HORTICULTURAL REPORT

2015 WEED CONTROL RESEARCH ON FRUIT & VEGETABLE CROPS

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By

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WEED CONTROL IN HORTICULTURAL CROPS – 2014
FOREWORD

This report summarizes the results of weed control experiments on horticultural crops in Michigan in 2015. It is intended to inform industry and university research and extension colleagues of our current results.

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METHODS

Chemical Application

Herbicides were applied with a small plot sprayer using carbon dioxide as a source of pressure. Spray volumes are specified in each experiment. All herbicide rates are expressed as pounds of active ingredient per acre.

Visual Evaluations

In most instances, weed control ratings were made on individual weed species. General ratings for broad-leaved weeds and grasses were sometimes used in orchard studies or for late-season assessments.

Weed control and crop injury are rated on a 1 to 10 scale; 1 = no visible injury or reduction in growth; 10 = complete kill of plants. The ratings can be roughly translated into percentages as follows:

10 = 100% kill, all the plants are dead or none are visible.
9 = 90-100% kill or reduction in growth and stand.
8 = 80-90% kill or reduction in growth and stand.
7 = 70-80% kill or reduction in growth and stand.
This is still a commercially acceptable control.
6 = 60-70% kill or reduction in growth and stand.
5 = 50% kill or reduction in growth and stand.
4 = 30-40% kill or reduction in growth and stand.
3 = 20-30% reduction in growth and stand.
2 = 10-20% reduction in growth and stand.
1 = 0-10% reduction in growth, no obvious effect of herbicide.

Experimental Design and Statistical Analysis

Experiments were set up and analyzed in the program Agriculture Research Manager (ARM) version 9.2014.7, from Gylling Data Management, Inc. (RR 4 405 Martin Boulevard, Brookings, SD 57006). Unless otherwise specified, the experiments were laid out as randomized complete blocks. The data were subjected to analysis of variance and the means were compared with the LSD test at the 5% level. Since data transformations were not used, the coefficient of variation for skewed ratings or weed densities may be misleading. In some instances, yields for weeded check plots may be low because of severe early weed competition. In these cases, it may be more desirable to compare new herbicides with standard treatments.

WEED LIST

Abbreviations for the common names of weeds correspond to those presented in the NCWSS proceedings volume 28 (1973), 143.

Abbr.	Common Name	Botanical Name
ALFA	alfalfa	*Medicago sativa* L.
ANBG	annual bluegrass	*Poa annua* L.
ANFB	annual fleabane	*Erigeron annuus* (L.) *Pers.*
ATRI	Atriplex	*Atriplex patula L. (Gray)*
BABR	bald brome (upright brome)	*Bromus racemosus* L.
BEGR	Bermudagrass	*Cynodon dactylon* L. *Pers.*
BFTF	birdsfoot trefoil	*Lotus corniculatus* L.
BHPL	buckhorn plantain	*Plantago lanceolata* L.
BLDO	broadleaf dock	*Rumex obtusifolius* L.
BLME	black medic	*Medicago lupulina* L.
BRFB	British fleabane	*Inula britannica* L.
BRPL	broadleaf plantain	*Plantago major* L.
BSPL	blackseed plantain	*Plantago rugelii* Dcne.
BYGR	barnyardgrass	*Echinochloa crus-galli* (L.) Beauv.
CABR	California brome	*Bromus carinatus* L.
CAGE	Carolina geranium	*Geranium carolinianam L.*
CATH	Canada thistle	*Cirsium arvense* (L.) Scop.
CAWE	carpetweed	*Mollugo verticillata* L.
CEPR	common evening primrose	*Oenothera biennis* L.
CLGC	clammy groundcherry	*Physalis heterophylla* Nees.
COBD	common burdock	*Arctium minus (Hill) Bernh.*
COBU	cocklebur	*Xanthium strumarium* L.
COCW	common chickweed	*Stellaria media* (L.) Cyrillo
COGR	common groundsel	*Senecio vulgaris* L.
COLQ	common lambsquarters	*Chenopodium album* L.
COMA	common mallow	*Malva neglecta Wallr.*
COMU	common mullein	*Verbascum Thapsus* L.
COMW	common milkweed	*Asclepias syriaca* L.
COPU	common purslane	*Portulaca oleracea* L.
COPW	common pokeweed	*Phytolacca americana* L.
CORW	common ragweed	*Ambrosia artemisiifolia* L.
CRWS	creeping woodsorrel	*Oxalis corniculata* L.
CUDO	curly dock	*Rumex crispus* L.
CWBS	catchweed bedstraw	*Galium aparine* L.
DAND	dandelion	*Taraxacum officinale* Weber
DOBG	downy bromegrass	*Bromus tectorum* L.
EBNS	eastern black nightshade	*Solanum ptycanthum* Dun.
FAPA	fall panicum	*Panicum dichotomiflorum* Michx.
FIBW	field bindweed	*Convolvulus arvensis* L.
FIPA	field pansy	*Viola rafinesquii* Greene
FIPC	field pennycress	*Thlaspi arvense* L.
FISB	field sandbur	*Cenchrus incertus* M.A.Curtis
FIVI	field violet	*Viola arvensis* Murray
GALI	galinsoga	*Galinsoga quadriradiata* Ruiz & Pav.
GIRW	giant ragweed	*Ambrosia trifida* L.

WEED LIST

Abbr.	Common Name	Botanical Name
GOGR	goosegrass	*Eleusine indica* (L.) Gaertn.
GORO	goldenrod	*Solidago nemoralis* Ait.
GIFT	giant foxtail	*Setaria faberi* Hermm.
GRFT	green foxtail	*Setaria viridis* (L.) Beauv.
GFPW	greenflower pepperweed	*Lepidium densiflorum* Schmd.
HABC	hairy bittercress	*Cardamine hirsute* L.
HAFE	hard fescue	*Festuca brevipila* Tracey
HANS	hairy nightshade	*Solanum sarrachoides* Sendtner
HAVE	hairy vetch	*Vicia villosa* Roth
HENB	henbit	*Lamium amplexicaule* L.
HEMU	hedge mustard	*Sisymbrium officinale (L.) Scop.*
HOAL	hoary alyssum	*Berteroa incana* (L.) DC.
HONE	horsenettle	*Solanum carolinense* L.
HOWE	horseweed (marestail)	*Conyza canadensis* (L.) Scop.
IRFB	Irish fleabane	*Inula salicina*
JABR	Japanese brome	*Bromus japonicas* L.
JIWE	jimsonweed	*Datura stramonium* L.
LACG	large crabgrass	*Digitaria sanguinalis* (L.) Scop
LATH	ladysthumb	*Polygonum persicaria* L.
MAYC	marsh yellowcress	*Rorippa islandica* (Oeder) Barbs
MECW	mouseear chickweed	*Cerastium vulgatum* L.
MECR	mouseear cress	Arabidopsis thaliana (L.) Heynh
MONO	monolepis	*Monolepis nuttaliane* Greene
MUTH	musk thistle	*Carduus nutans* L.
MWCH	mayweed chamomile	*Anthemis cotula* L.
NLLQ	narrowleaf lambsquarters	*Chenopodium desiccatum* A. Nels
OEDA	oxeye daisy	*Chrysanthemum leucanthemum* L.
ORGR	orchardgrass	*Dactylis glomerata* L.
PAWE	pineappleweed	*Matricaria matricariodes* (Less)C.L.Porter
PEST	perennial sowthistle	*Sonchus arvensis L.*
PESW	Pennsylvania smartweed	*Polygonum pennsylvanicum* L.
PERG	perennial ryegrass	*Lolium perenne* L.
POAM	Powell amaranth	*Amaranthus powellii S. Wats*
POIV	poison ivy	*Rhus radicans* L.
PRKW	prostrate knotweed	*Polygonum aviculare* L.
PRLE	prickly lettuce	*Lactuca serriola* L.
PRPW	prostrate pigweed	*Amaranthus blitoides* S. Wats.
PUDN	purple deadnettle	*Lamium purpureum* L.
PUSW	purslane speedwell	*Veronica serpyllifolia* L.
PUVI	puncturevine	*Tribulus terrestris* L.
QUGR	quackgrass	*Agropyron repens* (L.) Beauv.
RECL	red clover	*Trifolium pratense* L.
REFE	red fescue	*Festuca rubra* L.
RESO	red sorrel	*Rumex acetosella* L.
ROCI	rough cinquefoil	*Potentilla norvegica L.*
ROFB	rough fleabane	*Erigeron asper* Nutt.
RRPW	redroot pigweed	*Amaranthus retroflexus* L.
RSFI	redstem filaree	*Erodium cicutarium* (L.) L'Hér. ex Ait.
RUTH	Russian thistle	*Salsola iberica* L.
SFGE	smallflower geranium	*Geranium pusillum*

WEED LIST

Abbr.	Common Name	Botanical Name
SHPU	shepherdspurse	*Capsella bursa-pastoris* (L.) Medic.
SPKW	spotted knapweed	*Centaurea biebersteinii* DC.
SPSP	spotted spurge	*Euphorbia maculata L.*
STGR	stinkgrass	*Eragrostis cilianensis* (All.) E. Mosher
SWSW	swamp smartweed	*Polygonum coccineum* Muhl. ex Willd.
TAFE	tall fescue	*Festuca arundinacea* Schreb.
TLSW	thymeleaf sandwort	*Arenaria serpyllifolia* L.
TRCV	trailing crownvetch	*Coronilla caria L.*
TUPW	tumble pigweed	*Amaranthus albus* L.
VELE	velvetleaf	*Abutilon theophrasti* Medic.
VICR	Virginia creeper	*Parthenocissus quinquefolia* (L.) Planch.
VIPW	Virginia pepperweed	*Lepidium virginicum* L.
VOAS	volunteer asparagus	*Asparagus officinalis* L.
WESA	western salsify	*Tragopogon dubius* Scop.
WHCA	white campion	*Silene latifolia Poir.*
WHCL	white clover	*Trifolium repens* L.
WHHA	white heath aster	*Symphyotrichum ericoides* L.
WIBW	wild buckwheat	*Polygonum convolvulus* L.
WICA	wild carrot	*Daucus carota* L.
WICH	wild chamomile	*Matricaria chamomilla* L.
WIGA	wild garlic	*Allium vineale* L.
WIGR	witchgrass	*Panicum capillare* L.
WIMU	wild mustard	*Sinapis arvensis* L.
WIRA	wild radish	*Raphanus raphanistrum* L.
WLDGRP	wild grape	*Vitis* sp.
WLDRASP	wild raspberry	*Rubus* sp.
YEFC	yellow fieldcress (kiek)	*Rorippa sylvestris* L.
YEFT	yellow foxtail	*Setaria glauca* (L.) Beauv.
YEHW	yellow hawkweed	*Hieracium caespitosum Dumort.*
YENS	yellow nutsedge	*Cyperus esculentus* L.
YERO	yellow rocket	*Barbarea vulgaris* R. Br.

CHEMICAL LIST

COMMON NAME	TRADE NAME	FORMULATION	MANUFACTURER
2,4-D amine	Weedar 64	3.8 L	Nufarm, Inc.
acetochlor	Breakfree	6.4 EC	DuPont
acetochlor	Harness	7.0 E	Monsanto
acetochlor	Surpass	6.4 E	Dow Agrosciences
acetochlor	Warrant	3 EC	Monsanto
acifluorfen	Ultra Blazer	2 L	UPI
ammonium soap of fatty acid	Finalsan	22.1% L	Neudorff
atrazine	AAtrex	4 L	Syngenta
atrazine 4.006 lb ai + pyroxasulfone 0.485 lb ai + fluthiacet-methyl 0.014 lb ai	Anthem ATZ	4.5 SE	FMC
bensulide	Prefar	4 EC	Gowan
bentazon	Basagran	4 L	Arysta
bicyclopyrone	A 16003E	1.67 SL	Syngenta
bicyclopyrone 0.06 lb ai + mesotrione 0.24 lb ai + *S*-metolachlor 2.14 lb ai + atrazine 1 lb ai + benoxacor 0.107 lb ai	Acuron	3.547 CS	Syngenta
bromoxynil	Buctril	4 EC	Bayer CropScience
carfentrazone	Aim	2 EC	FMC
chlorimuron-ethyl	Classic	25 WDG	DuPont
clethodim	Intensity One	0.97 EC	CPS
clethodim	Select Max	0.97 EC	Valent
clomazone	Command	3 ME	FMC
clopyralid	Spur	3 EC	Albaugh
clopyralid	Stinger	3 EC	Dow Agrosciences
cloransulam-methyl	Firstrate	84 WDG	Dow Agrosciences
cycloate	Ro-Neet	6 EC	Helm Agro
DCPA	Dacthal	75 WP	AMVAC
dicamba	Clarity	4 L	BASF
diclobenil	Casoron G	4 G	Chemtura
diclobenil	Casoron L	1.4 CS	Chemtura
diflufenzopyr 21.4% + dicamba 55%	Distinct	76.4 WG	BASF
dimethenamid-P	Outlook	6 EC	BASF
dimethenamid-P	Tower	6 EC	BASF
diquat	Reglone	2 EC	Syngenta
diuron	Karmex	80 DF	Adama
EPTC	Eptam	7 EC	Gowan
ethalfluralin	Curbit	3 EC	CPS
ethalfluralin 1.6 lb ai + clomazone 0.5 lb ai	Strategy	2.1 EC	CPS
ethofumesate	Nortron SC	4 SC	Bayer CropScience
FeHEDTA	Fiesta	4.43% L	Neudorff
flazasulfuron	Mission	25 WG	ISK Bioscience
fluazifop-P	Fusilade DX	2 EC	Syngenta
flucarbazone	Everest	70 WDG	Arysta
flufenacet	Define	60 DF	Bayer CropScience
flufenacet 54.5% + metribuzin 13.6 %	Axiom	68 DF	Bayer CropScience
flumetsulam	Python	80 WDG	Dow Agrosciences
flumioxazin	Chateau SW	51 WG	Valent
flumioxazin	Sureguard	51 WDG	Valent

CHEMICAL LIST

COMMON NAME	TRADE NAME	FORMULATION	MANUFACTURER
fluthiacet	Cadet	0.91 EC	FMC
fluroxypyr	Starane Ultra	2.8 L	Dow Agrosciences
fomesafen	Reflex	2 EC	Syngenta
fomesafen 10.2% + *S*-metolachlor 46.4%	Prefix	5.29 L	Syngenta
foramsulfuron	Option	35 EG	Bayer CropScience
glufosinate	Rely 280, Liberty 280	2.34 L	Bayer CropScience
glufosinate-ammonium	Lifeline	2.34 L	UPI
glufosinate-ammonium	Reckon 280	2.34 L	Solera
glyphosate	Durango	5.4 L	Dow Agrosciences
glyphosate	Roundup Original	4 L	Monsanto
glyphosate	Roundup PowerMax	5.5 L	Monsanto
glyphosate	Roundup Ultra	4 L	Monsanto
glyphosate	Roundup UltraMax	5 L	Monsanto
glyphosate	Roundup WeatherMax	5.5 L	Monsanto
glyphosate	Touchdown Total	4.17 L	Syngenta
halosulfuron	Permit	75 WG	Gowan
halosulfuron	Sandea	75 WG	Gowan
hexazinone	Velpar	2 L	DuPont
hexazinone	Velpar ULV	75 SG	DuPont
hexazinone + sulfometuron	Westar	75 WDG	DuPont
imazamox	Raptor	1 AS	BASF
imazapic	Plateau	70 WG	BASF
imazethapyr	Pursuit	2 EC	BASF
imazosulfuron	League	75 WDG	Valent
indaziflam	Alion	1.67 CS	Bayer CropScience
isoxaben	Gallery, Trellis	75 DF	Dow Agrosciences
linuron	Lorox	50 DF	TKI NovaSource
mesotrione	Callisto	4 SC	Syngenta
metribuzin	Sencor	75 DF	Bayer CropScience
metribuzin	Tricor	75 DF	UPI
napropamide	Devrinol DF-XT	50 DF	UPI
nicosulfuron	Accent	75 WDG	DuPont
nicosulfuron + mesotrione + isoxadifen-ethyl	Revulin Q	51.2 WDG	DuPont
norflurazon	Solicam	80 DF	TKI NovaSource
oryzalin	KFD-163-01	3.2 SC	UPI
oryzalin	Surflan	4 AS	UPI
oxyfluorfen	Goal 2XL	2 EC	Dow Agrosciences
oxyfluorfen	GoalTender	4 SC	Dow Agrosciences
oxyfluorfen	KFD-155-01	2 L	UPI
paraquat	Firestorm	3 L	Chemtura
paraquat	Gramoxone SL	2 L	Syngenta
pelargonic acid	Scythe	4.2 EC	Gowan
pendimethalin	Prowl	3.3 EC	BASF
pendimethalin	Prowl H2O	3.8 ACS	BASF
penoxsulam 0.083 lb ai + oxyfluorfen 3.93 lb ai	Pindar GT	4.013	Dow Agrosciences
phenmedipham	Spin-Aid	1.3 L	Bayer CropScience
phenmedipham 0.6 lb ai + desmedipham 0.6 lb ai	Betamix	1.3 L	Bayer CropScience
prometryn	Caparol	4 L	Syngenta

CHEMICAL LIST

COMMON NAME	TRADE NAME	FORMULATION	MANUFACTURER
pronamide	Kerb	3.3 SC	Dow Agrosciences
pyraflufen-ethyl	Venue	0.17 SC	Nichino
pyrazon	Pyramin	68 DF	Arysta
pyroxasulfone	Zidua	85 WDG	BASF
pyroxasulfone 2.087 lb ai + fluthiacet-methyl 0.063 lb ai	Anthem	2.15 SE	FMC
quinclorac	Quinstar	3.8 L	Albaugh
quizalofop-P-ethyl	Assure II	0.88 EC	DuPont
quizalofop-P-ethyl	Targa	0.88 EC	Gowan
rimsulfuron	Matrix	25 DF	DuPont
rimsulfuron	Pruven	25 DF	Adama
saflufenacil	Sharpen	2.85 SC	BASF
saflufenacil	Treevix	70 WG	BASF
sethoxydim	Poast	1.53 EC	BASF
simazine	Princep	90 DF	Syngenta
S-metolachlor	Cinch	7.64 EC	DuPont
S-metolachlor	Dual Magnum	7.62 EC	Syngenta
S-metolachlor 3.34 lb ai + mesotrione 0.33 lb ai	Camix	3.67 L	Syngenta
S-metolachlor 2.68 lb ai + mesotrione 0.268 lb ai + atrazine 1.0 lb ai	Lumax	3.948 L	Syngenta
S-metolachlor II	Dual II Magnum	7.64 EC	Syngenta
sodium soap of asulam	Asulox	3.34 L	UPI
sulfentrazone	Spartan, Zeus	4 F	FMC
sulfentrazone 3.15 lb ai + carfentrazone 0.35 lb ai	Spartan Charge, Zeus Prime XC	3.5 SE	FMC
sulfentrazone 0.18 lb ai + metribuzin 0. 27 lb ai	Authority MTZ	45 DF	FMC
sulfometuron	Oust XP	75 WDG	Bayer CropScience
sulfosulfuron	Maverick	75 WG	Monsanto
tembotrione	Laudis	3.5 SC	Baye CropScience
terbacil	Sinbar	80 WDG	TKI NovaSource
tolpyralate		3.34 L	ISK Bioscience
topramezone	Impact	2.8 L	Amvac
triclopyr	Garlon	3 SC	Dow Agrosciences
trifloxysulfuron	Envoke	75 WG	Syngenta
trifluralin	Treflan	4 EC	Helena
triflusulfuron	Upbeet	50 WDG	DuPont

ADJUVANTS

TRADE NAME	ABBREVIATION	DESCRIPTION	MANUFACTURER
Activator 90	NIS	nonionic surfactant	Loveland
Agri-dex	COC	heavy range paraffinic oil	Helena
ammonium nitrate	AN	100% salt	
ammonium sulfate	AMS	spray grade fertilizer	
copper sulfate		100% salt	
Freeway		organosilicone surfactant	Loveland
Herbimax	COC	80% paraffin base + petroleum oil + 20% surfactant	Loveland
LI6193-11	COC		Loveland
MSO		methylated seed oil	Helena
N-Pak	AMS	ammonium sulfate liquid	Winfield Solutions
28% Nitrogen	UAN	28% urea ammonium nitrate solution	
Silwet L-77		organosilicone surfactant	Loveland
Sylgard 309		organosilicone surfactant	Dow Corning

ABBREVIATIONS USED IN THE REPORT

A =	Acre
a.i. / ai =	Active Ingredient
Amt =	Amount
ACS =	Aqueous Capsule Suspension
AMS =	Ammonium Sulfate
AS =	Aqueous Solution
ASPA =	Asparagus
CEC =	Cation Exchange Capacity
CRC =	Clarksville Research Center
CS =	Capsule Suspension
CV =	Coefficient of Variability
DF =	Dry Flowable
DS =	Designator
EC =	Emulsifiable Concentrate
EPRE =	Early PRE
EPOS =	Early POST
F =	Flowable
FALL =	Fall Application
FORM =	Formulation
FM =	Formulation
FT =	Distance in FT
g / gr =	Gram
GAL =	Gallon
GPA =	Gallon per acre
GROW STG =	Growth Stage at time of Application
HTRC =	Horticulture Teaching and Research Center
IN =	Inch
KG =	Kilogram
L =	Liquid
LPRE =	Late PRE
LPOS =	Late POST
LO =	Low Odor
LSD =	Least Significant Difference
LB =	Pounds
ME =	Microencapsulated
MKTBL =	Marketable
MPH =	Mile(s) per hour
MSU =	Michigan State University
N =	No
N/A =	Not Applicable/ Not Available
No. =	Number
OM =	Organic Matter
oz =	Ounce
P =	Probability
POH =	Post Harvest
PO1 =	Postemergence 1
PO2 =	Postemergence 2
POST =	Postemergence
POT =	Post Transplant
PPI =	Preplant Incorporated
PRE =	Preemergence
PREC. =	Precipitation (inches)
PRT =	Pretransplant
PSI =	Pounds per square inch
PT PR =	Pint Product
QT =	Quart
QT PR =	Quart Product
RCB / RCBD =	Randomized Complete Block Design
RH =	Relative Humidity
REPS =	Replication
SC =	Suspension Concentrate
SE =	Suspoemulsion
SNBE =	Snapbean
SP =	Soluble Powder
SPRING =	Spring Application
STBE =	Strawberry
SURF =	Surface
SWMREC =	Southwest Michigan Research and Extension Center
T =	Temperature
TNRC =	Trevor Nichols Research Complex
TRT =	Treatment
UNMKTBL =	Unmarketable
WDG =	Water Dispersible Granule
WSG =	Water Soluble Granule
WP =	Wettable Powder
WT =	Weight
' =	Feet
" =	Inches
Y =	Yes

TEMPERATURE AND PRECIPITATION DATA

MSU Horticulture Teaching and Research Center

Recorded at
MSU Horticulture Teaching and Research Center (HTRC)
East Lansing, Michigan
2015

APRIL				MAY				JUNE			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	64.5	26.9		**1**	74.0	42.0		**1**	64.7	42.3	
2	61.7	42.3	0.12	**2**	73.7	44.5		**2**	72.7	38.0	
3	51.7	30.2	0.01	**3**	78.2	46.9		**3**	74.8	42.6	
4	51.0	22.9		**4**	74.8	57.6	0.07	**4**	79.9	53.6	
5	58.1	31.8		**5**	63.3	47.5	0.37	**5**	72.8	56.4	
6	65.0	31.1		**6**	73.2	50.9		**6**	73.8	50.9	
7	52.7	35.3		**7**	83.4	53.4		**7**	77.8	47.7	
8	42.7	36.4	0.08	**8**	82.5	58.3	0.07	**8**	79.4	62.3	0.37
9	66.4	36.9	0.28	**9**	74.2	59.6	0.10	**9**	76.5	56.6	
10	67.8	38.7	0.04	**10**	69.7	51.1	0.80	**10**	83.3	63.2	
11	58.7	31.4		**11**	73.3	49.2	0.12	**11**	72.9	56.3	0.10
12	66.3	32.7		**12**	60.7	46.6	0.01	**12**	70.2	55.3	0.71
13	61.9	42.5	0.02	**13**	58.2	38.3		**13**	70.5	56.0	0.02
14	68.0	33.6		**14**	63.9	36.1		**14**	78.5	64.9	1.43
15	65.3	43.0		**15**	72.2	48.8	0.35	**15**	81.6	62.5	0.07
16	58.7	44.2		**16**	77.6	55.1		**16**	79.6	64.6	0.01
17	75.4	42.5		**17**	81.1	62.6	0.42	**17**	73.1	54.7	0.44
18	68.9	45.7		**18**	81.9	58.0	0.13	**18**	78.1	64.5	0.01
19	66.4	40.7	0.15	**19**	58.3	41.0		**19**	71.5	55.6	
20	58.1	41.5	0.10	**20**	60.6	34.5		**20**	78.7	51.1	
21	46.8	38.3		**21**	63.0	44.6		**21**	81.0	65.1	
22	39.4	33.0		**22**	67.3	45.9		**22**	81.7	58.6	1.02
23	42.3	26.7		**23**	75.2	37.5		**23**	77.6	64.8	0.72
24	58.0	23.6		**24**	75.4	54.7		**24**	78.2	52.2	
25	57.1	38.9		**25**	80.1	62.9	0.21	**25**	73.8	59.2	
26	59.1	33.1		**26**	81.5	63.6	0.32	**26**	73.6	58.4	
27	53.9	36.2		**27**	74.4	60.9		**27**	65.3	55.1	0.59
28	64.2	30.2		**28**	79.9	50.6		**28**	76.9	54.9	
29	65.5	34.5	0.05	**29**	83.1	59.1	0.24	**29**	74.7	57.3	
30	62.7	36.6		**30**	73.8	49.0	0.49	**30**	73.5	57.5	0.23
				31	52.0	45.1	0.27				

TEMPERATURE AND PRECIPITATION DATA

MSU Horticulture Teaching and Research Center

Recorded at
MSU Horticulture Teaching and Research Center (HTRC)
East Lansing, Michigan
2015

JULY				AUGUST				SEPTEMBER			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	69.3	56.0		**1**	80.4	57.5		**1**	86.7	59.0	
2	73.6	54.4		**2**	88.6	57.0	0.61	**2**	86.5	66.6	
3	77.2	47.0		**3**	76.8	60.6	0.12	**3**	81.5	62.4	0.66
4	79.4	51.5		**4**	77.8	55.3		**4**	79.8	64.9	
5	81.8	54.9		**5**	78.2	53.9		**5**	78.8	62.4	0.07
6	82.5	56.9		**6**	76.8	56.1		**6**	87.8	62.4	
7	75.3	56.9	0.98	**7**	77.7	55.4		**7**	88.2	68.8	1.80
8	65.8	51.0		**8**	72.2	62.8		**8**	85.1	68.7	0.16
9	76.1	57.2	0.03	**9**	82.3	63.6		**9**	76.0	53.6	
10	80.7	53.1		**10**	79.1	62.0	2.36	**10**	75.6	49.2	
11	79.4	54.8		**11**	79.5	61.4	0.01	**11**	64.5	54.9	
12	81.1	63.3	0.01	**12**	77.5	57.2		**12**	61.6	46.0	0.02
13	83.1	59.2	0.10	**13**	82.0	59.0	0.03	**13**	66.6	43.3	
14	75.8	63.6	0.67	**14**	83.4	66.3		**14**	75.3	45.5	
15	74.1	54.6		**15**	85.7	62.0	0.02	**15**	82.1	58.9	
16	74.7	51.9		**16**	86.0	64.8		**16**	80.9	53.3	
17	86.5	62.4	0.35	**17**	85.9	67.3		**17**	80.6	54.0	
18	83.8	67.7	0.10	**18**	83.4	62.3	0.10	**18**	75.6	61.9	0.45
19	83.3	65.1		**19**	83.1	66.3	0.18	**19**	68.5	53.4	0.11
20	80.9	60.2		**20**	68.6	58.7	0.38	**20**	69.9	43.5	
21	77.7	63.0		**21**	77.4	52.1		**21**	72.6	43.4	
22	76.9	56.2		**22**	79.9	55.1		**22**	82.9	42.6	
23	81.7	54.6		**23**	77.9	54.9	0.65	**23**	79.6	45.4	
24	84.3	59.9		**24**	70.1	54.9		**24**	77.4	48.8	
25	84.9	65.0		**25**	61.1	53.6		**25**	78.2	53.8	
26	86.1	60.5		**26**	66.7	55.8		**26**	73.3	54.2	
27	88.4	59.0		**27**	67.1	47.4		**27**	74.8	57.4	
28	87.8	59.5		**28**	75.9	45.1		**28**	78.2	64.0	0.01
29	85.0	67.3	0.01	**29**	69.1	60.2	0.13	**29**	68.5	50.9	
30	82.3	62.8		**30**	77.8	62.2	0.01	**30**	61.6	44.0	
31	82.4	60.8		**31**	80.3	59.0					

TEMPERATURE AND PRECIPITATION DATA

MSU Clarksville Research Center

Recorded at
MSU Clarksville Research Center (Clarksville)
Clarksville, Michigan
2015

APRIL				MAY				JUNE			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	64.1	25.9		**1**	71.5	37.8		**1**	66.2	37.2	
2	59.5	43.0	0.15	**2**	71.1	40.6		**2**	72.1	37.3	
3	49.1	28.2		**3**	77.6	52.2		**3**	75.9	45.3	
4	49.0	20.4		**4**	71.7	55.6	0.53	**4**	78.3	53.2	
5	54.4	32.3		**5**	55.5	46.4	0.24	**5**	68.6	57.7	
6	62.1	30.3		**6**	73.7	49.8		**6**	72.5	49.8	
7	49.0	33.5		**7**	84.1	55.0		**7**	75.6	52.6	0.06
8	40.3	34.1	0.33	**8**	80.9	61.1	0.03	**8**	77.6	59.4	0.11
9	64.0	34.0	1.35	**9**	67.6	59.5	0.13	**9**	76.1	53.4	
10	65.0	36.0	0.39	**10**	60.1	48.2	0.39	**10**	80.6	61.9	
11	55.9	30.3		**11**	66.8	47.4	0.31	**11**	72.5	55.4	
12	66.6	37.8		**12**	54.4	44.7		**12**	66.0	53.5	1.39
13	60.1	44.0	0.10	**13**	58.5	35.2		**13**	73.0	54.8	0.01
14	65.4	34.6		**14**	63.4	37.4		**14**	76.6	65.5	0.73
15	65.0	38.7		**15**	67.3	48.0	0.29	**15**	78.2	63.7	0.09
16	61.7	40.1	0.02	**16**	78.1	54.3		**16**	78.3	59.5	0.09
17	73.6	37.2		**17**	80.4	61.9		**17**	76.7	54.5	0.03
18	69.9	46.1		**18**	80.5	52.6		**18**	77.0	60.4	0.03
19	66.3	39.0	0.46	**19**	52.7	37.1		**19**	72.5	50.5	
20	54.6	38.3	0.27	**20**	58.3	30.6		**20**	79.1	49.4	
21	44.9	35.9	0.01	**21**	61.9	40.2		**21**	79.4	63.7	
22	37.9	31.0	0.01	**22**	65.5	40.3	0.01	**22**	80.9	60.6	0.47
23	41.5	28.9		**23**	76.5	39.9		**23**	74.2	59.5	
24	57.0	24.0		**24**	73.6	56.0		**24**	76.8	52.1	
25	54.6	34.7		**25**	74.9	62.5	0.19	**25**	74.9	59.8	0.01
26	59.6	29.4		**26**	79.8	62.6	0.33	**26**	75.9	57.1	
27	52.1	35.2		**27**	71.0	55.7	0.01	**27**	72.6	54.6	
28	63.4	33.0		**28**	80.8	51.0		**28**	75.3	51.1	
29	64.1	35.5	0.01	**29**	83.6	59.7	0.70	**29**	75.4	57.1	
30	62.0	33.2		**30**	68.9	45.3	0.56	**30**	71.2	54.2	
				31	55.7	41.3	0.29				

TEMPERATURE AND PRECIPITATION DATA

MSU Clarksville Research Center

Recorded at
MSU Clarksville Research Center (Clarksville)
Clarksville, Michigan
2015

JULY				AUGUST				SEPTEMBER			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	66.9	53.3		**1**	79.4	56.3		**1**	86.7	63.1	
2	73.6	49.5		**2**	87.3	60.5	0.79	**2**	86.4	68.6	
3	76.5	47.3		**3**	75.1	59.2	0.07	**3**	78.5	65.4	1.07
4	79.4	51.4		**4**	75.7	55.1		**4**	77.5	64.0	
5	82.0	54.8		**5**	77.1	53.0		**5**	80.5	60.2	0.41
6	82.1	58.5		**6**	77.9	54.4		**6**	87.2	63.8	
7	75.3	53.8		**7**	78.0	54.6		**7**	85.4	70.6	0.03
8	68.2	49.0		**8**	71.5	62.3	0.02	**8**	82.6	66.4	1.26
9	76.4	56.1		**9**	81.4	60.8		**9**	74.8	54.8	
10	78.7	52.2		**10**	78.1	65.0	0.39	**10**	72.8	51.0	
11	78.3	54.0		**11**	77.5	59.5		**11**	67.3	51.4	0.07
12	82.9	63.1		**12**	76.8	52.7		**12**	61.2	42.8	
13	80.5	60.9		**13**	80.6	57.8		**13**	66.5	39.1	
14	74.9	63.9		**14**	83.1	65.0		**14**	76.1	47.1	
15	75.3	54.3		**15**	87.2	59.2		**15**	82.3	58.5	
16	73.8	50.5		**16**	85.6	65.8		**16**	80.6	54.7	
17	83.2	61.1		**17**	85.4	65.0		**17**	81.4	53.0	
18	84.0	66.4	0.29	**18**	80.1	62.5	0.87	**18**	78.4	62.4	0.61
19	80.2	62.1		**19**	81.9	66.8	0.02	**19**	67.7	48.1	0.07
20	78.5	57.7		**20**	67.6	56.0	0.12	**20**	70.2	44.5	
21	76.0	58.0		**21**	76.2	50.8		**21**	73.8	42.3	
22	77.2	53.2		**22**	79.5	56.2		**22**	77.5	47.1	
23	81.0	57.3		**23**	74.7	55.1	0.49	**23**	79.6	47.5	
24	82.9	57.5		**24**	68.0	54.4		**24**	77.4	49.1	
25	83.7	64.2		**25**	61.1	51.0	0.08	**25**	78.0	54.4	
26	86.6	57.1		**26**	65.8	54.6		**26**			
27	88.9	60.2		**27**	69.9	47.5		**27**			
28	87.5	60.7		**28**	74.7	49.2	0.01	**28**			
29	83.1	64.3		**29**	68.2	58.6	0.20	**29**			
30	81.0	59.7		**30**	76.4	60.2	0.02	**30**			
31	81.5	59.6		**31**	79.5	59.1	0.01				

TEMPERATURE AND PRECIPITATION DATA

MSU Southwest Michigan Research and Extension Center

Recorded at
MSU Southwest Michigan Research and Extension Center (Benton Harbor)
Benton Harbor, Michigan
2015

APRIL				MAY				JUNE			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	70.1	30.1		**1**	61.6	34.8		**1**	67.5	46.6	
2	61.1	45.3	0.19	**2**	73.1	43.1		**2**	72.5	47.1	
3	48.8	30.9		**3**	80.4	52.3		**3**	76.9	45.0	
4	53.6	24.0		**4**	68.6	53.3	0.01	**4**	80.6	55.2	
5	64.8	40.2		**5**	58.1	51.1	0.58	**5**	68.6	52.3	
6	62.7	42.0		**6**				**6**	78.3	54.4	
7	52.2	40.2		**7**	85.4	61.2		**7**	77.9	58.3	0.03
8	53.9	41.8	0.06	**8**	83.7	62.4	0.51	**8**	82.3	56.0	0.24
9	70.2	45.0	1.31	**9**	65.4	47.1	0.35	**9**	80.2	51.3	
10	70.5	36.9	0.09	**10**	69.0	48.2	0.19	**10**	85.6	67.2	
11	58.9	33.1		**11**	70.4	52.2	0.20	**11**	82.0	65.3	0.24
12	67.3	42.6		**12**	53.3	47.5		**12**	69.2	58.5	0.37
13	62.1	49.0	0.39	**13**	54.7	40.6		**13**	88.5	62.5	
14	65.4	39.2		**14**	63.7	40.0	0.03	**14**	83.2	67.3	0.76
15	67.3	39.3		**15**	75.4	53.8	0.04	**15**	79.6	67.6	1.63
16	60.5	41.8	0.06	**16**	80.4	61.7		**16**	73.5	56.3	
17	73.4	37.7		**17**	79.8	65.6		**17**	71.8	54.8	0.04
18	77.6	55.3		**18**	82.5	50.8		**18**	80.4	61.1	
19	72.6	51.3	0.45	**19**	50.8	37.3		**19**	75.9	57.3	
20	55.3	41.5	0.06	**20**	55.5	35.5	0.04	**20**	82.4	60.0	
21	49.5	39.6		**21**	64.7	42.3		**21**	82.5	65.8	
22	40.6	33.9		**22**	66.4	45.7	0.06	**22**	84.9	64.8	0.01
23	46.4	28.5		**23**	80.5	45.4		**23**	81.0	57.3	
24	59.5	28.5	0.03	**24**	79.0	55.0		**24**	81.4	52.9	
25	49.7	41.2	0.02	**25**	77.9	65.7	0.04	**25**	77.8	62.9	0.02
26	51.4	33.8		**26**	78.8	65.1	0.56	**26**	76.3	63.8	0.01
27	49.5	36.1		**27**	74.8	53.4		**27**	72.3	58.1	0.08
28	53.5	30.1		**28**	82.6	69.3		**28**	79.1	50.8	
29	60.1	32.8		**29**	84.7	64.2	0.25	**29**	73.7	60.9	
30	49.2	37.1		**30**	71.4	50.4	0.82	**30**	71.5	58.6	
				31	59.2	47.4	0.18				

TEMPERATURE AND PRECIPITATION DATA

MSU Southwest Michigan Research and Extension Center

Recorded at
MSU Southwest Michigan Research and Extension Center (Benton Harbor)
Benton Harbor, Michigan
2015

JULY				AUGUST				SEPTEMBER			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	64.8	55.4		**1**	83.9	57.6		**1**	87.8	68.7	
2	77.2	50.4		**2**	92.5	63.5	0.66	**2**	88.1	69.5	
3	77.4	55.2		**3**	79.0	60.8	0.01	**3**	88.8	69.8	
4	80.1	51.3		**4**	80.4	56.1		**4**	80.4	66.5	
5	86.2	57.3		**5**	81.3	55.3		**5**	81.0	65.8	0.33
6	86.5	64.7		**6**	82.3	62.9		**6**	90.3	66.3	
7	78.7	54.1	0.56	**7**	81.5	58.8		**7**	88.6	71.8	
8	69.2	52.2		**8**	81.3	64.5		**8**	87.4	69.0	0.37
9	71.5	55.2	0.25	**9**	78.4	61.7		**9**	76.5	56.4	
10	79.5	52.1		**10**	81.8	67.6		**10**	78.6	53.6	
11	80.4	53.5		**11**	77.4	64.7		**11**	66.9	54.1	0.52
12	83.6	67.3	0.02	**12**	74.8	57.8		**12**	65.2	47.6	
13	86.4	64.4	1.08	**13**	85.9	57.2		**13**	68.9	41.5	
14	79.2	60.8		**14**	86.0	64.5	0.65	**14**	80.1	48.3	
15	77.9	57.1		**15**	87.7	63.0		**15**	83.7	60.1	
16	74.5	60.5	0.24	**16**	88.7	68.3		**16**	84.3	57.2	
17	90.8	64.3	0.67	**17**	86.8	68.3	0.15	**17**	85.4	60.0	
18	89.6	67.6	1.06	**18**	83.7	66.7	0.04	**18**	81.8	67.0	0.84
19	79.8	62.8		**19**	81.7	66.5	0.29	**19**	70.0	49.9	0.41
20	85.0	58.1		**20**	71.5	56.3		**20**	72.3	46.1	
21	75.3	58.7		**21**	82.3	53.7		**21**	75.2	46.7	
22	81.0	56.3		**22**	83.9	59.7		**22**	80.8	51.0	
23	82.8	57.4		**23**	78.0	59.2	0.33	**23**	81.0	53.7	
24	86.5	58.6		**24**	73.1	56.6		**24**	81.1	52.8	
25	85.0	66.5		**25**	64.3	58.9		**25**	81.8	56.5	
26	86.2	61.1		**26**	65.6	58.8	0.05	**26**	79.2	59.8	
27	89.2	66.0		**27**	72.3	50.3		**27**	74.3	64.3	
28	91.0	67.5		**28**	78.3	55.3		**28**	80.4	66.1	
29	84.7	73.8		**29**	69.5	62.5	0.66	**29**	70.0	52.8	0.02
30	85.5	67.8		**30**	78.0	60.9		**30**	65.3	43.1	
31	85.6	62.1		**31**	83.7	59.2					

TEMPERATURE AND PRECIPITATION DATA

Fremont

Recorded at
City of Fremont
Fremont, Michigan
2015

APRIL				MAY				JUNE			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	62.8	25.9		**1**	73.2	37.2		**1**	69.5	38.6	
2	57.5	44.7	0.17	**2**	70.3	37.6		**2**	72.3	40.4	
3	50.0	27.0		**3**	75.3	46.7		**3**	75.4	49.5	
4	51.0	20.3		**4**	76.5	54.5	0.10	**4**	75.3	52.6	
5	52.7	33.5	0.02	**5**	61.0	47.4	0.20	**5**	72.6	58.2	
6	66.1	34.6		**6**	77.6	49.7	0.03	**6**	74.1	50.1	
7	53.1	35.9	0.05	**7**	83.2	57.7		**7**	71.8	56.4	0.02
8	43.4	34.2	1.57	**8**	78.2	61.3		**8**	77.9	58.9	0.02
9	56.8	36.0	2.26	**9**	67.7	58.6	0.59	**9**	76.2	52.1	
10	56.6	34.0	0.03	**10**	58.7	49.5	0.46	**10**	80.7	61.8	
11	57.8	32.9		**11**	64.7	48.5	0.65	**11**	71.9	56.8	
12	66.3	35.3		**12**	50.7	43.7	0.01	**12**	67.0	54.6	1.93
13	61.4	42.8	0.29	**13**	62.9	37.2		**13**	69.5	57.0	0.10
14	67.0	32.8		**14**	64.8	37.5		**14**	74.8	65.0	0.09
15	64.8	38.6		**15**	65.8	48.1	0.36	**15**	79.9	63.1	1.40
16	61.0	40.4	0.21	**16**	76.7	54.4		**16**	76.8	54.2	
17	74.4	34.9		**17**	79.1	64.2		**17**	77.5	52.8	
18	72.5	42.2		**18**	75.5	48.4		**18**	78.6	60.1	
19	66.3	44.1	0.29	**19**	49.8	37.7		**19**	74.9	48.9	
20	50.8	39.1	0.35	**20**	56.0	30.1		**20**	77.2	50.7	
21	40.9	35.9	0.07	**21**	62.4	39.2		**21**	79.3	58.9	
22	37.2	31.0		**22**	65.2	36.1		**22**	80.5	59.8	0.44
23	45.8	28.4		**23**	74.0	36.9		**23**	75.3	56.8	
24	58.2	25.0		**24**	70.4	48.9	0.13	**24**	77.8	50.8	
25	55.9	36.7		**25**	73.3	58.8	0.06	**25**	76.3	58.7	0.01
26	59.0	29.4		**26**	78.1	58.2	0.81	**26**	75.9	58.5	0.01
27	60.4	37.7		**27**	69.6	56.6	0.02	**27**	78.2	56.9	
28	63.6	32.9		**28**	78.7	52.3		**28**	75.8	48.3	
29	64.5	36.8		**29**	79.9	61.8	0.37	**29**	78.1	53.7	
30	63.0	36.4		**30**	69.2	44.8	0.57	**30**	71.8	55.5	0.12
				31	64.4	43.2					

TEMPERATURE AND PRECIPITATION DATA

Fremont

Recorded at
City of Fremont
Fremont, Michigan
2015

JULY				AUGUST				SEPTEMBER			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	62.6	51.2		**1**	80.5	55.3		**1**	84.7	59.3	
2	76.7	49.0		**2**	86.7	57.3	0.21	**2**	86.4	68.2	
3	79.2	47.8		**3**	76.6	58.0	0.01	**3**	78.4	67.8	0.12
4	79.8	51.4		**4**	77.1	54.5		**4**	75.2	66.1	
5	81.3	54.5		**5**	79.3	52.3		**5**	79.0	62.9	0.01
6	82.9	60.1	0.71	**6**	79.7	54.8		**6**	86.3	64.3	
7	70.3	54.0	0.77	**7**	78.5	60.2	0.03	**7**	81.8	69.3	
8	68.3	46.8		**8**	73.6	61.3	0.03	**8**	74.4	66.0	1.58
9	78.4	55.8		**9**	80.1	61.4		**9**	78.0	53.3	
10	79.3	51.5		**10**	83.5	66.4		**10**	70.6	52.6	
11	78.7	52.8		**11**	79.5	60.3		**11**	70.4	49.9	
12	83.3	62.3		**12**	80.3	53.9		**12**	65.5	45.4	
13	79.8	63.1	0.33	**13**	79.6	57.3		**13**	69.2	40.3	
14	73.9	59.8	0.74	**14**	87.1	67.9		**14**	74.6	45.3	
15	76.1	52.9		**15**	88.1	60.6		**15**	79.0	56.5	
16	75.3	50.1		**16**	84.9	64.8		**16**	78.2	58.7	
17	81.8	61.8	0.63	**17**	86.6	64.6	0.36	**17**	80.3	54.8	
18	85.2	65.5	0.59	**18**	79.1	65.2	0.01	**18**	80.3	64.1	0.49
19	78.6	65.0		**19**	77.7	64.3	0.43	**19**	68.0	48.7	0.14
20	81.0	58.0		**20**	66.4	59.5	0.04	**20**	71.9	45.5	
21	75.7	57.1		**21**	77.0	48.3		**21**	72.4	42.9	
22	79.8	52.9		**22**	79.3	58.6		**22**	75.0	46.9	
23	83.4	57.8		**23**	70.9	59.0	0.27	**23**	81.6	48.8	
24	82.5	58.6		**24**	65.4	53.9		**24**	76.8	53.7	
25	85.1	63.0		**25**	59.8	53.9		**25**	80.5	55.2	
26	87.7	55.9		**26**				**26**	75.5	56.5	
27	90.6	61.2		**27**				**27**	71.6	60.2	
28	89.1	61.8		**28**	72.6	49.5	0.07	**28**	74.5	60.0	
29	83.2	65.3		**29**	66.2	58.4	0.43	**29**	64.0	46.7	0.30
30	83.5	61.1		**30**	74.5	59.7		**30**	62.6	40.4	
31	81.8	60.8		**31**	77.3	59.1	0.01				

TEMPERATURE AND PRECIPITATION DATA

Grand Junction

Recorded at
MBG Marketing
Grand Junction, Michigan
2015

APRIL				MAY				JUNE			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	71.3	26.9		**1**	68.5	32.4		**1**	69.5	45.9	
2	63.9	42.4	0.20	**2**	77.5	39.5		**2**	75.6	40.6	
3	53.1	31.1		**3**	83.8	47.6		**3**	77.1	43.7	
4	55.8	20.9		**4**	73.8	53.9	0.18	**4**	83.2	55.1	
5	64.8	34.9		**5**	57.1	50.5	1.29	**5**	75.9	58.9	
6	63.8	31.2		**6**	82.1	50.8		**6**	78.5	56.7	
7	54.5	40.7		**7**	88.0	60.2		**7**	77.1	58.5	0.07
8	49.8	41.9	0.08	**8**	84.4	61.3	0.32	**8**	83.6	56.3	0.08
9	69.3	43.7	1.04	**9**	67.1	50.9	0.21	**9**	80.8	51.5	
10	70.8	36.3	0.11	**10**	71.5	52	0.27	**10**	87.6	64.3	0.01
11	60.8	31.2	0.01	**11**	72.1	52.7	0.23	**11**	79.4	58.6	0.10
12	69.3	33.5		**12**	54.0	47.7		**12**	72.8	60.9	0.56
13	65.8	41.2	0.21	**13**	61.2	37.9		**13**	88.8	60.6	0.22
14	69.6	32.9		**14**	64.4	37.2	0.02	**14**	82.7	68.7	1.86
15	71.2	34.2		**15**	72.4	53.1	0.27	**15**	80.5	68.5	0.65
16	61.7	41.4	0.13	**16**	82.2	58.6		**16**	79.3	56.3	0.01
17	77.4	34.9		**17**	82.3	64.7		**17**	74.1	54.3	0.17
18	78.9	46.1		**18**	85.7	51.1		**18**	81.6	63.0	
19	74.4	50.4	0.53	**19**	54.1	37.2	0.01	**19**	74.8	56.6	
20	55.5	42.7	0.40	**20**	59.2	34.3	0.08	**20**	83.5	56.3	
21	49.1	39.9		**21**	66.0	41.8		**21**	83.3	66.1	
22	42.5	35.1		**22**	70.5	41.9		**22**	85.1	63.9	1.80
23	48.4	27.3	0.01	**23**	82.4	40.2		**23**	75.8	56.8	0.08
24	61.4	25.5	0.25	**24**	76.4	49.8		**24**	82.4	52.6	
25	53.2	41.9	0.01	**25**	80.4	61.6	0.13	**25**	76.9	64.4	0.08
26	59.6	30.3		**26**	81.3	61.7	0.16	**26**	77.5	61.3	
27	54.4	35.5		**27**	73.7	54.5		**27**	77.8	58.2	0.02
28	58.9	29.3		**28**	83.6	51.3		**28**	81.6	48.8	
29	66.1	31.6		**29**	86.2	64.9	0.57	**29**	75.3	60.0	0.09
30	56.6	35.2		**30**	71.6	49.9	0.65	**30**	73.6	58.5	
				31	59.4	46.6	0.33				

TEMPERATURE AND PRECIPITATION DATA

Grand Junction

Recorded at
MBG Marketing
Grand Junction, Michigan
2015

JULY				AUGUST				SEPTEMBER			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	68.1	53.1		**1**	84.4	56.5		**1**	89.9	63.2	0.01
2	76.7	46.9		**2**	92.8	62.8	0.72	**2**	90.8	69.0	
3	78.4	50.1		**3**	80.9	59.1	0.01	**3**	89.1	68.7	
4	82.8	49.5		**4**	82.1	56.2		**4**	82.3	66.2	
5	87.3	53.3		**5**	83.3	53.5		**5**	84.1	64.9	0.19
6	88.4	60.0		**6**	81.8	57.2		**6**	92.2	64.1	
7	79.4	53.0	0.34	**7**	81.2	58.4		**7**	90.0	71.1	
8	70.7	48.7		**8**	80.2	66.1	0.01	**8**	87.9	67.5	0.53
9	76.1	54.5	0.07	**9**	80.2	63.0		**9**	76.9	54.8	
10	81.3	49.4		**10**	83.8	67.1	0.52	**10**	77.6	51.7	
11	81.2	51.6		**11**	79.9	61.0		**11**	66.1	52.4	0.44
12	85.9	65.8	0.01	**12**	78.3	54.9		**12**	67.1	47.2	
13	86.2	64.7	1.37	**13**	85.9	57.8		**13**	71.7	38.7	
14	77.3	63.8		**14**	87.0	67.0	0.18	**14**	80.2	46.7	
15	79.9	58.7		**15**	89.6	61.8	0.01	**15**	84.8	57.9	
16	74.4	55.9	0.16	**16**	90.2	66.8		**16**	84.4	53.8	
17	90.9	63.8	0.42	**17**	90.4	67.4	0.05	**17**	86.7	55.9	
18	88.6	65.8	0.40	**18**	84.9	66.2	0.13	**18**	81.0	66.5	1.24
19	85.1	62.5		**19**	83.7	67.0	0.25	**19**	70.2	48.2	0.18
20	85.1	57.7		**20**	70.1	57.3	0.03	**20**	73.0	43.9	
21	79.6	57.9		**21**	82.4	51.2		**21**	75.0	41.8	
22	84.8	55.3		**22**	83.0	56.5		**22**	79.1	45.4	
23	85.7	57.2		**23**	79.2	56.1	0.67	**23**	81.1	47.7	
24	88.2	57.0		**24**	73.6	54.8		**24**	80.5	48.5	
25	87.3	65.8		**25**	63.0	56.8		**25**	79.5	54.2	
26	87.1	59.3		**26**	65.5	54.0	0.01	**26**	79.1	55.3	
27	90.8	61.6		**27**	75.1	46.9		**27**	74.6	63.4	
28	92.1	61.5		**28**	78.5	51.9		**28**	81.3	63.6	
29	87.7	71.7		**29**	70.9	62.7	0.27	**29**	67.5	50.0	0.07
30	86.8	65.0		**30**	78.6	59.2		**30**	65.6	40.8	
31	87.5	59.3		**31**	84.9	55.7					

TEMPERATURE AND PRECIPITATION DATA

Hart

Recorded at
Asparagus Research Farm
Hart, Michigan
2015

APRIL				MAY				JUNE			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	64.2	26.6		**1**	64.5	31.3	0.03	**1**	64.6	37.4	
2	60.7	45.5	0.19	**2**	71.0	38.9		**2**	69.3	44.0	
3	51.4	24.9		**3**	76.0	52.9		**3**	74.1	47.1	
4	49.1	18.7		**4**				**4**	75.8	55.3	
5	47.8	32.7	0.23	**5**	67.5	47.1		**5**	70.4	53.1	
6	59.4	33.7		**6**				**6**	72.1	45.3	
7	53.3	38.4	0.05	**7**	83.5	60.6		**7**	73.9	55.5	0.09
8	44.7	35.3	0.50	**8**	77.0	58.9	0.11	**8**	71.8	50.5	0.02
9	51.3	36.1	0.83	**9**	66.4	48.9	0.31	**9**	76.2	49.4	
10	56.7	31.6		**10**	60.4	49.6	0.06	**10**	78.5	62.0	
11	56.5	32.1		**11**	64.2	47.8	0.38	**11**	72.0	56.6	0.20
12	65.0	36.6		**12**	49.1	41.5		**12**	68.9	55.7	1.51
13	61.7	41.9		**13**	56.7	35.5		**13**	68.5	56.3	0.10
14	63.3	32.4		**14**	65.1	34.3		**14**	74.9	62.3	0.39
15	66.3	35.6		**15**	65.4	47.8	0.53	**15**	80.2	59.0	0.02
16	53.8	37.8		**16**	77.8	53.1		**16**	73.1	50.3	
17	70.1	34.8		**17**	80.8	62.8		**17**	79.2	50.9	
18	72.0	38.6		**18**	75.4	45.2		**18**	77.1	56.6	
19	70.1	45.2		**19**	47.4	35.6		**19**	74.0	46.3	
20	48.8	37.5		**20**	51.6	27.5		**20**	79.6	51.0	
21	42.2	34.2		**21**	63.9	38.9		**21**	79.9	55.3	
22	37.9	30.4		**22**	64.6	31.1		**22**	80.7	58.7	0.48
23	45.5	28.6		**23**	73.7	33.5	0.01	**23**	73.8	54.5	
24	53.7	26.0		**24**	69.1	54.1	0.34	**24**	80.0	50.9	
25	58.0	38.3		**25**	73.6	59.9	0.06	**25**	78.6	58.4	
26	54.5	27.8		**26**	75.2	62.3	0.22	**26**	78.1	59.6	
27	53.3	35.2		**27**	66.4	56.0		**27**	78.7	52.6	
28	60.4	29.6		**28**	78.7	53.6		**28**	76.8	46.3	
29	61.4	32.0		**29**	80.8	62.5	0.29	**29**	77.2	52.7	1.53
30	56.5	35.3		**30**	66.6	42.3	0.70	**30**	69.1	53.4	0.15
				31	65.8	38.3					

TEMPERATURE AND PRECIPITATION DATA

Hart

Recorded at
Asparagus Research Farm
Hart, Michigan
2015

JULY				AUGUST				SEPTEMBER			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	61.1	48.9		**1**	79.6	57.8		**1**	86.3	61.2	
2	73.3	45.6		**2**	87.0	59.5	0.18	**2**	86.8	70.6	
3	73.7	50.8		**3**	75.6	56.4	0.01	**3**	76.1	66.6	0.06
4	78.8	52.0		**4**	74.5	54.5		**4**	76.8	64.3	
5	81.7	57.7		**5**	75.9	53.7		**5**	81.1	64.2	0.01
6	82.8	61.1	0.31	**6**	79.0	53.6		**6**	89.3	68.7	
7	70.4	51.0	0.94	**7**	75.4	60.1	0.33	**7**	83.9	69.7	0.06
8	71.3	46.6		**8**	74.5	60.0	0.10	**8**	73.5	63.7	0.71
9	70.6	53.2		**9**	80.6	60.2		**9**	76.3	54.0	
10	79.5	49.3		**10**	78.5	63.4	0.04	**10**	70.7	53.7	0.01
11	80.2	52.8		**11**	77.1	57.1		**11**	67.3	52.2	0.24
12	83.0	59.9		**12**	73.6	51.3		**12**	64.7	39.8	
13	79.6	64.2	0.89	**13**	81.0	64.9		**13**	67.6	38.1	
14	71.6	56.1	0.14	**14**	86.0	69.8		**14**	75.0	45.2	
15	73.9	51.3		**15**	88.6	60.5		**15**	79.9	62.8	
16	76.8	53.3	0.03	**16**	87.3	67.6		**16**	80.3	56.0	
17	82.3	62.5	0.06	**17**	88.7	67.7		**17**	81.4	58.1	
18	87.5	65.2	0.45	**18**	79.9	67.1	0.06	**18**	77.5	64.7	0.08
19	77.0	63.0		**19**	78.1	64.5	0.32	**19**	67.4	48.8	0.71
20	81.7	60.0		**20**	66.8	60.6	0.12	**20**	70.9	46.8	
21	74.2	55.1		**21**	78.5	48.2		**21**	72.5	46.7	
22	78.6	50.5		**22**	81.1	61.7		**22**	76.6	49.7	
23	81.4	56.1		**23**	71.4	60.1	0.33	**23**	79.1	51.7	
24	84.1	59.9		**24**	65.3	57.4		**24**	77.3	53.0	
25	82.4	60.5		**25**	60.9	55.8		**25**	80.2	55.5	
26	85.5	57.7		**26**	68.4	48.2	0.03	**26**	78.0	54.6	
27	87.9	61.2		**27**	72.5	46.2		**27**	70.6	57.3	
28	89.1	60.2		**28**	74.4	52.4	0.07	**28**	77.1	63.3	
29	82.9	69.4		**29**	68.9	59.0	0.34	**29**	66.4	45.5	0.35
30	83.4	64.6		**30**	75.7	57.8		**30**	63.2	38.9	
31	80.7	60.0		**31**	77.5	55.2					

TEMPERATURE AND PRECIPITATION DATA

Hudsonville

Recorded at
Michigan Celery Cooperative
Hudsonville, Michigan
2015

APRIL				MAY				JUNE			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	67.0	26.8		**1**	68.6	34.9		**1**	68.2	39.1	
2	58.8	45.9	0.16	**2**	71.4	40.2		**2**	72.5	41.9	
3	50.8	29.3		**3**	78.2	52.6		**3**	75.5	47.3	
4	50.9	20.5		**4**	69.7	50.8	0.15	**4**	78.5	55.2	
5	57.9	32.2		**5**	57.9	48.4	0.18	**5**	75.4	55.3	
6	61.0	34.2		**6**	77.5	52.1		**6**	73.9	56.0	
7	50.2	37.7		**7**	83.9	59.1	0.01	**7**	75.6	57.6	
8	44.8	37.4	0.12	**8**	80.6	61.3	0.06	**8**	77.5	55.9	
9	65.7	37.6	1.67	**9**	66.7	57.9	0.75	**9**	75.0	51.1	
10	61.1	35.9	0.32	**10**	62.5	52.1	0.66	**10**	80.7	64.1	
11	54.9	32.4		**11**	68.2	50.8	0.57	**11**	73.5	57.6	
12	67.6	38.5		**12**	51.6	45.0		**12**	67.4	57.5	1.00
13	60.7	44.4	0.19	**13**	60.2	36.2		**13**	75.7	56.9	
14	65.3	32.9		**14**	63.4	38.8		**14**	76.9	66.5	0.86
15	66.1	36.5		**15**	69.7	50.4	0.27	**15**	78.9	63.6	0.09
16	61.8	41.4	0.22	**16**	81.0	55.1	0.02	**16**	77.9	58.7	
17	71.3	35.8		**17**	79.8	64.0		**17**	76.1	55.2	0.02
18	74.0	44.8		**18**	77.5	49.2		**18**	78.1	61.1	0.02
19	67.0	44.1	0.35	**19**	51.7	38.6		**19**	74.0	53.7	
20	52.7	40.2	0.34	**20**	58.6	34.0		**20**	81.0	53.2	
21	45.8	38.5		**21**	62.0	41.4		**21**	78.1	64.0	
22	38.5	32.6		**22**	66.5	40.7		**22**	83.0	60.7	0.53
23	45.9	29.5		**23**	76.7	39.1		**23**	74.5	56.5	
24	59.3	26.5	0.01	**24**	72.1	50.6		**24**	78.2	51.9	
25	55.5	39.4	0.02	**25**	76.3	64.8		**25**	75.4	61.0	0.25
26	60.6	28.6		**26**	79.8	64.3	0.51	**26**	76.8	60.6	
27	57.3	37.6		**27**	70.7	55.1		**27**	77.4	56.2	
28	58.8	32.2		**28**	81.6	52.1		**28**	77.5	49.2	
29	64.8	33.1		**29**	81.5	63.6	0.32	**29**	74.9	58.1	
30	58.8	37.7		**30**	69.4	49.7	0.28	**30**	70.3	57.0	
				31	61.6	46.1	0.01				

TEMPERATURE AND PRECIPITATION DATA

Hudsonville

Recorded at
Michigan Celery Cooperative
Hudsonville, Michigan
2015

JULY				AUGUST				SEPTEMBER			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	65.2	53.4		**1**	82.3	56.5		**1**	88.9	61.4	
2	76.2	47.0		**2**	89.2	62.7	0.34	**2**	87.3	71.0	
3	78.5	49.1		**3**	77.3	58.8		**3**	81.3	65.2	0.53
4	78.3	50.3		**4**	78.2	54.5		**4**	78.8	65.0	
5	83.6	54.5		**5**	80.6	54.0		**5**	82.3	62.3	0.11
6	84.6	61.4		**6**	79.9	56.3		**6**	89.1	66.7	
7	77.5	55.0	0.08	**7**	79.1	59.5		**7**	84.2	71.9	
8	68.9	48.5		**8**	75.5	65.6		**8**	82.4	66.1	0.92
9	75.7	55.6	0.01	**9**	77.4	62.3		**9**	78.5	56.2	
10	80.7	51.7		**10**	84.3	67.1	0.57	**10**	74.5	52.1	
11	79.5	51.0		**11**	81.2	59.5		**11**	69.2	52.0	0.04
12	83.5	64.7		**12**	78.5	52.4		**12**	67.2	46.1	
13	82.6	64.6	0.34	**13**	81.3	59.1		**13**	70.0	40.5	
14	75.8	64.0	0.11	**14**	84.1	69.8	0.04	**14**	78.8	50.1	
15	77.4	55.7		**15**	88.1	63.5		**15**	83.6	60.6	
16	79.6	58.9	0.02	**16**	87.7	67.0		**16**	82.8	57.8	
17	85.5	62.3	0.34	**17**	89.3	68.2		**17**	83.7	58.8	
18	86.4	66.8	0.25	**18**	80.9	64.9	0.30	**18**	78.5	66.5	0.87
19	81.0	62.5		**19**				**19**	70.4	50.5	0.06
20	80.4	58.1		**20**				**20**	71.7	46.2	
21	75.8	57.5		**21**	79.7	53.0		**21**	73.5	44.1	
22	80.5	53.4		**22**	81.9	61.0		**22**	79.7	47.7	
23	81.5	59.2		**23**	77.4	58.0	0.50	**23**	81.1	49.8	
24	83.4	56.9		**24**	69.7	58.8		**24**	78.5	51.8	
25	83.1	65.3		**25**	61.1	54.8	0.01	**25**	78.3	57.3	
26	86.6	56.2		**26**	67.6	56.8	0.03	**26**	77.0	58.5	
27	89.2	60.3		**27**	72.4	47.5		**27**	72.5	62.5	
28	89.8	60.7		**28**	76.4	49.7	0.01	**28**	79.6	61.8	
29	85.2	68.9		**29**	67.7	61.3	0.23	**29**	67.0	49.7	0.03
30	83.9	62.5		**30**	77.5	61.5	0.01	**30**	63.4	40.9	
31	83.4	60.4		**31**	81.6	56.6					

TEMPERATURE AND PRECIPITATION DATA

Imlay City

Recorded at
Lapeer USDA/NRCS Office
Lapeer, Michigan
2015

APRIL				MAY				JUNE			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	55.5	23.2		**1**	74.8	34.0		**1**	64.3	36.3	
2	63.0	41.0	0.06	**2**	78.6	40.1		**2**	72.2	36.0	
3	54.4	31.3	0.23	**3**	84.5	40.7		**3**	75.4	39.7	
4	50.7	18.8	0.03	**4**	77.7	56.9	0.04	**4**	81.2	49.6	
5	54.5	30.1	0.07	**5**	56.9	46.5	0.32	**5**	78.3	54.9	
6	68.6	30.6		**6**	74.5	43.2		**6**	70.3	46.4	
7	51.1	34.7		**7**	89.3	47.8		**7**	78.9	39.3	0.02
8	41.2	33.5	0.47	**8**	89.0	55.7	0.65	**8**	81.6	62.2	0.78
9	60.8	36.8	0.64	**9**	79.6	57.3	0.01	**9**	79.1	59.3	0.07
10	64.8	38.7	0.12	**10**	65.0	51.6	0.47	**10**	87.4	57.3	
11	62.5	29.1		**11**	79.8	50.9	0.41	**11**	75.0	52.2	0.07
12	69.1	29.1		**12**	60.3	44.5	0.02	**12**	70.2	54.2	0.44
13	68.8	41.7		**13**	59.1	37.1	0.01	**13**	67.5	54.2	
14	70.3	30.5		**14**	67.0	31.7		**14**	79.0	61.9	0.75
15	61.8	32.6		**15**	72.7	47.3	0.20	**15**	84.0	66.0	0.16
16	64.8	34.2		**16**	73.7	52.0		**16**	80.4	55.4	0.01
17	79.2	45.0		**17**	83.9	56.7		**17**	78.1	49.8	
18	66.1	40.5		**18**	88.1	62.0		**18**	82.2	61.7	0.03
19	66.0	35.9	0.08	**19**	62.0	38.8	0.02	**19**	71.9	50.9	
20	61.9	41.6	0.26	**20**	64.4	37.3		**20**	78.0	45.4	
21	47.9	35.4	0.01	**21**	69.6	45.3		**21**	83.9	66.2	
22	41.8	30.8	0.01	**22**	66.6	36.6		**22**	82.5	55.4	1.30
23	38.1	24.7		**23**	78.5	29.3		**23**	77.1	55.3	1.01
24	57.2	19.5		**24**	81.9	44.1		**24**	81.6	47.8	
25	50.8	33.0		**25**	81.4	63.7	0.28	**25**	78.7	55.4	
26	57.2	26.5		**26**	85.4	63.4	0.08	**26**	74.8	53.4	
27	51.5	32.5		**27**	83.1	59.3	0.01	**27**	63.3	55.7	0.09
28	65.7	27.0		**28**	84.0	51.7		**28**	76.0	57.8	
29	71.6	32.8	0.01	**29**	84.7	59.0		**29**	78.2	53.1	
30	59.5	41.3	0.04	**30**	80.7	47.9	0.67	**30**	74.8	53.2	0.01
				31	50.8	44.7	0.38				

TEMPERATURE AND PRECIPITATION DATA

Imlay City

Recorded at
Lapeer USDA/NRCS Office
Lapeer, Michigan
2015

JULY				AUGUST				SEPTEMBER			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	66.3	55.0		**1**	81.4	52.6		**1**	88.4	53.8	
2	73.4	48.9	0.01	**2**	87.2	50.4	1.08	**2**	89.3	60.3	0.22
3	77.4	41.7		**3**	77.5	57.3	0.11	**3**	83.9	61.5	0.58
4	81.5	45.7		**4**	78.3	53.7		**4**	80.1	64.6	
5	83.1	54.5		**5**	77.4	51.6		**5**	84.7	63.1	
6	84.6	51.1		**6**	77.2	48.8		**6**	90.0	60.5	
7	73.3	57.4	0.94	**7**	78.9	48.4		**7**	90.0	65.9	0.65
8	67.1	46.2	0.01	**8**	75.5	61.4	0.02	**8**	85.5	67.4	0.34
9	76.4	54.2		**9**	80.9	61.4		**9**	77.5	51.0	0.01
10	82.5	50.3		**10**	77.1	61.1	0.56	**10**	78.7	46.4	
11	84.9	52.1		**11**	78.7	60.9	0.02	**11**	64.4	53.7	
12	84.5	60.6		**12**	76.4	52.9		**12**	62.3	41.0	0.05
13	80.4	54.8	0.01	**13**	83.7	54.6		**13**	66.6	38.0	
14	77.8	61.7	0.52	**14**	86.7	62.8	0.01	**14**	76.4	38.0	
15	72.7	49.9		**15**	89.3	57.3		**15**	84.0	53.9	
16	77.4	43.8		**16**	89.0	59.0		**16**	82.6	46.5	
17	85.8	62.8	0.66	**17**	88.2	65.1		**17**	81.7	47.5	
18	87.6	62.9	0.01	**18**	85.0	63.2		**18**	81.0	54.2	0.23
19	86.5	62.2		**19**	86.3	68.6	0.07	**19**	68.6	47.8	0.11
20	83.1	58.1		**20**	73.7	59.0	0.65	**20**	71.2	38.9	
21	79.4	58.6	0.05	**21**	77.5	53.1		**21**	73.2	40.1	
22	79.6	52.0		**22**	80.9	51.0		**22**	78.7	39.2	
23	85.1	48.5		**23**	80.2	50.1	0.33	**23**	80.2	41.2	
24	87.3	53.7		**24**	73.1	50.1	0.01	**24**	78.7	46.5	
25	86.8	58.4		**25**	64.6	52.2		**25**	78.5	48.6	
26	88.5	59.5		**26**	66.3	54.8		**26**	75.5	47.4	
27	91.5	54.9		**27**	66.0	47.3		**27**	76.9	50.5	
28	91.3	57.8		**28**	77.2	42.1		**28**	79.4	63.5	
29	88.7	57.5	0.77	**29**	70.7	56.8	0.08	**29**	67.8	50.5	0.12
30	83.1	56.5		**30**	82.1	59.7		**30**	62.0	42.4	
31	83.8	58.0		**31**	81.1	55.4					

TEMPERATURE AND PRECIPITATION DATA

Momence

Recorded at
Stelle, Illinois Climate Network Station
Stelle, Illinois
2015

APRIL				MAY				JUNE			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	73.6	31.5		**1**	70.1	34.6		**1**	67.0	48.4	
2	67.7	43.2	0.16	**2**	77.3	45.3		**2**	72.2	42.9	
3	56.2	28.2		**3**	82.8	50.8		**3**	76.9	49.9	
4	59.2	22.0		**4**	72.6	58.2	0.83	**4**	82.2	55.3	
5	66.8	34.5		**5**	78.1	57.8	0.18	**5**	73.9	54.4	0.56
6	63.8	36.1	0.07	**6**	83.6	58.7	0.01	**6**	79.1	52.3	
7	56.5	42.8	0.02	**7**	83.9	55.9		**7**	85.8	59.8	1.56
8	65.7	47.6	0.18	**8**	81.3	63.1	1.43	**8**	82.3	59.7	0.05
9	76.7	47.1	0.20	**9**	72.9	52.1	0.04	**9**	85.5	57.0	
10	66.1	34.3		**10**	76.9	52.7	0.21	**10**	91.2	67.8	
11	63.8	29.1		**11**	69.8	52.3	0.23	**11**	88.3	67.2	0.10
12	69.3	35.0		**12**	59.2	41.8		**12**	83.2	60.9	1.02
13	66.7	45.0	0.43	**13**	58.7	37.7		**13**	86.5	60.0	0.03
14	69.4	41.8		**14**	66.9	41.9	0.24	**14**	84.8	70.2	
15	71.1	40.2		**15**	80.6	57.4	0.01	**15**	83.8	69.6	0.87
16	72.1	46.1	0.04	**16**	77.8	62.3	0.07	**16**	76.4	60.6	0.01
17	79.6	43.4		**17**	81.9	65.2		**17**	74.5	54.6	1.05
18	76.8	49.3		**18**	81.0	46.5		**18**	82.9	63.4	1.06
19	64.6	49.1	0.65	**19**	57.6	41.8		**19**	73.8	57.6	
20	55.7	35.7	0.01	**20**	50.6	41.5	0.03	**20**	81.6	61.3	1.85
21	58.5	34.9		**21**	68.6	43.6		**21**	83.7	66.4	
22	53.0	31.4		**22**	76.4	49.0		**22**	85.6	66.3	0.01
23	56.8	28.5		**23**	80.8	48.7		**23**	79.1	63.1	
24	64.3	25.9		**24**	83.5	57.0	0.09	**24**	77.9	59.1	0.04
25	49.0	41.0	1.24	**25**	82.8	67.2	0.02	**25**	80.2	66.2	0.99
26	56.4	34.6		**26**	76.1	64.2	0.43	**26**	70.8	62.0	1.53
27	60.6	34.2		**27**	78.5	55.0		**27**	74.8	55.6	
28	64.5	34.0		**28**	82.6	52.8		**28**	78.4	55.7	0.20
29	68.4	37.3		**29**	84.8	63.1	0.31	**29**	77.0	63.4	1.15
30	54.9	36.0		**30**	72.8	46.7	1.30	**30**	79.6	60.1	
				31	56.8	45.3					

TEMPERATURE AND PRECIPITATION DATA

Momence

Recorded at
Stelle, Illinois Climate Network Station
Stelle, Illinois
2015

JULY				AUGUST				SEPTEMBER			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	73.0	57.0		**1**	84.2	59.2		**1**	86.8	66.2	
2	75.4	54.3		**2**	88.9	64.3		**2**	90.5	65.3	
3	78.6	57.9		**3**	82.7	59.0		**3**	92.3	65.6	
4	80.8	56.7		**4**	80.6	56.1		**4**	92.9	63.8	0.02
5	82.3	57.5		**5**	83.1	57.0		**5**	81.3	65.7	0.05
6	86.4	61.2	0.42	**6**	82.7	62.3		**6**	92.9	63.7	
7	73.7	53.5	1.10	**7**	82.8	57.5		**7**	92.3	65.8	
8	66.2	52.9	1.34	**8**	84.2	62.6		**8**	89.4	68.8	0.45
9	72.7	59.2	0.17	**9**	78.2	66.7	0.35	**9**	78.8	59.3	
10	79.8	56.9		**10**	83.8	65.5	0.04	**10**	80.7	53.1	0.64
11	76.1	58.7	1.28	**11**	82.5	59.5		**11**	67.9	50.9	0.62
12	85.8	67.8		**12**	81.6	57.5		**12**	66.5	46.8	
13	87.2	66.9	0.70	**13**	83.4	57.3		**13**	71.8	42.9	
14	83.6	61.1		**14**	85.0	62.9	0.04	**14**	81.7	45.0	
15	80.0	56.4		**15**	88.9	63.0		**15**	82.4	52.2	
16	80.0	60.9	0.17	**16**	88.6	64.1		**16**	83.8	50.9	
17	91.1	72.4	0.03	**17**	86.1	63.4	0.79	**17**	85.7	54.7	
18	91.4	72.1		**18**	82.7	66.8	1.3	**18**	83.9	64.9	1.88
19	84.8	67.4		**19**	76.6	58.4		**19**	70.5	49.5	0.22
20	86.3	62.7		**20**	74.9	52.2		**20**	73.6	45.7	
21	80.7	61.5		**21**	80.8	50.7		**21**	76.0	46.6	
22	81.3	56.8		**22**	79.1	54.5		**22**	82.9	47.8	
23	85.3	62.1		**23**	76.2	60.7	0.02	**23**	82.6	51.9	
24	85.1	59.2		**24**	73.9	51.9		**24**	81.6	54.6	
25	89.6	65.8	0.05	**25**	73.0	51.6		**25**	80.5	52.7	
26	85.7	67.4	0.12	**26**	64.7	50.5		**26**	78.6	55.0	
27	87.2	67.1		**27**	76.1	46.5		**27**	77.1	60.7	
28	89.8	69.3		**28**	77.1	55.4		**28**	79.1	60.4	
29	85.5	63.4	0.74	**29**	76.9	62.3	0.01	**29**	71.4	53.0	
30	85.6	62.5		**30**	79.7	61.3		**30**	64.5	44.3	
31	85.9	60.7		**31**	87.4	60.7					

Weed Control in Asparagus – Hart - 2015

Project Code:120-15-1 **Location: Hart, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Asparagus **Variety: Jersey Supreme**
Planting Method: Crowns **Planting Date: 2011** **Harvest Date: 5/5 - 6/17/15**
Spacing: 1 ft **Row Spacing: 4.5 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 4.5 ft wide x 50 ft long

Soil Type: Spinks loamy fine sand **OM: 1%** **pH: 5.2**
Sand: 86% **Silt: 8%** **Clay: 6%** **CEC: 4.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/28/15	1:00 pm	55/58	F	Dry	7-9 NW	41	5% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/28	ASPARAGUS		Preemergence	
4/28	COCW = common chickweed	2-3″	Flower	Many
4/28	DAND = dandelion	4-6″	Veg	Many
4/28	DOBG = downy bromegrass	6-8″	Veg	Many
4/28	FIPA = field pansy	1-3″	Flower	Moderate
4/28	HOWE = horseweed	2-4″	Veg	Few
4/28	YEHW = yellow hawkweed	2-4″	Veg	Few

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Same plots as 2013 and 2014.
4. There were 21 harvests taken from 5 May through 17 June 2015.

