

Research Needs for the 2026-2027 Grant Cycle

Compiled July 2025 by the Sugarbeet Research & Education Board of Minnesota and North Dakota

Needs as reported by sugarbeet cooperatives (factory representatives and growers)

- I. Minn-Dak Farmers Cooperative (MDFC)
- II. American Crystal Sugar Company (ACSC)
- III. Southern Minnesota Beet Sugar Cooperative (SMBSC)

I. MDFC

Cercospora:

- Resistance testing/monitoring
 - Latent testing
 - Explanation of the resistance profile, especially as the season goes on
 - End of season levels
 - Do we need to test for EBDC resistance as well?
- Optimize utilization of the fungicides we have
 - What is the best order/rotation?
- CR+ durability
 - CLS strains that overcome CR+, why/how?
 - What is the best management plan then?
- Continued work on updating the model

Weeds:

- Truvera
 - How to maximize these new chemistries with our current herbicide program
 - Combination of dicamba and etho PRE?
 - Effect on nurse crops?
- Complex mixtures of herbicides, insecticides, fungicides
 - Safety to beets especially, but efficacy is important too
 - How will the sprayer fare?
 - Mixtures with expected “new” herbicides as well (Truvera)
- Etho POST
 - Label update to use more than 12 oz total
- Desmedipham
 - Would be great to have that chemistry back

- IF we get des/phen back – how do we use Betamix and the Truvera trait? What would that sort of weed control program look like?
- Preparation for Palmer

Insects:

- Alternative for Counter
- White grubs
- Cutworms
 - Importance of spraying at/after dark
- Springtails

Cover crops:

- Fall cover crops
 - Rye strips
 - Winter wheat
- Growers want to use more etho in the spring but also want to use cover/nurse crops
 - Do we up the bu/a of the small grain crops used?
 - What is the max rate we can use and still get a good cover crop?
 - Volunteer spring wheat after the field was harvested the previous fall
 - Do growers need to make two passes?
 - Ex: spread the cover and scratch it with the drag, then spray and incorporate the etho so it's not right on the cover crop seed

Strip tillage

Fertility:

- Manure management
 - Dairies putting in biodigesters – how to utilize the digestate

Storage:

- Respiration rates of scalped vs. non-scalped sugarbeets
- How do we reduce respiration within the pile?

Fusarium:

- Control beyond genetics is needed

Rhizomania:

- Continued monitoring
 - Lots of pressure on varietal resistance

Rhizoctonia:

- Continued screening of products
- How late can an application be made and still be effective?
 - Beyond 8-leaf stage

II. ACSC

Weed control

- Need Post herbicides that could be used to control resistant Waterhemp, Kochia, Common Ragweed, Common Lambsquarters.
 - Need to emphasize application timing on very small weeds
 - Continued research on Spin-Aid, education on timing and layer with Pre for Kochia control.
 - Can adjuvants help? Level Best – Tallow Amine?
- Need to know what herbicides will be effective on Palmer Amaranth. Are we confident that what we are using for a waterhemp program would also provide comparable palmer amaranth control? (Pre/PPI and & lay-by)
- Ethofumesate – Ability to get a higher amount of product Labeled POST for kochia control. 24 oz total? Two – 12 oz applications?
- Ultra Blazer
 - Better coverage research – Nozzle type (dual fan?), water volume
 - Placement in a regimented spray program
 - Environmental influences and sugarbeet injury
 - Tank-mixes that work or don't work based on environment
- Pre-Plant Incorporated herbicide comparison to Pre-Emerge herbicide - efficacy and crop safety
- PPI and Pre-Emerge – higher use rates – efficacy, injury, rotational considerations
- Nozzle research on contact herbicides – Dual fan, high water volume?

