



American Crystal Sugar Company

AgNotes



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Joe Hastings,
General Agronomist
Editor

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American Crystal 2022 Cercospora Control Recommendations

Cercospora Leafspot (CLS) fungicide recommendations incorporate both CLS control and resistance management.

Tank-mix and rotate fungicide modes of action throughout the fungicide program.

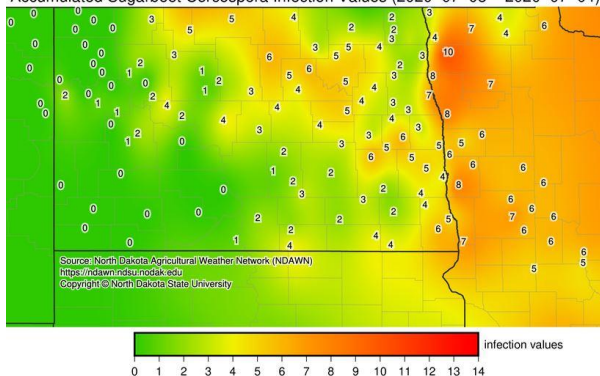
Each recommended fungicide tank-mix combines 2 different modes action utilizing a translaminar/systemic fungicide paired with a contact fungicide.

- Exception is when EBDC is alone in the 5 & 6 spray programs
 - There is no documented resistance to EBDC fungicides

Monitor CLS Daily Infection Values (DIV's)

- The Crystal Agronomy App is no longer supported
- [NDAWN Mobile-Friendly Website](#) will now be used
- 2-day DIV Risk Ratings
 - 1 – 3 = Slight
 - 4 – 6 = Moderate
 - 7 – 14 = Severe

Accumulated Sugarbeet Cercospora Infection Values (2020-07-03 – 2020-07-04)



<https://www.crystalsugar.com/agronomy/ag-gold-standards/>

- Fertility
- Variety Selection
- Stand Establishment
- Weed Control
- Disease & Insect Control
- Harvest

Starting your Cercospora Leaf Spot Spray program: If you think you're spraying too early, you're probably right on time.