Weed Control in Asparagus – Hart - 2015

Weed Control in Asparagus – Hart - 2015

Trial ID: 120-15-1 Location: Hart, MI
Protocol ID: 120-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
Pest Code								DOBG	FISB	FIPA
Crop Code							ASPA			
Rating Date							28/May/15	28/May/15	28/May/15	28/May/15
Rating Type							RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10
1	terbacil	80	WDG	1	lb ai/a	PRE	1.3	10.0	10.0	10.0
2	diuron	80	DF	1.6	lb ai/a	PRE	1.3	10.0	10.0	10.0
	metribuzin	75	DF	1.6	lb ai/a	PRE				
3	indaziflam	1.67	SC	0.085	lb ai/a	PRE	1.0	10.0	10.0	10.0
4	clomazone	3	ME	2	lb ai/a	PRE	1.0	10.0	10.0	8.7
5	rimsulfuron	25	DF	0.063	lb ai/a	PRE	1.0	9.3	10.0	10.0
6	isoxaben	75	DF	1.5	lb ai/a	PRE	1.0	6.0	9.0	9.0
	S-metolachlor	7.62	EC	1.9	lb ai/a	PRE				
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	1.0	5.0	10.0	4.0
8	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	1.0	1.7	10.0	5.3
9	mesotrione	4	SC	0.241	lb ai/a	PRE	1.3	6.7	9.7	10.0
	pendimethalin	3.8	CS	1.9	lb ai/a	PRE				
10	Untreated						1.0	1.7	10.0	3.3
LSD P=.05							0.57	1.91	1.01	3.71
Standard Deviation							0.33	1.11	0.59	2.16
CV							30.3	15.79	5.95	26.91

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
Pest Code							HAVE	HOWE	SFGE	
Crop Code										ASPA
Rating Date							28/May/15	28/May/15	28/May/15	4/Jun/15
Rating Type							RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10
1	terbacil	80	WDG	1	lb ai/a	PRE	9.0	10.0	10.0	1.0
2	diuron	80	DF	1.6	lb ai/a	PRE	10.0	10.0	10.0	1.0
	metribuzin	75	DF	1.6	lb ai/a	PRE				
3	indaziflam	1.67	SC	0.085	lb ai/a	PRE	9.7	10.0	10.0	1.0
4	clomazone	3	ME	2	lb ai/a	PRE	10.0	6.0	8.7	1.0
5	rimsulfuron	25	DF	0.063	lb ai/a	PRE	10.0	10.0	10.0	1.0
6	isoxaben	75	DF	1.5	lb ai/a	PRE	4.7	3.7	5.3	1.0
	S-metolachlor	7.62	EC	1.9	lb ai/a	PRE				
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	7.3	4.0	3.0	2.0
8	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	10.0	10.0	1.7	2.3
9	mesotrione	4	SC	0.241	lb ai/a	PRE	10.0	10.0	6.0	1.3
	pendimethalin	3.8	CS	1.9	lb ai/a	PRE				
10	Untreated						10.0	7.7	2.3	3.0
LSD P=.05							3.41	4.70	3.12	1.00
Standard Deviation							1.99	2.74	1.82	0.58
CV							21.93	33.7	27.17	39.58

Weed Control in Asparagus – Hart - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DOBG	FIPA	HAVE	HOWE
Pest Code										
Crop Code										
Rating Date							4/Jun/15	4/Jun/15	4/Jun/15	4/Jun/15
Rating Type							RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10
1	terbacil	80	WDG	1	lb ai/a	PRE	10.0	9.7	8.7	10.0
2	diuron	80	DF	1.6	lb ai/a	PRE	10.0	10.0	10.0	10.0
	metribuzin	75	DF	1.6	lb ai/a	PRE				
3	indaziflam	1.67	SC	0.085	lb ai/a	PRE	9.7	10.0	9.7	10.0
4	clomazone	3	ME	2	lb ai/a	PRE	10.0	6.7	9.7	3.7
5	rimsulfuron	25	DF	0.063	lb ai/a	PRE	9.3	10.0	9.7	10.0
6	isoxaben	75	DF	1.5	lb ai/a	PRE	4.3	9.3	2.3	7.0
	S-metolachlor	7.62	EC	1.9	lb ai/a	PRE				
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	5.3	4.0	7.0	7.0
8	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	1.7	4.3	9.3	9.3
9	mesotrione	4	SC	0.241	lb ai/a	PRE	7.3	10.0	10.0	10.0
	pendimethalin	3.8	CS	1.9	lb ai/a	PRE				
10	Untreated						2.7	4.7	7.7	5.3
LSD P=.05							1.84	4.51	3.22	4.88
Standard Deviation							1.07	2.63	1.87	2.85
CV							15.28	33.43	22.32	34.58

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	SFGE	ASPA	SFGE	ASPA
Pest Code										
Crop Code										
Rating Date							4/Jun/15	23/Jun/15	23/Jun/15	
Rating Type							RATING	RATING	RATING	TOTAL
Rating Unit							1-10	1-10	1-10	KG/PLOT
1	terbacil	80	WDG	1	lb ai/a	PRE	10.0	2.0	10.0	7.10
2	diuron	80	DF	1.6	lb ai/a	PRE	10.0	1.0	10.0	8.72
	metribuzin	75	DF	1.6	lb ai/a	PRE				
3	indaziflam	1.67	SC	0.085	lb ai/a	PRE	10.0	1.0	10.0	8.54
4	clomazone	3	ME	2	lb ai/a	PRE	9.3	1.3	8.7	8.88
5	rimsulfuron	25	DF	0.063	lb ai/a	PRE	9.7	1.0	9.0	8.63
6	isoxaben	75	DF	1.5	lb ai/a	PRE	2.3	1.0	6.0	8.21
	S-metolachlor	7.62	EC	1.9	lb ai/a	PRE				
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	3.7	1.3	5.3	8.25
8	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	1.3	2.0	2.3	6.95
9	mesotrione	4	SC	0.241	lb ai/a	PRE	5.3	1.0	7.0	6.99
	pendimethalin	3.8	CS	1.9	lb ai/a	PRE				
10	Untreated						1.3	2.0	4.7	7.92
LSD P=.05							1.92	0.64	3.64	1.901
Standard Deviation							1.12	0.37	2.12	1.108
CV							17.73	27.09	29.04	13.82

Weed Control in Asparagus – HTRC - 2015

Project Code:120-15-2 **Location: East Lansing, MI**
Block 115-116

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Asparagus **Variety: Millenium**
Planting Method: Transplant **Planting Date: 2009** **Harvest Date: 5/4 - 6/16/15**
Spacing: 1 ft **Row Spacing: 6 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.33 ft wide x 50 ft long

Soil Type: Capac loam **OM: 2.1%** **pH: 6.8**
Sand: 54% **Silt: 32%** **Clay: 14%** **CEC: 4.8**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/24/15	11:00 am	42/40	F	Damp	1-2 SW	33	0% Cloudy	N
PO1	6/1/15	2:00 pm	63/65	F	Dry	4-13 NE	46	70% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/24	DAND = dandelion	2-4″	Veg	Few
4/24	PEST = perennial sowthistle	2-3″	Rosette	Few
4/24	QUGR = quackgrass	3-5″	Veg	Few
4/24	WICA = wild carrot	1-4″	Veg, 2-3 LS	Mod
6/1	BHPL = buckhorn plantain	12-18″	Flower	Mod
6/1	COMW = common milkweed	12-18″	Bud	Few
6/1	DAND = dandelion	12-24″	Flower	Few
6/1	DOBG = downy bromegrass	18-24″	Veg	Mod
6/1	PEST = perennial sowthistle	8-12″	Veg	Few
6/1	QUGR = quackgrass	12-18″	Flower	Few
6/1	WICA = wild carrot	6-24″	Bud	Mod
6/1	WIRA = wild radish	18-24″	Flower	Mod

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. There were 20 harvests taken from 4 May through 16 June 2015.

Weed Control in Asparagus – HTRC - 2015

Weed Control in Asparagus – HTRC - 2015

Trial ID: 120-15-2 Location: East Lansing, MI
Protocol ID: 120-15-2 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA 4/May/15 RATING 1-10	HOWE 4/May/15 RATING 1-10	WHCA 4/May/15 RATING 1-10	WICA 4/May/15 RATING 1-10	ASPA 26/May/15 RATING 1-10
1	terbacil	80	WDG	1	lb ai/a	PRE	1.7	10.0	10.0	6.3	1.3
	sulfentrazone	4	F	0.375	lb ai/a	PRE					
2	diuron	80	DF	3	lb ai/a	PRE	1.7	10.0	8.0	4.7	1.3
	pendimethalin	3.8	CS	3	lb ai/a	PRE					
3	clomazone	3	ME	2	lb ai/a	PRE	1.7	10.0	8.7	10.0	1.0
	isoxaben	75	DF	2	lb ai/a	PRE					
4	norflurazon	80	DF	4	lb ai/a	PRE	1.7	10.0	10.0	9.7	1.0
	metribuzin	75	DF	1	lb ai/a	PRE					
5	flumioxazin	51	WDG	0.128	lb ai/a	PRE	1.7	10.0	10.0	7.0	1.0
	terbacil	80	WDG	1.2	lb ai/a	PRE					
6	diuron	80	DF	3.2	lb ai/a	PRE	1.0	10.0	7.0	4.0	1.3
	isoxaben	4.17	SC	2	lb ai/a	PRE					
7	mesotrione	4	SC	0.241	lb ai/a	PRE	2.0	10.0	8.3	7.0	1.0
	S-metolachlor	7.62	EC	1.9	lb ai/a	PRE					
8	diuron	80	DF	3	lb ai/a	PRE	2.0	9.0	10.0	4.7	1.3
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	clopyralid	3	L	0.188	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
9	diuron	80	DF	3	lb ai/a	PRE	1.7	10.0	9.7	5.3	1.7
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	dicamba	4	L	0.25	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
10	Authority MTZ	45	DF	0.255	lb ai/a	PRE	1.3	10.0	10.0	10.0	1.0
	sulfentrazone	18	DF	0.102	lb ai/a						
	metribuzin	27	DF	0.153	lb ai/a						
11	diuron	80	DF	3	lb ai/a	PRE	1.3	10.0	6.7	2.3	1.0
	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1					
12	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	1.3	10.0	8.7	3.7	1.3
	linuron	50	DF	1	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
13	Untreated						1.7	4.0	6.0	4.7	1.7
LSD P=.05							1.51	2.53	4.29	6.39	0.85
Standard Deviation							0.90	1.50	2.54	3.79	0.50
CV							56.31	15.85	29.25	62.15	40.8

Weed Control in Asparagus – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DOBG	BLPL	BSPL	COLQ	PRLE
	Pest Code										
	Crop Code										
	Rating Date						26/May/15	26/May/15	26/May/15	26/May/15	26/May/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	terbacil	80	WDG	1	lb ai/a	PRE	9.3	10.0	10.0	10.0	10.0
	sulfentrazone	4	F	0.375	lb ai/a	PRE					
2	diuron	80	DF	3	lb ai/a	PRE	7.3	9.0	9.0	10.0	7.3
	pendimethalin	3.8	CS	3	lb ai/a	PRE					
3	clomazone	3	ME	2	lb ai/a	PRE	10.0	9.7	10.0	10.0	10.0
	isoxaben	75	DF	2	lb ai/a	PRE					
4	norflurazon	80	DF	4	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0
	metribuzin	75	DF	1	lb ai/a	PRE					
5	flumioxazin	51	WDG	0.128	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0
	terbacil	80	WDG	1.2	lb ai/a	PRE					
6	diuron	80	DF	3.2	lb ai/a	PRE	9.7	8.7	10.0	10.0	10.0
	isoxaben	4.17	SC	2	lb ai/a	PRE					
7	mesotrione	4	SC	0.241	lb ai/a	PRE	8.0	7.7	10.0	9.3	6.0
	S-metolachlor	7.62	EC	1.9	lb ai/a	PRE					
8	diuron	80	DF	3	lb ai/a	PRE	8.3	5.0	7.7	10.0	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	clopyralid	3	L	0.188	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
9	diuron	80	DF	3	lb ai/a	PRE	9.3	10.0	10.0	9.3	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	dicamba	4	L	0.25	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
10	Authority MTZ	45	DF	0.255	lb ai/a	PRE	5.7	10.0	10.0	9.0	6.7
	sulfentrazone	18	DF	0.102	lb ai/a						
	metribuzin	27	DF	0.153	lb ai/a						
11	diuron	80	DF	3	lb ai/a	PRE	9.3	7.0	6.7	10.0	10.0
	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1					
12	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	6.0	7.0	10.0	5.7	4.0
	linuron	50	DF	1	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
13	Untreated						9.0	7.0	7.0	4.0	4.0
LSD P=.05							3.96	4.45	3.75	3.45	4.68
Standard Deviation							2.35	2.64	2.22	2.05	2.77
CV							27.31	30.93	24.02	22.66	33.39

Weed Control in Asparagus – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WICA 26/May/15 RATING 1-10	WIRA 26/May/15 RATING 1-10	ASPA 15/Jun/15 RATING 1-10	DOBG 15/Jun/15 RATING 1-10
	Pest Code									
	Crop Code									
	Rating Date						26/May/15	26/May/15	15/Jun/15	15/Jun/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	terbacil	80	WDG	1	lb ai/a	PRE	9.7	10.0	2.0	10.0
	sulfentrazone	4	F	0.375	lb ai/a	PRE				
2	diuron	80	DF	3	lb ai/a	PRE	3.7	10.0	1.3	6.0
	pendimethalin	3.8	CS	3	lb ai/a	PRE				
3	clomazone	3	ME	2	lb ai/a	PRE	9.7	10.0	1.0	10.0
	isoxaben	75	DF	2	lb ai/a	PRE				
4	norflurazon	80	DF	4	lb ai/a	PRE	10.0	10.0	1.0	10.0
	metribuzin	75	DF	1	lb ai/a	PRE				
5	flumioxazin	51	WDG	0.128	lb ai/a	PRE	9.3	10.0	1.3	10.0
	terbacil	80	WDG	1.2	lb ai/a	PRE				
6	diuron	80	DF	3.2	lb ai/a	PRE	3.3	10.0	1.0	8.3
	isoxaben	4.17	SC	2	lb ai/a	PRE				
7	mesotrione	4	SC	0.241	lb ai/a	PRE	6.3	1.7	1.7	7.7
	S-metolachlor	7.62	EC	1.9	lb ai/a	PRE				
8	diuron	80	DF	3	lb ai/a	PRE	3.7	10.0	1.7	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	clopyralid	3	L	0.188	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
9	diuron	80	DF	3	lb ai/a	PRE	5.3	10.0	1.0	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	dicamba	4	L	0.25	lb ai/a	PO1				
	clethodim	0.97	EC	0.12	lb ai/a	PO1				
10	Authority MTZ	45	DF	0.255	lb ai/a	PRE	7.3	9.7	1.7	7.0
	sulfentrazone	18	DF	0.102	lb ai/a					
	metribuzin	27	DF	0.153	lb ai/a					
11	diuron	80	DF	3	lb ai/a	PRE	5.0	10.0	1.3	9.7
	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1				
12	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	3.3	7.0	2.0	9.0
	linuron	50	DF	1	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	COC	100	SL	1	% v/v	PO1				
13	Untreated						7.0	5.7	2.0	5.3
LSD P=.05							5.69	2.94	1.42	3.53
Standard Deviation							3.38	1.75	0.84	2.10
CV							52.44	19.92	57.45	24.13

Weed Control in Asparagus – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BSPL	HOWE	WICA	WIRA
	Pest Code						BSPL	HOWE	WICA	WIRA
	Crop Code									
	Rating Date						15/Jun/15	15/Jun/15	15/Jun/15	15/Jun/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	terbacil	80	WDG	1	lb ai/a	PRE	9.7	10.0	10.0	10.0
	sulfentrazone	4	F	0.375	lb ai/a	PRE				
2	diuron	80	DF	3	lb ai/a	PRE	9.0	10.0	3.7	9.3
	pendimethalin	3.8	CS	3	lb ai/a	PRE				
3	clomazone	3	ME	2	lb ai/a	PRE	9.7	4.0	6.7	10.0
	isoxaben	75	DF	2	lb ai/a	PRE				
4	norflurazon	80	DF	4	lb ai/a	PRE	10.0	10.0	10.0	10.0
	metribuzin	75	DF	1	lb ai/a	PRE				
5	flumioxazin	51	WDG	0.128	lb ai/a	PRE	10.0	10.0	10.0	10.0
	terbacil	80	WDG	1.2	lb ai/a	PRE				
6	diuron	80	DF	3.2	lb ai/a	PRE	10.0	10.0	1.7	9.7
	isoxaben	4.17	SC	2	lb ai/a	PRE				
7	mesotrione	4	SC	0.241	lb ai/a	PRE	8.3	4.7	3.3	1.3
	S-metolachlor	7.62	EC	1.9	lb ai/a	PRE				
8	diuron	80	DF	3	lb ai/a	PRE	8.7	10.0	9.0	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	clopyralid	3	L	0.188	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
9	diuron	80	DF	3	lb ai/a	PRE	10.0	10.0	9.3	9.3
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	dicamba	4	L	0.25	lb ai/a	PO1				
	clethodim	0.97	EC	0.12	lb ai/a	PO1				
10	Authority MTZ	45	DF	0.255	lb ai/a	PRE	10.0	10.0	5.3	8.3
	sulfentrazone	18	DF	0.102	lb ai/a					
	metribuzin	27	DF	0.153	lb ai/a					
11	diuron	80	DF	3	lb ai/a	PRE	7.3	10.0	3.7	9.3
	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1				
12	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	9.3	10.0	3.3	8.7
	linuron	50	DF	1	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	COC	100	SL	1	% v/v	PO1				
13	Untreated						4.0	4.0	1.3	1.0
LSD P=.05							2.99	3.65	3.63	1.67
Standard Deviation							1.78	2.16	2.15	0.99
CV							19.9	24.96	36.21	12.05

Weed Control in Asparagus – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA TOTAL GOOD #/PLOT	ASPA TOTAL GOOD KG/PLOT	ASPA TOTAL CULL #/PLOT	ASPA TOTAL CULL KG/PLOT
	Pest Code									
	Crop Code						ASPA	ASPA	ASPA	ASPA
	Rating Date									
	Rating Type						TOTAL	TOTAL	TOTAL	TOTAL
							GOOD	GOOD	CULL	CULL
	Rating Unit						#/PLOT	KG/PLOT	#/PLOT	KG/PLOT
1	terbacil	80	WDG	1	lb ai/a	PRE	460.0	12.29	130.0	3.95
	sulfentrazone	4	F	0.375	lb ai/a	PRE				
2	diuron	80	DF	3	lb ai/a	PRE	544.0	15.05	150.3	5.08
	pendimethalin	3.8	CS	3	lb ai/a	PRE				
3	clomazone	3	ME	2	lb ai/a	PRE	561.3	15.52	141.7	4.26
	isoxaben	75	DF	2	lb ai/a	PRE				
4	norflurazon	80	DF	4	lb ai/a	PRE	556.7	16.25	160.3	4.56
	metribuzin	75	DF	1	lb ai/a	PRE				
5	flumioxazin	51	WDG	0.128	lb ai/a	PRE	373.3	10.30	291.3	9.17
	terbacil	80	WDG	1.2	lb ai/a	PRE				
6	diuron	80	DF	3.2	lb ai/a	PRE	532.0	15.23	145.0	4.92
	isoxaben	4.17	SC	2	lb ai/a	PRE				
7	mesotrione	4	SC	0.241	lb ai/a	PRE	535.3	15.10	117.3	3.63
	S-metolachlor	7.62	EC	1.9	lb ai/a	PRE				
8	diuron	80	DF	3	lb ai/a	PRE	428.7	12.79	133.3	4.51
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	clopyralid	3	L	0.188	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
9	diuron	80	DF	3	lb ai/a	PRE	552.3	15.28	166.3	4.80
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	dicamba	4	L	0.25	lb ai/a	PO1				
	clethodim	0.97	EC	0.12	lb ai/a	PO1				
10	Authority MTZ	45	DF	0.255	lb ai/a	PRE	637.3	17.35	160.7	4.60
	sulfentrazone	18	DF	0.102	lb ai/a					
	metribuzin	27	DF	0.153	lb ai/a					
11	diuron	80	DF	3	lb ai/a	PRE	489.0	13.26	135.0	4.07
	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1				
12	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	508.3	13.81	129.3	3.80
	linuron	50	DF	1	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	COC	100	SL	1	% v/v	PO1				
13	Untreated						575.3	15.65	125.7	3.81
LSD P=.05							205.56	6.060	45.29	1.522
Standard Deviation							121.98	3.596	26.88	0.903
CV							23.48	24.88	17.59	19.2

Weed Control in Asparagus with Alion – Hart - 2015

Project Code: 120-15-3 **Location: Hart, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Asparagus **Variety: Millenium**
Planting Method: Crowns **Planting Date: 2007** **Harvest Date: 5/5 - 6/17/15**
Spacing: 1 ft **Row Spacing: 4.5 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.33 ft wide x 50 ft long

Soil Type: Spinks loamy fine sand **OM: 3.1%** **pH: 6.0**
Sand: 70% **Silt: 20%** **Clay: 9%** **CEC: 7.3**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/28/15	1:30 pm	55/58	F	Dry	7-9 NW	41	5% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/28	ASPARAGUS		Pre-emergence	
4/28	DAND = dandelion	6-8″	Veg	Few
	*ground mostly bare			

Notes and Comments

1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Year 2 of a 3-4 year experiment.
4. Post-emergence weed control: spray all plots with Lorox (1 lb ai/A) + Spur (0.188 lb ai/A) + Select Max (0.12 lb ai/A) after last harvest, if needed to remove weeds.
5. Alion caused scoring on early spears. Total yield not reduced.
6. There were 21 harvests taken from 5 May through 17 June 2015.

Weed Control in Asparagus with Alion – Hart - 2015

Weed Control in Asparagus with Alion – Hart – 2015

Trial ID: 120-15-3 Location: Hart, MI
Protocol ID: 120-15-3 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA 28/May/15 RATING 1-10	DOBG 28/May/15 RATING 1-10	FIPA 28/May/15 RATING 1-10	HAVE 28/May/15 RATING 1-10	HOWE 28/May/15 RATING 1-10
1	Untreated						1.0	9.3	7.0	4.0	4.0
2	terbacil	80	WDG	1	lb ai/a	PRE	1.3	10.0	9.7	9.3	10.0
3	indaziflam	1.67	SC	0.046	lb ai/a	PRE	1.0	10.0	10.0	9.7	9.7
4	indaziflam	1.67	SC	0.065	lb ai/a	PRE	1.0	10.0	10.0	8.3	10.0
5	indaziflam	1.67	SC	0.13	lb ai/a	PRE	1.0	10.0	10.0	9.3	10.0
6	flumioxazin	51	WDG	0.128	lb ai/a	PRE	1.3	7.7	10.0	8.0	4.0
7	mesotrione	4	SC	0.241	lb ai/a	PRE	1.3	10.0	10.0	9.0	10.0
	pendimethalin	3.8	CS	1.9	lb ai/a	PRE					
8	diuron	80	DF	3	lb ai/a	PRE	1.0	10.0	10.0	9.0	9.7
	sulfentrazone	4	F	0.188	lb ai/a	PRE					
9	rimsulfuron	25	DF	0.063	lb ai/a	PRE	1.3	10.0	10.0	10.0	10.0
LSD P=.05							0.70	2.34	2.97	3.57	3.93
Standard Deviation							0.40	1.35	1.72	2.06	2.27
CV							35.06	14.01	17.85	24.23	26.41

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	SFGE 28/May/15 RATING 1-10	ASPA 4/Jun/15 RATING 1-10	COLQ 4/Jun/15 RATING 1-10	FIPA 4/Jun/15 RATING 1-10	HAVE 4/Jun/15 RATING 1-10
1	Untreated						7.0	1.0	3.0	7.0	3.0
2	terbacil	80	WDG	1	lb ai/a	PRE	10.0	1.0	10.0	8.7	8.7
3	indaziflam	1.67	SC	0.046	lb ai/a	PRE	9.3	1.0	9.3	10.0	8.3
4	indaziflam	1.67	SC	0.065	lb ai/a	PRE	9.0	1.0	9.7	10.0	6.7
5	indaziflam	1.67	SC	0.13	lb ai/a	PRE	9.7	1.0	10.0	10.0	9.7
6	flumioxazin	51	WDG	0.128	lb ai/a	PRE	7.7	1.3	9.3	10.0	6.3
7	mesotrione	4	SC	0.241	lb ai/a	PRE	5.3	1.0	10.0	10.0	10.0
	pendimethalin	3.8	CS	1.9	lb ai/a	PRE					
8	diuron	80	DF	3	lb ai/a	PRE	8.7	1.0	10.0	10.0	10.0
	sulfentrazone	4	F	0.188	lb ai/a	PRE					
9	rimsulfuron	25	DF	0.063	lb ai/a	PRE	9.0	1.0	6.0	10.0	10.0
LSD P=.05							4.64	0.33	3.34	3.03	3.36
Standard Deviation							2.68	0.19	1.93	1.75	1.94
CV							31.89	18.56	22.44	18.39	24.06

Weed Control in Asparagus with Alion – Hart - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HOWE	LATH	POAM	SFGE	ASPA
Pest Code											
Crop Code											ASPA
Rating Date							4/Jun/15	4/Jun/15	4/Jun/15	4/Jun/15	23/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Untreated						3.0	1.0	6.0	4.3	1.0
2	terbacil	80	WDG	1	lb ai/a	PRE	8.7	10.0	10.0	10.0	1.3
3	indaziflam	1.67	SC	0.046	lb ai/a	PRE	8.3	8.7	8.7	9.3	1.0
4	indaziflam	1.67	SC	0.065	lb ai/a	PRE	6.7	9.3	9.7	9.7	1.0
5	indaziflam	1.67	SC	0.13	lb ai/a	PRE	9.7	10.0	10.0	9.7	2.0
6	flumioxazin	51	WDG	0.128	lb ai/a	PRE	6.3	3.0	9.3	5.0	1.0
7	mesotrione	4	SC	0.241	lb ai/a	PRE	10.0	10.0	10.0	4.0	1.3
	pendimethalin	3.8	CS	1.9	lb ai/a	PRE					
8	diuron	80	DF	3	lb ai/a	PRE	10.0	7.3	9.0	6.3	1.0
	sulfentrazone	4	F	0.188	lb ai/a	PRE					
9	rimsulfuron	25	DF	0.063	lb ai/a	PRE	10.0	9.7	10.0	7.7	1.3
LSD P=.05							2.76	2.75	1.42	4.68	0.76
Standard Deviation							1.59	1.59	0.82	2.71	0.44
CV							20.79	17.29	10.32	36.89	36.08

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HAVE	HOWE	POAM	SFGE	ASPA
Pest Code											
Crop Code											ASPA
Rating Date							23/Jun/15	23/Jun/15	23/Jun/15	23/Jun/15	
Rating Type							RATING	RATING	RATING	RATING	TOTAL
Rating Unit							1-10	1-10	1-10	1-10	KG/PLOT
1	Untreated						10.0	3.3	8.3	5.7	14.46
2	terbacil	80	WDG	1	lb ai/a	PRE	7.3	10.0	1.7	10.0	13.47
3	indaziflam	1.67	SC	0.046	lb ai/a	PRE	4.0	10.0	6.7	9.0	14.31
4	indaziflam	1.67	SC	0.065	lb ai/a	PRE	5.3	10.0	8.7	8.7	13.10
5	indaziflam	1.67	SC	0.13	lb ai/a	PRE	9.7	10.0	10.0	9.3	13.15
6	flumioxazin	51	WDG	0.128	lb ai/a	PRE	7.7	7.0	7.7	5.7	13.63
7	mesotrione	4	SC	0.241	lb ai/a	PRE	10.0	10.0	7.3	3.7	13.09
	pendimethalin	3.8	CS	1.9	lb ai/a	PRE					
8	diuron	80	DF	3	lb ai/a	PRE	10.0	9.0	1.0	4.3	14.24
	sulfentrazone	4	F	0.188	lb ai/a	PRE					
9	rimsulfuron	25	DF	0.063	lb ai/a	PRE	10.0	9.3	10.0	4.3	14.64
LSD P=.05							4.52	2.90	4.67	5.03	3.461
Standard Deviation							2.61	1.68	2.70	2.91	1.999
CV							31.76	19.19	39.57	43.13	14.5

Powell Amaranth Control in Asparagus – Hart - 2015

Project Code: 120-15-4 **Location: Hart, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Asparagus **Variety: Millenium**
Planting Method: Crowns **Planting Date: 2011** **Harvest Date: 5/5 – 6/16/15**
Spacing: 1 ft **Row Spacing: 4.5 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 25 ft long

Soil Type: Spinks loamy fine sand **OM: 1.4%** **pH: 5.3**
Sand: 79% **Silt: 13%** **Clay: 8%** **CEC: 3.8**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/28/15	3:20 pm	64/58	F	Moist	7-9 NW	37	5% Cloudy	N
PO1	6/4/15	9:00 am	63/58	F	Dry	6-7 SE	73	95% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/28	ASPARAGUS		Preemergence	
4/28	COCW = common chickweed	1-2″	Veg	Moderate
4/28	DAND = dandelion	2-4″	Veg	Moderate
4/28	FIPA = field pansy	1-2″	Flower	Many
4/28	SFGE = smallflower geranium	2-4″	Veg	Few
4/28	WHCA = white campion	2-4″	Veg	Moderate
6/4	ASPARAGUS			
6/4	FIPA = field pansy	4-6″	Flower	Moderate
6/4	HAVE = hairy vetch	12-18″	Flower	Moderate
6/4	HOWE = horseweed	4-8″	Veg	Moderate
6/4	POAM = Powell amaranth	2-6″	Veg	Moderate
6/4	SFGE = smallflower geranium	6-8″	Veg	Few
6/4	WHCA = white campion	6-12″	Flower	Moderate

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. There were 21 harvests from 5 May through 16 June 2015.

Powell Amaranth Control in Asparagus – Hart - 2015

Powell Amaranth Control in Asparagus – Hart - 2015

Trial ID: 120-15-4 Location: Malburg, Jackson Rd
Protocol ID: 120-15-4 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA	FIPA	HAVE	HOWE	POAM
	Pest Code							FIPA	HAVE	HOWE	POAM
	Crop Code						ASPA				
	Rating Date						4/Jun/15	4/Jun/15	4/Jun/15	4/Jun/15	4/Jun/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	Untreated					PRE	2.0	1.3	4.7	3.3	10.0
	linuron	50	DF	1	lb ai/a	PO1					
2	Authority MTZ	45	DF	0.169	lb ai/a	PRE	1.0	4.3	5.0	9.0	10.0
3	Authority MTZ	45	DF	0.225	lb ai/a	PRE	1.0	4.0	5.3	9.3	10.0
4	Authority MTZ	45	DF	0.281	lb ai/a	PRE	1.0	4.3	6.0	9.0	9.0
5	diuron	80	DF	2	lb ai/a	PRE	1.0	6.0	7.7	3.3	3.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	dicamba	4	L	0.25	lb ai/a	PO1					
6	*S*-metolachlor	7.62	EC	1.9	lb ai/a	PRE	3.0	1.0	1.3	1.0	10.0
	linuron	50	DF	1	lb ai/a	PO1					
7	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.3	3.3	4.0	3.0	10.0
	linuron	50	DF	1	lb ai/a	PO1					
8	diuron	80	DF	2	lb ai/a	PRE	1.0	7.0	5.3	3.0	1.0
	quinclorac	3.8	L	0.25	lb ai/a	PO1					
9	flumioxazin	51	WDG	0.192	lb ai/a	PRE	2.0	1.7	7.0	1.3	10.0
10	mesotrione	4	SC	0.241	lb ai/a	PRE	1.0	8.3	10.0	10.0	10.0
LSD P=.05							0.60	2.61	4.29	3.65	2.05
Standard Deviation							0.35	1.52	2.50	2.13	1.20
CV							24.39	36.75	44.37	40.63	14.42

Powell Amaranth Control in Asparagus – Hart - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	SFGE	WHCA	ASPA	FIPA	HAVE
Pest Code							SFGE	WHCA		FIPA	HAVE
Crop Code									ASPA		
Rating Date							4/Jun/15	4/Jun/15	23/Jun/15	23/Jun/15	23/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Untreated					PRE	6.3	6.0	1.0	7.3	9.7
	linuron	50	DF	1	lb ai/a	PO1					
2	Authority MTZ	45	DF	0.169	lb ai/a	PRE	7.3	1.7	1.0	1.7	2.3
3	Authority MTZ	45	DF	0.225	lb ai/a	PRE	7.3	7.0	1.0	1.7	4.0
4	Authority MTZ	45	DF	0.281	lb ai/a	PRE	7.0	3.0	1.3	3.3	4.7
5	diuron	80	DF	2	lb ai/a	PRE	2.3	8.7	1.3	5.3	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	dicamba	4	L	0.25	lb ai/a	PO1					
6	*S*-metolachlor	7.62	EC	1.9	lb ai/a	PRE	7.0	7.7	2.0	7.3	7.7
	linuron	50	DF	1	lb ai/a	PO1					
7	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	8.7	7.0	1.7	8.7	8.3
	linuron	50	DF	1	lb ai/a	PO1					
8	diuron	80	DF	2	lb ai/a	PRE	5.3	9.7	1.0	5.3	9.0
	quinclorac	3.8	L	0.25	lb ai/a	PO1					
9	flumioxazin	51	WDG	0.192	lb ai/a	PRE	3.7	4.3	1.0	1.0	7.0
10	mesotrione	4	SC	0.241	lb ai/a	PRE	3.3	9.3	1.0	7.0	10.0
LSD P=.05							6.13	5.85	0.53	2.63	4.28
Standard Deviation							3.57	3.41	0.31	1.54	2.50
CV							61.26	52.98	25.16	31.56	34.37

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HOWE	POAM	SFGE	WHCA	ASPA
Pest Code							HOWE	POAM	SFGE	WHCA	
Crop Code											ASPA
Rating Date							23/Jun/15	23/Jun/15	23/Jun/15	23/Jun/15	
Rating Type							RATING	RATING	RATING	RATING	TOTAL
Rating Unit							1-10	1-10	1-10	1-10	KG/PLOT
1	Untreated					PRE	4.0	9.0	10.0	10.0	5.68
	linuron	50	DF	1	lb ai/a	PO1					
2	Authority MTZ	45	DF	0.169	lb ai/a	PRE	1.3	7.7	6.3	1.0	5.76
3	Authority MTZ	45	DF	0.225	lb ai/a	PRE	7.0	10.0	7.7	4.7	6.04
4	Authority MTZ	45	DF	0.281	lb ai/a	PRE	6.7	6.3	5.0	1.3	5.25
5	diuron	80	DF	2	lb ai/a	PRE	10.0	9.3	7.7	10.0	5.94
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	dicamba	4	L	0.25	lb ai/a	PO1					
6	*S*-metolachlor	7.62	EC	1.9	lb ai/a	PRE	2.7	8.7	9.3	8.3	5.91
	linuron	50	DF	1	lb ai/a	PO1					
7	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	2.3	10.0	9.3	8.3	6.44
	linuron	50	DF	1	lb ai/a	PO1					
8	diuron	80	DF	2	lb ai/a	PRE	9.3	1.0	7.0	10.0	6.02
	quinclorac	3.8	L	0.25	lb ai/a	PO1					
9	flumioxazin	51	WDG	0.192	lb ai/a	PRE	1.0	9.3	4.3	5.7	6.01
10	mesotrione	4	SC	0.241	lb ai/a	PRE	10.0	6.7	3.0	7.7	6.62
LSD P=.05							4.17	4.22	4.47	4.33	1.215
Standard Deviation							2.43	2.46	2.61	2.52	0.708
CV							44.76	31.52	37.42	37.66	11.87

Asparagus Post-harvest Weed Control with Alion – HTRC - 2015

Project Code: 120-15-5 **Location: East Lansing, MI**
Block 115-116

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Asparagus **Variety: Millenium**
Planting Method: Transplant **Planting Date: 2009**
Spacing: 1 ft **Row Spacing: 6 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.33 ft wide x 50 ft long

Soil Type: Capac loam **OM: 2.1%** **pH: 6.8**
Sand: 54% **Silt: 32%** **Clay: 14%** **CEC: 4.8**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
POH	6/16/15	12:00 pm	76/76	F	Moist	1-2 NNW	55	15% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/16	ASPARAGUS	10-12″	Spear	Good
6/16	HOWE = horseweed	3-4″	Veg	Moderate

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Applied after final harvest.
4. Alion caused serious stunting and distorted growth on emerging spears. Later growth appeared to be normal.

Asparagus Post-harvest Weed Control with Alion – HTRC - 2015

Asparagus Post-harvest Weed Control with Alion – HTRC - 2015

Trial ID:	120-15-5	Location:	East Lansing, MI
Protocol ID:	120-15-5	Investigator:	Dr. Bernard Zandstra
Study Director:	Colin Phillippo		

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
Pest Code								HOWE	
Crop Code							ASPA		ASPA
Rating Date							24/Jun/15	24/Jun/15	16/Jul/15
Rating Type							RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10
1	indaziflam	1.67	SC	0.065	lb ai/a	POH	4.3	7.0	2.0
2	Untreated Check						1.0	4.0	1.0
3	indaziflam	1.67	SC	0.13	lb ai/a	POH	4.0	9.3	3.0
4	flumioxazin	51	WDG	0.192	lb ai/a	POH	3.7	10.0	2.3
5	diuron	80	DF	3.2	lb ai/a	POH	1.3	7.0	1.3
LSD P=.05							1.50	7.52	1.40
Standard Deviation							0.80	4.00	0.74
CV							27.76	53.52	38.36

Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2015

Project Code: 109-15-1 **Location:** East Lansing, MI Block 62

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Red Beet, Sugar Beet, Swiss Chard **Variety:** Ruby Queen beet, HM173RR sugar beet, Fordhook Giant chard
Planting Method: Seeded **Planting Date:** 4/29/15 **Harvest Dates:** See notes
Spacing: 3 inch **Row Spacing:** 14 inch; see notes
Tillage Type: Conventional **Study Design:** RCB **Replications:** 3
Plot Size: 5.3 ft wide x 35 ft long

Soil Type: Marlette fine sandy loam **OM:** 2% **pH:** 5.7
Sand: 56% **Silt:** 28% **Clay:** 16% **CEC:** 8.9

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/30/15	3:00 pm	58/58	F	Moist	4-6 NNW	45	90% Cloudy	N
PO1	5/28/15	8:30 am	67/60	F	Wet	1-3 SSW	75	0% Cloudy	N
PO2	6/5/15	1:30 pm	73/68	F	Damp	3-4 NW	70	100% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/30	BEETS and CHARD		Pre-emergence	
4/30	No weeds			
5/28	RED BEET	2-4″	Veg	Good
5/28	SUGAR BEET	2-4″	Veg	Good
5/28	SWISS CHARD	2-4″	Veg	Good
5/28	COLQ = common lambsquarters	1-2″	Veg	Many
5/28	CORW = common ragweed	2-6″	Veg	Many
5/28	FIPC = field pennycress	2-4″	Veg	Mod
5/28	LATH = ladysthumb	2-3″	Veg	Few
5/28	RRPW = redroot pigweed	2-3″	Veg	Few
5/28	YEFT = yellow foxtail	2-4″	Veg	Many
6/5	RED BEET	3-5″	6 LS	Few
6/5	SUGAR BEET	4-6″	Veg	Good
6/5	SWISS CHARD	4-6″	4-6 LS	Good
6/5	COLQ = common lambsquarters	2-6″	Veg	Many
6/5	CORW = common ragweed	1-4″	4-6 LS	Many
6/5	EBNS = eastern black nightshade	1-3″	2-4 LS	Few
6/5	FIPC = field pennycress	6-12″	Flower	Moderate
6/5	LATH = ladysthumb	2-4″	3-6 LS	Moderate
6/5	RRPW = redroot pigweed	1-3″	2-6 LS	Moderate
6/5	SHPU = shepherdspurse	6-12″	Flower	Few

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Each plot had 2 rows Red Beet, 1 row Swiss Chard, and 2 rows Sugar Beet.
5. Harvest Dates: Swiss Chard, 7/21/15; Red Beet, 8/5/15; Sugar Beet, 10/9/15

Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2015

Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2015

Trial ID: 109-15-1 Location: East Lansing, MI
Protocol ID: 109-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	REDBEET 26/May/15 RATING 1-10	SUGBEET 26/May/15 RATING 1-10	SWCHARD 26/May/15 RATING 1-10	YEFT 26/May/15 RATING 1-10	COLQ 26/May/15 RATING 1-10
1	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	3.0	2.3	2.3	10.0	6.7
2	pyrazon	68	DF	2	lb ai/a	PRE	1.7	1.0	1.3	9.0	9.0
3	dimethenamid-P	6	EC	0.5	lb ai/a	PRE	3.7	1.7	2.3	10.0	6.7
4	ethofumesate	4	SC	2	lb ai/a	PRE	1.7	1.3	1.3	10.0	6.7
5	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	3.0	2.3	3.0	10.0	7.0
	Betamix	1.3	EC	0.244	lb ai/a	PO1,2					
	phenmedipham	0.65	EC	0.122	lb ai/a						
	desmedipham	0.65	EC	0.122	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO1,2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1,2					
	clethodim	0.97	EC	0.12	lb ai/a	PO1,2					
6	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	3.3	3.3	3.0	10.0	7.3
	Betamix	1.3	EC	0.488	lb ai/a	PO1					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO1					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
7	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	10.0	10.0	10.0	8.7	7.0
8	Untreated					PRE	1.0	1.0	1.0	1.0	1.0
	Betamix	1.3	EC	0.488	lb ai/a	PO2					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2					
	clethodim	0.97	EC	0.12	lb ai/a	PO2					
9	Untreated					PRE	1.0	1.0	1.0	1.0	1.0
	phenmedipham	1.3	L	0.488	lb ai/a	PO1					
	ethofumesate	4	SC	0.33	lb ai/a	PO1					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1					
	clopyralid	3	L	0.188	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
10	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	3.7	2.7	3.3	10.0	9.0
	ethofumesate	4	SC	1.9	lb ai/a	PRE					
	Betamix	1.3	EC	0.488	lb ai/a	PO2					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	ethofumesate	4	SC	0.33	lb ai/a	PO2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2					
	clopyralid	3	L	0.188	lb ai/a	PO2					
	clethodim	0.97	EC	0.12	lb ai/a	PO2					
LSD P=.05							1.14	0.92	1.09	0.83	2.28
Standard Deviation							0.66	0.53	0.64	0.48	1.33
CV							20.75	20.03	22.16	6.06	21.67

Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CORW 26/May/15 RATING 1-10	LATH 26/May/15 RATING 1-10	REDBEET 5/Jun/15 RATING 1-10	SUGBEET 5/Jun/15 RATING 1-10	SWCHARD 5/Jun/15 RATING 1-10
1	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	4.7	10.0	2.0	2.3	2.3
2	pyrazon	68	DF	2	lb ai/a	PRE	8.7	10.0	2.0	1.7	1.7
3	dimethenamid-P	6	EC	0.5	lb ai/a	PRE	7.0	10.0	3.0	1.7	1.7
4	ethofumesate	4	SC	2	lb ai/a	PRE	4.7	10.0	1.7	1.3	1.3
5	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	5.7	10.0	3.0	3.0	4.0
	Betamix	1.3	EC	0.244	lb ai/a	PO1,2					
	phenmedipham	0.65	EC	0.122	lb ai/a						
	desmedipham	0.65	EC	0.122	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO1,2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1,2					
	clethodim	0.97	EC	0.12	lb ai/a	PO1,2					
6	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	7.3	9.7	3.3	4.0	4.0
	Betamix	1.3	EC	0.488	lb ai/a	PO1					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO1					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
7	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	6.0	4.7	10.0	10.0	10.0
8	Untreated					PRE	1.0	1.0	1.7	1.3	1.7
	Betamix	1.3	EC	0.488	lb ai/a	PO2					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2					
	clethodim	0.97	EC	0.12	lb ai/a	PO2					
9	Untreated					PRE	1.0	1.0	2.7	2.7	3.0
	phenmedipham	1.3	L	0.488	lb ai/a	PO1					
	ethofumesate	4	SC	0.33	lb ai/a	PO1					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1					
	clopyralid	3	L	0.188	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
10	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	8.0	10.0	4.0	2.7	3.7
	ethofumesate	4	SC	1.9	lb ai/a	PRE					
	Betamix	1.3	EC	0.488	lb ai/a	PO2					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	ethofumesate	4	SC	0.33	lb ai/a	PO2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2					
	clopyralid	3	L	0.188	lb ai/a	PO2					
	clethodim	0.97	EC	0.12	lb ai/a	PO2					
LSD P=.05							3.12	1.90	1.37	1.04	1.18
Standard Deviation							1.82	1.11	0.80	0.61	0.69
CV							33.68	14.51	23.87	19.75	20.66

Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	YEFT	COLQ	CORW	LATH	RRPW	SHPU
Pest Code							YEFT	COLQ	CORW	LATH	RRPW	SHPU
Crop Code												
Rating Date							5/Jun/15	5/Jun/15	5/Jun/15	5/Jun/15	5/Jun/15	5/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	10.0	5.7	1.7	9.7	10.0	10.0
2	pyrazon	68	DF	2	lb ai/a	PRE	8.7	7.3	9.0	9.3	9.0	10.0
3	dimethenamid-P	6	EC	0.5	lb ai/a	PRE	10.0	5.7	3.7	9.0	10.0	10.0
4	ethofumesate	4	SC	2	lb ai/a	PRE	10.0	9.0	1.0	10.0	9.0	3.7
5	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0	10.0
	Betamix	1.3	EC	0.244	lb ai/a	PO1,2						
	phenmedipham	0.65	EC	0.122	lb ai/a							
	desmedipham	0.65	EC	0.122	lb ai/a							
	clopyralid	3	L	0.188	lb ai/a	PO1,2						
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1,2						
	clethodim	0.97	EC	0.12	lb ai/a	PO1,2						
6	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0	10.0
	Betamix	1.3	EC	0.488	lb ai/a	PO1						
	phenmedipham	0.65	EC	0.244	lb ai/a							
	desmedipham	0.65	EC	0.244	lb ai/a							
	clopyralid	3	L	0.188	lb ai/a	PO1						
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1						
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
7	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	7.7	5.0	9.0	3.0	8.0	10.0
8	Untreated					PRE	1.0	1.0	1.0	1.0	1.0	1.0
	Betamix	1.3	EC	0.488	lb ai/a	PO2						
	phenmedipham	0.65	EC	0.244	lb ai/a							
	desmedipham	0.65	EC	0.244	lb ai/a							
	clopyralid	3	L	0.188	lb ai/a	PO2						
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2						
	clethodim	0.97	EC	0.12	lb ai/a	PO2						
9	Untreated					PRE	10.0	10.0	10.0	10.0	10.0	10.0
	phenmedipham	1.3	L	0.488	lb ai/a	PO1						
	ethofumesate	4	SC	0.33	lb ai/a	PO1						
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1						
	clopyralid	3	L	0.188	lb ai/a	PO1						
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
10	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	10.0	9.7	7.7	10.0	10.0	10.0
	ethofumesate	4	SC	1.9	lb ai/a	PRE						
	Betamix	1.3	EC	0.488	lb ai/a	PO2						
	phenmedipham	0.65	EC	0.244	lb ai/a							
	desmedipham	0.65	EC	0.244	lb ai/a							
	ethofumesate	4	SC	0.33	lb ai/a	PO2						
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2						
	clopyralid	3	L	0.188	lb ai/a	PO2						
	clethodim	0.97	EC	0.12	lb ai/a	PO2						
LSD P=.05							0.68	1.32	2.04	1.32	2.08	2.51
Standard Deviation							0.40	0.77	1.19	0.77	1.21	1.46
CV							4.57	10.46	18.86	9.42	13.92	17.25

Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	REDBEET 11/Jun/15 RATING 1-10	SUGBEET 11/Jun/15 RATING 1-10	SWCHARD 11/Jun/15 RATING 1-10	YEFT 11/Jun/15 RATING 1-10	COLQ 11/Jun/15 RATING 1-10
	Pest Code									YEFT	COLQ
	Crop Code						REDBEET	SUGBEET	SWCHARD		
	Rating Date						11/Jun/15	11/Jun/15	11/Jun/15	11/Jun/15	11/Jun/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.3	1.3	1.7	10.0	4.0
2	pyrazon	68	DF	2	lb ai/a	PRE	1.3	1.0	1.0	7.3	7.0
3	dimethenamid-P	6	EC	0.5	lb ai/a	PRE	2.7	1.7	2.0	9.7	3.0
4	ethofumesate	4	SC	2	lb ai/a	PRE	2.0	1.3	1.3	9.7	7.7
5	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	3.3	3.0	4.0	10.0	10.0
	Betamix	1.3	EC	0.244	lb ai/a	PO1,2					
	phenmedipham	0.65	EC	0.122	lb ai/a						
	desmedipham	0.65	EC	0.122	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO1,2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1,2					
	clethodim	0.97	EC	0.12	lb ai/a	PO1,2					
6	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	3.7	3.3	3.7	10.0	9.7
	Betamix	1.3	EC	0.488	lb ai/a	PO1					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO1					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
7	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	10.0	10.0	10.0	9.3	3.7
8	Untreated					PRE	2.7	3.3	2.3	8.0	7.3
	Betamix	1.3	EC	0.488	lb ai/a	PO2					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2					
	clethodim	0.97	EC	0.12	lb ai/a	PO2					
9	Untreated					PRE	2.7	3.0	2.3	10.0	10.0
	phenmedipham	1.3	L	0.488	lb ai/a	PO1					
	ethofumesate	4	SC	0.33	lb ai/a	PO1					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1					
	clopyralid	3	L	0.188	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
10	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	4.0	3.0	4.0	10.0	10.0
	ethofumesate	4	SC	1.9	lb ai/a	PRE					
	Betamix	1.3	EC	0.488	lb ai/a	PO2					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	ethofumesate	4	SC	0.33	lb ai/a	PO2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2					
	clopyralid	3	L	0.188	lb ai/a	PO2					
	clethodim	0.97	EC	0.12	lb ai/a	PO2					
LSD P=.05							1.41	0.98	1.39	1.18	2.13
Standard Deviation							0.82	0.57	0.81	0.69	1.24
CV							24.45	18.52	25.11	7.3	17.18

Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CORW	EBNS	FIPC	LATH	RRPW	SHPU
Pest Code												
Crop Code												
Rating Date							11/Jun/15	11/Jun/15	11/Jun/15	11/Jun/15	11/Jun/15	11/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.7	10.0	9.0	10.0	10.0	9.3
2	pyrazon	68	DF	2	lb ai/a	PRE	7.3	8.7	10.0	9.3	8.7	10.0
3	dimethenamid-P	6	EC	0.5	lb ai/a	PRE	2.7	7.0	10.0	9.7	10.0	10.0
4	ethofumesate	4	SC	2	lb ai/a	PRE	1.0	10.0	10.0	10.0	9.7	10.0
5	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0	10.0
	Betamix	1.3	EC	0.244	lb ai/a	PO1,2						
	phenmedipham	0.65	EC	0.122	lb ai/a							
	desmedipham	0.65	EC	0.122	lb ai/a							
	clopyralid	3	L	0.188	lb ai/a	PO1,2						
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1,2						
	clethodim	0.97	EC	0.12	lb ai/a	PO1,2						
6	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0	10.0
	Betamix	1.3	EC	0.488	lb ai/a	PO1						
	phenmedipham	0.65	EC	0.244	lb ai/a							
	desmedipham	0.65	EC	0.244	lb ai/a							
	clopyralid	3	L	0.188	lb ai/a	PO1						
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1						
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
7	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	6.3	10.0	6.3	1.0	8.0	10.0
8	Untreated					PRE	9.3	10.0	7.3	8.0	9.7	7.3
	Betamix	1.3	EC	0.488	lb ai/a	PO2						
	phenmedipham	0.65	EC	0.244	lb ai/a							
	desmedipham	0.65	EC	0.244	lb ai/a							
	clopyralid	3	L	0.188	lb ai/a	PO2						
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2						
	clethodim	0.97	EC	0.12	lb ai/a	PO2						
9	Untreated					PRE	10.0	10.0	10.0	10.0	9.7	10.0
	phenmedipham	1.3	L	0.488	lb ai/a	PO1						
	ethofumesate	4	SC	0.33	lb ai/a	PO1						
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1						
	clopyralid	3	L	0.188	lb ai/a	PO1						
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
10	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	9.7	10.0	10.0	10.0	10.0	10.0
	ethofumesate	4	SC	1.9	lb ai/a	PRE						
	Betamix	1.3	EC	0.488	lb ai/a	PO2						
	phenmedipham	0.65	EC	0.244	lb ai/a							
	desmedipham	0.65	EC	0.244	lb ai/a							
	ethofumesate	4	SC	0.33	lb ai/a	PO2						
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2						
	clopyralid	3	L	0.188	lb ai/a	PO2						
	clethodim	0.97	EC	0.12	lb ai/a	PO2						
LSD P=.05							2.00	3.15	1.72	0.93	2.21	1.31
Standard Deviation							1.16	1.83	1.00	0.54	1.29	0.76
CV							17.12	19.18	10.81	6.19	13.49	7.89

Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	REDBEET 19/Jun/15 RATING 1-10	SUGBEET 19/Jun/15 RATING 1-10	SWCHARD 19/Jun/15 RATING 1-10	YEFT 19/Jun/15 RATING 1-10	COLQ 19/Jun/15 RATING 1-10
	Pest Code									YEFT	COLQ
	Crop Code						REDBEET	SUGBEET	SWCHARD		
	Rating Date						19/Jun/15	19/Jun/15	19/Jun/15	19/Jun/15	19/Jun/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	2.0	1.7	2.0	10.0	4.0
2	pyrazon	68	DF	2	lb ai/a	PRE	2.7	1.7	1.3	6.3	6.7
3	dimethenamid-P	6	EC	0.5	lb ai/a	PRE	2.7	1.7	1.7	10.0	1.7
4	ethofumesate	4	SC	2	lb ai/a	PRE	2.0	1.3	1.3	9.3	8.7
5	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	3.0	2.7	2.7	10.0	9.7
	Betamix	1.3	EC	0.244	lb ai/a	PO1,2					
	phenmedipham	0.65	EC	0.122	lb ai/a						
	desmedipham	0.65	EC	0.122	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO1,2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1,2					
	clethodim	0.97	EC	0.12	lb ai/a	PO1,2					
6	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	3.0	2.7	3.3	10.0	10.0
	Betamix	1.3	EC	0.488	lb ai/a	PO1					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO1					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
7	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	10.0	10.0	10.0	8.7	2.3
8	Untreated					PRE	4.0	3.7	3.3	9.0	7.3
	Betamix	1.3	EC	0.488	lb ai/a	PO2					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2					
	clethodim	0.97	EC	0.12	lb ai/a	PO2					
9	Untreated					PRE	2.7	2.3	2.3	10.0	10.0
	phenmedipham	1.3	L	0.488	lb ai/a	PO1					
	ethofumesate	4	SC	0.33	lb ai/a	PO1					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1					
	clopyralid	3	L	0.188	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
10	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	4.0	2.7	3.7	10.0	10.0
	ethofumesate	4	SC	1.9	lb ai/a	PRE					
	Betamix	1.3	EC	0.488	lb ai/a	PO2					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	ethofumesate	4	SC	0.33	lb ai/a	PO2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2					
	clopyralid	3	L	0.188	lb ai/a	PO2					
	clethodim	0.97	EC	0.12	lb ai/a	PO2					
LSD P=.05							1.84	1.32	1.30	1.79	1.84
Standard Deviation							1.07	0.77	0.76	1.04	1.07
CV							29.72	25.46	23.85	11.16	15.26

Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CORW	LATH	RRPW	SHPU	SWCHARD
Pest Code											
Crop Code											
Rating Date							19/Jun/15	19/Jun/15	19/Jun/15	19/Jun/15	21/Jul/15
Rating Type							RATING	RATING	RATING	RATING	HARVEST
Rating Unit							1-10	1-10	1-10	1-10	KG/PLOT
1	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.3	10.0	10.0	6.7	8.41
2	pyrazon	68	DF	2	lb ai/a	PRE	6.3	10.0	7.7	8.7	21.03
3	dimethenamid-P	6	EC	0.5	lb ai/a	PRE	2.7	9.0	10.0	7.7	11.09
4	ethofumesate	4	SC	2	lb ai/a	PRE	1.0	10.0	10.0	6.0	12.35
5	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	10.0	10.0	10.0	10.0	21.90
	Betamix	1.3	EC	0.244	lb ai/a	PO1,2					
	phenmedipham	0.65	EC	0.122	lb ai/a						
	desmedipham	0.65	EC	0.122	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO1,2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1,2					
	clethodim	0.97	EC	0.12	lb ai/a	PO1,2					
6	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	10.0	10.0	10.0	10.0	22.10
	Betamix	1.3	EC	0.488	lb ai/a	PO1					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO1					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
7	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	2.3	1.0	7.0	5.7	0.00
8	Untreated					PRE	10.0	8.3	7.7	4.3	9.69
	Betamix	1.3	EC	0.488	lb ai/a	PO2					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2					
	clethodim	0.97	EC	0.12	lb ai/a	PO2					
9	Untreated					PRE	10.0	10.0	9.3	9.7	24.89
	phenmedipham	1.3	L	0.488	lb ai/a	PO1					
	ethofumesate	4	SC	0.33	lb ai/a	PO1					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1					
	clopyralid	3	L	0.188	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
10	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	10.0	10.0	10.0	10.0	22.28
	ethofumesate	4	SC	1.9	lb ai/a	PRE					
	Betamix	1.3	EC	0.488	lb ai/a	PO2					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	ethofumesate	4	SC	0.33	lb ai/a	PO2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2					
	clopyralid	3	L	0.188	lb ai/a	PO2					
	clethodim	0.97	EC	0.12	lb ai/a	PO2					
LSD P=.05							1.50	1.20	3.18	3.96	5.118
Standard Deviation							0.88	0.70	1.85	2.31	2.983
CV							13.75	7.92	20.24	29.35	19.41

Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	REDBEET 5/Aug/15 HARVEST #/PLOT	REDBEET 5/Aug/15 HARVEST ROOT KG/PLOT	REDBEET 5/Aug/15 HARVEST LEAF KG/PLOT	SUGBEET 9/Oct/15 HARVEST #/PLOT	SUGBEET 9/Oct/15 HARVEST KG/PLOT
	Pest Code										
	Crop Code										
	Rating Date										
	Rating Type										
	Rating Unit										
1	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	70.7	7.70	4.51	107.7	54.54
2	pyrazon	68	DF	2	lb ai/a	PRE	160.7	14.26	5.42	107.0	50.65
3	dimethenamid-P	6	EC	0.5	lb ai/a	PRE	104.3	7.29	4.01	134.0	61.75
4	ethofumesate	4	SC	2	lb ai/a	PRE	121.3	8.37	5.50	148.3	73.50
5	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	140.0	21.81	7.83	153.7	116.60
	Betamix	1.3	EC	0.244	lb ai/a	PO1,2					
	phenmedipham	0.65	EC	0.122	lb ai/a						
	desmedipham	0.65	EC	0.122	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO1,2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1,2					
	clethodim	0.97	EC	0.12	lb ai/a	PO1,2					
6	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	168.7	23.03	8.81	135.7	92.48
	Betamix	1.3	EC	0.488	lb ai/a	PO1					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO1					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
7	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	0.7	0.03	0.03	4.3	4.29
8	Untreated					PRE	121.7	8.64	4.61	105.3	44.41
	Betamix	1.3	EC	0.488	lb ai/a	PO2					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	clopyralid	3	L	0.188	lb ai/a	PO2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2					
	clethodim	0.97	EC	0.12	lb ai/a	PO2					
9	Untreated					PRE	204.3	21.49	8.73	157.7	92.73
	phenmedipham	1.3	L	0.488	lb ai/a	PO1					
	ethofumesate	4	SC	0.33	lb ai/a	PO1					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1					
	clopyralid	3	L	0.188	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
10	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	157.0	19.83	7.73	158.0	128.92
	ethofumesate	4	SC	1.9	lb ai/a	PRE					
	Betamix	1.3	EC	0.488	lb ai/a	PO2					
	phenmedipham	0.65	EC	0.244	lb ai/a						
	desmedipham	0.65	EC	0.244	lb ai/a						
	ethofumesate	4	SC	0.33	lb ai/a	PO2					
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO2					
	clopyralid	3	L	0.188	lb ai/a	PO2					
	clethodim	0.97	EC	0.12	lb ai/a	PO2					
LSD P=.05							45.56	8.170	2.410	18.17	17.694
Standard Deviation							26.56	4.763	1.405	10.59	10.315
CV							21.26	35.96	24.57	8.74	14.33

Weed Control in Red Beet – Bouwkamp - 2015

Project Code: 109-15-2 **Location: Grant, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Red Beet **Varieties: Camano, Merlin, Red Ace, Touchstone Gold**
Planting Method: Seeded **Planting Date: 5/15/15** **Harvest Date: 7/30/15**
Spacing: 3 in **Row Spacing: 2 double rows/plot, 10″ by 24″; see notes**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.3 ft wide x 35 ft long

Soil Type: Carlisle muck **OM: 50.3%** **pH: 7.5**
Sand: 31% **Silt: 12%** **Clay: 7%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	5/20/15	11:00 am	50/50	F	Damp	3-4 SE	33	0% Cloudy	N
PO1	6/9/15	11:00 am	63/60	F	Damp	4-6 WSW	73	100% Cloudy	Y
PO2	6/25/15	1:30 pm	83/69	F	Dry	1-2 SW	49	98% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/20	RED BEET		Preemergence	
5/20	No Weeds			
6/9	RED BEET	3-5″	4-6 LS	Good
6/9	COLQ = common lambsquarters	1-2″	2-4 LS	Few
6/9	LATH = ladysthumb	0.5-1″	2-3 LS	Few
6/9	MAYC = marsh yellowcress	0.5-1″	2-3 LS	Few

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Each plot consisted of two beds spaced 24 inches apart. Each bed contained two rows spaced 10 inches apart.

Weed Control in Red Beet – Bouwkamp - 2015

Weed Control in Red Beet – Bouwkamp - 2015

Trial ID:	109-15-2	Location:	Grant, MI
Protocol ID:	109-15-2	Investigator:	Dr. Bernard Zandstra
Study Director:	Colin Phillippo		

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	REDBEET 9/Jun/15 RATING	REDBEET 25/Jun/15 RATING	REDBEET 20/Jul/15 RATING	REDBEET 30/Jul/15 HARVEST	REDBEET 30/Jul/15 HARVEST ROOT	REDBEET 30/Jul/15 HARVEST LEAF
Crop Code												
Rating Date												
Rating Type												
Rating Unit							1-10	1-10	1-10	#/PLOT	KG/PLOT	KG/PLOT
1	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.3	1.0	1.0	237.0	36.70	29.28
2	pyrazon	68	DF	2	lb ai/a	PRE	2.7	2.3	2.0	199.7	35.23	25.36
3	dimethenamid-P	6	EC	0.5	lb ai/a	PRE	2.7	2.7	2.3	169.3	37.35	24.17
4	ethofumesate	4	SC	2	lb ai/a	PRE	4.0	4.0	2.0	194.7	29.26	22.52
5	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	1.3	2.0	2.0	184.3	37.39	24.97
	Betamix	1.3	EC	0.244	lb ai/a	PO1,2						
	phenmedipham	0.65	EC	0.122	lb ai/a							
	desmedipham	0.65	EC	0.122	lb ai/a							
	clopyralid	3	L	0.188	lb ai/a	PO1,2						
	clethodim	0.97	EC	0.12	lb ai/a	PO1,2						
6	Untreated					PRE	1.0	2.3	1.7	189.0	32.75	26.71
	Betamix	1.3	EC	0.244	lb ai/a	PO1						
	phenmedipham	0.65	EC	0.122	lb ai/a							
	desmedipham	0.65	EC	0.122	lb ai/a							
	clopyralid	3	L	0.188	lb ai/a	PO1						
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1						
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
7	*S*-metolachlor	7.62	EC	1	lb ai/a	PRE	1.7	2.3	2.7	191.3	33.56	24.67
	Betamix	1.3	EC	0.244	lb ai/a	PO1,2						
	phenmedipham	0.65	EC	0.122	lb ai/a							
	desmedipham	0.65	EC	0.122	lb ai/a							
	clopyralid	3	L	0.188	lb ai/a	PO1,2						
	triflusulfuron	50	WDG	0.0156	lb ai/a	PO1,2						
	clethodim	0.97	EC	0.12	lb ai/a	PO1,2						

Weed Control in Broccoli and Cabbage – HTRC - 2015

Project Code: 114-15-1 **Location: East Lansing, MI**
Block 150

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Broccoli, Cabbage **Variety: Packman, Artost (respectively)**
Planting Method: Transplant **Planting Date: 6/2/15** **Harvest Date: 7/21/15 - 8/13/15**
Spacing: 22 in **Row Spacing: 3 ft; 1 row of each crop/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.3 ft wide x 30 ft long

Soil Type: Marlette fine sandy loam **OM: 1.9%** **pH: 7.7**
Sand: 52% **Silt: 24%** **Clay: 24%** **CEC: 9.4**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRT	6/2/15	9:30 am	60/53	F	Moist	1-4 NE	54	0% Cloudy	Y
POT	6/2/15	3:20 pm	75/77	F	Moist	2-6 NE	22	30% Cloudy	N
PO1	6/19/15	4:30 pm	76/73	F	Moist	5-7 E	40	90% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/2	BROCCOLI	4-6″	Veg	Good
6/2	CABBAGE	4-6″	Veg	Good
6/2	No Weeds			
6/19	BROCCOLI	8-10″	10-12 LS	Good
6/19	CABBAGE	8-10″	10-12 LS	Good
6/19	COLQ = common lambsquarters	2-4″	Veg	Moderate
6/19	CORW = common ragweed	4-6″	Veg	Many
6/19	PRKW = prostrate knotweed	8-12″	Veg	Many
6/19	RRPW = redroot pigweed	4-6″	Flower	Few
6/19	YEFT = yellow foxtail	2-4″	Veg	Few

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvest: There were 6 Broccoli harvests and 5 Cabbage harvests.