Insects

- Development of SBRM resistant varieties to be available for production.
- Evaluation/Testing of Varietal SBRM Tolerance
 - In cooperation with ACSC Beet Seed and Mark Boetel
 - ACSC Beet Seed could plant SBRM Evaluation trial – work through ACSC Seed Committee.
 - Work with Mark Boetel to apply for funding to do the evaluations
- New/Alternative insecticides for Sugarbeet Root Maggot control in comparison to Chlorpyrifos efficacy.
- Updated comparison of established Post liquid insecticide's (Asana, Mustang) efficacy to chlorpyrifos.
- SBRM Economic Thresholds - Evaluation of Post insecticide applications in relation to the Peak Fly in comparison to applications at various fly count levels prior to Peak Fly
- Springtail control with new/alternative insecticides – ideally and effective post application
- Springtail varietal resistance

Cercospora

- CR+ examine resistance durability of trait and monitor progression of resistance forming in Cercospora isolates.

- Refine Cercospora infection model to include spore germination and CLS DNA detection research to predict initial fungicide application timing prior to visual CLS spots as well as timing/triggers of subsequent applications. Probably 2 separate models tied together.
- Continue to track changes in Cercospora in resistance levels due to fungicide applications through growing season. This could identify chemistries that are effective in-season, rather than using only the end-of-year sample to evaluate sensitivity.
- CR+ fungicide program evaluation to optimize recoverable sugar production. May not be about eliminating fungicide applications to recoup tech fee, but may see an increase in sugar production/acre if maintaining applications that more than pay for the tech fee?
- Include all cooperative's fungicide sequencing/tank-mixing recommendations as a rep in fungicide sequencing study
- In fungicide efficacy trial, establish base treatment (fungicide sequence) programs repeated every year that act as a baseline control for evaluating results.
- Early fungicide applications for Cercospora control with different types of fungicides as the early application versus traditional timing and spray program

Root Disease

- For Fusarium control – develop/identify fungicide for control (seed treatment, in-furrow, post)
- Many new rhizoctonia fungicides have become labeled – continue evaluations on efficacy comparisons
- Continued evaluations of new seed treatments, in-furrow applications, Post applications for root disease control as well as combinations for efficacy and safety.
- Rhizomania evaluations for resistance breaking strains

Soil/Fertility

- Starter Fertilizer evaluation
 - Many questions past years on starter fertilizer
 - Much research has been done previously on 3 gal 10-34-0
 - Showed benefits and can reduce broadcast P application amount
 - Unfortunately, may have to redo prior research to show support for the precision application of Starter Fertilizer aid in:
 - Reducing the amount of broadcast phosphorous needed
 - Promoting early season growth in cold soils and proximity to P for availability
 - Proximity to sugarbeet's taproot for access vs. a more fibrous root system that other crops have with more surface area for capture.
 - Evaluation of interactions (stand establishment & yield) with other pesticides placed at-plant/infurrow
 - Ex. Counter, Poncho beta, Azteroid,
- Due to excessive rain, Growers are curious what Nitrogen soil test levels should be at in the early growing season (late May/early June) at different soil depths.
 - Need to develop/research what soil test available N levels are adequate at different soil depths in May & June to support season long growth.
 - Typically, it has been understood that if a grower intentionally planned N management to side dress they should do so. Otherwise, if they fertilized "in-full" in either Fall or

Spring they should not side dress in-season as most N should be in the soil profile and additional N will be mineralized from soil organic matter through the growing season.

- Evaluate cover crop establishment prior to sugarbeet planting considering:
 - Develop and educate on Fall seeded cover crops and spring management/control in wheat fields prior to sugarbeets
 - Should more volunteer wheat development be encouraged to be left to overwinter?
 - Fall or Spring planted
 - Ease of killing cover crop before and after planting
 - Cover crop that is winter killed but still provides carcass for erosion management – winter wheat?
- Evaluate methods to control erosion post-sugarbeet harvest
 - Planting cover crop on preiled areas of fields
 - What's the best cover crop to plant to get established in the Fall, rate and controlled following spring?

