

Winter Wheat Response to Previous Crop and Foliar Fungicides, Ellendale, 2007-09

Greg Endres, Blake Vander Vorst, Roger Knapp, Steve Dvorak, and Eugene Elhard

The three-year field study was conducted during 2007 to 2009 on the Larry Anderson farm near Ellendale as a joint project between Ducks Unlimited and the NDSU Carrington Research Extension Center. The objective of the research was to examine the response of several winter wheat varieties on different types of previous crop residue and to foliar fungicides. Details of each year's trial can be found at the CREC website: www.ag.ndsu.nodak.edu/carringt/agronomy/research%20highlights.htm.

Averaged across years, winter wheat seed yield and test weight was highest with spring wheat and flax as previous crops (Table 1). The residue, especially erect stubble, from spring wheat and flax provided an environment for snow accumulation to reduce winter injury compared to the low-residue environment with field pea and soybean. Over the three-year period, flowering stage or the combination of tillering followed by flowering application of fungicide improved yield compared to the untreated check or fungicide application at tillering. However, fungicide treatments provided yield and test weight increase only in 2007 (significant presence of leaf spot disease and scab).

Results from the 2009 trial illustrate the importance of growing a winter-hardy variety in appropriate crop residue (Table 2). Each variety tested generally had the highest yield and test weight with flax and spring wheat as previous crops. Note that 'Millennium,' rated as having fair winter hardiness, had a yield response of greater than 40 percent when grown on spring wheat or flax stubble compared to pea or soybean residue.

In summary, the study indicates that choosing a winter hardy variety and growing it on proper previous crop residue will assist with optimizing winter wheat yield and quality. If a variety is grown with questionable winter hardiness, the choice of previous crop residue is especially important. Also, NDSU continues to recommend a sequential foliar fungicide application at tillering followed by flowering stage to optimize production potential of winter wheat.

Treatment	Seed	
	Yield (bu/A)	Test weight (lb/bu)
Previous crop		
flax	75.8	59.2
spring wheat	81.6	59.8
field pea	64.3	57.8
soy	59.7	58.0
Fungicide		
UTC	69.5	58.6
tiller	68.7	58.5
flower	72.4	58.9
tiller/flower	71.2	58.9

Table 2. Winter Wheat Response to Previous Crop by Variety, Ellendale, 2009.

Treatments		Seed	
		Yield	Test weight
Previous crop	Variety	(bu/A)	(lb/bu)
flax	CDC Buteo	94.9	62.2
	Jerry	105.2	60.8
	Millennium	89.1	60.8
spring wheat	CDC Buteo	92.4	60.8
	Jerry	100.7	60.4
	Millennium	92.0	60.7
field pea	CDC Buteo	81.1	59.6
	Jerry	99.8	59.6
	Millennium	51.1	55.8
soybean	CDC Buteo	72.9	58.4
	Jerry	90.9	58.2
	Millennium	52.8	55.3
LSD 0.05		6.7	1.2
mean		85.2	59.4
C.V.%		9.3	1.8