AGRICULTURAL BEET

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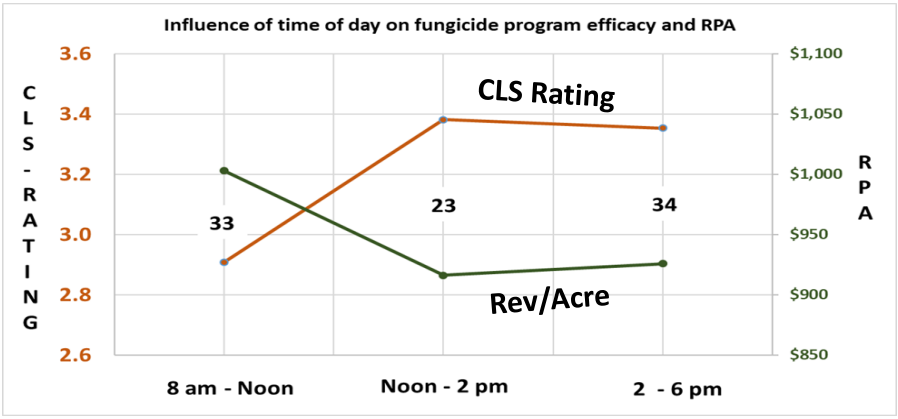
Foresight is 2020

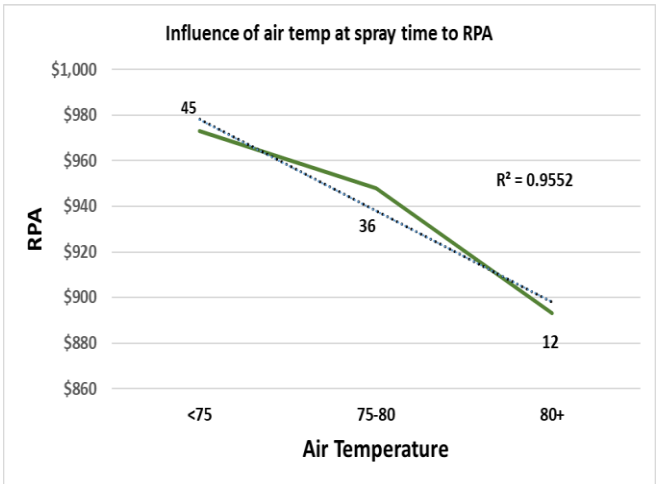
Observations from a 2019 database on Cercospora Leafspot (CLS) inputs Part I: Spray Day Environment.

Welcome to the first in a series on shareholder database observations of CLS control measures. As eluded to in the series introduction, the first category will examine opportunities relating to the day that the spraying is performed. Mother Nature has much to say about this category since many of the factors examined relate to the predominant weather trends or to the specific spray water source you are using and reside outside of your immediate control. Note that these data have also been supplemented in a video with verbal commentary and will be made available to you.

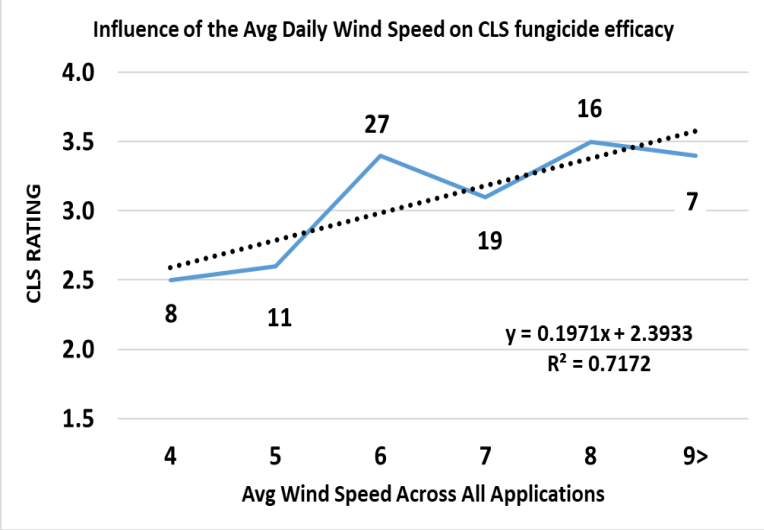
The first of the factors that we will discuss is the query involving the influence of the ***Avg Time Of Day*** that a spray application was made upon control of CLS (see graph at right). But first, there are a few common graphic factors to explain. The numbers in black found in the graphs relate to the number of fields representing that data point. Further, (as with many graphs we will discuss) the data represents an overall average of multiple spray applications. Note that initiating a spray application in the morning provided for both the lowest CLS rating and corresponding highest Revenue per Acre (RPA). As the day progresses, fungicide applications result in a higher CLS score and lower RPA which then appears to level off. A potential explanation for this particular result will be provided when we discuss the results of air temperature in the next section.



