

2020 Winter Agronomy Meetings



Sugarbeet 
Advancement 

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UNIVERSITY

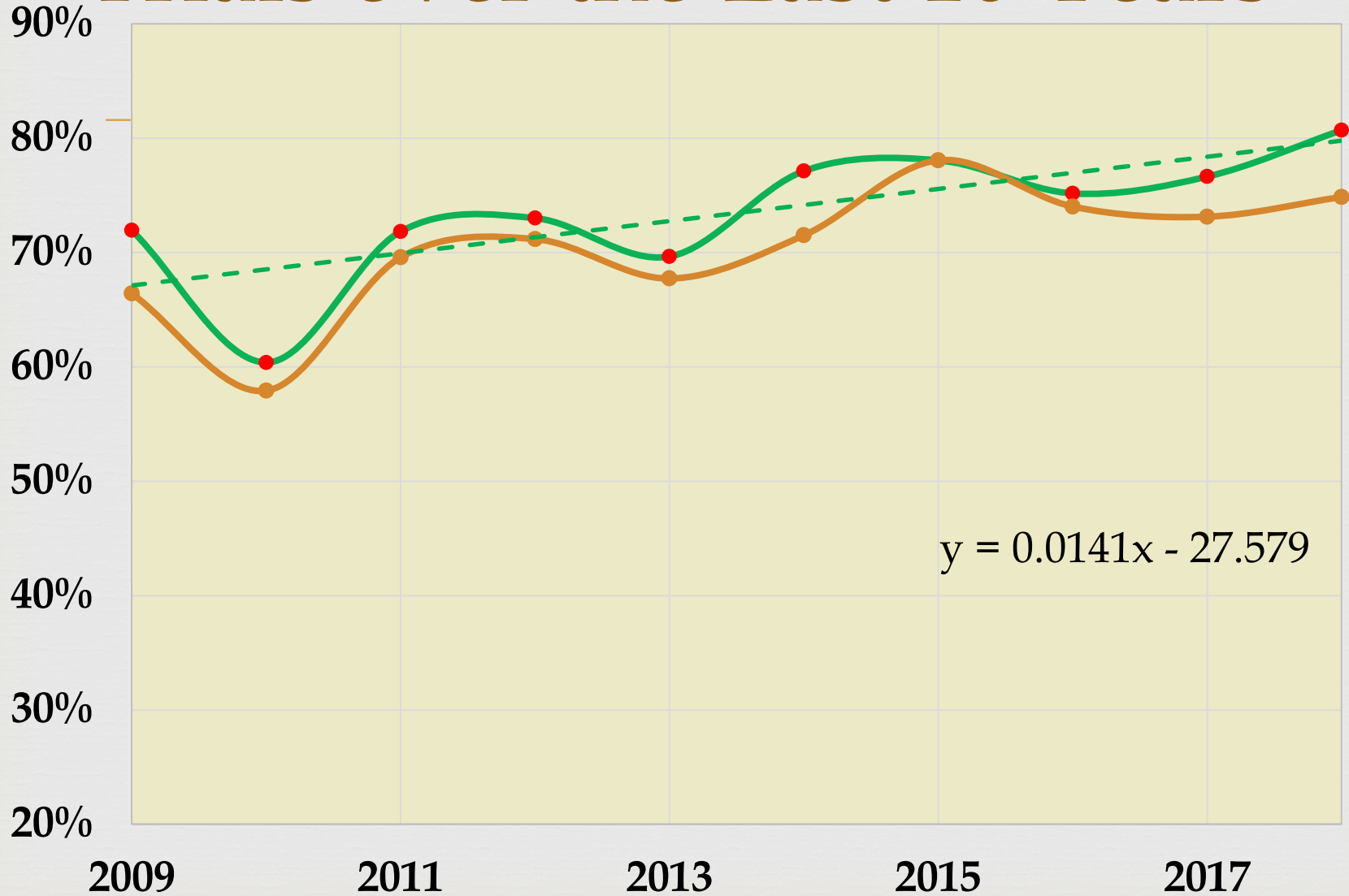
2019 Research Summary



- ❧ 7 Variety Trials (Seed Week)
- ❧ 15 Agronomic Trials
 - ❧ Population
 - ❧ Planting rates
 - ❧ Variable rate
 - ❧ Fertility
 - ❧ Foliar nutrients
 - ❧ In-furrow applied products
 - ❧ Pests & Diseases
 - ❧ Movento Insecticide
 - ❧ Xanthion
 - ❧ Quadris
- ❧ In-Progress and Future Research



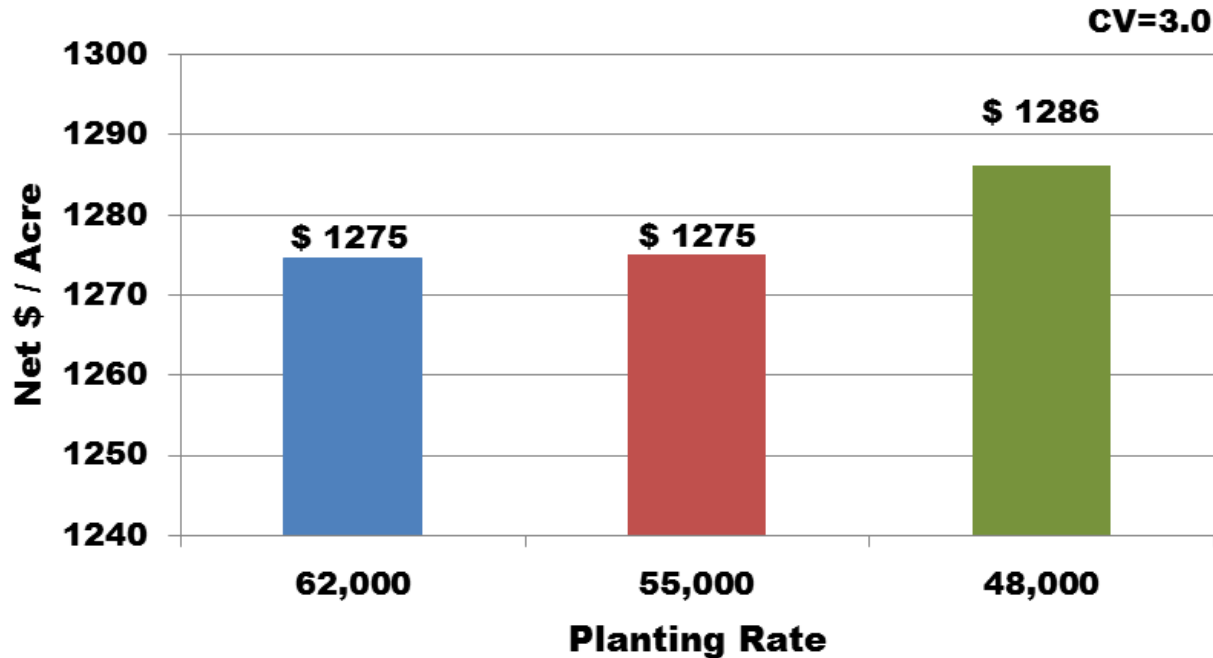
Percent Emergence in SBA Trials over the Last 10 Years



