



Cercospora Management in 2019...

The latter part of the 2018 season was a very quick reminder of how severe Cercospora Leaf Spot (CLS) can become in just a short period of time. This rapid onset is why it is still considered the most crippling foliar disease of sugarbeet within our growing region. The tremendous amount of CLS pressure experienced last year has given rise to a much larger over-wintering inoculum load, and over the next few weeks it will 'spark' another disease cycle. Now more than ever, growers will need to remain vigilant and stay in close contact with their Agriculturist in order to keep CLS at bay.

What Is This 'Section 18' That I've Heard About?

Last week, the Environmental Protection Agency (EPA) granted a Section 18 registration for Provysol fungicide, providing Minn-Dak growers an additional tool to aid in the control of CLS. By definition, "Section 18" of the Federal Insecticide, Fungicide and Rodenticide Act authorizes the EPA to allow emergency exemptions for unregistered uses of pesticides to address emergency conditions. Starting this past December, Minn-Dak led the charge on obtaining this emergency registration, working very closely with the State Agriculture Departments from both Minnesota and North Dakota to demonstrate to the EPA the significant economic loss incurred by our growers as a result of this disease.

What Is Provysol & How Is It Different?

Provysol is a new Group 3 fungicide (DMI) made by BASF. Although it is technically classified as a 'Triazole' (which is the same classification as Eminent and Inspire), it is important to remember that there are big differences in the activity spectra of these fungicides. In the nerd world, Provysol's active ingredient (mefentrifluconazole) is what is known as an 'isopropanol azole.' This means that this fungicide has a unique molecular structure that allows the molecule to easily conform to the different shapes of the target binding pockets within the pathogen. This adaptability to the target binding sites results in great fungal mortality and greater control of CLS. Minn-Dak has had Provysol in our internal research trials for the past three years - product performance has been exceptional each time.



Is There Any 'Fine Print' I Need To Worry About In The Section 18 Label?

Applying a fungicide under the guidelines of an emergency use label is VERY different from what you are used to doing - It is not 'business as usual!' Listed below are several key items surrounding the use of Provysol this season. Remember - the label is the law and must be adhered to at all times:

- Provysol can only be used for control of CLS in sugarbeets.
- Provysol must be applied in a tank-mix with another non-group 3 fungicide (we recommend copper).
- The product can only be used until Sept 25th, 2019.
- Any un-opened jugs must be returned at the end of the season.
- **Dual growers: The label is not only county-specific, but also cooperative-specific. Provysol may not be used on any sugarbeet acreage planted to American Crystal Sugar Company.**

Why Are You Recommending Specific Triazoles Over Others On The Market?

Each and every year, Minn-Dak Agriculturists collect sugarbeet leaves infected with CLS to be analyzed by the Plant Pathology Department at NDSU to determine their level of resistance to some of our most common commercial fungicides. Using several specialized tools and molecular techniques, the data generated from these diseased leaves is used to calculate an EC50 value for each individual sample (which is a standardized figure used to measure fungicide resistance). Once the EC50 value has been established, the data is correlated back to its field of origin. Just like bar graphs help explain a complex set of numbers, color-coding fields on a map by level of average EC50 values helps the Ag Staff visualize the problem at hand. When the current values are compared to the values collected from previous years, more often than not, several differences can be found. These differences can be directly related to the pathogen's "shift" in fungicide sensitivity - or basically, how effective is the fungicide in question. When looking specifically at the Triazoles, the year-after-year use of products like Eminent and Inspire has caused the CLS population in our region to react differently to these products today than it did a decade ago. Simply put, they just aren't as effective as they once were. The data collected from the 2018 fields has clearly indicated that Provisol and Proline are the Triazoles of choice for this upcoming season.

2019 Minn-Dak Cercospora Leaf Spot Fungicide Program

1. TPTH + ManKocide
2. Provisol + Copper
3. TPTH + EBDC
4. Proline + Copper
5. TPTH + EBDC

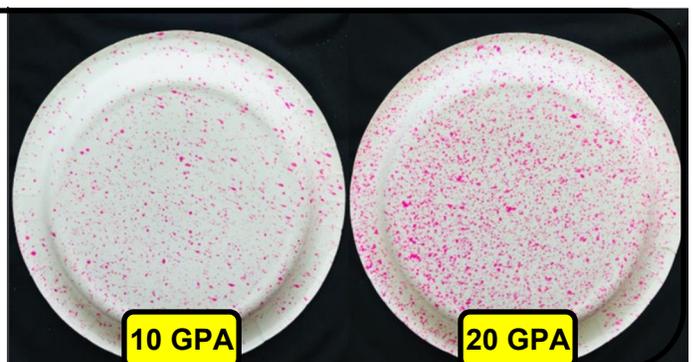
Keep all fungicide applications to a 10-12 day spray interval or tighter if rainfall and/or DIVs require

I Know That You Say Water Volume Is Important - But Does It Really Make That Much Difference?

