Impact of Foliar Fungicides on Corn Hybrids

Purpose:

The use of fungicides, particularly strobilurin fungicides, has been promoted for their disease control and yield enhancing effects on corn, soybeans and other crops. In many incidences, producers can expect economic yield responses from these products when diseases are present but the data is still inconsistent when it comes to plant health claims. The interactions among foliar fungicides and corn hybrids are not well understood; they most likely play a critical role in yield responses. In order to answer this question, a multi-year study was started in 2008.

Methods:

The trials were conducted at three locations in southwestern Ontario (Ridgetown, Exeter and Wingham Ontario) during the 2008 growing year. At each location, 21 commercial corn hybrids appropriate for that location were selected and planted. The 21 hybrids at each location were treated with or without the foliar fungicide Headline (BASF) at the tassel stage (T1) for a total of 168 plots per location. Headline application was done with the high clearance John Deere Field Research Sprayer maintained by the University of Guelph Ridgetown Campus. Headline was selected in this trial since much of the data generated in Ontario and the US has been associated with this product plus space and resources were limited. Plots were allowed to be naturally infected and disease ratings were recorded pre and post fungicide application.

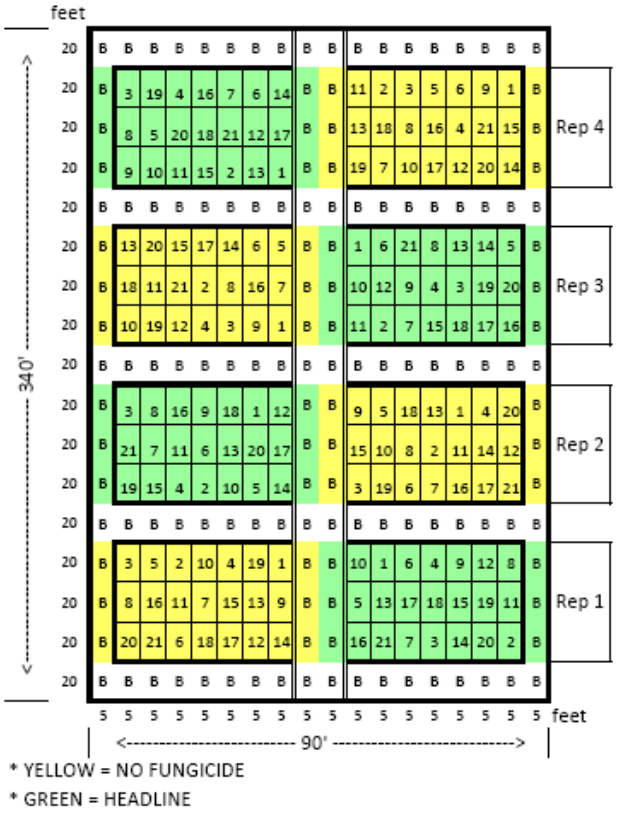


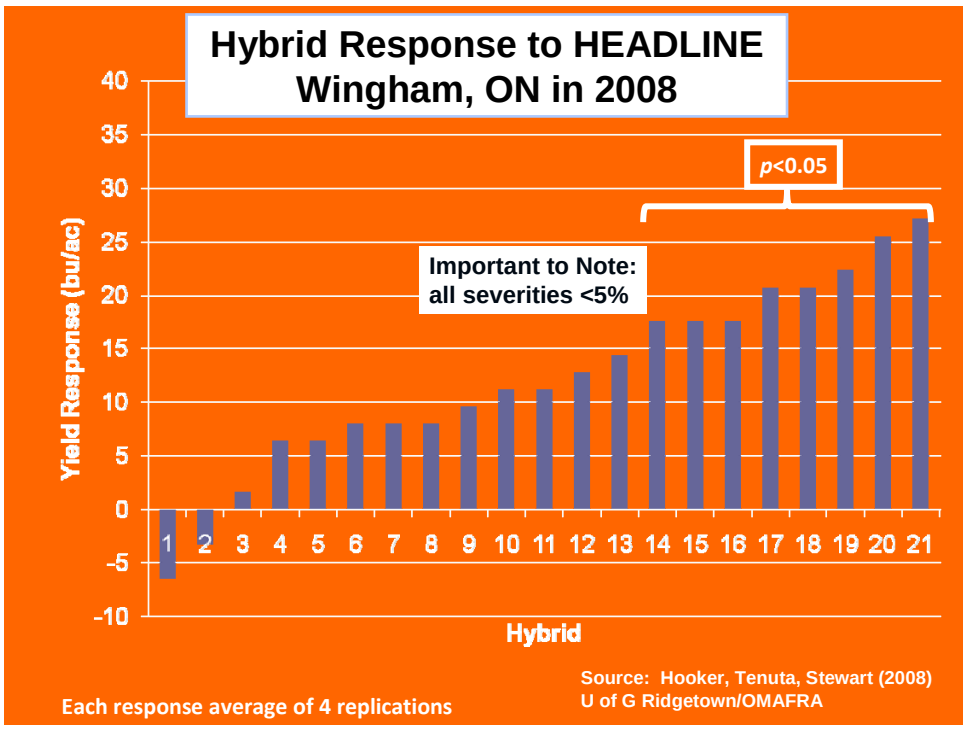
Figure 1 – Typical plot layout

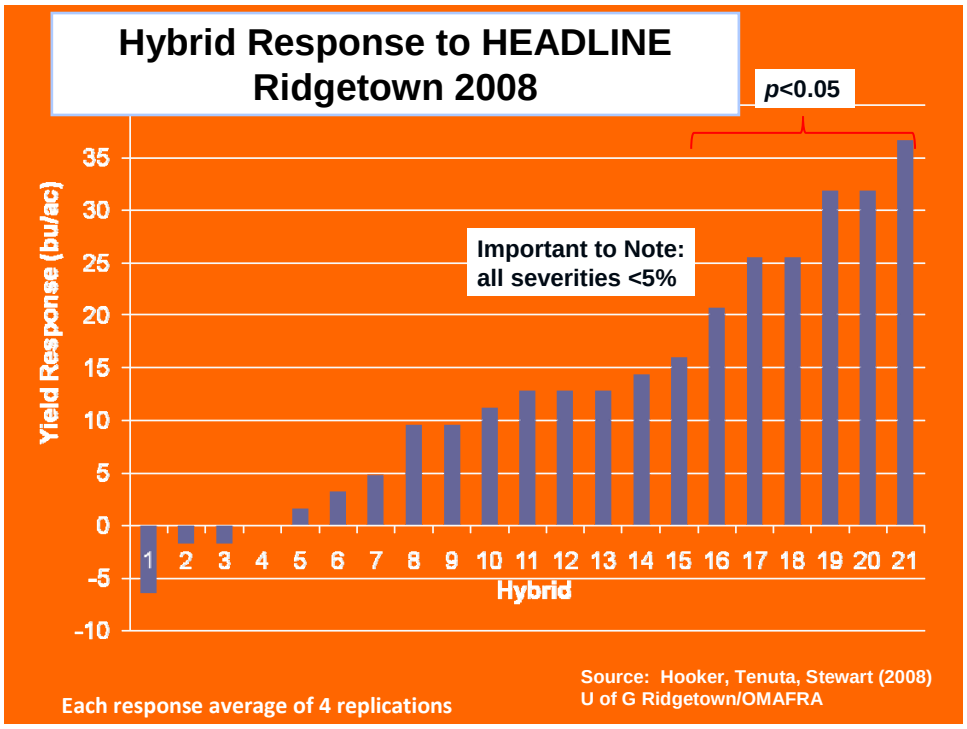
Results:

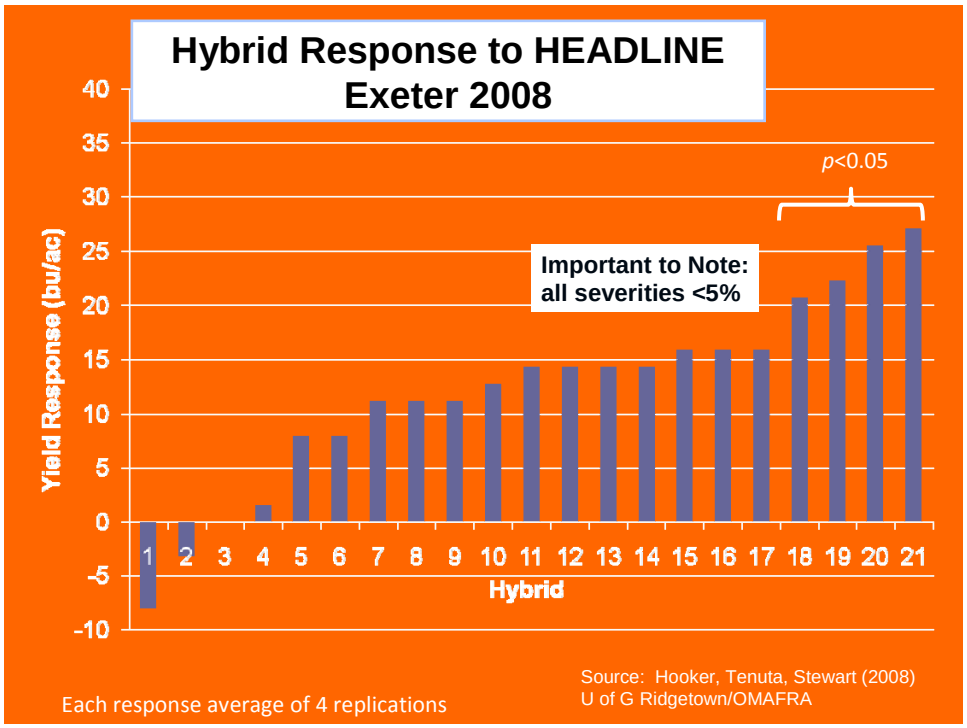