Weed Control in Broccoli and Cabbage – HTRC - 2015

Weed Control in Broccoli and Cabbage – HTRC - 2015

Trial ID: 114-15-1 Location: East Lansing, MI
Protocol ID: 114-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BROCCOLI	CABBAGE	YEFT	COLQ	CORW
Pest Code									YEFT	COLQ	CORW
Crop Code							BROCCOLI	CABBAGE			
Rating Date							18/Jun/15	18/Jun/15	18/Jun/15	18/Jun/15	18/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	pendimethalin	3.8	CS	1	lb ai/a	PRT	1.0	1.0	9.0	9.7	5.3
2	pendimethalin	3.8	CS	1	lb ai/a	POT	1.0	1.3	5.7	7.7	3.0
3	napropamide	50	DF	1	lb ai/a	PRT	1.0	1.0	7.0	6.3	2.3
4	napropamide	50	DF	1	lb ai/a	POT	1.0	1.0	8.3	8.0	2.0
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	2.7	2.7	10.0	8.7	7.3
6	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	2.7	2.7	10.0	8.0	7.7
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	3.0	3.7	10.0	7.3	8.0
8	clomazone	3	ME	0.5	lb ai/a	PRT	3.0	2.7	9.7	8.0	8.3
9	oxyfluorfen	4	SC	0.5	lb ai/a	PRT	1.7	1.3	10.0	10.0	10.0
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	2.0	1.7	9.7	10.0	9.7
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRT	3.3	2.3	9.7	9.7	10.0
12	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	2.0	1.7	9.0	8.7	9.0
13	bicyclopyrone	1.67	SL	0.045	lb ai/a	POT	3.7	3.7	9.7	10.0	9.7
14	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	1.0	1.3	9.0	9.0	5.3
15	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1	1.0	1.0	6.3	8.0	4.7
16	napropamide	50	DF	1	lb ai/a	PRT	1.0	1.0	8.7	9.0	5.7
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
17	napropamide	50	DF	1	lb ai/a	PRT	1.0	1.0	9.3	9.0	2.7
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clopyralid	3	L	0.188	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
18	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	1.0	1.0	9.3	10.0	5.7
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
19	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	1.0	1.0	8.7	7.0	3.3
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
20	Untreated						1.0	1.0	6.0	6.0	3.0
LSD P=.05							0.85	0.95	3.43	3.46	3.04
Standard Deviation							0.51	0.58	2.08	2.10	1.84
CV							29.36	33.92	23.74	24.7	30.07

Weed Control in Broccoli and Cabbage – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH	PRKW	RRPW	BROCCOLI	CABBAGE
Pest Code											
Crop Code										BROCCOLI	CABBAGE
Rating Date							18/Jun/15	18/Jun/15	18/Jun/15	25/Jun/15	25/Jun/15
Rating Type							RATING	RATING	RATING	STAND	STAND
Rating Unit							1-10	1-10	1-10	#/PLOT	#/PLOT
1	pendimethalin	3.8	CS	1	lb ai/a	PRT	9.3	5.7	10.0	17.0	17.0
2	pendimethalin	3.8	CS	1	lb ai/a	POT	9.7	5.0	9.3	17.3	16.0
3	napropamide	50	DF	1	lb ai/a	PRT	9.0	4.7	10.0	17.0	17.0
4	napropamide	50	DF	1	lb ai/a	POT	10.0	4.0	9.0	16.3	18.0
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	10.0	6.0	10.0	16.7	16.7
6	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	9.7	7.3	10.0	16.3	17.3
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	10.0	7.0	10.0	14.7	14.7
8	clomazone	3	ME	0.5	lb ai/a	PRT	10.0	9.0	9.7	16.7	16.3
9	oxyfluorfen	4	SC	0.5	lb ai/a	PRT	10.0	10.0	10.0	17.7	16.7
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	10.0	8.3	10.0	17.0	16.7
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRT	10.0	6.3	7.0	14.3	17.7
12	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	10.0	9.3	10.0	17.0	15.7
13	bicyclopyrone	1.67	SL	0.045	lb ai/a	POT	10.0	9.0	10.0	17.0	16.0
14	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	10.0	7.3	10.0	16.3	18.0
15	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1	9.3	3.7	9.3	17.3	16.3
16	napropamide	50	DF	1	lb ai/a	PRT	10.0	8.3	10.0	16.3	16.0
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
17	napropamide	50	DF	1	lb ai/a	PRT	10.0	3.7	9.3	18.0	16.0
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clopyralid	3	L	0.188	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
18	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	10.0	9.0	10.0	16.3	17.3
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
19	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	9.7	8.3	9.7	17.0	16.7
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
20	Untreated						9.7	3.3	8.7	16.7	17.0
LSD P=.05							0.80	3.52	2.30	2.25	1.86
Standard Deviation							0.49	2.13	1.39	1.36	1.12
CV							4.95	31.49	14.51	8.17	6.75

Weed Control in Broccoli and Cabbage – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
Pest Code									BYGR	YEFT	COLQ
Crop Code							BROCCOLI	CABBAGE			
Rating Date							26/Jun/15	26/Jun/15	26/Jun/15	26/Jun/15	26/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	pendimethalin	3.8	CS	1	lb ai/a	PRT	1.0	1.0	9.0	8.7	9.7
2	pendimethalin	3.8	CS	1	lb ai/a	POT	1.3	1.3	5.3	4.0	7.3
3	napropamide	50	DF	1	lb ai/a	PRT	1.3	1.3	6.3	6.3	6.0
4	napropamide	50	DF	1	lb ai/a	POT	1.0	1.0	8.7	8.0	7.3
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	3.3	4.0	9.3	9.0	7.7
6	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	4.7	4.3	9.7	9.7	7.7
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	5.7	6.0	9.7	9.7	6.7
8	clomazone	3	ME	0.5	lb ai/a	PRT	3.0	2.7	9.7	9.7	7.3
9	oxyfluorfen	4	SC	0.5	lb ai/a	PRT	1.3	1.7	10.0	10.0	10.0
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	2.3	1.7	9.3	8.7	10.0
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRT	3.3	2.7	10.0	9.7	8.7
12	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	2.7	2.3	9.3	9.3	8.0
13	bicyclopyrone	1.67	SL	0.045	lb ai/a	POT	4.0	3.7	9.7	9.7	10.0
14	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	2.7	3.0	9.3	9.0	9.7
15	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1	3.3	3.3	9.3	8.7	7.3
16	napropamide	50	DF	1	lb ai/a	PRT	4.3	4.3	10.0	10.0	10.0
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
17	napropamide	50	DF	1	lb ai/a	PRT	4.7	4.0	10.0	10.0	10.0
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clopyralid	3	L	0.188	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
18	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	4.7	4.7	10.0	10.0	10.0
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
19	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	5.7	4.7	10.0	10.0	9.3
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
20	Untreated						1.0	1.0	3.7	3.3	1.0
LSD P=.05							1.35	1.21	2.65	2.55	3.14
Standard Deviation							0.82	0.74	1.61	1.55	1.90
CV							26.75	25.06	18.01	17.85	23.22

Weed Control in Broccoli and Cabbage – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CORW	EBNS	PRKW	BROCCOLI	CABBAGE
Pest Code											
Crop Code										BROCCOLI	CABBAGE
Rating Date							26/Jun/15	26/Jun/15	26/Jun/15	9/Jul/15	9/Jul/15
Rating Type							RATING	RATING	RATING	STAND	STAND
Rating Unit							1-10	1-10	1-10	#/PLOT	#/PLOT
1	pendimethalin	3.8	CS	1	lb ai/a	PRT	5.7	10.0	5.3	16.7	16.7
2	pendimethalin	3.8	CS	1	lb ai/a	POT	1.3	10.0	4.7	17.3	16.3
3	napropamide	50	DF	1	lb ai/a	PRT	1.7	4.0	1.0	17.0	17.3
4	napropamide	50	DF	1	lb ai/a	POT	1.7	6.0	1.7	16.3	18.0
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	9.0	10.0	1.7	17.0	16.7
6	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	8.3	10.0	2.7	16.3	17.7
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	8.3	10.0	4.3	15.7	12.3
8	clomazone	3	ME	0.5	lb ai/a	PRT	7.0	10.0	8.7	16.7	16.3
9	oxyfluorfen	4	SC	0.5	lb ai/a	PRT	10.0	10.0	9.3	17.7	16.7
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	9.7	10.0	7.0	17.0	16.7
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRT	10.0	10.0	4.7	16.3	18.0
12	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	9.7	10.0	7.0	17.3	16.7
13	bicyclopyrone	1.67	SL	0.045	lb ai/a	POT	10.0	10.0	8.0	16.7	16.0
14	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	8.3	10.0	7.7	16.3	17.7
15	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1	8.3	10.0	7.3	17.3	17.0
16	napropamide	50	DF	1	lb ai/a	PRT	9.7	10.0	9.3	16.3	16.7
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
17	napropamide	50	DF	1	lb ai/a	PRT	10.0	10.0	9.7	18.0	16.7
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clopyralid	3	L	0.188	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
18	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	9.3	10.0	9.7	16.3	16.3
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
19	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	8.7	10.0	9.3	17.3	16.3
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
20	Untreated						1.0	1.0	1.0	16.7	16.7
LSD P=.05							1.90	2.62	2.79	1.93	1.97
Standard Deviation							1.15	1.59	1.69	1.17	1.19
CV							15.56	17.54	28.21	6.96	7.17

Weed Control in Broccoli and Cabbage – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
Pest Code									YEFT	COLQ	CORW
Crop Code							BROCCOLI	CABBAGE			
Rating Date							10/Jul/15	10/Jul/15	10/Jul/15	10/Jul/15	10/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	pendimethalin	3.8	CS	1	lb ai/a	PRT	1.0	1.3	8.0	8.7	2.7
2	pendimethalin	3.8	CS	1	lb ai/a	POT	1.0	1.0	6.0	6.7	1.7
3	napropamide	50	DF	1	lb ai/a	PRT	1.0	1.0	8.3	6.0	1.7
4	napropamide	50	DF	1	lb ai/a	POT	1.3	1.0	8.7	6.3	1.0
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	2.7	4.3	9.7	6.7	6.3
6	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	3.0	5.0	9.3	6.0	5.7
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	3.7	6.0	7.3	5.7	7.3
8	clomazone	3	ME	0.5	lb ai/a	PRT	2.0	1.7	8.7	5.3	5.7
9	oxyfluorfen	4	SC	0.5	lb ai/a	PRT	1.7	1.3	9.7	10.0	9.3
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	2.0	1.7	9.0	9.0	8.7
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRT	2.0	2.0	8.7	8.7	8.3
12	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	2.0	2.0	7.0	6.3	7.7
13	bicyclopyrone	1.67	SL	0.045	lb ai/a	POT	2.3	2.3	8.3	8.7	9.3
14	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	1.3	2.0	8.7	8.3	9.3
15	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1	1.0	1.3	7.3	6.0	9.0
16	napropamide	50	DF	1	lb ai/a	PRT	2.0	2.0	9.7	9.0	8.7
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
17	napropamide	50	DF	1	lb ai/a	PRT	2.7	2.3	9.0	9.7	10.0
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clopyralid	3	L	0.188	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
18	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	3.7	2.3	8.3	9.0	9.0
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
19	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	3.7	2.3	9.0	8.3	9.7
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
20	Untreated						1.0	1.0	6.0	6.0	5.3
LSD P=.05							1.09	1.10	3.18	4.12	2.46
Standard Deviation							0.66	0.66	1.93	2.50	1.49
CV							32.34	30.19	23.13	33.19	21.87

Weed Control in Broccoli and Cabbage – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	EBNS	PRKW	RRPW	BROCCOLI	BROCCOLI
Pest Code											
Crop Code										BROCCOLI	BROCCOLI
Rating Date							10/Jul/15	10/Jul/15	10/Jul/15	21/Jul/15	21/Jul/15
Rating Type							RATING	RATING	RATING	HARVEST	HARVEST
Rating Unit							1-10	1-10	1-10	#/PLOT	KG/PLOT
1	pendimethalin	3.8	CS	1	lb ai/a	PRT	10.0	4.3	10.0	4.0	2.77
2	pendimethalin	3.8	CS	1	lb ai/a	POT	6.0	5.7	9.3	1.3	0.84
3	napropamide	50	DF	1	lb ai/a	PRT	3.3	3.0	10.0	2.7	1.45
4	napropamide	50	DF	1	lb ai/a	POT	3.3	1.3	10.0	1.3	0.75
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	9.0	1.7	9.7	3.3	1.75
6	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	10.0	2.3	10.0	2.0	0.97
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	7.7	2.7	10.0	1.0	0.35
8	clomazone	3	ME	0.5	lb ai/a	PRT	8.7	7.0	9.0	1.0	0.56
9	oxyfluorfen	4	SC	0.5	lb ai/a	PRT	10.0	8.7	10.0	1.3	0.73
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	10.0	4.3	10.0	1.7	0.98
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRT	10.0	3.3	10.0	1.7	1.09
12	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	9.0	5.7	9.3	1.7	1.05
13	bicyclopyrone	1.67	SL	0.045	lb ai/a	POT	10.0	6.0	9.0	0.0	0.00
14	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	10.0	6.0	10.0	4.0	2.49
15	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1	10.0	6.7	10.0	3.0	1.83
16	napropamide	50	DF	1	lb ai/a	PRT	10.0	7.3	10.0	1.7	0.93
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
17	napropamide	50	DF	1	lb ai/a	PRT	10.0	7.0	9.7	0.7	0.38
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clopyralid	3	L	0.188	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
18	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	10.0	8.3	10.0	0.7	0.18
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
19	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	10.0	8.7	10.0	1.3	0.47
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
20	Untreated						7.0	5.7	7.0	4.0	2.25
LSD P=.05							3.82	3.45	2.27	3.09	1.920
Standard Deviation							2.31	2.09	1.37	1.87	1.164
CV							26.6	39.59	14.24	97.6	106.65

Weed Control in Broccoli and Cabbage – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BROCCOLI 23/Jul/15 HARVEST #/PLOT	BROCCOLI 23/Jul/15 HARVEST KG/PLOT	BROCCOLI 27/Jul/15 HARVEST #/PLOT	BROCCOLI 27/Jul/15 HARVEST KG/PLOT
	Pest Code									
	Crop Code									
	Rating Date									
	Rating Type									
	Rating Unit									
1	pendimethalin	3.8	CS	1	lb ai/a	PRT	4.3	1.96	6.3	3.10
2	pendimethalin	3.8	CS	1	lb ai/a	POT	2.3	1.11	10.3	5.23
3	napropamide	50	DF	1	lb ai/a	PRT	3.3	1.65	6.3	3.10
4	napropamide	50	DF	1	lb ai/a	POT	2.3	1.22	9.7	4.57
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	2.0	0.94	4.3	1.95
6	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	0.3	0.11	7.0	2.53
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	1.0	0.32	4.3	1.39
8	clomazone	3	ME	0.5	lb ai/a	PRT	3.7	1.80	11.0	5.41
9	oxyfluorfen	4	SC	0.5	lb ai/a	PRT	3.7	1.69	9.3	4.88
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	1.3	0.73	7.0	2.84
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRT	1.7	0.83	3.7	1.84
12	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	1.7	0.73	6.3	2.84
13	bicyclopyrone	1.67	SL	0.045	lb ai/a	POT	0.7	0.33	3.3	1.51
14	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	3.3	1.77	7.3	3.94
15	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1	4.3	2.36	8.0	4.62
16	napropamide	50	DF	1	lb ai/a	PRT	1.3	0.67	9.3	4.32
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
17	napropamide	50	DF	1	lb ai/a	PRT	2.7	1.53	10.3	5.14
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	clopyralid	3	L	0.188	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
18	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	2.3	0.92	7.7	2.63
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
19	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	1.7	0.47	7.0	3.05
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1				
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
20	Untreated						2.3	1.26	8.3	4.28
LSD P=.05							2.58	1.219	3.94	2.068
Standard Deviation							1.56	0.739	2.39	1.253
CV							67.37	65.95	32.46	36.23

Weed Control in Broccoli and Cabbage – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BROCCOLI 29/Jul/15 HARVEST #/PLOT	BROCCOLI 29/Jul/15 HARVEST KG/PLOT	BROCCOLI 3/Aug/15 HARVEST #/PLOT	BROCCOLI 3/Aug/15 HARVEST KG/PLOT
	Pest Code									
	Crop Code									
	Rating Date									
	Rating Type									
	Rating Unit									
1	pendimethalin	3.8	CS	1	lb ai/a	PRT	2.7	0.53	0.0	0.00
2	pendimethalin	3.8	CS	1	lb ai/a	POT	2.3	0.53	1.3	0.13
3	napropamide	50	DF	1	lb ai/a	PRT	3.3	0.67	0.7	0.08
4	napropamide	50	DF	1	lb ai/a	POT	2.3	0.39	0.0	0.00
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	4.7	1.24	1.0	0.12
6	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	4.3	0.90	2.7	0.40
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	5.0	0.98	1.0	0.16
8	clomazone	3	ME	0.5	lb ai/a	PRT	2.0	0.51	1.0	0.13
9	oxyfluorfen	4	SC	0.5	lb ai/a	PRT	3.3	0.91	2.0	0.34
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	3.3	0.70	3.3	0.71
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRT	3.3	0.95	2.0	0.47
12	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	4.3	1.19	2.0	0.55
13	bicyclopyrone	1.67	SL	0.045	lb ai/a	POT	3.7	1.11	5.7	1.86
14	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	2.0	0.43	1.0	0.15
15	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1	0.3	0.08	0.7	0.11
16	napropamide	50	DF	1	lb ai/a	PRT	4.3	0.99	0.7	0.08
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
17	napropamide	50	DF	1	lb ai/a	PRT	4.3	0.95	1.0	0.17
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	clopyralid	3	L	0.188	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
18	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	2.7	0.53	2.7	0.50
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
19	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	4.7	1.31	1.3	0.34
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1				
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
20	Untreated						2.0	0.54	1.3	0.25
LSD P=.05							3.44	0.876	2.15	0.584
Standard Deviation							2.08	0.531	1.30	0.354
CV							64.07	68.7	82.99	108.49

Weed Control in Broccoli and Cabbage – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BROCCOLI 13/Aug/15 HARVEST #/PLOT	BROCCOLI 13/Aug/15 HARVEST KG/PLOT	BROCCOLI TOTAL #/PLOT	BROCCOLI TOTAL KG/PLOT
	Pest Code									
	Crop Code									
	Rating Date									
	Rating Type									
	Rating Unit									
1	pendimethalin	3.8	CS	1	lb ai/a	PRT	0.0	0.00	17.3	8.36
2	pendimethalin	3.8	CS	1	lb ai/a	POT	0.0	0.00	17.7	7.84
3	napropamide	50	DF	1	lb ai/a	PRT	0.7	0.21	17.0	7.18
4	napropamide	50	DF	1	lb ai/a	POT	0.0	0.00	15.7	6.93
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	1.0	1.14	16.3	7.14
6	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	0.7	0.50	17.0	5.41
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	1.3	0.33	13.7	3.53
8	clomazone	3	ME	0.5	lb ai/a	PRT	0.0	0.00	18.7	8.41
9	oxyfluorfen	4	SC	0.5	lb ai/a	PRT	0.0	0.00	19.7	8.56
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	0.7	0.37	17.3	6.32
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRT	2.7	1.04	15.0	6.21
12	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	1.3	0.49	17.3	6.86
13	bicyclopyrone	1.67	SL	0.045	lb ai/a	POT	2.3	1.13	15.7	5.94
14	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	0.0	0.00	17.7	8.79
15	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1	0.0	0.00	16.3	9.00
16	napropamide	50	DF	1	lb ai/a	PRT	0.0	0.00	17.3	7.00
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
17	napropamide	50	DF	1	lb ai/a	PRT	0.0	0.00	19.0	8.17
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	clopyralid	3	L	0.188	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
18	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	0.3	0.17	16.3	4.93
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
19	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	0.7	0.17	16.7	5.80
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1				
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
20	Untreated						0.0	0.00	18.0	8.57
LSD P=.05							1.43	0.895	3.62	1.889
Standard Deviation							0.86	0.542	2.19	1.145
CV							148.11	195.47	12.91	16.25

Weed Control in Broccoli and Cabbage – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CABBAGE 27/Jul/15 HARVEST #/PLOT	CABBAGE 27/Jul/15 HARVEST KG/PLOT	CABBAGE 31/Jul/15 HARVEST #/PLOT	CABBAGE 31/Jul/15 HARVEST KG/PLOT
	Pest Code									
	Crop Code									
	Rating Date									
	Rating Type									
	Rating Unit									
1	pendimethalin	3.8	CS	1	lb ai/a	PRT	6.3	11.23	2.3	3.38
2	pendimethalin	3.8	CS	1	lb ai/a	POT	4.0	7.02	2.3	3.82
3	napropamide	50	DF	1	lb ai/a	PRT	4.0	7.01	3.0	5.26
4	napropamide	50	DF	1	lb ai/a	POT	3.0	5.65	5.3	8.90
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	1.3	2.46	2.3	3.69
6	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	0.0	0.00	0.3	0.54
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	0.0	0.00	0.0	0.00
8	clomazone	3	ME	0.5	lb ai/a	PRT	4.0	7.48	4.7	8.13
9	oxyfluorfen	4	SC	0.5	lb ai/a	PRT	4.0	6.83	3.3	5.61
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	4.7	8.45	2.3	4.34
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRT	2.7	5.45	3.3	6.37
12	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	3.7	6.19	2.0	3.57
13	bicyclopyrone	1.67	SL	0.045	lb ai/a	POT	2.3	3.63	0.7	1.18
14	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	6.0	9.56	4.7	8.31
15	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1	4.0	6.38	5.7	10.62
16	napropamide	50	DF	1	lb ai/a	PRT	1.7	2.52	4.3	7.17
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
17	napropamide	50	DF	1	lb ai/a	PRT	2.7	4.03	5.0	9.00
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	clopyralid	3	L	0.188	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
18	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	1.3	2.09	3.0	4.62
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
19	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	2.3	3.46	3.3	5.57
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1				
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
20	Untreated						5.3	10.03	3.0	5.24
LSD P=.05							3.20	5.597	3.67	6.288
Standard Deviation							1.94	3.392	2.23	3.810
CV							61.28	61.96	72.97	72.36

Weed Control in Broccoli and Cabbage – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CABBAGE 3/Aug/15 HARVEST #/PLOT	CABBAGE 3/Aug/15 HARVEST KG/PLOT	CABBAGE 13/Aug/15 HARVEST #/PLOT	CABBAGE 13/Aug/15 HARVEST KG/PLOT
	Pest Code									
	Crop Code									
	Rating Date						3/Aug/15	3/Aug/15	13/Aug/15	13/Aug/15
	Rating Type						HARVEST	HARVEST	HARVEST	HARVEST
	Rating Unit						#/PLOT	KG/PLOT	#/PLOT	KG/PLOT
1	pendimethalin	3.8	CS	1	lb ai/a	PRT	5.3	7.63	2.3	4.32
2	pendimethalin	3.8	CS	1	lb ai/a	POT	8.0	9.23	2.0	2.68
3	napropamide	50	DF	1	lb ai/a	PRT	5.7	6.72	2.7	2.78
4	napropamide	50	DF	1	lb ai/a	POT	7.0	8.75	1.7	2.13
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	4.7	4.52	5.7	8.47
6	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	5.0	4.47	5.7	6.93
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	1.0	1.23	6.0	6.56
8	clomazone	3	ME	0.5	lb ai/a	PRT	6.0	8.21	1.3	2.27
9	oxyfluorfen	4	SC	0.5	lb ai/a	PRT	7.7	10.35	1.3	1.90
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	8.3	11.12	0.7	1.04
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRT	6.3	7.36	4.7	6.33
12	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	9.7	11.92	1.7	2.25
13	bicyclopyrone	1.67	SL	0.045	lb ai/a	POT	8.3	10.53	5.0	6.94
14	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	3.0	3.50	4.3	6.88
15	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1	3.7	4.97	2.0	4.32
16	napropamide	50	DF	1	lb ai/a	PRT	6.3	7.33	4.7	9.27
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
17	napropamide	50	DF	1	lb ai/a	PRT	7.3	9.32	1.0	1.23
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	clopyralid	3	L	0.188	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
18	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	10.7	14.34	2.0	2.68
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
19	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	8.7	11.21	1.0	1.03
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1				
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
20	Untreated						6.3	8.13	1.7	1.98
LSD P=.05							4.37	5.750	3.38	6.138
Standard Deviation							2.65	3.484	2.05	3.720
CV							41.09	43.33	71.45	90.74

Weed Control in Broccoli and Cabbage – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CABBAGE 24/Aug/15 HARVEST #/PLOT	CABBAGE 24/Aug/15 HARVEST KG/PLOT	CABBAGE TOTAL #/PLOT	CABBAGE TOTAL KG/PLOT
	Pest Code									
	Crop Code									
	Rating Date									
	Rating Type									
	Rating Unit									
1	pendimethalin	3.8	CS	1	lb ai/a	PRT	1.7	0.67	18.0	27.23
2	pendimethalin	3.8	CS	1	lb ai/a	POT	0.3	0.13	16.7	22.89
3	napropamide	50	DF	1	lb ai/a	PRT	0.7	0.57	16.0	22.34
4	napropamide	50	DF	1	lb ai/a	POT	0.0	0.00	17.0	25.43
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	2.3	1.76	16.3	20.90
6	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	4.3	3.89	15.3	15.83
7	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	3.0	2.12	10.0	9.91
8	clomazone	3	ME	0.5	lb ai/a	PRT	0.7	0.85	16.7	26.94
9	oxyfluorfen	4	SC	0.5	lb ai/a	PRT	0.0	0.00	16.3	24.70
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	1.0	0.95	17.0	25.89
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRT	2.7	2.39	19.7	27.91
12	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	2.3	2.11	19.3	26.04
13	bicyclopyrone	1.67	SL	0.045	lb ai/a	POT	1.0	0.50	17.3	22.78
14	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	0.3	0.30	18.3	28.55
15	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1	0.3	0.13	15.7	26.42
16	napropamide	50	DF	1	lb ai/a	PRT	1.7	1.19	18.7	27.48
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
17	napropamide	50	DF	1	lb ai/a	PRT	1.0	0.96	17.0	24.54
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	clopyralid	3	L	0.188	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
18	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	1.0	0.86	18.0	24.59
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
19	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	0.3	0.34	15.7	21.61
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1				
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
20	Untreated						0.7	0.32	17.0	25.69
LSD P=.05							2.26	1.867	3.01	5.727
Standard Deviation							1.37	1.131	1.82	3.471
CV							107.94	112.92	10.84	14.53

Preemergence Weed Control in Carrot – Keilen - 2015

Project Code: 107-15-1 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Carrot **Variety: Belgrado**
Planting Method: Seeded **Planting Date: 5/6/2015**
Spacing: 1 inch **Row Spacing: 10 inch; 2 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 2.7 ft wide x 30 ft long

Soil Type: Houghton muck **OM: 42.1%** **pH: 7.2**
Sand: 36% **Silt: 22%** **Clay: 0%** **Sand: 36%**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	5/18/15	10:45 am	77/66	F	Damp	4-7 SW	64	60% Cloudy	N
PO1	6/9/15	12:15 pm	78/74	F	Damp	4-7 SW	51	60% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/18	CARROT	0.5-1″	Veg	Good
5/18	Barley	4-6″	Veg	Many
5/18	LATH = ladysthumb	<1″	Cotyledon	Many
5/18	YENS = yellow nutsedge	1-2″	Veg	Mod
6/9	CARROT	2-3″	3-4 LS	Good
6/9	COPU = common purslane	<1″	Veg	Few
6/9	LATH = ladysthumb	4-5″	Veg	Many
6/9	RRPW = redroot pigweed	2-4″	Veg	Mod
6/9	YENS = yellow nutsedge	5-7″	Veg	Mod

Notes and Comments
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Lorox (1 lb ai/A) was applied preemergence to entire field as carrots were just breaking the soil surface. Application made by Keilen Farms.
4. Experiment abandoned 30 June 2015 due to flood damage in field occurring on 22 June 2015 that resulted in complete loss of the crop.

Preemergence Weed Control in Carrot – Keilen - 2015

Preemergence Weed Control in Carrot – Keilen - 2015

Trial ID: 107-15-1 Location: East Lansing, MI
Protocol ID: 107-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CARROT 8/Jun/15 RATING 1-10	YENS 8/Jun/15 RATING 1-10	LATH 8/Jun/15 RATING 1-10	RRPW 8/Jun/15 RATING 1-10
1	pendimethalin	3.8	CS	0.95	lb ai/a	PRE	1.0	6.7	2.0	6.7
2	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.0	6.3	7.0	10.0
3	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.3	4.7	9.3	10.0
4	linuron	50	DF	1	lb ai/a	PRE	1.0	4.3	8.0	10.0
	pyroxasulfone	85	WDG	0.089	lb ai/a	PO1				
5	linuron	50	DF	1	lb ai/a	PRE	1.3	4.0	8.3	10.0
	pyroxasulfone	85	WDG	0.111	lb ai/a	PO1				
6	linuron	50	DF	1	lb ai/a	PRE	1.3	6.3	9.0	10.0
	pyroxasulfone	85	WDG	0.159	lb ai/a	PO1				
7	linuron	50	DF	1	lb ai/a	PRE	1.0	7.0	9.0	10.0
	pyroxasulfone	85	WDG	0.179	lb ai/a	PO1				
8	linuron	50	DF	1	lb ai/a	PRE	1.7	6.0	8.7	10.0
	pyroxasulfone	85	WDG	0.223	lb ai/a	PO1				
9	linuron	50	DF	1	lb ai/a	PRE	1.3	4.3	9.0	10.0
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1				
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	1.3	4.0	1.3	9.3
	linuron	50	DF	1	lb ai/a	PO1				
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	1.7	5.3	2.0	9.3
	linuron	50	DF	1	lb ai/a	PO1				
12	*S*-metolachlor	7.62	EC	1.9	lb ai/a	PRE	9.3	6.0	8.7	10.0
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE				
13	*S*-metolachlor	7.62	EC	1.9	lb ai/a	PRE	2.7	4.3	8.3	10.0
	linuron	50	DF	1	lb ai/a	PRE				
14	Untreated						1.0	10.0	8.3	9.3
LSD P=.05							0.91	7.30	2.39	2.39
Standard Deviation							0.54	4.35	1.42	1.43
CV							27.98	76.75	20.1	14.83

Preemergence Weed Control in Carrot – Keilen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
Pest Code								YENS	LATH
Crop Code							CARROT		
Rating Date							19/Jun/15	19/Jun/15	19/Jun/15
Rating Type							RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10
1	pendimethalin	3.8	CS	0.95	lb ai/a	PRE	1.0	9.0	1.0
2	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.7	6.0	5.3
3	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.7	4.3	8.0
4	linuron	50	DF	1	lb ai/a	PRE	1.7	6.7	7.3
	pyroxasulfone	85	WDG	0.089	lb ai/a	PO1			
5	linuron	50	DF	1	lb ai/a	PRE	1.7	5.3	6.3
	pyroxasulfone	85	WDG	0.111	lb ai/a	PO1			
6	linuron	50	DF	1	lb ai/a	PRE	2.0	8.3	8.3
	pyroxasulfone	85	WDG	0.159	lb ai/a	PO1			
7	linuron	50	DF	1	lb ai/a	PRE	2.7	7.7	8.7
	pyroxasulfone	85	WDG	0.179	lb ai/a	PO1			
8	linuron	50	DF	1	lb ai/a	PRE	2.3	8.0	8.0
	pyroxasulfone	85	WDG	0.223	lb ai/a	PO1			
9	linuron	50	DF	1	lb ai/a	PRE	2.0	5.7	9.0
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1			
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	1.7	6.7	8.0
	linuron	50	DF	1	lb ai/a	PO1			
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	2.0	7.0	7.0
	linuron	50	DF	1	lb ai/a	PO1			
12	*S*-metolachlor	7.62	EC	1.9	lb ai/a	PRE	8.7	6.3	7.0
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE			
13	*S*-metolachlor	7.62	EC	1.9	lb ai/a	PRE	2.7	7.0	8.3
	linuron	50	DF	1	lb ai/a	PRE			
14	Untreated						1.3	9.0	6.7
LSD P=.05							1.27	5.76	3.13
Standard Deviation							0.75	3.43	1.87
CV							32.02	49.56	26.41

Postemergence Weed Control in Carrot – Keilen - 2015

Project Code: 107-15-2 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Carrot **Variety: Belgrado**
Planting Method: Seeded **Planting Date: 5/6/2015**
Spacing: 1 inch **Row Spacing: 10 inch; 2 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 2.7 ft wide x 30 ft long

Soil Type: Houghton muck **OM: 42.1%** **pH: 7.2**
Sand: 36% **Silt: 22%** **Clay: 0%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PO1	6/9/15	1:30 pm	78/74	F	Damp	4-7 SW	51	60% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/9	CARROT	3-5″	3-4 LS	Good
6/9	LATH = ladysthumb	3-5″	Veg	Many
6/9	RRPW = redroot pigweed	6-8″	Veg	Mod
6/9	YENS = yellow nutsedge	4-6″	Veg	Mod

Notes and Comments
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Lorox (1 lb ai/A) was applied preemergence to entire field as carrots were just breaking the soil surface. Application made by Keilen Farms.
4. Experiment abandoned 30 June 2015 due to flood damage in field occurring on 22 June 2015 that resulted in complete loss of the crop.
5. PO2 Application: Experiment abandoned prior to second application.

Postemergence Weed Control in Carrot – Keilen - 2015

Postemergence Weed Control in Carrot – Keilen - 2015

Trial ID: 107-15-2 Location: East Lansing, MI
Protocol ID: 107-15-2 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CARROT 19/Jun/15 RATING 1-10	YENS 19/Jun/15 RATING 1-10	LATH 19/Jun/15 RATING 1-10	RRPW 19/Jun/15 RATING 1-10
1	linuron	50	DF	1	lb ai/a	PO1,2	1.0	7.7	4.3	7.0
2	linuron	50	DF	1	lb ai/a	PO1,2	1.7	6.7	8.0	9.7
	NIS	100	SL	0.25	% v/v	PO1,2				
3	metribuzin	75	DF	0.25	lb ai/a	PO1,2	1.3	6.7	8.7	8.7
4	metribuzin	75	DF	0.5	lb ai/a	PO1,2	1.7	8.0	9.3	9.0
5	prometryn	4	L	1	lb ai/a	PO1,2	1.0	7.0	3.0	7.3
6	prometryn	4	L	1	lb ai/a	PO1,2	1.0	4.7	3.0	9.7
	NIS	100	SL	0.25	% v/v	PO1,2				
7	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1,2	3.3	7.3	6.7	9.0
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1,2	4.0	6.0	8.0	9.0
	NIS	100	SL	0.25	% v/v	PO1,2				
9	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1,2	3.3	7.3	7.0	8.7
10	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1,2	5.0	7.3	8.0	9.0
	NIS	100	SL	0.25	% v/v	PO1,2				
11	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2	1.0	4.3	2.0	6.3
12	Untreated					PO1,2	1.3	5.3	1.7	8.7
LSD P=.05							0.83	5.42	1.65	3.45
Standard Deviation							0.49	3.20	0.98	2.04
CV							22.9	49.06	16.81	23.99

Weed Control in Celery – Cnossen - 2015

Project Code: 113-15-1 **Location: Wayland, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Celery **Variety: CR1**
Planting Method: Transplant **Planting Date: 5/22/15** **Harvest Date: 9/22/15**
Spacing: 8 in **Row Spacing: 15 in; 2 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 2.7 ft wide x 30 ft long

Soil Type: Houghton muck **OM: 61%** **pH: 6.6**
Sand: 19% **Silt: 19%** **Clay: 1%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
POT	5/29/15	2:30 pm	87/74	F	Dry	5-7 SW	42	75% Cloudy	N
PO1	6/26/15	1:30 pm	77/71	F	Wet	2-7 SE	59	45% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/29	CELERY	2-4″	2-4 leaf	Good
5/29	No Weeds			
6/26	CELERY	4-6″		Good
6/26	ANBG = annual bluegrass	1-3″	Veg	Many
6/26	BYGR = barnyard grass	4-7″	Veg	Many
6/26	COPU = common purslane	1-2″	Veg	Many
6/26	LATH = ladysthumb	3-6″	Veg	Many
6/26	RRPW = redroot pigweed	1-4″	Veg	Moderate
6/26	YENS = yellow nutsedge	4-6″	Veg	Few

Notes and Comments
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvested 10 feet of 2 rows in each plot.

Weed Control in Celery – Cnossen - 2015

Weed Control in Celery – Cnossen - 2015

Trial ID: 113-15-1 Location: Wayland, MI
Protocol ID: 113-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CELERY 26/Jun/15 RATING 1-10	ANBG 26/Jun/15 RATING 1-10	BYGR 26/Jun/15 RATING 1-10	YENS 26/Jun/15 RATING 1-10	COPU 26/Jun/15 RATING 1-10
1	prometryn	4	L	2	lb ai/a	POT, PO1	2.0	3.3	7.0	10.0	3.3
2	linuron	50	DF	1	lb ai/a	POT, PO1	1.7	1.7	4.0	10.0	1.0
3	pendimethalin	3.8	CS	1.9	lb ai/a	POT	2.0	2.7	3.3	6.0	2.7
	prometryn	4	L	2	lb ai/a	PO1					
4	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	1.3	6.0	7.0	4.7	5.7
5	pyroxasulfone	85	WDG	0.198	lb ai/a	POT	1.7	9.7	9.3	7.7	9.0
6	pyroxasulfone	85	WDG	0.267	lb ai/a	POT	3.0	9.0	8.3	9.0	9.7
7	prometryn	4	L	2	lb ai/a	POT	1.3	2.0	4.0	10.0	1.7
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1					
8	prometryn	4	L	2	lb ai/a	POT	1.7	2.7	5.0	10.0	2.0
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
9	pyroxasulfone	85	WDG	0.133	lb ai/a	POT, PO1	1.1	7.4	8.3	10.0	8.7
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	2.0	1.0	1.0	7.3	4.0
11	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	2.0	3.7	5.7	10.0	3.7
	pendimethalin	3.8	CS	1.9	lb ai/a	POT					
12	Untreated					POT	2.7	6.3	5.7	9.7	6.7
	Handweeded					PO1					
LSD P=.05							1.60	4.75	5.78	4.62	4.47
Standard Deviation							0.94	2.80	3.40	2.72	2.63
CV							50.37	60.57	59.47	31.26	54.43

Weed Control in Celery – Cnossen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH	RRPW		ANBG	BYGR
	Pest Code						LATH	RRPW		ANBG	BYGR
	Crop Code								CELERY		
	Rating Date						26/Jun/15	26/Jun/15	30/Jun/15	30/Jun/15	30/Jun/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	prometryn	4	L	2	lb ai/a	POT, PO1	3.7	9.7	1.7	6.3	9.0
2	linuron	50	DF	1	lb ai/a	POT, PO1	1.0	5.0	1.7	4.0	6.0
3	pendimethalin	3.8	CS	1.9	lb ai/a	POT	1.0	3.0	1.7	5.3	7.0
	prometryn	4	L	2	lb ai/a	PO1					
4	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	1.0	4.3	2.0	6.3	6.7
5	pyroxasulfone	85	WDG	0.198	lb ai/a	POT	3.0	10.0	2.0	9.7	10.0
6	pyroxasulfone	85	WDG	0.267	lb ai/a	POT	1.7	10.0	2.3	9.3	9.3
7	prometryn	4	L	2	lb ai/a	POT	3.3	10.0	1.3	4.3	7.0
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1					
8	prometryn	4	L	2	lb ai/a	POT	2.0	7.0	1.3	5.7	7.0
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
9	pyroxasulfone	85	WDG	0.133	lb ai/a	POT, PO1	1.0	8.4	1.0	9.0	9.2
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	1.0	7.0	2.0	1.0	1.7
11	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	1.0	7.7	1.7	4.0	6.3
	pendimethalin	3.8	CS	1.9	lb ai/a	POT					
12	Untreated					POT	1.0	9.3	2.3	7.0	7.7
	Handweeded					PO1					
LSD P=.05							3.55	5.03	1.22	5.88	5.00
Standard Deviation							2.09	2.96	0.72	3.47	2.94
CV							121.39	38.92	41.04	57.79	40.67

Weed Control in Celery – Cnossen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COPU	LATH	CELERY	ANBG	BYGR
Pest Code							COPU	LATH		ANBG	BYGR
Crop Code									CELERY		
Rating Date							30/Jun/15	30/Jun/15	15/Jul/15	15/Jul/15	15/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	prometryn	4	L	2	lb ai/a	POT, PO1	5.3	8.0	1.3	6.0	8.3
2	linuron	50	DF	1	lb ai/a	POT, PO1	2.7	4.7	2.0	5.7	8.0
3	pendimethalin	3.8	CS	1.9	lb ai/a	POT	5.7	2.3	1.0	8.3	8.0
	prometryn	4	L	2	lb ai/a	PO1					
4	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	6.3	2.3	1.0	6.7	6.3
5	pyroxasulfone	85	WDG	0.198	lb ai/a	POT	10.0	7.7	1.7	10.0	10.0
6	pyroxasulfone	85	WDG	0.267	lb ai/a	POT	10.0	4.3	2.7	9.0	10.0
7	prometryn	4	L	2	lb ai/a	POT	3.7	5.7	1.3	6.7	7.3
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1					
8	prometryn	4	L	2	lb ai/a	POT	5.3	6.0	1.3	8.0	7.3
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
9	pyroxasulfone	85	WDG	0.133	lb ai/a	POT, PO1	10.0	5.1	1.0	7.0	7.7
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	1.7	1.0	1.0	1.7	2.0
11	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	6.0	2.3	1.0	4.0	6.0
	pendimethalin	3.8	CS	1.9	lb ai/a	POT					
12	Untreated					POT	7.0	1.3	1.7	7.0	6.7
	Handweeded					PO1					
LSD P=.05							5.65	3.75	1.07	6.07	5.44
Standard Deviation							3.33	2.21	0.63	3.58	3.21
CV							54.22	52.23	44.73	53.77	44.0

Weed Control in Celery – Cnossen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COPU 15/Jul/15 RATING 1-10	LATH 15/Jul/15 RATING 1-10	CELERY 22/Sep/15 HARVEST #/10 FT	CELERY 22/Sep/15 HARVEST KG/10 FT
1	prometryn	4	L	2	lb ai/a	POT, PO1	5.0	8.7	31.7	48.07
2	linuron	50	DF	1	lb ai/a	POT, PO1	3.3	7.7	30.0	41.92
3	pendimethalin	3.8	CS	1.9	lb ai/a	POT	6.7	6.3	27.3	39.18
	prometryn	4	L	2	lb ai/a	PO1				
4	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	4.7	1.7	32.3	43.54
5	pyroxasulfone	85	WDG	0.198	lb ai/a	POT	10.0	5.3	33.3	45.65
6	pyroxasulfone	85	WDG	0.267	lb ai/a	POT	10.0	3.3	33.0	42.70
7	prometryn	4	L	2	lb ai/a	POT	7.0	4.3	30.0	45.29
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1				
8	prometryn	4	L	2	lb ai/a	POT	7.3	4.0	33.0	48.82
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1				
	NIS	100	SL	0.25	% v/v	PO1				
9	pyroxasulfone	85	WDG	0.133	lb ai/a	POT, PO1	7.3	1.3	33.3	48.31
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	POT	1.0	1.0	31.0	37.47
11	pyroxasulfone	85	WDG	0.133	lb ai/a	POT	5.0	2.0	35.3	47.26
	pendimethalin	3.8	CS	1.9	lb ai/a	POT				
12	Untreated					POT	6.7	1.0	30.7	40.31
	Handweeded					PO1				
LSD P=.05							4.97	3.33	7.19	11.962
Standard Deviation							2.93	1.97	4.25	7.064
CV							47.59	50.63	13.37	16.04

Weed Control in Celery – Schreur - 2015

Project Code: 113-15-2 **Location: Hudsonville, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Celery **Variety: CR1**
Planting Method: Transplant **Planting Date: 5/6/15** **Harvest Date: 7/24/15**
Spacing: 6 in **Row Spacing: 18 in; 2 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 2 ft wide x 30 ft long

Soil Type: Carlisle muck **OM: 68%** **pH: 6.7**
Sand: 18% **Silt: 10%** **Clay: 4%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRT	5/6/15	1:00 pm	65/57	F	Damp	3-4 NE	75	50% Cloudy	N
POT	5/7/15	10:15 am	73/58	F	Moist	4-6 SE	66	70% Cloudy	N
PO1	6/3/15	1:00 pm	69/59	F	Moist	5-7 SE	65	15% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/6	CELERY	3-4″	2-3 LS	Good
5/6	No Weeds			
5/7	CELERY	3-4″	2-3 LS	Good
5/7	No Weeds			
6/3	CELERY	4-6″	Veg	Good
6/3	CORW = common ragweed	2-8″	Veg	Few
6/3	MAYC = marsh yellowcress	2-5″	Veg	Many
6/3	WHCA = white campion	2-4″	Veg	Many
6/3	YENS = yellow nutsedge	3-5″	Veg	Moderate

Notes and Comments
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvested 10 feet of 2 rows in each plot.

Weed Control in Celery – Schreur - 2015

Weed Control in Celery – Schreur - 2015

Trial ID: 113-15-2 Location: Hudsonville, MI
Protocol ID: 113-15-2 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CELERY 28/May/15 RATING 1-10	CELERY 3/Jun/15 RATING 1-10	YENS 3/Jun/15 RATING 1-10	CORW 3/Jun/15 RATING 1-10	MAYC 3/Jun/15 RATING 1-10
	Pest Code										
	Crop Code										
	Rating Date										
	Rating Type										
	Rating Unit										
1	prometryn	4	L	2	lb ai/a	POT, PO1	1.0	1.0	3.0	5.3	3.3
2	pyroxasulfone	85	WDG	0.198	lb ai/a	PRT	1.0	1.0	4.7	9.7	3.0
3	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	1.0	1.0	6.7	10.0	9.0
4	pyroxasulfone	85	WDG	0.198	lb ai/a	POT	1.0	1.0	8.7	10.0	9.7
5	pyroxasulfone	85	WDG	0.267	lb ai/a	POT	1.0	1.0	6.3	10.0	9.3
6	pyroxasulfone	85	WDG	0.267	lb ai/a	POT	1.0	1.0	7.3	10.0	10.0
	NIS	100	SL	0.25	% v/v	POT					
7	pyroxasulfone	85	WDG	0.198	lb ai/a	PO1	1.0	1.0	6.0	9.0	2.0
8	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1	1.0	1.0	6.3	9.0	1.7
9	linuron	50	DF	1	lb ai/a	POT	1.0	1.0	3.3	9.7	9.4
	flumioxazin	51	WDG	0.064	lb ai/a	POT					
10	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	1.0	1.0	6.3	10.0	7.7
	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT					
11	Untreated					PRT	1.0	1.0	6.0	8.7	2.0
	prometryn	4	L	2	lb ai/a	PO1					
12	pendimethalin	3.8	CS	1.9	lb ai/a	POT	1.0	1.0	10.0	9.7	9.3
	flumioxazin	51	WDG	0.32	lb ai/a	POT					
LSD P=.05							0.00	0.00	5.74	1.87	1.21
Standard Deviation							0.00	0.00	3.39	1.10	0.71
CV							0.0	0.0	54.49	11.94	11.17

Weed Control in Celery – Schreur - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WHCA	CELERY	YENS	CORW	MAYC
Pest Code							WHCA		YENS	CORW	MAYC
Crop Code								CELERY			
Rating Date							3/Jun/15	17/Jun/15	17/Jun/15	17/Jun/15	17/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	prometryn	4	L	2	lb ai/a	POT, PO1	3.3	1.7	3.3	8.3	4.3
2	pyroxasulfone	85	WDG	0.198	lb ai/a	PRT	6.0	1.3	4.0	7.0	1.3
3	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	9.3	2.0	5.0	9.0	5.3
4	pyroxasulfone	85	WDG	0.198	lb ai/a	POT	10.0	2.0	4.3	8.0	8.3
5	pyroxasulfone	85	WDG	0.267	lb ai/a	POT	8.7	3.0	3.3	9.7	7.3
6	pyroxasulfone	85	WDG	0.267	lb ai/a	POT	8.0	2.7	5.3	10.0	8.7
	NIS	100	SL	0.25	% v/v	POT					
7	pyroxasulfone	85	WDG	0.198	lb ai/a	PO1	3.0	2.0	4.3	7.3	2.3
8	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1	1.7	1.7	4.7	5.3	2.3
9	linuron	50	DF	1	lb ai/a	POT	8.0	2.3	2.3	7.7	5.7
	flumioxazin	51	WDG	0.064	lb ai/a	POT					
10	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	6.7	1.3	1.3	7.3	1.3
	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT					
11	Untreated					PRT	1.3	1.3	6.3	10.0	3.0
	prometryn	4	L	2	lb ai/a	PO1					
12	pendimethalin	3.8	CS	1.9	lb ai/a	POT	9.3	1.7	9.0	9.3	8.3
	flumioxazin	51	WDG	0.32	lb ai/a	POT					
LSD P=.05							2.70	1.66	4.97	4.59	3.47
Standard Deviation							1.59	0.98	2.94	2.71	2.05
CV							25.4	51.18	66.05	32.84	42.21

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PESW	VIPW	WHCA	CELERY	COGR
Pest Code							PESW	VIPW	WHCA		COGR
Crop Code										CELERY	
Rating Date							17/Jun/15	17/Jun/15	17/Jun/15	25/Jun/15	25/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	prometryn	4	L	2	lb ai/a	POT, PO1	9.3	7.0	6.7	1.3	9.3
2	pyroxasulfone	85	WDG	0.198	lb ai/a	PRT	5.0	2.7	2.0	1.7	7.7
3	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	6.3	9.0	6.3	1.7	7.0
4	pyroxasulfone	85	WDG	0.198	lb ai/a	POT	4.0	9.7	3.7	2.0	9.3
5	pyroxasulfone	85	WDG	0.267	lb ai/a	POT	9.7	10.0	4.0	2.7	10.0
6	pyroxasulfone	85	WDG	0.267	lb ai/a	POT	9.0	7.3	6.3	2.3	10.0
	NIS	100	SL	0.25	% v/v	POT					
7	pyroxasulfone	85	WDG	0.198	lb ai/a	PO1	7.7	2.7	2.0	2.0	5.0
8	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1	6.0	3.3	1.7	1.7	3.3
9	linuron	50	DF	1	lb ai/a	POT	10.0	9.7	2.7	1.7	10.0
	flumioxazin	51	WDG	0.064	lb ai/a	POT					
10	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	7.0	2.3	1.3	1.7	6.0
	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT					
11	Untreated					PRT	9.3	7.3	7.0	1.0	3.7
	prometryn	4	L	2	lb ai/a	PO1					
12	pendimethalin	3.8	CS	1.9	lb ai/a	POT	10.0	9.7	9.0	1.0	9.3
	flumioxazin	51	WDG	0.32	lb ai/a	POT					
LSD P=.05							5.53	3.98	5.87	1.23	4.02
Standard Deviation							3.27	2.35	3.47	0.73	2.38
CV							42.02	34.93	79.02	42.18	31.46

Weed Control in Celery – Schreur - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	MAYC	PESW	RRPW	VIPW	WHCA
	Pest Code						MAYC	PESW	RRPW	VIPW	WHCA
	Crop Code										
	Rating Date						25/Jun/15	25/Jun/15	25/Jun/15	25/Jun/15	25/Jun/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	prometryn	4	L	2	lb ai/a	POT, PO1	8.3	9.0	9.3	7.3	7.7
2	pyroxasulfone	85	WDG	0.198	lb ai/a	PRT	7.0	5.7	8.3	4.0	6.0
3	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	10.0	9.7	10.0	10.0	7.7
4	pyroxasulfone	85	WDG	0.198	lb ai/a	POT	10.0	7.7	10.0	10.0	7.7
5	pyroxasulfone	85	WDG	0.267	lb ai/a	POT	9.3	10.0	10.0	10.0	7.7
6	pyroxasulfone	85	WDG	0.267	lb ai/a	POT	9.3	8.7	10.0	8.7	10.0
	NIS	100	SL	0.25	% v/v	POT					
7	pyroxasulfone	85	WDG	0.198	lb ai/a	PO1	5.7	7.7	10.0	3.3	3.7
8	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1	4.3	2.3	10.0	2.3	2.3
9	linuron	50	DF	1	lb ai/a	POT	10.0	10.0	10.0	8.7	10.0
	flumioxazin	51	WDG	0.064	lb ai/a	POT					
10	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	10.0	8.7	10.0	7.0	6.0
	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT					
11	Untreated					PRT	9.3	10.0	10.0	7.7	6.7
	prometryn	4	L	2	lb ai/a	PO1					
12	pendimethalin	3.8	CS	1.9	lb ai/a	POT	10.0	10.0	10.0	10.0	8.7
	flumioxazin	51	WDG	0.32	lb ai/a	POT					
LSD P=.05							2.56	3.92	1.54	3.34	5.10
Standard Deviation							1.51	2.31	0.91	1.98	3.01
CV							17.58	27.93	9.3	26.63	43.06

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CELERY	CELERY	CELERY	CELERY
	Pest Code									
	Crop Code						CELERY	CELERY	CELERY	CELERY
	Rating Date						2/Jul/15	15/Jul/15	24/Jul/15	24/Jul/15
	Rating Type						RATING	RATING	HARVEST	HARVEST
	Rating Unit						1-10	1-10	#/10 FT	KG/10 FT
1	prometryn	4	L	2	lb ai/a	POT, PO1	1.7	1.7	38.0	53.61
2	pyroxasulfone	85	WDG	0.198	lb ai/a	PRT	1.7	2.3	36.3	43.40
3	pyroxasulfone	85	WDG	0.267	lb ai/a	PRT	1.0	1.0	36.0	51.90
4	pyroxasulfone	85	WDG	0.198	lb ai/a	POT	1.7	1.7	36.7	45.55
5	pyroxasulfone	85	WDG	0.267	lb ai/a	POT	2.3	1.7	33.7	47.63
6	pyroxasulfone	85	WDG	0.267	lb ai/a	POT	2.0	1.7	35.0	48.84
	NIS	100	SL	0.25	% v/v	POT				
7	pyroxasulfone	85	WDG	0.198	lb ai/a	PO1	1.7	2.0	36.7	45.31
8	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1	2.0	1.3	38.0	50.09
9	linuron	50	DF	1	lb ai/a	POT	1.6	2.0	37.0	46.80
	flumioxazin	51	WDG	0.064	lb ai/a	POT				
10	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	1.0	1.3	37.0	47.43
	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT				
11	Untreated					PRT	1.0	2.0	37.0	46.67
	prometryn	4	L	2	lb ai/a	PO1				
12	pendimethalin	3.8	CS	1.9	lb ai/a	POT	1.3	1.0	38.7	53.83
	flumioxazin	51	WDG	0.32	lb ai/a	POT				
LSD P=.05							1.34	1.06	3.27	10.212
Standard Deviation							0.79	0.63	1.93	6.031
CV							50.11	38.17	5.27	12.45

Weed Control in Sweet Corn – HTRC - 2015

Project Code: 106-15-1 **Location: East Lansing, MI**
Block 123-124

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Sweet Corn **Variety: Obsession II, Protector**
Planting Method: Seeded **Planting Date: 6/10/15** **Harvest Date: 8/31/15**
Spacing: 10 inch **Row Spacing: 28 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.3 ft wide x 30 ft long

Soil Type: Colwood-Brookston loam **OM: 2.2%** **pH: 6.4**
Sand: 54% **Silt: 28.2%** **Clay: 17.8%** **CEC: 5.9**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/16/15	6:45 pm	76/78	F	Wet	3-6 N	42	5% Cloudy	N
PO1	7/6/15	2:00 pm	83/87	F	Dry	5-7 SW	49	100% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/16	SWEET CORN	0.25-0.5″		
6/16	LACG = large crabgrass	0.5-1″	Veg	Many
6/16	RRPW = redroot pigweed	1-2″	Veg	Few
6/16	YERO = yellow rocket	0.5-3″	Veg	Many
7/6	BYGR = barnyardgrass			
7/6	COLQ = common lambsquarters			
7/6	COPU = common purslane			
7/6	CORW = common ragweed			
7/6	LACG = large crabgrass			
7/6	WIRA = wild radish			

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Protector: yellow, 79 days LibertyLink; Obsession II: bicolor, 79 days Roundup Ready. One row of each hybrid/plot.
4. Please refer to the Chemical List for component rates, pages 9-12.
Anthem = pyroxasulfone + fluthiacet-methyl
Anthem ATZ = atrazine + pyroxasulfone + fluthiacet-methyl
Lumax = *S*-metolachlor + mesotrione + atrazine
Acuron = bicyclopyrone + *S*-metolachlor + mesotrione + atrazine + benoxacor
Revulin Q = nicosulfuron + mesotrione + isoxadifen-ethyl

Weed Control in Sweet Corn – HTRC - 2015

Weed Control in Sweet Corn – HTRC - 2015

Trial ID: 106-15-1 Location: East Lansing, MI
Protocol ID: 106-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	OBSSN II 6/Jul/15 RATING 1-10	PROTCTR 6/Jul/15 RATING 1-10	BYGR 6/Jul/15 RATING 1-10	LACG 6/Jul/15 RATING 1-10	COLQ 6/Jul/15 RATING 1-10	COPU 6/Jul/15 RATING 1-10
	Pest Code											
	Crop Code											
	Rating Date						6/Jul/15	6/Jul/15	6/Jul/15	6/Jul/15	6/Jul/15	6/Jul/15
	Rating Type						RATING	RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10	1-10
1	pyroxasulfone	85	WDG	0.21	lb ai/a	PRE	2.7	2.0	10.0	10.0	9.3	10.0
2	Anthem	2.15	SE	0.134	lb ai/a	PRE	1.7	1.3	10.0	10.0	10.0	10.0
3	Anthem ATZ	4.5	SE	1.4	lb ai/a	PRE	3.0	2.7	10.0	10.0	10.0	10.0
4	Acuron	3.547	CS	2.58	lb ai/a	PRE	2.0	2.0	10.0	10.0	10.0	10.0
5	Lumax	3.948	L	1.23	lb ai/a	PRE	1.3	1.0	10.0	10.0	10.0	10.0
6	acetochlor	6.4	EC	1	lb ai/a	PRE	2.7	2.0	10.0	10.0	10.0	10.0
7	Revulin Q	51.2	WDG	3.4	oz/a	PO1	1.7	1.7	1.0	1.0	1.0	1.0
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1						
	mesotrione	50	WDG	0.078	lb ai/a	PO1						
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1						
	COC	100	SL	1	% v/v	PO1						
	N Pak (AMS)	100	L	3	% v/v	PO1						
8	Revulin Q	51.2	WDG	3.4	oz/a	PO1	1.3	1.0	1.0	1.0	3.0	1.0
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1						
	mesotrione	50	WDG	0.078	lb ai/a	PO1						
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1						
	atrazine	4	L	0.5	lb ai/a	PO1						
	COC	100	SL	1	% v/v	PO1						
	N Pak (AMS)	100	L	3	% v/v	PO1						
9	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	1.3	1.3	7.0	7.0	5.7	7.0
	Revulin Q	51.2	WDG	3.4	oz/a	PO1						
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1						
	mesotrione	50	WDG	0.078	lb ai/a	PO1						
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1						
	COC	100	SL	1	% v/v	PO1						
	N Pak (AMS)	100	L	3	% v/v	PO1						
10	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	1.3	1.3	10.0	10.0	4.3	10.0
	Revulin Q	51.2	WDG	3.4	oz/a	PO1						
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1						
	mesotrione	50	WDG	0.078	lb ai/a	PO1						
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1						
	atrazine	4	L	0.5	lb ai/a	PO1						
	COC	100	SL	1	% v/v	PO1						
	N Pak (AMS)	100	L	3	% v/v	PO1						
11	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	2.3	1.3	10.0	10.0	4.7	10.0
	Revulin Q	51.2	WDG	3.4	oz/a	PO1						
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1						
	mesotrione	50	WDG	0.078	lb ai/a	PO1						
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1						
	atrazine	4	L	0.5	lb ai/a	PO1						
	topramezone	2.8	SC	0.016	lb ai/a	PO1						
	COC	100	SL	1	% v/v	PO1						
	N Pak (AMS)	100	L	3	% v/v	PO1						

Weed Control in Sweet Corn – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	OBSSN II 6/Jul/15 RATING 1-10	PROTCTR 6/Jul/15 RATING 1-10	BYGR 6/Jul/15 RATING 1-10	LACG 6/Jul/15 RATING 1-10	COLQ 6/Jul/15 RATING 1-10	COPU 6/Jul/15 RATING 1-10
	Pest Code											
	Crop Code											
	Rating Date											
	Rating Type											
	Rating Unit											
12	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	2.0	1.3	10.0	10.0	4.3	10.0
	Revulin Q	51.2	WDG	3.4	oz/a	PO1						
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1						
	mesotrione	50	WDG	0.078	lb ai/a	PO1						
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1						
	topramezone	2.8	SC	0.016	lb ai/a	PO1						
	COC	100	SL	1	% v/v	PO1						
	N Pak (AMS)	100	L	3	% v/v	PO1						
13	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	1.7	1.0	9.3	10.0	4.0	10.0
	tembotrione	3.5	SC	0.082	lb ai/a	PO1						
	N Pak (AMS)	100	L	3	% v/v	PO1						
	MSO	100	SL	1	% v/v	PO1						
14	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.3	1.3	9.7	9.3	10.0	10.0
15	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRE	2.0	1.7	10.0	10.0	5.0	10.0
	mesotrione	4	SC	0.09	lb ai/a	PO1						
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1						
16	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRE	2.7	1.7	10.0	10.0	2.3	10.0
	glufosinate	2.34	L	0.37	lb ai/a	PO1						
17	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRE	3.0	2.0	10.0	10.0	6.3	10.0
	glyphosate	5.5	L	0.95	lb ai/a	PO1						
18	dimethenamid-P	6	EC	0.75	lb ai/a	PRE	3.7	3.7	10.0	10.0	10.0	10.0
	saflufenacil	2.85	SC	0.045	lb ai/a	PRE						
19	tolpyralate	3.34	L	0.027	lb ai/a	PO1	1.7	1.7	1.0	1.0	1.0	1.0
	MSO	100	SL	0.5	% v/v	PO1						
	UAN	28	L	2.5	% v/v	PO1						
20	tolpyralate	3.34	L	0.036	lb ai/a	PO1	1.0	1.0	1.0	1.0	1.0	1.0
	MSO	100	SL	0.5	% v/v	PO1						
	UAN	28	L	2.5	% v/v	PO1						
21	tolpyralate	3.34	L	0.036	lb ai/a	PO1	1.3	1.3	1.0	1.0	1.7	1.0
	atrazine	4	L	1	lb ai/a	PO1						
	MSO	100	SL	0.5	% v/v	PO1						
	UAN	28	L	2.5	% v/v	PO1						
22	mesotrione	4	SC	0.094	lb ai/a	PO1	2.3	2.0	1.0	2.3	4.0	1.3
	atrazine	4	L	0.88	lb ai/a	PO1						
	COC	100	SL	1	% v/v	PO1						
	UAN	28	L	2.5	% v/v	PO1						
23	topramezone	2.8	SC	0.022	lb ai/a	PO1	2.3	2.0	2.3	2.7	3.3	3.0
	atrazine	4	L	0.88	lb ai/a	PO1						
	MSO	100	SL	0.5	% v/v	PO1						
	UAN	28	L	2.5	% v/v	PO1						
24	Untreated						1.3	1.3	1.3	3.0	3.7	3.0
LSD P=.05							1.81	1.52	2.00	2.52	4.45	2.46
Standard Deviation							1.10	0.92	1.21	1.53	2.70	1.49
CV							55.21	55.63	17.52	21.67	48.07	21.13

Weed Control in Sweet Corn – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CORW 6/Jul/15 RATING 1-10	WIRA 6/Jul/15 RATING 1-10	OBSSN II 16/Jul/15 RATING 1-10	PROTCTR 16/Jul/15 RATING 1-10	BYGR 16/Jul/15 RATING 1-10
	Pest Code										
	Crop Code										
	Rating Date										
	Rating Type										
	Rating Unit										
1	pyroxasulfone	85	WDG	0.21	lb ai/a	PRE	10.0	5.0	1.3	1.0	10.0
2	Anthem	2.15	SE	0.134	lb ai/a	PRE	10.0	4.7	1.3	1.3	8.3
3	Anthem ATZ	4.5	SE	1.4	lb ai/a	PRE	10.0	10.0	1.7	1.3	10.0
4	Acuron	3.547	CS	2.58	lb ai/a	PRE	10.0	10.0	1.7	1.3	10.0
5	Lumax	3.948	L	1.23	lb ai/a	PRE	10.0	9.0	1.3	1.0	10.0
6	acetochlor	6.4	EC	1	lb ai/a	PRE	10.0	4.0	2.0	1.3	10.0
7	Revulin Q	51.2	WDG	3.4	oz/a	PO1	7.0	1.0	2.0	1.7	9.0
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
8	Revulin Q	51.2	WDG	3.4	oz/a	PO1	4.0	2.3	2.0	1.7	9.0
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	atrazine	4	L	0.5	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
9	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	7.0	2.0	2.0	1.7	10.0
	Revulin Q	51.2	WDG	3.4	oz/a	PO1					
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
10	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	9.0	1.0	1.7	1.0	10.0
	Revulin Q	51.2	WDG	3.4	oz/a	PO1					
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	atrazine	4	L	0.5	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
11	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	10.0	1.0	3.0	1.3	10.0
	Revulin Q	51.2	WDG	3.4	oz/a	PO1					
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	atrazine	4	L	0.5	lb ai/a	PO1					
	topramezone	2.8	SC	0.016	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					

Weed Control in Sweet Corn – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CORW	WIRA	OBSSN II	PROTCTR	BYGR
Pest Code											
Crop Code											
Rating Date							6/Jul/15	6/Jul/15	16/Jul/15	16/Jul/15	16/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
12	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	10.0	1.7	2.3	1.3	10.0
	Revulin Q	51.2	WDG	3.4	oz/a	PO1					
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	topramezone	2.8	SC	0.016	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
13	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	7.7	1.0	2.0	1.0	10.0
	tembotrione	3.5	SC	0.082	lb ai/a	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
	MSO	100	SL	1	% v/v	PO1					
14	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	7.0	7.3	1.0	1.0	8.3
15	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRE	9.3	1.0	1.7	1.3	10.0
	mesotrione	4	SC	0.09	lb ai/a	PO1					
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
16	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRE	7.0	1.0	7.3	1.0	10.0
	glufosinate	2.34	L	0.37	lb ai/a	PO1					
17	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRE	7.0	1.3	2.7	2.0	10.0
	glyphosate	5.5	L	0.95	lb ai/a	PO1					
18	dimethenamid-P	6	EC	0.75	lb ai/a	PRE	10.0	10.0	3.3	3.7	9.7
	saflufenacil	2.85	SC	0.045	lb ai/a	PRE					
19	tolpyralate	3.34	L	0.027	lb ai/a	PO1	7.7	1.0	1.7	1.7	8.7
	MSO	100	SL	0.5	% v/v	PO1					
	UAN	28	L	2.5	% v/v	PO1					
20	tolpyralate	3.34	L	0.036	lb ai/a	PO1	7.0	1.7	1.0	1.0	8.7
	MSO	100	SL	0.5	% v/v	PO1					
	UAN	28	L	2.5	% v/v	PO1					
21	tolpyralate	3.34	L	0.036	lb ai/a	PO1	4.0	2.0	1.3	1.3	10.0
	atrazine	4	L	1	lb ai/a	PO1					
	MSO	100	SL	0.5	% v/v	PO1					
	UAN	28	L	2.5	% v/v	PO1					
22	mesotrione	4	SC	0.094	lb ai/a	PO1	10.0	3.3	2.0	2.3	9.7
	atrazine	4	L	0.88	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	UAN	28	L	2.5	% v/v	PO1					
23	topramezone	2.8	SC	0.022	lb ai/a	PO1	10.0	3.3	2.0	1.7	10.0
	atrazine	4	L	0.88	lb ai/a	PO1					
	MSO	100	SL	0.5	% v/v	PO1					
	UAN	28	L	2.5	% v/v	PO1					
24	Untreated						7.7	1.3	1.0	1.0	1.0
LSD P=.05							5.09	2.54	1.39	1.11	1.00
Standard Deviation							3.08	1.54	0.84	0.67	0.61
CV							36.77	42.94	41.08	46.24	6.54

Weed Control in Sweet Corn – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LACG	COLQ	CORW	WIRA	OBSSN II
Pest Code											
Crop Code											
Rating Date							16/Jul/15	16/Jul/15	16/Jul/15	16/Jul/15	16/Jul/15
Rating Type							RATING	RATING	RATING	RATING	STAND
Rating Unit							1-10	1-10	1-10	1-10	#/PLOT
1	pyroxasulfone	85	WDG	0.21	lb ai/a	PRE	10.0	10.0	10.0	3.0	30.3
2	Anthem	2.15	SE	0.134	lb ai/a	PRE	9.3	10.0	10.0	3.7	26.0
3	Anthem ATZ	4.5	SE	1.4	lb ai/a	PRE	10.0	10.0	10.0	10.0	23.3
4	Acuron	3.547	CS	2.58	lb ai/a	PRE	10.0	10.0	10.0	10.0	26.0
5	Lumax	3.948	L	1.23	lb ai/a	PRE	10.0	10.0	9.0	8.7	26.0
6	acetochlor	6.4	EC	1	lb ai/a	PRE	10.0	10.0	9.0	3.3	25.7
7	Revulin Q	51.2	WDG	3.4	oz/a	PO1	7.7	9.7	10.0	9.0	29.0
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
8	Revulin Q	51.2	WDG	3.4	oz/a	PO1	10.0	10.0	10.0	10.0	27.7
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	atrazine	4	L	0.5	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
9	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	10.0	10.0	10.0	9.3	24.3
	Revulin Q	51.2	WDG	3.4	oz/a	PO1					
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
10	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	10.0	10.0	10.0	10.0	26.7
	Revulin Q	51.2	WDG	3.4	oz/a	PO1					
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	atrazine	4	L	0.5	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
11	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	10.0	10.0	10.0	10.0	21.3
	Revulin Q	51.2	WDG	3.4	oz/a	PO1					
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	atrazine	4	L	0.5	lb ai/a	PO1					
	topramezone	2.8	SC	0.016	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					

Weed Control in Sweet Corn – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LACG	COLQ	CORW	WIRA	OBSSN II
Pest Code											
Crop Code											
Rating Date							16/Jul/15	16/Jul/15	16/Jul/15	16/Jul/15	16/Jul/15
Rating Type							RATING	RATING	RATING	RATING	STAND
Rating Unit							1-10	1-10	1-10	1-10	#/PLOT
12	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	10.0	10.0	10.0	9.3	24.0
	Revulin Q	51.2	WDG	3.4	oz/a	PO1					
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	topramezone	2.8	SC	0.016	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
13	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	10.0	10.0	10.0	8.3	23.7
	tembotrione	3.5	SC	0.082	lb ai/a	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
	MSO	100	SL	1	% v/v	PO1					
14	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	9.0	10.0	5.7	6.0	25.0
15	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRE	10.0	9.7	10.0	6.3	25.3
	mesotrione	4	SC	0.09	lb ai/a	PO1					
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
16	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRE	10.0	9.3	10.0	6.3	14.7
	glufosinate	2.34	L	0.37	lb ai/a	PO1					
17	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRE	10.0	10.0	10.0	10.0	25.0
	glyphosate	5.5	L	0.95	lb ai/a	PO1					
18	dimethenamid-P	6	EC	0.75	lb ai/a	PRE	10.0	10.0	10.0	10.0	26.3
	saflufenacil	2.85	SC	0.045	lb ai/a	PRE					
19	tolpyralate	3.34	L	0.027	lb ai/a	PO1	9.3	9.3	10.0	6.7	28.0
	MSO	100	SL	0.5	% v/v	PO1					
	UAN	28	L	2.5	% v/v	PO1					
20	tolpyralate	3.34	L	0.036	lb ai/a	PO1	9.3	10.0	10.0	7.0	26.0
	MSO	100	SL	0.5	% v/v	PO1					
	UAN	28	L	2.5	% v/v	PO1					
21	tolpyralate	3.34	L	0.036	lb ai/a	PO1	10.0	10.0	10.0	9.3	24.3
	atrazine	4	L	1	lb ai/a	PO1					
	MSO	100	SL	0.5	% v/v	PO1					
	UAN	28	L	2.5	% v/v	PO1					
22	mesotrione	4	SC	0.094	lb ai/a	PO1	10.0	10.0	10.0	10.0	24.3
	atrazine	4	L	0.88	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	UAN	28	L	2.5	% v/v	PO1					
23	topramezone	2.8	SC	0.022	lb ai/a	PO1	10.0	10.0	10.0	10.0	22.3
	atrazine	4	L	0.88	lb ai/a	PO1					
	MSO	100	SL	0.5	% v/v	PO1					
	UAN	28	L	2.5	% v/v	PO1					
24	Untreated						1.0	1.0	1.0	1.0	21.7
LSD P=.05							0.85	0.62	1.42	2.31	6.53
Standard Deviation							0.51	0.38	0.86	1.40	3.96
CV							5.46	3.96	9.18	17.9	15.91

Weed Control in Sweet Corn – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PROTCTR 16/Jul/15 STAND #/PLOT	OBSSN II 31/Aug/15 HARVEST #/PLOT	OBSSN II 31/Aug/15 HARVEST KG/PLOT	PROTCTR 31/Aug/15 HARVEST #/PLOT	PROTCTR 31/Aug/15 HARVEST KG/PLOT
	Pest Code										
	Crop Code										
	Rating Date										
	Rating Type										
	Rating Unit										
1	pyroxasulfone	85	WDG	0.21	lb ai/a	PRE	28.0	36.0	11.30	25.7	8.04
2	Anthem	2.15	SE	0.134	lb ai/a	PRE	29.7	33.7	11.07	37.7	11.13
3	Anthem ATZ	4.5	SE	1.4	lb ai/a	PRE	23.7	30.0	10.36	29.0	9.39
4	Acuron	3.547	CS	2.58	lb ai/a	PRE	25.7	39.3	13.43	28.7	9.44
5	Lumax	3.948	L	1.23	lb ai/a	PRE	25.0	39.0	14.02	41.3	13.49
6	acetochlor	6.4	EC	1	lb ai/a	PRE	26.0	21.3	7.29	32.7	10.66
7	Revulin Q	51.2	WDG	3.4	oz/a	PO1	26.3	29.7	10.27	28.7	7.97
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
8	Revulin Q	51.2	WDG	3.4	oz/a	PO1	25.7	34.3	11.84	42.3	13.02
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	atrazine	4	L	0.5	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
9	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	22.0	33.7	11.73	28.3	9.85
	Revulin Q	51.2	WDG	3.4	oz/a	PO1					
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
10	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	30.7	34.0	12.87	32.3	10.07
	Revulin Q	51.2	WDG	3.4	oz/a	PO1					
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	atrazine	4	L	0.5	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
11	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	28.7	25.3	8.65	34.0	11.38
	Revulin Q	51.2	WDG	3.4	oz/a	PO1					
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	atrazine	4	L	0.5	lb ai/a	PO1					
	topramezone	2.8	SC	0.016	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					

Weed Control in Sweet Corn – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PROTCTR 16/Jul/15 STAND #/PLOT	OBSSN II 31/Aug/15 HARVEST #/PLOT	OBSSN II 31/Aug/15 HARVEST KG/PLOT	PROTCTR 31/Aug/15 HARVEST #/PLOT	PROTCTR 31/Aug/15 HARVEST KG/PLOT
	Pest Code										
	Crop Code										
	Rating Date										
	Rating Type										
	Rating Unit										
12	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	30.7	27.0	9.20	43.3	13.29
	Revulin Q	51.2	WDG	3.4	oz/a	PO1					
	nicosulfuron	75	WDG	0.0306	lb ai/a	PO1					
	mesotrione	50	WDG	0.078	lb ai/a	PO1					
	isoxadifen-ethyl	50	WDG	0.0078	lb ai/a	PO1					
	topramezone	2.8	SC	0.016	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
13	*S*-metolachlor	7.64	EC	0.95	lb ai/a	PRE	31.0	33.7	12.08	41.7	12.67
	tembotrione	3.5	SC	0.082	lb ai/a	PO1					
	N Pak (AMS)	100	L	3	% v/v	PO1					
	MSO	100	SL	1	% v/v	PO1					
14	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	27.3	36.0	12.80	38.3	12.18
15	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRE	27.7	27.0	8.92	29.7	10.07
	mesotrione	4	SC	0.09	lb ai/a	PO1					
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
16	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRE	29.7	1.3	0.36	37.7	12.35
	glufosinate	2.34	L	0.37	lb ai/a	PO1					
17	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRE	26.3	32.0	11.50	32.3	9.95
	glyphosate	5.5	L	0.95	lb ai/a	PO1					
18	dimethenamid-P	6	EC	0.75	lb ai/a	PRE	25.3	28.3	10.04	17.7	5.57
	saflufenacil	2.85	SC	0.045	lb ai/a	PRE					
19	tolpyralate	3.34	L	0.027	lb ai/a	PO1	25.3	42.0	15.09	33.7	10.86
	MSO	100	SL	0.5	% v/v	PO1					
	UAN	28	L	2.5	% v/v	PO1					
20	tolpyralate	3.34	L	0.036	lb ai/a	PO1	27.0	34.7	12.19	31.7	9.63
	MSO	100	SL	0.5	% v/v	PO1					
	UAN	28	L	2.5	% v/v	PO1					
21	tolpyralate	3.34	L	0.036	lb ai/a	PO1	20.7	37.7	14.15	34.3	11.07
	atrazine	4	L	1	lb ai/a	PO1					
	MSO	100	SL	0.5	% v/v	PO1					
	UAN	28	L	2.5	% v/v	PO1					
22	mesotrione	4	SC	0.094	lb ai/a	PO1	22.3	35.0	12.32	20.7	6.63
	atrazine	4	L	0.88	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
	UAN	28	L	2.5	% v/v	PO1					
23	topramezone	2.8	SC	0.022	lb ai/a	PO1	23.3	34.3	12.48	34.7	11.01
	atrazine	4	L	0.88	lb ai/a	PO1					
	MSO	100	SL	0.5	% v/v	PO1					
	UAN	28	L	2.5	% v/v	PO1					
24	Untreated						21.7	25.0	7.89	25.0	7.06
LSD P=.05							7.64	11.73	4.529	19.30	6.310
Standard Deviation							4.63	7.11	2.745	11.70	3.824
CV							17.66	22.73	25.16	35.93	37.19

Weed Control in Pickling Cucumber – HTRC - 2015

Project Code: 108-15-1 **Location: East Lansing, MI**
Block 129-130

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Cucumber **Variety: Expedition**
Planting Method: Seeded **Planting Date: 5/29/15** **Harvest Date: 7/28/15**
Spacing: 3 in **Row Spacing: 14 in; 3 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 16 ft wide x 50 ft long

Soil Type: Colwood-Brookston loam **OM: 2.2%** **pH: 7.1**
Sand: 50% **Silt: 27%** **Clay: 23%** **CEC: 8.9**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/4/15	1:30 pm	80/79	F	Moist	1-2 W	45	80% Cloudy	N
PO1	6/22/15	9:30 am	80/70	F	Dry	2-4 WSW	71	55% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/4	CUCUMBER		Preemergence	
6/4	No Weeds			
6/22	CUCUMBER	2-4″		
6/22	BYGR = barnyardgrass	3-5″	4-6 LS	Moderate
6/22	COLQ = common lambsquarters	1-4″	3-5 LS	Few
6/22	COPU = common purslane	2-3″		Few
6/22	EBNS = eastern black nightshade	3-4″	3-6 LS	Moderate
6/22	RRPW = redroot pigweed	1-4″	2-6 LS	Moderate
6/22	WIRA = wild radish	4-6″	3-7 LS	Moderate
6/22	YENS = yellow nutsedge	3-5″	Veg	Few

Notes and Comments
1. Spray applied with 16 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 tractor sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvested all plants in each plot.
4. The experiment had flooding damage on 22-23 June 2015.

