

# AGRICULTURAL BEET

June 11th, 2020

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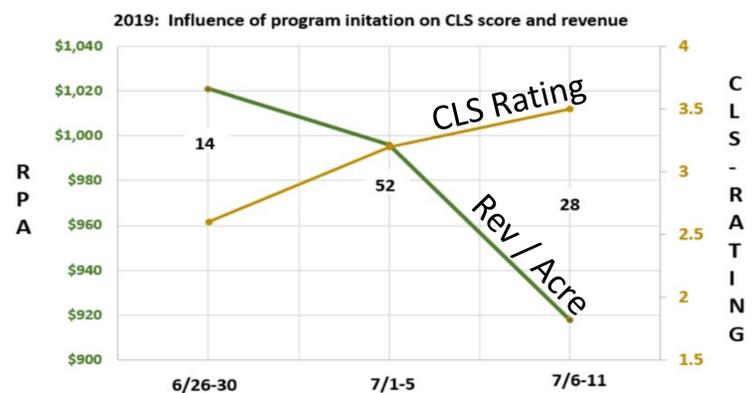
## Foresight is 2020

### Observations from a 2019 database on Cercospora Leafspot (CLS) inputs Part III: Spray Technique.

The final segment in our series on the shareholder database observations of CLS control measures is going to focus on opportunities with spray technique. Unlike the aspects covered in the first two installments of the survey, several of these factors relate to personal choice and preference as opposed to being either pre-planned or reactionary. Regardless, when it comes to spray technique, it is imperative that we be laser focused on these factors the day we head to the field to make a fungicide application. Before we get started on some of the practices that we summarized, it may be worth noting that everything that we can do to prevent sprayer skips is important since even one skip in a field due to obstacles or point rows, provides a haven for CLS infection and the potential to overwhelm other parts of the field.

**Spray Volume** will be the first factor covered. There were not enough shareholders that deviated from 20 GPA to report upon. However, past research with fluorescent dyes indicated there were incremental opportunities to increase spray volume beyond 20 GPA. Researchers were not able to determine if a diminishing return to increased volume exists. This was likely due to difficulties with estimating operation by operation concerns with handling additional water or tank filling. But, the bottom line is that there is likely opportunities for increased coverage from volumes in excess of 20 gpa.

A significant portion of this segment is going to focus on the value of an earlier **Program Initiation Date**. The SMBSC research staff as well as other neighboring research staff observations support this recommendation. Further, groundbreaking CLS research conducted back in the 1980's by Shane and Teng were already warning of the risk of underestimating the extent of inoculum load development early in the infection cycle when trying to visually monitor the disease progression with the naked eye based upon spot assessment alone. When the SMBSC special shareholder database looked at the impact of program initiation on Revenue per Acre (RPA) and CLS Rating, the data strongly suggested that those who initiated their CLS program early had the lowest CLS score and correspondingly highest RPA (see graph at right). Take note of the steepness of the RPA downward slope for program initiation dates later than the first week of July. In addition, the database data also identified a segment of the group that appeared to have applied an early EBDC alone. Those shareholders who initiated early with a single application of EBDC had considerably lower CLS pressure and a corresponding high RPA.



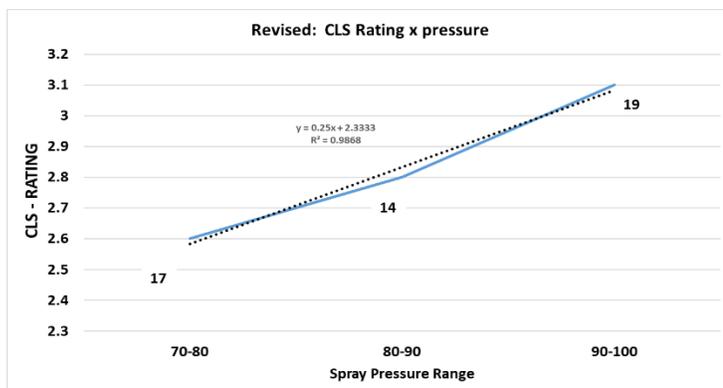
Visual assessment of the 2020 crop as well as monitoring growing degree unit accumulation since the average SMBSC planting date is indicating that our crop is on par with early development and canopy closure. Therefore, SMBSC is recommending an early pre-canopy-closure application of EBDC when the leaves are still 3 to 5 inches apart and coverage of the lower canopy leaves would still be relatively unimpeded. This is the ONLY application where we will endorse the use of EBDC (Mancozeb) alone.