Planting Rate, Sylvester Farms



Net Revenue



- 24 inch row spacing
- 75.3% emergence
- Significant change in final stand
- No significant difference in yield
- No significant difference in net revenue

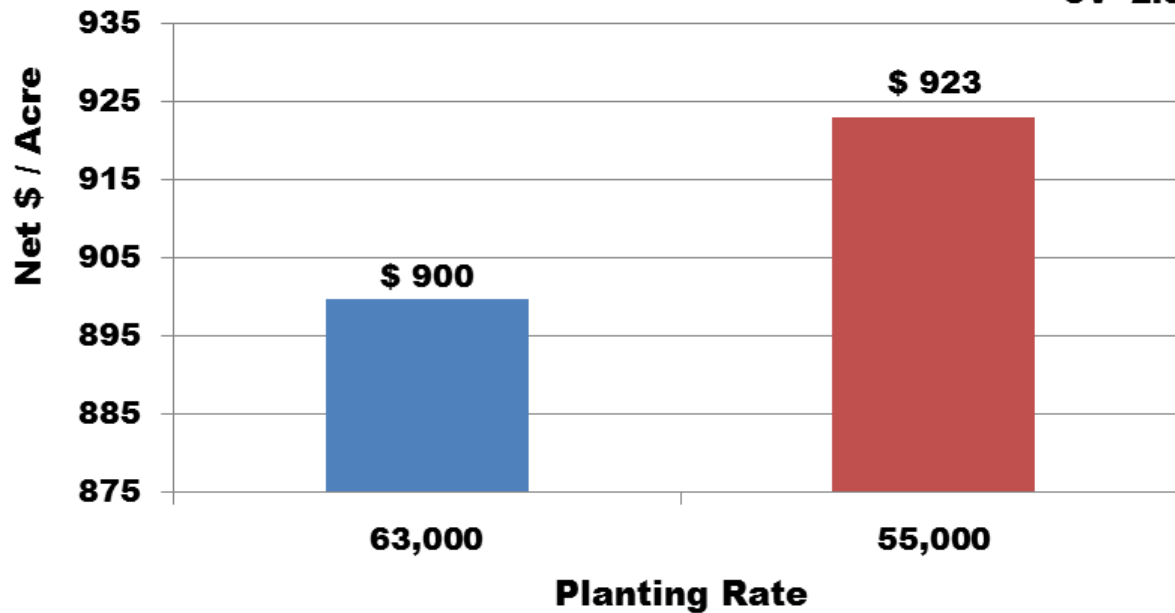
Planting Rate, Meylan Farms



- 22 inch row spacing
- 81.1% emergence
- Significant change in final stand
- No significant difference in yield
- No significant difference in net revenue
- Worth the risk?

Net Revenue

CV=2.3



Variable Planting Rate



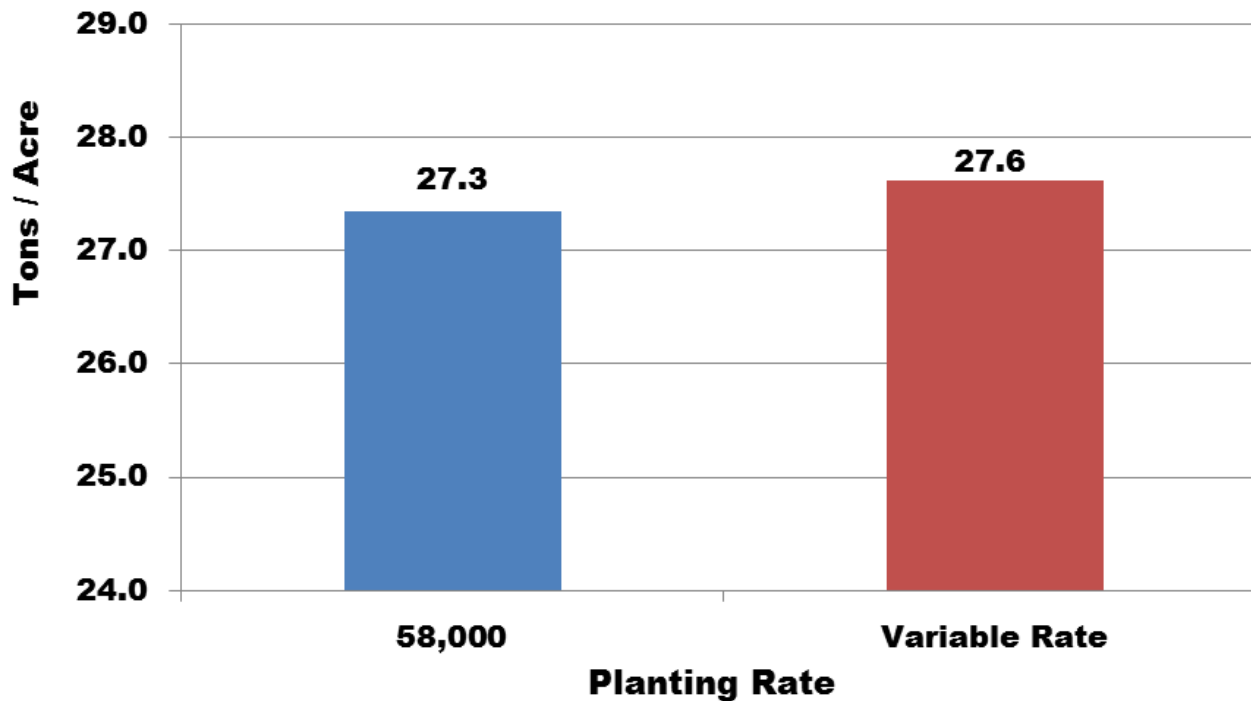
- ❧ What impact would variable planting rates have on yield?
- ❧ Planting rate varied based on yield maps and soil types
 - ❧ Ranged from 39,000 to 59,000 seeds per acre
- ❧ Check, 58,000 seeds per acre
- ❧ Variety, C-675
- ❧ 7 replications
- ❧ Very good trial quality