Weed Control in Pickling Cucumber – HTRC - 2015

Weed Control in Pickling Cucumber – HTRC - 2015

Trial ID: 108-15-1 Location: East Lansing, MI
Protocol ID: 108-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CUKE 20/Jun/15 RATING 1-10	CUKE 5/Jul/15 RATING 1-10	YEFT 5/Jul/15 RATING 1-10	COLQ 5/Jul/15 RATING 1-10	COPU 5/Jul/15 RATING 1-10
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	1.3	2.7	9.3	9.0	9.7
2	ethalfluralin	3	EC	0.75	lb ai/a	PRE	2.0	3.7	10.0	10.0	10.0
	clomazone	3	ME	0.375	lb ai/a	PRE					
3	Strategy	2.1	SE	6	pt/a	PRE	2.0	3.3	10.0	10.0	10.0
	ethalfluralin	1.6	SE	1.2	lb ai/a						
	clomazone	0.5	SE	0.375	lb ai/a						
4	fomesafen	2	SL	0.25	lb ai/a	PRE	6.0	7.7	10.0	9.3	10.0
5	ethalfluralin	3	EC	0.75	lb ai/a	PRE	4.7	5.0	10.0	10.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
	fomesafen	2	SL	0.125	lb ai/a	PRE					
6	ethalfluralin	3	EC	0.75	lb ai/a	PRE	2.7	3.0	10.0	10.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
	halosulfuron	75	WG	0.023	lb ai/a	PRE					
7	ethalfluralin	3	EC	0.75	lb ai/a	PRE	1.3	3.0	10.0	10.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
8	*S*-metolachlor	7.62	EC	0.5	lb ai/a	PRE	2.7	4.3	10.0	9.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
9	*S*-metolachlor	7.62	EC	0.4	lb ai/a	PRE	2.7	4.7	10.0	9.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	1.7	2.7	6.0	4.0	7.0
11	ethalfluralin	3	EC	0.75	lb ai/a	PRE	5.0	6.0	10.0	10.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
	fomesafen	2	SL	0.125	lb ai/a	PRE					
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
12	Untreated						1.3	1.7	1.3	1.0	1.0
LSD P=.05							1.54	2.36	1.38	2.29	2.57
Standard Deviation							0.91	1.39	0.81	1.35	1.52
CV							32.81	35.04	9.17	16.02	16.9

Weed Control in Pickling Cucumber – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	EBNS	RRPW	WIRA	CUKE	BYGR
Pest Code											
Crop Code										CUKE	
Rating Date							5/Jul/15	5/Jul/15	5/Jul/15	16/Jul/15	16/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	9.7	10.0	9.0	2.0	9.7
2	ethalfluralin	3	EC	0.75	lb ai/a	PRE	10.0	10.0	9.3	3.0	10.0
	clomazone	3	ME	0.375	lb ai/a	PRE					
3	Strategy	2.1	SE	6	pt/a	PRE	9.7	10.0	9.7	2.3	10.0
	ethalfluralin	1.6	SE	1.2	lb ai/a						
	clomazone	0.5	SE	0.375	lb ai/a						
4	fomesafen	2	SL	0.25	lb ai/a	PRE	10.0	10.0	10.0	7.0	10.0
5	ethalfluralin	3	EC	0.75	lb ai/a	PRE	10.0	10.0	10.0	4.3	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
	fomesafen	2	SL	0.125	lb ai/a	PRE					
6	ethalfluralin	3	EC	0.75	lb ai/a	PRE	10.0	10.0	10.0	2.7	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
	halosulfuron	75	WG	0.023	lb ai/a	PRE					
7	ethalfluralin	3	EC	0.75	lb ai/a	PRE	9.7	10.0	10.0	2.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
8	*S*-metolachlor	7.62	EC	0.5	lb ai/a	PRE	10.0	10.0	9.3	4.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
9	*S*-metolachlor	7.62	EC	0.4	lb ai/a	PRE	10.0	9.7	10.0	4.3	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	4.3	6.3	10.0	2.3	6.7
11	ethalfluralin	3	EC	0.75	lb ai/a	PRE	10.0	10.0	10.0	5.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
	fomesafen	2	SL	0.125	lb ai/a	PRE					
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
12	Untreated						1.0	1.0	6.3	1.7	1.7
LSD P=.05							2.46	1.54	2.48	1.86	2.44
Standard Deviation							1.46	0.91	1.47	1.10	1.44
CV							16.74	10.19	15.48	32.45	16.04

Weed Control in Pickling Cucumber – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COLQ	CORW	EBNS	RRPW	WIRA
Pest Code											
Crop Code											
Rating Date							16/Jul/15	16/Jul/15	16/Jul/15	16/Jul/15	16/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	8.7	9.0	4.3	8.3	9.0
2	ethalfluralin	3	EC	0.75	lb ai/a	PRE	9.0	10.0	4.7	9.3	9.0
	clomazone	3	ME	0.375	lb ai/a	PRE					
3	Strategy	2.1	SE	6	pt/a	PRE	10.0	10.0	10.0	10.0	9.3
	ethalfluralin	1.6	SE	1.2	lb ai/a						
	clomazone	0.5	SE	0.375	lb ai/a						
4	fomesafen	2	SL	0.25	lb ai/a	PRE	6.7	10.0	10.0	10.0	10.0
5	ethalfluralin	3	EC	0.75	lb ai/a	PRE	9.0	10.0	10.0	10.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
	fomesafen	2	SL	0.125	lb ai/a	PRE					
6	ethalfluralin	3	EC	0.75	lb ai/a	PRE	10.0	10.0	6.7	10.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
	halosulfuron	75	WG	0.023	lb ai/a	PRE					
7	ethalfluralin	3	EC	0.75	lb ai/a	PRE	10.0	10.0	4.0	10.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
8	*S*-metolachlor	7.62	EC	0.5	lb ai/a	PRE	6.3	10.0	9.0	9.3	9.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
9	*S*-metolachlor	7.62	EC	0.4	lb ai/a	PRE	7.0	8.3	8.7	9.0	9.7
	clomazone	3	ME	0.25	lb ai/a	PRE					
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	3.3	9.3	3.7	3.7	10.0
11	ethalfluralin	3	EC	0.75	lb ai/a	PRE	9.3	10.0	10.0	10.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
	fomesafen	2	SL	0.125	lb ai/a	PRE					
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
12	Untreated						1.0	10.0	1.0	1.0	9.3
LSD P=.05							3.80	1.24	3.96	2.31	1.50
Standard Deviation							2.25	0.73	2.34	1.36	0.89
CV							29.83	7.53	34.2	16.26	9.22

Weed Control in Pickling Cucumber – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CUKE 28/Jul/15 HARVEST FRUIT KG/PLOT	CUKE 28/Jul/15 HARVEST PLANT KG/PLOT	CUKE 28/Jul/15 GRADE1 KG/PLOT	CUKE 28/Jul/15 GRADE2 KG/PLOT	CUKE 28/Jul/15 GRADE3 KG/PLOT	CUKE 28/Jul/15 GRADE4 KG/PLOT
Pest Code												
Crop Code												
Rating Date												
Rating Type												
Rating Unit												
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	59.69	34.89	0.53	3.75	33.81	19.64
2	ethalfluralin	3	EC	0.75	lb ai/a	PRE	51.81	29.13	0.59	3.86	31.12	14.72
	clomazone	3	ME	0.375	lb ai/a	PRE						
3	Strategy	2.1	SE	6	pt/a	PRE	63.51	32.02	0.79	3.89	30.69	26.06
	ethalfluralin	1.6	SE	1.2	lb ai/a							
	clomazone	0.5	SE	0.375	lb ai/a							
4	fomesafen	2	SL	0.25	lb ai/a	PRE	18.27	6.66	0.51	2.45	8.99	5.61
5	ethalfluralin	3	EC	0.75	lb ai/a	PRE	41.89	18.63	0.68	3.78	24.39	11.67
	clomazone	3	ME	0.25	lb ai/a	PRE						
	fomesafen	2	SL	0.125	lb ai/a	PRE						
6	ethalfluralin	3	EC	0.75	lb ai/a	PRE	44.57	25.17	0.67	4.45	29.21	8.79
	clomazone	3	ME	0.25	lb ai/a	PRE						
	halosulfuron	75	WG	0.023	lb ai/a	PRE						
7	ethalfluralin	3	EC	0.75	lb ai/a	PRE	54.53	28.63	0.74	3.91	33.16	14.95
	clomazone	3	ME	0.25	lb ai/a	PRE						
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
8	*S*-metolachlor	7.62	EC	0.5	lb ai/a	PRE	38.66	21.23	0.92	4.58	27.45	4.65
	clomazone	3	ME	0.25	lb ai/a	PRE						
9	*S*-metolachlor	7.62	EC	0.4	lb ai/a	PRE	43.20	22.66	0.87	5.47	28.31	7.43
	clomazone	3	ME	0.25	lb ai/a	PRE						
10	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	46.79	28.10	0.58	3.79	29.52	11.78
11	ethalfluralin	3	EC	0.75	lb ai/a	PRE	33.79	14.53	0.75	3.73	19.19	9.34
	clomazone	3	ME	0.25	lb ai/a	PRE						
	fomesafen	2	SL	0.125	lb ai/a	PRE						
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
12	Untreated						57.58	39.65	0.76	3.55	28.57	23.07
LSD P=.05							30.820	16.876	0.312	1.677	15.255	16.715
Standard Deviation							18.200	9.966	0.184	0.990	9.008	9.870
CV							39.4	39.69	26.35	25.18	33.32	75.1

Weed Control in Edamame – HTRC - 2015

Project Code: 133-15-1 **Location: East Lansing, MI**
Block 55-56

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Edamame **Variety: Beer Friend**
Planting Method: Seeded **Planting Date: 5/21/15** **Harvest Date: 8/18/15**
Spacing: 4 in **Row Spacing: 28 in; 2 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.33 ft wide x 35 ft long

Soil Type: Marlette fine sandy loam **OM: 3%** **pH: 7.5**
Sand: 59% **Silt: 27%** **Clay: 14%** **CEC: 12.8**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	5/22/15	10:45 am	61/55	F	Dry	5-6 N	31	0% Cloudy	N
PO1	6/22/15	11:15 am	89/74	F	Dry	4-5 SW	58	25% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/22	EDAMAME		Preemergence	
5/22	No Weeds			
6/22	EDAMAME	4-6″	Veg	Good
6/22	BYGR = barnyardgrass	6-8″	Veg	Many
6/22	COLQ = common lambsquarters	2-4″	Veg	Many
6/22	CORW = common ragweed	2-4″	Veg	Many
6/22	RRPW = redroot pigweed	1-3″	Veg	Moderate
6/22	YEFT = yellow foxtail	2-4″	Veg	Many
6/22	YENS = yellow nutsedge	6-8″	Veg	Many

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Edamame – HTRC - 2015

Weed Control in Edamame – HTRC - 2015

Trial ID: 133-15-1 Location: East Lansing, MI
Protocol ID: 133-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	EDAMAME	YEFT	COLQ	COPU	CORW
	Pest Code							YEFT	COLQ	COPU	CORW
	Crop Code						EDAMAME				
	Rating Date						19/Jun/15	19/Jun/15	19/Jun/15	19/Jun/15	19/Jun/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	linuron	50	DF	1	lb ai/a	PRE	1.0	10.0	10.0	10.0	9.7
2	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	2.7	10.0	10.0	10.0	10.0
3	fomesafen	2	SL	0.25	lb ai/a	PRE	1.7	9.0	10.0	10.0	10.0
4	ethalfluralin	3	EC	1.13	lb ai/a	PRE	1.0	9.0	8.0	10.0	3.0
5	sulfentrazone	4	F	0.375	lb ai/a	PRE	2.0	10.0	10.0	10.0	9.7
6	clomazone	3	ME	0.5	lb ai/a	PRE	1.3	9.3	9.7	10.0	8.0
7	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	1.3	6.3	8.7	10.0	10.0
8	bicyclopyrone	1.67	SL	0.044	lb ai/a	PRE	2.0	7.3	9.0	10.0	4.0
9	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.0	7.3	9.7	10.0	10.0
	imazamox	1	AS	0.031	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
10	fomesafen	2	SL	0.25	lb ai/a	PRE	1.3	9.7	9.7	10.0	9.7
11	flumioxazin	51	WDG	0.064	lb ai/a	PRE	1.7	10.0	10.0	10.0	10.0
12	Untreated					PRE	1.0	1.0	1.0	1.0	1.0
	fomesafen	2	SL	0.25	lb ai/a	PO1					
LSD P=.05							0.79	3.09	1.01	0.00	1.59
Standard Deviation							0.47	1.82	0.59	0.00	0.94
CV							31.25	22.11	6.75	0.0	11.89

Weed Control in Edamame – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH	RRPW		BYGR	YEFT
Pest Code											
Crop Code									EDAMAME		
Rating Date							19/Jun/15	19/Jun/15	30/Jun/15	30/Jun/15	30/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	linuron	50	DF	1	lb ai/a	PRE	10.0	10.0	1.0	7.3	10.0
2	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	10.0	10.0	2.0	10.0	10.0
3	fomesafen	2	SL	0.25	lb ai/a	PRE	10.0	10.0	1.0	5.7	10.0
4	ethalfluralin	3	EC	1.13	lb ai/a	PRE	9.0	9.0	1.0	6.3	7.3
5	sulfentrazone	4	F	0.375	lb ai/a	PRE	10.0	10.0	1.7	10.0	10.0
6	clomazone	3	ME	0.5	lb ai/a	PRE	10.0	10.0	1.0	7.7	9.8
7	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	6.7	9.7	1.7	3.7	5.0
8	bicyclopyrone	1.67	SL	0.044	lb ai/a	PRE	9.7	10.0	2.0	10.0	10.0
9	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	9.7	9.7	1.3	2.0	8.0
	imazamox	1	AS	0.031	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
10	fomesafen	2	SL	0.25	lb ai/a	PRE	10.0	10.0	1.3	5.3	10.0
11	flumioxazin	51	WDG	0.064	lb ai/a	PRE	10.0	10.0	1.0	6.3	10.0
12	Untreated					PRE	1.0	1.0	2.3	3.3	4.0
	fomesafen	2	SL	0.25	lb ai/a	PO1					
LSD P=.05							1.74	0.58	0.76	3.29	3.50
Standard Deviation							1.03	0.34	0.45	1.94	2.06
CV							11.66	3.78	31.12	29.95	23.71

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	YENS	COLQ	COPU	CORW	EBNS
Pest Code											
Crop Code											
Rating Date							30/Jun/15	30/Jun/15	30/Jun/15	30/Jun/15	30/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	linuron	50	DF	1	lb ai/a	PRE	6.3	10.0	10.0	9.3	10.0
2	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	8.7	10.0	10.0	8.3	10.0
3	fomesafen	2	SL	0.25	lb ai/a	PRE	8.0	10.0	10.0	10.0	9.7
4	ethalfluralin	3	EC	1.13	lb ai/a	PRE	3.7	4.7	8.3	1.0	3.3
5	sulfentrazone	4	F	0.375	lb ai/a	PRE	10.0	10.0	10.0	8.0	10.0
6	clomazone	3	ME	0.5	lb ai/a	PRE	4.3	10.0	10.0	6.7	6.0
7	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	3.0	7.7	6.0	8.7	10.0
8	bicyclopyrone	1.67	SL	0.044	lb ai/a	PRE	10.0	9.0	10.0	6.7	10.0
9	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	7.3	9.3	8.0	10.0	10.0
	imazamox	1	AS	0.031	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
10	fomesafen	2	SL	0.25	lb ai/a	PRE	7.0	10.0	10.0	10.0	10.0
11	flumioxazin	51	WDG	0.064	lb ai/a	PRE	3.7	10.0	10.0	9.7	10.0
12	Untreated					PRE	7.7	3.7	7.0	8.0	9.0
	fomesafen	2	SL	0.25	lb ai/a	PO1					
LSD P=.05							2.47	1.24	1.40	1.08	2.47
Standard Deviation							1.46	0.73	0.82	0.64	1.46
CV							22.0	8.42	9.05	7.94	16.18

Weed Control in Edamame – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH	RRPW	EDAMAME	EDAMAME	EDAMAME
Pest Code											
Crop Code									EDAMAME	EDAMAME	EDAMAME
Rating Date							30/Jun/15	30/Jun/15	16/Jul/15	18/Aug/15	18/Aug/15
Rating Type							RATING	RATING	STAND	HARVEST	HARVEST
										PLANT	POD
Rating Unit							1-10	1-10	#/PLOT	KG/PLOT	KG/PLOT
1	linuron	50	DF	1	lb ai/a	PRE	10.0	10.0	104.3	8.93	9.70
2	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	9.3	10.0	96.7	6.90	9.05
3	fomesafen	2	SL	0.25	lb ai/a	PRE	9.7	7.0	96.3	7.64	9.08
4	ethalfluralin	3	EC	1.13	lb ai/a	PRE	5.0	5.7	98.0	5.39	6.58
5	sulfentrazone	4	F	0.375	lb ai/a	PRE	10.0	10.0	93.3	7.78	9.75
6	clomazone	3	ME	0.5	lb ai/a	PRE	10.0	7.0	106.3	7.36	8.77
7	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	3.0	8.7	102.3	6.86	7.55
8	bicyclopyrone	1.67	SL	0.044	lb ai/a	PRE	9.7	10.0	110.3	8.13	9.07
9	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	5.0	9.7	110.0	8.11	9.09
	imazamox	1	AS	0.031	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
10	fomesafen	2	SL	0.25	lb ai/a	PRE	9.7	10.0	103.3	8.47	9.94
11	flumioxazin	51	WDG	0.064	lb ai/a	PRE	10.0	10.0	104.0	8.73	10.04
12	Untreated					PRE	7.7	8.3	102.7	6.29	8.05
	fomesafen	2	SL	0.25	lb ai/a	PO1					
LSD P=.05							2.00	3.27	12.09	1.874	2.048
Standard Deviation							1.18	1.93	7.14	1.107	1.209
CV							14.31	21.78	6.98	14.66	13.6

Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame - IR4 – HTRC - 2015

Project Code: IR4-133-15-2 **Location:** East Lansing, MI
Block 55

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Edamame **Variety:** Envy OG
Planting Method: Seeded **Planting Date:** 5/21/15 **Harvest Date:** 8/18/15
Spacing: 4 in **Row Spacing:** 28 in, 2 rows/plot
Tillage Type: Conventional **Study Design:** RCB **Replications:** 3
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Marlette fine sandy loam **OM:** 3% **pH:** 7.5
Sand: 59% **Silt:** 27% **Clay:** 14% **CEC:** 12.8

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	5/22/15	10:00 am	61/55	F	Dry	5-6 N	31	0% Cloudy	N
PO1	6/22/15	11:00 am	89/74	F	Dry	4-5 SW	58	25% Cloudy	N
PO2	7/6/15	11:10 am	86/74	F	Dry	4-5 SW	54	0% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/22	EDAMAME		Preemergence	
5/22	No Weeds			
6/22	EDAMAME	4-6″	Veg	50%
6/22	BYGR = barnyardgrass	6-8″	Veg	Many
6/22	COLQ = common lambsquarters	2*4″	Veg	Many
6/22	COPU = common purslane	1-4″	Veg	Many
6/22	CORW = common ragweed	2-4″	Veg	Many
6/22	LATH = ladysthumb	1-4″	Veg	Moderate
6/22	RRPW = redroot pigweed	1-3″	Veg	Moderate
6/22	YENS = yellow nutsedge	6-8″	Veg	Many
7/6	EDAMAME	6-10″	Veg	50%
7/6	BYGR = barnyardgrass	8-10″	Veg	Many
7/6	COLQ = common lambsquarters	14-16″	Veg	Many
7/6	COPU = common purslane	2-5″	Veg	Many
7/6	RRPW = redroot pigweed	12-14″	Veg	Many
7/6	YEFT = yellow foxtail	8-10″	Veg	Many

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame - IR4 – HTRC - 2015

Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame – IR4 – HTRC – 2015

Trial ID: 133-15-2 Location: East Lansing, MI
Protocol ID: 133-15-2 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	EDAMAME	EDAMAME	BYGR	YEFT	YENS
Pest Code											
Crop Code							EDAMAME	EDAMAME			
Rating Date							18/Jun/15	18/Jun/15	18/Jun/15	18/Jun/15	18/Jun/15
Rating Type							STAND	RATING	RATING	RATING	RATING
Rating Unit							#/PLOT	1-10	1-10	1-10	1-10
1	Untreated, Handweeded						33.3	1.3	1.7	6.0	3.3
2	acifluorfen	2	SC	0.25	lb ai/a	PO2	35.0	1.0	2.3	5.3	4.3
	NIS	100	SL	0.25	% v/v	PO2					
3	acifluorfen	2	SC	0.375	lb ai/a	PO2	32.0	1.3	2.0	7.7	5.0
	NIS	100	SL	0.25	% v/v	PO2					
4	acifluorfen	2	SC	0.5	lb ai/a	PO2	25.3	1.7	2.3	7.7	8.0
	NIS	100	SL	0.25	% v/v	PO2					
5	pyroxasulfone	85	WDG	0.112	lb ai/a	PRE	44.0	1.0	10.0	10.0	9.0
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	44.3	1.3	10.0	10.0	9.7
7	pyroxasulfone	85	WDG	0.22	lb ai/a	PRE	31.3	1.7	10.0	10.0	9.3
8	pyroxasulfone	85	WDG	0.112	lb ai/a	PO1	38.3	1.3	4.7	6.0	6.0
9	pyroxasulfone	85	WDG	0.186	lb ai/a	PO1	42.3	1.0	2.3	6.7	6.3
10	pyroxasulfone	85	WDG	0.22	lb ai/a	PO1	24.7	1.7	2.0	8.0	5.7
11	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	42.7	1.3	10.0	10.0	10.0
12	fomesafen	2	SL	0.25	lb ai/a	PO1	36.0	1.0	1.7	3.3	2.7
LSD P=.05							16.23	0.83	2.57	4.24	3.11
Standard Deviation							9.59	0.49	1.52	2.50	1.84
CV							26.79	37.52	30.92	33.1	27.79

Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame - IR4 – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COLQ	COPU	CORW	FIBW	LATH
Pest Code											
Crop Code											
Rating Date							18/Jun/15	18/Jun/15	18/Jun/15	18/Jun/15	18/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Untreated, Handweeded						1.7	1.3	1.7	7.7	5.7
2	acifluorfen	2	SC	0.25	lb ai/a	PO2	1.3	1.3	1.7	9.3	3.0
	NIS	100	SL	0.25	% v/v	PO2					
3	acifluorfen	2	SC	0.375	lb ai/a	PO2	1.7	1.0	3.0	8.7	6.7
	NIS	100	SL	0.25	% v/v	PO2					
4	acifluorfen	2	SC	0.5	lb ai/a	PO2	1.3	1.3	3.0	10.0	7.3
	NIS	100	SL	0.25	% v/v	PO2					
5	pyroxasulfone	85	WDG	0.112	lb ai/a	PRE	10.0	10.0	8.7	10.0	10.0
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0
7	pyroxasulfone	85	WDG	0.22	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0
8	pyroxasulfone	85	WDG	0.112	lb ai/a	PO1	3.0	2.7	2.0	10.0	3.7
9	pyroxasulfone	85	WDG	0.186	lb ai/a	PO1	1.7	1.7	2.0	10.0	4.0
10	pyroxasulfone	85	WDG	0.22	lb ai/a	PO1	1.7	1.7	1.7	10.0	7.3
11	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	8.0	10.0	7.0	10.0	10.0
12	fomesafen	2	SL	0.25	lb ai/a	PO1	2.0	2.0	1.3	10.0	5.3
LSD P=.05							1.10	1.10	1.36	2.05	4.58
Standard Deviation							0.65	0.65	0.80	1.21	2.70
CV							14.89	14.75	18.52	12.57	39.09

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RRPW		YEFT	COLQ	COPU
Pest Code											
Crop Code								EDAMAME			
Rating Date							18/Jun/15	19/Jun/15	19/Jun/15	19/Jun/15	19/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Untreated, Handweeded						3.0	1.0	1.0	1.0	1.0
2	acifluorfen	2	SC	0.25	lb ai/a	PO2	3.3	1.3	1.0	1.0	1.0
	NIS	100	SL	0.25	% v/v	PO2					
3	acifluorfen	2	SC	0.375	lb ai/a	PO2	3.0	1.0	1.0	1.0	1.0
	NIS	100	SL	0.25	% v/v	PO2					
4	acifluorfen	2	SC	0.5	lb ai/a	PO2	2.7	1.3	1.0	1.0	1.0
	NIS	100	SL	0.25	% v/v	PO2					
5	pyroxasulfone	85	WDG	0.112	lb ai/a	PRE	10.0	3.3	10.0	10.0	10.0
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	10.0	3.0	10.0	10.0	10.0
7	pyroxasulfone	85	WDG	0.22	lb ai/a	PRE	10.0	5.3	10.0	10.0	10.0
8	pyroxasulfone	85	WDG	0.112	lb ai/a	PO1	4.7	2.3	3.7	3.3	4.0
9	pyroxasulfone	85	WDG	0.186	lb ai/a	PO1	2.7	1.3	1.0	1.0	4.0
10	pyroxasulfone	85	WDG	0.22	lb ai/a	PO1	3.3	1.7	1.0	1.0	1.3
11	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	10.0	3.3	10.0	8.3	10.0
12	fomesafen	2	SL	0.25	lb ai/a	PO1	1.7	1.7	1.0	1.0	1.0
LSD P=.05							2.81	1.86	2.26	2.05	3.40
Standard Deviation							1.66	1.10	1.33	1.21	2.01
CV							30.96	49.49	31.58	29.87	44.32

Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame - IR4 – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CORW	LATH	RRPW	EDAMAME	BYGR
Pest Code											
Crop Code											
Rating Date							19/Jun/15	19/Jun/15	19/Jun/15	26/Jun/15	26/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Untreated, Handweeded						1.0	1.0	1.0	1.0	1.3
2	acifluorfen	2	SC	0.25	lb ai/a	PO2	1.0	1.0	1.0	1.3	1.3
	NIS	100	SL	0.25	% v/v	PO2					
3	acifluorfen	2	SC	0.375	lb ai/a	PO2	1.0	1.0	1.0	2.0	3.0
	NIS	100	SL	0.25	% v/v	PO2					
4	acifluorfen	2	SC	0.5	lb ai/a	PO2	1.0	1.0	1.0	2.0	1.7
	NIS	100	SL	0.25	% v/v	PO2					
5	pyroxasulfone	85	WDG	0.112	lb ai/a	PRE	9.0	10.0	10.0	1.3	10.0
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	10.0	10.0	10.0	2.3	10.0
7	pyroxasulfone	85	WDG	0.22	lb ai/a	PRE	10.0	10.0	10.0	3.0	10.0
8	pyroxasulfone	85	WDG	0.112	lb ai/a	PO1	1.7	3.3	3.3	2.0	3.0
9	pyroxasulfone	85	WDG	0.186	lb ai/a	PO1	1.0	1.0	1.0	2.0	3.3
10	pyroxasulfone	85	WDG	0.22	lb ai/a	PO1	1.0	1.0	1.0	2.0	1.0
11	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	7.0	10.0	10.0	1.7	10.0
12	fomesafen	2	SL	0.25	lb ai/a	PO1	1.0	1.0	1.0	1.3	5.0
LSD P=.05							1.47	1.98	1.98	1.36	2.86
Standard Deviation							0.87	1.17	1.17	0.80	1.69
CV							23.34	27.81	27.81	43.77	34.02

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	YEFT	YENS	COLQ	COPU	CORW
Pest Code											
Crop Code											
Rating Date							26/Jun/15	26/Jun/15	26/Jun/15	26/Jun/15	26/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Untreated, Handweeded						2.0	3.3	1.0	1.0	1.7
2	acifluorfen	2	SC	0.25	lb ai/a	PO2	2.0	3.0	1.0	1.0	1.0
	NIS	100	SL	0.25	% v/v	PO2					
3	acifluorfen	2	SC	0.375	lb ai/a	PO2	1.3	3.3	1.0	1.0	1.3
	NIS	100	SL	0.25	% v/v	PO2					
4	acifluorfen	2	SC	0.5	lb ai/a	PO2	2.3	4.0	1.7	1.3	1.7
	NIS	100	SL	0.25	% v/v	PO2					
5	pyroxasulfone	85	WDG	0.112	lb ai/a	PRE	10.0	6.0	10.0	10.0	7.3
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	10.0	9.7	10.0	10.0	9.3
7	pyroxasulfone	85	WDG	0.22	lb ai/a	PRE	10.0	9.3	10.0	10.0	10.0
8	pyroxasulfone	85	WDG	0.112	lb ai/a	PO1	4.7	4.3	2.3	2.3	1.7
9	pyroxasulfone	85	WDG	0.186	lb ai/a	PO1	5.0	4.3	2.3	1.7	2.0
10	pyroxasulfone	85	WDG	0.22	lb ai/a	PO1	5.0	7.3	1.0	1.3	1.7
11	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	10.0	10.0	7.0	10.0	3.0
12	fomesafen	2	SL	0.25	lb ai/a	PO1	8.7	5.3	6.3	8.0	8.3
LSD P=.05							4.03	4.35	1.69	0.69	1.69
Standard Deviation							2.38	2.57	1.00	0.41	1.00
CV							40.23	44.04	22.33	8.43	24.4

Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame - IR4 – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH	RRPW		BYGR	YEFT
Crop Code									EDAMAME		
Rating Date							26/Jun/15	26/Jun/15	29/Jun/15	29/Jun/15	29/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Untreated, Handweeded						4.7	3.3	1.3	1.0	1.0
2	acifluorfen	2	SC	0.25	lb ai/a	PO2	2.0	2.0	1.7	1.0	1.0
	NIS	100	SL	0.25	% v/v	PO2					
3	acifluorfen	2	SC	0.375	lb ai/a	PO2	4.7	1.0	2.7	3.7	1.0
	NIS	100	SL	0.25	% v/v	PO2					
4	acifluorfen	2	SC	0.5	lb ai/a	PO2	4.7	1.3	2.3	1.0	1.0
	NIS	100	SL	0.25	% v/v	PO2					
5	pyroxasulfone	85	WDG	0.112	lb ai/a	PRE	10.0	10.0	2.7	10.0	10.0
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	10.0	10.0	3.3	10.0	10.0
7	pyroxasulfone	85	WDG	0.22	lb ai/a	PRE	10.0	10.0	4.3	10.0	10.0
8	pyroxasulfone	85	WDG	0.112	lb ai/a	PO1	3.0	3.0	3.0	3.3	5.7
9	pyroxasulfone	85	WDG	0.186	lb ai/a	PO1	3.3	3.3	3.3	6.0	5.3
10	pyroxasulfone	85	WDG	0.22	lb ai/a	PO1	4.3	2.0	3.3	1.3	3.3
11	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	9.7	10.0	2.0	10.0	10.0
12	fomesafen	2	SL	0.25	lb ai/a	PO1	9.3	8.7	2.7	4.3	6.0
LSD P=.05							4.03	2.66	1.50	3.07	3.13
Standard Deviation							2.38	1.57	0.89	1.81	1.85
CV							37.74	29.19	32.55	35.27	34.5

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	YENS	COLQ	COPU	CORW	EBNS
Crop Code											
Rating Date							29/Jun/15	29/Jun/15	29/Jun/15	29/Jun/15	29/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Untreated, Handweeded						4.0	1.3	1.0	1.0	4.0
2	acifluorfen	2	SC	0.25	lb ai/a	PO2	4.0	1.7	1.0	1.3	4.3
	NIS	100	SL	0.25	% v/v	PO2					
3	acifluorfen	2	SC	0.375	lb ai/a	PO2	5.0	1.7	2.0	1.0	6.7
	NIS	100	SL	0.25	% v/v	PO2					
4	acifluorfen	2	SC	0.5	lb ai/a	PO2	5.3	2.0	1.3	1.3	9.3
	NIS	100	SL	0.25	% v/v	PO2					
5	pyroxasulfone	85	WDG	0.112	lb ai/a	PRE	8.7	10.0	10.0	8.7	10.0
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	9.7	10.0	10.0	9.3	10.0
7	pyroxasulfone	85	WDG	0.22	lb ai/a	PRE	10.0	10.0	10.0	9.7	10.0
8	pyroxasulfone	85	WDG	0.112	lb ai/a	PO1	4.7	5.0	3.3	3.3	8.0
9	pyroxasulfone	85	WDG	0.186	lb ai/a	PO1	7.3	3.0	4.0	3.3	2.7
10	pyroxasulfone	85	WDG	0.22	lb ai/a	PO1	8.3	2.7	2.3	3.3	6.7
11	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	10.0	6.3	10.0	2.3	10.0
12	fomesafen	2	SL	0.25	lb ai/a	PO1	7.7	7.3	6.0	8.7	8.7
LSD P=.05							4.80	1.89	1.53	1.85	4.62
Standard Deviation							2.83	1.11	0.90	1.09	2.73
CV							40.14	21.93	17.79	24.59	36.23

Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame - IR4 – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH	RRPW		BYGR	YEFT
	Crop Code								EDAMAME		
	Rating Date						29/Jun/15	29/Jun/15	9/Jul/15	9/Jul/15	9/Jul/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	Untreated, Handweeded						2.0	1.3	1.7	1.3	1.3
2	acifluorfen	2	SC	0.25	lb ai/a	PO2	1.0	4.0	3.0	4.7	2.7
	NIS	100	SL	0.25	% v/v	PO2					
3	acifluorfen	2	SC	0.375	lb ai/a	PO2	4.0	2.0	4.0	6.0	4.0
	NIS	100	SL	0.25	% v/v	PO2					
4	acifluorfen	2	SC	0.5	lb ai/a	PO2	4.3	2.7	4.3	6.0	4.3
	NIS	100	SL	0.25	% v/v	PO2					
5	pyroxasulfone	85	WDG	0.112	lb ai/a	PRE	10.0	10.0	1.3	10.0	10.0
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	10.0	10.0	1.3	10.0	7.0
7	pyroxasulfone	85	WDG	0.22	lb ai/a	PRE	9.7	10.0	3.0	10.0	10.0
8	pyroxasulfone	85	WDG	0.112	lb ai/a	PO1	4.3	6.7	2.0	6.0	3.7
9	pyroxasulfone	85	WDG	0.186	lb ai/a	PO1	3.0	6.0	2.0	3.3	3.7
10	pyroxasulfone	85	WDG	0.22	lb ai/a	PO1	5.0	4.7	2.3	4.3	3.3
11	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	8.3	10.0	1.7	10.0	10.0
12	fomesafen	2	SL	0.25	lb ai/a	PO1	9.7	9.3	1.7	2.0	2.7
LSD P=.05							4.01	2.88	1.52	2.46	4.01
Standard Deviation							2.37	1.70	0.90	1.46	2.37
CV							39.88	26.62	38.07	23.71	45.3

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COLQ	COPU	CORW	EBNS	LATH
	Crop Code										
	Rating Date						9/Jul/15	9/Jul/15	9/Jul/15	9/Jul/15	9/Jul/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	Untreated, Handweeded						1.3	1.7	2.0	5.0	2.7
2	acifluorfen	2	SC	0.25	lb ai/a	PO2	3.7	7.3	5.7	8.0	9.0
	NIS	100	SL	0.25	% v/v	PO2					
3	acifluorfen	2	SC	0.375	lb ai/a	PO2	5.3	8.0	7.7	8.7	8.7
	NIS	100	SL	0.25	% v/v	PO2					
4	acifluorfen	2	SC	0.5	lb ai/a	PO2	4.7	8.0	8.3	8.0	7.3
	NIS	100	SL	0.25	% v/v	PO2					
5	pyroxasulfone	85	WDG	0.112	lb ai/a	PRE	9.7	10.0	6.3	10.0	10.0
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	10.0	10.0	8.3	10.0	10.0
7	pyroxasulfone	85	WDG	0.22	lb ai/a	PRE	10.0	9.0	10.0	10.0	10.0
8	pyroxasulfone	85	WDG	0.112	lb ai/a	PO1	3.7	2.3	1.0	4.7	4.0
9	pyroxasulfone	85	WDG	0.186	lb ai/a	PO1	2.7	2.0	1.0	4.7	1.0
10	pyroxasulfone	85	WDG	0.22	lb ai/a	PO1	2.7	1.7	1.0	8.0	2.3
11	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	4.0	9.7	1.7	7.0	6.0
12	fomesafen	2	SL	0.25	lb ai/a	PO1	1.0	4.3	7.3	7.7	9.0
LSD P=.05							2.66	2.12	1.98	5.20	4.29
Standard Deviation							1.57	1.25	1.17	3.07	2.54
CV							32.18	20.31	23.2	40.23	38.04

Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame - IR4 – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RRPW		BYGR	YEFT	YENS
	Crop Code							EDAMAME			
	Rating Date						9/Jul/15	23/Jul/15	23/Jul/15	23/Jul/15	23/Jul/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	Untreated, Handweeded						2.7	1.7	7.7	3.3	3.7
2	acifluorfen	2	SC	0.25	lb ai/a	PO2	6.0	2.7	7.0	6.0	4.0
	NIS	100	SL	0.25	% v/v	PO2					
3	acifluorfen	2	SC	0.375	lb ai/a	PO2	7.3	3.7	6.3	4.7	6.7
	NIS	100	SL	0.25	% v/v	PO2					
4	acifluorfen	2	SC	0.5	lb ai/a	PO2	9.3	3.7	9.3	6.0	6.3
	NIS	100	SL	0.25	% v/v	PO2					
5	pyroxasulfone	85	WDG	0.112	lb ai/a	PRE	10.0	1.7	10.0	10.0	9.3
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	10.0	1.7	10.0	10.0	9.3
7	pyroxasulfone	85	WDG	0.22	lb ai/a	PRE	10.0	3.0	10.0	10.0	10.0
8	pyroxasulfone	85	WDG	0.112	lb ai/a	PO1	5.3	2.0	10.0	7.3	7.0
9	pyroxasulfone	85	WDG	0.186	lb ai/a	PO1	9.3	2.0	8.0	8.0	8.0
10	pyroxasulfone	85	WDG	0.22	lb ai/a	PO1	4.3	3.3	5.7	7.7	9.3
11	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	10.0	1.7	10.0	10.0	10.0
12	fomesafen	2	SL	0.25	lb ai/a	PO1	7.3	2.0	10.0	6.0	2.3
LSD P=.05							3.47	1.66	4.56	3.74	3.95
Standard Deviation							2.05	0.98	2.69	2.21	2.34
CV							26.86	40.59	31.07	29.8	32.59

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COLQ	COPU	CORW	EBNS	LATH
	Crop Code										
	Rating Date						23/Jul/15	23/Jul/15	23/Jul/15	23/Jul/15	23/Jul/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	Untreated, Handweeded						2.7	1.7	1.3	2.7	4.7
2	acifluorfen	2	SC	0.25	lb ai/a	PO2	3.7	2.7	6.3	2.3	7.0
	NIS	100	SL	0.25	% v/v	PO2					
3	acifluorfen	2	SC	0.375	lb ai/a	PO2	3.3	2.0	8.7	4.3	10.0
	NIS	100	SL	0.25	% v/v	PO2					
4	acifluorfen	2	SC	0.5	lb ai/a	PO2	3.3	4.3	8.0	6.0	7.7
	NIS	100	SL	0.25	% v/v	PO2					
5	pyroxasulfone	85	WDG	0.112	lb ai/a	PRE	9.3	10.0	7.0	10.0	10.0
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	10.0	10.0	7.3	10.0	10.0
7	pyroxasulfone	85	WDG	0.22	lb ai/a	PRE	10.0	10.0	8.0	10.0	10.0
8	pyroxasulfone	85	WDG	0.112	lb ai/a	PO1	6.0	2.7	1.3	4.0	4.0
9	pyroxasulfone	85	WDG	0.186	lb ai/a	PO1	4.3	2.3	1.0	4.0	3.3
10	pyroxasulfone	85	WDG	0.22	lb ai/a	PO1	3.3	1.0	1.7	5.0	2.7
11	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	6.0	9.0	3.0	10.0	5.7
12	fomesafen	2	SL	0.25	lb ai/a	PO1	2.3	2.7	7.0	2.0	6.3
LSD P=.05							2.70	1.53	2.79	2.99	4.26
Standard Deviation							1.59	0.90	1.65	1.76	2.51
CV							29.74	18.58	32.56	30.09	37.1

Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame - IR4 – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RRPW	EDAMAME	LACG	TAFE	YEFT
Pest Code											
Crop Code								EDAMAME			
Rating Date							23/Jul/15	24/Aug/15	24/Aug/15	24/Aug/15	24/Aug/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Untreated, Handweeded						4.3	3.0	3.3	10.0	4.3
2	acifluorfen	2	SC	0.25	lb ai/a	PO2	3.7	2.3	2.7	8.0	7.7
	NIS	100	SL	0.25	% v/v	PO2					
3	acifluorfen	2	SC	0.375	lb ai/a	PO2	2.3	2.7	2.0	4.3	7.0
	NIS	100	SL	0.25	% v/v	PO2					
4	acifluorfen	2	SC	0.5	lb ai/a	PO2	4.3	3.3	1.7	4.0	7.3
	NIS	100	SL	0.25	% v/v	PO2					
5	pyroxasulfone	85	WDG	0.112	lb ai/a	PRE	10.0	3.7	10.0	10.0	10.0
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	10.0	3.7	10.0	10.0	7.0
7	pyroxasulfone	85	WDG	0.22	lb ai/a	PRE	10.0	4.3	10.0	10.0	10.0
8	pyroxasulfone	85	WDG	0.112	lb ai/a	PO1	4.7	2.3	5.3	7.7	8.7
9	pyroxasulfone	85	WDG	0.186	lb ai/a	PO1	5.7	2.3	7.0	10.0	9.0
10	pyroxasulfone	85	WDG	0.22	lb ai/a	PO1	6.0	3.3	6.0	7.3	8.0
11	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	10.0	2.0	10.0	10.0	10.0
12	fomesafen	2	SL	0.25	lb ai/a	PO1	5.3	2.3	3.7	8.0	6.0
LSD P=.05							3.88	1.23	3.31	5.06	5.43
Standard Deviation							2.29	0.73	1.96	2.99	3.21
CV							35.99	24.67	32.77	36.1	40.49

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	YENS	COLQ	COPU	CORW	EBNS
Pest Code											
Crop Code											
Rating Date							24/Aug/15	24/Aug/15	24/Aug/15	24/Aug/15	24/Aug/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Untreated, Handweeded						3.0	2.3	1.3	3.3	3.0
2	acifluorfen	2	SC	0.25	lb ai/a	PO2	2.3	1.3	1.7	2.0	2.7
	NIS	100	SL	0.25	% v/v	PO2					
3	acifluorfen	2	SC	0.375	lb ai/a	PO2	2.7	1.3	1.0	4.7	3.7
	NIS	100	SL	0.25	% v/v	PO2					
4	acifluorfen	2	SC	0.5	lb ai/a	PO2	4.7	1.7	1.7	6.3	5.0
	NIS	100	SL	0.25	% v/v	PO2					
5	pyroxasulfone	85	WDG	0.112	lb ai/a	PRE	10.0	10.0	10.0	8.0	10.0
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	9.0	10.0	10.0	7.3	10.0
7	pyroxasulfone	85	WDG	0.22	lb ai/a	PRE	7.0	9.3	10.0	8.0	10.0
8	pyroxasulfone	85	WDG	0.112	lb ai/a	PO1	8.7	5.7	4.0	1.0	4.7
9	pyroxasulfone	85	WDG	0.186	lb ai/a	PO1	9.7	6.3	3.7	1.0	4.3
10	pyroxasulfone	85	WDG	0.22	lb ai/a	PO1	7.7	4.7	3.0	1.7	3.7
11	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	10.0	5.0	7.7	3.0	10.0
12	fomesafen	2	SL	0.25	lb ai/a	PO1	2.3	1.3	2.7	7.3	2.7
LSD P=.05							3.50	3.85	2.93	3.39	2.88
Standard Deviation							2.07	2.27	1.73	2.00	1.70
CV							32.21	46.2	36.66	44.79	29.29

Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame - IR4 – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH	RRPW	EDAMAME	EDAMAME
Pest Code										
Crop Code									EDAMAME	EDAMAME
Rating Date							24/Aug/15	24/Aug/15	24/Aug/15	24/Aug/15
Rating Type							RATING	RATING	PLANT	POD
Rating Unit							1-10	1-10	KG/PLOT	KG/PLOT
1	Untreated, Handweeded						5.3	4.3	1.79	2.56
2	acifluorfen	2	SC	0.25	lb ai/a	PO2	3.0	4.3	2.25	2.48
	NIS	100	SL	0.25	% v/v	PO2				
3	acifluorfen	2	SC	0.375	lb ai/a	PO2	5.0	2.3	2.21	2.92
	NIS	100	SL	0.25	% v/v	PO2				
4	acifluorfen	2	SC	0.5	lb ai/a	PO2	4.7	3.7	1.37	1.84
	NIS	100	SL	0.25	% v/v	PO2				
5	pyroxasulfone	85	WDG	0.112	lb ai/a	PRE	10.0	10.0	4.05	5.76
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	9.3	10.0	2.81	4.48
7	pyroxasulfone	85	WDG	0.22	lb ai/a	PRE	9.3	10.0	2.05	3.04
8	pyroxasulfone	85	WDG	0.112	lb ai/a	PO1	2.3	6.7	2.43	3.48
9	pyroxasulfone	85	WDG	0.186	lb ai/a	PO1	2.7	9.0	2.55	3.44
10	pyroxasulfone	85	WDG	0.22	lb ai/a	PO1	2.3	9.0	1.28	1.66
11	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	6.7	10.0	4.08	5.14
12	fomesafen	2	SL	0.25	lb ai/a	PO1	4.3	2.7	2.82	3.93
LSD P=.05							3.94	3.78	1.660	2.028
Standard Deviation							2.32	2.23	0.980	1.197
CV							42.91	32.7	39.64	35.29

Weed Control in Basil – Van Drunen - 2015

Project Code: 117-15-3 **Location: Momence, IL**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Basil **Varieties: Superior, San Remo, Genovese, Nufar**
Planting Method: Seeded **Planting Date: 6/5/15** **Harvest Date:8/4/15**
Spacing: 2 in **Row Spacing: 10 in; 1 row of each variety/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Jasper loam **OM: 4.6%** **pH: 6.5**
Sand: 36% **Silt: 39%** **Clay: 25%** **CEC: 14.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/5/15	2:00 pm	69/66	F	Dry	5-6 NE	58	65% Cloudy	N
PO1	7/8/15	1:00 pm	68/34	F	Wet	1-2 SW	75	100% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/5	BASIL		Preemergence	
6/5	No Weeds			
7/8	BASIL			
7/8	COLQ = common lambsquarters	12-16″	Veg	Moderate
7/8	COPU = common purslane	12-24″	Veg	Many
7/8	GOGR = goosegrass	8-12″	Veg	Moderate
7/8	LACG = large crabgrass	12-18″	Veg	Moderate
7/8	RRPW = redroot pigweed	6-18″	Veg	Moderate

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Basil – Van Drunen - 2015

Weed Control in Basil – Van Drunen - 2015

Trial ID: 117-15-3 Location: Momence, IL
Protocol ID: 117-15-3 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BASIL SUPERIOR	BASIL SAN REMO	BASIL GENOVESE	BASIL NUFAR
	Pest Code									
	Crop Code									
	Crop Name									
	Rating Date						24/Jun/15	24/Jun/15	24/Jun/15	24/Jun/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	napropamide	50	DF	1	lb ai/a	PRE	8.7	2.3	3.3	5.3
2	linuron	50	DF	0.25	lb ai/a	PRE	6.0	1.3	4.0	4.3
3	halosulfuron	75	WG	0.023	lb ai/a	PRE	7.7	4.7	4.3	6.3
4	napropamide	50	DF	1	lb ai/a	PRE	7.0	2.0	2.7	3.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
5	napropamide	50	DF	1	lb ai/a	PRE	5.3	3.0	3.0	4.0
	halosulfuron	75	WG	0.047	lb ai/a	PO1				
6	saflufenacil	70	WG	0.044	lb ai/a	PRE	10.0	7.3	9.7	9.3
7	sulfentrazone	4	F	0.125	lb ai/a	PRE	7.3	3.3	5.0	6.0
8	isoxaben	4.17	SC	0.5	lb ai/a	PRE	10.0	10.0	10.0	10.0
9	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	8.3	3.7	5.7	7.7
10	Untreated						8.7	2.7	4.7	7.0
LSD P=.05							2.31	2.85	3.53	3.89
Standard Deviation							1.35	1.66	2.06	2.27
CV							17.04	41.24	39.35	36.03

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	GRFT	LACG	COLQ	COPU	RRPW
	Pest Code										
	Crop Code										
	Crop Name										
	Rating Date						24/Jun/15	24/Jun/15	24/Jun/15	24/Jun/15	24/Jun/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	napropamide	50	DF	1	lb ai/a	PRE	9.0	9.0	9.0	5.3	7.0
2	linuron	50	DF	0.25	lb ai/a	PRE	6.7	4.0	9.3	2.7	9.3
3	halosulfuron	75	WG	0.023	lb ai/a	PRE	7.0	1.7	9.3	5.7	10.0
4	napropamide	50	DF	1	lb ai/a	PRE	6.0	6.7	10.0	2.0	7.3
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
5	napropamide	50	DF	1	lb ai/a	PRE	8.0	6.0	9.3	2.3	9.3
	halosulfuron	75	WG	0.047	lb ai/a	PO1					
6	saflufenacil	70	WG	0.044	lb ai/a	PRE	8.7	6.0	9.7	10.0	10.0
7	sulfentrazone	4	F	0.125	lb ai/a	PRE	9.0	9.3	10.0	8.7	10.0
8	isoxaben	4.17	SC	0.5	lb ai/a	PRE	9.0	9.3	10.0	8.7	10.0
9	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	7.3	6.3	9.7	5.7	9.7
10	Untreated						6.0	3.3	9.7	2.7	9.3
LSD P=.05							4.00	4.98	1.29	3.48	3.92
Standard Deviation							2.33	2.90	0.75	2.03	2.28
CV							30.42	47.05	7.84	37.75	24.83

Weed Control in Basil – Van Drunen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BASIL SUPERIOR	BASIL SAN REMO	BASIL GENOVESE	BASIL NUFAR
Pest Code										
Crop Code										
Crop Name										
Rating Date							8/Jul/15	8/Jul/15	8/Jul/15	8/Jul/15
Rating Type							RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10
1	napropamide	50	DF	1	lb ai/a	PRE	7.3	2.7	3.7	5.7
2	linuron	50	DF	0.25	lb ai/a	PRE	6.0	1.3	4.0	4.0
3	halosulfuron	75	WG	0.023	lb ai/a	PRE	8.3	5.3	6.0	5.7
4	napropamide	50	DF	1	lb ai/a	PRE	6.3	2.0	2.3	3.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
5	napropamide	50	DF	1	lb ai/a	PRE	5.7	3.3	4.3	5.0
	halosulfuron	75	WG	0.047	lb ai/a	PO1				
6	saflufenacil	70	WG	0.044	lb ai/a	PRE	9.7	8.0	9.7	9.3
7	sulfentrazone	4	F	0.125	lb ai/a	PRE	7.7	3.3	5.7	4.7
8	isoxaben	4.17	SC	0.5	lb ai/a	PRE	10.0	10.0	10.0	10.0
9	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	9.0	4.3	6.7	7.3
10	Untreated						7.3	2.3	5.0	5.7
LSD P=.05							2.39	3.85	5.12	4.60
Standard Deviation							1.39	2.24	2.98	2.68
CV							17.98	52.58	52.02	44.46

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	GOGR	WIGR	COLQ	COPU	RRPW
Pest Code											
Crop Code											
Crop Name											
Rating Date							8/Jul/15	8/Jul/15	8/Jul/15	8/Jul/15	8/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	napropamide	50	DF	1	lb ai/a	PRE	6.3	5.7	5.3	3.3	4.3
2	linuron	50	DF	0.25	lb ai/a	PRE	3.7	9.3	4.0	1.3	4.3
3	halosulfuron	75	WG	0.023	lb ai/a	PRE	1.0	10.0	8.3	2.7	10.0
4	napropamide	50	DF	1	lb ai/a	PRE	4.7	9.3	6.7	1.0	6.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
5	napropamide	50	DF	1	lb ai/a	PRE	3.7	10.0	6.3	1.3	7.0
	halosulfuron	75	WG	0.047	lb ai/a	PO1					
6	saflufenacil	70	WG	0.044	lb ai/a	PRE	4.3	10.0	10.0	9.7	10.0
7	sulfentrazone	4	F	0.125	lb ai/a	PRE	8.7	9.7	10.0	7.3	10.0
8	isoxaben	4.17	SC	0.5	lb ai/a	PRE	8.0	9.7	10.0	7.7	10.0
9	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	6.0	9.3	5.3	3.7	9.0
10	Untreated						3.3	10.0	3.7	1.0	4.0
LSD P=.05							6.14	2.24	5.78	2.46	5.72
Standard Deviation							3.58	1.30	3.37	1.43	3.33
CV							72.07	14.02	48.36	36.73	44.65

Weed Control in Basil – Van Drunen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
Pest Code											GOGR
Crop Code							BASIL	BASIL	BASIL	BASIL	
Crop Name							SUPERIOR	SAN REMO	GENOVESE	NUFAR	
Rating Date							24/Jul/15	24/Jul/15	24/Jul/15	24/Jul/15	24/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	napropamide	50	DF	1	lb ai/a	PRE	7.0	2.3	4.3	5.3	10.0
2	linuron	50	DF	0.25	lb ai/a	PRE	6.0	1.0	4.3	4.7	6.0
3	halosulfuron	75	WG	0.023	lb ai/a	PRE	7.7	3.3	3.7	2.7	4.0
4	napropamide	50	DF	1	lb ai/a	PRE	6.3	1.3	3.0	2.3	4.3
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
5	napropamide	50	DF	1	lb ai/a	PRE	4.7	3.0	3.0	4.7	3.7
	halosulfuron	75	WG	0.047	lb ai/a	PO1					
6	saflufenacil	70	WG	0.044	lb ai/a	PRE	9.7	6.7	9.7	9.3	6.3
7	sulfentrazone	4	F	0.125	lb ai/a	PRE	6.7	2.3	5.0	3.7	10.0
8	isoxaben	4.17	SC	0.5	lb ai/a	PRE	10.0	10.0	10.0	10.0	6.3
9	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	8.3	4.0	6.7	7.0	9.0
10	Untreated						8.3	2.0	6.7	6.0	7.0
LSD P=.05							2.86	3.91	4.45	4.56	6.59
Standard Deviation							1.67	2.28	2.59	2.66	3.84
CV							22.37	63.32	46.05	47.75	57.6

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
Pest Code							GRFT	LACG	WIGR	COLQ	COPU
Crop Code											
Crop Name											
Rating Date							24/Jul/15	24/Jul/15	24/Jul/15	24/Jul/15	24/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	napropamide	50	DF	1	lb ai/a	PRE	9.3	7.3	7.0	8.3	4.3
2	linuron	50	DF	0.25	lb ai/a	PRE	10.0	7.0	6.3	6.3	4.0
3	halosulfuron	75	WG	0.023	lb ai/a	PRE	10.0	4.0	4.0	9.0	4.0
4	napropamide	50	DF	1	lb ai/a	PRE	10.0	4.3	6.7	6.3	1.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
5	napropamide	50	DF	1	lb ai/a	PRE	7.0	5.0	4.0	7.0	1.0
	halosulfuron	75	WG	0.047	lb ai/a	PO1					
6	saflufenacil	70	WG	0.044	lb ai/a	PRE	10.0	10.0	10.0	10.0	9.3
7	sulfentrazone	4	F	0.125	lb ai/a	PRE	10.0	10.0	10.0	10.0	8.7
8	isoxaben	4.17	SC	0.5	lb ai/a	PRE	9.3	8.3	7.0	9.7	5.7
9	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	10.0	9.0	9.0	9.3	4.0
10	Untreated						10.0	7.0	7.0	9.3	6.7
LSD P=.05							3.01	6.77	6.96	4.93	6.30
Standard Deviation							1.75	3.95	4.06	2.88	3.67
CV							18.32	54.84	57.13	33.71	75.45

Weed Control in Basil – Van Drunen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RRPW	BASIL SUPERIOR	BASIL SAN REMO	BASIL GENOVESE	BASIL NUFAR
Pest Code											
Crop Code								BASIL	BASIL	BASIL	BASIL
Crop Name								SUPERIOR	SAN REMO	GENOVESE	NUFAR
Rating Date							24/Jul/15	4/Aug/15	4/Aug/15	4/Aug/15	4/Aug/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	napropamide	50	DF	1	lb ai/a	PRE	9.0	7.0	3.0	4.0	5.3
2	linuron	50	DF	0.25	lb ai/a	PRE	7.0	5.3	2.7	4.7	5.0
3	halosulfuron	75	WG	0.023	lb ai/a	PRE	10.0	8.0	4.7	5.0	5.0
4	napropamide	50	DF	1	lb ai/a	PRE	7.0	7.7	4.0	5.7	5.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
5	napropamide	50	DF	1	lb ai/a	PRE	7.0	7.0	5.0	5.0	5.7
	halosulfuron	75	WG	0.047	lb ai/a	PO1					
6	saflufenacil	70	WG	0.044	lb ai/a	PRE	10.0	9.3	5.7	9.7	9.0
7	sulfentrazone	4	F	0.125	lb ai/a	PRE	10.0	5.3	1.7	3.3	3.7
8	isoxaben	4.17	SC	0.5	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0
9	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	9.7	7.7	4.0	6.7	7.3
10	Untreated						9.3	7.3	3.3	6.7	6.3
LSD P=.05							5.16	3.13	3.73	3.49	3.60
Standard Deviation							3.01	1.82	2.17	2.03	2.10
CV							33.78	24.4	49.43	33.54	33.67

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BASIL SUPERIOR	BASIL SAN REMO	BASIL GENOVESE	BASIL NUFAR	BASIL ALL
Pest Code											
Crop Code							BASIL	BASIL	BASIL	BASIL	BASIL
Crop Name							SUPERIOR	SAN REMO	GENOVESE	NUFAR	ALL
Rating Date							4/Aug/15	4/Aug/15	4/Aug/15	4/Aug/15	4/Aug/15
Rating Type							HARVEST	HARVEST	HARVEST	HARVEST	TOTAL
Rating Unit							KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT
1	napropamide	50	DF	1	lb ai/a	PRE	0.69	4.26	3.22	2.24	10.41
2	linuron	50	DF	0.25	lb ai/a	PRE	1.18	3.57	1.40	2.10	8.25
3	halosulfuron	75	WG	0.023	lb ai/a	PRE	0.17	3.28	2.12	4.09	9.67
4	napropamide	50	DF	1	lb ai/a	PRE	0.47	3.46	0.92	1.69	6.53
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
5	napropamide	50	DF	1	lb ai/a	PRE	0.65	2.07	1.37	1.25	5.34
	halosulfuron	75	WG	0.047	lb ai/a	PO1					
6	saflufenacil	70	WG	0.044	lb ai/a	PRE	0.09	2.51	0.05	0.13	2.77
7	sulfentrazone	4	F	0.125	lb ai/a	PRE	1.88	6.98	2.85	3.91	15.62
8	isoxaben	4.17	SC	0.5	lb ai/a	PRE	0.00	0.04	0.00	0.00	0.04
9	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	0.50	4.96	0.98	1.07	7.51
10	Untreated						0.27	3.10	1.06	1.32	5.75
LSD P=.05							1.175	3.882	2.525	3.302	7.784
Standard Deviation							0.685	2.263	1.472	1.925	4.538
CV							116.19	66.1	105.38	108.19	63.12

Weed Control in Cilantro, Dill, Fennel, and Parsley – Van Drunen - 2015

Project Code: 117-15-4 **Location: Momence, IL**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: See notes **Variety: See notes**
Planting Method: Seeded **Planting Date: 6/5/2015** **Harvest Date: See notes**
Spacing: 3 inch **Row Spacing: 10 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long; 4 rows/ plot

Soil Type: Jasper loam **OM: 4.6%** **pH: 6.5**
Sand: 36% **Silt: 39%** **Clay: 25%** **CEC: 14.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/5/15	1:00pm	69/66	F	Dry	5-6 NE	58	65% Cloudy	N
PO1	7/8/15	11:40pm	68/34	F	Wet	1-2 SW	75	100% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
7/8	COLQ = common lambsquarters	12-16″	Veg	Moderate
7/8	COPU = common purslane	12-24″	Veg	Many
7/8	GOGR = goosegrass	8-12″	Veg	Moderate
7/8	LACG = large crabgrass	12-18″	Veg	Moderate
7/8	RRPW = redroot pigweed	6-18″	Veg	Moderate

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Crops: Cilantro, Dill, Florence Fennel, and Parsley; one row of each crop/plot
4. Varieties, respectively: Slowbolt, Hera, Zefa Fino, Laica
5. Harvest Dates: 4 August 2015 – Cilantro, Dill, Fennel; 24 September 2015 – Parsley.

Weed Control in Cilantro, Dill, Fennel, and Parsley – Van Drunen - 2015

Weed Control in Cilantro, Dill, Fennel, and Parsley – Van Drunen - 2015

Trial ID: 117-15-4 Location: Momence, IL
Protocol ID: 117-15-4 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DILL 24/Jun/15 RATING 1-10	FENNEL 24/Jun/15 RATING 1-10	CILANTRO 24/Jun/15 RATING 1-10	PARSLEY 24/Jun/15 RATING 1-10	BYGR 24/Jun/15 RATING 1-10
1	linuron	50	DF	0.5	lb ai/a	PRE	2.0	1.7	1.7	1.3	1.7
2	pyroxasulfone	85	WDG	0.09	lb ai/a	PRE	3.3	2.0	1.7	4.0	10.0
3	prometryn	4	L	1	lb ai/a	PRE	3.3	1.7	1.7	1.3	9.3
4	*S*-metolachlor	7.62	EC	0.67	lb ai/a	PRE	1.3	1.3	2.0	1.7	10.0
5	clomazone	3	ME	0.5	lb ai/a	PRE	2.0	1.7	1.3	2.0	9.7
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	5.0	3.3	2.7	6.0	7.7
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	6.0	5.0	3.3	6.3	10.0
8	linuron	50	DF	0.25	lb ai/a	PRE	1.0	1.0	1.7	1.0	8.0
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
9	linuron	50	DF	0.25	lb ai/a	PRE	1.7	1.7	1.7	1.0	8.7
	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1					
10	Untreated						1.3	1.0	1.7	1.3	6.7
LSD P=.05							3.25	1.14	1.05	2.36	4.00
Standard Deviation							1.90	0.66	0.61	1.38	2.33
CV							70.24	32.65	31.64	52.96	28.53

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LACG 24/Jun/15 RATING 1-10	COLQ 24/Jun/15 RATING 1-10	COPU 24/Jun/15 RATING 1-10	RRPW 24/Jun/15 RATING 1-10	DILL 8/Jul/15 RATING 1-10
1	linuron	50	DF	0.5	lb ai/a	PRE	1.0	4.0	1.0	3.7	2.0
2	pyroxasulfone	85	WDG	0.09	lb ai/a	PRE	10.0	9.3	9.0	10.0	4.3
3	prometryn	4	L	1	lb ai/a	PRE	1.7	10.0	3.7	9.3	4.0
4	*S*-metolachlor	7.62	EC	0.67	lb ai/a	PRE	10.0	8.7	1.7	6.0	1.0
5	clomazone	3	ME	0.5	lb ai/a	PRE	6.7	4.0	8.3	1.0	2.0
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	9.3	9.0	5.3	7.0	4.3
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	10.0	10.0	9.0	9.3	6.7
8	linuron	50	DF	0.25	lb ai/a	PRE	1.7	4.0	1.3	6.0	1.0
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
9	linuron	50	DF	0.25	lb ai/a	PRE	1.3	6.7	1.0	3.7	1.7
	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1					
10	Untreated						1.0	1.3	1.0	4.0	2.0
LSD P=.05							2.93	5.22	2.53	5.64	3.37
Standard Deviation							1.71	3.04	1.47	3.29	1.97
CV							32.42	45.44	35.64	54.78	67.84

Weed Control in Cilantro, Dill, Fennel, and Parsley – Van Drunen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	FENNEL 8/Jul/15 RATING 1-10	CILANTRO 8/Jul/15 RATING 1-10	PARSLEY 8/Jul/15 RATING 1-10	ANBG 8/Jul/15 RATING 1-10	FAPA 8/Jul/15 RATING 1-10
1	linuron	50	DF	0.5	lb ai/a	PRE	1.3	2.3	2.7	1.7	1.7
2	pyroxasulfone	85	WDG	0.09	lb ai/a	PRE	2.0	1.3	6.3	9.7	9.3
3	prometryn	4	L	1	lb ai/a	PRE	1.7	1.3	2.3	6.3	4.7
4	*S*-metolachlor	7.62	EC	0.67	lb ai/a	PRE	1.0	1.3	2.7	7.3	7.0
5	clomazone	3	ME	0.5	lb ai/a	PRE	1.0	1.0	3.0	9.0	8.7
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	2.3	2.3	8.7	7.0	3.0
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	5.7	3.0	8.3	4.0	9.7
8	linuron	50	DF	0.25	lb ai/a	PRE	1.0	1.0	2.3	1.0	3.7
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
9	linuron	50	DF	0.25	lb ai/a	PRE	1.7	1.7	1.7	1.7	1.0
	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1					
10	Untreated						2.0	1.3	2.3	3.7	1.3
LSD P=.05							1.90	0.90	2.53	5.01	3.80
Standard Deviation							1.11	0.53	1.47	2.92	2.22
CV							56.3	31.62	36.56	56.93	44.34

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	GOGR 8/Jul/15 RATING 1-10	COLQ 8/Jul/15 RATING 1-10	COPU 8/Jul/15 RATING 1-10	RRPW 8/Jul/15 RATING 1-10	DILL 24/Jul/15 RATING 1-10
1	linuron	50	DF	0.5	lb ai/a	PRE	1.7	3.0	2.3	2.0	2.3
2	pyroxasulfone	85	WDG	0.09	lb ai/a	PRE	9.7	3.7	6.7	10.0	2.3
3	prometryn	4	L	1	lb ai/a	PRE	2.7	9.3	2.3	6.0	1.0
4	*S*-metolachlor	7.62	EC	0.67	lb ai/a	PRE	9.7	5.3	1.0	4.3	1.0
5	clomazone	3	ME	0.5	lb ai/a	PRE	3.7	3.0	5.7	2.0	1.0
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	7.7	7.0	2.3	4.0	4.0
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	8.3	10.0	5.7	5.7	4.3
8	linuron	50	DF	0.25	lb ai/a	PRE	3.0	3.0	1.0	2.0	2.0
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
9	linuron	50	DF	0.25	lb ai/a	PRE	6.7	1.0	1.0	5.0	1.7
	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1					
10	Untreated						1.0	1.0	1.0	2.0	1.7
LSD P=.05							4.55	5.38	2.28	4.57	3.10
Standard Deviation							2.65	3.13	1.33	2.67	1.81
CV							49.1	67.63	45.83	62.0	84.77

Weed Control in Cilantro, Dill, Fennel, and Parsley – Van Drunen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	FENNEL 24/Jul/15 RATING 1-10	CILANTRO 24/Jul/15 RATING 1-10	PARSLEY 24/Jul/15 RATING 1-10	BYGR 24/Jul/15 RATING 1-10	WIGR 24/Jul/15 RATING 1-10
1	linuron	50	DF	0.5	lb ai/a	PRE	1.7	2.0	3.7	5.8	9.7
2	pyroxasulfone	85	WDG	0.09	lb ai/a	PRE	1.3	1.0	3.0	10.0	10.0
3	prometryn	4	L	1	lb ai/a	PRE	1.0	1.0	4.0	10.0	10.0
4	*S*-metolachlor	7.62	EC	0.67	lb ai/a	PRE	1.0	1.0	1.0	9.8	9.7
5	clomazone	3	ME	0.5	lb ai/a	PRE	1.3	2.0	3.3	9.8	6.2
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	1.7	1.0	8.7	9.8	9.7
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	2.3	1.3	7.3	9.8	9.7
8	linuron	50	DF	0.25	lb ai/a	PRE	2.0	1.3	4.3	6.7	9.3
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
9	linuron	50	DF	0.25	lb ai/a	PRE	2.0	1.0	2.7	8.3	9.0
	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1					
10	Untreated						2.0	2.0	3.7	8.9	9.7
LSD P=.05							1.23	1.35	4.16	4.07	2.59
Standard Deviation							0.72	0.78	2.42	2.29	1.45
CV							43.93	57.37	58.13	25.73	15.64

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COLQ 24/Jul/15 RATING 1-10	COPU 24/Jul/15 RATING 1-10	DILL 4/Aug/15 RATING 1-10	FENNEL 4/Aug/15 RATING 1-10	CILANTRO 4/Aug/15 RATING 1-10
1	linuron	50	DF	0.5	lb ai/a	PRE	9.4	5.8	2.7	3.0	2.7
2	pyroxasulfone	85	WDG	0.09	lb ai/a	PRE	10.0	10.0	1.3	1.0	1.0
3	prometryn	4	L	1	lb ai/a	PRE	10.0	10.0	1.0	1.3	1.7
4	*S*-metolachlor	7.62	EC	0.67	lb ai/a	PRE	9.4	5.8	1.0	1.0	1.0
5	clomazone	3	ME	0.5	lb ai/a	PRE	4.9	8.3	2.3	2.0	1.7
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	9.4	6.8	3.7	1.3	1.3
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	9.4	9.3	5.3	3.0	1.3
8	linuron	50	DF	0.25	lb ai/a	PRE	2.3	4.0	4.3	1.7	4.0
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
9	linuron	50	DF	0.25	lb ai/a	PRE	4.0	4.3	3.7	2.7	2.0
	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1					
10	Untreated						7.4	5.3	3.7	3.7	3.3
LSD P=.05							5.21	5.57	2.91	1.68	1.99
Standard Deviation							2.93	3.13	1.70	0.98	1.16
CV							38.32	44.84	58.46	47.39	57.98

Weed Control in Cilantro, Dill, Fennel, and Parsley – Van Drunen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DILL 4/Aug/15 HARVEST KG/PLOT	FENNEL 4/Aug/15 HARVEST KG/PLOT	CILANTRO 4/Aug/15 HARVEST KG/PLOT
1	linuron	50	DF	0.5	lb ai/a	PRE	7.65	11.15	6.02
2	pyroxasulfone	85	WDG	0.09	lb ai/a	PRE	8.98	18.34	12.31
3	prometryn	4	L	1	lb ai/a	PRE	11.72	21.57	10.99
4	*S*-metolachlor	7.62	EC	0.67	lb ai/a	PRE	12.59	17.47	9.48
5	clomazone	3	ME	0.5	lb ai/a	PRE	8.68	13.40	8.03
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	5.22	15.63	12.25
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	4.05	9.93	13.00
8	linuron	50	DF	0.25	lb ai/a	PRE	5.95	13.33	6.10
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1			
9	linuron	50	DF	0.25	lb ai/a	PRE	5.30	7.91	6.82
	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1			
10	Untreated						6.90	9.89	5.18
LSD P=.05							4.895	7.373	3.522
Standard Deviation							2.853	4.298	2.053
CV							37.03	31.0	22.77

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PARSLEY 24/Sep/15 RATING 1-10	PARSLEY 24/Sep/15 STAND % STAND	PARSLEY 24/Sep/15 HARVEST KG/PLOT
1	linuron	50	DF	0.5	lb ai/a	PRE	4.3	63.3	6.08
2	pyroxasulfone	85	WDG	0.09	lb ai/a	PRE	6.3	18.3	0.84
3	prometryn	4	L	1	lb ai/a	PRE	2.3	76.7	7.59
4	*S*-metolachlor	7.62	EC	0.67	lb ai/a	PRE	3.0	78.3	8.07
5	clomazone	3	ME	0.5	lb ai/a	PRE	3.7	60.0	4.25
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	6.7	30.0	1.26
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	5.0	46.7	2.64
8	linuron	50	DF	0.25	lb ai/a	PRE	2.7	78.3	4.99
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1			
9	linuron	50	DF	0.25	lb ai/a	PRE	3.0	66.7	2.46
	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1			
10	Untreated						2.3	90.0	8.19
LSD P=.05							4.03	50.16	5.651
Standard Deviation							2.35	29.24	3.294
CV							59.74	48.07	71.07

Weed Control in Lettuce – Van Dyk - 2015

Project Code: 116-15-1 **Location: Imlay City, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Lettuce **Variety: Tall Guzmaine Romaine**
Planting Method: Seeded **Planting Date: 6/2/15**
Spacing: 3 in **Row Spacing: 12 inches; 2 rows/bed**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 2.7 ft wide x 30 ft long

Soil Type: Carlisle muck **OM: 66%** **pH: 5.1**
Sand: 24% **Silt: 9%** **Clay: 1%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/2/15	11:00 am	69/54	F	Damp	5-7 NE	43	0% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/2	LETTUCE		Preemergence	
6/2	No Weeds			

COPU = common purslane
LATH = ladysthumb
RRPW = redroot pigweed

Notes and Comments
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Crop was lost due to flooding prior to harvest.

