Fertilizer and Ag Lime Grants
Progress Report on:

Soil pH effects on atrazine carryover damage to no-till soybean

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Accomplishments for 2003:
- Additional lime and iron sulfate applications were made in fall 2002 to maintain a wide range of soil pH levels in the top inch of soil.
  - 2 tons lime/acre
  - 1 ton lime/acre
  - no treatment
  - 1 ton iron sulfate/acre
  - 2 tons iron sulfate/acre
- We had already created a wide range of soil pH levels in the top inch of soil using surface applications of lime and iron sulfate in 1998-1999. The same treatments were applied to the same plots in fall 2002 in order to reinforce and maintain the pH range created by the original applications.
- No-till corn was planted in all 160 plots in 2003.
- Herbicide programs applied to corn in 2003 were:
  - Untreated check
  - Atrazine 1.25 lb a.i./acre preplant
  - Atrazine 2.5 lb a.i./acre preplant
  - Atrazine 1.25 lb a.i./acre preplant followed by 1.25 lb a.i./acre post
    - This is a new treatment in the study. Many producers use post applications of atrazine, which carry greater carryover risk than preplant applications.
- Roundup Ready corn was used and Roundup was used to control weeds so that the only effect of soil pH is on carryover damage, allowing us to focus on carryover issues.
- The plots are ready to be planted to no-till soybean in 2004, so that the carryover effects of 2003 treatments on soybean yield can be measured.

Objectives for 2004:
- Plant no-till soybean in plots with atrazine treatments applied in 2003 over a range of soil pH values.
- Maintain weed control.
- Rate visual appearance of soybean if any visual symptoms are noted.
- Harvest soybeans.
- Analyze data to determine effects of soil pH and atrazine treatments on soybean yield.
- Write a final report combining 2004 results with results from 1999-2002, giving our best assessment of average risk of yield loss from atrazine carryover damage when surface soil pH is either high or low.
  - In 1999-2000, we saw a 6 bu/acre soybean yield loss on plots with high surface soil pH and either 1.25 or 2.5 lb/acre atrazine applied to the previous year’s corn.
In 1999-2000, we saw a 2 bu/acre soybean yield loss on plots with low surface soil pH and either 1.25 or 2.5 lb/acre atrazine applied to the previous year’s corn.

In 2001-2002, we saw a 1.2 bu/acre soybean yield loss on plots with low surface soil pH and 2.5 lb/acre atrazine applied to the previous year’s corn.

- Develop educational materials based on research results to help corn/soybean producers evaluate risks and develop management strategies.

**Budget requested for 2004 (same as for 2003):**

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<tr>
<th>Item</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Salary and wages</td>
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<td>33% of research specialist</td>
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<td>Fringe benefits</td>
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<td>Supplies</td>
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<td>Soil pH analyses</td>
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<td><strong>Total</strong></td>
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