As expected, fungicide response varied based on hybrids and the percentage of hybrids that had a statistically significant response ($p<0.05$) varied by location as well (Wingham – 38%, Ridgetown – 33%, Exeter – 19%). In this trial, there was little relationship between fungicide yield response and the yield potential of the hybrid and or the hybrids susceptibility to leaf diseases. This is in contrast to other studies which have found a greater economic response to fungicides in hybrids which lack a good disease package. One reason for our difference in results from these studies could be the low disease levels we had in these plots. In other studies we conducted this year (not reported in

this report) where a highly susceptible check was used we found the greatest yield response occurred where foliar leaf disease levels were high.

Figure 2. Hybrid Response to Headline Fungicide at Three Locations







Summary: There were significant differences in how hybrids responded to Headline. The different hybrid responses to the fungicide could explain why there has been such variation or inconsistency in results from on-farm strip trial conducted in Ontario and the US.

Next Steps:

As previously described, this is a multi-year project. The effects of hybrid in the absence of foliar diseases needs to further studied since we do not have a full understanding of the interactions occurring. Which hybrids respond and which don't to a fungicide application? Is this response consistent across environments (locations)? Ultimately, we would like to determine whether a hybrid response could be used in a predictive model to assist producers in their decision whether or not to apply a fungicide.

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Location of Project Final Report:

Please visit the "GoCorn.net" or the OCPA website.