Weed Control in Lettuce – Van Dyk - 2015

Weed Control in Lettuce – Van Dyk - 2015

Trial ID: 116-15-1 Location: Imlay City, MI
Protocol ID: 116-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
Pest Code								COPU	LATH	RRPW	
Crop Code							LETTUCE				LETTUCE
Rating Date							26/Jun/15	26/Jun/15	26/Jun/15	26/Jun/15	7/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	pronamide	3.3	SC	4	lb ai/a	PRE	4.0	9.0	7.0	7.7	4.7
2	pronamide	3.3	SC	6	lb ai/a	PRE	5.3	9.3	9.0	8.7	5.0
3	sulfentrazone	4	F	0.125	lb ai/a	PRE	3.3	8.7	4.3	7.3	4.0
4	sulfentrazone	4	F	0.188	lb ai/a	PRE	2.0	9.7	5.0	8.0	2.3
5	sulfentrazone	4	F	0.25	lb ai/a	PRE	5.0	9.0	6.0	9.0	4.7
6	sulfentrazone	4	F	0.375	lb ai/a	PRE	4.0	10.0	6.3	10.0	4.7
7	pronamide	3.3	SC	6	lb ai/a	PRE	4.7	9.7	9.7	9.0	4.3
	sulfentrazone	4	F	0.125	lb ai/a	PRE					
8	Untreated						2.0	6.0	3.3	5.3	2.7
LSD P=.05							2.06	2.58	3.57	3.10	2.50
Standard Deviation							1.18	1.47	2.04	1.77	1.42
CV							31.06	16.51	32.16	21.8	35.25

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
Pest Code							COPU	LATH		COPU	LATH
Crop Code									LETTUCE		
Rating Date							7/Jul/15	7/Jul/15	31/Jul/15	31/Jul/15	31/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	pronamide	3.3	SC	4	lb ai/a	PRE	8.3	8.0	4.7	4.0	7.3
2	pronamide	3.3	SC	6	lb ai/a	PRE	8.7	8.3	5.0	5.7	8.3
3	sulfentrazone	4	F	0.125	lb ai/a	PRE	9.0	8.3	3.3	7.0	8.3
4	sulfentrazone	4	F	0.188	lb ai/a	PRE	9.0	8.0	1.7	6.3	8.0
5	sulfentrazone	4	F	0.25	lb ai/a	PRE	9.7	9.7	4.7	7.0	7.7
6	sulfentrazone	4	F	0.375	lb ai/a	PRE	7.7	7.3	4.3	7.3	9.0
7	pronamide	3.3	SC	6	lb ai/a	PRE	8.7	8.7	4.0	7.7	8.3
	sulfentrazone	4	F	0.125	lb ai/a	PRE					
8	Untreated						8.3	8.3	2.7	7.3	7.3
LSD P=.05							1.55	2.09	3.34	2.80	2.19
Standard Deviation							0.88	1.19	1.91	1.60	1.25
CV							10.19	14.31	50.3	24.43	15.56

Weed Control in Native Spearmint – Irrer - 2015

Project Code: 121-15-01 **Location: St. Johns, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Mint **Variety: Native Spearmint**
Planting Method: Roots **Planting Date: 2013**
Spacing: 1 ft **Row Spacing: 6 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 50 ft long

Soil Type: Capac loam **OM: 2.6%** **pH: 6.5**
Sand: 81% **Silt: 11%** **Clay: 8%** **CEC: 5.4**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/6/15	11:00 am	50/43	F	Damp	1-2 NE	53	10% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/6	WHCA = white campion	2″	4-6 LS	Few
4/6	COCW = common chickweed	0.5″	Veg	Few
4/6	YERO = yellow rocket	1″	Veg	Few

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Native Spearmint – Irrer - 2015

Weed Control in Native Spearmint – Irrer - 2015

Trial ID: 121-15-1 Location: St. Johns, MI
Protocol ID: 121-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	MINT 5/Jun/15 RATING 1-10	FIPA 5/Jun/15 RATING 1-10	WHCA 5/Jun/15 RATING 1-10	WIBW 5/Jun/15 RATING 1-10
1	pyroxasulfone	85	WDG	0.21	lb ai/a	PRE	2.7	4.7	7.0	7.3
2	pyroxasulfone	85	WDG	0.42	lb ai/a	PRE	2.7	9.3	5.7	10.0
3	flumioxazin	51	WDG	0.128	lb ai/a	PRE	2.3	10.0	7.0	10.0
4	linuron	50	DF	1.0	lb ai/a	PRE	2.3	4.3	4.3	10.0
5	linuron	50	DF	2.0	lb ai/a	PRE	4.3	9.3	10.0	10.0
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	4.7	9.0	4.0	9.7
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	6.0	10.0	6.3	10.0
8	carfentrazone	2	EC	0.025	lb ai/a	PRE	3.3	10.0	7.0	10.0
	oxyfluorfen	2	EC	0.31	lb ai/a	PRE				
	terbacil	80	WDG	0.32	lb ai/a	PRE				
	NIS	100	SL	0.25	% v/v	PRE				
9	carfentrazone	2	EC	0.025	lb ai/a	PRE	5.3	10.0	7.0	10.0
	paraquat	2	SL	0.375	lb ai/a	PRE				
	oxyfluorfen	2	EC	0.31	lb ai/a	PRE				
	terbacil	80	WDG	0.32	lb ai/a	PRE				
10	flumioxazin	51	WDG	0.064	lb ai/a	PRE	5.7	10.0	8.7	10.0
	sulfentrazone	4	F	0.25	lb ai/a	PRE				
11	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	5.3	10.0	9.0	10.0
	flumioxazin	51	WDG	0.064	lb ai/a	PRE				
12	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	5.0	10.0	7.0	10.0
	sulfentrazone	4	F	0.25	lb ai/a	PRE				
LSD P=.05							1.55	3.28	4.19	2.25
Standard Deviation							0.92	1.94	2.47	1.33
CV							22.12	21.78	35.75	13.63

Weed Control in Native Spearmint – Irrer - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
Pest Code								CORW	WHCA
Crop Code							MINT		
Rating Date							23/Jun/15	23/Jun/15	23/Jun/15
Rating Type							RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10
1	pyroxasulfone	85	WDG	0.21	lb ai/a	PRE	2.0	9.0	7.0
2	pyroxasulfone	85	WDG	0.42	lb ai/a	PRE	2.0	10.0	6.0
3	flumioxazin	51	WDG	0.128	lb ai/a	PRE	2.0	10.0	7.0
4	linuron	50	DF	1.0	lb ai/a	PRE	1.7	9.0	4.0
5	linuron	50	DF	2.0	lb ai/a	PRE	2.0	10.0	10.0
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	2.7	7.7	4.3
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	4.3	10.0	7.0
8	carfentrazone	2	EC	0.025	lb ai/a	PRE	2.0	10.0	7.7
	oxyfluorfen	2	EC	0.31	lb ai/a	PRE			
	terbacil	80	WDG	0.32	lb ai/a	PRE			
	NIS	100	SL	0.25	% v/v	PRE			
9	carfentrazone	2	EC	0.025	lb ai/a	PRE	4.0	10.0	7.7
	paraquat	2	SL	0.375	lb ai/a	PRE			
	oxyfluorfen	2	EC	0.31	lb ai/a	PRE			
	terbacil	80	WDG	0.32	lb ai/a	PRE			
10	flumioxazin	51	WDG	0.064	lb ai/a	PRE	3.0	10.0	7.0
	sulfentrazone	4	F	0.25	lb ai/a	PRE			
11	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	3.7	10.0	9.0
	flumioxazin	51	WDG	0.064	lb ai/a	PRE			
12	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	3.0	10.0	7.3
	sulfentrazone	4	F	0.25	lb ai/a	PRE			
LSD P=.05							1.33	2.35	3.95
Standard Deviation							0.79	1.39	2.34
CV							29.19	14.38	33.36

Weed Control in Transplanted Molokhia – HTRC - 2015

Project Code: 134-15-2 **Location: East Lansing, MI**
Block 149

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Molokhia **Variety: Unknown**
Planting Method: Transplant **Planting Date: 8/21/15** **Harvest Date: 10/9/15**
Spacing: 22 in **Row Spacing: 36 in; 2 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.3 ft wide x 30 ft long

Soil Type: Capac loam **OM: 2.3%** **pH: 7.7**
Sand: 52% **Silt: 30%** **Clay: 18%** **CEC: 8.9**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRT	8/21/15	11:10 am	76/62	F	Damp	0-2 SW	45	10% Cloudy	N
POT	8/21/15	5:00 pm	72/68	F	Dry	3-5 SW	60	50% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
8/21	MOLOKHIA			
8/21	No Weeds			

COLQ = common lambsquarters
COPU = common purslane
EBNS = eastern black nightshade
RRPW = redroot pigweed
WIMU = wild mustard

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Molokhia (*Corchorus olitorius* L.); also known as nalta jute, Jew's marrow, and Egyptian spinach

Weed Control in Transplanted Molokhia – HTRC - 2015

Weed Control in Transplanted Molokhia – HTRC – 2015

Trial ID: 134-15-2 Location: East Lansing, MI
Protocol ID: 134-15-2 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	MOLOKHIA 10/Sep/15 RATING 1-10	COPU 10/Sep/15 RATING 1-10	EBNS 10/Sep/15 RATING 1-10	MOLOKHIA 25/Sep/15 RATING 1-10
1	*S*-metolachlor	7.62	EC	0.75	lb ai/a	PRT	1.7	9.7	10.0	2.7
2	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	4.3	10.0	9.7	4.7
3	napropamide	50	DF	1	lb ai/a	PRT	4.3	10.0	9.0	4.7
4	linuron	50	DF	0.5	lb ai/a	PRT	7.3	9.7	10.0	6.3
5	prometryn	4	L	0.5	lb ai/a	PRT	2.7	10.0	10.0	3.0
6	clomazone	3	ME	0.25	lb ai/a	PRT	6.7	10.0	10.0	5.3
7	trifluralin	4	EC	0.5	lb ai/a	PRT	2.0	9.7	6.0	2.3
8	flumioxazin	51	WDG	0.032	lb ai/a	PRT	4.7	10.0	10.0	4.7
9	pronamide	3.3	SC	1	lb ai/a	PRT	2.3	10.0	10.0	2.7
10	Untreated					POT	1.7	6.3	4.3	1.7
11	*S*-metolachlor	7.62	EC	0.75	lb ai/a	POT	3.3	10.0	10.0	4.0
12	pendimethalin	3.8	CS	0.75	lb ai/a	POT	6.7	10.0	10.0	7.7
13	napropamide	50	DF	1	lb ai/a	POT	6.7	10.0	1.3	7.0
14	clomazone	3	ME	0.25	lb ai/a	POT	4.7	10.0	1.0	5.7
15	pronamide	3.3	SC	0.75	lb ai/a	POT	5.0	10.0	10.0	5.7
16	ethofumesate	4	SC	1	lb ai/a	POT	3.3	10.0	10.0	3.3
LSD P=.05							2.05	2.03	2.38	2.27
Standard Deviation							1.23	1.22	1.43	1.36
CV							29.28	12.56	17.37	30.51

Weed Control in Transplanted Molokhia – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COLQ	EBNS	RRPW	WIMU
	Pest Code									
	Crop Code									
	Rating Date						25/Sep/15	25/Sep/15	25/Sep/15	25/Sep/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	*S*-metolachlor	7.62	EC	0.75	lb ai/a	PRT	9.0	10.0	9.7	9.3
2	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	9.0	8.7	10.0	5.7
3	napropamide	50	DF	1	lb ai/a	PRT	9.3	4.7	10.0	4.7
4	linuron	50	DF	0.5	lb ai/a	PRT	10.0	10.0	10.0	10.0
5	prometryn	4	L	0.5	lb ai/a	PRT	10.0	9.7	10.0	9.7
6	clomazone	3	ME	0.25	lb ai/a	PRT	10.0	8.7	10.0	8.7
7	trifluralin	4	EC	0.5	lb ai/a	PRT	6.3	1.7	9.7	4.3
8	flumioxazin	51	WDG	0.032	lb ai/a	PRT	10.0	10.0	10.0	10.0
9	pronamide	3.3	SC	1	lb ai/a	PRT	9.7	8.7	9.7	9.7
10	Untreated					POT	3.7	3.0	6.3	6.3
11	*S*-metolachlor	7.62	EC	0.75	lb ai/a	POT	8.3	10.0	10.0	7.7
12	pendimethalin	3.8	CS	0.75	lb ai/a	POT	10.0	9.7	9.3	7.0
13	napropamide	50	DF	1	lb ai/a	POT	9.3	1.0	9.7	6.3
14	clomazone	3	ME	0.25	lb ai/a	POT	9.3	1.0	8.3	8.3
15	pronamide	3.3	SC	0.75	lb ai/a	POT	9.7	9.7	10.0	9.3
16	ethofumesate	4	SC	1	lb ai/a	POT	10.0	9.7	10.0	10.0
LSD P=.05							2.13	2.26	2.05	4.54
Standard Deviation							1.28	1.36	1.23	2.72
CV							14.24	18.7	12.91	34.27

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	MOLOKHIA 6/Oct/15 STAND GOOD #/PLOT	MOLOKHIA 6/Oct/15 STAND POOR #/PLOT	MOLOKHIA 6/Oct/15 STAND TOTAL #/PLOT	MOLOKHIA 9/Oct/15 HARVEST KG/PLOT
	Pest Code									
	Crop Code									
	Rating Date									
	Rating Type									
	Rating Unit									
1	*S*-metolachlor	7.62	EC	0.75	lb ai/a	PRT	21.3	6.0	27.3	0.38
2	pendimethalin	3.8	CS	0.75	lb ai/a	PRT	13.0	8.3	21.3	0.19
3	napropamide	50	DF	1	lb ai/a	PRT	13.0	7.0	20.0	0.21
4	linuron	50	DF	0.5	lb ai/a	PRT	7.3	2.0	9.3	0.11
5	prometryn	4	L	0.5	lb ai/a	PRT	19.0	7.0	26.0	0.31
6	clomazone	3	ME	0.25	lb ai/a	PRT	3.7	8.3	12.0	0.10
7	trifluralin	4	EC	0.5	lb ai/a	PRT	21.0	7.7	28.7	0.50
8	flumioxazin	51	WDG	0.032	lb ai/a	PRT	17.0	3.7	20.7	0.29
9	pronamide	3.3	SC	1	lb ai/a	PRT	22.0	3.7	25.7	0.57
10	Untreated					POT	24.7	4.0	28.7	0.88
11	*S*-metolachlor	7.62	EC	0.75	lb ai/a	POT	21.3	1.3	22.7	0.64
12	pendimethalin	3.8	CS	0.75	lb ai/a	POT	0.7	10.3	11.0	0.03
13	napropamide	50	DF	1	lb ai/a	POT	2.7	9.3	12.0	0.10
14	clomazone	3	ME	0.25	lb ai/a	POT	10.7	14.7	25.3	0.18
15	pronamide	3.3	SC	0.75	lb ai/a	POT	10.7	11.3	22.0	0.18
16	ethofumesate	4	SC	1	lb ai/a	POT	18.3	10.0	28.3	0.25
LSD P=.05							9.10	6.09	8.00	0.364
Standard Deviation							5.46	3.65	4.80	0.218
CV							38.57	50.93	22.51	70.81

Preemergence Weed Control in Onion – Muck Soil - Keilen - 2015

Project Code: 112-15-1 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Onion **Variety: Stanley**
Planting Method: Seeded **Planting Date: 4/18/15** **Harvest Date: 9/11/15**
Spacing: 1 inch **Row Spacing: 10 in; 2 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 4**
Plot Size: 2.7 ft wide x 25 ft long

Soil Type: Houghton muck **OM: 57.4%** **pH: 7.0**
Sand: 24% **Silt: 15%** **Clay: 4%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/29/15	9:30 am	59/47	F	Dry	3-5 N	50	75% Cloudy	N
PO1	5/29/15	10:00 am	72/65	F	Dry	2-3 SW	70	70% Cloudy	N
PO2	6/19/15	2:50 pm	73/73	F	Moist	4-5 SE	47	75% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/29	ONION		Preemergence	
4/29	No Weeds			
5/29	ONION	4-5″	2 LS	Good
5/29	LATH = ladysthumb	2-3″	Veg	Many
5/29	RRPW = redroot pigweed	1-3″	Veg	Many
6/19	LATH = ladysthumb	2-4″	Veg	Moderate

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Preemergence Weed Control in Onion – Muck Soil - Keilen - 2015

Preemergence Weed Control in Onion – Muck Soil – Keilen – 2015

Trial ID: 112-15-1 Location: East Lansing, MI
Protocol ID: 112-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ONION 21/May/15 RATING 1-10	BARLEY 21/May/15 RATING 1-10	LATH 21/May/15 RATING 1-10	RRPW 21/May/15 RATING 1-10	ONION 29/May/15 RATING 1-10
1	pendimethalin	3.8	CS	1.9	lb ai/a	PRE, PO1,2	1.0	1.0	5.3	7.0	1.0
2	pendimethalin	3.8	CS	3.8	lb ai/a	PRE, PO1,2	1.0	1.8	6.3	8.3	1.3
3	pendimethalin	3.8	CS	1.9	lb ai/a	PRE, PO1,2	1.3	1.8	3.3	4.3	1.3
	flumioxazin	51	WDG	0.032	lb ai/a	PRE, PO1,2					
4	pendimethalin	3.8	CS	1.9	lb ai/a	PRE, PO1,2	1.3	1.3	4.8	7.5	1.5
	flumioxazin	51	WDG	0.064	lb ai/a	PRE					
	flumioxazin	51	WDG	0.032	lb ai/a	PO1					
5	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.0	1.5	3.8	5.8	1.0
	pyroxasulfone	85	WDG	0.133	lb ai/a	PO1					
6	pendimethalin	3.8	CS	1.9	lb ai/a	PRE, PO1	1.0	1.0	3.3	4.5	1.5
	pyroxasulfone	85	WDG	0.133	lb ai/a	PO2					
7	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.5	1.8	3.8	4.8	1.5
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1					
8	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.3	2.3	3.5	5.0	1.3
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
9	pendimethalin	3.8	CS	1.9	lb ai/a	PRE, PO1	1.0	1.0	4.0	6.5	1.0
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO2					
10	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	1.3	3.3	3.3	6.3	1.0
	pendimethalin	3.8	CS	1.9	lb ai/a	PO1,2					
11	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	1.3	2.0	3.5	8.8	1.3
	pendimethalin	3.8	CS	1.9	lb ai/a	PO1,2					
12	pendimethalin	3.8	CS	1.9	lb ai/a	PRE, PO1,2	1.5	2.3	4.8	6.8	1.8
	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE, PO1,2					
13	Untreated						1.0	1.3	1.3	1.0	1.0
LSD P=.05							0.51	1.14	2.86	3.39	0.70
Standard Deviation							0.36	0.80	2.00	2.38	0.49
CV							30.52	47.07	51.46	40.5	38.96

Preemergence Weed Control in Onion – Muck Soil - Keilen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH 29/May/15 RATING 1-10	RRPW 29/May/15 RATING 1-10	ONION 19/Jun/15 RATING 1-10	ONION 11/Sep/15 HARVEST KG/PLOT
1	pendimethalin	3.8	CS	1.9	lb ai/a	PRE, PO1,2	8.0	8.8	1.3	47.58
2	pendimethalin	3.8	CS	3.8	lb ai/a	PRE, PO1,2	8.5	9.0	1.3	48.54
3	pendimethalin	3.8	CS	1.9	lb ai/a	PRE, PO1,2	7.5	8.5	1.8	49.72
	flumioxazin	51	WDG	0.032	lb ai/a	PRE, PO1,2				
4	pendimethalin	3.8	CS	1.9	lb ai/a	PRE, PO1,2	7.3	9.3	1.5	51.49
	flumioxazin	51	WDG	0.064	lb ai/a	PRE				
	flumioxazin	51	WDG	0.032	lb ai/a	PO1				
5	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	7.0	6.8	1.8	49.98
	pyroxasulfone	85	WDG	0.133	lb ai/a	PO1				
6	pendimethalin	3.8	CS	1.9	lb ai/a	PRE, PO1	6.8	6.5	2.0	47.86
	pyroxasulfone	85	WDG	0.133	lb ai/a	PO2				
7	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	8.0	7.5	1.3	50.76
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1				
8	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	6.8	8.3	1.5	45.94
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO1				
	NIS	100	SL	0.25	% v/v	PO1				
9	pendimethalin	3.8	CS	1.9	lb ai/a	PRE, PO1	7.5	7.5	2.0	46.93
	pyroxasulfone	85	WDG	0.267	lb ai/a	PO2				
10	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	4.5	8.8	2.3	45.47
	pendimethalin	3.8	CS	1.9	lb ai/a	PO1,2				
11	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	4.5	8.8	3.0	42.34
	pendimethalin	3.8	CS	1.9	lb ai/a	PO1,2				
12	pendimethalin	3.8	CS	1.9	lb ai/a	PRE, PO1,2	7.0	9.0	1.8	46.60
	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE, PO1,2				
13	Untreated						2.5	3.5	1.5	47.46
LSD P=.05							2.29	2.07	0.82	5.598
Standard Deviation							1.61	1.45	0.57	3.918
CV							24.34	18.48	32.62	8.21

Postemergence Weed Control in Onion – Muck Soil - Keilen - 2015

Project Code: 112-15-2 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Onion **Variety: Stanley**
Planting Method: Seeded **Planting Date: 4/18/15** **Harvest Date: 9/11/15**
Spacing: 1 inch **Row Spacing: 10 in; 2 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 4**
Plot Size: 2.7 ft wide x 25 ft long

Soil Type: Houghton muck **OM: 57.4%** **pH: 7.0**
Sand: 24% **Silt: 15%** **Clay: 4%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PO1	5/18/15	9:30 am	75/66	F	Damp	2-5 SW	77	90% Cloudy	Y
PO2	5/29/15	11:05 am	79/65	F	Dry	3-5 SW	70	70% Cloudy	N
PO3	6/11/15	10:00 am	68/66	F	Dry	2-3 NW	67	90% Cloudy	N
PO4	6/16/15	4:45 pm	83/79	F	Moist	4-5 SSW	51	10% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/18	ONION	4-5″	1 LS	Good
5/18	CORW = common ragweed	2-3″	Veg	Few
5/18	LATH = ladysthumb	3″	2-3 LS	Many
5/18	RRPW = redroot pigweed	1-2″	Veg	Many
5/29	ONION	4-6″	2 LS	Good
5/29	CORW = common ragweed	6-8″	Veg	Many
5/29	LATH = ladysthumb	2-3″	Veg	Many
5/29	RRPW = redroot pigweed	3-5″	Veg	Many
6/11	ONION	5-7″	4-5 LS	Good
6/11	CORW = common ragweed	8-10″	Veg	Few
6/11	LATH = ladysthumb	4-6″	Veg	Many
6/11	RRPW = redroot pigweed	4-8″	Veg	Many

Notes and Comments
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Plots were 25 feet long; study contained 4 reps.
4. Plots were hand weeded after 1 August 2015.

Postemergence Weed Control in Onion – Muck Soil - Keilen - 2015

Postemergence Weed Control in Onion – Muck Soil – Keilen – 2015

Trial ID: 112-15-2 Location: East Lansing, MI
Protocol ID: 112-15-2 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ONION	LATH	RRPW	ONION	LATH
Pest Code								LATH	RRPW		LATH
Crop Code							ONION			ONION	
Rating Date							29/May/15	29/May/15	29/May/15	9/Jun/15	9/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2,3	1.0	6.5	7.3	2.5	5.5
2	oxyfluorfen	4	SC	0.125	lb ai/a	PO1,2,3	1.5	7.5	8.3	3.5	6.8
3	oxyfluorfen	4	SC	0.25	lb ai/a	PO1,2,3	2.0	8.3	8.8	4.0	7.5
4	oxyfluorfen	4	SC	0.125	lb ai/a	PO1,2,3	1.5	6.8	8.5	3.5	6.8
	flumioxazin	51	WDG	0.032	lb ai/a	PO1,2,3					
5	fomesafen	2	SL	0.125	lb ai/a	PO2,3	1.0	1.0	1.0	2.5	4.8
6	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2	1.3	6.3	6.8	2.3	4.8
	clopyralid	3	L	0.094	lb ai/a	PO3					
	clopyralid	3	L	0.188	lb ai/a	PO4					
7	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2	1.3	6.5	7.3	2.5	5.8
	clopyralid	3	L	0.188	lb ai/a	PO3					
	clopyralid	3	L	0.376	lb ai/a	PO4					
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO2	1.0	1.0	1.0	1.5	5.0
9	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO2	1.0	1.0	1.0	2.0	4.3
	NIS	100	SL	0.25	% v/v	PO2					
10	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO2	1.0	1.0	1.0	1.5	4.5
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO2	1.0	2.3	1.0	1.5	4.5
	NIS	100	SL	0.25	% v/v	PO2					
12	acifluorfen	2	L	0.25	lb ai/a	PO2,3	1.0	1.0	1.0	3.5	5.5
13	oxyfluorfen	4	SC	0.125	lb ai/a	PO1,2,3	1.8	7.5	8.0	3.5	8.0
	flumioxazin	51	WDG	0.032	lb ai/a	PO2,3					
	fluazifop-P	2	EC	0.188	lb ai/a	PO2,3					
14	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2,3	1.0	5.5	6.3	3.5	7.0
	bromoxynil	2	EC	0.12	lb ai/a	PO2,3					
15	Handweeded					PO1,2,3	1.0	1.0	1.0	1.3	9.0
LSD P=.05							0.52	1.61	0.86	1.05	2.99
Standard Deviation							0.37	1.13	0.60	0.73	2.09
CV							30.19	26.9	13.28	28.15	35.04

Postemergence Weed Control in Onion – Muck Soil - Keilen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RRPW 9/Jun/15 RATING 1-10	ONION 19/Jun/15 RATING 1-10	LATH 19/Jun/15 RATING 1-10	RRPW 19/Jun/15 RATING 1-10	ONION 24/Jun/15 RATING 1-10
1	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2,3	8.3	2.3	7.3	9.5	1.8
2	oxyfluorfen	4	SC	0.125	lb ai/a	PO1,2,3	9.8	2.0	9.0	10.0	1.5
3	oxyfluorfen	4	SC	0.25	lb ai/a	PO1,2,3	9.8	3.0	9.5	10.0	2.0
4	oxyfluorfen	4	SC	0.125	lb ai/a	PO1,2,3	9.3	3.0	9.5	10.0	2.3
	flumioxazin	51	WDG	0.032	lb ai/a	PO1,2,3					
5	fomesafen	2	SL	0.125	lb ai/a	PO2,3	3.3	2.5	6.5	8.5	1.8
6	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2	7.3	4.3	6.0	8.8	4.3
	clopyralid	3	L	0.094	lb ai/a	PO3					
	clopyralid	3	L	0.188	lb ai/a	PO4					
7	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2	7.5	5.0	7.3	8.5	4.3
	clopyralid	3	L	0.188	lb ai/a	PO3					
	clopyralid	3	L	0.376	lb ai/a	PO4					
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO2	2.3	1.0	3.5	2.8	2.0
9	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO2	3.3	1.3	3.8	4.0	1.8
	NIS	100	SL	0.25	% v/v	PO2					
10	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO2	2.0	1.8	2.8	1.0	2.5
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO2	5.5	1.5	3.5	4.8	2.5
	NIS	100	SL	0.25	% v/v	PO2					
12	acifluorfen	2	L	0.25	lb ai/a	PO2,3	6.3	2.5	7.3	8.5	2.3
13	oxyfluorfen	4	SC	0.125	lb ai/a	PO1,2,3	9.3	4.0	10.0	10.0	3.0
	flumioxazin	51	WDG	0.032	lb ai/a	PO2,3					
	fluazifop-P	2	EC	0.188	lb ai/a	PO2,3					
14	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2,3	9.0	3.0	9.3	10.0	2.0
	bromoxynil	2	EC	0.12	lb ai/a	PO2,3					
15	Handweeded					PO1,2,3	9.0	1.3	7.8	8.0	1.3
LSD P=.05							2.22	1.16	2.41	2.56	1.59
Standard Deviation							1.55	0.81	1.69	1.79	1.11
CV							22.92	31.73	24.6	23.49	47.53

Postemergence Weed Control in Onion – Muck Soil - Keilen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH	RRPW	ONION	LATH	RRPW
Pest Code							LATH	RRPW		LATH	RRPW
Crop Code									ONION		
Rating Date							24/Jun/15	24/Jun/15	10/Jul/15	10/Jul/15	10/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2,3	7.5	9.5	1.8	8.5	8.3
2	oxyfluorfen	4	SC	0.125	lb ai/a	PO1,2,3	9.0	10.0	1.5	8.8	9.5
3	oxyfluorfen	4	SC	0.25	lb ai/a	PO1,2,3	9.8	10.0	1.8	8.8	9.5
4	oxyfluorfen	4	SC	0.125	lb ai/a	PO1,2,3	9.5	10.0	1.8	9.5	10.0
	flumioxazin	51	WDG	0.032	lb ai/a	PO1,2,3					
5	fomesafen	2	SL	0.125	lb ai/a	PO2,3	7.5	8.5	1.3	6.8	8.0
6	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2	6.5	8.5	2.8	4.0	1.5
	clopyralid	3	L	0.094	lb ai/a	PO3					
	clopyralid	3	L	0.188	lb ai/a	PO4					
7	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2	9.3	9.3	3.0	6.3	5.3
	clopyralid	3	L	0.188	lb ai/a	PO3					
	clopyralid	3	L	0.376	lb ai/a	PO4					
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO2	6.0	4.0	3.0	8.3	9.0
9	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO2	6.5	7.0	3.5	8.0	7.8
	NIS	100	SL	0.25	% v/v	PO2					
10	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO2	3.8	3.3	4.5	8.0	8.0
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO2	5.3	5.3	2.8	8.8	6.8
	NIS	100	SL	0.25	% v/v	PO2					
12	acifluorfen	2	L	0.25	lb ai/a	PO2,3	6.8	8.8	2.0	7.3	8.3
13	oxyfluorfen	4	SC	0.125	lb ai/a	PO1,2,3	9.8	10.0	2.0	9.5	9.3
	flumioxazin	51	WDG	0.032	lb ai/a	PO2,3					
	fluazifop-P	2	EC	0.188	lb ai/a	PO2,3					
14	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2,3	9.5	10.0	1.8	9.3	9.3
	bromoxynil	2	EC	0.12	lb ai/a	PO2,3					
15	Handweeded					PO1,2,3	9.0	8.5	2.0	8.3	8.8
LSD P=.05							3.50	3.36	1.61	2.66	2.02
Standard Deviation							2.45	2.35	1.13	1.86	1.41
CV							31.81	28.82	47.92	23.32	17.83

Postemergence Weed Control in Onion – Muck Soil - Keilen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ONION 27/Jul/15 RATING 1-10	COPU 27/Jul/15 RATING 1-10	LATH 27/Jul/15 RATING 1-10	RRPW 27/Jul/15 RATING 1-10	ONION 11/Sep/15 HARVEST KG/PLOT
1	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2,3	1.5	7.8	8.5	7.0	45.71
2	oxyfluorfen	4	SC	0.125	lb ai/a	PO1,2,3	1.5	8.0	6.5	9.5	49.55
3	oxyfluorfen	4	SC	0.25	lb ai/a	PO1,2,3	1.5	8.5	7.0	7.8	48.03
4	oxyfluorfen	4	SC	0.125	lb ai/a	PO1,2,3	2.0	9.5	9.3	10.0	45.53
	flumioxazin	51	WDG	0.032	lb ai/a	PO1,2,3					
5	fomesafen	2	SL	0.125	lb ai/a	PO2,3	1.5	7.3	5.5	6.0	41.07
6	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2	1.8	9.8	3.0	1.0	28.14
	clopyralid	3	L	0.094	lb ai/a	PO3					
	clopyralid	3	L	0.188	lb ai/a	PO4					
7	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2	2.3	10.0	7.0	4.8	37.41
	clopyralid	3	L	0.188	lb ai/a	PO3					
	clopyralid	3	L	0.376	lb ai/a	PO4					
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO2	2.8	6.5	7.5	8.3	38.41
9	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO2	2.5	4.5	5.3	4.3	36.31
	NIS	100	SL	0.25	% v/v	PO2					
10	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO2	3.5	5.3	5.0	4.8	26.71
11	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO2	3.0	7.5	8.3	5.5	39.53
	NIS	100	SL	0.25	% v/v	PO2					
12	acifluorfen	2	L	0.25	lb ai/a	PO2,3	1.3	7.8	6.0	6.0	44.51
13	oxyfluorfen	4	SC	0.125	lb ai/a	PO1,2,3	2.0	7.3	9.3	9.3	44.81
	flumioxazin	51	WDG	0.032	lb ai/a	PO2,3					
	fluazifop-P	2	EC	0.188	lb ai/a	PO2,3					
14	oxyfluorfen	4	SC	0.063	lb ai/a	PO1,2,3	1.8	8.3	7.0	6.3	47.04
	bromoxynil	2	EC	0.12	lb ai/a	PO2,3					
15	Handweeded					PO1,2,3	2.0	7.5	6.0	6.5	46.76
LSD P=.05							0.92	3.93	3.67	3.62	8.591
Standard Deviation							0.65	2.75	2.57	2.54	6.012
CV							31.55	35.81	38.1	39.31	14.56

Preemergence Weed Control in Onion – Mineral Soil - Vogel - 2015

Project Code: 112-15-3 **Location: Fremont, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Onion **Variety: Saffrain**
Planting Method: Seeded **Planting Date: 4/17/15** **Harvest Date: 9/15/15**
Spacing: 1 in **Row Spacing: 12 in; 3 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Pipestone sand **OM: 2.0%** **pH: 7.2**
Sand: 94% **Silt: 5%** **Clay: 1%** **CEC: 6.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/28/15	6:00 pm	64/70	F	Moist	3-5 NW	33	5% Cloudy	N
PO1	5/20/15	1:00 pm	55/65	F	Dry	3-4 NW	29	100% Cloudy	N
PO2	6/25/15	11:00 am	72/70	F	Damp	2-3 SW	77	100% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/28	ONION		Preemergence	
4/28	No Weeds			
5/20	ONION	2-3″	1 LS	Good
5/20	COLQ = common lambsquarters	0.5-1″	2-4 LS	Many
5/20	CORW = common ragweed	0.5-1″	2 LS	Moderate
5/20	HANS = hairy nightshade	1-2″	2-4 LS	Many
6/25	ONION			
6/25	COLQ = common lambsquarters	3-12″	Veg	Moderate

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. May 20, 2015: 4 oz. of GoalTender applied to all plots that did not receive PO1 treatments.
4. Plots were hand weeded after July 20.

Preemergence Weed Control in Onion – Mineral Soil - Vogel - 2015

Preemergence Weed Control in Onion – Mineral Soil – Vogel – 2015

Trial ID: 112-15-3 Location: Fremont, MI
Protocol ID: 112-15-3 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ONION 20/May/15 RATING 1-10	COLQ 20/May/15 RATING 1-10	CORW 20/May/15 RATING 1-10	HANS 20/May/15 RATING 1-10	ONION 28/May/15 RATING 1-10
1	pendimethalin	3.8	CS	0.95	lb ai/a	PRE,PO1,2	1.3	8.0	7.7	7.0	1.0
2	pendimethalin	3.8	CS	0.75	lb ai/a	PRE,PO1,2	1.7	6.7	8.7	5.0	1.7
	flumioxazin	51	WDG	0.016	lb ai/a	PRE,PO1,2					
3	pendimethalin	3.8	CS	0.75	lb ai/a	PRE	1.3	7.7	6.3	8.0	1.7
	pyroxasulfone	85	WDG	0.133	lb ai/a	PO1					
4	pendimethalin	3.8	CS	0.75	lb ai/a	PRE, PO1	1.3	7.7	9.3	5.3	1.3
	pyroxasulfone	85	WDG	0.133	lb ai/a	PO2					
5	pendimethalin	3.8	CS	0.75	lb ai/a	PRE	1.3	8.3	9.3	4.7	1.3
	pyroxasulfone	85	WDG	0.198	lb ai/a	PO1					
6	pendimethalin	3.8	CS	0.75	lb ai/a	PRE, PO1	1.3	8.0	9.0	5.7	1.3
	pyroxasulfone	85	WDG	0.198	lb ai/a	PO2					
7	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	3.3	5.7	8.3	5.0	4.7
8	pyroxasulfone	85	WDG	0.198	lb ai/a	PRE	6.3	7.0	10.0	7.3	5.3
9	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	3.3	4.3	9.3	3.3	2.7
10	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	3.7	4.3	10.0	3.0	4.0
11	pendimethalin	3.8	CS	0.75	lb ai/a	PRE	1.0	6.7	7.7	5.7	1.3
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
12	Untreated					PRE	1.0	1.3	7.0	2.3	1.0
	Handweeded					PO1,2					
LSD P=.05							1.54	3.27	3.42	2.82	1.60
Standard Deviation							0.91	1.93	2.02	1.66	0.94
CV							40.39	30.67	23.61	32.04	41.45

Preemergence Weed Control in Onion – Mineral Soil - Vogel - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COLQ 28/May/15 RATING 1-10	HANS 28/May/15 RATING 1-10	ONION 4/Jun/15 RATING 1-10	COLQ 4/Jun/15 RATING 1-10	HANS 4/Jun/15 RATING 1-10
1	pendimethalin	3.8	CS	0.95	lb ai/a	PRE,PO1,2	9.3	9.3	1.0	9.3	9.3
2	pendimethalin	3.8	CS	0.75	lb ai/a	PRE,PO1,2	9.3	9.7	1.3	9.0	9.7
	flumioxazin	51	WDG	0.016	lb ai/a	PRE,PO1,2					
3	pendimethalin	3.8	CS	0.75	lb ai/a	PRE	9.3	9.3	1.0	8.7	8.3
	pyroxasulfone	85	WDG	0.133	lb ai/a	PO1					
4	pendimethalin	3.8	CS	0.75	lb ai/a	PRE, PO1	8.7	8.7	1.7	8.0	7.7
	pyroxasulfone	85	WDG	0.133	lb ai/a	PO2					
5	pendimethalin	3.8	CS	0.75	lb ai/a	PRE	9.3	9.0	1.3	8.3	8.7
	pyroxasulfone	85	WDG	0.198	lb ai/a	PO1					
6	pendimethalin	3.8	CS	0.75	lb ai/a	PRE, PO1	9.3	9.3	1.3	7.7	8.7
	pyroxasulfone	85	WDG	0.198	lb ai/a	PO2					
7	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	2.3	7.3	3.0	3.3	5.7
8	pyroxasulfone	85	WDG	0.198	lb ai/a	PRE	5.0	4.7	3.0	5.0	4.7
9	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	3.3	3.3	2.0	4.0	3.0
10	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	2.0	1.7	4.0	2.3	4.0
11	pendimethalin	3.8	CS	0.75	lb ai/a	PRE	7.3	8.3	1.3	7.0	7.7
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1					
12	Untreated Handweeded					PRE PO1,2	6.0	7.7	1.0	6.0	8.0
LSD P=.05							1.76	3.19	1.24	2.28	2.83
Standard Deviation							1.04	1.88	0.73	1.34	1.67
CV							15.34	25.57	40.0	20.51	23.53

Preemergence Weed Control in Onion – Mineral Soil - Vogel - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
Pest Code									COLQ	
Crop Code							ONION	ONION		ONION
Rating Date							23/Jun/15	20/Jul/15	20/Jul/15	15/Sep/15
Rating Type							RATING	RATING	RATING	HARVEST
Rating Unit							1-10	1-10	1-10	KG/PLOT
1	pendimethalin	3.8	CS	0.95	lb ai/a	PRE,PO1,2	2.3	1.3	7.7	126.95
2	pendimethalin	3.8	CS	0.75	lb ai/a	PRE,PO1,2	2.7	1.7	8.0	126.43
	flumioxazin	51	WDG	0.016	lb ai/a	PRE,PO1,2				
3	pendimethalin	3.8	CS	0.75	lb ai/a	PRE	2.7	2.0	6.3	126.13
	pyroxasulfone	85	WDG	0.133	lb ai/a	PO1				
4	pendimethalin	3.8	CS	0.75	lb ai/a	PRE, PO1	2.7	2.3	10.0	127.59
	pyroxasulfone	85	WDG	0.133	lb ai/a	PO2				
5	pendimethalin	3.8	CS	0.75	lb ai/a	PRE	3.0	2.3	6.7	122.52
	pyroxasulfone	85	WDG	0.198	lb ai/a	PO1				
6	pendimethalin	3.8	CS	0.75	lb ai/a	PRE, PO1	2.0	1.7	10.0	121.89
	pyroxasulfone	85	WDG	0.198	lb ai/a	PO2				
7	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	6.7	4.0	3.3	68.40
8	pyroxasulfone	85	WDG	0.198	lb ai/a	PRE	5.7	5.3	2.3	67.23
9	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	6.0	4.7	1.3	67.37
10	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	7.3	4.3	1.0	52.29
11	pendimethalin	3.8	CS	0.75	lb ai/a	PRE	2.3	1.3	6.0	124.36
	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1				
12	Untreated					PRE	1.7	1.3	7.0	127.90
	Handweeded					PO1,2				
LSD P=.05							1.90	1.27	2.16	28.086
Standard Deviation							1.12	0.75	1.28	16.586
CV							29.99	27.73	22.02	15.81

Weed Control in Established Chives – IR4 – Van Drunen - 2015

Project Code: 117-15-1 **Location: Momence, IL**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Chives **Variety: Purly**
Planting Method: Root division **Planting Date: 2011** **Harvest Dates: See notes**
Spacing: 1 inch **Row Spacing: 10 inch; 4 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Jasper loam **OM: 5.3%** **pH: 4.9**
Sand: 28% **Silt: 40%** **Clay: 32%** **CEC: 22.3**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/5/15	4:00 pm	69/66	F	Dry	5-6 NE	58	65% Cloudy	N
PO1	6/24/15	1:30 pm	78/70	F	Wet	5-7 SW	71	25% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/5	CHIVES		Preemergence	
6/5	No Weeds			
6/24	CHIVES	4-6″	Veg	Good
6/24	COLQ = common lambsquarters			
6/24	COPU = common purslane			
6/24	DAND = dandelion			
6/24	GOGR = goosegrass			
6/24	RRPW = redroot pigweed			

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvested 8 July, 4 August, and 24 September 2015.

Weed Control in Established Chives – IR4 – Van Drunen - 2015

Weed Control in Established Chives – IR4 – Van Drunen – 2015

Trial ID: 117-15-1 Location: Momence, IL
Protocol ID: 117-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CHIVES 24/Jun/15 RATING 1-10	GOGR 24/Jun/15 RATING 1-10	COLQ 24/Jun/15 RATING 1-10	COPU 24/Jun/15 RATING 1-10	DAND 24/Jun/15 RATING 1-10
1	Untreated						1.0	4.7	1.0	2.7	2.3
2	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.3	6.0	2.0	3.7	2.0
3	clethodim	0.97	EC	0.12	lb ai/a	PO1	1.7	3.0	1.0	1.3	1.3
4	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	3.0	5.0	2.3	3.7	1.7
5	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	2.7	4.3	2.3	4.0	3.0
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	1.7	6.3	1.3	2.7	2.3
7	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	2.3	9.7	4.3	4.3	2.7
8	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	2.0	10.0	5.0	9.0	4.3
9	fluazifop-P	2	EC	0.375	lb ai/a	PO1	1.7	10.0	1.3	3.0	1.7
	NIS	100	SL	0.25	% v/v	PO1					
10	fluazifop-P	2	EC	0.750	lb ai/a	PO1	1.0	10.0	2.0	3.0	1.3
	NIS	100	SL	0.25	% v/v	PO1					
LSD P=.05							1.52	4.93	2.36	4.90	1.98
Standard Deviation							0.89	2.87	1.38	2.86	1.15
CV							48.33	41.62	60.69	76.58	50.8

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RRPW 24/Jun/15 RATING 1-10	CHIVES 29/Jun/15 RATING 1-10	CHIVES 1/Jul/15 RATING 1-10	CHIVES 8/Jul/15 RATING 1-10	BYGR 8/Jul/15 RATING 1-10
1	Untreated						6.0	1.3	1.3	1.0	7.0
2	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	10.0	1.3	1.3	1.0	10.0
3	clethodim	0.97	EC	0.12	lb ai/a	PO1	10.0	2.0	1.7	1.0	9.0
4	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE		3.3	3.3	2.0	7.0
5	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	9.0	3.3	3.3	1.7	2.3
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	9.0	1.7	2.0	1.3	7.0
7	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	10.0	2.3	2.3	1.7	7.3
8	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	10.0	2.0	2.0	1.7	10.0
9	fluazifop-P	2	EC	0.375	lb ai/a	PO1	10.0	1.7	1.3	1.0	10.0
	NIS	100	SL	0.25	% v/v	PO1					
10	fluazifop-P	2	EC	0.750	lb ai/a	PO1	10.0	1.3	1.0	1.0	10.0
	NIS	100	SL	0.25	% v/v	PO1					
LSD P=.05							4.92	1.73	1.72	1.01	4.99
Standard Deviation							2.46	1.01	1.01	0.59	2.91
CV							26.41	49.54	51.13	44.02	36.48

Weed Control in Established Chives – IR4 – Van Drunen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	FAPA	LACG	COLQ	COPU	DAND
Pest Code											
Crop Code											
Rating Date							8/Jul/15	8/Jul/15	8/Jul/15	8/Jul/15	8/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Untreated						1.0	7.7	3.3	4.0	2.3
2	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	7.7	10.0	4.3	6.0	2.3
3	clethodim	0.97	EC	0.12	lb ai/a	PO1	10.0	10.0	3.7	3.3	1.3
4	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	9.3	4.7	4.7	5.7	2.3
5	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	10.0	5.7	5.7	4.3	3.7
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	10.0	8.7	7.7	6.0	8.0
7	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	10.0	5.3	4.0	5.3	2.3
8	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	10.0	10.0	6.0	8.3	3.3
9	fluazifop-P	2	EC	0.375	lb ai/a	PO1	10.0	10.0	5.0	5.3	2.0
	NIS	100	SL	0.25	% v/v	PO1					
10	fluazifop-P	2	EC	0.750	lb ai/a	PO1	10.0	10.0	5.0	6.3	1.7
	NIS	100	SL	0.25	% v/v	PO1					
LSD P=.05							2.31	4.80	2.48	3.70	2.19
Standard Deviation							1.35	2.80	1.44	2.16	1.28
CV							15.32	34.15	29.27	39.47	43.62

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CHIVES	BYGR	WIGR	COLQ	COPU
Pest Code											
Crop Code											
Rating Date							24/Jul/15	24/Jul/15	24/Jul/15	24/Jul/15	24/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Untreated						1.7	7.3	7.7	6.3	8.3
2	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.7	10.0	7.7	7.0	5.7
3	clethodim	0.97	EC	0.12	lb ai/a	PO1	1.7	10.0	10.0	7.0	4.7
4	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	2.0	8.3	10.0	7.0	5.0
5	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	1.3	3.3	7.7	5.7	4.3
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	2.7	7.7	10.0	5.7	5.3
7	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	1.3	8.3	9.0	7.0	7.0
8	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	2.3	10.0	9.7	8.3	8.0
9	fluazifop-P	2	EC	0.375	lb ai/a	PO1	1.7	10.0	10.0	6.3	7.0
	NIS	100	SL	0.25	% v/v	PO1					
10	fluazifop-P	2	EC	0.750	lb ai/a	PO1	1.7	10.0	10.0	8.7	7.7
	NIS	100	SL	0.25	% v/v	PO1					
LSD P=.05							1.23	3.51	4.13	3.93	5.28
Standard Deviation							0.71	2.05	2.41	2.29	3.08
CV							39.72	24.1	26.25	33.22	48.87

Weed Control in Established Chives – IR4 – Van Drunen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CHIVES 4/Aug/15 RATING 1-10	CHIVES 24/Sep/15 RATING 1-10	COLQ 24/Sep/15 RATING 1-10	COPU 24/Sep/15 RATING 1-10	DAND 24/Sep/15 RATING 1-10
1	Untreated						2.3	2.7	9.3	9.3	5.3
2	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	2.3	2.0	7.7	8.7	4.0
3	clethodim	0.97	EC	0.12	lb ai/a	PO1	2.0	2.0	7.0	10.0	2.3
4	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	2.0	2.0	7.3	9.3	3.3
5	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	2.7	2.7	8.0	9.0	4.0
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	3.3	2.0	9.3	9.3	6.0
7	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	2.0	2.7	8.3	10.0	4.7
8	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	1.7	2.7	8.3	10.0	6.0
9	fluazifop-P	2	EC	0.375	lb ai/a	PO1	2.3	3.0	6.3	9.0	3.7
	NIS	100	SL	0.25	% v/v	PO1					
10	fluazifop-P	2	EC	0.750	lb ai/a	PO1	2.0	2.3	7.7	10.0	4.7
	NIS	100	SL	0.25	% v/v	PO1					
LSD P=.05							1.26	1.03	2.65	2.01	2.90
Standard Deviation							0.74	0.60	1.54	1.17	1.69
CV							32.44	25.1	19.45	12.35	38.41

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CHIVES 8/Jul/15 HARVEST1 KG/PLOT	CHIVES 4/Aug/15 HARVEST2 KG/PLOT	CHIVES 24/Sep/15 HARVEST3 KG/PLOT	CHIVES TOTAL KG/PLOT
1	Untreated						18.35	8.69	6.92	33.96
2	*S*-metolachlor	7.62	EC	1.3	lb ai/a	PRE	16.39	8.34	7.90	32.62
3	clethodim	0.97	EC	0.12	lb ai/a	PO1	15.17	8.04	7.41	30.61
4	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	12.86	7.85	6.88	27.58
5	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	13.32	7.33	7.38	28.02
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	15.40	6.71	8.61	30.72
7	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	15.63	8.47	8.53	32.64
8	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	15.04	9.23	8.56	32.83
9	fluazifop-P	2	EC	0.375	lb ai/a	PO1	17.80	7.81	7.76	33.37
	NIS	100	SL	0.25	% v/v	PO1				
10	fluazifop-P	2	EC	0.750	lb ai/a	PO1	19.66	8.93	7.80	36.39
	NIS	100	SL	0.25	% v/v	PO1				
LSD P=.05							6.915	2.965	1.997	10.750
Standard Deviation							4.031	1.728	1.164	6.266
CV							25.25	21.23	14.97	19.66

Weed Control in Seeded Chives and Green Onion – Van Drunen - 2015

Project Code: 117-15-2 **Location: Momence, IL**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Chives, Green Onions **Variety: Purly, Tokyo Long White (respectively)**
Planting Method: Seeded **Planting Date: 6/5/15** **Harvest Dates: 8/4, 9/24/15**
Spacing: 1 inch **Row Spacing: 10 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Jasper loam **OM: 4.6%** **pH: 6.5**
Sand: 36% **Silt: 39%** **Clay: 25%** **CEC: 14**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/5/15	3:00 pm	69/66	F	Dry	5-6 NE	58	65% Cloudy	N
PO1	7/8/15	11:00 am	68/64	F	Wet	1-2 SW	75	100% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/5	CHIVES		Preemergence	
6/5	GREEN ONIONS		Preemergence	
6/5	No Weeds			
7/8	COLQ = common lambsquarters	12-16″	Veg	Moderate
7/8	COPU = common purslane	12-24″	Veg	Many
7/8	GOGR = goosegrass	8-12″	Veg	Moderate
7/8	LACG = large crabgrass	12-18″	Veg	Moderate
7/8	RRPW = redroot pigweed	6-18″	Veg	Moderate

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Two rows of each crop per plot.

Weed Control in Seeded Chives and Green Onion – Van Drunen - 2015

Weed Control in Seeded Chives and Green Onion – Van Drunen – 2015

Trial ID: 117-15-2 Location: Momence, IL
Protocol ID: 117-15-2 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CHIVE	GRONION	GRFT	LACG	COLQ
	Pest Code										
	Crop Code										
	Rating Date						24/Jun/15	24/Jun/15	24/Jun/15	24/Jun/15	24/Jun/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	pendimethalin	3.8	CS	1.43	lb ai/a	PRE	2.0	2.0	10.0	5.0	10.0
2	flumioxazin	51	WDG	0.032	lb ai/a	PRE	5.7	3.7	9.0	5.3	9.3
3	pyroxasulfone	85	WDG	0.033	lb ai/a	PRE	4.7	1.7	9.3	9.3	7.0
4	pyroxasulfone	85	WDG	0.067	lb ai/a	PRE	7.0	3.0	10.0	10.0	9.7
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	7.7	5.3	10.0	10.0	10.0
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	2.7	2.3	7.3	9.7	9.7
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	3.3	2.3	10.0	9.0	10.0
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	1.7	2.0	7.7	1.7	6.3
9	pendimethalin	3.8	CS	1.43	lb ai/a	PRE	2.3	1.3	9.7	9.3	10.0
	oxyfluorfen	4	SC	0.032	lb ai/a	PO1					
	fluazifop-P	2	EC	0.25	lb ai/a	PO1					
10	Untreated						1.7	1.7	4.7	2.7	4.7
LSD P=.05							2.03	1.50	3.51	3.15	3.41
Standard Deviation							1.18	0.88	2.04	1.84	1.99
CV							30.64	34.56	23.33	25.53	22.96

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COPU	RRPW	CHIVE	GRONION	BYGR
	Pest Code										
	Crop Code										
	Rating Date						24/Jun/15	24/Jun/15	8/Jul/15	8/Jul/15	8/Jul/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	pendimethalin	3.8	CS	1.43	lb ai/a	PRE	6.0	10.0	1.0	1.0	9.0
2	flumioxazin	51	WDG	0.032	lb ai/a	PRE	8.7	10.0	3.0	2.7	7.0
3	pyroxasulfone	85	WDG	0.033	lb ai/a	PRE	6.7	10.0	2.7	1.0	10.0
4	pyroxasulfone	85	WDG	0.067	lb ai/a	PRE	9.0	10.0	5.7	2.7	10.0
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	9.3	10.0	7.7	4.7	10.0
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	6.0	9.3	2.0	1.7	5.7
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	8.3	9.7	2.7	2.0	8.0
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	1.0	6.7	1.0	1.0	3.0
9	pendimethalin	3.8	CS	1.43	lb ai/a	PRE	5.3	7.3	1.3	1.0	10.0
	oxyfluorfen	4	SC	0.032	lb ai/a	PO1					
	fluazifop-P	2	EC	0.25	lb ai/a	PO1					
10	Untreated						1.0	4.0	1.0	1.0	3.3
LSD P=.05							3.41	4.20	2.11	1.29	3.59
Standard Deviation							1.99	2.45	1.23	0.75	2.09
CV							32.44	28.16	44.01	40.33	27.52

Weed Control in Seeded Chives and Green Onion – Van Drunen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	GOGR	COLQ	COPU	RRPW	CHIVE
	Crop Code										
	Rating Date						8/Jul/15	8/Jul/15	8/Jul/15	8/Jul/15	24/Jul/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	pendimethalin	3.8	CS	1.43	lb ai/a	PRE	4.0	5.7	4.0	7.7	2.0
2	flumioxazin	51	WDG	0.032	lb ai/a	PRE	1.0	9.0	4.0	10.0	2.3
3	pyroxasulfone	85	WDG	0.033	lb ai/a	PRE	8.3	4.0	3.0	5.0	2.0
4	pyroxasulfone	85	WDG	0.067	lb ai/a	PRE	9.0	7.0	6.3	10.0	5.0
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	10.0	7.7	8.3	10.0	7.0
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	7.7	6.3	3.0	7.0	2.3
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	6.0	7.7	5.3	5.3	2.7
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	2.3	1.0	1.0	1.0	2.0
9	pendimethalin	3.8	CS	1.43	lb ai/a	PRE	5.3	7.7	3.7	2.0	1.7
	oxyfluorfen	4	SC	0.032	lb ai/a	PO1					
	fluazifop-P	2	EC	0.25	lb ai/a	PO1					
10	Untreated						3.3	1.0	1.0	1.3	1.7
LSD P=.05							3.87	5.62	2.91	4.95	3.16
Standard Deviation							2.26	3.28	1.70	2.89	1.84
CV							39.56	57.53	42.77	48.67	64.25

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	GRONION	BYGR	LACG	WIGR	COLQ
	Crop Code										
	Rating Date						24/Jul/15	24/Jul/15	24/Jul/15	24/Jul/15	24/Jul/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	pendimethalin	3.8	CS	1.43	lb ai/a	PRE	2.3	10.0	8.7	8.3	10.0
2	flumioxazin	51	WDG	0.032	lb ai/a	PRE	1.3	8.0	6.0	6.0	9.7
3	pyroxasulfone	85	WDG	0.033	lb ai/a	PRE	1.7	10.0	9.7	10.0	10.0
4	pyroxasulfone	85	WDG	0.067	lb ai/a	PRE	2.0	10.0	10.0	10.0	9.3
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	3.7	10.0	10.0	10.0	7.7
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	2.3	9.7	10.0	8.0	9.3
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	2.3	9.0	10.0	10.0	10.0
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	1.7	4.7	8.3	7.0	1.7
9	pendimethalin	3.8	CS	1.43	lb ai/a	PRE	2.0	10.0	10.0	10.0	9.7
	oxyfluorfen	4	SC	0.032	lb ai/a	PO1					
	fluazifop-P	2	EC	0.25	lb ai/a	PO1					
10	Untreated						2.0	4.0	4.0	4.0	4.0
LSD P=.05							1.54	3.30	3.52	3.84	3.61
Standard Deviation							0.90	1.92	2.05	2.24	2.10
CV							42.22	22.52	23.7	26.86	25.88

Weed Control in Seeded Chives and Green Onion – Van Drunen - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COPU 24/Jul/15 RATING 1-10	RRPW 24/Jul/15 RATING 1-10	CHIVE 4/Aug/15 RATING 1-10	GRONION 4/Aug/15 RATING 1-10	CHIVE 24/Sep/15 RATING 1-10
1	pendimethalin	3.8	CS	1.43	lb ai/a	PRE	4.7	10.0	2.3	2.7	1.7
2	flumioxazin	51	WDG	0.032	lb ai/a	PRE	4.7	10.0	3.0	2.7	4.0
3	pyroxasulfone	85	WDG	0.033	lb ai/a	PRE	6.0	10.0	3.0	2.0	3.7
4	pyroxasulfone	85	WDG	0.067	lb ai/a	PRE	7.7	10.0	4.7	2.7	6.0
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	8.7	10.0	7.7	4.3	7.3
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	4.3	9.0	3.3	3.0	3.3
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	7.0	9.7	3.3	3.0	2.0
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	1.0	5.0	5.3	5.3	5.0
9	pendimethalin	3.8	CS	1.43	lb ai/a	PRE	9.3	9.0	2.0	2.0	2.0
	oxyfluorfen	4	SC	0.032	lb ai/a	PO1					
	fluazifop-P	2	EC	0.25	lb ai/a	PO1					
10	Untreated						3.7	4.0	4.3	3.7	3.0
LSD P=.05							3.44	3.39	2.77	1.29	2.71
Standard Deviation							2.01	1.97	1.62	0.75	1.58
CV							35.2	22.79	41.46	23.95	41.64

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	GRONION 4/Aug/15 HARVEST KG/PLOT	CHIVE 4/Aug/15 HARVEST KG/PLOT	CHIVE 24/Sep/15 HARVEST KG/PLOT	CHIVE TOTAL KG/PLOT
1	pendimethalin	3.8	CS	1.43	lb ai/a	PRE	11.43	1.49	1.81	3.31
2	flumioxazin	51	WDG	0.032	lb ai/a	PRE	8.59	0.48	0.62	1.10
3	pyroxasulfone	85	WDG	0.033	lb ai/a	PRE	15.20	0.86	0.88	1.74
4	pyroxasulfone	85	WDG	0.067	lb ai/a	PRE	10.95	0.25	0.50	0.75
5	pyroxasulfone	85	WDG	0.133	lb ai/a	PRE	3.83	0.13	0.24	0.37
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	12.89	0.84	1.18	2.02
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PRE	10.13	0.59	1.47	2.06
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PO1	5.11	0.55	0.27	0.81
9	pendimethalin	3.8	CS	1.43	lb ai/a	PRE	15.81	2.27	2.10	4.36
	oxyfluorfen	4	SC	0.032	lb ai/a	PO1				
	fluazifop-P	2	EC	0.25	lb ai/a	PO1				
10	Untreated						8.63	0.64	0.89	1.53
LSD P=.05							5.321	0.879	1.023	1.669
Standard Deviation							3.102	0.512	0.596	0.973
CV							30.24	63.2	59.89	53.88

Weed Control in Hot Banana and Jalapeno Pepper – HTRC - 2015

Project Code: 101-15-1 **Location: East Lansing, MI**
Block 72

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Banana, Jalapeno Pepper **Variety: Hungarian Wax, Jalapeno M**
Planting Method: Transplant **Planting Date: 5/28/15** **Harvest Date: See notes**
Spacing: 22 in **Row Spacing: 36 in; 1 row of each crop/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 35 ft long

Soil Type: Marlette fine sandy loam **OM: 1.9%** **pH: 6.2**
Sand: 53% **Silt: 27%** **Clay: 20%** **CEC: 8.6**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRT	5/28/15	10:00 am	74/65	F	Wet	1-2 S	62	0% Cloudy	N
POT	5/28/15	5:15 pm	79/71	F	Moist	5-6 SE	71	15% Cloudy	N
PO1	6/22/15	11:50 am	83/78	F	Dry	6-8 SW	49	30% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/22	BANANA PEPPER	4-6″	Early Flower	Good
6/22	JALAPENO PEPPER	4-6″	Early Flower	Good
6/22	CORW = common ragweed	2-6″	Veg	Many
6/22	COLQ = common lambsquarters	2-4″	Veg	Moderate
6/22	LATH = ladysthumb	2-4″	Veg	Moderate
6/22	YEFT = yellow foxtail	2-4″	Veg	Moderate
6/22	YENS = yellow nutsedge	3-5″	Veg	Moderate

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvest Dates: Banana, 4 harvests – 8/4, 8/11, 9/9, 10/13; Jalapeno, 3 harvests - 8/19, 9/21, 10/13

Weed Control in Hot Banana and Jalapeno Pepper – HTRC - 2015

Weed Control in Hot Banana and Jalapeno Pepper – HTRC – 2015

Trial ID: 101-15-1 Location: East Lansing, MI
Protocol ID: 101-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BANANA	JALAPENO	YEFT	COLQ	CORW
Pest Code									YEFT	COLQ	CORW
Crop Code							BANANA	JALAPENO			
Rating Date							17/Jun/15	17/Jun/15	17/Jun/15	17/Jun/15	17/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	napropamide	50	DF	2	lb ai/a	PRT	1.0	1.0	8.0	10.0	3.3
2	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.7	1.0	7.7	10.0	2.0
3	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRT	2.0	2.0	10.0	8.7	5.0
4	fomesafen	2	SL	0.125	lb ai/a	PRT	1.0	1.0	7.3	9.0	9.0
5	fomesafen	2	SL	0.25	lb ai/a	PRT	1.0	1.0	8.7	10.0	10.0
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	3.0	2.3	9.0	10.0	10.0
7	clomazone	3	ME	1	lb ai/a	PRT	1.7	1.7	7.0	10.0	9.7
8	clomazone	3	ME	1	lb ai/a	PRT	1.3	1.3	10.0	10.0	10.0
	S-metolachlor	7.62	EC	0.95	lb ai/a	PRT					
9	*S*-metolachlor	7.62	EC	0.95	lb ai/a	POT	1.3	1.3	9.3	9.7	4.7
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
10	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	2.3	1.7	9.3	9.7	10.0
11	Zeus Prime XC	3.5	EC	0.25	lb ai/a	PRT	4.0	2.7	10.0	9.7	9.0
	sulfentrazone	3.15	EC	0.225	lb ai/a						
	carfentrazone	0.35	EC	0.025	lb ai/a						
12	Untreated						1.0	1.0	1.0	1.0	1.0
LSD P=.05							1.05	0.87	2.98	0.93	1.57
Standard Deviation							0.62	0.51	1.76	0.55	0.93
CV							34.85	34.33	21.67	6.11	13.31

Weed Control in Hot Banana and Jalapeno Pepper – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH RATING 1-10	RRPW RATING 1-10	BANANA STAND #/PLOT	JALAPENO STAND #/PLOT	BANANA RATING 1-10
	Pest Code						LATH	RRPW			
	Crop Code								BANANA	JALAPENO	BANANA
	Rating Date						17/Jun/15	17/Jun/15	25/Jun/15	25/Jun/15	28/Jun/15
	Rating Type						RATING	RATING	STAND	STAND	RATING
	Rating Unit						1-10	1-10	#/PLOT	#/PLOT	1-10
1	napropamide	50	DF	2	lb ai/a	PRT	9.7	9.7	19.3	20.0	1.0
2	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	9.0	10.0	18.3	20.7	1.0
3	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRT	10.0	10.0	20.0	19.0	2.0
4	fomesafen	2	SL	0.125	lb ai/a	PRT	9.7	10.0	18.7	20.0	1.0
5	fomesafen	2	SL	0.25	lb ai/a	PRT	10.0	10.0	20.0	19.7	1.3
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	10.0	10.0	16.7	18.0	4.0
7	clomazone	3	ME	1	lb ai/a	PRT	10.0	10.0	20.7	19.0	1.7
8	clomazone	3	ME	1	lb ai/a	PRT	10.0	10.0	20.0	19.7	1.3
	S-metolachlor	7.62	EC	0.95	lb ai/a	PRT					
9	*S*-metolachlor	7.62	EC	0.95	lb ai/a	POT	8.3	10.0	18.7	19.3	2.3
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
10	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	10.0	10.0	19.7	20.0	3.0
11	Zeus Prime XC	3.5	EC	0.25	lb ai/a	PRT	10.0	10.0	12.3	18.3	5.3
	sulfentrazone	3.15	EC	0.225	lb ai/a						
	carfentrazone	0.35	EC	0.025	lb ai/a						
12	Untreated						3.0	3.0	18.7	19.7	1.0
LSD P=.05							1.76	1.74	3.14	2.20	1.76
Standard Deviation							1.04	1.03	1.85	1.30	1.04
CV							11.38	10.96	9.97	6.68	49.96

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	JALAPENO RATING 1-10	YEFT RATING 1-10	COLQ RATING 1-10	CORW RATING 1-10	EBNS RATING 1-10
	Pest Code							YEFT	COLQ	CORW	EBNS
	Crop Code						JALAPENO				
	Rating Date						28/Jun/15	28/Jun/15	28/Jun/15	28/Jun/15	28/Jun/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	napropamide	50	DF	2	lb ai/a	PRT	1.0	7.7	10.0	1.3	1.0
2	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.0	5.3	9.3	1.0	10.0
3	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRT	2.0	9.0	6.0	1.7	10.0
4	fomesafen	2	SL	0.125	lb ai/a	PRT	1.0	3.0	7.7	9.3	10.0
5	fomesafen	2	SL	0.25	lb ai/a	PRT	1.3	6.0	8.7	10.0	10.0
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	3.7	6.7	7.7	9.7	10.0
7	clomazone	3	ME	1	lb ai/a	PRT	1.3	10.0	10.0	9.7	10.0
8	clomazone	3	ME	1	lb ai/a	PRT	1.3	10.0	10.0	10.0	7.0
	S-metolachlor	7.62	EC	0.95	lb ai/a	PRT					
9	*S*-metolachlor	7.62	EC	0.95	lb ai/a	POT	2.0	9.0	8.3	7.3	9.7
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
10	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	2.3	8.0	9.7	9.0	10.0
11	Zeus Prime XC	3.5	EC	0.25	lb ai/a	PRT	4.0	10.0	10.0	9.3	10.0
	sulfentrazone	3.15	EC	0.225	lb ai/a						
	carfentrazone	0.35	EC	0.025	lb ai/a						
12	Untreated						1.0	1.0	1.0	1.0	1.0
LSD P=.05							0.83	1.84	2.26	1.08	2.53
Standard Deviation							0.49	1.09	1.33	0.64	1.49
CV							26.86	15.21	16.27	9.64	18.17

Weed Control in Hot Banana and Jalapeno Pepper - HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH	RRPW	BANANA	JALAPENO
Pest Code										
Crop Code									BANANA	JALAPENO
Rating Date							28/Jun/15	28/Jun/15	9/Jul/15	9/Jul/15
Rating Type							RATING	RATING	STAND	STAND
Rating Unit							1-10	1-10	#/PLOT	#/PLOT
1	napropamide	50	DF	2	lb ai/a	PRT	6.3	7.7	19.7	19.7
2	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	9.0	10.0	18.3	20.3
3	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRT	9.3	10.0	19.7	18.3
4	fomesafen	2	SL	0.125	lb ai/a	PRT	9.3	10.0	18.3	19.0
5	fomesafen	2	SL	0.25	lb ai/a	PRT	9.7	10.0	20.0	20.0
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	7.3	6.7	15.3	16.7
7	clomazone	3	ME	1	lb ai/a	PRT	10.0	10.0	20.7	19.0
8	clomazone	3	ME	1	lb ai/a	PRT	10.0	10.0	20.0	19.7
	S-metolachlor	7.62	EC	0.95	lb ai/a	PRT				
9	*S*-metolachlor	7.62	EC	0.95	lb ai/a	POT	9.3	10.0	18.7	19.3
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
10	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	9.7	10.0	19.0	20.7
11	Zeus Prime XC	3.5	EC	0.25	lb ai/a	PRT	10.0	10.0	13.3	18.7
	sulfentrazone	3.15	EC	0.225	lb ai/a					
	carfentrazone	0.35	EC	0.025	lb ai/a					
12	Untreated						1.0	1.0	18.7	18.7
LSD P=.05							1.59	3.17	2.93	2.15
Standard Deviation							0.94	1.87	1.73	1.27
CV							11.19	21.35	9.37	6.61

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BANANA	BANANA	BANANA	BANANA	BANANA
Pest Code											
Crop Code							BANANA	BANANA	BANANA	BANANA	BANANA
Rating Date							4/Aug/15	11/Aug/15	9/Sep/15	13/Oct/15	
Rating Type							HARVEST	HARVEST	HARVEST	HARVEST	TOTAL
Rating Unit							KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT
1	napropamide	50	DF	2	lb ai/a	PRT	4.34	4.80	13.90	3.14	26.19
2	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	4.32	3.89	15.92	3.64	27.78
3	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRT	4.05	3.86	15.74	3.23	26.87
4	fomesafen	2	SL	0.125	lb ai/a	PRT	4.89	4.31	13.66	2.88	25.73
5	fomesafen	2	SL	0.25	lb ai/a	PRT	5.03	3.59	14.12	3.08	25.83
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	2.60	3.24	10.60	2.59	19.02
7	clomazone	3	ME	1	lb ai/a	PRT	5.11	6.60	20.69	5.22	37.61
8	clomazone	3	ME	1	lb ai/a	PRT	5.70	5.44	21.17	6.16	38.47
	S-metolachlor	7.62	EC	0.95	lb ai/a	PRT					
9	*S*-metolachlor	7.62	EC	0.95	lb ai/a	POT	3.47	3.26	18.29	6.48	31.50
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
10	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	1.20	1.08	9.93	4.23	16.44
11	Zeus Prime XC	3.5	EC	0.25	lb ai/a	PRT	0.83	0.87	7.10	3.18	11.99
	sulfentrazone	3.15	EC	0.225	lb ai/a						
	carfentrazone	0.35	EC	0.025	lb ai/a						
12	Untreated						4.01	4.46	16.35	3.68	28.50
LSD P=.05							1.940	1.903	4.441	1.964	8.156
Standard Deviation							1.145	1.124	2.623	1.160	4.816
CV							30.18	29.7	17.73	29.29	18.29

Weed Control in Hot Banana and Jalapeno Pepper – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	JALAPENO 19/Aug/15 HARVEST KG/PLOT	JALAPENO 21/Sep/15 HARVEST KG/PLOT	JALAPENO 13/Oct/15 HARVEST KG/PLOT	JALAPENO TOTAL KG/PLOT
	Pest Code									
	Crop Code						JALAPENO	JALAPENO	JALAPENO	JALAPENO
	Rating Date						19/Aug/15	21/Sep/15	13/Oct/15	
	Rating Type						HARVEST	HARVEST	HARVEST	TOTAL
	Rating Unit						KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT
1	napropamide	50	DF	2	lb ai/a	PRT	9.49	17.04	1.22	27.75
2	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	10.53	18.08	2.32	30.93
3	*S*-metolachlor	7.62	EC	0.95	lb ai/a	PRT	8.69	13.59	0.53	22.80
4	fomesafen	2	SL	0.125	lb ai/a	PRT	9.76	13.84	0.93	24.52
5	fomesafen	2	SL	0.25	lb ai/a	PRT	10.41	19.25	1.21	30.87
6	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRT	6.27	15.51	0.84	22.62
7	clomazone	3	ME	1	lb ai/a	PRT	12.41	26.44	4.86	43.71
8	clomazone	3	ME	1	lb ai/a	PRT	12.57	24.56	1.67	38.80
	S-metolachlor	7.62	EC	0.95	lb ai/a	PRT				
9	*S*-metolachlor	7.62	EC	0.95	lb ai/a	POT	9.51	21.27	1.23	32.00
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
10	pyroxasulfone	85	WDG	0.133	lb ai/a	PRT	6.33	17.55	0.78	24.65
11	Zeus Prime XC	3.5	EC	0.25	lb ai/a	PRT	5.67	14.99	2.80	23.46
	sulfentrazone	3.15	EC	0.225	lb ai/a					
	carfentrazone	0.35	EC	0.025	lb ai/a					
12	Untreated						7.60	15.76	0.61	23.97
LSD P=.05							4.011	5.988	2.407	8.183
Standard Deviation							2.369	3.536	1.421	4.832
CV							26.03	19.48	89.78	16.76

Weed Control in Bell Pepper and Tomato – HTRC - 2015

Project Code: 101-15-2 **Location: East Lansing, MI**
Block 72

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Bell Pepper, Tomato **Variety: Aristotle, Sunbrite (respectively)**
Planting Method: Transplant **Planting Date: 5/28/15** **Harvest Date: See notes**
Spacing: 22 in **Row Spacing: 3 ft; 1 row each crop/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 35 ft long

Soil Type: Marlette fine sandy loam **OM: 1.9%** **pH: 6.2**
Sand: 53% **Silt: 27%** **Clay: 20%** **CEC: 8.6**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRT	5/28/15	9:00 am	67/30	F	Wet	1-3 S	75	0% Cloudy	Y
POT	5/28/15	5:00 pm	79/71	F	Moist	5-6 SE	71	15% Cloudy	N
PO1	6/22/15	12:00 pm	83/78	F	Dry	6-8 SW	49	30% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/22	COLQ = common lambsquarters	2-4″	Veg	Moderate
6/22	CORW = common ragweed	2-6″	Veg	Many
6/22	EBNS = eastern black nightshade	1-2″	Veg	Few
6/22	LATH = ladysthumb	2-4″	Veg	Few
6/22	YEFT = yellow foxtail	2-8″	Veg	Many
6/22	YENS = yellow nutsedge	3-5″	Veg	Moderate

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. PRT = pre-transplant; POT = post-transplant; PO1 = post-emergence 1
4. Harvest Dates: Pepper, 6 harvests – 8/6, 8/18, 8/31, 9/11, 10/6, 10/15; Tomato, 5 harvests – 8/27, 9/4, 9/10, 9/17, 9/24

