

Research Needs for the 2027-2028 Grant Cycle

Compiled July 2026 by the Sugarbeet Research & Education Board of Minnesota and North Dakota

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

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

I. SMBSC

2026 SMBSC Research Needs and Priorities – July 14, 2026

Research and Education Board Needs Meeting

1. Cercospora Leaf Spot
 - a. Maximize the efficacy of all products and lessen resistance pressure on current products.
 - b. New genetic resistance sources for CLS resistance.
 - c. Determine the best order or sequence of fungicides based on cross resistance data and in field changes to resistance based on management practices.
 - d. Update and implementation of a new Disease Index Value model.
 - e. 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?
 - f. Evaluation of other potential fungicides for efficacy on CLS.
 - g. Efficacy and BMP's for CLS fungicide applications via drones.
2. Weed Management
 - a. Continue to pursue any additional pre or post-emerge herbicide options for sugar beets.
 - 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. Sugar beet stunting from layby chloroacetamide herbicides.
 - f. Potential for rope wick applications in sugar beets.
 - g. Rotational herbicide carryover effects on sugar beet yield.
 - h. Robotic weeding, laser weeding, and "See and Spray" technology evaluation for sugar beet.
3. Nutrient management
 - a. Nitrogen placement. Spring urea is reducing sugar beet emergence at rates above 80-90 lbs. per acre. How best to apply any remaining nitrogen?
 - b. In-season applications of nitrogen using Y drops or other delivery systems.
 - c. Biological products to release soil nutrients, enhance growth, enhance nutrient uptake, or aid in plant health.

- d. Micronutrients – applied in-furrow or foliar with CLS fungicides.
 - e. Tissue testing. What range of nutrients should be present in the crop at various crop stages?
Do the sufficiency tables need updating?
 - f. Late-season nitrogen mineralization – how can we account for this potential in our fertility programs?
 - g. 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 fungicide 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 practices for decreased storage losses.
 - c. Ways to decrease sugar beet damage during harvest and piling operations.
 - d. Defoliator comparison with scalp vs. nonscalp.
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.
 - c. Plant population study. Sugar beet population to maximize extractable sugar per acre.
9. Plant growth regulators – can we influence yield and sugar content with plant growth regulator products.

II. MDFC Research Priorities

SBREB Needs Meeting, July 14, 2026

Cercospora:

- Drone vs. ground rig
- Dawn dish soap
 - Especially with EBDC
- Peroxide
- Adjuvants
 - Proline specifically calls for NIS – should we be using with others (not just other triazoles)
 - How can we make the chemistries that we have more effective?
 - Less prone to rain wash-off
 - Penetrate canopy better so better leaf coverage
- Inoculum reduction
- Continued work on updating the model
 - Too conservative currently
- Resistance testing/monitoring
 - Real-time data – know if resistant or susceptible before going out to make an application
 - Latent season
 - Dynamic movement 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?

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 + fungicides and/or herbicides + insecticides
 - Ex: glyphosate + tin
 - Glyphosate, ethofumesate, chloroacetamide + EBDC, Proline, Tin, Topsin
 - Mixtures with clethodim
 - Safety to beets especially, but efficacy is important too
 - How will the sprayer fare?
- Etho POST
 - Label update to use more than 12 oz total
 - Is the efficacy boost “worth” the cost of the ethofumesate?
 - 4 oz vs. 6 oz vs. 12 oz vs. 16 oz vs. 24 oz, etc.
- Fall-applied Dual

- Desmedipham
 - Does this chemistry still work?
 - Betamix that's still out on the farms is old, even if stored perfectly we see inconsistent results
- Real-time detection of herbicide resistance prior to application
- See & Spray
 - Label process
 - No need to identify each weed – just need to know if not a sugarbeet, then remove it
- Autonomous weeders
 - Boiling water
 - Laser
 - Mechanical
- Adjuvants
 - Tallow amine
 - Which adjuvant is best for each mixture?
 - Ex: Glyphosate + MSO
- Preparation for Palmer

Insects:

