Silage Corn/Soybeans Interseeding, Carbon County

Ted Nelson, NRCS District Conservationist, Columbus, MT

County: Carbon, near Fromberg
Average annual precip: 14-15”
MLRA: 58A, Northern rolling plains
Dominant Soil Type: Kc – Kyle Clay, 0 to 2 % slopes
Acres: 114.9
Planting Date: May 7, 2015
Seeding Rate: Corn, 51,000 seeds/ac
Soybean, 104,000 seeds/ac
Seeding Method: No-till planter
Row Spacing: 7.5” Alternate spacing corn/soybeans
Tillage: No-till (prob less than 5 years)
Previous Crop and Year: 2014, barley
Herbicides: Pre: May 6, herbicide
Inoculant: yes, for soybeans
Insecticides/Fungicides: none
Fertilizer: Yes, prior to seeding
Irrigation: Center pivot
Harvest Date: September 18, 2015

Introduction: This producer has enthusiastically embraced soil health principles in the last few years and has been trying innovative new practices to increase diversity and reduce tillage while maintaining, or increasing, profitability. In 2015 he interseeded soybeans with irrigated silage corn with the goals of decreasing his need for N fertilizer, increasing silage yield, and increasing crop diversity. This is the second year he has tried the practice.

Results: The producer seeded corn and soybean at the same time, with 7.5” row spacings. Corn population was 51k/ac and soybean was 104k/ac. It is important to note that a late-maturing soybean variety should be used for this technique to be successful in Montana to prevent the soybean from setting pods and to keep the nitrogen in the leaves and roots. The producer also had a field of conventionally tilled corn silage that was not interseeded as a comparison, with a corn population of 51k/ac on 15” spacings. The no-till corn did germinate a little slower in the spring but it soon caught up and passed the conventional corn in size and vigor. Figure 5 details the comparative yield and feed analysis data. The energy content of the interseeded silage is slightly less than the conventional silage, but the 25% increase in yield more than compensates for this. Soil test results taken from the 0-6” depth on October 23, 2015 showed available nitrogen of 22 lb/ac in the conventional corn field versus 46 lb/ac in the interseeded field.

Summary and Discussion: The producer has been very pleased with the results of two years of interseeding soybeans with silage corn. He stated that the cost of adding the soybeans was insignificant compared to the
improved yield and protein content of the silage, along with the added soil nitrogen and soil building benefits of increased diversity.

Fig. 3. Nodules on soybean root, Aug 27, 2015. Ted Nelson

Fig. 4. Soybeans and corn, July 8, 2015. Ted Nelson.

<table>
<thead>
<tr>
<th>Field Operations</th>
<th>Corn</th>
<th>Corn/Soybeans</th>
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<tbody>
<tr>
<td>Field Operations</td>
<td>Disk, Ridge or Disk, Roller-Harrow, Ridge</td>
<td>No-Till</td>
</tr>
<tr>
<td>Yield</td>
<td>32 t/ac</td>
<td>40 t/ac</td>
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<tr>
<td>Crude Protein %</td>
<td>7.80%</td>
<td>8.60%</td>
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<tr>
<td>Acid Detergent Fiber %</td>
<td>21.80%</td>
<td>27.10%</td>
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<tr>
<td>Total Digestible Nutrients %</td>
<td>72.50%</td>
<td>69.00%</td>
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<tr>
<td>Calculated Net Energy Lactation, Mcal/lb</td>
<td>0.77</td>
<td>0.71</td>
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<tr>
<td>Calculated Net Energy Maintenance, Mcal/lb</td>
<td>0.78</td>
<td>0.73</td>
</tr>
<tr>
<td>Calculated Net Energy Gain, Mcal/lb</td>
<td>0.5</td>
<td>0.45</td>
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Fig. 5. Comparison of feed analysis values of conventionally tilled corn silage versus no-till corn silage with soybeans interseeded.

Fig. 6. Barley residue remaining in no-till corn and soybeans, July 8, 2015. Ted Nelson.