Fungicide, Rate, and Nozzle Effects on Fusarium Head Blight (FHB) Control

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Many growers reduce herbicide rates but reducing fungicide rates has not been addressed, especially with the different application technology techniques recently available. The objective of this study was to determine if one-half rate of Folicur and Tilt compared to full rates provide adequate Fusarium head blight (scab) and leaf disease control. Different nozzle arrangements were used to determine if application technology also improved disease control and consequent yield increases.

'Grandin' hard red spring wheat was grown and sprinkler irrigated from May 29 to July 22 delivering 4.25 inches of water to maintain conditions favorable for disease. Treatments were applied through 8002 straight down, 8002 TwinJet, or 8001 f+b (forward+backward) nozzle tips to Feekes growth stage 10.51 wheat (25% flowering) using a CO_2 hand-held backpack sprayer. One 8001 tip faced forward and the other 8001 tip faced backward relative to the direction of travel.

Fungicide treatments, except Folicur at 2 fl oz/A with the 8002TJ nozzle and Tilt at both 2 and 4 fl oz/A with the 8001 f+b nozzle, tended to reduce scab incidence ($p=0.0997$) compared to the untreated check (Table 1). Overall, treatments tended to reduce head, field, and Septoria severity compared to the untreated check. Rust severity was reduced with Folicur at 4 fl oz/A, regardless of nozzles, and Folicur at 2 fl oz/A with the 8001 f+b nozzle compared to the untreated check.

Test weights generally were improved with fungicide treatments, but not significantly (Table 1). Yields increased significantly when wheat was sprayed with fungicide treatments compared to the untreated check. Yields were significantly greater with Folicur at 4 fl oz/A applied with the 8001f+b nozzle than Folicur at 2 fl oz/A applied with either the 8002sd or 8002TJ nozzle, Tilt at 2 fl oz/A applied with any nozzle, and Folicur and Tilt at 4 fl oz/A applied with the 8002TJ nozzle.

In comparison of fungicides averaged across rates and nozzles, Folicur and Tilt were not significantly different in controlling FHB or septoria, but Folicur significantly controlled rust, and improved quality and yield (Table 2). Applying fungicides at 4 rather than 2 fl oz/A significantly increased yield (27.2 bu/A vs. 26.1 bu/A) (Table 3). Yields significantly increased when fungicide treatments were applied through the 8002f+b nozzles (27.4 bu/A) than the 8002TJ nozzles (25.7 bu/A).

Table 1. Effects of fungicides, rates, and nozzle orientation on wheat diseases and yield.

Fungicide	Rate	Nozzle*	Scab	Head	Field	Septoria	Rust	Test Weight	Yield
	prod/A		% inc	----------% severity----------				lb/bu	bu/A
Untreated	--	--	50	61.7	30.8	12.2	17.7	53.1	21.3
Folicur	2 fl oz	8002sd	36.7	48.8	18.1	8.7	11.6	55.2	26.3
Folicur	2 fl oz	8002TJ	40.0	58.3	24.4	9.2	4.9	55.5	26.5
Folicur	2 fl oz	8001f+b	35.0	56.0	27.2	8.4	2.2	55.0	27.4
Tilt	2 fl oz	8002sd	42.5	40.3	17.4	6.2	6.8	54.5	26.0
Tilt	2 fl oz	8002TJ	43.3	61.1	27.2	9.7	16.6	52.5	24.1
Tilt	2 fl oz	8001f+b	36.6	41.9	15.3	11.2	23.0	54.0	26.2
Folicur	4 fl oz	8002sd	32.5	60.7	18.7	8.2	1.8	54.5	27.8
Folicur	4 fl oz	8002TJ	36.7	48.2	17.3	7.7	2.0	54.8	26.5
Folicur	4 fl oz	8001f+b	36.7	52.1	18.6	7.2	3.7	54.6	29.0
Tilt	4 fl oz	8002sd	43.3	58.2	25.5	8.0	16.7	54.6	26.8
Tilt	4 fl oz	8002TJ	44.2	45.6	19.9	7.3	10.8	55.0	25.9
Tilt	4 fl oz	8001f+b	33.3	45.4	15.3	7.3	5.7	54.3	27.1
LSD (0.05)			NS	NS	NS	NS	13.2	NS	2.5

* Nozzle orientation: 8002sd = straight down; 8002TJ = TwinJet; 8001f+b = forward + backward facing tips.

Table 2. Mean effect of fungicide on wheat diseases and yield.

Fungicide	Scab	Spike	Field	Septoria	Rust	Test Weight	Kernel Weight	Yield
	% incid.	----------% severity----------				lb/bu	g/ 1000	bu/A
Folicur	36.3	54	19.6	8.2	4.4	54.9	23.9	27.2
Tilt	40.6	48.8	20.1	8.3	13.3	54.1	22.5	26
LSD (0.05)	NS	NS	NS	NS	5.4	0.7	1.2	1.0

Data averaged across fungicide rates and nozzle types.

Table 3. Wheat yield response to fungicide rates and nozzle types.

Treatment	Yield
Fungicide Rate[a]	
2 fl oz/A	26.1
4 fl oz/A	27.2
LSD (0.05)	1.0
Nozzle Type[b]	
8002sd	26.7
8002TJ	25.7
8001f+b	27.4
LSD (0.05)	1.3

[a] Fungicide rates averaged across fungicides and nozzle types.

[b] Nozzle types averaged across fungicides and rates.