At the end of the 2018 CLS epidemic year, a survey was conducted of shareholders who had maintained CLS control. Nearly 75% of shareholders that were successful in controlling CLS in 2018 had used a **Spray Adjuvant** for one or more of their applications. Further, adjuvant information from the 2019 Main Agronomic Practice Database can be found in the table at right.

There were 565 fields represented in the SMBSC-APD and nearly 40% reported the use of adjuvants with their fungicide program providing an apparent \$60/acre advantage

Shareholder Database by Adjuvant 3											
CLS Sprays	Whole Fields	Weighted						Tons/Acre	Harvest Acres	Times to Beets	Stand Count
		Rev./Acre	EST	ESA	Sugar	Purity	Brie				
	Cnt	\$	lbs.	lbs.	%	%			Yrs	Adj.	
No	344	\$824	263	6,439	15.56	91.0	17.1	24.5	41,760	5.6	41,442
Yes	221	\$884	266	6,803	15.73	91.1	16.5	25.5	26,140	6.5	43,538

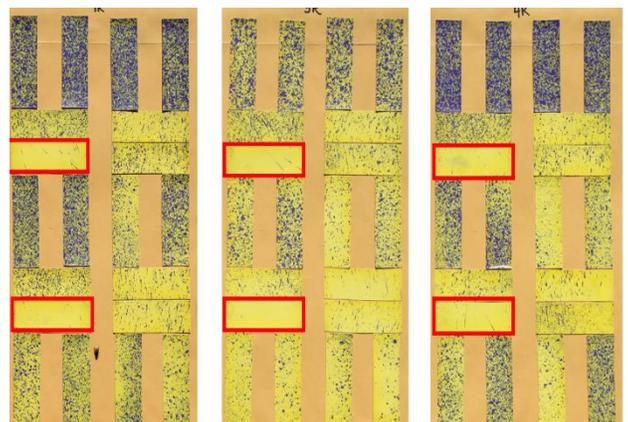
over fields not reporting the use of adjuvants. Data from the special CLS database in 2019 also indicated an advantage to deposition-type adjuvants that could be further enhanced when used in combination with specific “extender” adjuvants designed to prevent rain wash-off which did present significant challenges in the wet conditions of 2019.



When **Spray Pressure** options were examined, there wasn't a lot of difference in CLS rating below 70 psi. Therefore, we are presenting only the results of modifying pressure within 70 and 100 psi (See the graph at left). Focusing on data within these pressure ranges and segmenting the data into 10 psi ranges, there appeared to be a strong inclination toward greater control through reduction in pressure. Preliminary inferences might conclude that extremely high pressures may produce an abundance of highly evaporative fine droplets that may not be making it to the leaf target.

Next, it may be worth noting that there are various **Formulations of Mancozeb** (EBDC) products on the market that possess differing concentrations of the active ingredients EBDC, Zinc, and Manganese. Some formulations provide for the application of more active ingredient per acre at the labelled use rate. This increased level of active ingredient may be significant when one considers that EBDC products make up the backbone of the SMBSC CLS fungicide program and can be used up to six times in a season providing an opportunity for greater control with more active ingredient.

**Spray Direction and Coverage.** The last factor I will address includes observations from Water Sensitive Paper (WSP) demos performed in 2019. WSP were placed in the field and harvested after a sprayer application. Papers were placed onto cards to facilitate photography and paper positioning always represented a certain position from the collection apparatus. Noting the figure to the right, the cards marked with red border represent the cards that were placed on the aft side of the apparatus from the direction of sprayer travel. Compared to all other data collection positions, these paper placements always appeared to have less coverage representing an opportunity to alternate sprayer travel direction or equipment modifications to address this deficiency.



This concludes the series relating to observations made from a special shareholder CLS database summary from the 2019 growing season. Factors obtained from this accumulation of data should only be considered for use in conjunction with sound research-based recommendations. Make adjustments to your spray program only after proper discernment.

Please look for video descriptions of this info at <https://www.smbc.com/Agronomy/CLS/CLsVideos.aspx> or the portal.