

Phosphorus Application Methods for Corn

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Objective

To compare the influences of different phosphorus application methods on corn yields.

Background

Cooperator:	Keith Dennis	Tillage:	Minimum till
County:	Perry	Soil Test:	pH 6.5, P 23 ppm, K 114 ppm, CEC 9
Nearest Town:	Rushville	Previous Crop:	Corn
Soil type:	Centerburg and Luray	Hybrid:	Seed Consultants 1134
Drainage:	Improved	Planting Date:	May 2, 1999
		Planting Rate:	27, 200 seeds/A

Methods

A study was designed to compare corn yields under two different phosphorus placement programs. Plots were field length (>750 ft.) and 54 ft. wide, replicated six times and completely randomized. Anhydrous ammonia was used at a rate of 190 lb N/acre on all three treatments. One fertilizer program was the broadcasting of 100 lbs/acre of diammonium phosphate or DAP (18-46-0). The second fertilizer program was the same rate of DAP placed about eight inches in the soil profile when the anhydrous was injected. A third treatment was a half rate of the DAP (50 lbs/acre) placed at about eight inches in the soil profile. All fertilizer applications were made on April 26 or six days before planting.

All plots received a surface tillage pass with an Aerway unit. The shallow tillage probably incorporated the broadcasted fertilizer to a depth of two to three inches. This is the second year for this trial using the same treatment areas as the previous year.

Results

Treatment	Yield (bu/A) ¹	Harvest Population	Treatment Cost (\$/A) ²
Broadcast Full Rate	98.81	9,630	\$20.32
Full Rate Deep Placement	93.49	11,170	\$23.26
Half Rate Deep Placement	94.99	12,430	\$13.89
	NS ³	NS ⁴	

¹ @ 15% moisture.

² Includes actual fertilizer cost, plus estimated machinery and fuel cost based on Ohio Farm Machinery Economic Cost Estimates for 1999.

³ F<1, CV= 9.94% ;

⁴ F= 2.62, CV= 18.41%

Summary and Notes

Yields were down due to lack of rain. Rainfall during the growing season was approximately 10 inches below normal. Finding no significant differences between the three treatments was not surprising when considering the soil test values being above the critical level for phosphorus. Past research indicates that if soil test values are above the critical level then specific placement of the fertilizer will have no significant effect on yield. This trial should also be done on a field that has soil test values below the critical level. In that case, past research indicates that fertilizer placement will have a greater effect on yield.

For additional information, contact:

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