

# Placement of P and K on Corn

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## Objective

To compare corn yields under three different fertilizer programs.

## Background

|                |                      |                |                       |
|----------------|----------------------|----------------|-----------------------|
| Cooperator:    | Keith Dennis         | Soil Test:     | pH 6.5, P 23 lbs/A,   |
| County:        | Perry                |                | K 114 lbs/A, CEC 9    |
| Nearest Town:  | Rushville            | Variety:       | Seed Consultants 1118 |
| Soil Type:     | Centerburg silt loam | Planting Date: | May 11, 2000          |
|                | Luray silt loam      | Planting Rate: | 27,000 seeds/A        |
| Previous Crop: | Corn                 | Row Spacing:   | 36 inches             |
| Drainage:      | Tiled                | Harvest Date:  | November 28, 2000     |
| Tillage:       | Minimum-Till         |                |                       |

## Methods

A study was designed to compare corn yield under three different phosphorus and potassium fertilizer programs. Plots were field length (>750 ft.) and 54 ft. wide, replicated six times and completely randomized. Application of 190 lbs. per acre actual nitrogen was applied as anhydrous to all three plots. One fertilizer program was 18-46-60 actual applied by broadcasting before tillage. The second fertilizer program was 18-46-60 actual applied with the anhydrous and placed about eight inches in the soil profile. The applicator was a DMI Ecoltill 2500 with shark-fin points fed by a Harmon's 3100 air system. The third program was 9-23-30 actual applied with the anhydrous and placed at the same depth as the second program. All fertilizer applications, including anhydrous, were made on April 27 or 14 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 third year for this trial using the same treatment areas as the previous years.

## Results

**Table 1. Corn Population and Yield.**

| Treatment                | Yield (bu/A) <sup>1</sup> | Treatment Cost (\$/A) <sup>2</sup> |
|--------------------------|---------------------------|------------------------------------|
| Broadcast Full Rate      | 161.98                    | \$19.04                            |
| Full Rate Deep Placement | 166.12                    | \$24.40                            |
| Half Rate Deep Placement | 160.18                    | \$16.15                            |
| F<1                      | NS <sup>3</sup>           |                                    |

<sup>1</sup> 15% moisture.

<sup>2</sup> Includes actual fertilizer cost, plus estimated machinery and fuel cost based on "Ohio Farm Machinery Economic Cost Estimates for 2000."

<sup>3</sup> NS = Not Significant at P = 0.05, CV = 4.6%.

## Summary and Notes

Finding no significant differences between the three treatments was not surprising since the soil-test values are above the critical level for both phosphorus and potassium. 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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