Herbicide selection is key to using cover crops for forage

- Look at crop rotation interval (plant-back)

- There are three reasons why cash crop herbicide selection is important
  1. Herbicides residuals in the soil could stunt the growth or cause your double crop to fail out right
  2. The residue can taken up by the double crop and be toxic to cattle
  3. Forage with the residues can accumulate in the fat resulting in a human health risk
Fall forage

Great option for backgrounding calves

Corn silage fields
Seed corn fields

Maximize your fall growth
Commit to planting quickly

Maximum yields will be obtained when soil conditions permit quick germination and emergence.

The extra forage production can make hiring someone to plant profitable.
Species for fall grazing

- Plant winter sensitive species
  - Winter hardy species have limited production in the fall
- Oats or spring small grains
- Brassicas- turnips, radishes, collards
Cool season cereal grasses

• Full seeding rate 100-120 lb/ac
  – Oats $30-38/ac \hspace{1em} \text{winter sensitive}
  – Cereal rye $30-36/ac \hspace{1em} \text{winter hardy}
  
  – Barley $31-37/ac
  – Triticale $35-42/ac
  – Wheat $26-36/ac

• Winter varieties = winter hardy
• Spring varieties = winter sensitive

• Plant 1-1.5 in deep

Brassicas
(Turnips, kale, rape, collards)

• Winter sensitive
• Seed at a rate of 5 lb/ac if seeding alone
  (recommend seeding with a grass)
  – Turnips – $1.80 to $3.50/lb \hspace{1em} $9-18/ac
  – Kale/Rape – $2.75/lb \hspace{1em} $14/ac
  – Collard – $2.50/lb \hspace{1em} $13/ac

• Planting depth should not exceed ½ in deep
### Types of turnips

- **Globe**
  - Purple top
  - Green
  - $1.80/lb
  - $9.00/ac

- **Leafy**
  - Appin
  - $3.50/lb
  - $17.50/ac

- **Hybrids**
  - Pasja
  - Winfred
  - Hunter

### Brassicas - Radishes

- Winter sensitive
- Seeding rate 10 lb/ac
  - 1/2 in deep
  - $2.50-3.65/lb
  - $25 to 36/ac seed cost
Oat-brassica mix after corn silage

- Oats (84 lb/ac), Radish (2.0 lb/ac), Turnip (1.5 lb/ac)

- Sept 8th in Clay Center, NE
  - Irrigated Field

- Fertilized with 48 lbs N/ac via pivot

- 1.7 tons DM/ac

Cox et al., 2016 Beef Report, p 55

Oat-Brassica Forage Yield

- Yield was 3353 DM/ac (Nov. 7th)

P < 0.01
When to start grazing?

Nov 6th

Dec 9th

Change in nutrient content during fall

<table>
<thead>
<tr>
<th>% of DM</th>
<th>Radish top</th>
<th>Turnip top</th>
<th>Oats</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>November</td>
<td>December</td>
<td>November</td>
</tr>
<tr>
<td>Crude Protein</td>
<td>28</td>
<td>27</td>
<td>29</td>
</tr>
<tr>
<td>TDN</td>
<td>82</td>
<td>77</td>
<td>85</td>
</tr>
<tr>
<td>ADF</td>
<td>16.0</td>
<td>20.2</td>
<td>13.1</td>
</tr>
<tr>
<td>NDF (fiber)</td>
<td>20.4</td>
<td>34.7</td>
<td>17.9</td>
</tr>
<tr>
<td>WSC (sugar)</td>
<td>10.7</td>
<td>6.2</td>
<td>13.3</td>
</tr>
<tr>
<td>Sulfur</td>
<td>0.75</td>
<td>0.81</td>
<td>0.67</td>
</tr>
</tbody>
</table>
Fall grazing of a oat-brassica mix after corn silage

• Stocked at 0.9 hd/ac of 600 lb calves
  – 1 calf/1.5 tons DM
  – Started grazing Nov. 20th

• Grazed for 64 days
  – 1286 lbs DM/ac remaining

• Calves gained 2.2 lbs/d (141 lbs/ac)