Variable Rate, D&B Karg Farms



Tons per Acre

CV=2.0



- ❧ No significant impact on yield
- ❧ Potential seed cost savings

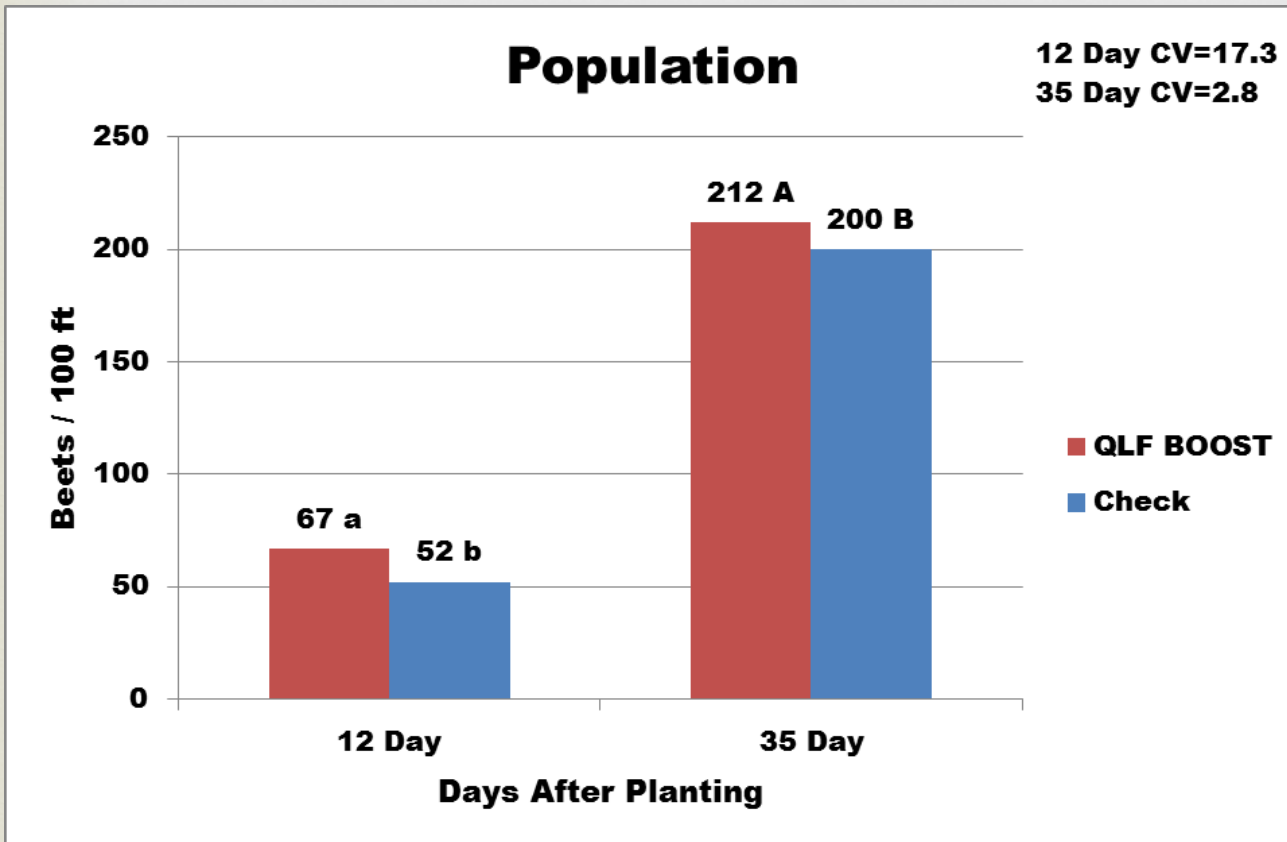
QLF BOOST™



- ❧ QLF BOOST™ (4-0-3-2S) is a supplemental fertilizer product
- ❧ Intended to improve root health which aids in root disease management
- ❧ Applications
 - ❧ 2 gallons/acre with 2x2 blend
 - ❧ 1 gallon/acre with Quadris (8.1 oz/acre) T-band application
- ❧ Check, with no BOOST at planting
 - ❧ BOOST applied to all treatments with CLS fungicide applications
- ❧ Very good trial quality

QLF BOOST™,

Nancy & Dwight Bartle



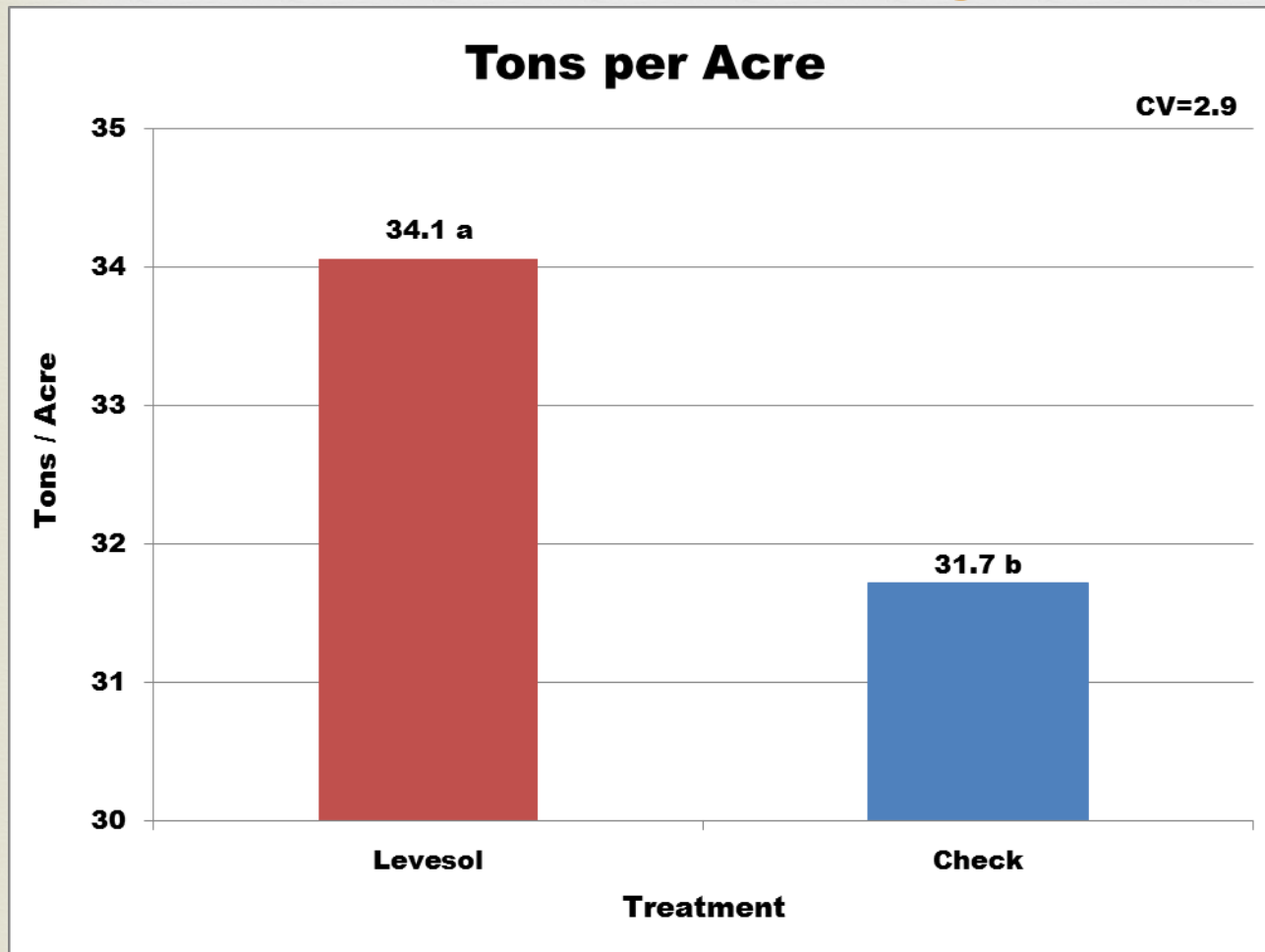
- ☞ No significant difference in yield
- ☞ Very low level of root diseases
- ☞ Significant increase in early and late population