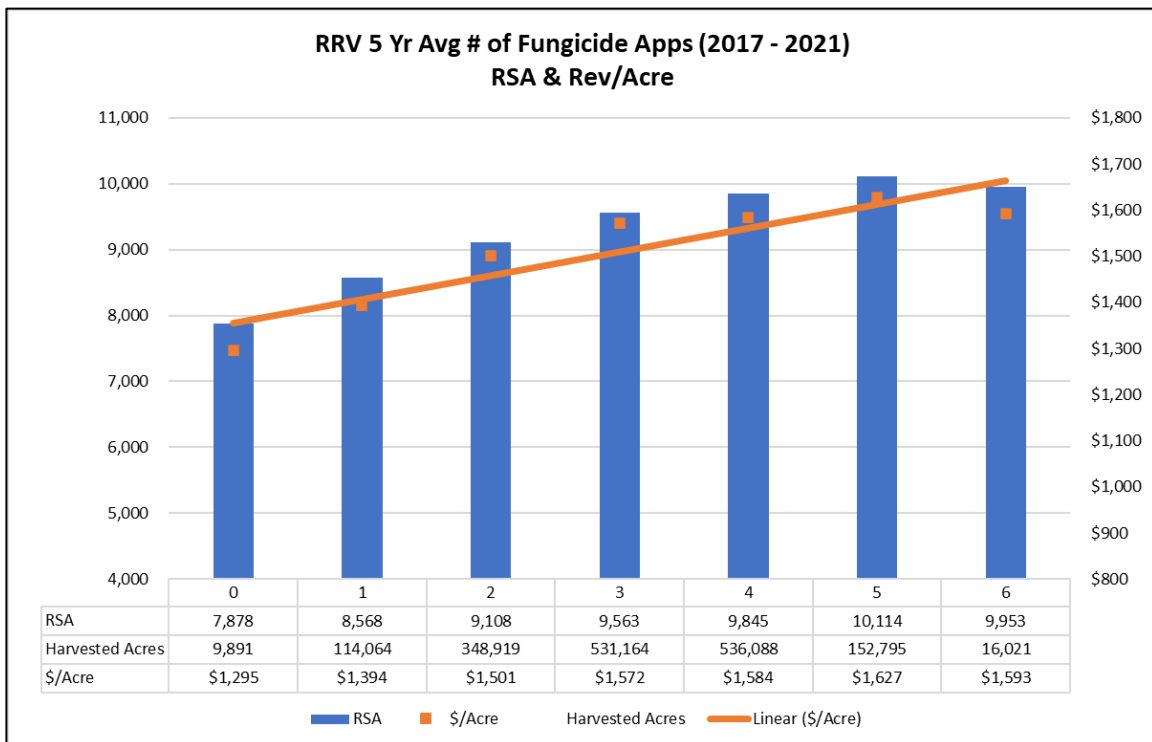
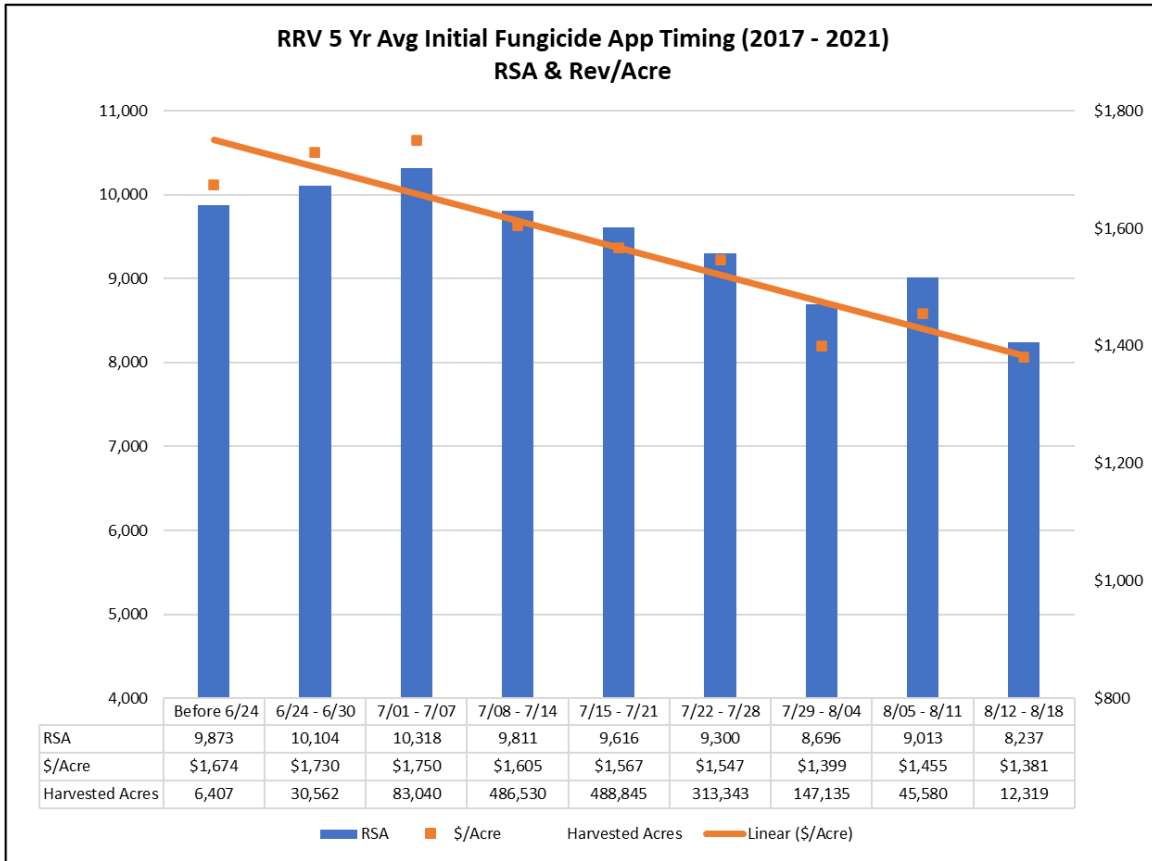
- Both CR+ and Non-CR+ varieties require timely initial fungicide applications.
- The timing of the 1st two fungicide applications is most important to achieve optimum potential in CR+ varieties.
- There is a robust amount of Cercospora inoculum in the environment from the late onset of Cercospora in the 2021 growing season.
- Start fungicide program once rows start to close coinciding with Moderate to Severe Daily Infection Value's. Start early and stay on track.
 - 2022 is a unique year with later dates and therefore later canopy row closure, be in contact with your Agriculturist on fungicide application timing.
 - To note: in recent years we have observed CLS in fields without closed rows
- It can take 5 to 21 days for spots to appear on the leaf after Cercospora infects the leaf.
- Fungicides are protectants and are not curatives, use them as such.
- To limit CLS infections, be proactive by applying fungicides to protect the sugarbeet leaves before infections can occur.