Backgrounding economics oats/brassicas after corn silage

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost with yardage</th>
</tr>
</thead>
<tbody>
<tr>
<td>48 lbs N/ac</td>
<td>27.36</td>
</tr>
<tr>
<td>Seed cost</td>
<td>32.90</td>
</tr>
<tr>
<td>Seeding</td>
<td>12.00</td>
</tr>
<tr>
<td>Fertilizer app</td>
<td>6.00</td>
</tr>
<tr>
<td>Total, $/ac</td>
<td>78.27</td>
</tr>
<tr>
<td>Calves/ac</td>
<td>0.93</td>
</tr>
<tr>
<td>Cost $/calf</td>
<td>84.38 90.78</td>
</tr>
<tr>
<td>Cost $/lb of gain</td>
<td>0.60 0.64</td>
</tr>
</tbody>
</table>

Yardage $0.10/d
Backgrounding economics
Residue plus DDGS

- Supplemented 6 days a week
  - 6.1 lbs DM/d of DDGS + 2% limestone
  - Gained 1.77 lb/d

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
<th>With yardage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distillers ($129/ton)</td>
<td>22.97</td>
<td></td>
</tr>
<tr>
<td>Residue ($0.20/d)</td>
<td>12.8</td>
<td></td>
</tr>
</tbody>
</table>

Cost $/calf 35.77 48.57
Cost $/lb of gain 0.32 0.43

Yardage $0.20/d

Finishing Performance

<table>
<thead>
<tr>
<th></th>
<th>Residue + DDGS</th>
<th>Oat Brassica</th>
<th>Grower ration</th>
<th>SEM</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial BW, lb</td>
<td>802b</td>
<td>838a</td>
<td>803b</td>
<td>5.3</td>
<td>0.01</td>
</tr>
<tr>
<td>End BW, lb</td>
<td>1394b</td>
<td>1433a</td>
<td>1406ab</td>
<td>9.6</td>
<td>0.05</td>
</tr>
<tr>
<td>ADG, lb</td>
<td>3.70</td>
<td>3.73</td>
<td>3.77</td>
<td>0.059</td>
<td>0.65</td>
</tr>
<tr>
<td>DMI, lb</td>
<td>22.3a</td>
<td>22.7a</td>
<td>21.1b</td>
<td>0.31</td>
<td>0.01</td>
</tr>
<tr>
<td>F:G</td>
<td>6.05a</td>
<td>6.09a</td>
<td>5.60b</td>
<td>0.052</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

1All treatments on finishing period for 160 days.
### Carcass Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Residue + DDGS</th>
<th>Oat Brassica</th>
<th>Grower ration</th>
<th>SEM</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCW, lb</td>
<td>855&lt;sup&gt;b&lt;/sup&gt;</td>
<td>885&lt;sup&gt;a&lt;/sup&gt;</td>
<td>861&lt;sup&gt;b&lt;/sup&gt;</td>
<td>5.8</td>
<td>0.01</td>
</tr>
<tr>
<td>12&lt;sup&gt;th&lt;/sup&gt; rib fat, in</td>
<td>0.58</td>
<td>0.61</td>
<td>0.60</td>
<td>0.018</td>
<td>0.65</td>
</tr>
<tr>
<td>LM area, in&lt;sup&gt;2&lt;/sup&gt;</td>
<td>13.2&lt;sup&gt;a&lt;/sup&gt;</td>
<td>13.2&lt;sup&gt;a&lt;/sup&gt;</td>
<td>12.8&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.11</td>
<td>0.06</td>
</tr>
<tr>
<td>Calculated YG</td>
<td>3.29&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.48&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3.49&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.047</td>
<td>0.02</td>
</tr>
<tr>
<td>Marbling</td>
<td>402&lt;sup&gt;b&lt;/sup&gt;</td>
<td>419&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>423&lt;sup&gt;a&lt;/sup&gt;</td>
<td>5.6</td>
<td>0.06</td>
</tr>
<tr>
<td>% Choice</td>
<td>44&lt;sup&gt;b&lt;/sup&gt;</td>
<td>59&lt;sup&gt;a&lt;/sup&gt;</td>
<td>56&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>4.1</td>
<td>0.06</td>
</tr>
</tbody>
</table>

