Phosphorus Response in Corn Study

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Objective

To measure the corn yield effect of added phosphorus fertilizer.

Background

Crop Year: 2014
Location: York Township
County/Town: Darke/Brock
Soil Type: Blount Silt Loam/Pewamo
Drainage: None
Previous Crop: Soybeans/ Cereal Rye Cover
Tillage: No-Till
Soil Test: pH 6.8, P 29 ppm M III, K 105 ppm
Planting Date: May 20, 2014
Nitrogen: 200 Pounds per acre
Seeding Rate: 32,000
Harvest Date: October 17, 2014

Methods

Phosphorus application rate per Tri-State Fertility Guide recommendations versus zero application of phosphorus was replicated four times in a randomized complete block design. Treatments were applied at planting with a 12 row White planter. All treatments received the same tillage, herbicide and non-P fertilizer applications. Seed used was Seed Consultants 1121. Plots were harvested with a commercial combine equipped with a 6 row corn head. Yields were verified using a grain cart. Moistures were taken for each treatment. Yields were shrunk to 15.5% moisture.

Treatments

1. 0 pounds of P
2. 75 pounds of P

Results

No.	Treatment	Wet Moisture	Treatment Average (bu./acre)	Economic Return of P Treatment
1	No P	23.0%	139.2	
2	Tri State	21.5%	148	-$13.35/acre

LSD = 14.75 (p<0.29); CV 7.48; No Significant Difference.

Summary

Corn yield was not influenced by phosphorus rates compared to Tri-State expected yield effects response. There was no significant difference in yield seen with the different phosphorus rates. An economic comparison between the phosphorus rates of 0 and 75 pounds revealed a $13.35 loss over the net return calculated for each rate. Assumptions were P_2O_5 cost $.53 per pound with corn at $3.00 per bushel.

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