Double-cropping options for Today’s Dairies

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Vita Plus Corp

Thinking Outside the Box
What Can We Do to Maximize Fall and Spring Forage Growth?

- Corn Silage → Winter Rye or Winter Triticale
- Alfalfa (3rd yr: 3rd Crop) → Fall Oats, Winter Rye/Triticale
- Alfalfa (3rd yr: 1st Crop) → Corn Silage
- Winter Rye/Triticale → Sorghum Sudan

Note: This has been done south of us for a long time!
Thinking Outside the Box

- Capitalize on Sept-Oct and March-April Photosynthesis
- Increase Forage Yield/Acre/Year
- Dry Cow-Heifer Forage Needs
- Increase Manure Application Opportunities
- Provide Fall and Spring Soil Covers
- Low Seed Cost/Acre

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**Alfalfa (1st Crop → Corn Silage)...Yield x Planting Date**

*Lauer et al., 2003*

![Graph showing the relationship between alfalfa 1st crop harvest date and corn forage yield.](image)
### When in Doubt – Plant Corn for Forage

*Lauer et al., University of Wisconsin*

<table>
<thead>
<tr>
<th>Date</th>
<th>Yield T/DM/A</th>
<th>Protein %</th>
<th>NDF %</th>
<th>NDFD %</th>
<th>Starch %</th>
<th>Milk (2006) lb/T</th>
<th>Milk (2006) lb/A</th>
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</thead>
<tbody>
<tr>
<td><strong>Full-season (108 d RM) hybrid</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>June 30</td>
<td>7.5</td>
<td>8.0</td>
<td>56</td>
<td>60</td>
<td>17</td>
<td>3,000</td>
<td>22,600</td>
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<tr>
<td>July 15</td>
<td>5.3</td>
<td>9.4</td>
<td>61</td>
<td>63</td>
<td>8</td>
<td>2,900</td>
<td>15,300</td>
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<tr>
<td>August 1</td>
<td>2.1</td>
<td>11.1</td>
<td>64</td>
<td>72</td>
<td>1</td>
<td>2,800</td>
<td>5,600</td>
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<tr>
<td><strong>Shorter-season (94 d RM) hybrid</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>June 30</td>
<td>7.0</td>
<td>8.6</td>
<td>50</td>
<td>57</td>
<td>23</td>
<td>3,100</td>
<td>21,900</td>
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<tr>
<td>July 15</td>
<td>4.7</td>
<td>9.5</td>
<td>60</td>
<td>63</td>
<td>8</td>
<td>2,800</td>
<td>13,500</td>
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<tr>
<td>August 1</td>
<td>1.9</td>
<td>11.3</td>
<td>63</td>
<td>72</td>
<td>1</td>
<td>2,800</td>
<td>5,000</td>
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<tr>
<td><strong>Brown midrib hybrid</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>June 30</td>
<td>5.9</td>
<td>8.3</td>
<td>53</td>
<td>69</td>
<td>17</td>
<td>3,300</td>
<td>19,300</td>
</tr>
<tr>
<td>July 15</td>
<td>3.8</td>
<td>9.0</td>
<td>62</td>
<td>73</td>
<td>3</td>
<td>2,900</td>
<td>10,900</td>
</tr>
<tr>
<td>August 1</td>
<td>1.4</td>
<td>10.6</td>
<td>65</td>
<td>79</td>
<td>0</td>
<td>3,000</td>
<td>3,800</td>
</tr>
</tbody>
</table>

> **August 1- Winter Rye/Triticale**

- Planted Sept-Oct 10 + or -
- Harvest Early Following Spring May 15-30 + or -
- Good NDF Yield Potential
- 2 Manure Application Opportunities (Pre Plant or Post Harvest)
- Yields Typical Small Grain Silage
- Winter Wheat Matures to Slow
**August 1 - Winter Rye/Triticale**

Table 1 Nutrient compositions of spring harvested rye forage.

