

Fungicide Spraying on Wheat in a Wet Year in South Dakota

Background:

Scab, or Fusarium head blight (FHB,) appears as bleached areas on the wheat spikes (fig. 1). Infected wheat kernels (fig. 2) can be shriveled or shrunken and lightweight. These infected kernels have limited marketability because a chemical produced by the fungi is toxic to humans and livestock. In South Dakota, scab is not as prevalent as in other areas of the country, mainly due to the lack of sufficient moisture to promote fungus growth. In 2005, it was a wet year in South Dakota so conditions for scab were good. The question -- to spray or not to spray fungicide? At the time the cost of application was \$14.55 per acre. That would potentially reduce the profit of the crop, but by not spraying losses could be even higher.



Figure 1: Wheat with Scab.



Figure 2: Wheat kernels that were infected with scab.

Use of Data:

Dan Forgey was trying to decide if spraying fungicide to prevent scab would be profitable in 2005. He decided to do a test. He took one field of wheat and sprayed half with fungicide and left the other half unsprayed. You can see from Landsat imagery (fig. 3) that the top sprayed half of the field is much healthier than the bottom unsprayed half. (Coincidentally, this imagery also helped a neighbor of Dan's by indicating a fertilizer skip. After looking at the imagery the neighbor was able to ground truth and fix the problem.)

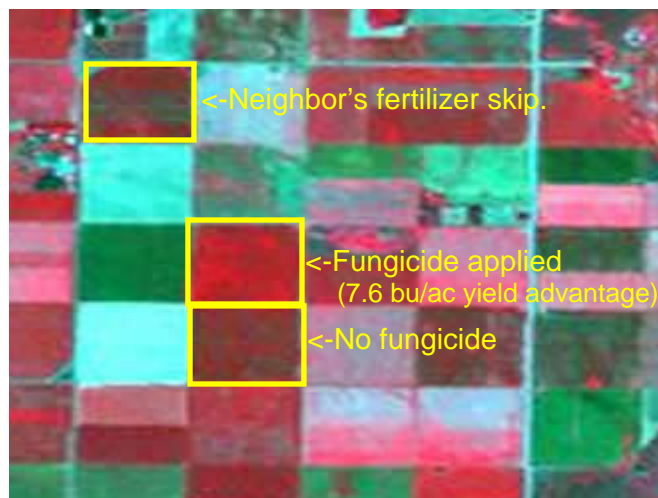


Figure 3: The field that was sprayed is a brighter red in color.

Economic and Environmental Benefit:

The economic benefit came when Dan received the yield results. The portion of the field that was sprayed had a 7.6 bushel per acre average higher yield than the portion of the field that was not sprayed. This test answered the question of weather or not to spray fungicide on wheat in a wet year for Dan and the Landsat imagery provided independent confirmation of the test results. He plans on spraying the next time the issue comes up.