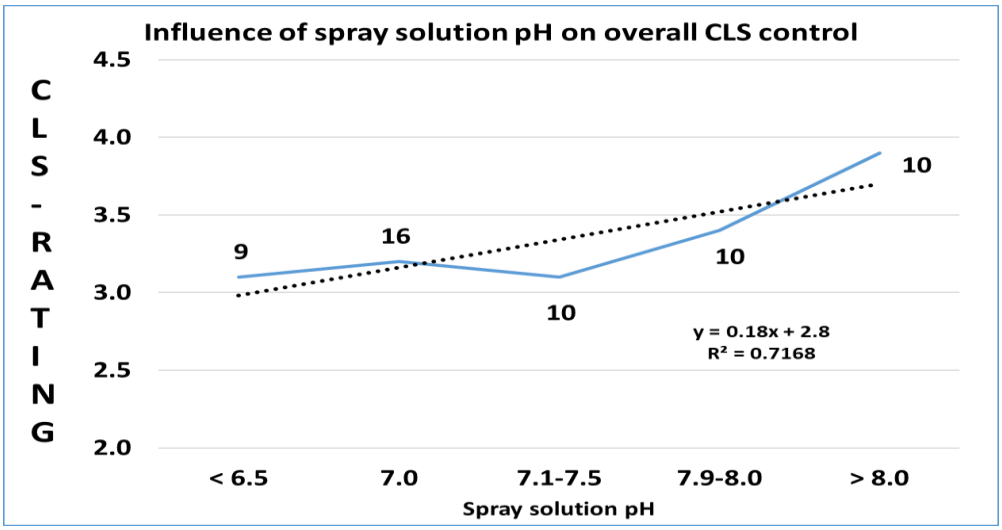
The influence of ***Avg Ambient Air Temperature*** at time of application was also accumulated. Note that there was no differences detected in CLS score accountable to air temperature. However, the graph to the left describes a trend for increasing RPA with decreasing air temp at application. Although interpretations of RPA data when made up of relatively low field counts should be made with caution, it is being included in this report as it has implications to the time of day trends above since we might expect applications with lowest air temps to occur more often with morning applications. Further, in theory cooler air temps could generally expose spray droplets to less evaporative pressure and greater opportunity for droplets to deposit on the leaves. However, one should always try to avoid applications in heavy dews.



The next factor we will discuss involves ***Avg Wind Speed*** as it relates to fungicide application efficacy (see graph at right). Since wind is present in our geography more than it is not, 4 mph was the lowest windspeed observed when data were averaged across all applications for a given field. Regarding the data, as average wind speed increased, CLS rating also increased indicating poorer control. For database-generated data, the linear relationship was fairly well correlated. This wind data goes a long way toward substantiating the time of day information reported earlier in that we would expect lower wind speeds right away in the morning even though we must be wary of the impact of excess morning dew levels.



The last factor that I want to discuss as it relates to the impact of the variables that you deal with on the actual spray day involves your water source pH. The Michigan Fruit Management Guide produced by Michigan State University indicates that EBDC half-life (described as the period of time it takes for one half of the amount of a pesticide in water to degrade from hydrolysis reactions) is 17 hours at a pH of 7.0 but is 20 days at a pH of 5.0 (more acidic). The data in the graph found to the left also possesses a reasonably consistent linear relationship that supports the University recommendation that reduced spray solution pH can result in increased CLS control and makes a case for reducing spray solution pH if and when possible.



Concluding this first segment in our series on the influence of spray day conditions on CLS fungicide performance, I would like to make a couple of additional points….

- First of all, upon reading this, it would not be a surprise if some of you are thinking…, "The conditions that are present at the time that I spray influence my fungicide application performance. So, what? What can I do about my weather or my water source."? To answer that question, it is vital to understand that although you are ***NOT*** able to control the weather, temperature, or wind, you ***ARE*** in control of the days you choose to spray and even more importantly (in operations possessing more than one field), the sequence or order in which you spray your fields such that alternations may be made as to which fields get sprayed in the morning based upon your application rotation or based upon priority relating to fields of relative high or low disease incidence concerns.
- Secondly, these are single year observations. We do not have concrete evidence that incorporating any of these changes to your program to adjust for weather or water will increase the efficacy of their overall program. However, where there are reasonable explanations that can support the strategy, there may also be value.

Please visit www.smbsc.com\Agronomic Sustainability \ CLS to view a series of videos pertaining to this database info.

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