RRV Initial CLS Fungicide Application and # of CLS Fungicide Applications

The below charts are compiled from data collected by American Crystal Agriculturists from growers on their Cercospora fungicide application programs from 2017 – 2021 for the Red River Valley.

- Your Agriculturist has these same charts for their factory district and their growing area. The trends are the same for these as compared to the Red River Valley.

These charts show recoverable sugar/acre and revenue/acre increase with earlier initial fungicide applications and with additional fungicide applications.



2022 ACSC Cercospora Leaf Spot Fungicide Program

Application # Sequence based on Initial Fungicide Application Timing & 12-Day Intervals	Late June Initial Application	Early - Mid July Initial Application	Mid - Late July Initial Application	Late July Initial Application	
				Option 1	Option 2
1	Triazole + EBDC	Triazole + EBDC	Triazole + EBDC	Triazole + EBDC	TPTH + Benzimidazole
2	EBDC	TPTH + Benzimidazole	TPTH + Benzimidazole	TPTH + Benzimidazole	Triazole + EBDC
3	TPTH + Benzimidazole	Triazole + EBDC	Triazole + EBDC	Triazole + Headline/Priaxor	Headline/Priaxor + TPTH
4	Triazole + EBDC	EBDC	Headline/Priaxor + TPTH		
5	EBDC	Headline/Priaxor + TPTH			
6	Headline/Priaxor + TPTH				

CR+ Variety CLS Fungicide Program

	Late June Initial Application	Early - Mid July Initial Application	Mid - Late July Initial Application	Late July Initial Application
1	Triazole + EBDC	Triazole + EBDC	Triazole + EBDC	Triazole + EBDC
2	TPTH + Benzimidazole	TPTH + Benzimidazole	TPTH + Benzimidazole	Extended Interval
3	Extended Interval	Extended Interval	Extended Interval	Headline/Priaxor + TPTH
4	Triazole + EBDC	Triazole + EBDC or EBDC	Triazole + Headline/Priaxor	
5	Extended Interval	Headline/Priaxor + TPTH		
6	Headline/Priaxor + TPTH			



Contact your Agriculturist

Contact your American Crystal Agriculturist for the most up-to-date information and issues affecting sugarbeets in your area.