Levesol



- ❧ A 2% nitrogen fertilizer and pure chelating agent made by West Central
- ❧ Intended to make nutrients more available for uptake by plants, improve plant health
- ❧ Applied T-band, in-furrow with Quadris
 - ❧ Levesol: 2 qt/acre
 - ❧ Quadris: 8 oz/acre
- ❧ Quadris alone as check
- ❧ 4 replications
- ❧ Very good trial quality

Levesol, Reif Farms



- Significant increase in tonnage with Levesol
- First year of testing

TerraNu Calcium & MicroPack

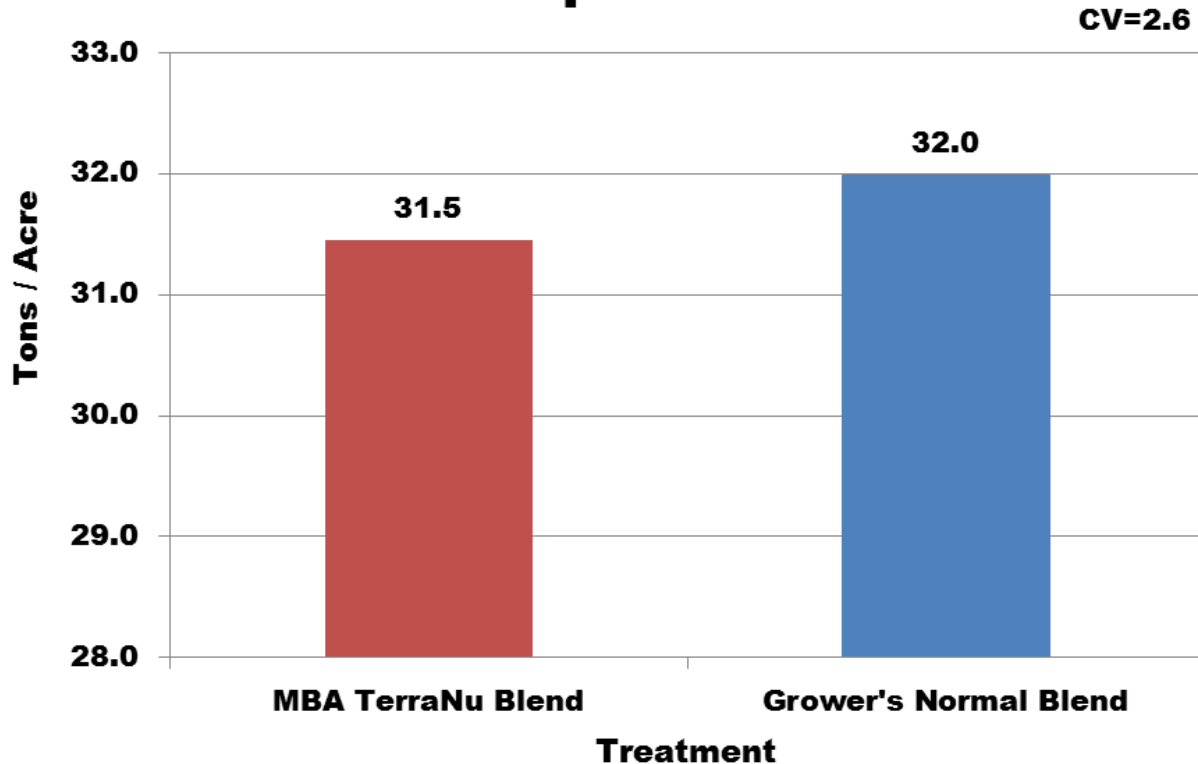


- ⌘ A 2x2 fertilizer blend by Midwestern BioAg
- ⌘ The blend provides several macro and micronutrients, including N, P, K, S, Ca, Mg, B, Cu, Fe, Mn, and Zn
- ⌘ Intended to improve nutrient availability by providing all the nutrients in each granule of fertilizer
- ⌘ The grower's standard 2x2 blend was used as the check
 - ⌘ Had similar amount of nutrients provided
- ⌘ 5 replicates
- ⌘ Very good trial quality

TerraNu, D&B Karg Farms



Tons per Acre



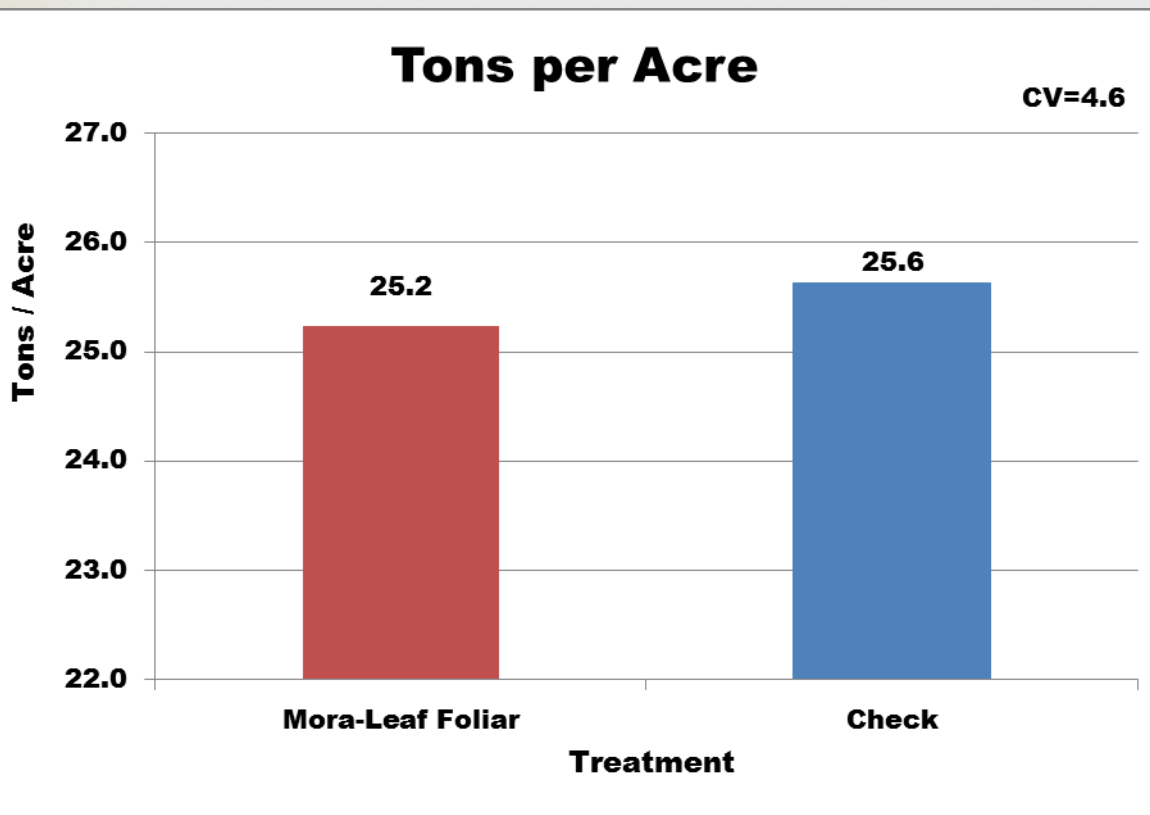
- ❧ No significant differences in yield
- ❧ Significant improvement in clear juice purity
- ❧ Tissue samples, taken in July
 - ❧ No deficiencies found