Water Volume + Fungicides	Recoverable Sugar per Acre
20 GPA	8,032 lbs.
15 GPA	7,878 lbs.
10 GPA	7,803 lbs.
7 GPA	7,623 lbs.
Check Trt.	7,289 lbs.

Absolutely - Regardless of which fungicide combination you have in the tank, every product relies on thorough leaf coverage to be effective - there is just no way around it. The data to the left was generated in 2003 by Dr. Mohamed Khan (NDSU) from a trial near Glyndon, MN. Just as one would expect, higher per acre water volumes resulted in higher levels of disease control (and the greater revenue per acre). Water is the cheapest thing that you put into the spray tank - **it doesn't make much sense to try to 'cheat' the performance of your fungicides at the expense of something as simple as water...**

The picture to the right demonstrates the clear difference between spray water volumes on a per acre basis. A spray solution consisting of water and a pink dye was 'captured' on the back of paper plates. The same solution was applied with TeeJet XR8002 flat fan nozzles - the only difference was the spray volume. There is absolutely no difference between the surface of the plates or the surface of a sugarbeet leaf. **Remember: Coverage = Control**



Is There Anything Else I Can Do to Make My CLS Program More Effective?

You bet there is!!! Much like the past few seasons, several of the products recommended as tank-mix partners in this year's program are not fit to be 'stand-alone' products - namely the EBDCs and Coppers. However, research conducted at Minn-Dak, NDSU and the U of MN has all shown that CLS control, yield and quality can be increased if they are applied in conjunction with a 'major league' products like Provysol, Proline and the Tins. Think of these tank-mix partners as Triple-A ballplayers called up to play a Major League game - they can play a very effective role in the game's outcome if coached correctly (putting them in the right position on the field and in the batting order). Here are several ways to help 'coach' these new (and old) players along:

- **Start your program on time** and stay on schedule.
- **Keep your spray intervals tight** - everything in this year's program should be kept to a 10-12 day interval. Utilize the reminder feature in your smartphone - it's a handy tool to help stay on schedule!
- **Watch the NDAWN Daily Infection Values (DIVs).** These color-coded ratings can be found on the MDFC website or within the MDFC mobile app.
- **Use the correct nozzles.** The same nozzles you utilize for glyphosate applications are generally not the best for fungicide use (small vs large droplet size). Your target for fungicide applications should be a medium-fine to fine droplet size.
- **High water volumes.** Many of the tank-mix partners are protectants and as such, require a little more water than you'd normally like to use. Like I mentioned earlier, water is the cheapest thing you put into your spray tank, there should be no reason to cut back on it. Ground applications should target 20 GPA and aerial applications 5 GPA.
- **Do not mix fungicides with glyphosate.** The main reason is the amount of water required with each application. CLS fungicide performance is best when applied with small droplets at high water volumes (20 GPA). Glyphosate is just the opposite as it has better performance when applied in larger droplets (pile effect) and lower water volumes (5-15 GPA). They are two completely different approaches to maximize the control offered by each type of product. You are money ahead making separate applications to achieve the needed weed and CLS control rather than making one single application and getting mediocre control of each.
- **Be wary of 'miracle-type' adjuvants.** Please keep in mind that if there was a 'silver bullet' that could be added to the tank to significantly increase CLS control we would be recommending it. Invest your money where you know it will return dividends - increased water volumes, tighter spray intervals, full rates, etc.
- **Use an aerial applicator if needed.** If rain/wet ground is prohibiting you from staying on your spray schedule, call in the 'Air Force.' You are money ahead by staying on schedule - once you get behind the eight-ball of CLS pressure, its almost impossible to catch up.
- **Don't give up on the dry formulations.** They will give you little to no trouble if handled & mixed correctly. When in doubt, follow the A.P.P.L.E.S. recommended by NDSU Weed Science:
 - ⇒ **Agitate**
 - ⇒ **Powders soluble (SG, SP)**
 - ⇒ **Powders dry (DF, WDG, WP)**
 - ⇒ **Liquid flowables & suspensions (ASC, F, ME, SC, SE)**
 - ⇒ **Emulsifiable concentrates (EC, EW, OD)**
 - ⇒ **Solutions (S, SL)**

Make sure that each product is uniformly mixed in the tank before adding another...
- **There is a pecking order when it comes to the Copper fungicides.** Cu-Hydroxide and Cu-Oxychloride formulations are most effective (i.e. Badge, Kocide, Champ, etc.) whereas products containing Cu-Sulfate (Cuprifix Ultra, MasterCop, etc.) do not perform as well in our research trials.
- **Pay attention to variety ratings.** Varieties approved for sale at Minn-Dak can greatly differ in their susceptibility to CLS. The lower the number the better when it comes to a variety's CLS rating. 'Extra' attention needs to be placed on fields planted to a susceptible cultivar.
- **Listen to your Agriculturist.** They are the best source for information regarding CLS - keep in close contact with them regarding products, rates & timing.

The product label trumps this information at all times - Always read & follow label instructions