---

### Nutritive value of brassicas and oats planted after wheat

<table>
<thead>
<tr>
<th></th>
<th>Radish</th>
<th>Turnip</th>
<th>Oat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Leaves</td>
<td>Root</td>
<td>Leaves</td>
</tr>
<tr>
<td>DM, %</td>
<td>5.9</td>
<td>6.0</td>
<td>8.4</td>
</tr>
<tr>
<td>% on DM basis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crude Protein</td>
<td>18.2</td>
<td>8.2</td>
<td>13.5</td>
</tr>
<tr>
<td>TDN</td>
<td>81.2</td>
<td>90.0</td>
<td>82.9</td>
</tr>
<tr>
<td>NDF (Fiber)</td>
<td>21.7</td>
<td>14.9</td>
<td>19.9</td>
</tr>
<tr>
<td>Sugar</td>
<td>12.7</td>
<td>22.8</td>
<td>17.2</td>
</tr>
<tr>
<td>Sulfur</td>
<td>0.69</td>
<td>0.61</td>
<td>0.57</td>
</tr>
<tr>
<td>Proportion of plant</td>
<td>60.5</td>
<td>39.6</td>
<td>63.6</td>
</tr>
</tbody>
</table>

Planted in early-August in Southeast Nebraska and harvested in late-October
Forage yield 2.27 tons DM/ac with 39, 35 and 26% of DM being radish, turnip and oat, respectively.
Planted after wheat harvest at a rate of 2 lb of radish, 3 lb of turnip and 40 lb of oat seed per acre. Fertilized with 50 lb of N/ac.
Fall grazing of a brassica-grass mix after wheat

<table>
<thead>
<tr>
<th>Yr</th>
<th>Forage production DM Ton/ac</th>
<th>Stocking rate (hd/ac)</th>
<th>days</th>
<th>ADG (lb/d)</th>
<th>Gain per ac (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1.08</td>
<td>1.00</td>
<td>48</td>
<td>2.03</td>
<td>97</td>
</tr>
<tr>
<td>2014</td>
<td>2.39</td>
<td>1.70</td>
<td>52</td>
<td>1.55</td>
<td>137</td>
</tr>
</tbody>
</table>

Considerations for spring grazing

Great option for lactating cows
Plant winter hardy species in fall for spring grazing

- Planting winter hardy species in the fall will increase yields in spring over spring planting
- Cereal rye is earlier maturing than winter wheat or triticale
- Early harvest soybean fields are a great opportunity

Effect of fall planting date on spring growth of winter hardy small cereals
**Beef Forage Crops Systems**

Double-cropped cool-season annuals (cover crops) for late fall and early spring forage

(October 2015) There are two types of cool-season annual forages that are commonly used to produce forage (double-cropped forage) between cash crop production. These are the small grain cereal grasses (such as oats, cereal rye, triticale, and wheat) and the brassicas (which include turnip, radish,rape, and collards). Learn more.

**Previous Articles**

- **Annual and double cropped forages (cover crops)**
  - Effects of a Freeze on Forages (October 2015)
  - Annual Forage Insurance Plan Available (October 2015)
  - Cover Crop Forages: The Nitrate Dilemma (September 2015)

- **Crop residues**
  - Low Cost Option for Growing Calves: Corn Residue Grazing with Distiller Supplementation (September 2015)
  - Grain Sorghum Residue for Beef Cattle (February 2015)

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**G2162**

**Annual Cool-Season Forages for Late-Fall or Early-Spring Double-Crop**

Mary E. Drzewiecki, Extension Beef Systems Specialist  
Daren D. Rebeschini, Extension Forage and Crop Residue Systems Specialist

Plants cool-season annuals following grain or corn silage harvest is an economical way to produce high-quality forage. This publication provides information about how to use small grains and brassicas to produce forage within each cropping system.

Plants cool-season annuals following grain or corn silage harvest is an economical way to produce high-quality forage. Two types of cool-season annual forages that are well suited to produce double-cropped forages are small grain cereal grasses, such as oats, cereal rye, triticale, and wheat (Figure 1), and brassicas which include turnip and radish (Figure 2).

For fall forages, the general concept is to take advantage of the potential growing degree days following grain harvest (Figure 3). Ideally, planting forage double-crops should occur as soon as possible following grain harvest since the growing degree days available for plant growth rapidly decline through the late summer into early fall. The risk of frost increases with later planting dates. However, establishment costs are often low enough for many of these forages that the savings...