ACSC Cercospora Recommendations are formulated based on both: Cercospora leaf spot (CLS) control and fungicide resistance management

- Tank-mix and rotate different fungicide chemistries (Modes of Action)
- Tank-mix recs combine systemic/translaminar + contact fungicides
- 12-day spray intervals
- Fungicides are protectants, they are not curatives.
- Initial fungicide application timing is critical – better to apply fungicide too early than too late
- Last App – Designed to be applied last week of August to 1st week of September
 - Fungicide application may still be needed in September
 - Discuss with Agriculturist options w/PHI's for Prepile & Stockpile

CR+ Varieties

- Extended Intervals are NOT Skips
- Continue to monitor Daily Infection Values & CLS
- CR+ does Not have immunity to Cercospora leaf spot, they only have a higher tolerance.
- CR+ varieties require fungicide applications to optimize control, Recoverable Sugar/Acre & Revenue/Acre
- The 1st two applications and their timing are most important to achieve maximum potential



Triazoles

- Do not use in more than 50% of applications per cropping season and only in a tank-mix.
 - Triazoles are vital to CLS management
 - Overuse may further increase resistance.
- Alternate different Triazoles if used more than once in a spray season.
- Due to a high probability of cross-resistant CLS spores
 - If applying just 2 Triazoles per season:
 - Do not use both Provysol & Inspire XT in the same growing season.
- Watch Preharvest intervals (PHI's) for Triazoles
 - They can range from 7 to 14 to 21 days.
 - Consider applying Triazoles with longer PHI's early in the spray season
 - Use shorter PHI's later in your fungicide program for harvest planning.

EBDC's (Mancozeb/Manzate):

- Are an effective tank mix partner for CLS control and resistance management.
- There is no known resistance to EBDC's.
- Pre-Slurrying product helps in tank-mixing.
- Maneb's are not as effective on CLS as Mancozeb's.

Tins (TPTH):

- Use in only **2** applications per cropping season and only in a tank-mix.
 - Tins are vital to CLS management
 - Overuse may further increase resistance.

- **Pre-Harvest intervals (PHI's) differ from North Dakota to Minnesota: 7-day PHI in North Dakota and 21-day PHI in Minnesota.**

Benzimidazole (Topsin/T-Methyl):

- Use only once per season early in spray program & only in a tank-mix (e.g., Tins - TPTH).

Strobilurin (Headline/Priaxor):

- Headline/Priaxor benefits include: plant health; harvest frost deterrence/recovery; and storage benefits.
- Use with a tank mix of Tin (TPTH) or a Triazole at a full rate.

Copper

- Coppers have a 0-day Pre-Harvest Interval (PHI), option if up against Pre-Harvest Intervals during pre-pile or before stockpile harvest as a tank-mix partner.
- Ideally tank-mix copper with a non-contact fungicide (Triazole) to avoid two contact fungicides in the same application. Adhere to the PHI of tank mix partner.
- Talk to your Agriculturist if you are planning to use a Copper product.

Fungicide Use Information				
Fungicide Class	Fungicide	Rate/Acre	REI (Reentry Interval) Hours	PHI - (Pre-Harvest Interval) Days
Triazole	Inspire XT	7.0 oz.	12	21
Triazole	Proline	5.7 oz.	12	7
Triazole	Provysol	4 oz.	12	7
Triazole	Minerva / Eminent VP	13 oz.	12	14
Triazole + TPTH	Minerva Duo	16 oz.	48	14
Triazole + SDHI	Lucento	5.5 oz.	12	21
Triazole + Strobilurin	Veltyma	8.0 oz.	12	7
EBDC	Several	Ranges by Product	24	14
TPTH (liquid)	Agri Tin Flowable / Super Tin 4L	8.0 oz.	48	21 MN / 7 ND
Benzimidazole (liquid)	Topsin 4.5FL / T-Methyl 4.5F	10.0 oz.	24	21
Benzimidazole (dry)	Topsin M 70W / T-Methyl 70WSB	0.5 lbs.	24	21
Strobilurin	Headline SC	9.0 oz.	12	7
Strobilurin + Xemium	Priaxor	6.7 oz.	12	7
Copper	Several	Ranges by Product	48	0

This table is not a substitute for the product label. Always refer to the label for product details.