Mora-Leaf Foliar Nutrients



- ❧ Foliar nutrients are becoming increasingly popular due to a desire to ensure plant health
- ❧ Mora-Leaf is a foliar nutrient produced by Willbur-Ellis
 - ❧ Contains 20% N, P, and K, as well as several micronutrients, including B, Cu, Mn, Zn, and Fe
- ❧ Foliar applied
 - ❧ One application, 2 lb/acre
 - ❧ Tank mixed with Quadris (15.7 oz/acre)
 - ❧ 7 inch T-band
- ❧ Check, no foliar nutrients
- ❧ 6 replications

Mora-Leaf Foliar, Helmreich Farms



- ☞ Good trial quality
- ☞ No significant differences between the treatment and check
- ☞ No nutrient deficiencies identified at this field

Insta-Cal vs NDemand

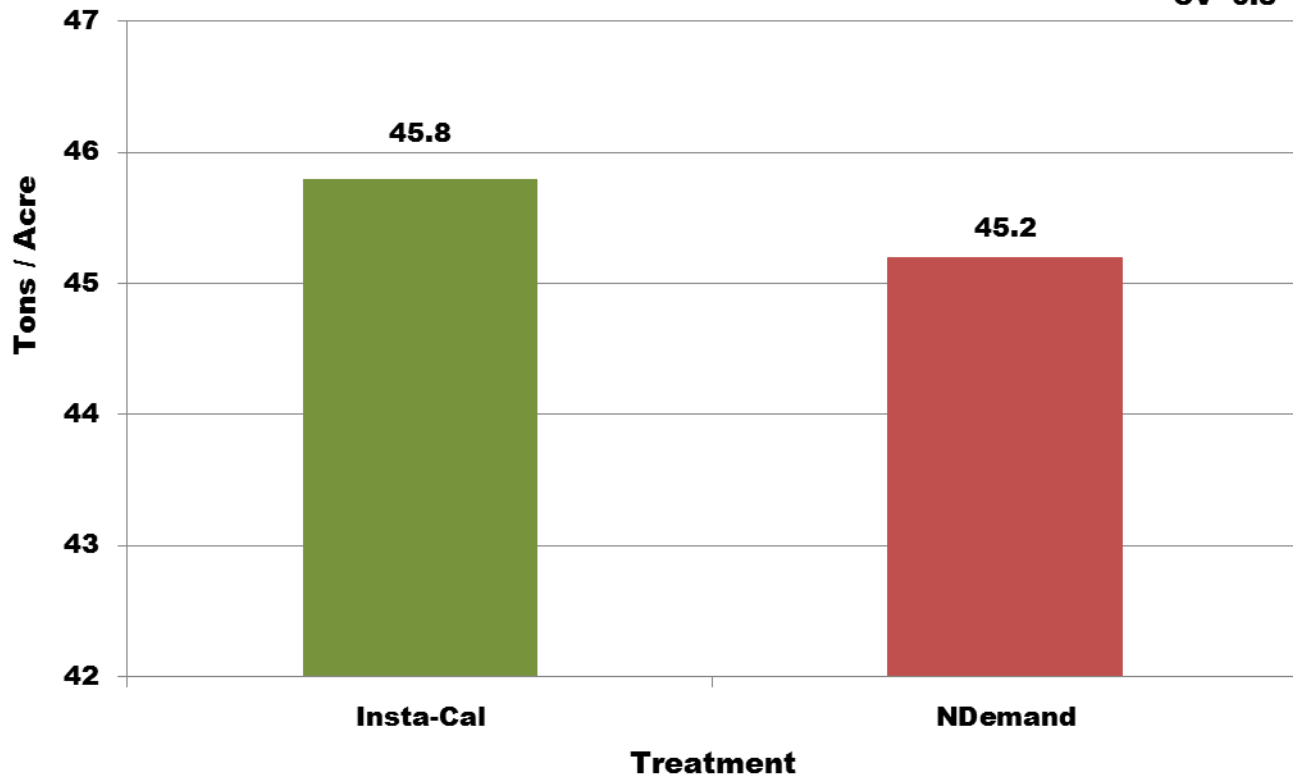


- ❧ Insta-Cal is a foliar feed product by Insta-Grow which includes calcium nitrate
- ❧ Sales representatives claim:
 - ❧ Provides more available calcium to the plant
 - ❧ Strengthens cell walls
 - ❧ Improves Cercospora leaf spot management
- ❧ NDemand is a common foliar nitrogen product by Wilbur-Ellis
 - ❧ Manufacturer claims plant health benefits
- ❧ Both added to the first 3 CLS fungicide applications
 - ❧ 1 gallon per acre
- ❧ 5 replications
- ❧ Excellent trial quality
- ❧ No check

Insta-Cal vs NDemand, Reif Farms



Tons per Acre



- ❧ No significant difference between products at 95% confidence
- ❧ Improvement from no foliar fertilizer?
- ❧ Very little CLS

Movement



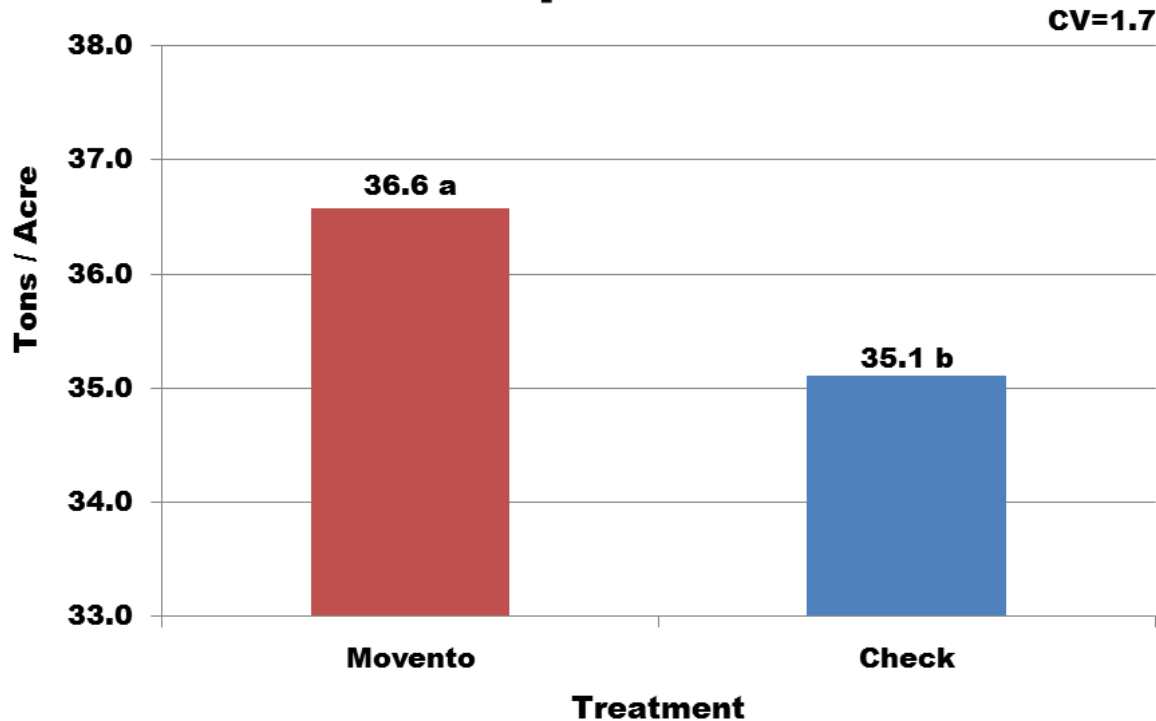
- ❧ Insecticide produced by Bayer Crop Science
- ❧ Intended to manage root aphids and sugarbeet cyst nematode
- ❧ Foliar applied
 - ❧ Target, 2 applications
 - ❧ Last 10 days of June
 - ❧ 2 weeks later
 - ❧ 2.5 oz/acre
 - ❧ With 1% MSO
- ❧ 2 trials
 - ❧ LAKKE Ewald Farms
 - ❧ Laracha Farms



