NORTHERN STAR SEED, LLC
SPRING OAT & TRITICALE VARIETY TRIAL – 2025 RESULTS

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Michigan State University conducted spring oat and triticale variety trials in 2025 with support from Northern Star Seed, LLC. The trial location was the MSU Upper Peninsula Research and Extension Center (MSU-UPREC) in Chatham, MI. This research represents an effort to characterize Northern Star varieties while improving general understanding of oat and triticale performance in Michigan for both forage and grain markets.

Temperature and precipitation were near normal from planting through harvest at Chatham. However, hours of rainfall were above normal due to frequent lake effect rains. Wildfire smoke blanketed Upper Michigan for much of the growing season, reducing light intensity. Grass weed pressure was above average in all plots. Lodging was observed in oat grain, but not triticale. Raw grain quality was analyzed at MSU-UPREC, while forage quality was analyzed at Dairyland Labs. Data were analyzed using ANOVA (alpha = 0.05) and Tukey's HSD test in the Agricolae package for R. Statistical analysis was not completed for grain and forage quality data due to samples being composited by variety.

Significant differences were observed among oat varieties for all parameters, except forage yield. NSO2076 had below average establishment and stand density. Mean grain yield was 96.6 bu/a and forage yield was 1.8 t/a. The highest yielding grain varieties were Ida, SD Titan, SD Momentum, Hayden, NSO2407 and SD Buffalo. Mean grain test weight was 38.3 lbs/bu, and mean protein concentration was 10.9%. The highest yielding forage varieties were NSO2201, Hayden, ORe3542M, and NSO2401, while the highest RFQ varieties were NSO2401, NSO2407 and NSO2201. However, NSO2201 was later maturing and harvested in the boot stage for forage. Mean crude protein in oat forage was 10.5% and mean RFQ was 114.0.

Significant differences were observed among triticale varieties for all parameters, except grain stand and lodging. Mean grain yield was 60.6 bu/a and forage yield was 3.6 t/a. The highest yielding grain varieties were NSTX334, NSTX87, NSTX3801 and NSTX323. Mean grain test weight was 47.4 lbs/bu. The highest yielding forage varieties were Kicker, NSTX334, Gunner, and NSTX340, while the highest RFQ varieties were NS2215, NSTX17, NSTX47 and Gunner. However, NS2215 was much later maturing than other varieties and harvested in the vegetative stage for forage. Mean crude protein in triticale forage was 6.6% and mean RFQ was 67.2.

TRIAL DETAILS

Design:
RCBD with four replications

Location:
MSU-UPREC in Chatham, MI

Soil:
Eben Very Cobbly Sandy Loam

Planting date:
Oats: May 16th
Triticale: May 14th

Seeded at 28 seeds/ft2

Fertility:
50 lbs/a N as Urea

Herbicide:
1.5 pt/a Broclean, plus
0.75 pt/a MCP Amine 4

Fungicide:
4 oz/a Priaxor, plus
13.7 oz/a Miravis Ace

Harvest Date:
Oat Forage: July 24th
Triticale Forage: August 13th
Oat Grain: September 2nd
Triticale Grain: September 29th

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Table 1. Oat Forage Performance Data

Variety	Growth Stage	Stand (1 ft^2)		Heading Date		Height (in)		Disease		DM Yield (t/a)		Crude Protein (%)	RFQ
AAC Douglas	Dough	21.6	ac	10-Jul	d	27.5	ab	0.0	b	1.86	a	NA	NA
Hayden	Dough	21.6	ac	11-Jul	d	28.6	a	0.0	b	1.98	a	NA	NA
Ida	Dough	24.0	ac	9-Jul	d	27.8	ab	0.0	b	1.84	a	NA	NA
NSO2076	Milk	16.4	c	13-Jul	c	27.6	ab	0.8	a	1.66	a	9.8	109.1
NSO2201	Boot	29.1	a	21-Jul	a	24.5	ab	0.0	b	2.10	a	10.2	116.1
NSO2401	Milk	23.5	ac	16-Jul	b	25.1	ab	0.5	ab	1.90	a	11.1	121.2
NSO2407	Milk	20.8	ac	15-Jul	bc	23.5	b	0.5	ab	1.44	a	10.4	120.4
NSO2501	Milk	21.8	ac	16-Jul	b	27.0	ab	0.3	ab	1.68	a	10.8	106.5
ORe3542M	Milk	20.0	bc	14-Jul	bc	23.5	b	0.0	b	1.94	a	NA	NA
Raven	Dough	21.1	ac	11-Jul	d	25.4	ab	0.3	ab	1.87	a	10.9	110.5
Rushmore	Dough	25.6	ab	11-Jul	d	26.5	ab	0.0	b	1.86	a	NA	NA
SD Buffalo	Dough	22.4	ac	10-Jul	d	27.5	ab	0.0	b	1.69	a	NA	NA
Average		**22.3**		**13-Jul**		**26.2**		**0.2**		**1.8**		**10.5**	**114.0**
P-value		**0.005**		**<0.001**		**0.060**		**0.026**		**n.s.**			

