1998 Fusarium Head Blight (Head Scab) and Foliar Disease Fungicide Test

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Objective:

An experiment was established on the Walnut Grove Farm in Logan County, Kentucky to determine the effects of various foliar fungicide treatments on fusarium head blight (FHB) and various other foliar and head diseases in a commercial field.

Methods:

The sort red winter wheat variety 'Clark' was planted into triple-disced corn stubble in a field with a history of high crop productivity, but also with a history of significant FHB. The field has followed a corn - wheat/soybean rotation for many years. A significant level of corn residue existed in the field despite the tillage operations. Plots six rows wide, 7-in. between rows, and 10 ft-long were planted on October 14, 1997 at a density of 35 seed/ square-ft. Nitrogen was applied in the spring as a split application: 30 lbs of actual N/A (ammonium nitrate 34-0-0) were applied on February 19, 1998 and 60 lbs were applied on March 15, 1998. Fungicidal treatments were applied to plots in the very early flowering stages (Feeke's stage 10.51) using a CO2 pressurized backpack sprayer with boom equipped with TeeJet flat fan (80067) nozzles delivering 20 gal/A at 40 psi. Treatments were replicated six times and were arranged following a randomized complete block design. Plots were rated for FHB incidence and severity and Stagonospora nodorum leaf and glume blotch at the early dough stage on May 21, 1998. Plots were harvested on June 11, 1998 using a Hege small plot combine. Harvested grain was dried to 12% moisture and seed yield and test weights were determined. Percent standard germ, percent *Fusarium* infection, and vomitoxin levels were determined for a subset grain sample from each test plot after harvest.

Results:

Levels of FHB were extremely low in the test. As a result, neither FHB incidence nor severity were significantly different among treatments. Similarly, vomitoxin levels in all plots were extremely low (none above 0.4 ppm and most 0.3 ppm or less; data not shown). Unlike FHB scab,

Stagonospora nodorum leaf and glume blotch were severe in the test late in the season, but levels of the diseases were low at the time fungicide treatments were applied. All treatments except Benlate 50DF (0.5 lb/A) + Dithane 75 DF (1.0 lb/A) + CS-7 (0.12% v/v) resulted in significantly lower leaf blotch compared to non-treated plots. In contrast, only Quadris 2.08 SC (0.2 lb a.i./A) + crop oil (1% v/v) significantly reduced the incidence of glume blotch in plots. All fungicidal treatments reduced the severity of glume blotch, albeit at different efficiencies. Quadris treatments, in particular, appeared to have the most activity in reducing glume blotch severity. Yields and test weights were generally below standard because of unseasonably high temperatures during early to mid grain fill. All treatments except Benlate + Dithane + CS-7 significantly increased yields compared to non-treated plots. In contrast, only the Quadris + Benlate treatment significantly increased test weight compared with the control. Standard germination and percent *Fusarium* infection were similar among treatments.

	Stagonospora nodorum			FHB		Seed Tests			
Treatment and Rate/A	**Leaf Blotch**	**GB inc**	**GB sev**	**inc**	**sev**	**Yld**	**Tst wt**	**% Germ**	**% Fusarium**
Non-treated	7.8 c	100 b	20.7 e	4.7 ns	1.4 ns	38.3 c	47.3 b	89.7 ns	16.3 ns
Tilt 3.6E 4.0 fl oz	5.7 b	100 b	9.6 c	2.0	0.8	45.7 ab	48.8 b	90.0	12.7
Folicur 3.6F 4.0 gl oz X77 0.25% v/v	4.8 a	90.0 b	6.6 bc	5.0	0.8	46.7 ab	49.3 ab	89.5	15.7
Quadris 2.08 SC 0.2 lb a.i. + Crop oil 1% v/v	4.8 a	76.7 a	2.8 a	13.3	1.4	47.4 a	488 b	86.2	21.3
Quadris 2.08 SC 0.2 lb a.i. + Benlate 50 DF 0.5 lb + Crop oil 1% v/v	5.5 b	95.0 a	3.9 ab	7.0	2.4	49.7 a	51.2 a	89.2	18.0
Benlate 50 DF 0.5 lb + Dithane 75 DF 1.0 lb. + CS-7 0.12% v/v	7.5 c	100 b	17.1 d	11.7	2.0	42.5 bc	48.3 b	90.7	18.0

1. Leaf blotch was rated on a scale of 1-9 where 1 = no disease and 9 = 2/3 or more of the flag leaf infected.

2. GB and FHB incidence is a percentage of plants with any symptoms.

3. GB and FHB severity is the average surface area of head infected.

4. Yield is expressed as bushels/A

5. Test Weight is expressed as lbs/Bu

6. Means within a column followed by a common letter are not significantly different, LSD P =0.05 ns = no significant differences.

Conclusion:

FHB levels were too low in the test to see any potential benefit from the fungicide treatments. However, an early flowering application of most fungicide treatments did an excellent job of controlling Stagonospora leaf and glume blotch, which was at moderate levels in the test. It is clear from the data that grain yield can be significantly increased by the proper timing of fungicides, even in a low-yielding environment, when disease pressure is moderate and is at low levels when the crop begins to flower.