

FUNGICIDES FOR WHEAT STRIPE RUST DISEASE CONTROL

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In 2003 in California, wheat stripe rust returned as a wide spread serious disease of wheat. Since 2003 many new wheat varieties with genetic resistance to new strains of wheat stripe rust have been released, but in a few years new strains of wheat stripe rust have overcome this “new” genetic resistance. When genetic resistance is overwhelmed by new strains of wheat stripe rust, fungicides have been shown to be very cost effective.

Eighteen replicated trials from 2003 through 2012 show just how effective. When a fungicide was applied at the first sign of the disease in a field, a single fungicide application at the early (flag leaf) or later (heading) timing gave the same yield increase. Quadris was applied to 163 plots from 2004 to 2006 at both the early timing and the later timing with yield increases over the control plots respectively of 132 percent and 133 percent. Headline was applied to 113 plots in the same years and timings with yield increases over the control plots respectively of 140 percent and 139 percent.

Over four years (2004 to 2007) of testing the fungicides Quadris, Headline, and Stratego the yield response was the same regardless of the rate for a single application. In years when stripe rust showed up very early before flag leaf emergence, then two separate applications, one early (flag leaf) and one late (heading) increased yields an average of 222 percent of the untreated. These responses occurred in fields with severe wheat stripe rust, in a limited number of treatments spread over five locations in a four year period.

The fungicide labels restrict applications to before flowering. In one trial, not included in the group above, eight fungicide treatments were applied at this latest timing on April 16th as the disease was just starting in the field. Even though 60 percent of the untreated flag leaves were damaged from wheat stripe rust by harvest, there was not a significant yield increase. Although this is only one trial for one year, at some point a wheat stripe rust infection is too late to decrease yields. This has been thought to be the case for **leaf rust** on wheat in the San Joaquin Valley and so it is not treated.

One final trial not reported above was done in 2012 where fungicides were applied on April 9th just as the disease was starting. The fungicides had less than 30 days to work because the wheat dried up for harvest on May 7th about three weeks earlier than normal because of drought conditions. Even under these conditions there was a 15 percent yield increase. As in all of the trials there was also a very significant bushel weight increase of three to five pounds.

Five out of six years, the fungicide treatments more than paid the cost when applied to susceptible varieties. The year 2004 was the only year when stripe rust was not severe enough to reduce yields (higher temperatures and low humidity). Bushel weights were increased every year.

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