Movement, LAKKE Ewald Farms



Tons per Acre



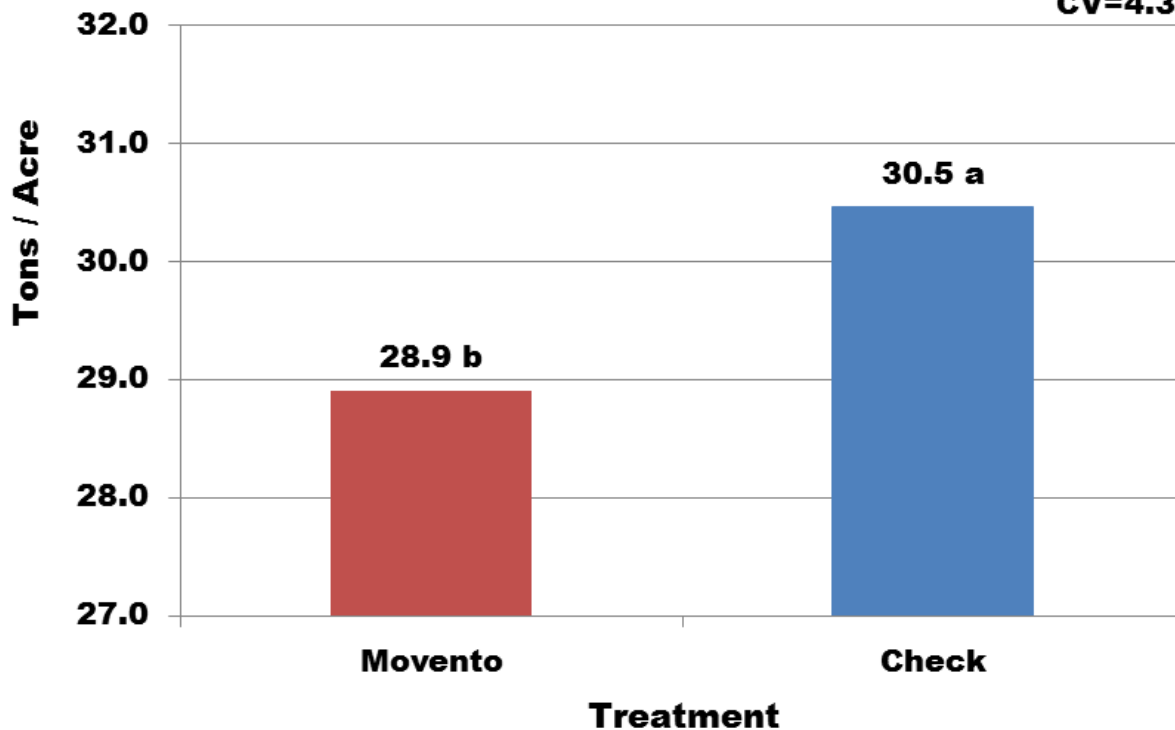
- Excellent trial quality
- 5 replicates
- Variety B-12RR2N
- Applied as intended
- Movento led to a significant increase in:
 - Tons per acre
 - RWSA
 - Revenue

Movement, Laracha Farms



Tons per Acre

CV=4.3



- ❧ Good trial quality
- ❧ 8 replicates
- ❧ Variety B-1606
- ❧ Significant decrease in tons per acre
- ❧ Reasons?
 - ❧ Applied 3-4 weeks later than intended
 - ❧ Tank mixed with Super Tin

Xanthion In-Furrow Fungicide

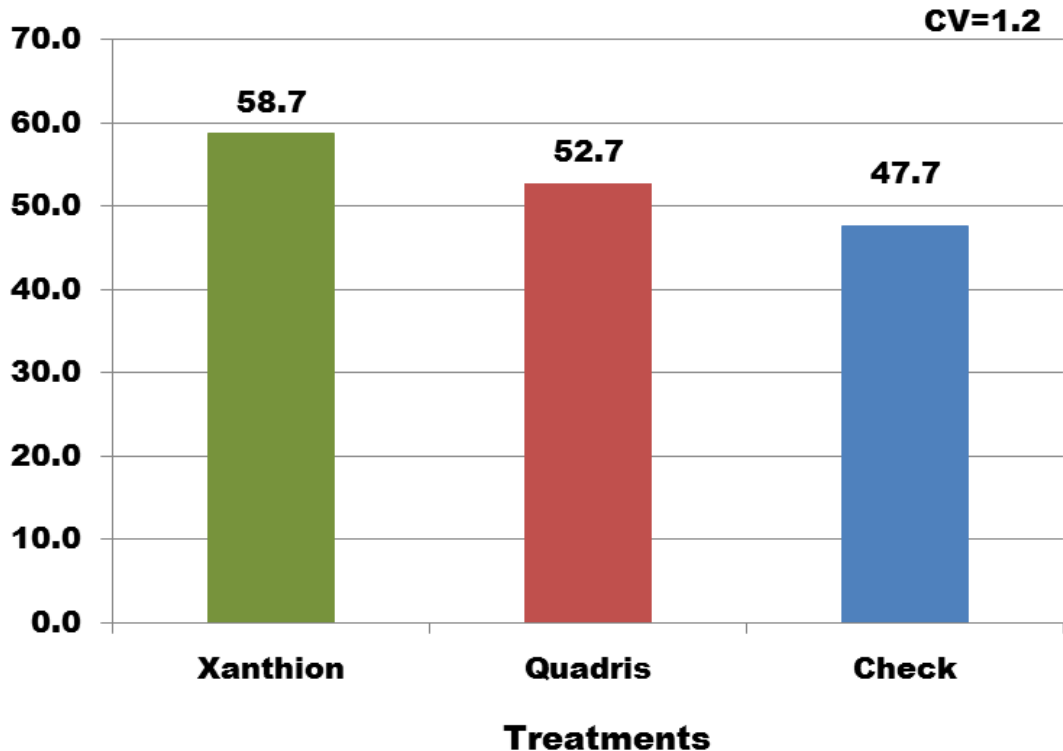


- ❧ Fungicide by BASF intended for Rhizoctonia root rot management
- ❧ 2 active ingredients
 - ❧ Pyraclostrobin (active ingredient in Headline)
 - ❧ Biological fungicide
- ❧ Compared with Quadris (Syngenta)
- ❧ Both products applied in-furrow with Fastac insecticide
 - ❧ Xanthion 10.8 oz/acre
 - ❧ Quadris 8 oz/acre
 - ❧ Fastac 4 oz/acre
- ❧ Check had neither a fungicide nor insecticide

