

Fungicides Applied with Herbicides/ Stripe Rust Control

We have had several questions in regard to early application of fungicides timed with herbicide applications and effectiveness in either increasing yield or providing disease protection. I only have 2 years worth of data (2 PDMRs) that directly address this question in spring wheat, which can be accessed at the South-central / Southeast Idaho Cereals website:

<http://www.ag.uidaho.edu/scseidaho/> under "Publications". In 2006, we had enough late season stripe rust to damage yield in a very susceptible spring wheat variety. In the 2006 experiment, we saw a 1.3 bu increase with reduced rate (7 fl oz/A) of Quilt applied at herbicide timing and a 2.8 bu increase with (6 fl oz/ A) Headline applied at herbicide timing over the untreated control. We have NOT seen a statistically significant yield benefit with application of fungicides at herbicide application in 2006 or 2007, where the plants were in the 4-5 leaf stage at time of herbicide treatment. In 2006, where stripe rust was present at damaging levels late in the season, early application of Headline and Maestro at Feekes 3 did not reduce stripe rust over the untreated control (63.8% leaf area affected with early Headline versus 65.6% in the untreated control). Disease control with Headline alone at Feekes 8 resulted in 26.3% leaf area diseased and 82.5 bu/A as opposed to the early Headline treatment at 63.8% disease, and 72.5 bu/A. The yield and disease differences were significant at the 5% level.

In 2007, we did not have significant stripe rust. In experiment 2 (2007) we saw a 0.9 bu increase with 6 oz/A Headline, a 1.0 bu increase with reduced rate of Quilt (7 oz/A), and 1.3 bu decrease with a reduced rate of (6 oz/A) Stratego, when these fungicides were applied with herbicides. For Quilt, the rates were at a ½ rate of 7 fl oz/A at herbicide application versus 14 fl oz/A for full application at heading. Headline was applied at 6 fl oz/A with an herbicide and at 6 fl oz/A at heading. Stratego was 6 fl oz/A with herbicide or 10 fl oz/A at heading. Obviously, results may vary depending upon year and location, and multiple replicated trials over several years will give us the best answer. Talking with our BASF rep, early Headline recommendations are full rate (6 fl oz/A), for which they say they consistently (80% of the time) see 2-3 bu/A increase, and more often an average 6 bu/A increase in yield in unreplicated on-farm trials in wheat and barley.

In general, fungicides are recommended to control disease and protect yield when there is disease in the area; for example, as soon as stripe rust is present. In varieties that are very susceptible, that may mean an early protective fungicide application in with the herbicides when stripe rust or other diseases are in the area. However, in many cases, effective disease control and yield protection is achieved with one application to protect the flag leaf and / or the developing head, as late as allowed by the label. In the past, when disease becomes an issue, the greatest benefit to yield is application between flag leaf emergence and flowering, depending upon when the disease is present. Experiments in Kansas do not support split applications of fungicides to control disease. In years with low disease pressure, an overall 2.5% increase in yield was seen with split applications of fungicides, but fungicide applications were NOT timed for application with herbicides (Erick De Wolf, Bill Bockus, Bob Bowden, Kansas State University).

I do not think there would be any benefit of foliar fungicides for control of root rots, as those that are "locally" systemic are not readily translocated down into the root system. Any systemic translocation will more likely be in an upward direction, so control of root rots is highly unlikely. Root rot control would be best managed with seed health practices, such as in-furrow fertility and seed treatments, even with second-year grain. As far as second year of wheat or barley, if there are foliar pathogens present early (and it depends on the disease, like scald in barley), then I think there may be some benefit in disease control, but little benefit in yield. Diseases like scald and spot blotch tend to dissipate with warmer, dryer weather anyway. So I am not recommending foliar application of fungicides simply because a grower went back-to-back grain. Spraying fungicides for disease control is really only effective when disease is present and only after flag leaf emergence to heading. There seems to be no real benefit from 2 applications of fungicides within a season. Appropriate rotation and plant health practices remain the best insurance for a healthy crop (in our area). Fungicides are effective when disease threatens yield and the best yield protection comes after flag leaf emergence, but especially at heading to flowering.

DO NOT delay weed control applications to target potential disease problems. You will lose more yield to weed competition than gain by trying to target an early season fungicide application.

At current prices, a 2-3 bu yield increase should pay for most fungicides when incorporated into the herbicide treatment. However, in our area, we usually have very little foliar disease pressure. In areas where disease pressure can be significant early in the season (say, stripe rust in the Palouse), then I would consider early-season application based on significance of disease in the area. However, routinely applying low-levels of fungicides for "just-in-case" protection may contribute to the occurrence and buildup of fungicide resistance in fungal populations and is counter to the integrated pest management principals developed to reduce pesticides in the environment and we need to carefully consider any additional input costs.