Table 2. Triticale Forage Performance Data

Variety	Growth Stage	Stand (1 ft^2)		Heading Date		Height (in)		Disease (0G-5B)		DM Yield (t/a)		Crude Protein (%)	RFQ
Gunner	Milk	26.6	ab	13-Jul	b	45.8	b	0.3	b	4.1	ab	7.1	73.3
Kicker	Milk	24.6	ab	13-Jul	b	51.3	a	0.0	b	4.3	a	6.3	67.9
NS2215	Veg	25.8	ab	13-Aug	a	12.1	h	0.3	b	1.7	c	10.6	136.1
NSTX17	Dough	21.9	b	11-Jul	b	34.4	df	0.5	ab	3.7	ab	6.7	81.9
NSTX45	Dough	24.5	ab	5-Jul	cd	28.8	g	1.3	ab	3.8	ab	6.4	69.7
NSTX47	Dough	23.6	ab	5-Jul	cd	29.5	g	1.3	ab	3.3	b	8.1	75.7
NSTX50	Dough	24.7	ab	5-Jul	cd	29.8	g	1.3	ab	3.8	ab	6.3	56.1
NSTX319	Dough	27.6	ab	4-Jul	cd	30.8	fg	2.0	a	3.4	ab	7.0	56.8
NSTX323	Dough	24.9	ab	5-Jul	cd	37.1	cd	0.8	ab	3.4	ab	5.6	49.8
NSTX324	Dough	25.0	ab	2-Jul	cd	31.3	eg	2.0	a	3.3	b	6.7	58.9
NSTX334	Dough	26.8	ab	6-Jul	c	37.0	cd	1.0	ab	4.1	ab	5.7	46.4
NSTX338	Dough	25.1	ab	3-Jul	cd	35.1	de	0.8	ab	3.7	ab	6.0	57.3
NSTX340	Dough	28.6	a	2-Jul	cd	39.0	c	0.8	ab	4.0	ab	3.3	38.3
NSTX3801	Dough	26.4	ab	2-Jul	d	35.8	cd	1.0	ab	3.7	ab	7.0	71.9
Average		**25.4**		**8-Jul**		**34.1**		**0.9**		**3.6**		**6.6**	**67.2**
P-value		**0.089**		**<0.001**		**<0.001**		**0.002**		**<0.001**			

Table 3. Oat Grain Performance Data

Variety	TKW (g)	Germ (%)	Stand (1 ft^2)		Heading Date		Height (in)		Disease (0G-5B)		Lodging (0G-5B)		Yield (bu/a)		TW (lbs/bu)		Protein (%)	Thins (%)
AAC Douglas	39.6	93	24.3	ab	10-Jul	gh	28.4	fg	0.0	b	0.8	c	103.6	ab	38.5	ad	11.0	0.2
Hayden	33.5	82	26.4	ab	11-Jul	fh	31.4	bg	0.0	b	3.0	ab	105.7	a	38.7	ad	10.9	0.0
Ida	29.9	90	23.6	ab	13-Jul	be	35.1	ad	0.0	b	2.5	ac	113.1	a	38.0	bd	11.6	0.2
NSO2076	25.4	88	18.9	b	12-Jul	cg	35.8	ac	0.0	b	1.5	ac	68.9	bc	37.6	cd	11.4	0.2
NSO2201	35.9	82	28.0	ab	21-Jul	a	34.8	ad	0.0	b	1.5	ac	103.6	ab	36.6	cd	11.1	0.2
NSO2401	26.5	78	27.0	ab	15-Jul	b	29.0	eg	0.0	b	1.0	bc	103.6	ab	39.4	ac	10.8	0.0
NSO2407	33.1	72	23.9	ab	14-Jul	bd	28.5	eg	0.0	b	1.3	ac	104.9	a	35.6	d	10.8	0.0
NSO2501	25.7	81	26.1	ab	15-Jul	b	33.8	ae	0.3	ab	1.0	bc	93.1	ab	37.1	cd	10.7	0.1
ORe3542M	40.2	82	25.4	ab	14-Jul	bc	26.8	g	0.0	b	1.0	bc	101.7	ab	37.6	cd	10.5	0.0
Raven	27.6	83	25.6	ab	11-Jul	eh	30.0	dg	0.5	a	2.3	ac	85.1	ac	37.5	cd	NA	0.2
Rushmore	31.5	80	24.5	ab	11-Jul	dh	28.0	fg	0.0	b	2.5	ac	98.1	ab	41.5	a	11.1	0.1
SD Buffalo	35.8	91	20.5	ab	9-Jul	h	32.3	bf	0.0	b	1.0	bc	104.9	a	37.9	bd	10.2	0.0
SD Momentum	33.3	80	28.3	a	14-Jul	b	38.8	a	0.0	b	2.0	ac	106.8	a	41.3	ab	9.7	0.1
SD Ranger	33.6	95	22.5	ab	12-Jul	cg	30.5	cg	0.0	b	1.8	ac	96.5	ab	39.0	ac	10.2	0.0
SD Titan	33.7	93	23.5	ab	13-Jul	bf	36.3	ab	0.0	b	1.5	ac	109.0	a	39.0	ac	11.0	0.0
Streaker	26.5	90	NA		NA		NA		0.0	b	3.3	a	47.9	c	NA		12.8	0.1
Average	**32.0**	**85.0**	**24.6**		**13-Jul**		**31.9**		**0.0**		**1.7**		**96.6**		**38.3**		**10.9**	**0.1**
P-value			**0.038**		**<0.001**		**<0.001**		**0.030**		**<0.001**		**<0.001**		**<0.001**			