Xanthion In-Furrow, Spartan Acres Farms



Dead Beet Count



- Very good trial quality
- 3 replications
- No significant differences
- Low levels of Rhizoctonia root rot
- Aphanomyces and Fusarium root rots observed



Quadris Plus Adjuvants

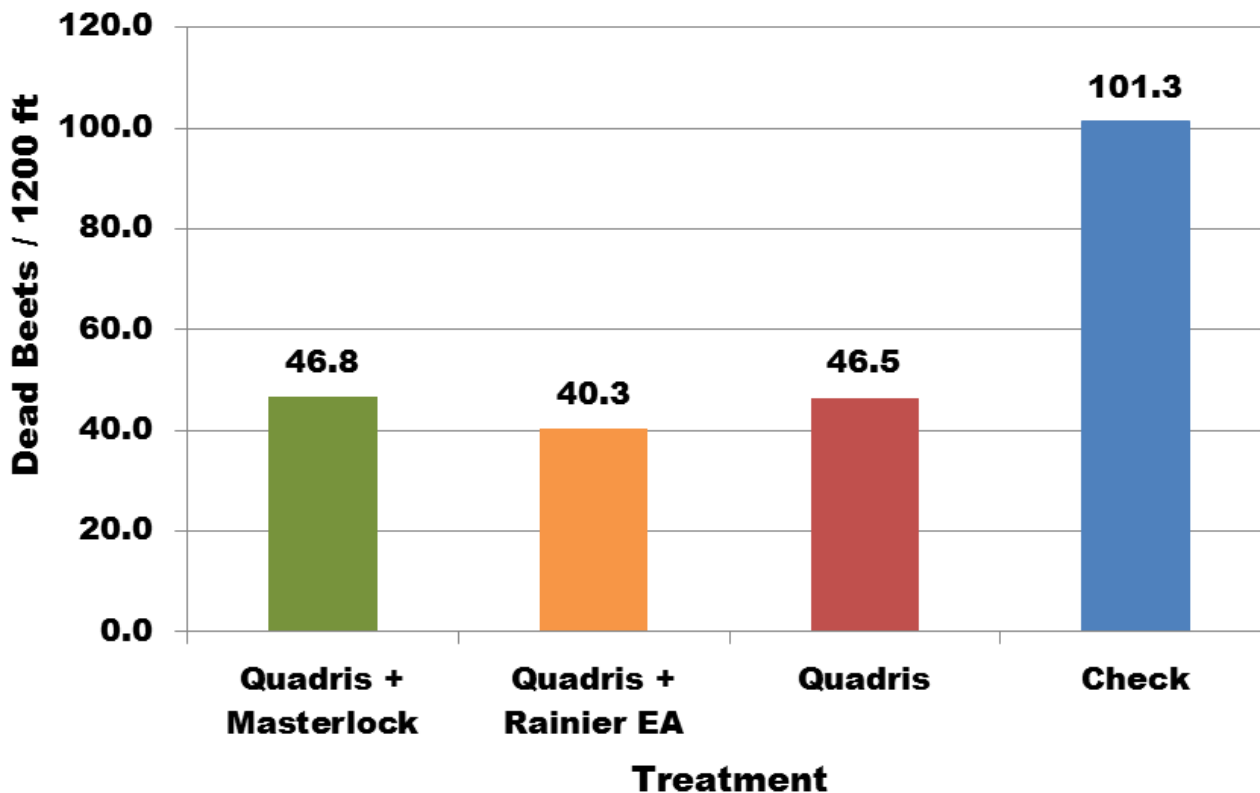


- ❧ To maximize efficacy, Quadris needs to move into the soil
- ❧ How do different adjuvants effect its mobility and efficacy during foliar application?
- ❧ 2 adjuvants tested
 - ❧ MasterLock
 - ❧ Spreader-sticker from Winfield
 - ❧ Applied at 2.25 oz/acre
 - ❧ Rainier EA
 - ❧ Spreader from Wilbur-Ellis
 - ❧ Applied at 11.2 oz/acre
- ❧ Applied with Quadris (15.7 oz/acre) in a 7 inch T-band
- ❧ In-furrow Quadris applied at planting

Quadris plus Adjuvants Helmreich Farms



Dead Beet Count



- Very good trial quality
- 4 replications
- Lower than ideal levels of Rhizoctonia
- No significant differences for yield and dead beet count
- Numerically, all treatments with Quadris had lower dead beet count

Other Quadris Trials at Helmreich Farms



- ❧ EBDC tank mixed with foliar Quadris application
 - ❧ No negative impact observed on the beets
 - ❧ Not enough CLS in trial to see visible difference in disease levels
- ❧ Topsin tank mixed with foliar Quadris application
 - ❧ Research from other states suggests Topsin may have efficacy against Fusarium root rot
 - ❧ No negative impact observed on the beets
 - ❧ Dead beet count too low to see differences

In-Progress and Future Projects



Clover vs Radish Cover Crop



- ❧ Both red clover and oilseed radish are popular cover crops after wheat
- ❧ Benefits of clover
 - ❧ Increase in organic matter
 - ❧ Nitrogen
- ❧ Benefits of radish
 - ❧ Reduction of sugarbeet cyst nematode population
 - ❧ Breaking up compaction
 - ❧ Some organic matter
- ❧ In a nematode field, which is the best cover crop before sugarbeets?

Clover vs Radish Sylvester Farms



Heat Treatment to Reduce *C. beticola* Inoculum



- ❧ *Cercospora beticola* is sensitive to high heat
- ❧ In preliminary greenhouse study, observed complete inhibition of spore production, 80-90% lesion fatality
- ❧ Purchased burner from Multi-Trail Enterprises
- ❧ Tank and propane from Fairgrove Oil
- ❧ Key factors to determine:
 - ❧ Temperature range
 - ❧ Defoliation
 - ❧ Storage
 - ❧ *C. beticola* survival