Weed Control in Bell Pepper and Tomato – HTRC - 2015

Weed Control in Bell Pepper and Tomato – HTRC – 2015

Trial ID: 101-15-2 Location: East Lansing, MI
Protocol ID: 101-15-2 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PEPPER	TOMATO	YEFT	COLQ	CORW
Pest Code									YEFT	COLQ	CORW
Crop Code							PEPPER	TOMATO			
Rating Date							17/Jun/15	17/Jun/15	17/Jun/15	17/Jun/15	17/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	napropamide	50	DF	2	lb ai/a	PRT	1.3	1.0	9.0	10.0	4.7
2	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.3	1.3	7.7	9.3	5.0
3	clomazone	3	ME	1	lb ai/a	PRT	1.7	3.0	10.0	9.3	9.7
4	*S*-metolachlor	7.62	EC	0.95	lb ai/a	POT	1.3	1.3	9.7	9.3	6.0
5	fomesafen	2	SL	0.125	lb ai/a	PRT	1.3	1.0	6.3	10.0	10.0
6	Authority MTZ	45	DF	0.338	lb ai/a	PRT	3.3	1.7	10.0	10.0	10.0
	sulfentrazone	18	DF	0.135	lb ai/a						
	metribuzin	27	DF	0.203	lb ai/a						
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT					
	metribuzin	75	DF	0.93	lb ai/a	PO1					
	rimsulfuron	25	SG	0.016	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
7	Authority MTZ	45	DF	0.338	lb ai/a	PRT	2.7	2.3	10.0	10.0	10.0
	sulfentrazone	18	DF	0.135	lb ai/a						
	metribuzin	27	DF	0.203	lb ai/a						
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT					
	metribuzin	75	DF	0.93	lb ai/a	PO1					
	rimsulfuron	25	SG	0.016	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
8	sulfentrazone	4	F	0.25	lb ai/a	PRT	3.0	2.0	10.0	10.0	8.7
	pendimethalin	3.8	CS	0.95	lb ai/a	PRT					
9	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	2.7	1.0	10.0	10.0	10.0
	metribuzin	75	DF	0.25	lb ai/a	PRT					
10	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	3.0	1.3	10.0	10.0	10.0
	metribuzin	75	DF	0.25	lb ai/a	PRT					
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
11	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.7	2.7	9.0	10.0	6.7
	clomazone	3	ME	0.5	lb ai/a	PRT					
	rimsulfuron	25	SG	0.031	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
12	Untreated						1.0	1.0	1.0	1.0	1.0
LSD P=.05							1.20	0.86	1.64	0.98	1.57
Standard Deviation							0.71	0.51	0.97	0.58	0.93
CV							35.05	30.82	11.31	6.36	12.15

Weed Control in Bell Pepper and Tomato – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH 17/Jun/15 RATING 1-10	RRPW 17/Jun/15 RATING 1-10	PEPPER 25/Jun/15 STAND #/PLOT	TOMATO 25/Jun/15 STAND #/PLOT	PEPPER 28/Jun/15 RATING 1-10
1	napropamide	50	DF	2	lb ai/a	PRT	7.3	10.0	20.0	19.7	1.0
2	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	8.3	10.0	19.3	19.3	1.3
3	clomazone	3	ME	1	lb ai/a	PRT	9.7	10.0	20.3	19.3	1.7
4	*S*-metolachlor	7.62	EC	0.95	lb ai/a	POT	10.0	10.0	18.3	20.0	2.0
5	fomesafen	2	SL	0.125	lb ai/a	PRT	9.7	10.0	19.0	19.3	1.3
6	Authority MTZ	45	DF	0.338	lb ai/a	PRT	10.0	10.0	16.0	18.7	4.7
	sulfentrazone	18	DF	0.135	lb ai/a						
	metribuzin	27	DF	0.203	lb ai/a						
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT					
	metribuzin	75	DF	0.93	lb ai/a	PO1					
	rimsulfuron	25	SG	0.016	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
7	Authority MTZ	45	DF	0.338	lb ai/a	PRT	10.0	10.0	18.3	17.7	3.3
	sulfentrazone	18	DF	0.135	lb ai/a						
	metribuzin	27	DF	0.203	lb ai/a						
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT					
	metribuzin	75	DF	0.93	lb ai/a	PO1					
	rimsulfuron	25	SG	0.016	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
8	sulfentrazone	4	F	0.25	lb ai/a	PRT	10.0	10.0	17.7	19.7	3.0
	pendimethalin	3.8	CS	0.95	lb ai/a	PRT					
9	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	10.0	10.0	17.7	19.3	2.3
	metribuzin	75	DF	0.25	lb ai/a	PRT					
10	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	10.0	10.0	16.0	20.0	3.7
	metribuzin	75	DF	0.25	lb ai/a	PRT					
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
11	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	9.0	10.0	20.3	19.3	1.7
	clomazone	3	ME	0.5	lb ai/a	PRT					
	rimsulfuron	25	SG	0.031	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
12	Untreated						1.7	1.0	19.3	19.7	1.0
LSD P=.05							1.19	0.00	2.66	1.63	1.64
Standard Deviation							0.71	0.00	1.57	0.97	0.97
CV							8.01	0.0	8.48	4.99	43.08

Weed Control in Bell Pepper and Tomato – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	TOMATO 28/Jun/15 RATING 1-10	YEFT 28/Jun/15 RATING 1-10	COLQ 28/Jun/15 RATING 1-10	CORW 28/Jun/15 RATING 1-10	EBNS 28/Jun/15 RATING 1-10
1	napropamide	50	DF	2	lb ai/a	PRT	1.0	9.3	9.0	1.0	4.0
2	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.0	7.3	8.7	1.0	10.0
3	clomazone	3	ME	1	lb ai/a	PRT	3.0	10.0	9.3	8.3	10.0
4	*S*-metolachlor	7.62	EC	0.95	lb ai/a	POT	1.7	9.7	8.3	1.7	10.0
5	fomesafen	2	SL	0.125	lb ai/a	PRT	1.0	2.7	9.3	7.7	10.0
6	Authority MTZ	45	DF	0.338	lb ai/a	PRT	1.3	10.0	10.0	10.0	10.0
	sulfentrazone	18	DF	0.135	lb ai/a						
	metribuzin	27	DF	0.203	lb ai/a						
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT					
	metribuzin	75	DF	0.93	lb ai/a	PO1					
	rimsulfuron	25	SG	0.016	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
7	Authority MTZ	45	DF	0.338	lb ai/a	PRT	1.3	9.7	10.0	10.0	10.0
	sulfentrazone	18	DF	0.135	lb ai/a						
	metribuzin	27	DF	0.203	lb ai/a						
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT					
	metribuzin	75	DF	0.93	lb ai/a	PO1					
	rimsulfuron	25	SG	0.016	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
8	sulfentrazone	4	F	0.25	lb ai/a	PRT	1.3	10.0	10.0	7.3	10.0
	pendimethalin	3.8	CS	0.95	lb ai/a	PRT					
9	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	1.0	10.0	10.0	10.0	10.0
	metribuzin	75	DF	0.25	lb ai/a	PRT					
10	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	1.3	10.0	10.0	10.0	10.0
	metribuzin	75	DF	0.25	lb ai/a	PRT					
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
11	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.0	10.0	7.0	5.7	10.0
	clomazone	3	ME	0.5	lb ai/a	PRT					
	rimsulfuron	25	SG	0.031	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
12	Untreated						1.0	1.0	1.0	1.0	1.0
LSD P=.05							0.79	1.40	2.86	1.28	2.54
Standard Deviation							0.47	0.82	1.69	0.76	1.50
CV							35.15	9.92	19.72	12.33	17.14

Weed Control in Bell Pepper and Tomato – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH	RRPW	PEPPER	TOMATO	PEPPER
Pest Code											
Crop Code									PEPPER	TOMATO	PEPPER
Rating Date							28/Jun/15	28/Jun/15	9/Jul/15	9/Jul/15	6/Aug/15
Rating Type							RATING	RATING	STAND	STAND	HARVEST
Rating Unit							1-10	1-10	#/PLOT	#/PLOT	#/PLOT
1	napropamide	50	DF	2	lb ai/a	PRT	4.3	8.3	19.7	19.7	19.0
2	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	7.3	9.7	19.7	18.3	13.0
3	clomazone	3	ME	1	lb ai/a	PRT	9.7	9.7	14.7	19.7	17.7
4	*S*-metolachlor	7.62	EC	0.95	lb ai/a	POT	8.3	9.3	18.3	20.0	20.0
5	fomesafen	2	SL	0.125	lb ai/a	PRT	8.3	10.0	20.0	19.0	26.0
6	Authority MTZ	45	DF	0.338	lb ai/a	PRT	10.0	10.0	4.3	18.7	0.0
	sulfentrazone	18	DF	0.135	lb ai/a						
	metribuzin	27	DF	0.203	lb ai/a						
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT					
	metribuzin	75	DF	0.93	lb ai/a	PO1					
	rimsulfuron	25	SG	0.016	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
7	Authority MTZ	45	DF	0.338	lb ai/a	PRT	10.0	10.0	13.0	17.7	9.3
	sulfentrazone	18	DF	0.135	lb ai/a						
	metribuzin	27	DF	0.203	lb ai/a						
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT					
	metribuzin	75	DF	0.93	lb ai/a	PO1					
	rimsulfuron	25	SG	0.016	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
8	sulfentrazone	4	F	0.25	lb ai/a	PRT	10.0	10.0	19.0	20.0	10.0
	pendimethalin	3.8	CS	0.95	lb ai/a	PRT					
9	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	10.0	10.0	17.7	19.7	18.3
	metribuzin	75	DF	0.25	lb ai/a	PRT					
10	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	10.0	10.0	15.3	20.0	9.3
	metribuzin	75	DF	0.25	lb ai/a	PRT					
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
11	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	9.3	10.0	20.7	18.3	10.3
	clomazone	3	ME	0.5	lb ai/a	PRT					
	rimsulfuron	25	SG	0.031	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
12	Untreated						1.0	1.0	19.3	20.0	22.3
LSD P=.05							2.24	0.92	6.36	1.88	15.50
Standard Deviation							1.32	0.54	3.76	1.11	9.15
CV							16.17	6.04	22.35	5.77	62.63

Weed Control in Bell Pepper and Tomato – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PEPPER 6/Aug/15 HARVEST KG/PLOT	PEPPER 18/Aug/15 HARVEST #/PLOT	PEPPER 18/Aug/15 HARVEST KG/PLOT	PEPPER 31/Aug/15 HARVEST #/PLOT	PEPPER 31/Aug/15 HARVEST KG/PLOT
	Pest Code										
	Crop Code						PEPPER	PEPPER	PEPPER	PEPPER	PEPPER
	Rating Date						6/Aug/15	18/Aug/15	18/Aug/15	31/Aug/15	31/Aug/15
	Rating Type						HARVEST	HARVEST	HARVEST	HARVEST	HARVEST
	Rating Unit						KG/PLOT	#/PLOT	KG/PLOT	#/PLOT	KG/PLOT
1	napropamide	50	DF	2	lb ai/a	PRT	3.77	31.7	6.18	39.7	7.67
2	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	2.76	17.7	3.05	60.0	10.87
3	clomazone	3	ME	1	lb ai/a	PRT	3.03	17.0	2.98	34.3	5.90
4	*S*-metolachlor	7.62	EC	0.95	lb ai/a	POT	3.96	22.0	4.31	30.7	4.90
5	fomesafen	2	SL	0.125	lb ai/a	PRT	5.43	26.0	5.36	35.3	6.37
6	Authority MTZ	45	DF	0.338	lb ai/a	PRT	0.00	0.0	0.00	5.0	0.81
	sulfentrazone	18	DF	0.135	lb ai/a						
	metribuzin	27	DF	0.203	lb ai/a						
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT					
	metribuzin	75	DF	0.93	lb ai/a	PO1					
	rimsulfuron	25	SG	0.016	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
7	Authority MTZ	45	DF	0.338	lb ai/a	PRT	1.63	4.0	0.73	31.3	5.41
	sulfentrazone	18	DF	0.135	lb ai/a						
	metribuzin	27	DF	0.203	lb ai/a						
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT					
	metribuzin	75	DF	0.93	lb ai/a	PO1					
	rimsulfuron	25	SG	0.016	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
8	sulfentrazone	4	F	0.25	lb ai/a	PRT	1.65	12.3	2.07	43.3	8.16
	pendimethalin	3.8	CS	0.95	lb ai/a	PRT					
9	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	3.80	34.0	6.41	37.3	6.62
	metribuzin	75	DF	0.25	lb ai/a	PRT					
10	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	1.92	15.7	2.57	30.3	5.26
	metribuzin	75	DF	0.25	lb ai/a	PRT					
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
11	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.95	14.3	2.39	62.0	10.12
	clomazone	3	ME	0.5	lb ai/a	PRT					
	rimsulfuron	25	SG	0.031	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
12	Untreated						4.09	23.0	4.32	48.0	8.37
LSD P=.05							2.874	12.95	2.487	24.26	4.515
Standard Deviation							1.697	7.64	1.468	14.32	2.666
CV							59.93	42.15	43.65	37.58	39.77

Weed Control in Bell Pepper and Tomato – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PEPPER 11/Sep/15 HARVEST #/PLOT	PEPPER 11/Sep/15 HARVEST KG/PLOT	PEPPER 6/Oct/15 HARVEST #/PLOT	PEPPER 6/Oct/15 HARVEST KG/PLOT	PEPPER 15/Oct/15 HARVEST #/PLOT
	Pest Code										
	Crop Code										
	Rating Date						11/Sep/15	11/Sep/15	6/Oct/15	6/Oct/15	15/Oct/15
	Rating Type						HARVEST	HARVEST	HARVEST	HARVEST	HARVEST
	Rating Unit						#/PLOT	KG/PLOT	#/PLOT	KG/PLOT	#/PLOT
1	napropamide	50	DF	2	lb ai/a	PRT	24.7	5.09	12.0	2.68	15.3
2	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	39.0	7.27	13.3	3.04	13.7
3	clomazone	3	ME	1	lb ai/a	PRT	19.0	3.29	10.3	2.37	12.7
4	*S*-metolachlor	7.62	EC	0.95	lb ai/a	POT	26.7	5.31	11.0	2.66	18.0
5	fomesafen	2	SL	0.125	lb ai/a	PRT	20.7	4.34	11.3	2.57	9.0
6	Authority MTZ	45	DF	0.338	lb ai/a	PRT	11.3	1.97	5.3	0.96	5.0
	sulfentrazone	18	DF	0.135	lb ai/a						
	metribuzin	27	DF	0.203	lb ai/a						
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT					
	metribuzin	75	DF	0.93	lb ai/a	PO1					
	rimsulfuron	25	SG	0.016	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
7	Authority MTZ	45	DF	0.338	lb ai/a	PRT	26.3	4.29	9.7	2.10	13.7
	sulfentrazone	18	DF	0.135	lb ai/a						
	metribuzin	27	DF	0.203	lb ai/a						
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT					
	metribuzin	75	DF	0.93	lb ai/a	PO1					
	rimsulfuron	25	SG	0.016	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
8	sulfentrazone	4	F	0.25	lb ai/a	PRT	25.0	4.55	8.7	2.17	15.3
	pendimethalin	3.8	CS	0.95	lb ai/a	PRT					
9	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	22.7	4.29	11.7	2.82	12.7
	metribuzin	75	DF	0.25	lb ai/a	PRT					
10	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	26.0	4.59	9.7	2.19	13.7
	metribuzin	75	DF	0.25	lb ai/a	PRT					
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
11	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	33.7	5.89	12.3	2.83	15.3
	clomazone	3	ME	0.5	lb ai/a	PRT					
	rimsulfuron	25	SG	0.031	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
12	Untreated						31.7	6.37	11.3	2.66	14.3
LSD P=.05							13.68	2.631	7.95	1.868	11.67
Standard Deviation							8.08	1.554	4.70	1.103	6.89
CV							31.6	32.55	44.49	45.58	52.11

Weed Control in Bell Pepper and Tomato – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PEPPER 15/Oct/15 HARVEST KG/PLOT	PEPPER TOTAL #/PLOT	PEPPER TOTAL KG/PLOT	TOMATO 27/Aug/15 HARVEST KG/PLOT	TOMATO 4/Sep/15 HARVEST KG/PLOT
	Pest Code										
	Crop Code						PEPPER	PEPPER	PEPPER	TOMATO	TOMATO
	Rating Date						15/Oct/15			27/Aug/15	4/Sep/15
	Rating Type						HARVEST	TOTAL	TOTAL	HARVEST	HARVEST
	Rating Unit						KG/PLOT	#/PLOT	KG/PLOT	KG/PLOT	KG/PLOT
1	napropamide	50	DF	2	lb ai/a	PRT	2.34	142.3	27.73	17.34	27.74
2	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	2.35	156.7	29.34	7.51	27.31
3	clomazone	3	ME	1	lb ai/a	PRT	2.18	111.0	19.75	5.57	20.02
4	*S*-metolachlor	7.62	EC	0.95	lb ai/a	POT	3.14	128.3	24.29	8.88	29.08
5	fomesafen	2	SL	0.125	lb ai/a	PRT	1.44	128.3	25.52	15.54	31.68
6	Authority MTZ	45	DF	0.338	lb ai/a	PRT	0.72	26.7	4.46	7.76	22.66
	sulfentrazone	18	DF	0.135	lb ai/a						
	metribuzin	27	DF	0.203	lb ai/a						
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT					
	metribuzin	75	DF	0.93	lb ai/a	PO1					
	rimsulfuron	25	SG	0.016	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
7	Authority MTZ	45	DF	0.338	lb ai/a	PRT	2.15	94.3	16.31	8.08	25.95
	sulfentrazone	18	DF	0.135	lb ai/a						
	metribuzin	27	DF	0.203	lb ai/a						
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT					
	metribuzin	75	DF	0.93	lb ai/a	PO1					
	rimsulfuron	25	SG	0.016	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
8	sulfentrazone	4	F	0.25	lb ai/a	PRT	2.93	114.7	21.52	9.23	24.71
	pendimethalin	3.8	CS	0.95	lb ai/a	PRT					
9	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	2.01	136.7	25.94	14.69	31.53
	metribuzin	75	DF	0.25	lb ai/a	PRT					
10	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	2.30	104.7	18.83	8.98	27.03
	metribuzin	75	DF	0.25	lb ai/a	PRT					
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
11	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	2.74	148.0	25.93	7.28	22.46
	clomazone	3	ME	0.5	lb ai/a	PRT					
	rimsulfuron	25	SG	0.031	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
12	Untreated						2.55	150.7	28.36	20.44	23.98
LSD P=.05							2.076	49.66	9.845	6.414	11.608
Standard Deviation							1.226	29.33	5.813	3.788	6.855
CV							54.78	24.4	26.03	34.62	26.19

Weed Control in Bell Pepper and Tomato – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	TOMATO 10/Sep/15 HARVEST KG/PLOT	TOMATO 17/Sep/15 HARVEST KG/PLOT	TOMATO 24/Sep/15 HARVEST KG/PLOT	TOMATO TOTAL KG/PLOT
	Pest Code									
	Crop Code									
	Rating Date									
	Rating Type									
	Rating Unit									
1	napropamide	50	DF	2	lb ai/a	PRT	59.12	9.84	14.12	128.16
2	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	54.98	13.54	17.16	120.50
3	clomazone	3	ME	1	lb ai/a	PRT	57.55	25.33	23.81	132.26
4	*S*-metolachlor	7.62	EC	0.95	lb ai/a	POT	53.50	18.23	24.95	134.64
5	fomesafen	2	SL	0.125	lb ai/a	PRT	56.83	12.51	24.82	141.38
6	Authority MTZ	45	DF	0.338	lb ai/a	PRT	57.00	26.29	21.76	135.47
	sulfentrazone	18	DF	0.135	lb ai/a					
	metribuzin	27	DF	0.203	lb ai/a					
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT				
	metribuzin	75	DF	0.93	lb ai/a	PO1				
	rimsulfuron	25	SG	0.016	lb ai/a	PO1				
	NIS	100	SL	0.25	% v/v	PO1				
7	Authority MTZ	45	DF	0.338	lb ai/a	PRT	59.97	25.74	31.91	151.65
	sulfentrazone	18	DF	0.135	lb ai/a					
	metribuzin	27	DF	0.203	lb ai/a					
	S-metolachlor	7.62	EC	0.72	lb ai/a	PRT				
	metribuzin	75	DF	0.93	lb ai/a	PO1				
	rimsulfuron	25	SG	0.016	lb ai/a	PO1				
	NIS	100	SL	0.25	% v/v	PO1				
8	sulfentrazone	4	F	0.25	lb ai/a	PRT	52.90	18.66	19.55	125.05
	pendimethalin	3.8	CS	0.95	lb ai/a	PRT				
9	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	64.20	17.27	21.56	149.25
	metribuzin	75	DF	0.25	lb ai/a	PRT				
10	*S*-metolachlor	7.62	EC	1.4	lb ai/a	PRT	61.70	16.59	34.02	148.32
	metribuzin	75	DF	0.25	lb ai/a	PRT				
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	clethodim	0.97	EC	0.12	lb ai/a	PO1				
11	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	52.65	13.36	19.17	114.92
	clomazone	3	ME	0.5	lb ai/a	PRT				
	rimsulfuron	25	SG	0.031	lb ai/a	PO1				
	clethodim	0.97	EC	0.12	lb ai/a	PO1				
12	Untreated						42.95	7.01	10.85	105.23
LSD P=.05							24.930	12.638	13.049	30.816
Standard Deviation							14.722	7.463	7.706	18.197
CV							26.24	43.82	35.07	13.76

Weed Control in Pumpkin and Squash – HTRC - 2015

Project Code: 108-15-2 Location: East Lansing, MI
Block 121-123

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Pumpkin, Squash Varieties: Burgess buttercup, Ultra butternut, Howden pumpkin
Planting Method: Seeded Planting Date: 6/9/15 Harvest Date: See notes
Spacing: 1 ft Row Spacing: 5 ft; 1 row each/plot
Tillage Type: Conventional Study Design: RCB Replications: 3
Plot Size: 16 ft wide x 50 ft long

Soil Type: Marlette fine sandy loam OM: 2.3% pH: 6.0
Sand: 60% Silt: 28% Clay: 12% CEC: 6.2

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/9/15	5:00 pm	79/78	F	Moist	4-7 W	42	100% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/9	BUTTERCUP		Preemergence	
6/9	BUTTERNUT		Preemergence	
6/9	PUMPKIN		Preemergence	
6/9	No Weeds			

BYGR = barnyardgrass
COLQ = common lambsquarters
CORW = common ragweed
LACG = large crabgrass
RRPW = redroot pigweed
WIRA = wild radish

Notes and Comments
1. Spray applied with 16 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 tractor sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. The experiment had poor growth overall due to cool, wet conditions in June. Pumpkin stand was reduced.
4. Harvest Dates: Pumpkins harvested on 9/29/15; Squash harvested on 10/5/15

Weed Control in Pumpkin and Squash – HTRC – 2015

Trial ID: 108-15-2 Location: East Lansing, MI
Protocol ID: 108-15-2 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BUTTERCUP 5/Jul/15 RATING 1-10	PUMPKIN 5/Jul/15 RATING 1-10	BUTTERNUT 5/Jul/15 RATING 1-10	BYGR 5/Jul/15 RATING 1-10	COLQ 5/Jul/15 RATING 1-10
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	2.3	5.0	2.3	7.7	10.0
	clomazone	3	ME	0.375	lb ai/a	PRE					
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	4.3	5.7	3.3	9.7	10.0
	clomazone	3	ME	0.375	lb ai/a	PRE					
	fomesafen	2	SL	0.125	lb ai/a	PRE					
3	fomesafen	2	SL	0.25	lb ai/a	PRE	2.7	5.0	3.7	4.0	10.0
4	fomesafen	2	SL	0.25	lb ai/a	PRE	2.7	3.0	3.0	6.7	9.7
	clomazone	3	ME	0.375	lb ai/a	PRE					
5	fomesafen	2	SL	0.25	lb ai/a	PRE	4.3	5.7	3.0	10.0	10.0
	S-metolachlor	7.62	EC	1.26	lb ai/a	PRE					
6	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	2.0	5.3	4.0	10.0	10.0
	clomazone	3	ME	0.5	lb ai/a	PRE					
7	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	3.7	6.3	4.3	10.0	10.0
	clomazone	3	ME	0.375	lb ai/a	PRE					
	fomesafen	2	SL	0.25	lb ai/a	PRE					
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	4.0	6.3	4.0	8.0	9.3
9	Strategy	2.1	SE	6	pt/a	PRE	4.7	5.0	4.7	10.0	10.0
	ethalfluralin	1.6	SE	1.2	lb ai/a						
	clomazone	0.5	SE	0.375	lb ai/a						
10	Untreated						3.0	4.7	3.3	1.7	4.0
LSD P=.05							3.74	4.05	3.22	3.13	2.85
Standard Deviation							2.18	2.36	1.88	1.82	1.66
CV							64.77	45.42	52.67	23.47	17.84

Weed Control in Pumpkin and Squash – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CORW	RRPW	WIRA	BUTTERCUP	PUMPKIN
Pest Code											
Crop Code										BUTTERCUP	PUMPKIN
Rating Date							5/Jul/15	5/Jul/15	5/Jul/15	16/Jul/15	16/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	6.0	10.0	3.3	2.3	1.7
	clomazone	3	ME	0.375	lb ai/a	PRE					
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	7.3	10.0	10.0	3.3	3.0
	clomazone	3	ME	0.375	lb ai/a	PRE					
	fomesafen	2	SL	0.125	lb ai/a	PRE					
3	fomesafen	2	SL	0.25	lb ai/a	PRE	7.0	10.0	10.0	1.3	3.3
4	fomesafen	2	SL	0.25	lb ai/a	PRE	7.7	10.0	10.0	1.7	2.0
	clomazone	3	ME	0.375	lb ai/a	PRE					
5	fomesafen	2	SL	0.25	lb ai/a	PRE	10.0	10.0	10.0	2.3	4.3
	S-metolachlor	7.62	EC	1.26	lb ai/a	PRE					
6	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	5.3	10.0	3.0	1.3	5.0
	clomazone	3	ME	0.5	lb ai/a	PRE					
7	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	10.0	10.0	10.0	2.3	3.7
	clomazone	3	ME	0.375	lb ai/a	PRE					
	fomesafen	2	SL	0.25	lb ai/a	PRE					
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	7.3	9.3	1.3	2.7	5.0
9	Strategy	2.1	SE	6	pt/a	PRE	8.7	10.0	4.3	3.0	3.7
	ethalfluralin	1.6	SE	1.2	lb ai/a						
	clomazone	0.5	SE	0.375	lb ai/a						
10	Untreated						1.7	6.3	2.7	2.3	4.0
LSD P=.05							3.95	2.68	2.99	2.50	4.06
Standard Deviation							2.30	1.56	1.74	1.46	2.37
CV							32.39	16.36	26.93	64.21	66.37

Weed Control in Pumpkin and Squash – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
Pest Code								BYGR	LACG	COLQ	CORW
Crop Code							BUTTERNUT				
Rating Date							16/Jul/15	16/Jul/15	16/Jul/15	16/Jul/15	16/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	1.3	10.0	8.3	9.3	6.3
	clomazone	3	ME	0.375	lb ai/a	PRE					
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	2.3	9.7	8.3	9.3	8.0
	clomazone	3	ME	0.375	lb ai/a	PRE					
	fomesafen	2	SL	0.125	lb ai/a	PRE					
3	fomesafen	2	SL	0.25	lb ai/a	PRE	1.7	6.7	4.7	9.0	8.3
4	fomesafen	2	SL	0.25	lb ai/a	PRE	2.3	9.3	6.7	9.7	8.0
	clomazone	3	ME	0.375	lb ai/a	PRE					
5	fomesafen	2	SL	0.25	lb ai/a	PRE	2.0	9.7	9.7	9.3	9.0
	S-metolachlor	7.62	EC	1.26	lb ai/a	PRE					
6	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	1.3	9.7	9.7	10.0	8.0
	clomazone	3	ME	0.5	lb ai/a	PRE					
7	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	2.7	8.7	9.7	9.3	9.7
	clomazone	3	ME	0.375	lb ai/a	PRE					
	fomesafen	2	SL	0.25	lb ai/a	PRE					
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	5.7	8.7	5.0	9.3	8.7
9	Strategy	2.1	SE	6	pt/a	PRE	2.7	7.0	9.7	10.0	8.0
	ethalfluralin	1.6	SE	1.2	lb ai/a						
	clomazone	0.5	SE	0.375	lb ai/a						
10	Untreated						1.7	1.0	1.7	3.0	1.0
LSD P=.05							2.36	3.85	2.70	2.17	2.81
Standard Deviation							1.37	2.24	1.58	1.27	1.64
CV							58.01	27.93	21.5	14.35	21.88

Weed Control in Pumpkin and Squash – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WIRA	BUTTERCUP	PUMPKIN	BUTTERNUT
Pest Code							WIRA			
Crop Code								BUTTERCUP	PUMPKIN	BUTTERNUT
Rating Date							16/Jul/15	22/Jul/15	22/Jul/15	22/Jul/15
Rating Type							RATING	STAND	STAND	STAND
Rating Unit							1-10	#/PLOT	#/PLOT	#/PLOT
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	4.0	26.7	18.7	31.7
	clomazone	3	ME	0.375	lb ai/a	PRE				
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	9.7	22.3	16.0	34.3
	clomazone	3	ME	0.375	lb ai/a	PRE				
	fomesafen	2	SL	0.125	lb ai/a	PRE				
3	fomesafen	2	SL	0.25	lb ai/a	PRE	10.0	40.3	13.0	26.0
4	fomesafen	2	SL	0.25	lb ai/a	PRE	10.0	39.0	15.7	34.7
	clomazone	3	ME	0.375	lb ai/a	PRE				
5	fomesafen	2	SL	0.25	lb ai/a	PRE	10.0	31.0	9.7	35.0
	S-metolachlor	7.62	EC	1.26	lb ai/a	PRE				
6	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	3.7	27.7	8.7	32.3
	clomazone	3	ME	0.5	lb ai/a	PRE				
7	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	9.7	32.0	6.7	31.3
	clomazone	3	ME	0.375	lb ai/a	PRE				
	fomesafen	2	SL	0.25	lb ai/a	PRE				
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	1.0	35.7	7.0	25.3
9	Strategy	2.1	SE	6	pt/a	PRE	4.3	42.7	14.7	36.7
	ethalfluralin	1.6	SE	1.2	lb ai/a					
	clomazone	0.5	SE	0.375	lb ai/a					
10	Untreated						3.0	37.0	22.0	32.3
LSD P=.05							3.75	19.32	17.60	14.67
Standard Deviation							2.19	11.26	10.26	8.55
CV							33.5	33.68	77.73	26.75

Weed Control in Pumpkin and Squash – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PUMPKIN 29/Sep/15 HARVEST ORANGE #/PLOT	PUMPKIN 29/Sep/15 HARVEST ORANGE KG/PLOT	PUMPKIN 29/Sep/15 HARVEST GREEN #/PLOT	PUMPKIN 29/Sep/15 HARVEST GREEN KG/PLOT
	Pest Code									
	Crop Code						PUMPKIN	PUMPKIN	PUMPKIN	PUMPKIN
	Rating Date						29/Sep/15	29/Sep/15	29/Sep/15	29/Sep/15
	Rating Type						HARVEST	HARVEST	HARVEST	HARVEST
	Rating Unit						ORANGE #/PLOT	ORANGE KG/PLOT	GREEN #/PLOT	GREEN KG/PLOT
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	11.7	83.18	1.3	5.98
	clomazone	3	ME	0.375	lb ai/a	PRE				
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	8.7	80.95	5.3	38.41
	clomazone	3	ME	0.375	lb ai/a	PRE				
	fomesafen	2	SL	0.125	lb ai/a	PRE				
3	fomesafen	2	SL	0.25	lb ai/a	PRE	10.7	87.49	3.3	19.45
4	fomesafen	2	SL	0.25	lb ai/a	PRE	11.3	100.20	3.0	13.81
	clomazone	3	ME	0.375	lb ai/a	PRE				
5	fomesafen	2	SL	0.25	lb ai/a	PRE	9.3	99.15	1.7	8.48
	S-metolachlor	7.62	EC	1.26	lb ai/a	PRE				
6	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	8.0	54.56	1.0	7.99
	clomazone	3	ME	0.5	lb ai/a	PRE				
7	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	6.7	72.77	1.0	6.30
	clomazone	3	ME	0.375	lb ai/a	PRE				
	fomesafen	2	SL	0.25	lb ai/a	PRE				
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	2.7	29.76	2.7	19.75
9	Strategy	2.1	SE	6	pt/a	PRE	10.0	103.40	3.7	20.83
	ethalfluralin	1.6	SE	1.2	lb ai/a					
	clomazone	0.5	SE	0.375	lb ai/a					
10	Untreated						6.7	38.24	4.7	15.63
LSD P=.05							9.27	73.532	4.78	26.083
Standard Deviation							5.40	42.864	2.79	15.204
CV							63.06	57.18	100.73	97.08

Weed Control in Pumpkin and Squash – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BUTTERCUP 5/Oct/15 HARVEST #/PLOT	BUTTERCUP 5/Oct/15 HARVEST KG/PLOT	BUTTERNUT 5/Oct/15 HARVEST #/PLOT	BUTTERNUT 5/Oct/15 HARVEST KG/PLOT
	Pest Code									
	Crop Code									
	Rating Date									
	Rating Type									
	Rating Unit									
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	46.0	49.05	75.0	164.28
	clomazone	3	ME	0.375	lb ai/a	PRE				
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	51.0	59.18	61.0	140.44
	clomazone	3	ME	0.375	lb ai/a	PRE				
	fomesafen	2	SL	0.125	lb ai/a	PRE				
3	fomesafen	2	SL	0.25	lb ai/a	PRE	62.3	68.89	60.7	146.70
4	fomesafen	2	SL	0.25	lb ai/a	PRE	64.7	69.26	61.3	133.49
	clomazone	3	ME	0.375	lb ai/a	PRE				
5	fomesafen	2	SL	0.25	lb ai/a	PRE	69.3	78.56	59.0	122.92
	S-metolachlor	7.62	EC	1.26	lb ai/a	PRE				
6	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	70.7	80.81	71.0	144.85
	clomazone	3	ME	0.5	lb ai/a	PRE				
7	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	68.0	74.88	56.0	123.49
	clomazone	3	ME	0.375	lb ai/a	PRE				
	fomesafen	2	SL	0.25	lb ai/a	PRE				
8	bicyclopyrone	1.67	SL	0.033	lb ai/a	PRE	52.0	51.87	32.0	78.25
9	Strategy	2.1	SE	6	pt/a	PRE	47.0	41.47	57.7	118.72
	ethalfluralin	1.6	SE	1.2	lb ai/a					
	clomazone	0.5	SE	0.375	lb ai/a					
10	Untreated						29.3	24.21	40.3	87.57
LSD P=.05							41.36	53.311	34.04	88.825
Standard Deviation							24.11	31.077	19.84	51.779
CV							43.03	51.95	34.57	41.07

Weed Control in Rhubarb – HTRC - 2015

Project Code: 102-15-1 **Location:** East Lansing, MI
Block 125/126

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Rhubarb **Variety:** German Wine
Planting Method: Root division **Planting Date:** 5/21/07 **Harvest Date:** 6/12/15
Spacing: 4 ft; 6 plants/plot **Row Spacing:** 6 ft
Tillage Type: Conventional **Study Design:** RCB **Replications:** 3
Plot Size: 5.3 ft wide x 30 ft long

Soil Type: Marlette fine sandy loam **OM:** 3.6% **pH:** 4.9
Sand: 70% **Silt:** 21% **Clay:** 9% **CEC:** 9.1

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/6/15	2:30 pm	61/55	F	Damp	5 SW	30	100% Cloudy	N
PO1	5/21/15	9:15 am	54/51	F	Slightly Damp	1-2 W	54	100% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/6	ANBG = annual bluegrass	1-2″	Veg	Few
4/6	CUDO = curly dock	4-5″	Veg	Moderate
4/6	DAND = dandelion	4-6″	Veg	Few
4/6	QUGR = quackgrass	6-8″	Veg	Many
4/6	WHCL = white clover	1-2″	Veg	Moderate
4/6	YERO = yellow rocket	4-6″	Veg	Few
5/21	RHUBARB	1.5-2′	Veg/Flower	Good
5/21	CAGE = Carolina geranium	4-5″	Veg	Moderate
5/21	COLQ = common lambsquarter	1-2″	Veg	Few
5/21	CORW = common ragweed	4-6″	Veg	Many
5/21	CUDO = curly dock	2-2.5′	Veg	Moderate
5/21	DAND = dandelion	1-2″	Late flower	Many
5/21	LACG = large crabgrass	6-8″	Veg	Moderate
5/21	QUGR = quackgrass	1.5-2′	Veg	Many
5/21	SHPU = shepherdspurse	1-1.5′	Seed set	Many
5/21	WHCA = white campion	1.5-2′	Veg	Many

Notes and Comments

1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvest, 12 June 2015: 5 (of 6) best plants were harvested per plot.

Weed Control in Rhubarb – HTRC - 2015

Weed Control in Rhubarb – HTRC – 2015

Trial ID: 102-15-1 Location: East Lansing, MI
Protocol ID: 102-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RHUBARB 4/May/15 RATING 1-10	QUGR 4/May/15 RATING 1-10	COLQ 4/May/15 RATING 1-10	DAND 4/May/15 RATING 1-10	RHUBARB 13/May/15 RATING 1-10
1	pronamide	3.3	SC	2	lb ai/a	PRE	1.3	6.0	5.0	7.0	1.0
2	prometryn	4	L	2	lb ai/a	PRE	2.0	4.7	10.0	8.3	2.0
3	clomazone	3	ME	1	lb ai/a	PRE	3.0	9.0	9.3	9.0	2.7
4	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	1.3	1.3	8.7	3.7	1.3
	sethoxydim	1.53	EC	0.28	lb ai/a	PO1					
5	mesotrione	4	SC	0.188	lb ai/a	PRE	2.0	7.0	9.7	7.7	2.0
6	sulfentrazone	4	F	1	lb ai/a	PRE	1.7	5.7	10.0	8.0	1.7
7	linuron	50	DF	1.5	lb ai/a	PRE	1.3	5.7	9.3	5.7	1.0
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
8	halosulfuron	75	WG	0.047	lb ai/a	PRE	1.7	7.0	9.7	6.0	2.3
9	pronamide	3.3	SC	2	lb ai/a	PRE	1.7	8.0	6.0	5.3	1.7
	quinclorac	3.8	L	0.37	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.28	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
10	Untreated					PRE	2.3	5.7	1.0	3.0	1.3
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
LSD P=.05							1.80	4.66	3.19	3.93	1.19
Standard Deviation							1.05	2.72	1.86	2.29	0.69
CV							57.21	45.26	23.6	35.98	40.66

Weed Control in Rhubarb – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	QUGR	BHPL	COLQ	CUDO	DAND
Pest Code											
Crop Code											
Rating Date							13/May/15	13/May/15	13/May/15	13/May/15	13/May/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	pronamide	3.3	SC	2	lb ai/a	PRE	4.7	4.7	2.3	7.0	5.0
2	prometryn	4	L	2	lb ai/a	PRE	4.0	7.0	10.0	7.7	7.0
3	clomazone	3	ME	1	lb ai/a	PRE	8.7	2.7	8.3	8.7	8.3
4	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	1.3	4.0	5.3	6.0	1.0
	sethoxydim	1.53	EC	0.28	lb ai/a	PO1					
5	mesotrione	4	SC	0.188	lb ai/a	PRE	4.7	7.0	10.0	7.0	5.7
6	sulfentrazone	4	F	1	lb ai/a	PRE	5.3	10.0	10.0	7.7	7.3
7	linuron	50	DF	1.5	lb ai/a	PRE	4.0	5.7	8.3	7.0	5.7
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
8	halosulfuron	75	WG	0.047	lb ai/a	PRE	7.0	8.7	8.3	4.0	4.0
9	pronamide	3.3	SC	2	lb ai/a	PRE	7.0	4.0	1.7	7.0	3.3
	quinclorac	3.8	L	0.37	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.28	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
10	Untreated					PRE	6.3	5.3	1.0	1.0	1.7
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
LSD P=.05							5.40	5.77	2.91	3.84	4.35
Standard Deviation							3.15	3.37	1.70	2.24	2.53
CV							59.4	57.05	25.95	35.57	51.72

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RHUBARB	QUGR	CAGE	COLQ	CUDO
Pest Code											
Crop Code											
Rating Date							21/May/15	21/May/15	21/May/15	21/May/15	21/May/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	pronamide	3.3	SC	2	lb ai/a	PRE	1.0	4.0	1.0	1.0	4.0
2	prometryn	4	L	2	lb ai/a	PRE	1.7	4.7	9.0	10.0	7.0
3	clomazone	3	ME	1	lb ai/a	PRE	2.7	8.7	10.0	7.3	8.7
4	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	1.7	1.3	1.0	6.0	7.0
	sethoxydim	1.53	EC	0.28	lb ai/a	PO1					
5	mesotrione	4	SC	0.188	lb ai/a	PRE	1.3	5.0	1.0	10.0	6.0
6	sulfentrazone	4	F	1	lb ai/a	PRE	1.3	4.7	10.0	10.0	9.7
7	linuron	50	DF	1.5	lb ai/a	PRE	1.3	2.3	7.0	7.7	7.0
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
8	halosulfuron	75	WG	0.047	lb ai/a	PRE	2.0	6.3	7.7	7.7	2.7
9	pronamide	3.3	SC	2	lb ai/a	PRE	1.3	6.3	7.0	4.0	7.0
	quinclorac	3.8	L	0.37	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.28	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
10	Untreated					PRE	1.7	6.0	4.0	1.0	1.3
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
LSD P=.05							1.61	4.67	5.64	4.83	5.60
Standard Deviation							0.94	2.72	3.29	2.82	3.26
CV							58.8	55.22	57.02	43.58	54.08

Weed Control in Rhubarb – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DAND	SHPU		QUGR
	Crop Code								RHUBARB	
	Rating Date						21/May/15	21/May/15	29/May/15	29/May/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	pronamide	3.3	SC	2	lb ai/a	PRE	1.7	1.0	1.0	3.7
2	prometryn	4	L	2	lb ai/a	PRE	5.3	10.0	1.7	6.0
3	clomazone	3	ME	1	lb ai/a	PRE	10.0	10.0	2.0	8.7
4	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	1.3	6.3	2.0	1.3
	sethoxydim	1.53	EC	0.28	lb ai/a	PO1				
5	mesotrione	4	SC	0.188	lb ai/a	PRE	3.7	10.0	2.0	5.7
6	sulfentrazone	4	F	1	lb ai/a	PRE	5.3	10.0	2.3	4.7
7	linuron	50	DF	1.5	lb ai/a	PRE	4.3	10.0	1.0	3.0
	clethodim	0.97	EC	0.12	lb ai/a	PO1				
8	halosulfuron	75	WG	0.047	lb ai/a	PRE	5.7	10.0	2.3	6.7
9	pronamide	3.3	SC	2	lb ai/a	PRE	1.0	4.0	1.7	7.3
	quinclorac	3.8	L	0.37	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.28	lb ai/a	PO1				
	COC	100	SL	1	% v/v	PO1				
10	Untreated					PRE	1.0	1.0	2.7	7.7
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1				
	COC	100	SL	1	% v/v	PO1				
LSD P=.05							5.06	3.75	1.54	4.01
Standard Deviation							2.95	2.18	0.90	2.34
CV							75.04	30.18	48.03	42.78

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BHPL	BSPL	COLQ	CUDO
	Crop Code									
	Rating Date						29/May/15	29/May/15	29/May/15	29/May/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	pronamide	3.3	SC	2	lb ai/a	PRE	4.0	4.0	1.0	4.0
2	prometryn	4	L	2	lb ai/a	PRE	10.0	4.0	9.7	4.0
3	clomazone	3	ME	1	lb ai/a	PRE	2.0	6.0	8.3	7.7
4	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	7.0	9.3	4.0	7.0
	sethoxydim	1.53	EC	0.28	lb ai/a	PO1				
5	mesotrione	4	SC	0.188	lb ai/a	PRE	10.0	7.0	10.0	4.0
6	sulfentrazone	4	F	1	lb ai/a	PRE	10.0	10.0	10.0	7.7
7	linuron	50	DF	1.5	lb ai/a	PRE	9.0	10.0	8.3	7.0
	clethodim	0.97	EC	0.12	lb ai/a	PO1				
8	halosulfuron	75	WG	0.047	lb ai/a	PRE	4.0	10.0	2.3	1.0
9	pronamide	3.3	SC	2	lb ai/a	PRE	10.0	10.0	4.7	3.7
	quinclorac	3.8	L	0.37	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.28	lb ai/a	PO1				
	COC	100	SL	1	% v/v	PO1				
10	Untreated					PRE	4.0	4.0	1.0	1.0
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1				
	COC	100	SL	1	% v/v	PO1				
LSD P=.05							5.68	6.07	4.33	5.86
Standard Deviation							3.31	3.54	2.52	3.42
CV							47.31	47.61	42.5	72.71

Weed Control in Rhubarb – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HOWE	WHCA	RHUBARB
Pest Code							HOWE	WHCA	
Crop Code									RHUBARB
Rating Date							29/May/15	29/May/15	12/Jun/15
Rating Type							RATING	RATING	HARVEST
Rating Unit							1-10	1-10	KG/PLOT
1	pronamide	3.3	SC	2	lb ai/a	PRE	4.7	4.0	4.70
2	prometryn	4	L	2	lb ai/a	PRE	8.3	7.0	7.45
3	clomazone	3	ME	1	lb ai/a	PRE	5.3	10.0	6.35
4	*S*-metolachlor	7.62	EC	1.26	lb ai/a	PRE	6.3	7.0	4.07
	sethoxydim	1.53	EC	0.28	lb ai/a	PO1			
5	mesotrione	4	SC	0.188	lb ai/a	PRE	10.0	1.0	7.82
6	sulfentrazone	4	F	1	lb ai/a	PRE	10.0	9.3	6.38
7	linuron	50	DF	1.5	lb ai/a	PRE	1.3	8.7	6.39
	clethodim	0.97	EC	0.12	lb ai/a	PO1			
8	halosulfuron	75	WG	0.047	lb ai/a	PRE	6.3	10.0	3.09
9	pronamide	3.3	SC	2	lb ai/a	PRE	10.0	4.7	4.85
	quinclorac	3.8	L	0.37	lb ai/a	PO1			
	sethoxydim	1.53	EC	0.28	lb ai/a	PO1			
	COC	100	SL	1	% v/v	PO1			
10	Untreated					PRE	4.7	4.0	2.33
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1			
	COC	100	SL	1	% v/v	PO1			
LSD P=.05							5.12	6.23	3.599
Standard Deviation							2.99	3.63	2.098
CV							44.56	55.27	39.26

Fall Weed Control in Strawberry – HTRC - Fall 2014

Project Code: 126-15-1 **Location: East Lansing, MI**
Block SH4/5

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Strawberry **Variety: Jewel**
Planting Method: Transplant **Planting Date: 5/6/2014** **Harvest Date: 6/10 – 6/24/15**
Spacing: Solid row **Row Spacing: 6 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.33 ft wide x 30 ft long

Soil Type: Riddles sandy loam **OM: 1.4%** **pH: 5.3**
Sand: 85% **Silt: 9%** **Clay: 6%** **CEC: 2.9**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
FALL14	10/11/14	1:00 pm	70/58	F	Moist	5-7 SW	57	50% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/4/15	STRAWBERRY			
5/4/15	QUGR = quackgrass			
5/4/15	WHCA = white campion			
5/4/15	YERO = yellow rocket			
5/13/15	STRAWBERRY			
5/13/15	HAVE = hairy vetch			
5/13/15	HOWE = horseweed			
5/13/15	QUGR = quackgrass			

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Experiment conducted at Sandhill in 2014 planting, south end.
4. Harvest Dates: 6/10, 6/12, 6/19, and 6/24.

Fall Weed Control in Strawberry – HTRC - Fall 2014

Fall Weed Control in Strawberry – HTRC – Fall 2014

Trial ID: 126-15-1 Location: Sandhill
Protocol ID: 126-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	STBE 4/May/15 RATING 1-10	QUGR 4/May/15 RATING 1-10	WHCA 4/May/15 RATING 1-10	YERO 4/May/15 RATING 1-10
1	terbacil	80	WDG	0.4	lb ai/a	FALL	2.3	7.0	7.0	7.7
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
2	sulfentrazone	4	F	0.25	lb ai/a	FALL	2.0	8.7	4.7	7.7
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
3	acifluorfen	2	L	0.375	lb ai/a	FALL	2.3	6.0	4.3	7.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
4	napropamide	50	DF	4	lb ai/a	FALL	2.0	8.7	7.3	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
5	pendimethalin	3.8	CS	1.4	lb ai/a	FALL	1.3	9.7	1.7	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
6	indaziflam	1.67	SC	0.065	lb ai/a	FALL	1.7	8.3	4.0	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
7	indaziflam	1.67	SC	0.085	lb ai/a	FALL	2.0	6.0	6.3	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
8	isoxaben	75	DF	1	lb ai/a	FALL	1.0	5.7	4.3	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
9	fomesafen	2	SL	0.0375	lb ai/a	FALL	1.7	5.0	7.0	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
10	flumioxazin	51	WDG	0.094	lb ai/a	FALL	2.3	9.3	9.0	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
11	clopyralid	3	L	0.25	lb ai/a	FALL	2.3	10.0	7.0	10.0
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
LSD P=.05							1.30	5.23	7.88	4.00
Standard Deviation							0.76	3.07	4.62	2.35
CV							39.85	40.02	81.16	25.23

Fall Weed Control in Strawberry – HTRC - Fall 2014

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	STBE 13/May/15 RATING 1-10	QUGR 13/May/15 RATING 1-10	HAVE 13/May/15 RATING 1-10	HOWE 13/May/15 RATING 1-10
1	terbacil	80	WDG	0.4	lb ai/a	FALL	1.7	7.0	10.0	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
2	sulfentrazone	4	F	0.25	lb ai/a	FALL	2.3	7.0	10.0	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
3	acifluorfen	2	L	0.375	lb ai/a	FALL	2.3	5.3	10.0	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
4	napropamide	50	DF	4	lb ai/a	FALL	3.0	9.0	10.0	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
5	pendimethalin	3.8	CS	1.4	lb ai/a	FALL	2.3	9.3	10.0	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
6	indaziflam	1.67	SC	0.065	lb ai/a	FALL	2.0	8.3	10.0	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
7	indaziflam	1.67	SC	0.085	lb ai/a	FALL	2.3	4.0	10.0	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
8	isoxaben	75	DF	1	lb ai/a	FALL	1.3	6.7	10.0	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
9	fomesafen	2	SL	0.0375	lb ai/a	FALL	2.0	2.0	10.0	10.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
10	flumioxazin	51	WDG	0.094	lb ai/a	FALL	2.0	9.3	6.3	6.0
	clopyralid	3	L	0.25	lb ai/a	FALL				
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
11	clopyralid	3	L	0.25	lb ai/a	FALL	3.3	9.0	10.0	10.0
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL				
LSD P=.05							1.94	5.62	2.08	1.36
Standard Deviation							1.14	3.30	1.22	0.80
CV							50.9	47.15	12.61	8.28

Fall Weed Control in Strawberry – HTRC - Fall 2014

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	STBE 10/Jun/15 HARVEST KG/PLOT	STBE 12/Jun/15 HARVEST KG/PLOT	STBE 19/Jun/15 HARVEST KG/PLOT	STBE 24/Jun/15 HARVEST KG/PLOT	STBE TOTAL KG/PLOT
	Pest Code										
	Crop Code										
	Rating Date										
	Rating Type										
	Rating Unit										
1	terbacil	80	WDG	0.4	lb ai/a	FALL	1.64	1.53	0.83	0.78	4.78
	clopyralid	3	L	0.25	lb ai/a	FALL					
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL					
2	sulfentrazone	4	F	0.25	lb ai/a	FALL	1.85	1.79	1.17	0.90	5.72
	clopyralid	3	L	0.25	lb ai/a	FALL					
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL					
3	acifluorfen	2	L	0.375	lb ai/a	FALL	1.96	1.84	1.04	0.81	5.65
	clopyralid	3	L	0.25	lb ai/a	FALL					
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL					
4	napropamide	50	DF	4	lb ai/a	FALL	2.46	2.10	1.02	1.11	6.70
	clopyralid	3	L	0.25	lb ai/a	FALL					
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL					
5	pendimethalin	3.8	CS	1.4	lb ai/a	FALL	2.50	2.50	1.21	0.93	7.15
	clopyralid	3	L	0.25	lb ai/a	FALL					
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL					
6	indaziflam	1.67	SC	0.065	lb ai/a	FALL	2.22	2.01	1.35	1.23	6.81
	clopyralid	3	L	0.25	lb ai/a	FALL					
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL					
7	indaziflam	1.67	SC	0.085	lb ai/a	FALL	2.60	2.34	1.41	0.92	7.26
	clopyralid	3	L	0.25	lb ai/a	FALL					
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL					
8	isoxaben	75	DF	1	lb ai/a	FALL	2.36	2.09	1.02	1.02	6.50
	clopyralid	3	L	0.25	lb ai/a	FALL					
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL					
9	fomesafen	2	SL	0.0375	lb ai/a	FALL	2.17	1.42	1.53	0.97	6.08
	clopyralid	3	L	0.25	lb ai/a	FALL					
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL					
10	flumioxazin	51	WDG	0.094	lb ai/a	FALL	2.61	2.10	1.34	0.92	6.98
	clopyralid	3	L	0.25	lb ai/a	FALL					
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL					
11	clopyralid	3	L	0.25	lb ai/a	FALL	2.44	2.22	0.73	0.83	6.22
	sethoxydim	1.53	EC	0.19	lb ai/a	FALL					
LSD P=.05							1.562	1.296	0.779	0.441	3.168
Standard Deviation							0.917	0.761	0.457	0.259	1.860
CV							40.65	38.13	39.71	27.36	29.29

Spring Weed Control in Strawberry – HTRC - 2015

Project Code: 126-15-2 **Location: East Lansing, MI**
Block SH4

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Strawberry **Variety: Jewel**
Planting Method: Transplant **Planting Date: 5/10/2012** **Harvest Date: 6/8 – 6/24/15**
Spacing: 24 in **Row Spacing: 6 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.33 ft wide x 30 ft long

Soil Type: Riddles sandy loam **OM: 1.2%** **pH: 7.2**
Sand: 82% **Silt: 11%** **Clay: 7%** **CEC: 4.3**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/13/15	9:10 am	61/50	F	Moist	5-7 SW	52	90% Cloudy	N
PO1	5/13/15	2:10 pm	55/55	F	Moist	1-2 NW	54	100% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/13	STRAWBERRY	2-3″	Early new foliar	Good
4/13	HOWE = horseweed	1-2″	Rosette	Many
4/13	MECR = mouseear cress	1-2″	Flower	Many
4/13	QUGR = quackgrass	3-5″	Foliar	Few
5/13	STRAWBERRY	6-8″	Flowering	Good
5/13	COCW = common chickweed	4-6″	Early Flower	Moderate
5/13	CORW = common ragweed	2-8″	Veg	Many
5/13	HOWE = horseweed	3-5″	Rosette	Many
5/13	MECR = mouseear cress	4-6″	Flowering	Many
5/13	QUGR = quackgrass	12-18″	Veg	Many

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Experiment conducted at Sandhill location in the 2012 planting.
4. Harvest Dates: 6/8, 6/11, 6/18, 6/22, and 6/24.

Spring Weed Control in Strawberry – HTRC - 2015

Spring Weed Control in Strawberry – HTRC – 2015

Trial ID: 126-15-2 Location: Sandhill
Protocol ID: 126-15-2 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	STBE 4/May/15 RATING 1-10	QUGR 4/May/15 RATING 1-10	HOWE 4/May/15 RATING 1-10	MECR 4/May/15 RATING 1-10	STBE 13/May/15 RATING 1-10
1	terbacil	80	WDG	0.4	lb ai/a	PRE	1.3	6.7	6.0	9.0	1.3
2	napropamide	50	DF	4	lb ai/a	PRE	2.3	6.7	4.3	5.7	2.7
3	sulfentrazone	4	F	0.25	lb ai/a	PRE	2.3	6.7	5.3	6.0	3.7
	pendimethalin	3.8	CS	1.4	lb ai/a	PRE					
4	indaziflam	1.67	SC	0.085	lb ai/a	PRE	1.0	5.3	2.3	7.7	1.3
5	napropamide	50	DF	4	lb ai/a	PRE	1.3	7.7	3.0	7.7	1.3
	pendimethalin	3.8	CS	1	lb ai/a	PRE					
6	terbacil	80	WDG	0.2	lb ai/a	PRE	1.0	10.0	8.3	9.3	1.7
	clopyralid	3	L	0.25	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
7	*S*-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.3	5.3	1.0	1.0	1.7
8	Untreated						1.3	6.0	1.0	1.7	1.7
LSD P=.05							1.60	6.25	4.27	4.20	1.81
Standard Deviation							0.92	3.57	2.44	2.40	1.04
CV							61.08	52.56	62.2	39.99	54.01

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	QUGR 13/May/15 RATING 1-10	HOWE 13/May/15 RATING 1-10	MECR 13/May/15 RATING 1-10	STBE 8/Jun/15 HARVEST KG/PLOT	STBE 11/Jun/15 HARVEST KG/PLOT
1	terbacil	80	WDG	0.4	lb ai/a	PRE	7.3	8.3	10.0	1.78	2.51
2	napropamide	50	DF	4	lb ai/a	PRE	6.7	4.0	4.0	1.29	2.23
3	sulfentrazone	4	F	0.25	lb ai/a	PRE	6.0	6.7	4.7	1.28	2.04
	pendimethalin	3.8	CS	1.4	lb ai/a	PRE					
4	indaziflam	1.67	SC	0.085	lb ai/a	PRE	5.0	1.3	7.7	1.23	2.92
5	napropamide	50	DF	4	lb ai/a	PRE	6.3	5.0	5.7	0.97	2.41
	pendimethalin	3.8	CS	1	lb ai/a	PRE					
6	terbacil	80	WDG	0.2	lb ai/a	PRE	10.0	6.7	9.0	1.28	2.34
	clopyralid	3	L	0.25	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
7	*S*-metolachlor	7.62	EC	1.9	lb ai/a	PRE	4.0	1.7	1.0	1.41	2.86
8	Untreated						3.3	1.0	1.0	1.02	2.41
LSD P=.05							5.96	5.06	4.71	0.781	1.214
Standard Deviation							3.40	2.89	2.69	0.446	0.693
CV							55.93	66.64	50.03	34.74	28.14

Spring Weed Control in Strawberry – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	STBE 18/Jun/15 HARVEST KG/PLOT	STBE 22/Jun/15 HARVEST KG/PLOT	STBE 24/Jun/15 HARVEST KG/PLOT	STBE TOTAL KG/PLOT
	Pest Code									
	Crop Code									
	Rating Date									
	Rating Type									
	Rating Unit									
1	terbacil	80	WDG	0.4	lb ai/a	PRE	2.00	2.20	1.20	9.68
2	napropamide	50	DF	4	lb ai/a	PRE	1.68	1.92	0.66	7.77
3	sulfentrazone	4	F	0.25	lb ai/a	PRE	1.41	1.45	0.36	6.54
	pendimethalin	3.8	CS	1.4	lb ai/a	PRE				
4	indaziflam	1.67	SC	0.085	lb ai/a	PRE	3.33	2.87	0.87	11.22
5	napropamide	50	DF	4	lb ai/a	PRE	2.25	1.36	0.84	7.81
	pendimethalin	3.8	CS	1	lb ai/a	PRE				
6	terbacil	80	WDG	0.2	lb ai/a	PRE	2.04	1.83	0.63	8.12
	clopyralid	3	L	0.25	lb ai/a	PO1				
	clethodim	0.97	EC	0.12	lb ai/a	PO1				
7	*S*-metolachlor	7.62	EC	1.9	lb ai/a	PRE	2.45	2.07	0.44	9.23
8	Untreated						2.30	1.61	0.58	7.91
LSD P=.05							2.119	1.290	1.184	4.443
Standard Deviation							1.210	0.736	0.676	2.537
CV							55.46	38.47	97.33	29.72

Postemergence Weed Control in Apple – CRC - 2015

Project Code: 128-15-1 **Location: Clarksville, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Apple **Varieties: see notes**
Planting Method: Transplant **Planting Date: 2005**
Spacing: 12 ft **Row Spacing: 18 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 11 ft wide x 50 ft long; 4 trees/plot

Soil Type: Lapeer sandy loam **OM: 2.8%** **pH: 6.2**
Sand: 56% **Silt: 25%** **Clay: 19%** **CEC: 6.3**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
EPOS	6/11/15	11:45 am	70/66	F	Dry	6-7 NE	59	100% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/11	APPLE	8-10′	0.5-1″ fruit	Good
6/11	ANBG = annual bluegrass	12-24″	Veg	Moderate
6/11	BYGR = barnyardgrass	12-18″	Veg	Many
6/11	COLQ = common lambsquarters	4-12″	Veg	Many
6/11	COMA = common mallow	10-12″	Flower	Moderate
6/11	CUDO = curly dock	24-48″	Flower	Few
6/11	DAND = dandelion	10-24″	Flower	Many
6/11	EBNS = eastern black nightshade	24-36″	Flower	Few
6/11	GORO = goldenrod	24-36″	Veg	Few
6/11	WHCL = white clover	6-10″	Flower	Many
6/11	WICA = wild carrot	6-8″	Veg	Few

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. EPRE, 4/17/15: Applied 2 lbs ai/A Princep 90 WDG (simazine) + 1 lb ai/A Gramoxone 2 SL (paraquat) to entire experiment.
4. EPOS, 6/11/15: Trt 9 applied to NE of plot #106; NE of plot #311 did not receive coverage.
5. Varieties: Dandee Red, Honeycrisp, Rising Sun Fuji, Ruby Jon, Schlect Spur

Postemergence Weed Control in Apple – CRC - 2015

Postemergence Weed Control in Apple – CRC – 2015

Trial ID: 128-15-1 Location: Clarksville, MI
Protocol ID: 128-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	APPLE 15/Jul/15 RATING 1-10	BYGR 15/Jul/15 RATING 1-10	COLQ 15/Jul/15 RATING 1-10	CUDO 15/Jul/15 RATING 1-10	DAND 15/Jul/15 RATING 1-10
1	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	EPOS	1.0	1.0	10.0	10.0	1.7
	COC	100	SL	1	% v/v	EPOS					
2	glyphosate	5.5	L	2.75	lb ai/a	EPOS	1.0	8.3	7.3	9.7	8.0
3	glufosinate	2.34	L	1	lb ai/a	EPOS	1.0	3.3	3.3	9.0	6.7
4	paraquat	2	SL	1	lb ai/a	EPOS	1.0	3.0	4.7	10.0	4.7
5	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	EPOS	1.7	5.3	10.0	10.0	8.0
	glyphosate	5.5	L	2.75	lb ai/a	EPOS					
	COC	100	SL	1	% v/v	EPOS					
6	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	EPOS	1.3	6.7	6.3	10.0	7.7
	glufosinate	2.34	L	1	lb ai/a	EPOS					
	COC	100	SL	1	% v/v	EPOS					
7	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	EPOS	1.0	5.3	10.0	10.0	7.0
	paraquat	2	SL	1	lb ai/a	EPOS					
	COC	100	SL	1	% v/v	EPOS					
8	saflufenacil	70	WG	0.044	lb ai/a	EPOS	1.0	10.0	7.7	10.0	2.0
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	EPOS					
	COC	100	SL	1	% v/v	EPOS					
	N Pak (AMS)	100	L	2.5	% v/v	EPOS					
9	Zeus Prime XC	3.5	EC	0.41	lb ai/a	EPOS	1.0	9.3	10.0	10.0	2.0
	sulfentrazone	3.15	EC	0.369	lb ai/a						
	carfentrazone	0.35	EC	0.041	lb ai/a						
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	EPOS					
	COC	100	SL	1	% v/v	EPOS					
	N Pak (AMS)	100	L	2.5	% v/v	EPOS					
10	fluroxypyr	2.8	L	0.49	lb ai/a	EPOS	1.3	7.3	5.0	10.0	7.0
	sethoxydim	1.53	EC	0.38	lb ai/a	EPOS					
	COC	100	SL	1	% v/v	EPOS					
	N Pak (AMS)	100	L	2.5	% v/v	EPOS					
11	quinclorac	3.8	L	0.25	lb ai/a	EPOS	1.0	10.0	7.7	10.0	4.7
	fluazifop-P	2	EC	0.5	lb ai/a	EPOS					
	COC	100	SL	1	% v/v	EPOS					
	N Pak (AMS)	100	L	2.5	% v/v	EPOS					
12	Untreated						1.3	2.0	2.3	9.0	1.3
LSD P=.05							0.76	3.76	4.68	1.27	3.17
Standard Deviation							0.45	2.22	2.76	0.75	1.87
CV							39.47	37.15	39.31	7.67	36.99

Spring Weed Control in Apple – HTRC - 2015

Project Code: 128-15-4 **Location: East Lansing, MI**
Block 154/160

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Apple **Variety: See notes**
Planting Method: Transplant **Planting Date: 2006**
Spacing: 12 ft **Row Spacing: 18 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 11 ft wide x 50 ft long; 4 trees/plot

Soil Type: Marlette fine sandy loam **OM: 3.2%** **pH: 6.1**
Sand: 66% **Silt: 22%** **Clay: 12%** **CEC: 6.4**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
EPRE	4/14/15	2:40 pm	64/50	F	Moist	2-4 N	20	40% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/14	APPLE	15-20′	Bud swell	Good
4/14	CUDO = curly dock	2-4″	Veg	Many
4/14	DAND = dandelion	4-6″	Veg	Many
4/14	QUGR = quackgrass	2-4″	Veg	Many
4/14	WHCA = white campion	4-6″	Veg	Many
4/14	WHCL = white clover	2-3″	Veg	Few
4/14	YERO = yellow rocket	6-8″	Veg	Few

Notes and Comments
1. Spray applied with 4 nozzle boom; one pass on each side of row. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. This is year 2 using the same plots; 4 trees/plot. Block 154-160, rows 5-20 on the west end.
4. Varieties: Fuji, Gala, Honeycrisp, Luckyjon, Spartan

Spring Weed Control in Apple – HTRC - 2015

Spring Weed Control in Apple – HTRC – 2015

Trial ID: 128-15-4 Location: East Lansing, MI
Protocol ID: 128-15-4 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	APPLE 13/May/15 RATING 1-10	QUGR 13/May/15 RATING 1-10	ALFA 13/May/15 RATING 1-10	CUDO 13/May/15 RATING 1-10	DAND 13/May/15 RATING 1-10
1	clomazone	3	ME	1.25	lb ai/a	EPRE	1.0	8.7	7.7	4.0	8.0
	paraquat	2	SL	1	lb ai/a	EPRE					
2	isoxaben	4.17	SC	0.75	lb ai/a	EPRE	1.0	9.7	3.7	4.7	10.0
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
3	isoxaben	4.17	SC	1	lb ai/a	EPRE	1.0	9.3	3.0	5.7	10.0
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
4	isoxaben	4.17	SC	2	lb ai/a	EPRE	1.0	10.0	2.0	6.0	10.0
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
5	Zeus Prime XC	3.5	EC	0.164	lb ai/a	EPRE	1.0	10.0	3.0	5.0	9.3
	sulfentrazone	3.15	EC	0.1476	lb ai/a						
	carfentrazone	0.35	EC	0.0164	lb ai/a						
	diuron	80	DF	3	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
6	Zeus Prime XC	3.5	EC	0.164	lb ai/a	EPRE	1.0	10.0	4.7	6.3	10.0
	sulfentrazone	3.15	EC	0.1476	lb ai/a						
	carfentrazone	0.35	EC	0.0164	lb ai/a						
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					

Spring Weed Control in Apple – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	APPLE 13/May/15 RATING 1-10	QUGR 13/May/15 RATING 1-10	ALFA 13/May/15 RATING 1-10	CUDO 13/May/15 RATING 1-10	DAND 13/May/15 RATING 1-10
7	flumioxazin	51	WDG	0.383	lb ai/a	EPRE	1.0	4.7	4.7	2.0	4.0
	oryzalin	4	L	3	lb ai/a	EPRE					
	saflufenacil	70	WG	0.044	lb ai/a	EPRE					
8	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	1.0	6.3	7.7	7.7	8.3
	sulfentrazone	3.15	EC	0.2457	lb ai/a						
	carfentrazone	0.35	EC	0.0273	lb ai/a						
	terbacil	80	WDG	0.8	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
9	terbacil	80	WDG	1	lb ai/a	EPRE	1.0	9.3	6.0	3.7	8.3
	norflurazon	80	DF	2	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
10	Pindar GT	4.013	SC	1.5	lb ai/a	EPRE	1.0	10.0	7.3	8.3	9.7
	penoxsulam	0.083	SC	0.031	lb ai/a						
	oxyfluorfen	3.93	SC	1.47	lb ai/a						
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
11	rimsulfuron	25	SG	0.063	lb ai/a	EPRE	1.0	9.3	6.3	5.7	9.3
	diuron	80	DF	3	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
12	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	1.0	10.0	6.0	5.3	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
13	indaziflam	1.67	SC	0.052	lb ai/a	EPRE	1.0	9.7	2.3	8.0	10.0
	rimsulfuron	25	SG	0.031	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
14	Untreated						1.0	4.0	1.3	1.0	3.0
LSD P=.05							0.00	3.34	4.21	4.84	2.76
Standard Deviation							0.00	1.99	2.51	2.88	1.64
CV							0.0	23.03	53.49	55.01	19.19

Spring Weed Control in Apple – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PEST 13/May/15 RATING 1-10	WICA 13/May/15 RATING 1-10	APPLE 12/Jun/15 RATING 1-10	ORGR 12/Jun/15 RATING 1-10	QUGR 12/Jun/15 RATING 1-10
1	clomazone	3	ME	1.25	lb ai/a	EPRE	7.0	1.7	1.0	10.0	9.0
	paraquat	2	SL	1	lb ai/a	EPRE					
2	isoxaben	4.17	SC	0.75	lb ai/a	EPRE	4.7	2.7	1.0	10.0	10.0
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
3	isoxaben	4.17	SC	1	lb ai/a	EPRE	4.0	4.0	1.0	10.0	10.0
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
4	isoxaben	4.17	SC	2	lb ai/a	EPRE	8.3	4.0	1.0	10.0	10.0
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
5	Zeus Prime XC	3.5	EC	0.164	lb ai/a	EPRE	4.3	5.3	1.0	10.0	10.0
	sulfentrazone	3.15	EC	0.1476	lb ai/a						
	carfentrazone	0.35	EC	0.0164	lb ai/a						
	diuron	80	DF	3	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
6	Zeus Prime XC	3.5	EC	0.164	lb ai/a	EPRE	6.3	5.3	1.0	10.0	10.0
	sulfentrazone	3.15	EC	0.1476	lb ai/a						
	carfentrazone	0.35	EC	0.0164	lb ai/a						
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					

Spring Weed Control in Apple – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PEST	WICA	APPLE	ORGR	QUGR
Pest Code							PEST	WICA		ORGR	QUGR
Crop Code									APPLE		
Rating Date							13/May/15	13/May/15	12/Jun/15	12/Jun/15	12/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
7	flumioxazin	51	WDG	0.383	lb ai/a	EPRE	7.7	1.0	1.0	7.0	7.0
	oryzalin	4	L	3	lb ai/a	EPRE					
	saflufenacil	70	WG	0.044	lb ai/a	EPRE					
8	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	7.3	9.3	1.0	9.7	9.7
	sulfentrazone	3.15	EC	0.2457	lb ai/a						
	carfentrazone	0.35	EC	0.0273	lb ai/a						
	terbacil	80	WDG	0.8	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
9	terbacil	80	WDG	1	lb ai/a	EPRE	4.7	8.7	1.0	9.3	9.3
	norflurazon	80	DF	2	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
10	Pindar GT	4.013	SC	1.5	lb ai/a	EPRE	9.7	7.0	1.3	10.0	10.0
	penoxsulam	0.083	SC	0.031	lb ai/a						
	oxyfluorfen	3.93	SC	1.47	lb ai/a						
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
11	rimsulfuron	25	SG	0.063	lb ai/a	EPRE	6.7	7.3	1.0	9.3	8.3
	diuron	80	DF	3	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
12	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	9.3	4.7	1.0	10.0	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
13	indaziflam	1.67	SC	0.052	lb ai/a	EPRE	5.3	1.7	1.0	10.0	10.0
	rimsulfuron	25	SG	0.031	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
14	Untreated						4.0	1.7	1.0	4.0	4.0
LSD P=.05							4.14	3.90	0.26	3.51	3.75
Standard Deviation							2.46	2.33	0.15	2.09	2.23
CV							38.62	50.61	15.07	22.6	24.55

Spring Weed Control in Apple – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ALFA	BFTF	BHPL	CATH	CUDO
	Pest Code						ALFA	BFTF	BHPL	CATH	CUDO
	Crop Code										
	Rating Date						12/Jun/15	12/Jun/15	12/Jun/15	12/Jun/15	12/Jun/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	clomazone	3	ME	1.25	lb ai/a	EPRE	9.3	8.3	1.0	10.0	3.3
	paraquat	2	SL	1	lb ai/a	EPRE					
2	isoxaben	4.17	SC	0.75	lb ai/a	EPRE	9.3	1.0	10.0	7.0	5.7
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
3	isoxaben	4.17	SC	1	lb ai/a	EPRE	10.0	1.7	10.0	10.0	3.7
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
4	isoxaben	4.17	SC	2	lb ai/a	EPRE	4.0	3.3	10.0	10.0	3.7
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
5	Zeus Prime XC	3.5	EC	0.164	lb ai/a	EPRE	6.3	7.0	10.0	7.0	4.3
	sulfentrazone	3.15	EC	0.1476	lb ai/a						
	carfentrazone	0.35	EC	0.0164	lb ai/a						
	diuron	80	DF	3	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
6	Zeus Prime XC	3.5	EC	0.164	lb ai/a	EPRE	4.0	5.3	10.0	10.0	4.7
	sulfentrazone	3.15	EC	0.1476	lb ai/a						
	carfentrazone	0.35	EC	0.0164	lb ai/a						
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					

Spring Weed Control in Apple – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ALFA	BFTF	BHPL	CATH	CUDO
	Pest Code										
	Crop Code										
	Rating Date						12/Jun/15	12/Jun/15	12/Jun/15	12/Jun/15	12/Jun/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
7	flumioxazin	51	WDG	0.383	lb ai/a	EPRE	1.0	8.3	10.0	10.0	1.3
	oryzalin	4	L	3	lb ai/a	EPRE					
	saflufenacil	70	WG	0.044	lb ai/a	EPRE					
8	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	7.7	6.7	10.0	10.0	5.7
	sulfentrazone	3.15	EC	0.2457	lb ai/a						
	carfentrazone	0.35	EC	0.0273	lb ai/a						
	terbacil	80	WDG	0.8	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
9	terbacil	80	WDG	1	lb ai/a	EPRE	7.0	7.7	10.0	10.0	3.7
	norflurazon	80	DF	2	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
10	Pindar GT	4.013	SC	1.5	lb ai/a	EPRE	9.3	8.0	9.3	10.0	8.0
	penoxsulam	0.083	SC	0.031	lb ai/a						
	oxyfluorfen	3.93	SC	1.47	lb ai/a						
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
11	rimsulfuron	25	SG	0.063	lb ai/a	EPRE	9.3	6.0	1.7	10.0	1.0
	diuron	80	DF	3	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
12	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	7.0	4.7	10.0	4.0	2.7
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
13	indaziflam	1.67	SC	0.052	lb ai/a	EPRE	6.3	1.7	10.0	7.3	8.3
	rimsulfuron	25	SG	0.031	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
14	Untreated						1.0	1.7	6.3	7.0	1.0
LSD P=.05							5.68	4.41	2.25	4.83	4.28
Standard Deviation							3.38	2.63	1.34	2.87	2.55
CV							51.67	51.56	15.87	32.9	62.55

Spring Weed Control in Apple – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PEST	WHCA	WICA	APPLE	QUGR
Pest Code							PEST	WHCA	WICA		QUGR
Crop Code										APPLE	
Rating Date							12/Jun/15	12/Jun/15	12/Jun/15	16/Jul/15	16/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	clomazone	3	ME	1.25	lb ai/a	EPRE	4.0	7.3	2.3	1.0	2.3
	paraquat	2	SL	1	lb ai/a	EPRE					
2	isoxaben	4.17	SC	0.75	lb ai/a	EPRE	7.0	7.0	1.0	1.0	8.7
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
3	isoxaben	4.17	SC	1	lb ai/a	EPRE	4.0	10.0	1.3	1.0	9.3
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
4	isoxaben	4.17	SC	2	lb ai/a	EPRE	10.0	10.0	1.7	1.0	9.3
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
5	Zeus Prime XC	3.5	EC	0.164	lb ai/a	EPRE	1.7	8.7	4.0	1.0	9.3
	sulfentrazone	3.15	EC	0.1476	lb ai/a						
	carfentrazone	0.35	EC	0.0164	lb ai/a						
	diuron	80	DF	3	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
6	Zeus Prime XC	3.5	EC	0.164	lb ai/a	EPRE	7.0	7.0	2.0	1.0	10.0
	sulfentrazone	3.15	EC	0.1476	lb ai/a						
	carfentrazone	0.35	EC	0.0164	lb ai/a						
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					

Spring Weed Control in Apple – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PEST	WHCA	WICA	APPLE	QUGR
	Pest Code						PEST	WHCA	WICA		QUGR
	Crop Code									APPLE	
	Rating Date						12/Jun/15	12/Jun/15	12/Jun/15	16/Jul/15	16/Jul/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
7	flumioxazin	51	WDG	0.383	lb ai/a	EPRE	5.7	5.3	5.3	1.0	7.7
	oryzalin	4	L	3	lb ai/a	EPRE					
	saflufenacil	70	WG	0.044	lb ai/a	EPRE					
8	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	5.0	7.3	7.0	1.0	7.0
	sulfentrazone	3.15	EC	0.2457	lb ai/a						
	carfentrazone	0.35	EC	0.0273	lb ai/a						
	terbacil	80	WDG	0.8	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
9	terbacil	80	WDG	1	lb ai/a	EPRE	7.7	7.7	9.0	1.0	8.7
	norflurazon	80	DF	2	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
10	Pindar GT	4.013	SC	1.5	lb ai/a	EPRE	6.0	10.0	5.3	1.0	8.7
	penoxsulam	0.083	SC	0.031	lb ai/a						
	oxyfluorfen	3.93	SC	1.47	lb ai/a						
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
11	rimsulfuron	25	SG	0.063	lb ai/a	EPRE	7.0	7.3	8.3	1.0	5.0
	diuron	80	DF	3	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
12	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	10.0	10.0	1.7	1.0	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
13	indaziflam	1.67	SC	0.052	lb ai/a	EPRE	5.0	7.7	5.0	1.0	10.0
	rimsulfuron	25	SG	0.031	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
14	Untreated						5.3	4.0	1.7	1.0	4.0
LSD P=.05							6.03	6.40	2.71	0.00	3.72
Standard Deviation							3.59	3.81	1.61	0.00	2.22
CV							58.92	48.82	40.54	0.0	28.23

Spring Weed Control in Apple – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	YEFT	ALFA	BFTF	BHPL
	Pest Code						YEFT	ALFA	BFTF	BHPL
	Crop Code									
	Rating Date						16/Jul/15	16/Jul/15	16/Jul/15	16/Jul/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	clomazone	3	ME	1.25	lb ai/a	EPRE	7.0	7.0	2.3	1.0
	paraquat	2	SL	1	lb ai/a	EPRE				
2	isoxaben	4.17	SC	0.75	lb ai/a	EPRE	10.0	7.0	1.0	10.0
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
3	isoxaben	4.17	SC	1	lb ai/a	EPRE	10.0	10.0	1.0	10.0
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
4	isoxaben	4.17	SC	2	lb ai/a	EPRE	10.0	6.3	4.0	10.0
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
5	Zeus Prime XC	3.5	EC	0.164	lb ai/a	EPRE	10.0	7.7	3.0	10.0
	sulfentrazone	3.15	EC	0.1476	lb ai/a					
	carfentrazone	0.35	EC	0.0164	lb ai/a					
	diuron	80	DF	3	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
6	Zeus Prime XC	3.5	EC	0.164	lb ai/a	EPRE	10.0	4.0	1.7	10.0
	sulfentrazone	3.15	EC	0.1476	lb ai/a					
	carfentrazone	0.35	EC	0.0164	lb ai/a					
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				

Spring Weed Control in Apple – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	YEFT	ALFA	BFTF	BHPL
Pest Code							YEFT	ALFA	BFTF	BHPL
Crop Code										
Rating Date							16/Jul/15	16/Jul/15	16/Jul/15	16/Jul/15
Rating Type							RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10
7	flumioxazin	51	WDG	0.383	lb ai/a	EPRE	7.0	6.0	7.0	7.7
	oryzalin	4	L	3	lb ai/a	EPRE				
	saflufenacil	70	WG	0.044	lb ai/a	EPRE				
8	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	10.0	5.7	5.3	9.3
	sulfentrazone	3.15	EC	0.2457	lb ai/a					
	carfentrazone	0.35	EC	0.0273	lb ai/a					
	terbacil	80	WDG	0.8	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
9	terbacil	80	WDG	1	lb ai/a	EPRE	10.0	7.3	7.0	10.0
	norflurazon	80	DF	2	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
10	Pindar GT	4.013	SC	1.5	lb ai/a	EPRE	8.0	8.7	6.7	8.3
	penoxsulam	0.083	SC	0.031	lb ai/a					
	oxyfluorfen	3.93	SC	1.47	lb ai/a					
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
11	rimsulfuron	25	SG	0.063	lb ai/a	EPRE	9.0	7.7	5.7	1.7
	diuron	80	DF	3	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
12	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	10.0	7.0	6.0	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
13	indaziflam	1.67	SC	0.052	lb ai/a	EPRE	7.0	5.0	1.0	10.0
	rimsulfuron	25	SG	0.031	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
14	Untreated						10.0	4.7	3.3	7.0
LSD P=.05							4.28	7.11	5.32	3.42
Standard Deviation							2.55	4.23	3.17	2.04
CV							27.87	63.05	80.74	24.82

Spring Weed Control in Apple – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CATH	PEST	WHCA	WICA	APPLE
	Pest Code						CATH	PEST	WHCA	WICA	
	Crop Code										APPLE
	Rating Date						16/Jul/15	16/Jul/15	16/Jul/15	16/Jul/15	30/Oct/15
	Rating Type						RATING	RATING	RATING	RATING	DIAMETER
	Rating Unit						1-10	1-10	1-10	1-10	CM
1	clomazone	3	ME	1.25	lb ai/a	EPRE	7.0	4.7	10.0	2.3	10.21
	paraquat	2	SL	1	lb ai/a	EPRE					
2	isoxaben	4.17	SC	0.75	lb ai/a	EPRE	7.0	7.0	10.0	1.0	12.23
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
3	isoxaben	4.17	SC	1	lb ai/a	EPRE	10.0	4.0	7.0	1.0	10.88
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
4	isoxaben	4.17	SC	2	lb ai/a	EPRE	10.0	6.7	10.0	1.3	12.03
	pendimethalin	3.8	CS	1.9	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
5	Zeus Prime XC	3.5	EC	0.164	lb ai/a	EPRE	7.0	1.7	10.0	3.3	12.14
	sulfentrazone	3.15	EC	0.1476	lb ai/a						
	carfentrazone	0.35	EC	0.0164	lb ai/a						
	diuron	80	DF	3	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
6	Zeus Prime XC	3.5	EC	0.164	lb ai/a	EPRE	10.0	7.0	10.0	1.0	13.25
	sulfentrazone	3.15	EC	0.1476	lb ai/a						
	carfentrazone	0.35	EC	0.0164	lb ai/a						
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					

Spring Weed Control in Apple – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CATH	PEST	WHCA	WICA	APPLE
Pest Code							CATH	PEST	WHCA	WICA	
Crop Code											APPLE
Rating Date							16/Jul/15	16/Jul/15	16/Jul/15	16/Jul/15	30/Oct/15
Rating Type							RATING	RATING	RATING	RATING	DIAMETER
Rating Unit							1-10	1-10	1-10	1-10	CM
7	flumioxazin	51	WDG	0.383	lb ai/a	EPRE	10.0	9.0	7.0	4.7	11.31
	oryzalin	4	L	3	lb ai/a	EPRE					
	saflufenacil	70	WG	0.044	lb ai/a	EPRE					
8	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	10.0	4.0	7.0	5.0	12.77
	sulfentrazone	3.15	EC	0.2457	lb ai/a						
	carfentrazone	0.35	EC	0.0273	lb ai/a						
	terbacil	80	WDG	0.8	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
9	terbacil	80	WDG	1	lb ai/a	EPRE	10.0	7.7	7.0	9.3	12.69
	norflurazon	80	DF	2	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
10	Pindar GT	4.013	SC	1.5	lb ai/a	EPRE	10.0	7.0	10.0	5.0	12.69
	penoxsulam	0.083	SC	0.031	lb ai/a						
	oxyfluorfen	3.93	SC	1.47	lb ai/a						
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
11	rimsulfuron	25	SG	0.063	lb ai/a	EPRE	10.0	7.7	10.0	5.7	10.54
	diuron	80	DF	3	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
12	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	7.0	7.7	7.0	3.0	12.37
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
13	indaziflam	1.67	SC	0.052	lb ai/a	EPRE	7.7	4.7	10.0	4.3	13.06
	rimsulfuron	25	SG	0.031	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
14	Untreated						10.0	7.0	4.0	1.0	11.43
LSD P=.05							4.94	6.14	5.78	3.93	3.000
Standard Deviation							2.94	3.66	3.45	2.34	1.787
CV							32.77	59.82	40.53	68.36	14.93

Preemergence Weed Control in Blueberry with Zeus Prime XC, Alion, and Trellis – SWMREC - 2015

Project Code: 127-15-1 **Location: Benton Harbor, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Blueberry **Variety: Blue Crop**
Planting Method: Transplant **Planting Date: 1990**
Spacing: 4 ft **Row Spacing: 10 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 30 ft long

Soil Type: Spinks loamy fine sand **OM: 2.4%** **pH: 5.9**
Sand: 83% **Silt: 10%** **Clay: 7%** **CEC: 6.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
EPRE	4/16/15	1:00 pm	58/52	F	Damp	1-2 SE	52	100% Cloudy	Y

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/16	BLUEBERRY	4-5′	Pre bud break	Good
4/16	BHPL = buckhorn plantain	2-3″	Rosette	Moderate
4/16	DAND = dandelion	2-4″	Veg	Moderate
4/16	HAVE = hairy vetch	2-3″	Veg	Many
4/16	PUDN = purple deadnettle	2-4″	Flower	Moderate
4/16	WHCL = white clover	1-2″	Veg	Many
4/16	WIGA = wild garlic	5-6″	Veg	Moderate
4/16	YEHW = yellow hawkweed	2-4″	Rosette	Many

Notes and Comments
1. Spray applied with 2 nozzle boom; one pass on each side of row. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. This is the second year using the same plots (middle of the block).