- Lygus bugs
 - Threshold; some crop consultants want to spray if see a single bug, but is that economically correct?
 - Are they causing damage that will lead to yield/quality loss?
- Weevils
- White grubs
- Cutworms
- Springtails
- Alternative for Counter

Cover Crops:

- Fall cover crops
 - Rye strips
 - Planted vs. broadcast
 - How best to get established in fall
 - Winter wheat
- If don't use a cover crop, how to "rough up" the ground so that the soil is less likely to blow in a
- wind event
 - Planting practices/equipment
- Growers want to use more etho in the spring but also want to use cover/nurse crops – how can
- we effectively do both?
 - Do we up the bu/a of the small grain crops used?
 - What is the max rate we can use before we choke out the sugarbeet
 - Volunteer spring wheat after the field was harvested the previous fall
 - Timing
 - Soil test for N

Rhizoctonia:

- Complex mixtures of insecticides + fungicides
 - Quadris/Excalia/Elatius + Mustang/Asana
- How late can an app be made and still be effective?
 - Beyond 8-leaf stage
- Continued screening of products

Fertility:

- Nitrogen and CLS
 - “Healthier sugarbeet” with higher N
 - Microclimate with larger canopy
- 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?

Strip tillage:

- More residue in the spring to keep soil in place
- Hard to test at a research level
 - Equipment
 - Area
 - Need big enough space to determine if having an effect

Fusarium:

- Control beyond genetics is needed

Rhizomania:

- Continued monitoring
 - Lots of pressure on varietal resistance

III. 2026 ACSC SBREB Research Needs

Weed control

- Research use of See & Spray technology to apply herbicide products such as Stinger, Spin-Aid, Ultra Blazer, etc. in a targeted manner
 - To be used for a lone application of registered sugarbeet herbicide that can cause more relative sugarbeet injury for hard to control weeds
 - Dual boom? – one Primary tank for general tank-mix with Secondary tank with “hot” herbicide for See & Spray to target waterhemp, kochia, or ragweed?
- New weed control technology exploration/evaluation: Laser weeders, autonomous weeders, etc.
- Nozzle research on contact & systemic herbicides – Dual fan, high water volume?
- 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
- Ethofumesate – Ability to get a higher amount of product Labeled POST for kochia control. 24 – 32 oz total? Two – 12 oz applications?
- 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)

Insects

- SBRM Economic Thresholds – Finalize evaluation
 - What levels trigger Post Insecticide applications prior to Projected Peak Fly.
- 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
- Evaluate New/Alternative insecticides for Sugarbeet Root Maggot control in comparison to industry standard best practice (Counter high rate & Chlorpyrifos) for efficacy.
- Springtail control with new/alternative insecticides – ideally and effective post application
- Can Springtail varietal resistance be developed
- Fusarium – is there a relationship between infection and springtail and soybean cyst nematode feeding.

Cercospora

- Refine Cercospora infection model to include “Primary” initial latent detection to predict initial fungicide application timing prior to visual CLS spots as well as “Secondary” timing/triggers for subsequent fungicide applications. Probably 2 separate models tied together.
- New NDAWN CLS Application: programming of eventual new CLS infection model into the NDAWN system –
 - Is funding needed for NDAWN to develop new model
 - Need to maintain historical CLS DIV – “look back comparisons”
- Detection of Latent CLS infection in the field without sending samples to the lab
 - Can it be done through: Multi-spectral signature identification? Field Assay? Etc.
- Continue to look for fungicide modes of action that could be used for effective CLS control
- Continue to track changes in Cercospora in-season resistance level responses 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.
- What can be done in the year previous sugarbeet field to limit CLS spore dispersal to current year’s sugarbeet fields.
 - Can something be applied to kill spores or not let them leave?
 - Fall (after harvest) or Spring
- 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.

- Cercospora damage comparison of latent vs. In-season infections.

Root Disease

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

Soil/Fertility

- Evaluate cover crop establishment prior to sugarbeet planting considering:
 - Fall seeded Cover Crop - Develop systems and educate on Fall seeded cover crops and spring management/control
 - Should more volunteer wheat development be encouraged to be left to overwinter?
 - Will dead plant carcass after winter kill provide enough protection
 - 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 prepped 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 sugarbeet