Temperature & Defoliation



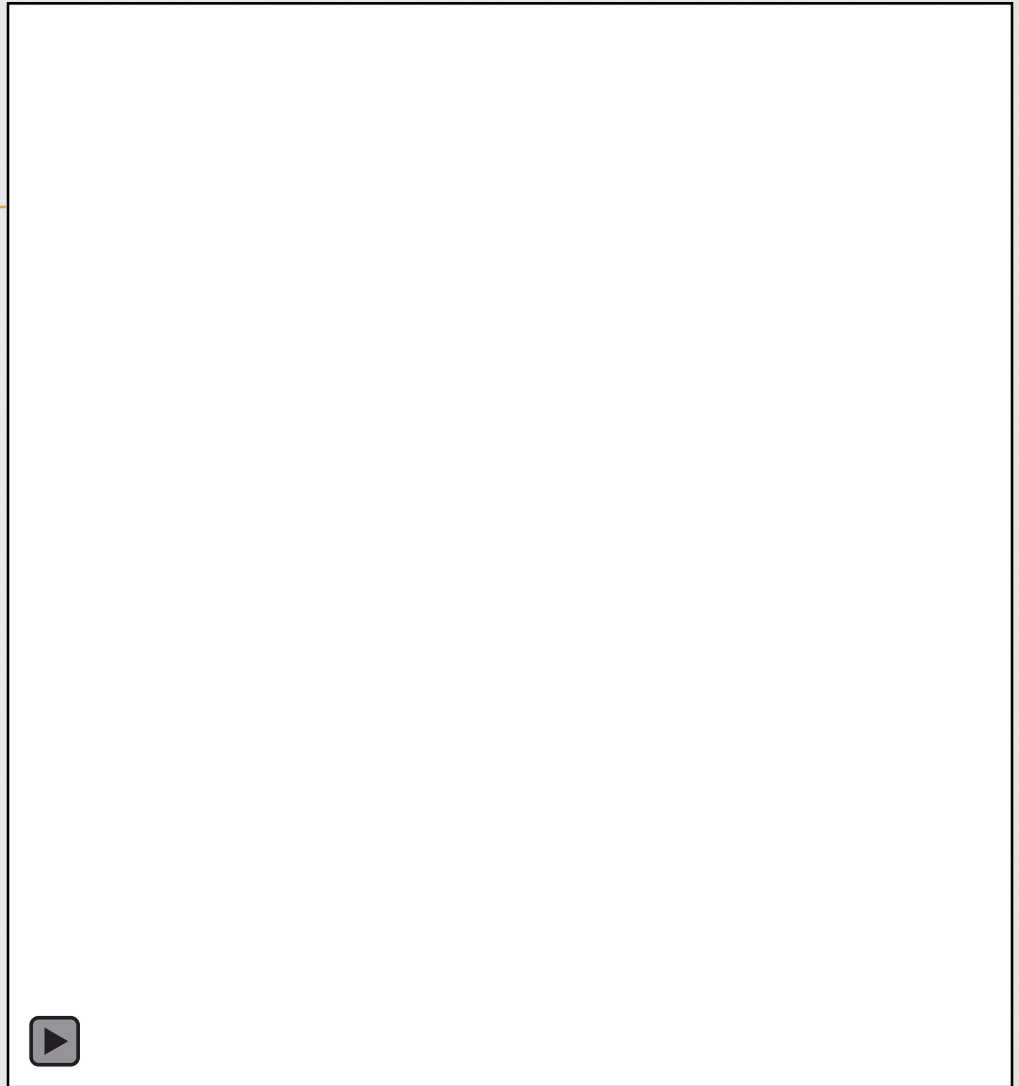
- ☞ Temperature range: 1,200 to 1,600°F
- ☞ No impact on defoliation



Inoculum Reduction

∞ Treatments:

1. Control
2. Plow (immediately post-harvest)
3. Burn (prior to defoliation)
4. Desiccant (7 days pre-harvest)



Cercospora beticola Survival

- Significant differences were detected in samples collected at-harvest (N=133 leaves or 240 lesions)
- Impact on storage, testing in progress
- In 2020, will monitor overwintered leaf samples, early season sporulation, disease, and yield

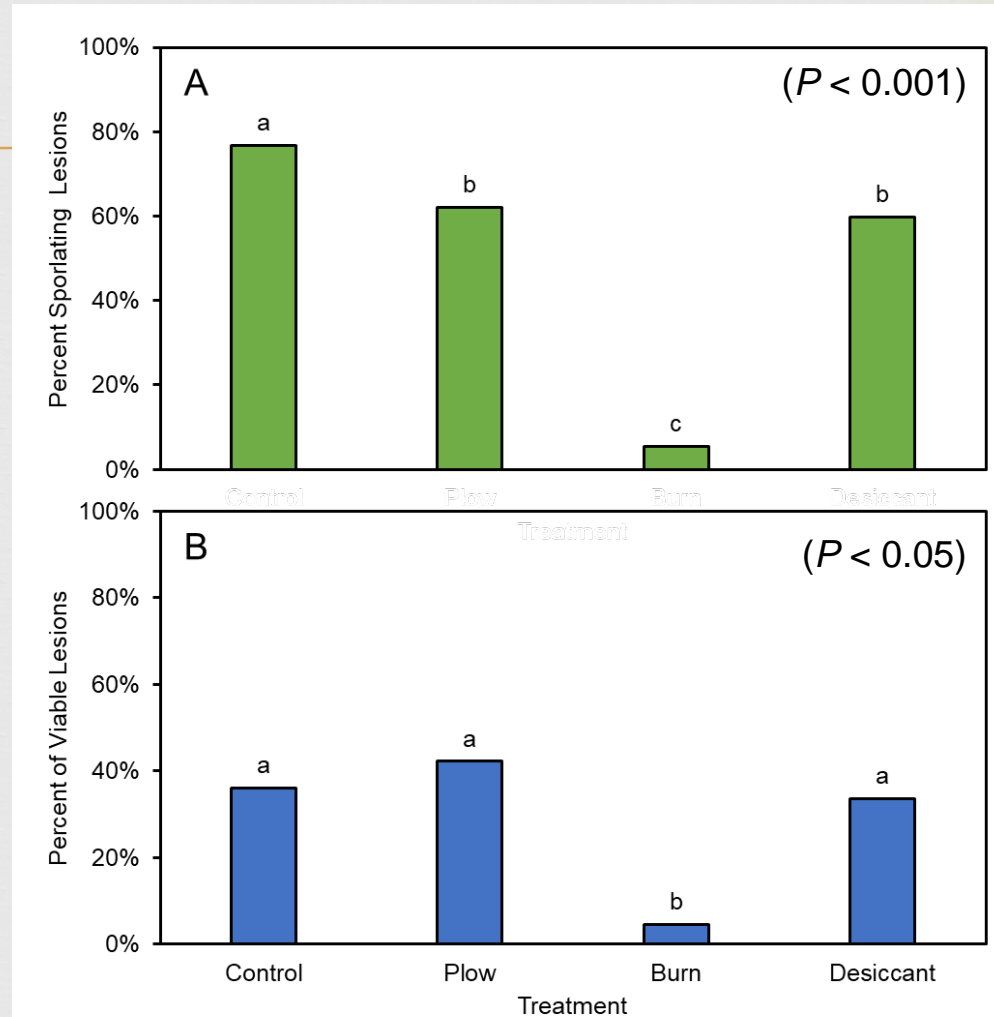


Figure credit: A. Hernandez

Cercospora Fungicide Resistance Sampling



- Both strobilurin and benzimidazole (Topsin) fungicides are recommended for Cercospora leaf spot management
- Resistance to both is present in Michigan
- This year, will offer an in-season resistance screening program
- Will help to maximize the efficacy of our fungicide applications



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