Preemergence Weed Control in Blueberry with Zeus Prime XC, Alion, and Trellis – SWMREC - 2015

Preemergence Weed Control in Blueberry with Zeus Prime XC, Alion, and Trellis – SWMREC – 2015

Trial ID: 127-15-1 Location: Benton Harbor, MI
Protocol ID: 127-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BLBE 1/May/15 RATING 1-10	PERG 1/May/15 RATING 1-10	QUGR 1/May/15 RATING 1-10	BHPL 1/May/15 RATING 1-10
1	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	1.0	10.0	8.3	10.0
	sulfentrazone	3.15	EC	0.2457	lb ai/a					
	carfentrazone	0.35	EC	0.0273	lb ai/a					
	terbacil	80	WDG	0.96	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
2	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	1.0	10.0	10.0	10.0
	sulfentrazone	3.15	EC	0.2457	lb ai/a					
	carfentrazone	0.35	EC	0.0273	lb ai/a					
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
3	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	1.0	6.3	8.7	10.0
	sulfentrazone	3.15	EC	0.2457	lb ai/a					
	carfentrazone	0.35	EC	0.0273	lb ai/a					
	diuron	80	DF	2.4	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
4	indaziflam	1.67	SC	0.033	lb ai/a	EPRE	1.0	9.0	9.7	9.7
	rimsulfuron	25	SG	0.032	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				

Preemergence Weed Control in Blueberry with Zeus Prime XC, Alion, and Trellis – SWMREC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
Pest Code								PERG	QUGR	BHPL
Crop Code							BLBE			
Rating Date							1/May/15	1/May/15	1/May/15	1/May/15
Rating Type							RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10
5	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	1.0	9.3	10.0	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
6	indaziflam	1.67	SC	0.13	lb ai/a	EPRE	1.0	10.0	10.0	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
7	isoxaben	4.17	SC	0.5	lb ai/a	EPRE	1.0	9.3	10.0	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
8	isoxaben	4.17	SC	1	lb ai/a	EPRE	1.0	9.7	10.0	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
9	isoxaben	4.17	SC	2	lb ai/a	EPRE	1.0	9.0	10.0	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
10	oxyfluorfen	4	SC	2	lb ai/a	EPRE	1.0	9.3	10.0	9.7
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
11	glyphosate	5.5	L	1	lb ai/a	EPRE	1.0	9.0	10.0	8.7
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
12	glufosinate	2.34	L	1	lb ai/a	EPRE	1.0	8.3	9.3	9.3
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
13	Untreated						1.0	2.3	4.7	4.0
LSD P=.05							0.00	1.81	2.82	2.58
Standard Deviation							0.00	1.07	1.67	1.53
CV							0.0	12.47	18.0	16.39

Preemergence Weed Control in Blueberry with Zeus Prime XC, Alion, and Trellis – SWMREC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DAND	HAVE	PUDN	RESO
	Pest Code						DAND	HAVE	PUDN	RESO
	Crop Code									
	Rating Date						1/May/15	1/May/15	1/May/15	1/May/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	9.3	10.0	10.0	10.0
	sulfentrazone	3.15	EC	0.2457	lb ai/a					
	carfentrazone	0.35	EC	0.0273	lb ai/a					
	terbacil	80	WDG	0.96	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
2	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	8.7	10.0	9.7	9.3
	sulfentrazone	3.15	EC	0.2457	lb ai/a					
	carfentrazone	0.35	EC	0.0273	lb ai/a					
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
3	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	9.0	9.7	9.0	10.0
	sulfentrazone	3.15	EC	0.2457	lb ai/a					
	carfentrazone	0.35	EC	0.0273	lb ai/a					
	diuron	80	DF	2.4	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
4	indaziflam	1.67	SC	0.033	lb ai/a	EPRE	8.7	9.7	9.3	6.7
	rimsulfuron	25	SG	0.032	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
5	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	8.7	10.0	9.3	5.7
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
6	indaziflam	1.67	SC	0.13	lb ai/a	EPRE	10.0	10.0	10.0	4.3
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
7	isoxaben	4.17	SC	0.5	lb ai/a	EPRE	9.7	10.0	10.0	5.3
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
8	isoxaben	4.17	SC	1	lb ai/a	EPRE	9.7	10.0	10.0	6.7
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
9	isoxaben	4.17	SC	2	lb ai/a	EPRE	9.0	10.0	9.3	8.0
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
10	oxyfluorfen	4	SC	2	lb ai/a	EPRE	9.0	9.7	10.0	5.3
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
11	glyphosate	5.5	L	1	lb ai/a	EPRE	9.3	9.3	8.0	7.0
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
12	glufosinate	2.34	L	1	lb ai/a	EPRE	9.3	10.0	8.7	9.7
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
13	Untreated						1.0	9.3	3.7	4.0
LSD P=.05							1.43	0.87	1.13	4.27
Standard Deviation							0.85	0.51	0.67	2.53
CV							9.91	5.24	7.44	35.79

Preemergence Weed Control in Blueberry with Zeus Prime XC, Alion, and Trellis – SWMREC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WHCL		BYGR	PERG	BHPL
Pest Code											
Crop Code								BLBE			
Rating Date							1/May/15	15/Jun/15	15/Jun/15	15/Jun/15	15/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	10.0	1.3	7.7	10.0	9.0
	sulfentrazone	3.15	EC	0.2457	lb ai/a						
	carfentrazone	0.35	EC	0.0273	lb ai/a						
	terbacil	80	WDG	0.96	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
2	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	10.0	1.0	8.7	9.7	9.3
	sulfentrazone	3.15	EC	0.2457	lb ai/a						
	carfentrazone	0.35	EC	0.0273	lb ai/a						
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
3	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	8.7	1.0	8.7	9.7	10.0
	sulfentrazone	3.15	EC	0.2457	lb ai/a						
	carfentrazone	0.35	EC	0.0273	lb ai/a						
	diuron	80	DF	2.4	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
4	indaziflam	1.67	SC	0.033	lb ai/a	EPRE	9.3	1.0	9.0	8.0	10.0
	rimsulfuron	25	SG	0.032	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
5	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	9.0	1.0	9.0	9.0	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
6	indaziflam	1.67	SC	0.13	lb ai/a	EPRE	9.7	1.0	9.3	9.3	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
7	isoxaben	4.17	SC	0.5	lb ai/a	EPRE	9.7	1.0	2.3	7.0	9.3
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
8	isoxaben	4.17	SC	1	lb ai/a	EPRE	9.3	1.7	1.0	8.7	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
9	isoxaben	4.17	SC	2	lb ai/a	EPRE	9.7	1.7	1.0	8.3	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
10	oxyfluorfen	4	SC	2	lb ai/a	EPRE	9.3	1.7	8.7	9.3	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
11	glyphosate	5.5	L	1	lb ai/a	EPRE	9.0	1.0	1.0	7.7	9.3
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
12	glufosinate	2.34	L	1	lb ai/a	EPRE	9.3	1.0	1.3	2.7	5.3
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
13	Untreated						1.0	1.0	4.3	4.0	4.0
LSD P=.05							1.23	0.82	2.98	2.84	3.05
Standard Deviation							0.73	0.49	1.77	1.69	1.81
CV							8.3	41.29	31.96	21.23	20.24

Preemergence Weed Control in Blueberry with Zeus Prime XC, Alion, and Trellis – SWMREC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DAND	HAVE	RESO	BLBE	BYGR
Pest Code							DAND	HAVE	RESO		BYGR
Crop Code										BLBE	
Rating Date							15/Jun/15	15/Jun/15	15/Jun/15	29/Jul/15	29/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	10.0	10.0	9.3	1.7	8.0
	sulfentrazone	3.15	EC	0.2457	lb ai/a						
	carfentrazone	0.35	EC	0.0273	lb ai/a						
	terbacil	80	WDG	0.96	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
2	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	8.7	10.0	10.0	1.0	9.0
	sulfentrazone	3.15	EC	0.2457	lb ai/a						
	carfentrazone	0.35	EC	0.0273	lb ai/a						
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
3	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	9.7	7.0	9.3	1.0	8.7
	sulfentrazone	3.15	EC	0.2457	lb ai/a						
	carfentrazone	0.35	EC	0.0273	lb ai/a						
	diuron	80	DF	2.4	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
4	indaziflam	1.67	SC	0.033	lb ai/a	EPRE	10.0	10.0	5.0	1.0	3.3
	rimsulfuron	25	SG	0.032	lb ai/a	EPRE					
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
5	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	10.0	10.0	5.3	1.0	7.7
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
6	indaziflam	1.67	SC	0.13	lb ai/a	EPRE	10.0	10.0	7.0	1.0	9.3
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
7	isoxaben	4.17	SC	0.5	lb ai/a	EPRE	8.3	10.0	6.0	1.0	2.0
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
8	isoxaben	4.17	SC	1	lb ai/a	EPRE	9.3	10.0	4.7	1.7	1.0
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
9	isoxaben	4.17	SC	2	lb ai/a	EPRE	10.0	9.3	8.0	1.7	1.3
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
10	oxyfluorfen	4	SC	2	lb ai/a	EPRE	10.0	7.0	3.3	1.3	5.3
	glyphosate	5.5	L	1	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
11	glyphosate	5.5	L	1	lb ai/a	EPRE	8.7	3.7	3.0	1.7	4.0
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
12	glufosinate	2.34	L	1	lb ai/a	EPRE	9.3	8.7	4.0	1.7	3.7
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
13	Untreated						3.7	7.7	1.0	1.0	6.0
LSD P=.05							2.01	3.47	5.47	0.78	4.03
Standard Deviation							1.19	2.06	3.25	0.46	2.39
CV							13.15	23.63	55.56	36.24	44.89

Preemergence Weed Control in Blueberry with Zeus Prime XC, Alion, and Trellis – SWMREC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BHPL	HOWE	LATH	RESO
	Pest Code						BHPL	HOWE	LATH	RESO
	Crop Code									
	Rating Date						29/Jul/15	29/Jul/15	29/Jul/15	29/Jul/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	10.0	9.7	10.0	10.0
	sulfentrazone	3.15	EC	0.2457	lb ai/a					
	carfentrazone	0.35	EC	0.0273	lb ai/a					
	terbacil	80	WDG	0.96	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
2	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	10.0	9.3	10.0	9.7
	sulfentrazone	3.15	EC	0.2457	lb ai/a					
	carfentrazone	0.35	EC	0.0273	lb ai/a					
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
3	Zeus Prime XC	3.5	EC	0.273	lb ai/a	EPRE	9.3	9.3	9.3	10.0
	sulfentrazone	3.15	EC	0.2457	lb ai/a					
	carfentrazone	0.35	EC	0.0273	lb ai/a					
	diuron	80	DF	2.4	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
4	indaziflam	1.67	SC	0.033	lb ai/a	EPRE	10.0	10.0	10.0	7.7
	rimsulfuron	25	SG	0.032	lb ai/a	EPRE				
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
5	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	10.0	9.3	8.7	7.7
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
6	indaziflam	1.67	SC	0.13	lb ai/a	EPRE	10.0	10.0	9.7	8.3
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
7	isoxaben	4.17	SC	0.5	lb ai/a	EPRE	10.0	9.3	7.7	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
8	isoxaben	4.17	SC	1	lb ai/a	EPRE	10.0	10.0	9.0	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
9	isoxaben	4.17	SC	2	lb ai/a	EPRE	10.0	9.7	7.0	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
10	oxyfluorfen	4	SC	2	lb ai/a	EPRE	9.3	9.7	10.0	9.0
	glyphosate	5.5	L	1	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
11	glyphosate	5.5	L	1	lb ai/a	EPRE	9.0	9.3	7.7	8.3
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
12	glufosinate	2.34	L	1	lb ai/a	EPRE	8.3	8.7	9.3	7.3
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
13	Untreated						4.0	7.3	10.0	4.0
LSD P=.05							2.88	1.96	3.12	3.64
Standard Deviation							1.71	1.17	1.85	2.16
CV							18.54	12.46	20.34	25.04

Preemergence and Postemergence Weed Control in Blueberry – SWMREC - 2015

Project Code: 127-15-2 **Location: Benton Harbor, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Blueberry **Variety: Blue Crop**
Planting Method: Transplant **Planting Date: 1990**
Spacing: 4 ft **Row Spacing: 10 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 30 ft long

Soil Type: Spinks loamy fine sand **OM: 2.4%** **pH: 5.9**
Sand: 83% **Silt: 10%** **Clay: 7%** **CEC: 6.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
EPRE	4/16/15	11:00 am	53/52	F	Damp	1-2 NW	60	100% Cloudy	Y
EPOS	6/17/15	2:00 pm	76/68	F	Moist	1-2 S	78	100% Cloudy	Y

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/16	BLUEBERRY	4-5′	Pre bud break	Good
4/16	BHPL = buckhorn plantain	2-3″	Rosette	Moderate
4/16	DAND = dandelion	2-4″	Veg	Moderate
4/16	HAVE = hairy vetch	2-3″	Veg	Many
4/16	HOWE = horseweed	1-2″	Rosette	Moderate
4/16	PUDN = purple deadnettle	2-4″	Flower	Moderate
4/16	QUGR = quackgrass	3-6″	Veg	Moderate
4/16	WHCA = white campion	4-6″	Rosette	Moderate
4/16	WHCL = white clover	1-2″	Veg	Many
4/16	WIGA = wild garlic	5-6″	Veg	Moderate
4/16	YEHW = yellow hawkweed	2-4″	Rosette	Many
6/17	BLUEBERRY	4-5′	Fruit	Good
6/17	ANBG = annual bluegrass	18-24″	Flower	Many
6/17	BHPL = buckhorn plantain	6-10″	Flower	Many
6/17	DAND = dandelion	10-12″	Post-flower	Many
6/17	HAVE = hairy vetch	36-40″	Flower	Many
6/17	LATH = ladysthumb	8-10″	Veg	Moderate
6/17	RESO = red sorrel	4-8″	Veg	Moderate
6/17	WHCL = white clover	2-4″	Flower	Many
6/17	YEHW = yellow hawkweed	18-36″	Flower	Many

Notes and Comments
1. Spray applied with 2 nozzle boom; one pass on each side of row. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. East end of the block.

Preemergence and Postemergence Weed Control in Blueberry – SWMREC - 2015

Preemergence and Postemergence Weed Control in Blueberry – SWMREC – 2015

Trial ID: 127-15-2 Location: Benton Harbor, MI
Protocol ID: 127-15-2 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BLBE 1/May/15 RATING 1-10	PERG 1/May/15 RATING 1-10	QUGR 1/May/15 RATING 1-10	BHPL 1/May/15 RATING 1-10	DAND 1/May/15 RATING 1-10
1	diuron	80	DF	2	lb ai/a	EPRE	1.0	5.7	4.0	1.3	5.0
	Zeus Prime XC	3.5	EC	0.41	lb ai/a	EPOS					
	sulfentrazone	3.15	EC	0.369	lb ai/a						
	carfentrazone	0.35	EC	0.041	lb ai/a						
	clethodim	0.97	EC	0.12	lb ai/a	EPOS					
	COC	100	SL	1	lb ai/a	EPOS					
2	diuron	80	DF	2	lb ai/a	EPRE	1.0	3.7	7.7	4.0	4.3
	glufosinate	2.34	L	1.02	lb ai/a	EPOS					
	N Pak (AMS)	100	L	2.5	% v/v	EPOS					
3	diuron	80	DF	2	lb ai/a	EPRE	1.0	4.0	6.7	4.3	7.3
	glyphosate	5.5	L	1	lb ai/a	EPOS					
	N Pak (AMS)	100	L	2.5	% v/v	EPOS					
4	diuron	80	DF	2	lb ai/a	EPRE	1.0	1.0	1.7	4.7	6.3
	clopyralid	3	L	0.125	lb ai/a	EPOS					
	clethodim	0.97	EC	0.12	lb ai/a	EPOS					
	COC	100	SL	1	% v/v	EPOS					
5	diuron	80	DF	2	lb ai/a	EPRE	1.0	7.3	8.3	2.0	6.7
	glufosinate	2.34	L	1.02	lb ai/a	EPOS					
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	EPOS					
	N Pak (AMS)	100	L	2.5	% v/v	EPOS					
6	diuron	80	DF	2	lb ai/a	EPRE	1.0	3.7	7.3	6.3	4.3
	halosulfuron	75	WG	0.047	lb ai/a	EPOS					
	clethodim	0.97	EC	0.12	lb ai/a	EPOS					
	COC	100	SL	1	% v/v	EPOS					
7	diuron	80	DF	2	lb ai/a	EPRE	1.0	7.0	3.0	6.7	4.7
	quinclorac	3.8	L	0.25	lb ai/a	EPOS					
8	diuron	80	DF	2	lb ai/a	EPRE	1.0	2.3	9.0	2.3	5.7
	paraquat	2	SL	1	lb ai/a	EPOS					
	NIS	100	SL	0.25	% v/v	EPOS					
9	flazasulfuron	25	WG	0.033	lb ai/a	EPRE	1.0	8.0	7.0	5.7	8.3
	glyphosate	5.5	L	1	lb ai/a	EPRE					
10	flazasulfuron	25	WG	0.045	lb ai/a	EPRE	1.0	9.7	10.0	5.0	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE					
11	flazasulfuron	25	WG	0.088	lb ai/a	EPRE	1.0	8.7	10.0	5.7	8.3
	glyphosate	5.5	L	1	lb ai/a	EPRE					
12	Untreated						1.0	1.0	7.0	1.0	5.7
LSD P=.05							0.00	4.30	6.25	5.65	5.65
Standard Deviation							0.00	2.54	3.69	3.34	3.34
CV							0.0	49.17	54.2	81.75	52.26

Preemergence and Postemergence Weed Control in Blueberry – SWMREC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PUDN 1/May/15 RATING 1-10	WHCA 1/May/15 RATING 1-10	WHCL 1/May/15 RATING 1-10	BLBE 15/Jun/15 RATING 1-10	PERG 15/Jun/15 RATING 1-10
1	diuron	80	DF	2	lb ai/a	EPRE	10.0	10.0	7.0	1.0	3.7
	Zeus Prime XC	3.5	EC	0.41	lb ai/a	EPOS					
	sulfentrazone	3.15	EC	0.369	lb ai/a						
	carfentrazone	0.35	EC	0.041	lb ai/a						
	clethodim	0.97	EC	0.12	lb ai/a	EPOS					
	COC	100	SL	1	lb ai/a	EPOS					
2	diuron	80	DF	2	lb ai/a	EPRE	10.0	7.3	9.0	1.0	4.3
	glufosinate	2.34	L	1.02	lb ai/a	EPOS					
	N Pak (AMS)	100	L	2.5	% v/v	EPOS					
3	diuron	80	DF	2	lb ai/a	EPRE	10.0	4.0	8.7	2.7	5.7
	glyphosate	5.5	L	1	lb ai/a	EPOS					
	N Pak (AMS)	100	L	2.5	% v/v	EPOS					
4	diuron	80	DF	2	lb ai/a	EPRE	10.0	6.3	10.0	1.3	3.0
	clopyralid	3	L	0.125	lb ai/a	EPOS					
	clethodim	0.97	EC	0.12	lb ai/a	EPOS					
	COC	100	SL	1	% v/v	EPOS					
5	diuron	80	DF	2	lb ai/a	EPRE	10.0	7.0	9.7	1.0	5.3
	glufosinate	2.34	L	1.02	lb ai/a	EPOS					
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	EPOS					
	N Pak (AMS)	100	L	2.5	% v/v	EPOS					
6	diuron	80	DF	2	lb ai/a	EPRE	10.0	4.0	8.7	1.0	4.0
	halosulfuron	75	WG	0.047	lb ai/a	EPOS					
	clethodim	0.97	EC	0.12	lb ai/a	EPOS					
	COC	100	SL	1	% v/v	EPOS					
7	diuron	80	DF	2	lb ai/a	EPRE	10.0	4.0	4.7	1.7	5.3
	quinclorac	3.8	L	0.25	lb ai/a	EPOS					
8	diuron	80	DF	2	lb ai/a	EPRE	10.0	6.7	6.7	1.0	3.7
	paraquat	2	SL	1	lb ai/a	EPOS					
	NIS	100	SL	0.25	% v/v	EPOS					
9	flazasulfuron	25	WG	0.033	lb ai/a	EPRE	7.0	9.7	10.0	1.7	8.0
	glyphosate	5.5	L	1	lb ai/a	EPRE					
10	flazasulfuron	25	WG	0.045	lb ai/a	EPRE	7.0	10.0	9.7	1.0	9.3
	glyphosate	5.5	L	1	lb ai/a	EPRE					
11	flazasulfuron	25	WG	0.088	lb ai/a	EPRE	9.3	10.0	7.3	1.7	9.3
	glyphosate	5.5	L	1	lb ai/a	EPRE					
12	Untreated						1.0	4.0	7.0	1.7	1.0
LSD P=.05							3.70	5.54	5.47	1.45	4.10
Standard Deviation							2.18	3.27	3.23	0.85	2.42
CV							25.12	47.3	39.4	60.94	46.39

Preemergence and Postemergence Weed Control in Blueberry – SWMREC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BHPL	BSPL	DAND	HAVE
Pest Code							BHPL	BSPL	DAND	HAVE
Crop Code										
Rating Date							15/Jun/15	15/Jun/15	15/Jun/15	15/Jun/15
Rating Type							RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10
1	diuron	80	DF	2	lb ai/a	EPRE	1.0	1.0	5.0	7.0
	Zeus Prime XC	3.5	EC	0.41	lb ai/a	EPOS				
	sulfentrazone	3.15	EC	0.369	lb ai/a					
	carfentrazone	0.35	EC	0.041	lb ai/a					
	clethodim	0.97	EC	0.12	lb ai/a	EPOS				
	COC	100	SL	1	lb ai/a	EPOS				
2	diuron	80	DF	2	lb ai/a	EPRE	1.0	3.7	3.7	9.3
	glufosinate	2.34	L	1.02	lb ai/a	EPOS				
	N Pak (AMS)	100	L	2.5	% v/v	EPOS				
3	diuron	80	DF	2	lb ai/a	EPRE	3.0	5.7	5.0	10.0
	glyphosate	5.5	L	1	lb ai/a	EPOS				
	N Pak (AMS)	100	L	2.5	% v/v	EPOS				
4	diuron	80	DF	2	lb ai/a	EPRE	1.7	5.0	3.3	4.3
	clopyralid	3	L	0.125	lb ai/a	EPOS				
	clethodim	0.97	EC	0.12	lb ai/a	EPOS				
	COC	100	SL	1	% v/v	EPOS				
5	diuron	80	DF	2	lb ai/a	EPRE	1.7	3.7	4.0	1.3
	glufosinate	2.34	L	1.02	lb ai/a	EPOS				
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	EPOS				
	N Pak (AMS)	100	L	2.5	% v/v	EPOS				
6	diuron	80	DF	2	lb ai/a	EPRE	1.0	1.7	1.7	4.0
	halosulfuron	75	WG	0.047	lb ai/a	EPOS				
	clethodim	0.97	EC	0.12	lb ai/a	EPOS				
	COC	100	SL	1	% v/v	EPOS				
7	diuron	80	DF	2	lb ai/a	EPRE	3.3	3.7	5.0	5.3
	quinclorac	3.8	L	0.25	lb ai/a	EPOS				
8	diuron	80	DF	2	lb ai/a	EPRE	1.3	3.3	4.3	2.7
	paraquat	2	SL	1	lb ai/a	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
9	flazasulfuron	25	WG	0.033	lb ai/a	EPRE	4.0	10.0	10.0	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE				
10	flazasulfuron	25	WG	0.045	lb ai/a	EPRE	4.7	9.3	10.0	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE				
11	flazasulfuron	25	WG	0.088	lb ai/a	EPRE	7.3	10.0	9.7	10.0
	glyphosate	5.5	L	1	lb ai/a	EPRE				
12	Untreated						1.0	2.3	4.0	4.7
LSD P=.05							3.46	3.03	4.66	5.16
Standard Deviation							2.04	1.79	2.75	3.04
CV							79.09	36.23	50.29	46.44

Preemergence and Postemergence Weed Control in Blueberry – SWMREC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RESO	YEHW	BLBE	BYGR
Pest Code							RESO	YEHW		BYGR
Crop Code									BLBE	
Rating Date							15/Jun/15	15/Jun/15	29/Jul/15	29/Jul/15
Rating Type							RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10
1	diuron	80	DF	2	lb ai/a	EPRE	7.7	7.7	1.0	9.7
	Zeus Prime XC	3.5	EC	0.41	lb ai/a	EPOS				
	sulfentrazone	3.15	EC	0.369	lb ai/a					
	carfentrazone	0.35	EC	0.041	lb ai/a					
	clethodim	0.97	EC	0.12	lb ai/a	EPOS				
	COC	100	SL	1	lb ai/a	EPOS				
2	diuron	80	DF	2	lb ai/a	EPRE	10.0	7.3	1.0	8.3
	glufosinate	2.34	L	1.02	lb ai/a	EPOS				
	N Pak (AMS)	100	L	2.5	% v/v	EPOS				
3	diuron	80	DF	2	lb ai/a	EPRE	9.0	9.0	1.7	8.7
	glyphosate	5.5	L	1	lb ai/a	EPOS				
	N Pak (AMS)	100	L	2.5	% v/v	EPOS				
4	diuron	80	DF	2	lb ai/a	EPRE	7.0	4.3	1.3	9.0
	clopyralid	3	L	0.125	lb ai/a	EPOS				
	clethodim	0.97	EC	0.12	lb ai/a	EPOS				
	COC	100	SL	1	% v/v	EPOS				
5	diuron	80	DF	2	lb ai/a	EPRE	5.3	2.7	1.3	9.0
	glufosinate	2.34	L	1.02	lb ai/a	EPOS				
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	EPOS				
	N Pak (AMS)	100	L	2.5	% v/v	EPOS				
6	diuron	80	DF	2	lb ai/a	EPRE	7.3	4.7	1.0	8.3
	halosulfuron	75	WG	0.047	lb ai/a	EPOS				
	clethodim	0.97	EC	0.12	lb ai/a	EPOS				
	COC	100	SL	1	% v/v	EPOS				
7	diuron	80	DF	2	lb ai/a	EPRE	4.3	1.3	1.3	9.0
	quinclorac	3.8	L	0.25	lb ai/a	EPOS				
8	diuron	80	DF	2	lb ai/a	EPRE	10.0	7.3	1.7	5.7
	paraquat	2	SL	1	lb ai/a	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
9	flazasulfuron	25	WG	0.033	lb ai/a	EPRE	10.0	10.0	1.7	6.3
	glyphosate	5.5	L	1	lb ai/a	EPRE				
10	flazasulfuron	25	WG	0.045	lb ai/a	EPRE	7.7	10.0	1.0	6.3
	glyphosate	5.5	L	1	lb ai/a	EPRE				
11	flazasulfuron	25	WG	0.088	lb ai/a	EPRE	10.0	10.0	1.7	5.0
	glyphosate	5.5	L	1	lb ai/a	EPRE				
12	Untreated						1.0	1.7	1.7	10.0
LSD P=.05							5.03	5.27	0.95	4.43
Standard Deviation							2.97	3.11	0.56	2.62
CV							39.92	49.15	41.28	32.92

Preemergence and Postemergence Weed Control in Blueberry – SWMREC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BHPL	HOWE	LATH	RESO
	Pest Code						BHPL	HOWE	LATH	RESO
	Crop Code									
	Rating Date						29/Jul/15	29/Jul/15	29/Jul/15	29/Jul/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	diuron	80	DF	2	lb ai/a	EPRE	2.0	9.3	9.3	10.0
	Zeus Prime XC	3.5	EC	0.41	lb ai/a	EPOS				
	sulfentrazone	3.15	EC	0.369	lb ai/a					
	carfentrazone	0.35	EC	0.041	lb ai/a					
	clethodim	0.97	EC	0.12	lb ai/a	EPOS				
	COC	100	SL	1	lb ai/a	EPOS				
2	diuron	80	DF	2	lb ai/a	EPRE	1.7	10.0	7.0	10.0
	glufosinate	2.34	L	1.02	lb ai/a	EPOS				
	N Pak (AMS)	100	L	2.5	% v/v	EPOS				
3	diuron	80	DF	2	lb ai/a	EPRE	9.0	10.0	10.0	9.3
	glyphosate	5.5	L	1	lb ai/a	EPOS				
	N Pak (AMS)	100	L	2.5	% v/v	EPOS				
4	diuron	80	DF	2	lb ai/a	EPRE	2.7	10.0	10.0	10.0
	clopyralid	3	L	0.125	lb ai/a	EPOS				
	clethodim	0.97	EC	0.12	lb ai/a	EPOS				
	COC	100	SL	1	% v/v	EPOS				
5	diuron	80	DF	2	lb ai/a	EPRE	2.3	7.0	9.7	9.3
	glufosinate	2.34	L	1.02	lb ai/a	EPOS				
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	EPOS				
	N Pak (AMS)	100	L	2.5	% v/v	EPOS				
6	diuron	80	DF	2	lb ai/a	EPRE	3.3	10.0	4.7	10.0
	halosulfuron	75	WG	0.047	lb ai/a	EPOS				
	clethodim	0.97	EC	0.12	lb ai/a	EPOS				
	COC	100	SL	1	% v/v	EPOS				
7	diuron	80	DF	2	lb ai/a	EPRE	4.7	10.0	6.3	7.0
	quinclorac	3.8	L	0.25	lb ai/a	EPOS				
8	diuron	80	DF	2	lb ai/a	EPRE	3.3	5.7	5.0	10.0
	paraquat	2	SL	1	lb ai/a	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
9	flazasulfuron	25	WG	0.033	lb ai/a	EPRE	4.3	7.7	10.0	9.3
	glyphosate	5.5	L	1	lb ai/a	EPRE				
10	flazasulfuron	25	WG	0.045	lb ai/a	EPRE	3.0	9.7	8.7	7.3
	glyphosate	5.5	L	1	lb ai/a	EPRE				
11	flazasulfuron	25	WG	0.088	lb ai/a	EPRE	5.3	9.3	10.0	8.3
	glyphosate	5.5	L	1	lb ai/a	EPRE				
12	Untreated						5.7	8.0	10.0	9.3
LSD P=.05							3.73	3.96	4.94	2.39
Standard Deviation							2.19	2.34	2.92	1.41
CV							55.59	26.3	34.75	15.4

Preemergence Weed Control in Cherry – CRC - 2015

Project Code: 128-15-5 **Location: Clarksville, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Cherry **Variety: Ulster, Heidelfinger**
Planting Method: Transplant **Planting Date: 1995**
Spacing: 8 ft **Row Spacing: 16 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 11 ft wide x 50 ft long; 5 trees/plot

Soil Type: Dryden sandy loam **OM: 1.5%** **pH: 6.8**
Sand: 64% **Silt: 22%** **Clay: 14%** **CEC: 5.5**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
FALL14	11/3/15	9:35 am	52/42	F	Moist	2-3 W	34	5% Cloudy	Y
EPRE15	4/15/15	1:30 pm	63/51	F	Damp	3-4 SE	22	55% Cloudy	N
FALL15	11/3/15	11:05 am	77/50	F	Moist	1-3 SW	42	0% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
11/3/14	CHERRY		Dormant	
11/3/14	DAND = dandelion	10-12″	Veg	Moderate
11/3/14	POIV = poison ivy	12-18″	Veg	Many
11/3/14	WHCL = white clover	2-4″	Veg	Few
11/3/14	WICA = wild carrot	10-12″	Veg	Few
4/15/15	CHERRY	15-20′	Bud Swell	Good
4/15/15	DAND = dandelion	2-4″	Veg	Many
4/15/15	HOWE = horseweed	2-3″	Veg	Few
4/15/15	PERG = perennial ryegrass	4-6″	Veg	Few
4/15/15	WHCL = white clover	1-2″	Veg	Moderate
11/3/15	COCW = common chickweed	4-6″	Flower	Many
11/3/15	CUDO = curly dock	24-48″	Rosette	Moderate
11/3/15	DAND = dandelion	12-18″	Veg	Many
11/3/15	HOWE = horseweed	24-48″	Flower	Many
11/3/15	WICA = wild carrot	4-6″	Veg	Few
11/3/15	YEFT = yellow foxtail	4-6′	Flower	Many
	GORO = goldenrod			

Notes and Comments
1. Spray applied with 4 nozzle boom; one pass on each side of row. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Preemergence Weed Control in Cherry – CRC - 2015

Preemergence Weed Control in Cherry – CRC – 2015

Trial ID: 128-15-5 Location: Clarksville, MI
Protocol ID: 128-15-5 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CHERRY 9/Jun/15 RATING 1-10	PERG 9/Jun/15 RATING 1-10	DAND 9/Jun/15 RATING 1-10	GORO 9/Jun/15 RATING 1-10
1	oxyfluorfen	4	SC	1.5	lb ai/a	EPRE14,15	1.0	6.7	8.7	7.0
	glyphosate	5.4	L	1.35	lb ai/a	EPRE14,15				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
2	Pindar GT	4.013	SC	1.5	lb ai/a	EPRE14,15	1.0	7.7	10.0	10.0
	penoxsulam	0.083	SC	0.031	lb ai/a					
	oxyfluorfen	3.93	SC	1.469	lb ai/a					
	glyphosate	5.4	L	1.35	lb ai/a	EPRE14,15				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
3	Pindar GT	4.013	SC	3.01	lb ai/a	EPRE14,15	1.7	10.0	10.0	10.0
	penoxsulam	0.083	SC	0.062	lb ai/a					
	oxyfluorfen	3.93	SC	2.948	lb ai/a					
	glyphosate	5.4	L	1.35	lb ai/a	EPRE14,15				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
4	oxyfluorfen	4	SC	1.5	lb ai/a	FALL13,14,15	1.0	10.0	10.0	10.0
	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15				
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
5	Pindar GT	4.013	SC	1.5	lb ai/a	FALL13,14,15	1.3	9.3	10.0	10.0
	penoxsulam	0.083	SC	0.031	lb ai/a					
	oxyfluorfen	3.93	SC	1.469	lb ai/a					
	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15				
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
6	Pindar GT	4.013	SC	3.01	lb ai/a	FALL13,14,15	1.3	10.0	9.3	10.0
	penoxsulam	0.083	SC	0.062	lb ai/a					
	oxyfluorfen	3.93	SC	2.948	lb ai/a					
	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15				
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
7	isoxaben	4.17	SC	0.75	lb ai/a	EPRE14,15	1.3	7.3	8.7	10.0
	glyphosate	5.4	L	1.5	lb ai/a	EPRE14,15				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
8	isoxaben	4.17	SC	2	lb ai/a	EPRE14,15	1.0	7.3	7.0	10.0
	glyphosate	5.4	L	1.5	lb ai/a	EPRE14,15				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
9	isoxaben	4.17	SC	0.75	lb ai/a	FALL13,14,15	1.0	4.3	5.3	10.0
	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15				
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
10	isoxaben	4.17	SC	2	lb ai/a	FALL13,14,15	1.0	7.7	9.0	10.0
	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15				
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
11	glyphosate	5.4	L	1.35	lb ai/a	EPRE14,15	1.0	7.0	7.0	10.0
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
12	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15	1.0	3.3	3.3	10.0
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
LSD P=.05							0.56	5.86	4.58	2.54
Standard Deviation							0.33	3.46	2.70	1.50
CV							29.27	45.79	33.01	15.38

Preemergence Weed Control in Cherry – CRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	POIV 9/Jun/15 RATING 1-10	CHERRY 15/Jul/15 RATING 1-10	PERG 15/Jul/15 RATING 1-10	COCW 15/Jul/15 RATING 1-10
1	oxyfluorfen	4	SC	1.5	lb ai/a	EPRE14,15	4.0	1.0	6.7	4.0
	glyphosate	5.4	L	1.35	lb ai/a	EPRE14,15				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
2	Pindar GT	4.013	SC	1.5	lb ai/a	EPRE14,15	4.0	1.0	7.0	8.7
	penoxsulam	0.083	SC	0.031	lb ai/a					
	oxyfluorfen	3.93	SC	1.469	lb ai/a					
	glyphosate	5.4	L	1.35	lb ai/a	EPRE14,15				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
3	Pindar GT	4.013	SC	3.01	lb ai/a	EPRE14,15	7.7	1.3	10.0	10.0
	penoxsulam	0.083	SC	0.062	lb ai/a					
	oxyfluorfen	3.93	SC	2.948	lb ai/a					
	glyphosate	5.4	L	1.35	lb ai/a	EPRE14,15				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
4	oxyfluorfen	4	SC	1.5	lb ai/a	FALL13,14,15	10.0	1.0	10.0	6.0
	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15				
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
5	Pindar GT	4.013	SC	1.5	lb ai/a	FALL13,14,15	5.0	1.3	7.0	4.0
	penoxsulam	0.083	SC	0.031	lb ai/a					
	oxyfluorfen	3.93	SC	1.469	lb ai/a					
	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15				
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
6	Pindar GT	4.013	SC	3.01	lb ai/a	FALL13,14,15	3.0	1.0	10.0	4.0
	penoxsulam	0.083	SC	0.062	lb ai/a					
	oxyfluorfen	3.93	SC	2.948	lb ai/a					
	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15				
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
7	isoxaben	4.17	SC	0.75	lb ai/a	EPRE14,15	8.7	1.0	6.7	10.0
	glyphosate	5.4	L	1.5	lb ai/a	EPRE14,15				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
8	isoxaben	4.17	SC	2	lb ai/a	EPRE14,15	6.7	1.0	7.7	9.0
	glyphosate	5.4	L	1.5	lb ai/a	EPRE14,15				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
9	isoxaben	4.17	SC	0.75	lb ai/a	FALL13,14,15	7.7	1.0	3.3	7.0
	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15				
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
10	isoxaben	4.17	SC	2	lb ai/a	FALL13,14,15	6.3	1.0	5.7	5.7
	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15				
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
11	glyphosate	5.4	L	1.35	lb ai/a	EPRE14,15	9.3	1.3	5.7	5.3
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
12	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15	7.0	1.7	5.0	3.7
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
LSD P=.05							6.53	0.75	5.94	6.43
Standard Deviation							3.86	0.44	3.51	3.80
CV							58.34	38.72	49.74	58.93

Preemergence Weed Control in Cherry – CRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	POIV	CHERRY	CHERRY	CHERRY
Pest Code										
Crop Code								CHERRY	CHERRY	CHERRY
Rating Date							15/Jul/15	1/Apr/14	16/Oct/14	27/Oct/15
Rating Type							RATING	DIAMETER	DIAMETER	DIAMETER
Rating Unit							1-10	CM	CM	CM
1	oxyfluorfen	4	SC	1.5	lb ai/a	EPRE14,15	3.0	18.07	18.70	18.97
	glyphosate	5.4	L	1.35	lb ai/a	EPRE14,15				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
2	Pindar GT	4.013	SC	1.5	lb ai/a	EPRE14,15	2.7	18.79	19.47	20.03
	penoxsulam	0.083	SC	0.031	lb ai/a					
	oxyfluorfen	3.93	SC	1.469	lb ai/a					
	glyphosate	5.4	L	1.35	lb ai/a	EPRE14,15				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
3	Pindar GT	4.013	SC	3.01	lb ai/a	EPRE14,15	9.0	20.83	21.17	21.87
	penoxsulam	0.083	SC	0.062	lb ai/a					
	oxyfluorfen	3.93	SC	2.948	lb ai/a					
	glyphosate	5.4	L	1.35	lb ai/a	EPRE14,15				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
4	oxyfluorfen	4	SC	1.5	lb ai/a	FALL13,14,15	9.0	20.15	20.70	21.10
	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15				
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
5	Pindar GT	4.013	SC	1.5	lb ai/a	FALL13,14,15	5.3	14.55	15.10	15.37
	penoxsulam	0.083	SC	0.031	lb ai/a					
	oxyfluorfen	3.93	SC	1.469	lb ai/a					
	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15				
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
6	Pindar GT	4.013	SC	3.01	lb ai/a	FALL13,14,15	3.0	18.74	19.30	19.60
	penoxsulam	0.083	SC	0.062	lb ai/a					
	oxyfluorfen	3.93	SC	2.948	lb ai/a					
	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15				
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
7	isoxaben	4.17	SC	0.75	lb ai/a	EPRE14,15	8.3	20.70	21.47	21.70
	glyphosate	5.4	L	1.5	lb ai/a	EPRE14,15				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
8	isoxaben	4.17	SC	2	lb ai/a	EPRE14,15	7.0	22.91	23.53	24.63
	glyphosate	5.4	L	1.5	lb ai/a	EPRE14,15				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
9	isoxaben	4.17	SC	0.75	lb ai/a	FALL13,14,15	9.0	18.20	18.80	18.93
	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15				
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
10	isoxaben	4.17	SC	2	lb ai/a	FALL13,14,15	4.0	20.06	20.20	20.50
	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15				
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
11	glyphosate	5.4	L	1.35	lb ai/a	EPRE14,15	7.0	21.05	21.57	23.33
	N Pak (AMS)	100	L	2.5	% v/v	EPRE14,15				
12	glyphosate	5.4	L	1.35	lb ai/a	FALL13,14,15	9.0	19.06	19.70	20.30
	N Pak (AMS)	100	L	2.5	% v/v	FALL13,14,15				
LSD P=.05							6.20	6.342	6.307	6.853
Standard Deviation							3.66	3.745	3.724	4.047
CV							57.58	19.28	18.64	19.71

Preemergence and Postemergence Weed Control in Tart Cherries – HTRC - 2015

Project Code: 128-15-6 **Location:** East Lansing, MI Block 157-158

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Cherry, Tart **Variety:** Montmorency
Planting Method: Transplant **Planting Date:** 5/5/1999
Spacing: 15 ft **Row Spacing:** 20 ft
Tillage Type: Conventional **Study Design:** RCB **Replications:** 3
Plot Size: 11 ft wide x 50 ft long

Soil Type: Marlette fine sandy loam **OM:** 4.8% **pH:** 6.6
Sand: 56% **Silt:** 26% **Clay:** 18% **CEC:** 8.2

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/14/15	2:20 pm	64/50	F	Moist	2-4 N	20	40% Cloudy	N
PO1	5/7/15	2:40 pm	85/71	F	Moist	4-6 SE	38	75% Cloudy	N
PO2	6/11/15	2:30 pm	72/67	F	Dry	1-3 SE	51	100% Cloudy	N
PO3	6/29/15	4:00 pm	76/70	F	Moist	2-4 SE	50	70% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/14	DAND = dandelion	2-4″	Veg	Many
4/14	HOWE = horseweed	2-3″	Veg	Moderate
4/14	LACG = large crabgrass	3-5″	Veg	Many
4/14	MECR = mouseear cress	2-4″	Flowering	Many
4/14	PUDN = purple deadnettle	2-4″	Flowering	Many
5/7	DAND = dandelion	3-6″	Flowering	Many
5/7	HOWE = horseweed	2-3″	Rosette	Moderate
5/7	MECR = mouseear cress	5-7″	Flowering	Many
5/7	PUDN = purple deadnettle	3-5″	Flowering	Moderate
5/7	QUGR = quackgrass	4-8″	Veg	Many
5/7	WICA = wild carrot	2-3″	Rosette	Few
6/11	BEGR = Bermudagrass	6″	Veg	Moderate
6/11	BHPL = buckhorn plantain	6-10″	Flowering	Few
6/11	COMW = common milkweed	24-30″	Veg	Few
6/11	DAND = dandelion	6-12″	Flowering	Moderate
6/11	HOWE = horseweed	12-18″	Veg	Moderate
6/11	ORGR = orchardgrass	24-36″	Seed	Many
6/11	PUDN = purple deadnettle	4-8″	Flowering	Few
6/11	QUGR = quackgrass	18-24″	Seed	Many
6/11	WICA = wild carrot	3-10″	Veg	Moderate
6/29	COMW = common milkweed	18-24″	Early Flower	Moderate
6/29	DAND = dandelion	4-8″	Veg	Many
6/29	ORGR = orchardgrass	36-48″	Flowering	Moderate
6/29	PEST = perennial sowthistle	12-24″	Veg	
6/29	QUGR = quackgrass	12-24″	Flower	Many
6/29	WICA = wild carrot	2-8″	Early Flower	Few

Notes and Comments

1. Spray applied with 4 nozzle boom; one pass on each side of row. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. 6/11/15, PO2 Treatment 4: 18.5mL Reckon 280 x 0.22 gal tank mix applied to South side of plots 104 and 201 only.

Preemergence and Postemergence Weed Control in Tart Cherries – HTRC - 2015

Preemergence and Postemergence Weed Control in Tart Cherries – HTRC – 2015

Trial ID: 128-15-6 Location: East Lansing, MI
Protocol ID: 128-15-6 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CHERRY 7/May/15 RATING 1-10	ORGR 7/May/15 RATING 1-10	QUGR 7/May/15 RATING 1-10	DAND 7/May/15 RATING 1-10
1	Untreated						1.0	1.0	3.3	2.3
2	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1,2,3	1.0	1.7	4.7	1.0
	N Pak (AMS)	100	L	2.5	% v/v	PO1,2,3				
3	saflufenacil	70	WG	0.044	lb ai/a	PO1	1.0	1.0	3.0	1.0
4	glufosinate – Reckon 280	2.34	SL	1.02	lb ai/a	PO1,2,3	1.0	1.7	1.3	2.7
5	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1	1.0	1.7	1.7	1.0
	indaziflam	1.67	SC	0.052	lb ai/a	PO1				
	rimsulfuron	25	SG	0.031	lb ai/a	PO1				
	N Pak (AMS)	100	L	2.5	% v/v	PO1				
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	1.0	9.7	9.7	8.3
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
7	clopyralid	3	L	0.188	lb ai/a	PO1,2	1.0	1.3	2.3	1.0
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2				
	carfentrazone	2	EC	0.031	lb ai/a	PO1,2				
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2				
	NIS	100	SL	0.25	% v/v	PO1,2				
8	indaziflam	1.67	SC	0.052	lb ai/a	PRE	1.0	10.0	10.0	9.3
	rimsulfuron	25	SG	0.031	lb ai/a	PRE				
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
LSD P=.05							0.00	1.41	3.06	2.37
Standard Deviation							0.00	0.81	1.75	1.35
CV							0.0	23.01	38.83	40.55

Preemergence and Postemergence Weed Control in Tart Cherries – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	MECR 7/May/15 RATING 1-10	PUDN 7/May/15 RATING 1-10	CHERRY 19/May/15 RATING 1-10	ORGR 19/May/15 RATING 1-10
1	Untreated						1.0	3.7	1.0	1.0
2	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1,2,3	1.7	4.0	1.0	9.3
	N Pak (AMS)	100	L	2.5	% v/v	PO1,2,3				
3	saflufenacil	70	WG	0.044	lb ai/a	PO1	1.0	2.3	1.0	1.0
4	glufosinate – Reckon 280	2.34	SL	1.02	lb ai/a	PO1,2,3	3.0	2.7	1.0	7.7
5	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1	1.7	1.0	1.0	8.3
	indaziflam	1.67	SC	0.052	lb ai/a	PO1				
	rimsulfuron	25	SG	0.031	lb ai/a	PO1				
	N Pak (AMS)	100	L	2.5	% v/v	PO1				
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	10.0	10.0	1.0	9.0
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
7	clopyralid	3	L	0.188	lb ai/a	PO1,2	1.7	1.0	1.0	8.3
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2				
	carfentrazone	2	EC	0.031	lb ai/a	PO1,2				
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2				
	NIS	100	SL	0.25	% v/v	PO1,2				
8	indaziflam	1.67	SC	0.052	lb ai/a	PRE	10.0	10.0	1.0	10.0
	rimsulfuron	25	SG	0.031	lb ai/a	PRE				
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
LSD P=.05							2.52	4.68	0.00	1.63
Standard Deviation							1.44	2.67	0.00	0.93
CV							38.38	61.65	0.0	13.6

Preemergence and Postemergence Weed Control in Tart Cherries – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	QUGR	ALFA	DAND	MECR
	Pest Code						QUGR	ALFA	DAND	MECR
	Crop Code									
	Rating Date						19/May/15	19/May/15	19/May/15	19/May/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	Untreated						1.0	3.0	1.0	1.0
2	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1,2,3	9.7	7.7	10.0	10.0
	N Pak (AMS)	100	L	2.5	% v/v	PO1,2,3				
3	saflufenacil	70	WG	0.044	lb ai/a	PO1	1.7	7.0	4.3	7.0
4	glufosinate – Reckon 280	2.34	SL	1.02	lb ai/a	PO1,2,3	7.3	10.0	9.0	9.3
5	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1	8.7	10.0	10.0	10.0
	indaziflam	1.67	SC	0.052	lb ai/a	PO1				
	rimsulfuron	25	SG	0.031	lb ai/a	PO1				
	N Pak (AMS)	100	L	2.5	% v/v	PO1				
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	9.7	8.7	8.7	9.7
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
7	clopyralid	3	L	0.188	lb ai/a	PO1,2	8.7	9.3	7.7	6.7
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2				
	carfentrazone	2	EC	0.031	lb ai/a	PO1,2				
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2				
	NIS	100	SL	0.25	% v/v	PO1,2				
8	indaziflam	1.67	SC	0.052	lb ai/a	PRE	10.0	10.0	9.3	10.0
	rimsulfuron	25	SG	0.031	lb ai/a	PRE				
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
	LSD P=.05						1.55	4.90	1.46	2.64
	Standard Deviation						0.88	2.80	0.83	1.51
	CV						12.47	34.1	11.08	18.97

Preemergence and Postemergence Weed Control in Tart Cherries – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PUDN	WICA	CHERRY	BEGR
	Pest Code						PUDN	WICA		BEGR
	Crop Code								CHERRY	
	Rating Date						19/May/15	19/May/15	11/Jun/15	11/Jun/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	Untreated						3.0	1.0	1.0	4.0
2	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1,2,3	10.0	10.0	1.0	7.0
	N Pak (AMS)	100	L	2.5	% v/v	PO1,2,3				
3	saflufenacil	70	WG	0.044	lb ai/a	PO1	4.7	1.7	1.0	4.0
4	glufosinate – Reckon 280	2.34	SL	1.02	lb ai/a	PO1,2,3	10.0	8.3	1.0	7.0
5	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1	10.0	10.0	1.0	10.0
	indaziflam	1.67	SC	0.052	lb ai/a	PO1				
	rimsulfuron	25	SG	0.031	lb ai/a	PO1				
	N Pak (AMS)	100	L	2.5	% v/v	PO1				
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	9.3	7.7	1.0	10.0
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
7	clopyralid	3	L	0.188	lb ai/a	PO1,2	8.0	8.7	1.0	7.3
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2				
	carfentrazone	2	EC	0.031	lb ai/a	PO1,2				
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2				
	NIS	100	SL	0.25	% v/v	PO1,2				
8	indaziflam	1.67	SC	0.052	lb ai/a	PRE	10.0	10.0	1.0	4.0
	rimsulfuron	25	SG	0.031	lb ai/a	PRE				
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
	LSD P=.05						3.16	1.85	0.00	7.97
	Standard Deviation						1.80	1.06	0.00	4.55
	CV						22.21	14.72	0.0	68.28

Preemergence and Postemergence Weed Control in Tart Cherries – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ORGR	QUGR	BHPL	COMW
	Pest Code						ORGR	QUGR	BHPL	COMW
	Crop Code									
	Rating Date						11/Jun/15	11/Jun/15	11/Jun/15	11/Jun/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	Untreated						3.0	3.0	6.7	4.0
2	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1,2,3	9.7	9.7	4.3	4.7
	N Pak (AMS)	100	L	2.5	% v/v	PO1,2,3				
3	saflufenacil	70	WG	0.044	lb ai/a	PO1	4.0	5.7	10.0	10.0
4	glufosinate – Reckon 280	2.34	SL	1.02	lb ai/a	PO1,2,3	9.7	7.3	7.7	4.0
5	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1	10.0	9.7	10.0	8.0
	indaziflam	1.67	SC	0.052	lb ai/a	PO1				
	rimsulfuron	25	SG	0.031	lb ai/a	PO1				
	N Pak (AMS)	100	L	2.5	% v/v	PO1				
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	8.3	10.0	10.0	7.3
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
7	clopyralid	3	L	0.188	lb ai/a	PO1,2	9.0	10.0	5.3	8.3
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2				
	carfentrazone	2	EC	0.031	lb ai/a	PO1,2				
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2				
	NIS	100	SL	0.25	% v/v	PO1,2				
8	indaziflam	1.67	SC	0.052	lb ai/a	PRE	10.0	10.0	10.0	10.0
	rimsulfuron	25	SG	0.031	lb ai/a	PRE				
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
	LSD P=.05						3.14	3.26	5.89	7.10
	Standard Deviation						1.79	1.86	3.36	4.05
	CV						22.51	22.81	42.05	57.55

Preemergence and Postemergence Weed Control in Tart Cherries – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DAND	HOWE	PUDN	WICA
	Pest Code						DAND	HOWE	PUDN	WICA
	Crop Code									
	Rating Date						11/Jun/15	11/Jun/15	11/Jun/15	11/Jun/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	Untreated						1.0	1.3	1.0	1.0
2	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1,2,3	10.0	10.0	10.0	10.0
	N Pak (AMS)	100	L	2.5	% v/v	PO1,2,3				
3	saflufenacil	70	WG	0.044	lb ai/a	PO1	1.7	10.0	5.0	4.0
4	glufosinate – Reckon 280	2.34	SL	1.02	lb ai/a	PO1,2,3	10.0	10.0	5.7	4.0
5	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1	9.0	10.0	10.0	10.0
	indaziflam	1.67	SC	0.052	lb ai/a	PO1				
	rimsulfuron	25	SG	0.031	lb ai/a	PO1				
	N Pak (AMS)	100	L	2.5	% v/v	PO1				
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	7.7	10.0	9.7	6.7
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
7	clopyralid	3	L	0.188	lb ai/a	PO1,2	6.7	10.0	4.3	10.0
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2				
	carfentrazone	2	EC	0.031	lb ai/a	PO1,2				
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2				
	NIS	100	SL	0.25	% v/v	PO1,2				
8	indaziflam	1.67	SC	0.052	lb ai/a	PRE	9.0	10.0	10.0	10.0
	rimsulfuron	25	SG	0.031	lb ai/a	PRE				
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
	LSD P=.05						1.81	0.36	4.33	4.98
	Standard Deviation						1.04	0.20	2.47	2.84
	CV						15.06	2.29	35.55	40.84

Preemergence and Postemergence Weed Control in Tart Cherries – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		BEGR	ORGR	YEFT
	Pest Code									
	Crop Code						CHERRY			
	Rating Date						2/Jul/15	2/Jul/15	2/Jul/15	2/Jul/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	Untreated						1.0	6.0	5.7	9.3
2	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1,2,3	1.0	8.3	9.7	7.7
	N Pak (AMS)	100	L	2.5	% v/v	PO1,2,3				
3	saflufenacil	70	WG	0.044	lb ai/a	PO1	1.0	5.3	4.0	7.3
4	glufosinate – Reckon 280	2.34	SL	1.02	lb ai/a	PO1,2,3	1.3	7.0	8.7	6.3
5	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1	1.0	10.0	9.7	9.7
	indaziflam	1.67	SC	0.052	lb ai/a	PO1				
	rimsulfuron	25	SG	0.031	lb ai/a	PO1				
	N Pak (AMS)	100	L	2.5	% v/v	PO1				
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	1.0	10.0	8.7	9.0
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
7	clopyralid	3	L	0.188	lb ai/a	PO1,2	1.3	9.7	10.0	9.0
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2				
	carfentrazone	2	EC	0.031	lb ai/a	PO1,2				
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2				
	NIS	100	SL	0.25	% v/v	PO1,2				
8	indaziflam	1.67	SC	0.052	lb ai/a	PRE	1.0	7.0	10.0	9.3
	rimsulfuron	25	SG	0.031	lb ai/a	PRE				
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
LSD P=.05							0.52	6.43	3.46	3.44
Standard Deviation							0.30	3.67	1.98	1.96
CV							27.58	46.4	23.85	23.2

Preemergence and Postemergence Weed Control in Tart Cherries – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DAND	HOWE	WICA	CHERRY
	Pest Code						DAND	HOWE	WICA	
	Crop Code									CHERRY
	Rating Date						2/Jul/15	2/Jul/15	2/Jul/15	28/Jul/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	Untreated						1.0	1.3	4.7	1.0
2	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1,2,3	10.0	10.0	10.0	1.0
	N Pak (AMS)	100	L	2.5	% v/v	PO1,2,3				
3	saflufenacil	70	WG	0.044	lb ai/a	PO1	3.7	10.0	1.7	1.0
4	glufosinate – Reckon 280	2.34	SL	1.02	lb ai/a	PO1,2,3	9.3	10.0	8.7	1.0
5	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1	8.3	10.0	10.0	1.0
	indaziflam	1.67	SC	0.052	lb ai/a	PO1				
	rimsulfuron	25	SG	0.031	lb ai/a	PO1				
	N Pak (AMS)	100	L	2.5	% v/v	PO1				
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	8.0	9.3	5.3	1.0
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
7	clopyralid	3	L	0.188	lb ai/a	PO1,2	8.3	10.0	9.0	1.0
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2				
	carfentrazone	2	EC	0.031	lb ai/a	PO1,2				
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2				
	NIS	100	SL	0.25	% v/v	PO1,2				
8	indaziflam	1.67	SC	0.052	lb ai/a	PRE	8.0	10.0	9.3	1.0
	rimsulfuron	25	SG	0.031	lb ai/a	PRE				
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
	LSD P=.05						2.61	0.78	3.57	0.00
	Standard Deviation						1.49	0.44	2.04	0.00
	CV						21.04	5.02	27.82	0.0

Preemergence and Postemergence Weed Control in Tart Cherries – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BEGR	ORGR	HOWE	WICA
	Pest Code						BEGR	ORGR	HOWE	WICA
	Crop Code									
	Rating Date						28/Jul/15	28/Jul/15	28/Jul/15	28/Jul/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	Untreated						1.7	3.7	2.7	5.7
2	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1,2,3	9.3	9.3	10.0	9.7
	N Pak (AMS)	100	L	2.5	% v/v	PO1,2,3				
3	saflufenacil	70	WG	0.044	lb ai/a	PO1	4.7	4.7	10.0	4.3
4	glufosinate – Reckon 280	2.34	SL	1.02	lb ai/a	PO1,2,3	8.3	9.3	10.0	7.7
5	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1	10.0	9.0	10.0	9.7
	indaziflam	1.67	SC	0.052	lb ai/a	PO1				
	rimsulfuron	25	SG	0.031	lb ai/a	PO1				
	N Pak (AMS)	100	L	2.5	% v/v	PO1				
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	10.0	8.3	10.0	5.7
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
7	clopyralid	3	L	0.188	lb ai/a	PO1,2	10.0	9.3	10.0	8.3
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2				
	carfentrazone	2	EC	0.031	lb ai/a	PO1,2				
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2				
	NIS	100	SL	0.25	% v/v	PO1,2				
8	indaziflam	1.67	SC	0.052	lb ai/a	PRE	7.0	10.0	9.7	9.0
	rimsulfuron	25	SG	0.031	lb ai/a	PRE				
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
	LSD P=.05						5.07	3.14	1.02	4.57
	Standard Deviation						2.90	1.79	0.58	2.61
	CV						37.98	22.51	6.44	34.81

Preemergence and Postemergence Weed Control in Tart Cherries – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		BEGR	LACG	ORGR
Pest Code								BEGR	LACG	ORGR
Crop Code							CHERRY			
Rating Date							28/Aug/15	28/Aug/15	28/Aug/15	28/Aug/15
Rating Type							RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10
1	Untreated						1.0	10.0	9.3	2.3
2	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1,2,3	1.0	8.7	7.0	9.3
	N Pak (AMS)	100	L	2.5	% v/v	PO1,2,3				
3	saflufenacil	70	WG	0.044	lb ai/a	PO1	1.0	5.3	7.0	3.7
4	glufosinate – Reckon 280	2.34	SL	1.02	lb ai/a	PO1,2,3	1.0	7.3	7.7	8.7
5	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1	1.0	10.0	10.0	10.0
	indaziflam	1.67	SC	0.052	lb ai/a	PO1				
	rimsulfuron	25	SG	0.031	lb ai/a	PO1				
	N Pak (AMS)	100	L	2.5	% v/v	PO1				
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	1.0	10.0	10.0	9.3
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
7	clopyralid	3	L	0.188	lb ai/a	PO1,2	1.0	10.0	7.7	9.0
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2				
	carfentrazone	2	EC	0.031	lb ai/a	PO1,2				
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2				
	NIS	100	SL	0.25	% v/v	PO1,2				
8	indaziflam	1.67	SC	0.052	lb ai/a	PRE	1.0	5.3	10.0	10.0
	rimsulfuron	25	SG	0.031	lb ai/a	PRE				
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
LSD P=.05							0.00	5.13	5.49	1.77
Standard Deviation							0.00	2.93	3.14	1.01
CV							0.0	35.18	36.53	12.95

Preemergence and Postemergence Weed Control in Tart Cherries – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	QUGR	YEFT	HOWE	WICA
	Pest Code						QUGR	YEFT	HOWE	WICA
	Crop Code									
	Rating Date						28/Aug/15	28/Aug/15	28/Aug/15	28/Aug/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	Untreated						2.7	4.7	2.7	8.0
2	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1,2,3	9.3	7.0	10.0	10.0
	N Pak (AMS)	100	L	2.5	% v/v	PO1,2,3				
3	saflufenacil	70	WG	0.044	lb ai/a	PO1	5.3	7.0	10.0	2.3
4	glufosinate – Reckon 280	2.34	SL	1.02	lb ai/a	PO1,2,3	8.3	8.3	10.0	7.3
5	glufosinate – Rely 280	2.34	L	1.02	lb ai/a	PO1	8.3	10.0	9.7	10.0
	indaziflam	1.67	SC	0.052	lb ai/a	PO1				
	rimsulfuron	25	SG	0.031	lb ai/a	PO1				
	N Pak (AMS)	100	L	2.5	% v/v	PO1				
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	9.3	7.0	9.7	4.3
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
7	clopyralid	3	L	0.188	lb ai/a	PO1,2	8.0	7.3	10.0	8.7
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2				
	carfentrazone	2	EC	0.031	lb ai/a	PO1,2				
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2				
	NIS	100	SL	0.25	% v/v	PO1,2				
8	indaziflam	1.67	SC	0.052	lb ai/a	PRE	10.0	9.3	9.7	9.3
	rimsulfuron	25	SG	0.031	lb ai/a	PRE				
	glyphosate	5.5	L	1	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
	LSD P=.05						3.02	6.42	1.15	3.00
	Standard Deviation						1.73	3.67	0.66	1.71
	CV						22.5	48.37	7.36	22.84

Preemergence Weed Control in Niagara Grapes – SWMREC - 2015

Project Code: 132-15-1 **Location: Benton Harbor, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Grape **Variety: Niagara**
Planting Method: Seedlings **Planting Date: 1996** **Harvest Date:9/24/15**
Spacing: 7 ft; 6 vines/plot **Row Spacing: 10 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 30 ft long

Soil Type: Pipestone sand **OM: 1.4%** **pH: 5.6**
Sand: 88% **Silt: 6.1%** **Clay: 5.9%** **CEC: 1.9**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
EPRE	4/16/15	2:00 pm	57/57	F	Damp	3-4 NW	52	100% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/16	GRAPE	6′	Dormant	
4/16	HAFE = hard fescue	1-2″	Veg	Moderate
4/16	QUGR = quackgrass	4-6″	Veg	Moderate
4/16	RESO = red sorrel	0.5-1″	Veg	Many

Notes and Comments
1. Spray applied with 2 nozzle boom; one pass on each side of row. FF8002, 20 gpa, 30 psi, 3.2 mph, CO_2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Yields taken from 4 vines/plot.