Storage

- Continued research on reduction of storage losses,
 - Particularly early storage (October – Jan) in Non-ventilated piles.
- Storage respiration of scalped vs. non-scalped sugarbeets

III. SMBSC

1. Cercospora Leaf Spot

- a. Based on changes to fungicide resistance during the growing season, is there a best order or sequence to apply products to maximize the efficacy of all products and lessen resistance? How to best determine this order or sequence?
- b. Update the Disease Index Value model. Has the fungus and its development changed over this time period, and how can the model be updated?
- c. CLS fungicide resistance monitoring. It is very important to continue this monitoring for use in determining the trends in the effectiveness of the different fungicides. Should we be monitoring additional fungicides? Should we be monitoring EBDC fungicides?
- d. Evaluation of potential and current CLS products for efficacy.
- e. When florylpicoxamid (new QII fungicide) becomes available, where in the CLS fungicide program does it best fit in a program for effectiveness and resistance management.
- f. Are CR+ adapted strains more aggressive?
- g. Efficacy of drones for CLS fungicide applications.

2. Weed Management

- a. Continue to pursue any additional post-emerge herbicide options for sugar beets including Truvera.

- b. Weed management in rotation crops – education to maintain Liberty and dicamba effectiveness in anticipation of Truvera availability in the future.
- c. Herbicide efficacy trials on palmer amaranth to prepare for the discovery of and spread of palmer amaranth across the growing area.
- d. Complex mixtures of herbicides with insecticides and fungicides. Crop injury potential of various mixtures.
- e. Fall herbicide applications
- f. Efficacy of Treflan as a layby herbicide.
- g. Potential for rope wick applications in sugar beets.
- h. Are high rates of ethofumesate (6-7.5 pint/acre) reducing the sugar beet stand? Differences between incorporated etho and rain incorporated.
- i. Rotational herbicide carryover effects on sugar beet yield.
- j. Robotic weeding and “See and Spray” technology evaluation for sugar beet.

3. Nutrient management

- a. Nitrogen placement. Will the placement of nitrogen in 2X2 band at planting help reduce issues of nitrogen tie-up in high-residue corn situations?
- b. In-season applications of nitrogen using Y drops or other delivery systems.
- c. Manure management in a sugar beet rotation. (dairy, swine, poultry)
- d. Biological products to release soil nutrients, enhance growth, enhance nutrient uptake, or aid in plant health. (Pivot Bio, Source, Utrisha N, etc.)
- e. Micronutrients – applied in-furrow or foliar.
- f. Tissue testing. What range of nutrients should be present in the crop at various crop stages? Do the sufficiency tables need updating?
- g. Late-season nitrogen mineralization – how can we account for this potential in our fertility programs?
- h. Starter fertilizer on medium and high P soils.
- i. Mid-late season nitrogen applications, especially after high rainfall events.

4. Insects

- a. Lygus bug. Lygus has been a yearly insect pest in portions of SMBSC.
 - i. Does the threshold for lygus control need to be updated?

5. Root Disease

- a. Rhizoctonia
 - i. Screening of new in-furrow and post-emerge Rhizoctonia products compared to existing products. Do they perform similarly, or are there superior options?
 - ii. Use of adjuvants or other methods to increase the effectiveness of banded/broadcast Rhizoctonia fungicide applications.
 - iii. Late season applications for Rhizoctonia management
- b. Rhizomania.

- i. Management options or practices in addition to variety resistance. We are currently exerting a great amount of selection pressure on the resistance genes within varieties.
 - ii. Continued monitoring of rhizomania at field levels to detect changes in the virus that may allow it to overcome current variety resistance.
 - c. Aphanomyces
 - i. Evaluate new products for Aphanomyces.
 - ii. Tachigaren effectiveness at rates less than 45 grams.
- 6. Storage
 - a. Practices that can decrease respiration losses in storage piles.
 - b. Evaluation of post-harvest fungicides for decreased storage losses.
 - c. Ways to decrease sugar beet damage during harvest and piling operations.
 - d. Defoliator comparison.
- 7. Fall cover crops in sugar beet fields.
 - a. How can we establish fall cover crops or inter-seed in sugar beets to reduce soil movement over the winter and early spring?
- 8. Stand establishment
 - a. Closing wheel comparison.
 - b. Advantages of stand uniformity.