To Spray or not to Spray?

Through springs and summers ranging from drought to flood and highly variable commodity pricing, the benefits and return on investment (ROI) from a fungicide are constantly changing, especially on lentils. When deciding whether or not to apply a fungicide we typically look at the weather and how it pertains to disease potential. Look back at 2016, the question was whether the disease pressure was too high for a fungicide application to handle, or how many fungicide applications is too many. Fast forward to 2017 and the question was if it was too dry to warrant the use of a fungicide all. From 2015-2017, G-Mac's has performed Field Verified Trials to provide a bit of an insight on when the weather conditions are fitting for a fungicide applications.

Benefits of a Fungicide Application

Some of the non-yield benefits that were shown in field trials in the last three years of field trials resulting from a fungicide application include:

- ✓ **Harvestability -** easier to harvest because the stems are healthier allowing the lentils to stay standing longer.
- ✓ **Grade Quality -** Better grade vs. untreated lentils. This includes less mold but also more uniform seed size as the plants are able to mature at a more even rate without being shut down early from stem disease.
- ✓ **Seed Quality -** Applying a fungicide has also minimized disease in the seed giving it a better chance for high seed quality for the following year.

Trial Results

Table 1 outlines the results from the G-Mac's Field Verified first-pass lentil fungicide trials. When comparing the different years in the responsive treatments column, with the exception of 2016, lentil fungicides have shown very consistent results. Whether it was a result of high disease pressure during the summer of 2015, or a response to the plant health benefits in a highly stressful growing environment in 2017. However, 2016 painted quite a different picture, where only 50% of the treatments were responsive to a fungicide. On a year as wet as 2016, it would seem logical that it would create the perfect scenario for positive responses to fungicide application; however, in this instance disease pressure and canopy growth far exceeded what we could keep up with for fungicide management in most cases.

Table 1. Comparison of mean yield results from first pass fungicide applications, with triple replicated fungicide treatments, in Field Verified Trials over three growing seasons (2015-2017).

Year	n	Responsive Treatments	Treated Yield	Untreated Yield	Yield Difference	Treated Yield
		------%------	----------bu ac^{-1}----------			----%---
2015	3	100	29.7	25.9	3.8	115
2016	2	50	14.8	13.5	1.3	110
2017	3	100	30.6	29.1	1.5	105
Mean	**8**	**89**	**25.0**	**22.8**	**2.2**	**110**

As shown in Table 1, even including 2016 data, the average yield advantage of a fungicide treatment was 2.2 bushels. ROI can be tricky in years with volatile markets, which is why it is good to know your break even at different grain prices and yields. The average cost of a fungicide used in these treatments was \$16.94 ac^{-1} and the average sprayer cost is typically estimated at \$5 ac^{-1}. Working with \$21.94 ac^{-1} as the cost of the fungicide application investment, the actual breakeven for the average 2.2 bu ac^{-1} increase is just under \$0.17 lb^{-1}.

As for an 'average year' one might compare ROI and yield increases to 2015. However, the last three years have shown those average years seem to be few and far between. Unfortunately without a crystal ball showing us what weather is to come we cannot predict whether we will get responses similar to 2015 or 2016. However, it is always the best agronomy practice to keep a close eye on your crop—watching for early signs of disease and hitting it with a preventative fungicide before row closure (about 25-30% flower) if it looks like it will be an average to above average crop. This will keep the highest yielding potential, as well as, keep the stems healthy, the lentils standing, and hopefully keep the nightmare of combining diseased lentils away.

G-mac's AgTeam Inc.
"our business is growing"