For prompt answers to your questions and comments, call and leave a message and Tom Astrup or one of his staff will respond as soon as possible.

**Shareholders:
1-800-633-8941**



CONTACT YOUR AGRICULTURIST

Contact your American Crystal Agriculturist for the most up-to-date information on issues affecting sugarbeets in your area.

Tips for Maximizing Cercospora Leafspot Control

1. **CLS variety rating** – CLS control should improve with a better CLS variety rating. However, this may not equate to fewer fungicide applications. Variety Selector: <https://www.crystalsugar.com/media/mvolklh4/variety-selector-2021.pdf>
2. **Daily Infection Values** – Monitor Daily Infection Values (DIV's) and weather forecasts for timing initial and following fungicide applications. Found on:
 - NDAWN: <https://ndawn.ndsu.nodak.edu/sugarbeet-Cercospora.html>
 - NDAWN Mobile Friendly: <https://ndawn.info/crops.html>
3. **Timing of fungicide program** – Start program once rows close and coinciding with Moderate to Severe DIV's. Start early and stay on track. Cercospora Leaf Spot can appear 5 to 21 days after spore infection. Fungicides are protectants and being proactive by applying fungicides ahead of infection limits the development of Cercospora leaf spot.
4. **Full rates** – In tank mixes utilize full application rates of each tank mix partner, following label recommendations.
5. **Spray intervals** – The time interval between applications should not exceed 12 days, plan best as possible around adverse weather conditions (rain, wind, hail). For EBDC's alone follow a 7-day spray interval.
6. **Aerial application** – If too wet for ground application, stay on schedule with an aerial application.
7. **Glyphosate tank mixes** – Are not recommend with CLS fungicide applications since optimum water volume requirements are different for glyphosate and CLS fungicide applications as the target pests are not the same.
8. **Pre-Pile & Fungicide Pre-Harvest Intervals** – Be aware of each fungicide's Pre-harvest Interval and how that may impact pre-pile harvest plans. Adjust your fungicide spray program accordingly.
9. **Water volume** – CLS fungicides need excellent coverage to protect the sugarbeet leaf surface. To achieve this requires 15 to 20 gallons of water per acre.
10. **Pressure** – High pressure applications at 80+ psi provides improved leaf coverage depending on the spray tip chosen.
11. **Spray nozzles/tips & droplet size**– Using nozzles that will produce Medium droplet sizes of 250–350µm (microns) is optimum for fungicide applications. Utilize nozzle manufacturer's recommended application pressure to operate within this range. Use proper spray boom height above crop canopy depending on chosen spray nozzle degree angle for best coverage.

Wales tank mixing order for Pesticides

1. **Wettable powders & dispersible granules**
2. **Agitate tank to mix thoroughly**
3. **Liquid flowables & suspensions**
4. **Emulsifiable concentrate formulations**
5. **Surfactants & Solutions**

12. **Tank mixes** – All fungicide applications should contain more than one chemistry or mode of action (MOA). Only exception would be EBDC's. Tank-mixing fungicide MOA's and rotating MOA's are paramount. Using only a single fungicide, MOA, increases resistance development pressure to that fungicide. Single fungicide applications may "get you by" but will increase and compound resistance to fungicides on your farm and surrounding neighbors. Utilizing all available fungicide chemistry wisely is vitally important for current fungicide options today and tomorrow. Any tank mix should be sprayed out as soon as possible, with agitation, do not allow mix to sit overnight, spray tank out completely, and rinse sprayer (all lines and tank) with clean water daily.

13. **Water temperature** – Warm water is best for dissolving & mixing fungicides. Pre-warm water in dark bulk tanks a few days prior to use, sunlight aids in warming the water.
14. **Jar test** – If in doubt about a tank mix, run a jar test to see if combination is compatible before loading sprayer.
15. **Scout fields** –during the growing season to evaluate how your fungicide spray program is working.