Preemergence Weed Control in Niagara Grapes – SWMREC - 2015

Preemergence Weed Control in Niagara Grapes – SWMREC – 2015

Trial ID: 132-15-1 Location: Benton Harbor, MI
Protocol ID: 132-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	GRAPE 17/Jun/15 RATING 1-10	QUGR 17/Jun/15 RATING 1-10	FIBW 17/Jun/15 RATING 1-10	HANS 17/Jun/15 RATING 1-10
1	diuron	80	DF	3	lb ai/a	PRE	1.3	1.0	10.0	10.0
	carfentrazone	2	EC	0.031	lb ai/a	PRE				
	NIS	100	SL	0.25	% v/v	PRE				
2	diuron	80	DF	3	lb ai/a	PRE	1.3	1.0	10.0	10.0
	glufosinate	2.34	L	0.88	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
3	diuron	80	DF	3	lb ai/a	PRE	2.0	4.3	7.3	7.0
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
4	flazasulfuron	25	WG	0.033	lb ai/a	PRE	2.0	9.0	7.0	10.0
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
5	indaziflam	1.67	SC	0.052	lb ai/a	PRE	1.7	7.7	9.7	5.7
	rimsulfuron	25	SG	0.031	lb ai/a	PRE				
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	1.3	8.0	10.0	9.3
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
7	flumioxazin	51	WDG	0.383	lb ai/a	PRE	1.0	7.7	10.0	9.7
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
8	isoxaben	4.17	SC	1	lb ai/a	PRE	1.0	7.0	10.0	6.7
	pendimethalin	3.8	CS	3	lb ai/a	PRE				
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
9	norflurazon	80	DF	3.2	lb ai/a	PRE	1.0	7.7	10.0	8.0
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
10	Zeus Prime XC	3.5	EC	0.328	lb ai/a	PRE	2.3	6.7	7.0	7.0
	sulfentrazone	3.15	EC	0.2952	lb ai/a					
	carfentrazone	0.35	EC	0.0328	lb ai/a					
	oryzalin	4	L	2	lb ai/a	PRE				
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
11	Untreated						1.0	1.0	10.0	7.0
LSD P=.05							1.07	2.46	3.94	5.91
Standard Deviation							0.63	1.45	2.31	3.47
CV							43.15	26.09	25.21	42.25

Preemergence Weed Control in Niagara Grapes - SWMREC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HAVE	HONE	HOWE	RESO
Pest Code							HAVE	HONE	HOWE	RESO
Crop Code										
Rating Date							17/Jun/15	17/Jun/15	17/Jun/15	17/Jun/15
Rating Type							RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10
1	diuron	80	DF	3	lb ai/a	PRE	7.0	1.7	6.0	3.3
	carfentrazone	2	EC	0.031	lb ai/a	PRE				
	NIS	100	SL	0.25	% v/v	PRE				
2	diuron	80	DF	3	lb ai/a	PRE	10.0	1.0	10.0	7.0
	glufosinate	2.34	L	0.88	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
3	diuron	80	DF	3	lb ai/a	PRE	9.7	1.0	8.7	3.0
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
4	flazasulfuron	25	WG	0.033	lb ai/a	PRE	10.0	3.3	9.7	7.7
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
5	indaziflam	1.67	SC	0.052	lb ai/a	PRE	10.0	1.0	10.0	1.0
	rimsulfuron	25	SG	0.031	lb ai/a	PRE				
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	10.0	1.0	7.3	5.7
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
7	flumioxazin	51	WDG	0.383	lb ai/a	PRE	9.7	1.7	7.7	3.0
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
8	isoxaben	4.17	SC	1	lb ai/a	PRE	3.7	1.3	7.0	1.0
	pendimethalin	3.8	CS	3	lb ai/a	PRE				
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
9	norflurazon	80	DF	3.2	lb ai/a	PRE	9.3	1.0	5.7	2.3
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
10	Zeus Prime XC	3.5	EC	0.328	lb ai/a	PRE	7.0	2.0	9.3	8.0
	sulfentrazone	3.15	EC	0.2952	lb ai/a					
	carfentrazone	0.35	EC	0.0328	lb ai/a					
	oryzalin	4	L	2	lb ai/a	PRE				
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
11	Untreated						7.0	1.0	1.0	1.0
LSD P=.05							5.14	2.28	5.15	2.98
Standard Deviation							3.02	1.34	3.03	1.75
CV							35.58	91.93	40.42	44.75

Preemergence Weed Control in Niagara Grapes – SWMREC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	SFGE 17/Jun/15 RATING 1-10	GRAPE 9/Jul/15 RATING 1-10	QUGR 9/Jul/15 RATING 1-10	HONE 9/Jul/15 RATING 1-10
1	diuron	80	DF	3	lb ai/a	PRE	10.0	1.0	1.0	1.7
	carfentrazone	2	EC	0.031	lb ai/a	PRE				
	NIS	100	SL	0.25	% v/v	PRE				
2	diuron	80	DF	3	lb ai/a	PRE	10.0	1.7	2.7	2.7
	glufosinate	2.34	L	0.88	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
3	diuron	80	DF	3	lb ai/a	PRE	7.0	1.0	4.3	1.7
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
4	flazasulfuron	25	WG	0.033	lb ai/a	PRE	10.0	1.0	6.3	4.0
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
5	indaziflam	1.67	SC	0.052	lb ai/a	PRE	10.0	1.3	5.7	3.0
	rimsulfuron	25	SG	0.031	lb ai/a	PRE				
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	7.0	1.3	8.7	2.0
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
7	flumioxazin	51	WDG	0.383	lb ai/a	PRE	1.0	1.0	7.7	2.0
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
8	isoxaben	4.17	SC	1	lb ai/a	PRE	6.3	1.3	6.3	1.3
	pendimethalin	3.8	CS	3	lb ai/a	PRE				
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
9	norflurazon	80	DF	3.2	lb ai/a	PRE	7.0	1.3	5.3	4.3
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
10	Zeus Prime XC	3.5	EC	0.328	lb ai/a	PRE	7.0	1.7	6.7	3.7
	sulfentrazone	3.15	EC	0.2952	lb ai/a					
	carfentrazone	0.35	EC	0.0328	lb ai/a					
	oryzalin	4	L	2	lb ai/a	PRE				
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
11	Untreated						7.3	1.0	1.0	1.0
LSD P=.05							4.66	0.87	4.04	3.58
Standard Deviation							2.73	0.51	2.37	2.10
CV							36.37	41.09	46.83	84.47

Preemergence Weed Control in Niagara Grapes – SWMREC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HOWE	RESO	GRAPE	LACG
Pest Code							HOWE	RESO		LACG
Crop Code									GRAPE	
Rating Date							9/Jul/15	9/Jul/15	29/Jul/15	29/Jul/15
Rating Type							RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10
1	diuron	80	DF	3	lb ai/a	PRE	6.0	1.0	1.0	9.3
	carfentrazone	2	EC	0.031	lb ai/a	PRE				
	NIS	100	SL	0.25	% v/v	PRE				
2	diuron	80	DF	3	lb ai/a	PRE	7.7	9.0	1.3	5.7
	glufosinate	2.34	L	0.88	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
3	diuron	80	DF	3	lb ai/a	PRE	6.0	8.3	1.3	4.3
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
4	flazasulfuron	25	WG	0.033	lb ai/a	PRE	9.0	8.7	1.3	6.3
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
5	indaziflam	1.67	SC	0.052	lb ai/a	PRE	10.0	1.0	1.7	10.0
	rimsulfuron	25	SG	0.031	lb ai/a	PRE				
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	7.0	4.3	1.3	8.7
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
7	flumioxazin	51	WDG	0.383	lb ai/a	PRE	9.0	5.0	1.0	5.3
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
8	isoxaben	4.17	SC	1	lb ai/a	PRE	7.7	1.0	1.3	8.7
	pendimethalin	3.8	CS	3	lb ai/a	PRE				
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
9	norflurazon	80	DF	3.2	lb ai/a	PRE	7.7	7.7	1.3	8.3
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
10	Zeus Prime XC	3.5	EC	0.328	lb ai/a	PRE	7.7	8.3	1.3	6.3
	sulfentrazone	3.15	EC	0.2952	lb ai/a					
	carfentrazone	0.35	EC	0.0328	lb ai/a					
	oryzalin	4	L	2	lb ai/a	PRE				
	glyphosate	5.5	L	0.95	lb ai/a	PRE				
	N Pak (AMS)	100	L	2.5	% v/v	PRE				
11	Untreated						1.0	1.0	1.0	8.3
LSD P=.05							5.92	3.82	0.83	4.04
Standard Deviation							3.48	2.24	0.49	2.37
CV							48.61	44.57	38.44	32.12

Preemergence Weed Control in Niagara Grapes – SWMREC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	QUGR	HONE	HOWE	GRAPE	GRAPE
Pest Code							QUGR	HONE	HOWE		
Crop Code										GRAPE	GRAPE
Rating Date							29/Jul/15	29/Jul/15	29/Jul/15	24/Sep/15	24/Sep/15
Rating Type							RATING	RATING	RATING	HARVEST	HARVEST
Rating Unit							1-10	1-10	1-10	CLUSTER /PLOT	KG/PLOT
1	diuron	80	DF	3	lb ai/a	PRE	2.0	5.3	7.3	438.0	59.35
	carfentrazone	2	EC	0.031	lb ai/a	PRE					
	NIS	100	SL	0.25	% v/v	PRE					
2	diuron	80	DF	3	lb ai/a	PRE	1.3	1.7	7.7	444.0	69.00
	glufosinate	2.34	L	0.88	lb ai/a	PRE					
	N Pak (AMS)	100	L	2.5	% v/v	PRE					
3	diuron	80	DF	3	lb ai/a	PRE	2.7	2.3	9.0	394.3	64.40
	glyphosate	5.5	L	0.95	lb ai/a	PRE					
4	flazasulfuron	25	WG	0.033	lb ai/a	PRE	3.7	3.0	9.7	515.0	64.55
	glyphosate	5.5	L	0.95	lb ai/a	PRE					
5	indaziflam	1.67	SC	0.052	lb ai/a	PRE	5.3	5.0	9.3	424.7	60.94
	rimsulfuron	25	SG	0.031	lb ai/a	PRE					
	glyphosate	5.5	L	0.95	lb ai/a	PRE					
	N Pak (AMS)	100	L	2.5	% v/v	PRE					
6	indaziflam	1.67	SC	0.065	lb ai/a	PRE	8.3	4.0	8.7	419.3	62.97
	glyphosate	5.5	L	0.95	lb ai/a	PRE					
	N Pak (AMS)	100	L	2.5	% v/v	PRE					
7	flumioxazin	51	WDG	0.383	lb ai/a	PRE	5.7	2.3	7.3	400.7	62.97
	glyphosate	5.5	L	0.95	lb ai/a	PRE					
8	isoxaben	4.17	SC	1	lb ai/a	PRE	5.3	2.3	7.3	367.3	61.32
	pendimethalin	3.8	CS	3	lb ai/a	PRE					
	glyphosate	5.5	L	0.95	lb ai/a	PRE					
9	norflurazon	80	DF	3.2	lb ai/a	PRE	6.3	3.7	7.7	406.0	61.42
	glyphosate	5.5	L	0.95	lb ai/a	PRE					
10	Zeus Prime XC	3.5	EC	0.328	lb ai/a	PRE	6.7	4.3	8.3	383.0	56.94
	sulfentrazone	3.15	EC	0.2952	lb ai/a						
	carfentrazone	0.35	EC	0.0328	lb ai/a						
	oryzalin	4	L	2	lb ai/a	PRE					
	glyphosate	5.5	L	0.95	lb ai/a	PRE					
	N Pak (AMS)	100	L	2.5	% v/v	PRE					
11	Untreated						1.0	2.0	3.0	474.3	75.23
LSD P=.05							2.24	2.67	3.52	181.18	32.210
Standard Deviation							1.31	1.57	2.07	106.38	18.911
CV							29.88	47.84	26.64	25.07	29.76

Preemergence Weed Control in Grape – HTRC - 2015

Project Code: 132-15-2 **Location: East Lansing, MI**
Block 37; Rows 5-10

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Grape **Variety: Concord**
Planting Method: Seedling **Planting Date: 1967**
Spacing: 7 ft; 4 vines/plot **Row Spacing: 10 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 30 ft long

Soil Type: Capac loam **OM: 5.1%** **pH: 7.1**
Sand: 53% **Silt: 30%** **Clay: 17%** **CEC: 12.8**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
EPRE	4/14/15	11:30 am	61/45	F	Moist	2-4 N	29	80% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/14	GRAPE	4-5′	Veg	Good
4/14	ANBG = annual bluegrass	2-4″	Veg	Many
4/14	DAND = dandelion	6-8″	Veg	Many
4/14	HOWE = horseweed	0.5-1″	Veg	Few
4/14	WHCL = white clover	1-3″	Veg	Many
4/14	WICA = wild carrot	3-4″	Veg	Moderate
4/14	QUGR = quackgrass	6-8″	Veg	Many

Notes and Comments
1. Spray applied with 2 nozzle boom; one pass on each side of row. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Preemergence Weed Control in Grape – HTRC - 2015

Preemergence Weed Control in Grape – HTRC – 2015

Trial ID: 132-15-2 Location: East Lansing, MI
Protocol ID: 132-15-2 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	GRAPE 13/May/15 RATING 1-10	ANBG 13/May/15 RATING 1-10	CABR 13/May/15 RATING 1-10	QUGR 13/May/15 RATING 1-10	DAND 13/May/15 RATING 1-10
1	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	1.3	8.7	10.0	7.7	8.0
	sulfentrazone	3.15	EC	0.2952	lb ai/a						
	carfentrazone	0.35	EC	0.0328	lb ai/a						
	oryzalin	4	L	4	lb ai/a	EPRE					
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
2	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	1.0	10.0	10.0	9.3	8.7
	sulfentrazone	3.15	EC	0.2952	lb ai/a						
	carfentrazone	0.35	EC	0.0328	lb ai/a						
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE					
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
3	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	1.0	10.0	10.0	9.0	6.3
	sulfentrazone	3.15	EC	0.2952	lb ai/a						
	carfentrazone	0.35	EC	0.0328	lb ai/a						
	diuron	80	DF	4	lb ai/a	EPRE					
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
4	isoxaben	4.17	SC	1	lb ai/a	EPRE	1.3	9.7	10.0	8.7	9.0
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
5	pyroxasulfone	85	WDG	0.267	lb ai/a	EPRE	1.0	10.0	10.0	8.0	10.0
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
6	flazasulfuron	25	WG	0.063	lb ai/a	EPRE	1.0	1.7	4.0	5.0	6.7
7	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	1.0	1.0	5.3	1.3	4.0
8	flumioxazin	51	WDG	0.383	lb ai/a	EPRE	1.0	6.0	7.0	2.0	10.0
9	diuron	80	DF	4	lb ai/a	EPRE	1.3	6.7	7.0	5.3	4.0
	saflufenacil	70	WG	0.044	lb ai/a	EPRE					
10	oxyfluorfen	2	EC	2	lb ai/a	EPRE	1.3	1.0	6.3	4.7	6.0
11	rimsulfuron	25	DF	0.063	lb ai/a	EPRE	1.0	2.3	7.7	4.7	9.0
12	bicyclopyrone	1.67	SL	0.090	lb ai/a	EPRE	1.3	1.0	7.7	3.3	9.0
LSD P=.05							0.62	2.99	5.14	3.78	4.35
Standard Deviation							0.37	1.77	3.03	2.23	2.57
CV							32.12	31.18	38.32	38.77	33.99

Preemergence Weed Control in Grape – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	FIBW	WICA	GRAPE	CABR	QUGR
Pest Code							FIBW	WICA		CABR	QUGR
Crop Code									GRAPE		
Rating Date							13/May/15	13/May/15	12/Jun/15	12/Jun/15	12/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	9.0	3.0	1.0	9.3	6.3
	sulfentrazone	3.15	EC	0.2952	lb ai/a						
	carfentrazone	0.35	EC	0.0328	lb ai/a						
	oryzalin	4	L	4	lb ai/a	EPRE					
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
2	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	10.0	4.7	1.0	10.0	8.7
	sulfentrazone	3.15	EC	0.2952	lb ai/a						
	carfentrazone	0.35	EC	0.0328	lb ai/a						
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE					
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
3	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	7.7	3.5	1.0	10.0	10.0
	sulfentrazone	3.15	EC	0.2952	lb ai/a						
	carfentrazone	0.35	EC	0.0328	lb ai/a						
	diuron	80	DF	4	lb ai/a	EPRE					
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
4	isoxaben	4.17	SC	1	lb ai/a	EPRE	6.7	8.0	1.0	8.3	6.7
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
5	pyroxasulfone	85	WDG	0.267	lb ai/a	EPRE	2.0	7.3	1.0	10.0	8.3
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
6	flazasulfuron	25	WG	0.063	lb ai/a	EPRE	4.3	4.0	1.0	6.0	6.3
7	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	7.0	4.0	1.3	3.0	2.0
8	flumioxazin	51	WDG	0.383	lb ai/a	EPRE	9.7	2.3	1.0	3.0	3.3
9	diuron	80	DF	4	lb ai/a	EPRE	5.3	5.3	1.0	6.0	7.3
	saflufenacil	70	WG	0.044	lb ai/a	EPRE					
10	oxyfluorfen	2	EC	2	lb ai/a	EPRE	7.0	6.3	1.3	1.0	4.0
11	rimsulfuron	25	DF	0.063	lb ai/a	EPRE	6.3	5.0	1.3	9.3	7.7
12	bicyclopyrone	1.67	SL	0.090	lb ai/a	EPRE	7.0	4.0	1.3	4.3	4.3
LSD P=.05							6.31	6.15	0.56	4.11	5.07
Standard Deviation							3.73	3.62	0.33	2.42	2.99
CV							54.52	75.59	30.0	36.21	47.86

Preemergence Weed Control in Grape – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DAND	FIBW	WHCL	WICA	GRAPE
Pest Code											
Crop Code											
Rating Date							12/Jun/15	12/Jun/15	12/Jun/15	12/Jun/15	2/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	6.0	10.0	6.7	1.3	1.3
	sulfentrazone	3.15	EC	0.2952	lb ai/a						
	carfentrazone	0.35	EC	0.0328	lb ai/a						
	oryzalin	4	L	4	lb ai/a	EPRE					
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
2	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	8.3	8.3	7.7	1.7	1.0
	sulfentrazone	3.15	EC	0.2952	lb ai/a						
	carfentrazone	0.35	EC	0.0328	lb ai/a						
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE					
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
3	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	4.0	7.7	10.0	1.0	1.0
	sulfentrazone	3.15	EC	0.2952	lb ai/a						
	carfentrazone	0.35	EC	0.0328	lb ai/a						
	diuron	80	DF	4	lb ai/a	EPRE					
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
4	isoxaben	4.17	SC	1	lb ai/a	EPRE	8.7	3.3	8.7	6.3	1.0
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
5	pyroxasulfone	85	WDG	0.267	lb ai/a	EPRE	10.0	1.3	10.0	9.0	1.0
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
6	flazasulfuron	25	WG	0.063	lb ai/a	EPRE	10.0	3.0	9.3	7.3	1.0
7	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	4.0	3.7	8.3	4.3	1.3
8	flumioxazin	51	WDG	0.383	lb ai/a	EPRE	10.0	8.7	10.0	5.0	1.0
9	diuron	80	DF	4	lb ai/a	EPRE	5.0	2.7	10.0	5.7	1.0
	saflufenacil	70	WG	0.044	lb ai/a	EPRE					
10	oxyfluorfen	2	EC	2	lb ai/a	EPRE	6.3	4.0	9.7	7.3	2.0
11	rimsulfuron	25	DF	0.063	lb ai/a	EPRE	8.7	4.7	10.0	5.3	1.0
12	bicyclopyrone	1.67	SL	0.090	lb ai/a	EPRE	6.7	2.3	10.0	3.0	1.3
LSD P=.05							4.39	4.02	3.11	5.76	0.51
Standard Deviation							2.59	2.38	1.84	3.40	0.30
CV							35.46	47.8	19.98	71.18	25.84

Preemergence Weed Control in Grape – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CABR	ORGR	QUGR	FIBW	HOWE
	Pest Code						CABR	ORGR	QUGR	FIBW	HOWE
	Crop Code										
	Rating Date						2/Jul/15	2/Jul/15	2/Jul/15	2/Jul/15	2/Jul/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	10.0	10.0	5.3	9.0	10.0
	sulfentrazone	3.15	EC	0.2952	lb ai/a						
	carfentrazone	0.35	EC	0.0328	lb ai/a						
	oryzalin	4	L	4	lb ai/a	EPRE					
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
2	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	10.0	10.0	9.3	9.0	10.0
	sulfentrazone	3.15	EC	0.2952	lb ai/a						
	carfentrazone	0.35	EC	0.0328	lb ai/a						
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE					
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
3	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	10.0	9.3	8.3	5.7	10.0
	sulfentrazone	3.15	EC	0.2952	lb ai/a						
	carfentrazone	0.35	EC	0.0328	lb ai/a						
	diuron	80	DF	4	lb ai/a	EPRE					
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
	N Pak (AMS)	100	L	2.5	% v/v	EPRE					
4	isoxaben	4.17	SC	1	lb ai/a	EPRE	9.3	7.0	5.7	3.3	10.0
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
5	pyroxasulfone	85	WDG	0.267	lb ai/a	EPRE	10.0	10.0	7.7	1.0	10.0
	glyphosate	5.5	L	0.945	lb ai/a	EPRE					
6	flazasulfuron	25	WG	0.063	lb ai/a	EPRE	7.3	8.0	7.3	2.0	4.7
7	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	6.3	7.0	3.0	1.3	7.0
8	flumioxazin	51	WDG	0.383	lb ai/a	EPRE	8.3	7.3	2.0	7.7	4.0
9	diuron	80	DF	4	lb ai/a	EPRE	10.0	8.7	7.7	1.3	10.0
	saflufenacil	70	WG	0.044	lb ai/a	EPRE					
10	oxyfluorfen	2	EC	2	lb ai/a	EPRE	4.3	4.0	5.3	2.7	6.3
11	rimsulfuron	25	DF	0.063	lb ai/a	EPRE	9.0	8.3	7.0	3.0	1.7
12	bicyclopyrone	1.67	SL	0.090	lb ai/a	EPRE	3.3	3.7	4.7	3.3	8.7
LSD P=.05							3.57	4.44	4.94	3.86	5.16
Standard Deviation							2.11	2.62	2.92	2.28	3.05
CV							25.84	33.68	47.7	55.44	39.63

Preemergence Weed Control in Grape – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WICA		QUGR	PERG
	Pest Code						WICA		QUGR	PERG
	Crop Code							GRAPE		
	Rating Date						2/Jul/15	28/Jul/15	28/Jul/15	28/Jul/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	1.0	1.3	6.3	7.0
	sulfentrazone	3.15	EC	0.2952	lb ai/a					
	carfentrazone	0.35	EC	0.0328	lb ai/a					
	oryzalin	4	L	4	lb ai/a	EPRE				
	glyphosate	5.5	L	0.945	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
2	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	1.7	1.3	9.3	9.7
	sulfentrazone	3.15	EC	0.2952	lb ai/a					
	carfentrazone	0.35	EC	0.0328	lb ai/a					
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE				
	glyphosate	5.5	L	0.945	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
3	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	1.0	1.0	7.7	8.3
	sulfentrazone	3.15	EC	0.2952	lb ai/a					
	carfentrazone	0.35	EC	0.0328	lb ai/a					
	diuron	80	DF	4	lb ai/a	EPRE				
	glyphosate	5.5	L	0.945	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
4	isoxaben	4.17	SC	1	lb ai/a	EPRE	5.7	1.0	3.7	5.0
	glyphosate	5.5	L	0.945	lb ai/a	EPRE				
5	pyroxasulfone	85	WDG	0.267	lb ai/a	EPRE	9.0	1.3	7.3	9.3
	glyphosate	5.5	L	0.945	lb ai/a	EPRE				
6	flazasulfuron	25	WG	0.063	lb ai/a	EPRE	4.7	1.0	6.7	4.7
7	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	4.7	1.7	1.7	1.7
8	flumioxazin	51	WDG	0.383	lb ai/a	EPRE	3.0	1.0	2.0	3.3
9	diuron	80	DF	4	lb ai/a	EPRE	5.0	1.3	4.0	8.7
	saflufenacil	70	WG	0.044	lb ai/a	EPRE				
10	oxyfluorfen	2	EC	2	lb ai/a	EPRE	6.3	1.7	4.3	3.0
11	rimsulfuron	25	DF	0.063	lb ai/a	EPRE	6.0	1.3	4.3	8.0
12	bicyclopyrone	1.67	SL	0.090	lb ai/a	EPRE	1.7	1.7	6.0	1.7
LSD P=.05							5.24	1.09	4.75	4.70
Standard Deviation							3.10	0.64	2.80	2.78
CV							74.82	49.29	53.12	47.37

Preemergence Weed Control in Grape – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COMA	FIBW	HOWE	WICA
	Pest Code									
	Crop Code									
	Rating Date						28/Jul/15	28/Jul/15	28/Jul/15	28/Jul/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	7.7	9.3	7.0	1.7
	sulfentrazone	3.15	EC	0.2952	lb ai/a					
	carfentrazone	0.35	EC	0.0328	lb ai/a					
	oryzalin	4	L	4	lb ai/a	EPRE				
	glyphosate	5.5	L	0.945	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
2	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	10.0	8.3	4.7	1.0
	sulfentrazone	3.15	EC	0.2952	lb ai/a					
	carfentrazone	0.35	EC	0.0328	lb ai/a					
	indaziflam	1.67	SC	0.065	lb ai/a	EPRE				
	glyphosate	5.5	L	0.945	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
3	Zeus Prime XC	3.5	EC	0.328	lb ai/a	EPRE	10.0	8.0	10.0	1.0
	sulfentrazone	3.15	EC	0.2952	lb ai/a					
	carfentrazone	0.35	EC	0.0328	lb ai/a					
	diuron	80	DF	4	lb ai/a	EPRE				
	glyphosate	5.5	L	0.945	lb ai/a	EPRE				
	N Pak (AMS)	100	L	2.5	% v/v	EPRE				
4	isoxaben	4.17	SC	1	lb ai/a	EPRE	7.0	3.0	10.0	5.7
	glyphosate	5.5	L	0.945	lb ai/a	EPRE				
5	pyroxasulfone	85	WDG	0.267	lb ai/a	EPRE	10.0	2.0	9.3	7.0
	glyphosate	5.5	L	0.945	lb ai/a	EPRE				
6	flazasulfuron	25	WG	0.063	lb ai/a	EPRE	10.0	2.3	6.7	6.0
7	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	10.0	1.3	10.0	4.0
8	flumioxazin	51	WDG	0.383	lb ai/a	EPRE	10.0	6.7	7.7	3.0
9	diuron	80	DF	4	lb ai/a	EPRE	10.0	3.7	10.0	5.3
	saflufenacil	70	WG	0.044	lb ai/a	EPRE				
10	oxyfluorfen	2	EC	2	lb ai/a	EPRE	10.0	4.7	6.0	5.7
11	rimsulfuron	25	DF	0.063	lb ai/a	EPRE	7.0	6.0	2.7	4.3
12	bicyclopyrone	1.67	SL	0.090	lb ai/a	EPRE	10.0	1.3	10.0	4.0
LSD P=.05							4.28	3.85	4.89	6.99
Standard Deviation							2.53	2.27	2.89	4.13
CV							27.15	48.16	36.84	101.73

Postemergence Weed Control in Grape – HTRC - 2015

Project Code: 132-15-3 **Location: East Lansing, MI**
Block 37; Rows 18-21

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Grapes **Variety: Frontenac, Marechal Foch**
Planting Method: Seedling **Planting Date: 1996**
Spacing: 7 ft; 4 vines/plot **Row Spacing: 10 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 30 ft long

Soil Type: Capac loam **OM: 5.1%** **pH: 7.1**
Sand: 53% **Silt: 30%** **Clay: 17%** **CEC: 12.8**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
EPOS	5/21/15	11:00 am	55/55	F	Damp	1-2 W	50	100% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/21	GRAPE	4-5′	Pre Bud Break	Good
5/21	ANBG = annual bluegrass	5-7″	Flower	Many
5/21	QUGR = quackgrass	12-18″	Veg	Many
5/21	COLQ = common lambsquarters	1-8″	Veg	Many
5/21	CUDO = curly dock	12-18″	Veg	Few
5/21	DAND = dandelion	12-18″	Late flower	Many
5/21	HOWE = horseweed	2-6″	Rosette	Few
5/21	WHCL = white clover	4-6″	Veg	Moderate
5/21	WICA = wild carrot	4-8″	Veg	Many

Notes and Comments
1. Spray applied with 2 nozzle boom; one pass on each side of row. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Postemergence Weed Control in Grape – HTRC - 2015

Postemergence Weed Control in Grape – HTRC – 2015

Trial ID: 132-15-3 Location: East Lansing, MI
Protocol ID: 132-15-3 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		CABR	QUGR	DAND
Pest Code										
Crop Code							GRAPE			
Rating Date							12/Jun/15	12/Jun/15	12/Jun/15	12/Jun/15
Rating Type							RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10
1	glufosinate - Lifeline	2.34	L	0.88	lb ai/a	EPOS	1.0	8.7	8.3	8.7
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
2	glufosinate - Lifeline	2.34	L	1.17	lb ai/a	EPOS	1.0	8.7	9.0	9.7
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
3	glufosinate – Rely 280	2.34	L	0.88	lb ai/a	EPOS	1.3	9.7	9.0	10.0
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
4	glufosinate – Rely 280	2.34	L	1.17	lb ai/a	EPOS	1.0	10.0	9.3	10.0
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
5	glufosinate - Lifeline	2.34	L	0.88	lb ai/a	EPOS	1.3	8.7	8.3	9.3
	KFD-155-01	2	XL	0.086	lb ai/a	EPOS				
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
6	glufosinate - Lifeline	2.34	L	1.02	lb ai/a	EPOS	1.0	9.0	8.7	10.0
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
7	glufosinate - Lifeline	2.34	L	1.02	lb ai/a	EPOS	1.0	8.3	8.7	10.0
	KFD-155-01	2	XL	0.1	lb ai/a	EPOS				
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
8	Untreated						1.0	1.3	1.7	1.7
LSD P=.05							0.47	1.58	1.77	1.33
Standard Deviation							0.27	0.90	1.01	0.76
CV							24.67	11.23	12.81	8.77

Postemergence Weed Control in Grape – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WHCL	WICA	GRAPE	CABR
	Pest Code						WHCL	WICA		CABR
	Crop Code								GRAPE	
	Rating Date						12/Jun/15	12/Jun/15	2/Jul/15	2/Jul/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	glufosinate - Lifeline	2.34	L	0.88	lb ai/a	EPOS	10.0	2.0	1.0	6.3
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
2	glufosinate - Lifeline	2.34	L	1.17	lb ai/a	EPOS	10.0	2.7	1.0	5.0
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
3	glufosinate – Rely 280	2.34	L	0.88	lb ai/a	EPOS	9.0	3.7	1.3	5.3
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
4	glufosinate – Rely 280	2.34	L	1.17	lb ai/a	EPOS	10.0	3.3	1.0	5.0
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
5	glufosinate - Lifeline	2.34	L	0.88	lb ai/a	EPOS	10.0	2.7	1.3	4.0
	KFD-155-01	2	XL	0.086	lb ai/a	EPOS				
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
6	glufosinate - Lifeline	2.34	L	1.02	lb ai/a	EPOS	9.0	3.3	1.0	2.3
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
7	glufosinate - Lifeline	2.34	L	1.02	lb ai/a	EPOS	10.0	1.3	1.3	4.3
	KFD-155-01	2	XL	0.1	lb ai/a	EPOS				
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
8	Untreated						1.0	1.0	1.0	4.0
LSD P=.05							1.57	4.05	0.62	5.43
Standard Deviation							0.90	2.31	0.35	3.10
CV							10.39	92.58	31.43	68.2

Postemergence Weed Control in Grape – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ORGR 2/Jul/15 RATING 1-10	QUGR 2/Jul/15 RATING 1-10	WICA 2/Jul/15 RATING 1-10	GRAPE 28/Jul/15 RATING 1-10
1	glufosinate - Lifeline	2.34	L	0.88	lb ai/a	EPOS	7.7	6.0	3.3	1.3
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
2	glufosinate - Lifeline	2.34	L	1.17	lb ai/a	EPOS	6.0	7.7	5.3	1.3
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
3	glufosinate – Rely 280	2.34	L	0.88	lb ai/a	EPOS	4.7	5.3	2.3	1.0
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
4	glufosinate – Rely 280	2.34	L	1.17	lb ai/a	EPOS	7.0	6.3	3.7	1.0
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
5	glufosinate - Lifeline	2.34	L	0.88	lb ai/a	EPOS	3.7	6.0	6.3	2.0
	KFD-155-01	2	XL	0.086	lb ai/a	EPOS				
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
6	glufosinate - Lifeline	2.34	L	1.02	lb ai/a	EPOS	5.0	5.3	3.7	1.3
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
7	glufosinate - Lifeline	2.34	L	1.02	lb ai/a	EPOS	5.7	7.3	1.7	1.3
	KFD-155-01	2	XL	0.1	lb ai/a	EPOS				
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
8	Untreated						5.3	5.3	1.0	1.0
LSD P=.05							3.69	4.45	3.33	1.00
Standard Deviation							2.11	2.54	1.90	0.57
CV							37.44	41.21	55.63	44.3

Postemergence Weed Control in Grape – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PERG	QUGR	HOWE	WICA
	Pest Code						PERG	QUGR	HOWE	WICA
	Crop Code									
	Rating Date						28/Jul/15	28/Jul/15	28/Jul/15	28/Jul/15
	Rating Type						RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10
1	glufosinate - Lifeline	2.34	L	0.88	lb ai/a	EPOS	5.3	1.7	10.0	2.7
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
2	glufosinate - Lifeline	2.34	L	1.17	lb ai/a	EPOS	1.0	1.3	9.7	4.3
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
3	glufosinate – Rely 280	2.34	L	0.88	lb ai/a	EPOS	6.0	1.7	9.3	2.7
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
4	glufosinate – Rely 280	2.34	L	1.17	lb ai/a	EPOS	6.3	2.0	10.0	4.0
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
5	glufosinate - Lifeline	2.34	L	0.88	lb ai/a	EPOS	7.0	2.7	9.0	2.3
	KFD-155-01	2	XL	0.086	lb ai/a	EPOS				
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
6	glufosinate - Lifeline	2.34	L	1.02	lb ai/a	EPOS	4.3	1.7	9.3	6.0
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
7	glufosinate - Lifeline	2.34	L	1.02	lb ai/a	EPOS	6.7	1.7	10.0	2.7
	KFD-155-01	2	XL	0.1	lb ai/a	EPOS				
	N Pak (AMS)	100	L	5	% v/v	EPOS				
	NIS	100	SL	0.25	% v/v	EPOS				
8	Untreated						3.7	4.3	4.0	3.3
LSD P=.05							3.77	2.50	2.67	4.34
Standard Deviation							2.15	1.42	1.52	2.48
CV							42.66	67.04	17.07	70.81

Postemergence Broadleaf and Grass Control in Concord Grape – HTRC - 2015

Project Code: 132-15-4 **Location:** East Lansing, MI
Block 37; Rows 1-4

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Grape **Variety:** Concord
Planting Method: Seedling **Planting Date:** 1967
Spacing: 7 ft, 4 vines/plot **Row Spacing:** 10 ft
Tillage Type: Conventional **Study Design:** RCB **Replications:** 3
Plot Size: 6 ft wide x 30 ft long

Soil Type: Capac loam **OM:** 5.1% **pH:** 7.1
Sand: 53% **Silt:** 30% **Clay:** 17% **CEC:** 12.8

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PO1	5/18/15	2:30 pm	82/70	F	Damp	5-7 SW	48	50% Cloudy	N
PO2	6/29/15	3:10 pm	78/71	F	Damp	2-6 SE	54	70% Cloudy	N
PO3	8/6/15	-	85/72	F	Dry	2-4 E	38	30% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/18	GRAPE	4.5′	Pre Bud Break	Good
5/18	ANBG = annual bluegrass	10-12″	Flower	Many
5/18	CATH = Canada thistle	10-12	Veg	Moderate
5/18	DAND = dandelion	10-14″	Flower	Many
5/18	FIBW = field bindweed	2-4″	Veg	Many
5/18	GORO = goldenrod	8-12″	Veg	Moderate
5/18	ORGR = orchardgrass	14-18″	Flower	Many
5/18	QUGR = quackgrass	14-18″	Veg	Many
5/18	WHCA = white campion	10-12″	Veg	Few
5/18	WHCL = white clover	3-6″	Veg	Moderate
5/18	WICA = wild carrot	6-8″	Veg	Moderate
6/29	ANBG = annual bluegrass	12-18″	Flower	Many
6/29	CATH = Canada thistle	24-36″	Veg	Few
6/29	DAND = dandelion	4-18″	Veg	Many
6/29	FIBW = field bindweed	2-4″	Flower	Many
6/29	GORO = goldenrod	3-4′	Veg	Moderate
6/29	ORGR = orchardgrass	3-4′	Flower	Moderate
6/29	QUGR = quackgrass	3-4′	Flower	Many
6/29	WHCA = white campion	24-36″	Veg	Few
6/29	WHCL = white clover	6-8″	Flower	Moderate
6/29	WICA = wild carrot	1-24″	Early Flower	Moderate
8/6	ANBG = annual bluegrass	12-18″	Senescence	Many
8/6	COMA = common mallow	3-6″	Post Flower	Moderate
8/6	DAND = dandelion	12-18″	Post Flower	Moderate
8/6	FIBW = field bindweed	2-4″	Flower	Many
8/6	HOWE = horseweed	4-5′	Flower	Moderate
8/6	QUGR = quackgrass	2-2.5′	Late Flower	Many
8/6	WHCL = white clover	2-4″	Flower	Moderate
8/6	WICA = wild carrot	12-48″	Flower	Many

Notes and Comments
1. Spray applied with 2 nozzle boom; one pass on each side of row. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Postemergence Broadleaf and Grass Control in Concord Grape – HTRC - 2015

Postemergence Broadleaf and Grass Control in Concord Grape – HTRC – 2015

Trial ID: 132-15-4 Location: East Lansing, MI
Protocol ID: 132-15-4 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	GRAPE	CABR	QUGR	COMA	CUDO
	Pest Code							CABR	QUGR	COMA	CUDO
	Crop Code						GRAPE				
	Rating Date						11/Jun/15	11/Jun/15	11/Jun/15	11/Jun/15	11/Jun/15
	Rating Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.4	L	1	lb ai/a	PO1,2,3	1.0	9.7	10.0	7.0	8.3
2	glufosinate	2.34	L	1	lb ai/a	PO1,2,3	1.0	5.0	7.7	10.0	7.0
3	paraquat	2	SL	1	lb ai/a	PO1,2,3	1.0	8.3	7.0	7.3	10.0
4	Zeus Prime XC	3.5	EC	0.41	lb ai/a	PO1,2,3	1.0	7.3	3.3	10.0	9.3
	sulfentrazone	3.15	EC	0.369	lb ai/a						
	carfentrazone	0.35	EC	0.041	lb ai/a						
	sethoxydim	1.53	EC	0.38	lb ai/a	PO1,2,3					
5	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2,3	1.3	4.0	3.3	4.0	10.0
	clethodim	0.97	EC	0.012	lb ai/a	PO1,2,3					
6	clopyralid	3	L	0.125	lb ai/a	PO1,2,3	1.0	7.0	9.0	10.0	7.3
	fluazifop-P	2	EC	0.5	lb ai/a	PO1,2,3					
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1,2,3	1.3	9.7	7.3	10.0	7.7
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2,3					
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2,3					
	NIS	100	SL	0.25	% v/v	PO1,2,3					
8	Untreated						1.3	1.0	1.0	4.0	10.0
LSD P=.05							0.62	5.60	3.75	6.32	5.43
Standard Deviation							0.35	3.20	2.14	3.61	3.10
CV							31.43	49.15	35.17	46.29	35.57

Postemergence Broadleaf and Grass Control in Concord Grape – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DAND	FIBW	WHCA	WHCL	WICA
Pest Code											
Crop Code											
Rating Date							11/Jun/15	11/Jun/15	11/Jun/15	11/Jun/15	11/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.4	L	1	lb ai/a	PO1,2,3	9.7	5.0	10.0	10.0	4.7
2	glufosinate	2.34	L	1	lb ai/a	PO1,2,3	10.0	1.7	10.0	10.0	7.0
3	paraquat	2	SL	1	lb ai/a	PO1,2,3	9.3	3.3	10.0	10.0	10.0
4	Zeus Prime XC	3.5	EC	0.41	lb ai/a	PO1,2,3	5.3	8.7	10.0	10.0	3.3
	sulfentrazone	3.15	EC	0.369	lb ai/a						
	carfentrazone	0.35	EC	0.041	lb ai/a						
	sethoxydim	1.53	EC	0.38	lb ai/a	PO1,2,3					
5	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2,3	6.3	1.0	10.0	1.7	7.7
	clethodim	0.97	EC	0.012	lb ai/a	PO1,2,3					
6	clopyralid	3	L	0.125	lb ai/a	PO1,2,3	7.0	2.0	4.0	10.0	4.7
	fluazifop-P	2	EC	0.5	lb ai/a	PO1,2,3					
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1,2,3	4.7	4.7	10.0	8.3	4.3
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2,3					
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2,3					
	NIS	100	SL	0.25	% v/v	PO1,2,3					
8	Untreated						3.0	1.0	7.0	1.0	4.7
LSD P=.05							4.53	3.19	4.38	1.20	6.53
Standard Deviation							2.59	1.82	2.50	0.69	3.73
CV							37.41	53.25	28.21	8.99	64.43

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	GRAPE	CABR	ORGR	QUGR	COMA
Pest Code											
Crop Code											
Rating Date							2/Jul/15	2/Jul/15	2/Jul/15	2/Jul/15	2/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.4	L	1	lb ai/a	PO1,2,3	1.0	10.0	9.7	10.0	7.7
2	glufosinate	2.34	L	1	lb ai/a	PO1,2,3	1.3	9.7	6.7	8.0	9.3
3	paraquat	2	SL	1	lb ai/a	PO1,2,3	2.0	9.7	10.0	8.7	9.0
4	Zeus Prime XC	3.5	EC	0.41	lb ai/a	PO1,2,3	1.7	2.3	3.0	2.3	10.0
	sulfentrazone	3.15	EC	0.369	lb ai/a						
	carfentrazone	0.35	EC	0.041	lb ai/a						
	sethoxydim	1.53	EC	0.38	lb ai/a	PO1,2,3					
5	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2,3	1.0	9.0	7.7	5.3	9.3
	clethodim	0.97	EC	0.012	lb ai/a	PO1,2,3					
6	clopyralid	3	L	0.125	lb ai/a	PO1,2,3	1.3	9.0	10.0	9.0	9.6
	fluazifop-P	2	EC	0.5	lb ai/a	PO1,2,3					
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1,2,3	1.7	9.3	6.7	8.7	10.0
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2,3					
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2,3					
	NIS	100	SL	0.25	% v/v	PO1,2,3					
8	Untreated						1.7	8.3	2.7	1.7	10.0
LSD P=.05							1.40	1.93	4.32	2.53	3.01
Standard Deviation							0.80	1.10	2.47	1.45	1.71
CV							54.98	13.09	35.04	21.55	18.23

Postemergence Broadleaf and Grass Control in Concord Grape – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	FIBW	HOWE	WICA	GRAPE	PERG
Pest Code							FIBW	HOWE	WICA		PERG
Crop Code										GRAPE	
Rating Date							2/Jul/15	2/Jul/15	2/Jul/15	28/Jul/15	28/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.4	L	1	lb ai/a	PO1,2,3	4.3	8.3	1.3	1.3	9.7
2	glufosinate	2.34	L	1	lb ai/a	PO1,2,3	6.3	9.0	4.0	1.3	8.0
3	paraquat	2	SL	1	lb ai/a	PO1,2,3	6.7	10.0	10.0	1.0	8.7
4	Zeus Prime XC	3.5	EC	0.41	lb ai/a	PO1,2,3	9.3	6.0	3.0	1.3	5.7
	sulfentrazone	3.15	EC	0.369	lb ai/a						
	carfentrazone	0.35	EC	0.041	lb ai/a						
	sethoxydim	1.53	EC	0.38	lb ai/a	PO1,2,3					
5	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2,3	7.3	10.0	10.0	1.0	1.7
	clethodim	0.97	EC	0.012	lb ai/a	PO1,2,3					
6	clopyralid	3	L	0.125	lb ai/a	PO1,2,3	3.7	9.3	8.3	1.7	8.7
	fluazifop-P	2	EC	0.5	lb ai/a	PO1,2,3					
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1,2,3	8.0	9.3	5.0	2.3	5.7
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2,3					
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2,3					
	NIS	100	SL	0.25	% v/v	PO1,2,3					
8	Untreated						1.0	7.0	1.0	1.0	1.0
LSD P=.05							2.08	3.71	5.13	1.20	2.97
Standard Deviation							1.19	2.12	2.93	0.69	1.70
CV							20.32	24.55	54.89	49.87	27.68

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COMA	FIBW	HOWE	WICA	GRAPE
Pest Code							COMA	FIBW	HOWE	WICA	
Crop Code											GRAPE
Rating Date							28/Jul/15	28/Jul/15	28/Jul/15	28/Jul/15	17/Aug/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.4	L	1	lb ai/a	PO1,2,3	9.0	7.7	8.3	8.3	2.0
2	glufosinate	2.34	L	1	lb ai/a	PO1,2,3	10.0	2.7	10.0	8.0	1.7
3	paraquat	2	SL	1	lb ai/a	PO1,2,3	7.0	3.3	10.0	10.0	1.3
4	Zeus Prime XC	3.5	EC	0.41	lb ai/a	PO1,2,3	10.0	9.0	3.0	3.7	1.3
	sulfentrazone	3.15	EC	0.369	lb ai/a						
	carfentrazone	0.35	EC	0.041	lb ai/a						
	sethoxydim	1.53	EC	0.38	lb ai/a	PO1,2,3					
5	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2,3	10.0	2.3	5.7	10.0	1.0
	clethodim	0.97	EC	0.012	lb ai/a	PO1,2,3					
6	clopyralid	3	L	0.125	lb ai/a	PO1,2,3	7.7	2.7	10.0	6.7	1.0
	fluazifop-P	2	EC	0.5	lb ai/a	PO1,2,3					
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1,2,3	7.7	5.0	8.0	3.3	1.0
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2,3					
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2,3					
	NIS	100	SL	0.25	% v/v	PO1,2,3					
8	Untreated						7.0	3.3	5.0	2.0	1.7
LSD P=.05							5.26	2.65	3.78	4.53	0.98
Standard Deviation							3.00	1.51	2.16	2.59	0.56
CV							35.16	33.6	28.8	39.79	40.85

Postemergence Broadleaf and Grass Control in Concord Grape – HTRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	QUGR	COMA	FIBW	HOWE	WICA
Pest Code							QUGR	COMA	FIBW	HOWE	WICA
Crop Code											
Rating Date							17/Aug/15	17/Aug/15	17/Aug/15	17/Aug/15	17/Aug/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.4	L	1	lb ai/a	PO1,2,3	9.7	8.0	7.3	8.7	5.7
2	glufosinate	2.34	L	1	lb ai/a	PO1,2,3	6.0	8.3	3.3	10.0	7.0
3	paraquat	2	SL	1	lb ai/a	PO1,2,3	4.0	7.0	4.0	10.0	10.0
4	Zeus Prime XC	3.5	EC	0.41	lb ai/a	PO1,2,3	5.3	10.0	10.0	4.3	4.3
	sulfentrazone	3.15	EC	0.369	lb ai/a						
	carfentrazone	0.35	EC	0.041	lb ai/a						
	sethoxydim	1.53	EC	0.38	lb ai/a	PO1,2,3					
5	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2,3	4.0	10.0	4.7	8.0	6.0
	clethodim	0.97	EC	0.012	lb ai/a	PO1,2,3					
6	clopyralid	3	L	0.125	lb ai/a	PO1,2,3	9.0	8.7	3.0	7.7	6.3
	fluazifop-P	2	EC	0.5	lb ai/a	PO1,2,3					
7	bicyclopyrone	1.67	SL	0.045	lb ai/a	PO1,2,3	7.7	9.3	7.3	8.7	4.0
	pyraflufen-ethyl	0.177	SC	0.0055	lb ai/a	PO1,2,3					
	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1,2,3					
	NIS	100	SL	0.25	% v/v	PO1,2,3					
8	Untreated						2.0	10.0	2.7	2.7	1.3
LSD P=.05							5.03	2.98	2.15	4.10	4.49
Standard Deviation							2.87	1.70	1.22	2.34	2.56
CV							48.24	19.06	23.14	31.18	45.93

Postemergence Annual Grass Control in Concord Grape – Grieser - 2015

Project Code: 132-15-5 **Location: Watervliet, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Grape **Variety: Concord**
Planting Method: Seedling **Planting Date: Unknown**
Spacing: 9 ft **Row Spacing: 9 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 30 ft long

Soil Type: Sand **OM: 2.8%** **pH: 6.6**
Sand: 89% **Silt: 6.6%** **Clay: 4.9%** **CEC: 5.7**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PO1	7/23/15	12:05 pm	80/76	F	Dry	1-2 SW	40	0% Cloudy	N
PO2	8/20/15	1:00 pm	66/60	F	Damp	7-9 SW	60	100% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
7/23	GRAPE		Green Fruit	Good
7/23	LACG = large crabgrass	3-12″	Veg	Many
8/20	GRAPE		Mature Fruit	Good
8/20	LACG = large crabgrass	4-12″	Seed	Many
8/20	SFGE = smallflower geranium	3-5″	Veg	Moderate

Notes and Comments
1. Spray applied with 2 nozzle boom; one pass on each side of row. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Postemergence Annual Grass Control in Concord Grape – Grieser - 2015

Postemergence Annual Grass Control in Concord Grape – Grieser – 2015

Trial ID: 132-15-5 Location: Watervliet, MI
Protocol ID: 132-15-5 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
Pest Code								LACG		LACG	SFGE
Crop Code							GRAPE		GRAPE		
Rating Date							20/Aug/15	20/Aug/15	19/Sep/15	19/Sep/15	19/Sep/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Untreated						1.0	3.0	1.0	1.0	1.7
2	glyphosate	5.5	L	1.375	lb ai/a	PO1, PO2	1.3	6.0	1.0	9.7	8.0
3	glufosinate	2.34	L	0.88	lb ai/a	PO1, PO2	1.0	4.7	1.0	10.0	7.3
	NIS	100	SL	0.25	% v/v	PO1, PO2					
4	fluazifop-P	2	EC	0.375	lb ai/a	PO1, PO2	1.7	6.7	1.0	10.0	3.0
	COC	100	SL	1	% v/v	PO1, PO2					
5	sethoxydim	1.53	EC	0.57	lb ai/a	PO1, PO2	1.0	4.7	1.0	10.0	4.0
	COC	100	SL	1	% v/v	PO1, PO2					
6	quizalofop-P-ethyl	0.88	EC	0.08	lb ai/a	PO1, PO2	1.3	4.7	1.0	10.0	1.7
	COC	100	SL	1	% v/v	PO1, PO2					
7	clethodim	0.97	EC	0.12	lb ai/a	PO1, PO2	1.7	4.3	1.0	10.0	1.7
	COC	100	SL	1	% v/v	PO1, PO2					
8	paraquat	2	SL	1	lb ai/a	PO1, PO2	1.0	4.7	1.0	10.0	7.7
	NIS	100	SL	0.25	% v/v	PO1, PO2					
LSD P=.05							0.65	3.01	0.00	0.36	4.06
Standard Deviation							0.37	1.72	0.00	0.20	2.32
CV							29.6	35.59	0.0	2.31	52.93

Weed Control in Raspberry – CRC - 2015

Project Code: 131-15-1 **Location: Clarksville, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Raspberry **Variety: Caroline**
Planting Method: Plants **Planting Date: 2009** **Harvest Date: See notes**
Spacing: Solid Row **Row Spacing: 10 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Lapeer sandy loam **OM: 2.8%** **pH: 6.3**
Sand: 44% **Silt: 39%** **Clay: 17%** **CEC: 9.1**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/17/15	10:45 pm	62/53	F	Damp	0-2 SE	50	0% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/17	RASPBERRY	0.5-1″	1-3 Leaf	Low
4/17	ANBG = annual bluegrass	2-3″	Veg	Many
4/17	COCW = common chickweed	1-2″	Veg	Few
4/17	DAND = dandelion	4-6″	Veg	Many
4/17	HOWE = horseweed	2-6″	Veg	Few
4/17	RESO = red sorrel	1-2″	Veg	Moderate
4/17	YERO = yellow rocket	4-6″	Veg	Moderate

Notes and Comments
1. Spray applied with 4 nozzle boom; over the top of each row. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvest Dates: 8/20, 8/27, 9/3, 9/10, 9/17, and 9/24.

Weed Control in Raspberry – CRC - 2015

Weed Control in Raspberry – CRC – 2015

Trial ID: 131-15-1 Location: Clarksville, MI
Protocol ID: 131-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RASP	COLQ	DAND	HOWE	ROFB
Pest Code											
Crop Code											
Rating Date							9/Jun/15	9/Jun/15	9/Jun/15	9/Jun/15	9/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	terbacil	80	WDG	1.6	lb ai/a	PRE	1.7	8.7	7.7	10.0	9.0
2	diuron	80	DF	3	lb ai/a	PRE	2.0	10.0	2.7	7.0	9.7
	sulfentrazone	4	F	0.25	lb ai/a	PRE					
3	norflurazon	80	DF	3	lb ai/a	PRE	2.3	4.0	4.0	4.0	7.3
4	terbacil	80	WDG	1	lb ai/a	PRE	1.3	10.0	6.0	7.7	6.0
	norflurazon	80	DF	2	lb ai/a	PRE					
5	flumioxazin	51	WDG	0.255	lb ai/a	PRE	3.3	10.0	1.3	1.7	4.0
6	isoxaben	75	DF	1	lb ai/a	PRE	2.7	8.3	6.3	4.0	7.0
7	isoxaben	75	DF	1	lb ai/a	PRE	2.3	9.3	3.3	1.0	4.7
	norflurazon	80	DF	2	lb ai/a	PRE					
8	terbacil	80	WDG	1	lb ai/a	PRE	2.7	9.7	6.3	7.7	5.0
	saflufenacil	70	WG	0.044	lb ai/a	PRE					
9	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	3.0	7.0	4.3	2.0	2.7
10	Untreated						2.3	1.0	1.7	4.7	3.0
LSD P=.05							1.99	2.80	5.41	6.07	6.48
Standard Deviation							1.16	1.63	3.15	3.54	3.78
CV							49.06	20.95	72.19	71.25	64.73

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RESO	WHCA	RASP	LACG	QUGR
Pest Code											
Crop Code											
Rating Date							9/Jun/15	9/Jun/15	15/Jul/15	15/Jul/15	15/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	terbacil	80	WDG	1.6	lb ai/a	PRE	7.0	5.3	1.7	5.0	9.7
2	diuron	80	DF	3	lb ai/a	PRE	10.0	7.0	2.0	6.0	9.0
	sulfentrazone	4	F	0.25	lb ai/a	PRE					
3	norflurazon	80	DF	3	lb ai/a	PRE	4.7	4.7	2.0	8.3	10.0
4	terbacil	80	WDG	1	lb ai/a	PRE	4.3	6.7	1.3	8.0	10.0
	norflurazon	80	DF	2	lb ai/a	PRE					
5	flumioxazin	51	WDG	0.255	lb ai/a	PRE	5.3	7.7	4.0	5.3	7.7
6	isoxaben	75	DF	1	lb ai/a	PRE	4.7	6.7	2.3	3.0	9.3
7	isoxaben	75	DF	1	lb ai/a	PRE	4.7	6.7	2.7	9.0	7.7
	norflurazon	80	DF	2	lb ai/a	PRE					
8	terbacil	80	WDG	1	lb ai/a	PRE	5.7	6.3	1.7	3.7	9.7
	saflufenacil	70	WG	0.044	lb ai/a	PRE					
9	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	1.0	6.0	2.7	7.3	9.0
10	Untreated						4.7	6.3	2.7	1.7	9.0
LSD P=.05							6.83	7.43	2.07	3.32	3.21
Standard Deviation							3.98	4.33	1.21	1.93	1.87
CV							76.58	68.35	52.52	33.72	20.58

Weed Control in Raspberry – CRC - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COLQ	HOWE	ROFB	RASP	RASP
Crop Code										RASP	RASP
Rating Date							15/Jul/15	15/Jul/15	15/Jul/15	20/Aug/15	27/Aug/15
Rating Type							RATING	RATING	RATING	HARVEST	HARVEST
Rating Unit							1-10	1-10	1-10	KG/PLOT	KG/PLOT
1	terbacil	80	WDG	1.6	lb ai/a	PRE	10.0	10.0	10.0	0.46	0.86
2	diuron	80	DF	3	lb ai/a	PRE	10.0	10.0	10.0	0.36	0.61
	sulfentrazone	4	F	0.25	lb ai/a	PRE					
3	norflurazon	80	DF	3	lb ai/a	PRE	9.0	4.3	5.0	0.35	0.60
4	terbacil	80	WDG	1	lb ai/a	PRE	10.0	10.0	10.0	0.59	1.00
	norflurazon	80	DF	2	lb ai/a	PRE					
5	flumioxazin	51	WDG	0.255	lb ai/a	PRE	10.0	2.3	7.0	0.37	0.73
6	isoxaben	75	DF	1	lb ai/a	PRE	10.0	7.3	7.0	0.62	0.99
7	isoxaben	75	DF	1	lb ai/a	PRE	10.0	4.0	6.0	0.26	0.49
	norflurazon	80	DF	2	lb ai/a	PRE					
8	terbacil	80	WDG	1	lb ai/a	PRE	7.3	10.0	10.0	0.46	0.91
	saflufenacil	70	WG	0.044	lb ai/a	PRE					
9	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	7.3	6.0	6.3	0.49	0.88
10	Untreated						4.0	6.0	7.0	0.30	0.47
LSD P=.05							4.09	5.26	6.78	0.270	0.465
Standard Deviation							2.38	3.07	3.95	0.157	0.271
CV							27.19	43.83	50.48	36.84	35.94

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RASP	RASP	RASP	RASP	RASP
Crop Code											
Rating Date							3/Sep/15	10/Sep/15	17/Sep/15	24/Sep/15	
Rating Type							HARVEST	HARVEST	HARVEST	HARVEST	TOTAL
Rating Unit							KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT
1	terbacil	80	WDG	1.6	lb ai/a	PRE	0.91	0.87	0.79	0.71	4.59
2	diuron	80	DF	3	lb ai/a	PRE	0.82	0.76	0.74	0.81	4.10
	sulfentrazone	4	F	0.25	lb ai/a	PRE					
3	norflurazon	80	DF	3	lb ai/a	PRE	0.66	0.58	0.76	0.77	3.73
4	terbacil	80	WDG	1	lb ai/a	PRE	1.06	1.04	0.97	0.78	5.43
	norflurazon	80	DF	2	lb ai/a	PRE					
5	flumioxazin	51	WDG	0.255	lb ai/a	PRE	0.77	0.84	0.73	0.55	3.99
6	isoxaben	75	DF	1	lb ai/a	PRE	1.04	0.90	0.70	0.73	4.98
7	isoxaben	75	DF	1	lb ai/a	PRE	0.55	0.56	0.51	0.52	2.90
	norflurazon	80	DF	2	lb ai/a	PRE					
8	terbacil	80	WDG	1	lb ai/a	PRE	0.81	0.58	0.74	0.75	4.25
	saflufenacil	70	WG	0.044	lb ai/a	PRE					
9	pyroxasulfone	85	WDG	0.267	lb ai/a	PRE	0.74	0.93	0.72	0.77	4.51
10	Untreated						0.49	0.49	0.48	0.45	2.68
LSD P=.05							0.470	0.430	0.368	0.470	1.801
Standard Deviation							0.274	0.251	0.215	0.274	1.050
CV							34.91	33.23	30.15	40.07	25.51

Preemergence Weed Control in Third Year Fraser Fir – Wahmhoff - 2015

Project Code: XMAS-15-1 **Location: Gobles, MI**

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Fir **Variety: Fraser Fir**
Planting Method: Seeded **Planting Date: 2012**
Spacing: 6 ft **Row Spacing: 6 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 35 ft long

Soil Type: Spinks-Oshtemo sandy loam **OM: 2.0%** **pH: 4.6**
Sand: 87% **Silt: 7%** **Clay: 6%** **CEC: 5.1**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
LPRE	5/1/15	11:00 am	62/53	F	Damp	2-3 NW	41	0% Cloudy	N
PO1	7/23/15	10:00 am	70/72	F	Damp	1-2 SW	57	30% Cloudy	Y

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/1	FRASER FIR	12-18″	Pre-Bud Break	Good
5/1	HOWE = horseweed	1-2″	Rosette	Many
5/1	MECR = mouseear cress	4-6″	Flower	Many
7/23	FRASER FIR	18-24″	6-20″ Growth	Good
7/23	COMW = common milkweed	6-30″	Flower	Moderate
7/23	HOWE = horseweed	6-36″	Flower	Many
7/23	LACG = large crabgrass	6-18″	Seed	Many

Notes and Comments
1. Spray applied with 4 nozzle boom; over the top of trees. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Preemergence Weed Control in Third Year Fraser Fir – Wahmhoff - 2015

Preemergence Weed Control in Third Year Fraser Fir – Wahmhoff – 2015

Trial ID: XMAS-15-1 Location: Gobles, MI
Protocol ID: XMAS-15-1 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	FIR	LACG	COMW	FIPA	HOWE
Pest Code								LACG	COMW	FIPA	HOWE
Crop Code							FIR				
Rating Date							17/Jun/15	17/Jun/15	17/Jun/15	17/Jun/15	17/Jun/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	glyphosate	4	L	1.85	lb ai/a	PRE	1.0	7.0	3.7	7.3	10.0
	atrazine	4	L	1	lb ai/a	PO1					
2	indaziflam	1.67	SC	0.065	lb ai/a	PRE	1.0	10.0	2.7	10.0	10.0
	glyphosate	4	L	1.85	lb ai/a	PRE					
3	indaziflam	1.67	SC	0.13	lb ai/a	PRE	1.0	10.0	3.3	10.0	10.0
	glyphosate	4	L	1.85	lb ai/a	PRE					
4	indaziflam	1.67	SC	0.065	lb ai/a	PRE	1.0	10.0	5.0	7.3	4.7
5	indaziflam	1.67	SC	0.13	lb ai/a	PRE	1.0	10.0	3.7	10.0	4.3
6	flumioxazin	51	WDG	0.383	lb ai/a	PRE	1.7	10.0	3.3	10.0	10.0
	glyphosate	4	L	1.85	lb ai/a	PRE					
7	Westar	75	WDG	8	oz/a	PRE	1.0	10.0	5.7	10.0	7.0
	hexazinone	75	DF	0.257	lb ai/a						
	sulfometuron	75	DG	0.0244	lb ai/a						
8	flumioxazin	51	WDG	0.383	lb ai/a	PRE	1.0	10.0	3.0	10.0	9.0
	sodium soap of asulam	3.34	SL	3.34	lb ai/a	PO1					
9	Untreated					PRE	1.0	7.0	5.9	7.0	4.0
	linuron	50	DF	1	lb ai/a	PO1					
10	flazasulfuron	25	WG	0.045	lb ai/a	PRE	1.0	10.0	8.0	10.0	3.0
11	dimethenamid-P	6	EC	1.5	lb ai/a	PRE	1.0	10.0	6.7	7.0	8.4
	simazine	4	F	4	lb ai/a	PRE					
12	pronamide	3.3	SC	2	lb ai/a	PRE	3.7	10.0	2.7	10.0	7.3
	hexazinone	2	L	1	lb ai/a	PRE					
13	atrazine	4	L	1	lb ai/a	PO1					
14	linuron	50	DF	1	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
LSD P=.05							0.62	3.67	3.99	4.81	2.41
Standard Deviation							0.37	2.17	2.35	2.84	1.42
CV							28.63	22.83	52.61	31.35	19.38

Preemergence Weed Control in Third Year Fraser Fir – Wahmhoff - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	VIPW	FIR	LACG	COMW	HOWE
Pest Code											
Crop Code								FIR			
Rating Date							17/Jun/15	9/Jul/15	9/Jul/15	9/Jul/15	9/Jul/15
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	glyphosate	4	L	1.85	lb ai/a	PRE	5.0	1.7	1.7	6.0	9.3
	atrazine	4	L	1	lb ai/a	PO1					
2	indaziflam	1.67	SC	0.065	lb ai/a	PRE	10.0	1.3	8.3	2.3	10.0
	glyphosate	4	L	1.85	lb ai/a	PRE					
3	indaziflam	1.67	SC	0.13	lb ai/a	PRE	10.0	2.0	9.7	3.3	10.0
	glyphosate	4	L	1.85	lb ai/a	PRE					
4	indaziflam	1.67	SC	0.065	lb ai/a	PRE	4.7	2.3	10.0	6.0	2.7
5	indaziflam	1.67	SC	0.13	lb ai/a	PRE	4.7	1.0	10.0	9.3	2.3
6	flumioxazin	51	WDG	0.383	lb ai/a	PRE	10.0	1.7	10.0	4.0	10.0
	glyphosate	4	L	1.85	lb ai/a	PRE					
7	Westar	75	WDG	8	oz/a	PRE	10.0	1.7	7.7	7.3	4.7
	hexazinone	75	DF	0.257	lb ai/a						
	sulfometuron	75	DG	0.0244	lb ai/a						
8	flumioxazin	51	WDG	0.383	lb ai/a	PRE					
	sodium soap of asulam	3.34	SL	3.34	lb ai/a	PO1					
9	Untreated					PRE	10.0	2.3	9.3	4.7	9.3
	linuron	50	DF	1	lb ai/a	PO1					
10	flazasulfuron	25	WG	0.045	lb ai/a	PRE	1.0	1.0	2.7	9.3	3.3
11	dimethenamid-P	6	EC	1.5	lb ai/a	PRE					
	simazine	4	F	4	lb ai/a	PRE	10.0	1.0	6.7	9.0	1.3
12	pronamide	3.3	SC	2	lb ai/a	PRE	5.3	1.0	1.7	8.7	5.7
	hexazinone	2	L	1	lb ai/a	PRE					
13	atrazine	4	L	1	lb ai/a	PO1	10.0	2.0	5.7	5.3	6.0
14	linuron	50	DF	1	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
14	Lorox	50	DF	1	lb ai/a	PO1					
	Select Max	0.97	EC	0.12	lb ai/a	PO1					
LSD P=.05							4.18	1.52	2.46	4.04	3.59
Standard Deviation							2.47	0.90	1.45	2.38	2.12
CV							32.7	56.86	20.92	37.96	34.08

Preemergence Weed Control in Third Year Fraser Fir – Wahmhoff - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	VIPW 9/Jul/15 RATING 1-10	FIR 23/Jul/15 RATING 1-10	LACG 23/Jul/15 RATING 1-10	COMW 23/Jul/15 RATING 1-10
1	glyphosate	4	L	1.85	lb ai/a	PRE	6.3	1.3	1.0	6.0
	atrazine	4	L	1	lb ai/a	PO1				
2	indaziflam	1.67	SC	0.065	lb ai/a	PRE	9.3	1.7	8.3	1.7
	glyphosate	4	L	1.85	lb ai/a	PRE				
3	indaziflam	1.67	SC	0.13	lb ai/a	PRE	10.0	2.7	9.3	4.0
	glyphosate	4	L	1.85	lb ai/a	PRE				
4	indaziflam	1.67	SC	0.065	lb ai/a	PRE	5.0	2.0	8.7	5.0
5	indaziflam	1.67	SC	0.13	lb ai/a	PRE	4.0	1.7	9.3	8.3
6	flumioxazin	51	WDG	0.383	lb ai/a	PRE	10.0	2.0	9.7	4.3
	glyphosate	4	L	1.85	lb ai/a	PRE				
7	Westar	75	WDG	8	oz/a	PRE	10.0	2.0	6.7	6.3
	hexazinone	75	DF	0.257	lb ai/a					
	sulfometuron	75	DG	0.0244	lb ai/a					
8	flumioxazin	51	WDG	0.383	lb ai/a	PRE				
	sodium soap of asulam	3.34	SL	3.34	lb ai/a	PO1				
9	Untreated					PRE	10.0	2.7	7.7	2.3
	linuron	50	DF	1	lb ai/a	PO1				
10	flazasulfuron	25	WG	0.045	lb ai/a	PRE	1.7	1.7	3.7	8.0
11	dimethenamid-P	6	EC	1.5	lb ai/a	PRE				
	simazine	4	F	4	lb ai/a	PRE	9.3	1.3	3.7	7.3
12	pronamide	3.3	SC	2	lb ai/a	PRE	3.3	1.3	1.3	7.7
	hexazinone	2	L	1	lb ai/a	PRE				
13	atrazine	4	L	1	lb ai/a	PO1	9.0	1.7	3.0	6.7
14	linuron	50	DF	1	lb ai/a	PO1				
	clethodim	0.97	EC	0.12	lb ai/a	PO1		1.0	3.0	10.0
14	Lorox	50	DF	1	lb ai/a	PO1		1.0	5.0	5.0
	Select Max	0.97	EC	0.12	lb ai/a	PO1				
LSD P=.05							4.54	1.65	2.14	5.63
Standard Deviation							2.68	0.98	1.26	3.33
CV							36.56	56.99	22.04	56.33

Preemergence Weed Control in Third Year Fraser Fir – Wahmhoff - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HOWE		LACG	CAWE
Pest Code							HOWE		LACG	CAWE
Crop Code								FIR		
Rating Date							23/Jul/15	20/Aug/15	20/Aug/15	20/Aug/15
Rating Type							RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10
1	glyphosate	4	L	1.85	lb ai/a	PRE	9.0	2.0	1.3	7.0
	atrazine	4	L	1	lb ai/a	PO1				
2	indaziflam	1.67	SC	0.065	lb ai/a	PRE	9.3	1.3	7.7	1.7
	glyphosate	4	L	1.85	lb ai/a	PRE				
3	indaziflam	1.67	SC	0.13	lb ai/a	PRE	10.0	1.7	10.0	4.7
	glyphosate	4	L	1.85	lb ai/a	PRE				
4	indaziflam	1.67	SC	0.065	lb ai/a	PRE	2.0	2.0	9.0	5.7
5	indaziflam	1.67	SC	0.13	lb ai/a	PRE	1.7	1.0	9.0	6.7
6	flumioxazin	51	WDG	0.383	lb ai/a	PRE	10.0	1.7	7.7	7.0
	glyphosate	4	L	1.85	lb ai/a	PRE				
7	Westar	75	WDG	8	oz/a	PRE	3.7	1.7	4.0	8.7
	hexazinone	75	DF	0.257	lb ai/a					
	sulfometuron	75	DG	0.0244	lb ai/a					
8	flumioxazin	51	WDG	0.383	lb ai/a	PRE				
	sodium soap of asulam	3.34	SL	3.34	lb ai/a	PO1				
9	Untreated					PRE	9.0	1.7	10.0	7.3
	linuron	50	DF	1	lb ai/a	PO1				
10	flazasulfuron	25	WG	0.045	lb ai/a	PRE	3.0	1.0	3.3	7.0
11	dimethenamid-P	6	EC	1.5	lb ai/a	PRE				
	simazine	4	F	4	lb ai/a	PRE	1.0	1.0	5.3	8.3
12	pronamide	3.3	SC	2	lb ai/a	PRE	4.7	1.3	1.0	7.0
	hexazinone	2	L	1	lb ai/a	PRE				
13	atrazine	4	L	1	lb ai/a	PO1	7.3	1.7	2.0	9.0
14	linuron	50	DF	1	lb ai/a	PO1				
	clethodim	0.97	EC	0.12	lb ai/a	PO1	1.0	2.3	3.3	10.0
14	Lorox	50	DF	1	lb ai/a	PO1	3.0	1.0	8.0	10.0
	Select Max	0.97	EC	0.12	lb ai/a	PO1				
LSD P=.05							2.77	1.20	1.67	5.78
Standard Deviation							1.64	0.71	0.99	3.44
CV							30.67	46.91	17.03	48.23

Preemergence Weed Control in Third Year Fraser Fir – Wahmhoff - 2015

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COMW	HOWE	FIR	LACG
Pest Code										
Crop Code										
Rating Date							20/Aug/15	20/Aug/15	19/Sep/15	19/Sep/15
Rating Type							RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10
1	glyphosate	4	L	1.85	lb ai/a	PRE	8.7	9.0	2.0	1.7
	atrazine	4	L	1	lb ai/a	PO1				
2	indaziflam	1.67	SC	0.065	lb ai/a	PRE	3.7	8.7	1.7	7.7
	glyphosate	4	L	1.85	lb ai/a	PRE				
3	indaziflam	1.67	SC	0.13	lb ai/a	PRE	4.0	10.0	2.7	9.3
	glyphosate	4	L	1.85	lb ai/a	PRE				
4	indaziflam	1.67	SC	0.065	lb ai/a	PRE	8.0	1.7	3.0	8.7
5	indaziflam	1.67	SC	0.13	lb ai/a	PRE	6.7	1.3	2.3	9.7
6	flumioxazin	51	WDG	0.383	lb ai/a	PRE	4.7	9.3	2.7	7.0
	glyphosate	4	L	1.85	lb ai/a	PRE				
7	Westar	75	WDG	8	oz/a	PRE	7.7	4.3	2.0	4.7
	hexazinone	75	DF	0.257	lb ai/a					
	sulfometuron	75	DG	0.0244	lb ai/a					
8	flumioxazin	51	WDG	0.383	lb ai/a	PRE				
	sodium soap of asulam	3.34	SL	3.34	lb ai/a	PO1				
9	Untreated					PRE	4.0	9.3	2.7	8.7
	linuron	50	DF	1	lb ai/a	PO1				
10	flazasulfuron	25	WG	0.045	lb ai/a	PRE	8.7	3.0	1.7	2.0
11	dimethenamid-P	6	EC	1.5	lb ai/a	PRE				
	simazine	4	F	4	lb ai/a	PRE	7.7	1.0	1.7	5.7
12	pronamide	3.3	SC	2	lb ai/a	PRE	8.0	4.7	2.0	1.0
	hexazinone	2	L	1	lb ai/a	PRE				
13	atrazine	4	L	1	lb ai/a	PO1	5.3	5.3	2.0	4.0
14	linuron	50	DF	1	lb ai/a	PO1				
	clethodim	0.97	EC	0.12	lb ai/a	PO1	8.3	4.0	2.7	6.0
14	Lorox	50	DF	1	lb ai/a	PO1	9.0	4.7	1.0	7.7
	Select Max	0.97	EC	0.12	lb ai/a	PO1				
LSD P=.05							3.83	3.44	2.04	2.72
Standard Deviation							2.28	2.05	1.21	1.62
CV							33.9	37.57	56.66	27.11