Effects of Municipal Solid Waste (MSW) on Double Crop Soybean Yield

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Objective
To evaluate the grain yield effect of Municipal Solid Waste (MSW) applied prior to planting double crop soybeans.

Background
Crop Year: 2013
Location: Wauseon, OH
County: Fulton County
Soil Type: Rimer and Mermill
Drainage: Old clay, un-systematic
Previous Crop: Wheat
Tillage: Conventional and no-till
Soil Test: pH 6.4, P 25 ppm, K 137 ppm
Planting Date: July 16 & 18, 2013
Seeding Rate: 200,000 seeds/acre, 15” rows
Herbicide: 8 oz Tricor pre-emerge; 1.5 pt glyphosate on August 10
Insecticide/Fungicide: none
Harvest Date: October 27, 2013

Methods
This study was designed with two treatments replicated five times in a randomized complete block design. Treatment plots were roughly 28 feet wide by 300 feet long. In treatment 1, 6,000 gallons of Municipal Solid Waste (MSW) were knifed into the wheat stubble. An analysis of the MSW showed that at the 6,000 gal/ac rate, 24.9 lbs of N, 75.0 lbs P, and 6.8 lbs K were applied to the land. A conventional till soil finisher was then used to prep the seedbed 2-3 days after MSW was applied or 4-5 days after wheat harvest. Treatment 1 was planted July 18, 2013.

In the check treatment, soybeans were no-till planted 3 days after wheat harvest (July 16, 2013). An eleven row planter (15” spacing) was used to plant both treatments. Seed used was Pioneer 92Y80 in both treatments. Plots were harvested with a commercial combine. Yield measurements were taken with a GreenStar 2 yield monitor.

Treatments
1) Double crop soybeans with 6,000 gallons/ac MSW prior to planting
2) Double crop soybeans without MSW – Untreated Check

Results

Table 1. Double crop Soybean Yield (bu/ac) Response to MSW

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Harvest Moisture</th>
<th>Yield (bu/ac)</th>
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<tbody>
<tr>
<td>Double crop soybean with 6,000 gal MSW</td>
<td>15.8%</td>
<td>21.5</td>
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<tr>
<td>Double crop soybean without MSW</td>
<td>16.3%</td>
<td>16.7</td>
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LSD (0.05) 2.85, CV 8.49 – Yes significant difference between treatments
Summary

There was a significant difference in yield between the doublecrop soybeans planted with MSW and those planted without. The MSW soybeans showed better emergence, stand counts and canopy that likely occurred from added fertility and moisture from the MSW applied. This faster growth could have also lead to faster maturation and thus, lower harvest moisture. Further data in the form of multi-year replications will add to the validity of these results.

Acknowledgement

The author expresses appreciation to the City of Wauseon for its swift application of MSW after wheat harvest and to Larry Richer for his cooperation and aid in the planting and harvesting of this trial.

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