



June 1, 2020  
Issue 612  
Joe Hastings, Editor

[www.crystalsugar.com](http://www.crystalsugar.com)

## Cercospora Leafspot Management Notes

**American Crystal's Cercospora leafspot (CLS) fungicide recommendations are for both CLS control and resistance management.** The goal is to keep Cercospora under control while at the same time keep the fungicides available to us working now and in future years. 2019 CLS management was successful in general, Cercospora was present in most areas but remained in check because the majority of growers are following these recommendations.



### Key Points in CLS management:



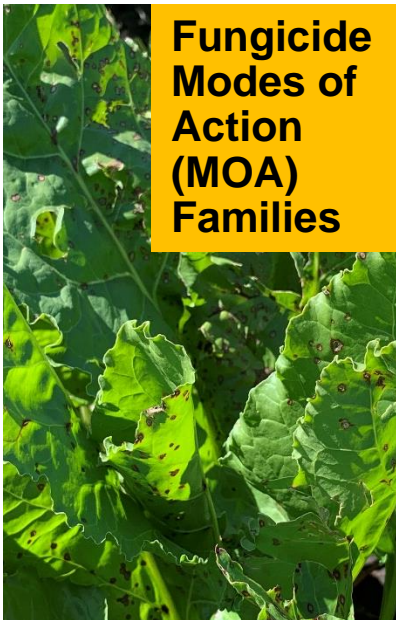
- Proper Timing** of initial and following fungicide applications
- Tank-mixing fungicides** with different Modes of Action (MOA)
- Rotating different MOA's** from one application to the next
- Proper water volume** for applications.
- Variety's Cercospora tolerance**
- Know Pre-Harvest Intervals**

The following pages in this Ag Notes edition will expand upon these key points in Cercospora control and resistance management.



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

Your Way  
TO GROW



**Fungicide Modes of Action (MOA) Families**

DMI – Triazoles	EBDC's	Tins – TPTH	Benzimidazole	Qoi - Strobilurin
Provysol Inspire XT Proline Minerva Minerva Duo	Several: Penncozeb Mancozeb Maneb Etc.	Super Tin Agritin	Topsin M Thiophanate Methyl85	Headline Priaxor

- Good resistance management starts with rotating different modes of action
- **Never** use fungicides from the same mode of action back-to-back
  - Except with EBDC's in 5 & 6 application spray programs
    - There is no known resistance to EBDC's

**2020 ACSC Recommended Cercospora Leaf Spot (CLS) Spray Program**

Fungicide Application Sequence based on Initial Fungicide Application Timing	Timing of Initial Fungicide Application						
	Late June 6 Spray Program	Early-Mid July 5 Spray Program	Mid-Late July 4 Spray Program	Late July- Early Aug 3 Spray Program	Early-Mid Aug 2 Spray Program	Late Aug 1 Spray Program	
				Option 1	Option 2		
Application #1	Triazole*** + EBDC	Triazole*** + EBDC	Triazole*** + EBDC	TPTH* + Topsin**	Triazole*** + EBDC	Triazole*** + EBDC	Headline/ Priaxor**** + TPTH*
Application #2	EBDC	TPTH* + Topsin**	TPTH* + Topsin**	Triazole*** + EBDC	TPTH* + Topsin**	Headline/ Priaxor**** + TPTH*	
Application #3	TPTH* + Topsin**	Triazole*** + EBDC	Triazole*** + EBDC	Headline/ Priaxor**** + TPTH*	Headline/ Priaxor**** + EBDC		
Application #4	Triazole*** + EBDC	EBDC	Headline/ Priaxor**** + TPTH*				
Application #5	EBDC	Headline/ Priaxor**** + TPTH*					
Application #6	Headline/ Priaxor**** + TPTH*						

- \* TPTH:
  - Should NOT be used more than twice per year & used only at Full Rate
- \*\* Benzimidazole (Topsin)
  - Should be used only once per season and NEVER alone.
  - Be aware of 21-day Pre-Harvest Interval.
- \*\*\* Triazoles:
  - Not to exceed 50% of total applications in a season.
  - Due to high level of CLS cross resistance, if only two Triazole apps are used, do not use both Provysol & Inspire XT in the same growing season.
  - Consider starting with Triazoles that have longer Pre-Harvest Intervals.
- \*\*\*\* Headline/Priaxor:
  - Time application August 25 through 1<sup>st</sup> week of September.
- Other Notes:
  - 12-day spray intervals on all products except EBDC alone is 7-8 days.
  - In tank mixing order, dry formulations go in first followed by liquids.
  - Always start with plenty of water and good agitation start to finish.