Table 4. Triticale Grain Performance Data

Variety	TKW	Germ (%)	Stand (1 ft^2)		Heading Date		Height (in)		Disease (0G-5B)		Lodging (0G-5B)		Yield (bu/a)		TW (lbs/bu)	
Gunner	32.5	98	25.1	a	16-Jul	b	43.6	b	0.3	bc	0.0	a	45.5	gh	44.9	ab
Kicker	45.3	97	25.3	a	14-Jul	bd	50.3	a	0.3	bc	0.0	a	58.8	cg	46.0	ab
NSTX17	30.2	92	22.9	a	13-Jul	cd	34.8	cd	0.0	c	0.0	a	56.7	dg	45.5	ab
NSTX45	40.5	86	24.1	a	7-Jul	eh	30.1	eg	2.0	a	0.0	a	74.1	ac	50.8	a
NSTX47	36.3	94	21.3	a	5-Jul	fi	27.6	g	2.0	a	0.0	a	59.4	cg	44.8	ab
NSTX50	38.9	92	25.1	a	6-Jul	fh	28.1	g	1.5	ac	0.0	a	62.3	bg	43.7	b
NSTX60	54.7	96	24.6	a	13-Aug	a	15.8	h	0.0	c	0.0	a	9.2	i	45.0	ab
NSTX61	37.5	88	25.4	a	15-Jul	bc	36.0	cd	0.0	c	0.0	a	36.6	h	50.1	ab
NSTX62	42.2	85	22.4	a	12-Jul	d	35.0	cd	1.3	ac	0.0	a	53.4	eh	48.1	ab
NSTX65	41.1	94	24.8	a	14-Jul	bd	34.6	cd	0.5	ac	0.0	a	49.2	fh	49.4	ab
NSTX66	38	95	22.8	a	9-Jul	e	32.8	df	0.5	ac	0.0	a	55.0	dg	48.8	ab
NSTX67	36.5	94	24.4	a	9-Jul	e	30.1	eg	2.0	a	0.0	a	68.5	ae	48.0	ab
NSTX87	40.9	99	23.0	a	3-Jul	jk	36.5	cd	1.0	ac	0.0	a	79.1	ab	49.2	ab
NSTX319	51	83	22.8	a	4-Jul	hk	28.8	fg	2.0	a	0.0	a	71.6	ad	47.9	ab
NSTX323	57	82	25.6	a	7-Jul	eg	35.9	cd	1.5	ac	0.0	a	76.9	ab	47.4	ab
NSTX324	55.8	86	26.5	a	3-Jul	ik	29.3	fg	2.0	a	0.0	a	74.1	ac	48.5	ab
NSTX334	49.6	99	26.4	a	7-Jul	ef	35.9	cd	0.8	ac	0.0	a	79.7	a	50.2	ab
NSTX338	40.9	100	25.4	a	5-Jul	gj	34.0	de	1.3	ac	0.0	a	58.6	cg	45.4	ab
NSTX340	45.8	98	26.6	a	3-Jul	jk	38.6	c	1.3	ac	0.0	a	63.8	af	47.0	ab
NSTX3801	46.1	99	18.9	a	2-Jul	k	36.0	cd	1.8	ab	0.0	a	78.7	ab	48.1	ab
Average	**43.0**	**92.9**	**24.2**		**10-Jul**		**33.7**		**1.1**		**0.0**		**60.6**		**47.4**	
P-value			**n.s.**		**<0.001**		**<0.001**		**<0.001**		**n.s.**		**<0.001**		**0.013**	

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