

The Effect of Urea on Soybean Yield at R1.2

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Objective

It has been theorized that soybeans would benefit from supplemental nitrogen applications during early reproductive growth states. The objective of this study was to examine soybean yield response to supplemental nitrogen applied during early reproductive stages.

Background

Cooperator:	OSU Unger Farm	Fertilizer:	27-69-60 (fall 1997)
County	Crawford		49.5 lbs/A nitrogen urea July 6
Soil Type:	Pewamo	Herbicide:	Roundup Ultra (1 qt/A)
Drainage:	Systematic	Variety:	Pioneer 9333
Tillage:	Spring cultivate (2x)	Planting Date:	May 14, 1998
Previous Crop:	Pumpkins	Planting Rate:	63 lbs/A
Soil Test:	pH 7.3, P 16 ppm, K 88 ppm	Harvest Date:	September 25, 1998

Methods

Urea @ 107.5 lbs/acre was applied in 30' swaths (used only one boom) with Ag Chem air machine in three random strips across soybeans at growth stage R1.2. Rainfall occurred July 7, 1998, thus lessening nitrogen volatilization losses. The center 22 feet of the strip plots were harvested to measure treatment effect. Individual harvested plot size was 0.17 acre. Experiment design was completely randomized with three replications for each treatment.

Results

Treatment	Yield (bu/A)
Urea	63.07
No Urea	65.93

F = 2.06 Not significant at P = 0.05 CV = 3.8%

Summary and Notes

Each bushel of soybeans contains from 3.0 to 3.5 pounds of nitrogen. Thus, a 60-bushel-per-acre yield of soybeans requires 180 to 210 pounds of nitrogen. Soybeans, being legumes, have a symbiotic relationship with *Rhizobium* bacteria. These bacteria have the ability to fix 200 pounds of nitrogen or more per acre. However, there are reproductive stages in the growth of soybeans where nitrogen deficiency may occur. In this study, there was no significant difference between treatments. These results are consistent with previous studies on this topic.

For additional information, contact:

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