## Fungicide Use Information

Fungicide Class	Fungicide	Rate/Acre	REI – (Reentry Interval) Hours	PHI – (Pre-Harvest Interval) Days
Triazole	Provysol	4.0 oz.	12	21
Triazole	Inspire XT	7.0 oz.	12	21
Triazole	Proline	5.7 oz.	12	7
Triazole	Minerva / Eminent VP	13 oz.	12	14
Triazole & TPTH	Minerva Duo	16 oz.	48	14
EBDC	Several Available	Ranges by Product	24	14
TPTH	Agri Tin Flowable (Liquid)	8.0 oz.	48	7 MN 7 ND
TPTH	Agri Tin (Dry)	5.0 oz.	48	7 MN 21 ND
TPTH	Super Tin 4L (Liquid)	8.0 oz.	48	7 MN 7 ND
TPTH	Super Tin 80 WP (Dry)	5.0 oz.	48	7 MN 21 ND
Benzimidazole	Topsin 4.5 FL / T-Methyl 4.5F (Liquid)	10.0 oz.	24	21
Benzimidazole	Topsin M 70W / T-Methyl 70WSB (Dry)	0.5 lbs.	24	21
Strobilurin	Headline SC	9.0 oz.	12	7
Strobilurin + Xemium	Priaxor	6.7 oz.	12	7

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

### **WALES** tank mixing order for any Pesticide:

1. **W**etttable powders & dispersible granules
2. **A**gitate tank to mix thoroughly
3. **L**iquid flowables & suspensions
4. **E**mulsifiable concentrate formulations
5. **S**urfactants & Solutions



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**

### 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.
- Manebs are not as effective on CLS as Mancozeb's.

### Headline/Priaxor (Strobilurin):

- Headline/Priaxor benefits include: plant health; harvest frost deterrence/recovery; and storage benefits.
- Use only with a tank mix of Tin (TPTH) at full rate. Exception is in the 3 Spray program under Option 2 where EBDC is used as the tank mix partner.

### Tins (TPTH):

- Use in only **2** applications per cropping season and only in a tank-mix.
- Tins are vital to CLS management and overuse may further increase resistance.
- Watch Pre-Harvest intervals (PHI's) as they range from 7 - 21 days.

### Topsin (Benzimidazole):

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

### DMI's/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 and 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:  
Do not use both Provysol & Inspire XT in the same growing season if applying just 2 Triazoles per 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 and shorter PHI's later in your fungicide program for harvest planning.

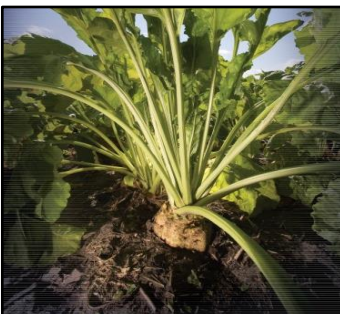
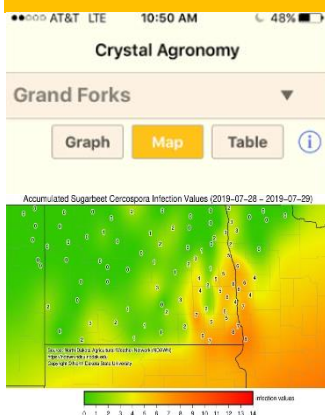
### Minerva Duo:

- Combination of a Triazole + TPTH in a premix formulation and considered a tank-mix (premix).
- Can add EBDC into tank mix to keep fungicide program sequence on track.
- Do not tank mix Minerva Duo with glyphosate.

## American Crystal Agronomy App

Keep a close eye on Cercospora Leafspot development by monitoring Daily Infection Values.

The American Crystal Agronomy App is available and free, found at “the App Store” or “Google Play”.



## 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/523191/variety-selector2019-1.pdf>
2. **Daily Infection Values** – Monitor Daily Infection Values (DIV's) and weather forecasts for timing initial and following fungicide applications. Found on:
  - Crystal Agronomy App
  - NDAWN: <https://ndawn.ndsu.nodak.edu/sugarbeet-Cercospora.html>
3. **Scout fields** – When DIV's have reached Moderate to Severe levels scout for CLS presence. Continue scouting during the growing season to evaluate how your fungicide spray program is working.
4. **Timing of fungicide program** – Start early and stay on track once CLS is found in your area. 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.
5. **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.
6. **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.
  - Dry leaves in the afternoon: 15–20 gallons/acre.
  - Heavy dew on leaves in morning, consider 10-15 gallons/acre.
7. **Pressure** – High pressure applications at 80+ psi provides improved leaf coverage depending on the spray tip chosen. Utilize nozzle manufacturer's recommended application pressure for maximum leaf coverage.
8. **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.
9. **Aerial application** – If too wet for ground application, stay on schedule with an aerial application. Also, if there are tank mixes you prefer not to use in your sprayer, consider aerial or custom ground application.
10. **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.
11. **Tank mixes** – All fungicide applications should contain more than one chemistry or mode of action (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.
12. **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.
13. **Jar test** – If in doubt about a tank mix, run a jar test to see if combination is compatible before loading sprayer.
14. **Full rates** – In tank mixes utilize full application rates of each tank mix partner, following label recommendations.
15. **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 7-8 day spray interval.