

NITROGEN MANAGEMENT FOR NO-TILLAGE WHEAT FOLLOWING CORN OR FULL-SEASON SOYBEANS

John H. Grove
Agronomy Department

RESEARCH OBJECTIVE:

Determine whether the optimal N fertilizer rate for no-tillage wheat will differ among with N source management or previous crop.

METHODS:

Location	Fayette County/Spindletop
Soil Type and Drainage	Loradale silt loam – well drained
Previous Crops	Corn or Soybean
Tillage	No-Tillage (Lilliston 9680)
Cultivar	Pioneer 2540
Planting Date/Rate	Oct. 26, 1999; 34.1 seed/sq. ft
Harvest Date	June 30, 2000
Fertilizer: Four Nitrogen Source-Management Schemes	-urea (46-0-0); -ammonium nitrate (34-0-0); -urea-ammonium nitrate solution (28-0-0); 33% of all N rates on 3/6/99 67% of all N rates on 3/22/99
Herbicide: Harmony Extra – 0.65 oz/ac on 11/23/99	
Harmony Extra – 0.5 oz/ac on 3/7/00	
Fungicide: Tilt 3.2EC – 4 fl oz/ac on 5/3/00	

Results: Average of 4 replications - see Table 1, on next page.

CONCLUSIONS:

Fertilizer N addition and soybean, as opposed to corn, as a previous crop, positively influenced yield (Table 1). Wheat following soybean averaged 3.6 bushel/acre greater yield than wheat following corn in this study. The difference was smaller than in the past year, largely because of the lodging at higher fertilizer N rates where wheat followed soybean. Lodging was severe enough to cause significant average yield reductions at the two highest fertilizer N rates. Averaged across all N rates, and regardless of previous crop, little difference due to N source management was observed. The optimal N rate was little affected by N source management, but was strongly related to the previous crop. The optimal fertilizer N rate was about 27 lb N/ac for wheat following soybean and 81 lb N/ac for wheat following corn. UAN solution application management, whether broadcast or streamjet, had little effect on the yield results for wheat grown in the two rotations.

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Table 1. Effect of Previous Crop, N Source Management, and N Rate on Yield of No-Tillage Wheat

Previous Crop	Fertilizer N Rate	Wheat Yield - by N Source Management				N Rate Average
		UAN streamjet	Urea broadcast	AN broadcast	UAN broadcast	
lb N/acre		Grain Yield (bu/acre)				
Corn	0	69.1	66.1	66.8	73.1	68.8
	27	76.9	77.8	69.7	80.0	76.1
	54	87.4	91.5	85.2	86.5	87.7
	81	95.9	95.1	96.1	92.5	94.9
	108	94.7	99.9	97.6	97.3	97.4
	135	95.4	96.2	94.6	94.7	95.2
Source Average		86.6	87.8	85.0	87.4	86.7
Soybean	0	82.6	86.9	91.9	87.8	87.3
	27	94.0	94.4	92.2	98.4	94.8
	54	94.0	98.2	84.6	91.2	92.0
	81	93.1	92.7	86.6	102.2	93.7
	108	91.9	92.1	91.4	84.5	90.0
	135	87.0	86.7	83.6	78.5	84.0
Source Average		90.4	91.8	88.4	90.4	90.3