Maize Residue Removal and Cover Crop Effects on Subsequent Soybean Crops

This poster reports on a long-term field study that addressed the impact of maize residue removal and cover crop cultivation on the subsequent soybean crop yield, seed moisture, and mineral nutrients under no-till soil management.

**Materials and Methods**
- No-till experiment established in 2000.
- Corn (C) and soybeans (S) were grown in 2-year rotation.
- Maize residue removal treatments imposed in the fall of each year.

**Residue Removal Treatments**
- LRR = maize grain harvest only.
- MRR = residue windrowed, baled and removed after grain harvest.
- HRR = fodder harvested as silage.

**Cover Crop Treatments**
- Slender wheatgrass was drilled into maize plots.
- Oats and hairy vetch were direct seeded into soybean.

**Results**

<table>
<thead>
<tr>
<th>Year</th>
<th>Residue Removal</th>
<th>Cover Crop</th>
<th>Soybean Yield (kg ha⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>LRR</td>
<td>Oats</td>
<td>3,200</td>
</tr>
<tr>
<td>2010</td>
<td>MRR</td>
<td>Oats</td>
<td>3,400</td>
</tr>
<tr>
<td>2011</td>
<td>HRR</td>
<td>Oats</td>
<td>3,500</td>
</tr>
</tbody>
</table>

**Conclusions**
- Only during the hot and dry 2012 season did the MRR and HRR treatments result in less grain yield than LRR.
- Seed moisture was less while seed N and S concentrations were greater under MRR or HRR than under LRR.
- Warmer soil temperatures under MRR and HRR likely increased plant development and reduced seed moisture at harvest.
- Negative effects of maize residue removal or cover crop cultivation on soybean grain yield were mitigated during seasons characterized by moderate temperature and rainfall.