AGRICULTURAL BEET

June 26, 2019
Cercospora Leafspot Control
BMP Series

Southern Minnesota Beet Sugar Cooperative
Renville, MN
www.smbsc.com | 320.329.8305

AGBEET series on Cercospora Leafspot BMP's for 2019

It seems that SMBSC has always fought the front line battle with Cercospora Leafspot (CLS). Whether generally warmer temperatures or higher humidity, the sugarbeet acres of southern Minnesota require increasingly extraordinary control measures to suppress this disease. However, in recent years this disease has appeared to have turned up the heat even more leaving shareholders wondering what has changed that is making control of this disease so difficult. And of course, the answer to that question is not altogether clear.

One point is clear however, control of CLS at SMBSC requires an integrated strategy that identifies all available tools in the toolbox and utilizes all of them in a methodical and strategic manner. In a previous edition of this series, Mark Bloomquist described the tools at your disposal that are provided by the cooperative. One tool is collection of weather data and conversion to a Disease Index Value (DIV) to assist with interpreting infection periods over a time continuum. As I type this AgBEET update, it was brought to my attention that one of the weather stations had already reached a two day infectious value and it is only the 24th of June. Another tool is the long-term monitoring of CLS spores for fungicide sensitivity. This procedure was established in response to the development of tin tolerance in the 1990s and was able to predict the demise of the strobilurin class of chemistry. It is now identifying the risk of resistance buildup to the triazole family of fungicides. This is a trend that simply cannot be taken lightly which is why your cooperative research staff provides the following 2019 SMBSC Cercospora Recommendations at https://www.smbsc.com/agronomy/quickrefsheets.aspx.

1. *Begin spray program prior to (preferred as best chance to cover lower leaves), or at row closure.*
2. *Always alternate main fungicide modes of action. Never spray two fungicides from the same fungicide group back to back (see spray program example and other considerations at the bottom of the page).*
3. *Tank mix fungicides in every application to obtain adequate control of CLS and deter development of pathogen resistance to fungicide chemistry classes.*
4. *Access CLS – DIVs to assist with decisions to shorten spray intervals when necessary.*
5. *Note varietal differences in disease susceptibility and plant highly resistant varieties on common lines.*
6. *The recommended interval is 10-12 days that should be shortened in periods of high infection values or when rain events have occurred between sprays.*

However, research trials cannot account for all CLS infection scenarios. Further, the tools mentioned above cannot replace the most important tool of all; the one between our collective ears. For instance, DIV interpretations tend promote a reactive management strategy. Meaning by the time a 2-day infection value is recorded and transmitted to the SMBSC website link: https://www.smbsc.com/agronomy/cls_DIVvalues.aspx, the infection period has already occurred. Therefore, the best way to use these values would be in establishing if or when to *proactively* shorten spray intervals versus using them to determine when to start a CLS program or to decide if a subsequent spray is needed.

That said, with the loss of a couple of fungicide classes to CLS resistance coupled with a documented risk of diminishing utility of our current arsenal of effective fungicides, the importance of becoming more knowledgeable with spray management practices that have the potential to increase the likelihood of fungicidal success becomes increasingly important. That has been a foundation position of the newly formed Shareholder Innovation Committee (SIC) which was created to encourage sharing of ideas and concepts between growers and the SMBSC research staff. A couple of the fungicide spray concepts that are being discussed and/or investigated by the SIC in cooperation with SMBSC Research include the influence of…

1. … spray solution pH on the longevity of fungicide activity.
2. … deposition and sticker type adjuvants on droplet size, leaf coverage, rainfastness, and resistance to photodegradation.
3. … spray pressure on nozzle effectiveness and spray droplet deposition vs potential loss from evaporation or runoff.
4. … spray nozzle type, nozzle angle, nozzle boom spacing, and flow rate on spray pattern overlap and canopy penetration.
5. … several other spray factors that tend to be exclusive or unique to the specific farming operations that utilize them.

A fungicide molecule can be altered in several ways from the time it is introduced to water at the mixing station to the actual time it is released from the nozzle and allowed to free fall to the surface of a sugarbeet canopy. Further, at nearly every step along this process a potential exists for the fungicide molecule to be impacted from a fungicide efficacy perspective. Perhaps one of the more eye-opening realizations was that when working with effective fungicide modes of action, the influence of spray dynamics may be hidden but as fungicide efficacy becomes increasingly marginalized, the more likely that subtle differences in spray technique and equipment will increase in relative importance.

The SIC wanted to disclose one specific piece of advice to shareholders for the 2019 fungicide season. There will undoubtedly be an abundance of controversial information being discussed about nozzle sizes, spray pressure, adjuvants, etc. But, one particular disease control factor does not change. In order for a fungicide spray droplet to exert activity on a germinating CLS spore, it must reach and deposit on a sugarbeet leaf. Thus, inputs designed to reduce ultra-fine spray droplets will likely increase coverage and control whereas there is still much to learn about the influence of larger droplets.

Steve Roehl – Ag Strategy Manager