Effect of Different Nitrogen Rates and Time of Application on No-till Wheat Production

Lloyd Murdock, Extension Soils Specialist

Research Objective:

Verify the proper spring nitrogen rate for no-till wheat and determine if a specific ratio of the nitrogen split between late winter N and spring N is better. A secondary objective looked at the need for additional N after a severe spring freeze.

Method:

Location	Logan County
Soil type and & drainage	Pembroke silt loam (well drained)
Previous Crop	Corn, Wheat, Soybeans rotation
Tillage	No-Till
Planting Date	Oct. 8, 1997
Variety	Pioneer 2540
Soil Test (lb/ac)	pH-6.3, P-52, K-312, Mg-120, Ca-3050

Type		Rate of Application	Date of Application
Fertilizer	18-46-60	100 lb/ac	09/25/97
Fertilizer	Nitrogen	(see Table 1)	02/24/98 (Feekes 3)
Fertilizer	Nitrogen	(see Table 1)	03/24/98 (Feekes 6)
Fungicide	Tilt	4 oz/ac	05/05/98 (Heading)
Insecticide	Warrior	3 oz/ac	11/25/97
Insecticide	Warrior	3 oz/ac	05/05/98
Herbicides	Harmony Extra	0.5 oz/ac	11/25/97

Results:

Table 1. Effect of N on Yield

N Treatment			Yield (13.5% H_2O)
February	March	Total	
---------- lb/ac ----------			----- bu/ac -----
30	90	120	75.4a
50	50	100	74.9 ab
40	40	80	74.2 ab
30	70	100	72.9 abc
60	60	120	69.8 bc
30	110	140	68.5 c
0	120	120	68.3 c
0	0	0	47.0 d

Conclusion:

The yields were good but not exceptional. High rates of N were not needed to obtain the maximum yields. The 80 lb/ac rate resulted in yields as high as the 120 lb/ac rate. The yields of treatments with the same total rate of N but with different ratios applied between Feb. and March were about the same in most cases. The treatments with the high rates of N added in March, after the freeze, was not helpful and actually resulted in the lowest yields. This is contrary to what might have been expected. In May, these two treatments were visually better than the other treatments. This indicates that looks are many times not important, we just think they are!