<table>
<thead>
<tr>
<th>Item</th>
<th>Average</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td>Yield DMT/acre</td>
<td>2.37</td>
<td>1.34 – 3.88</td>
</tr>
<tr>
<td>RFQ</td>
<td>180</td>
<td>149 - 205</td>
</tr>
<tr>
<td>CP %</td>
<td>16.2</td>
<td>9.5 – 17.5</td>
</tr>
<tr>
<td>ADF %</td>
<td>27.6</td>
<td>24.6 – 31.4</td>
</tr>
<tr>
<td>NDF %</td>
<td>52.2</td>
<td>47.2 – 66.0</td>
</tr>
<tr>
<td>P %</td>
<td>0.39</td>
<td>0.29 - 0.48</td>
</tr>
<tr>
<td>K %</td>
<td>3.05</td>
<td>2.10 – 4.37</td>
</tr>
</tbody>
</table>

*Miller et al., 2013, University of Wisconsin*

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**Fall Triticale + Corn Silage (System Yield)**

![Graph showing system yield comparison](Image)

*Cox et al., Cornell*
> August 1- Fall Oats

- Planted August 1 + or -
- Grows Backwards in Decreasing Day Length
- Low Lignin Static NDF
- Can Have Very High Sugar Levels
- Late Cold Weather Silage Harvest
- Versatile with High TDN Potential

Yield responses (lbs/acre) for elongated (oat) cultivars maintained the same 2:1 advantage over vegetative (wheat) cultivars observed previously across a wide range of harvest dates.

Coblentz and Walgenbach (2010)

Prairie du Sac, WI 2006-2007
Yield responses for fall planted oat cultivars were opposite those expected for traditional spring establishment.

**Fall Forage Yield**

**Early vs Late Oat Cultivars**

Prairie du Sac, WI (2006-07)

**Planting Date and Oat Cultivar on Peak Yield of Fall-Grown Oat**

(Marshfield, WI; 2007-2009)
Fall Planted Oats:

1. In Wisconsin, cereal-grain forages that elongate during fall will out-yield those that remain vegetative by about a 2:1 ratio before winter.

2. There is very little regrowth potential from oat, especially after jointing occurs.

3. With a planting date about 10 August, there appears to be a yield drag associated with slow-maturing oat cultivars.

4. Fall-grown oat forage exhibits very different quality characteristics than observed with spring planted oats
   - lower NDF
   - lower lignin
   - greater non-fiber carbohydrates
   - greater DM and fiber digestibility
   - relatively stable estimates of TDN over time
Small-Grain Forage vs. Alfalfa Forage

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Small Grain Forage</th>
<th>Range</th>
<th>Alfalfa</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP, %</td>
<td>13</td>
<td>10-16</td>
<td>21</td>
<td>18-24</td>
</tr>
<tr>
<td>NDF, %</td>
<td>55</td>
<td>48-62</td>
<td>43</td>
<td>38-48</td>
</tr>
<tr>
<td>NDFD, %</td>
<td>47</td>
<td>39-55</td>
<td>51</td>
<td>46-56</td>
</tr>
</tbody>
</table>

Check Particle Size

- 8-10% top screen (6% if dry hay or straw)
- <50% pan
Small Grain Forages Nutritional Reminders:

- Low in Ca and Buffering Capacity
- Can be High in K and ++ DCAD
- CP = N Fertility
- Packing Challenges When Mature
- Butyric Acid if Too Wet
- Mg Bioavailability

Double-cropping Options
Concerns and Considerations

- Matures fast when dairies are pressed for time
- Matures fast when weather is unpredictable
- Harvest Stage (Hedge Early)
  - Lactating Cows = Boot = lower NDF
  - Heifers = Head = higher NDF
- Windrow size, drying, wet weather and fermentation
- Information on varieties is limited
- False Expectations: < CP, Ca, NDFD and > NDF
### Other Alternative Forages

<table>
<thead>
<tr>
<th>Forage</th>
<th>Positive</th>
<th>Negative</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sorghum/Sudan</td>
<td>Manure Sink</td>
<td>Very Warm Season</td>
<td>North-never meets expectations</td>
</tr>
<tr>
<td>Soybeans</td>
<td>Legume</td>
<td>Palatability</td>
<td>Fermentation</td>
</tr>
<tr>
<td>Oats-Peas</td>
<td>Quality + CP -NDF</td>
<td>Peas don’t increase yield</td>
<td>Packs well</td>
</tr>
<tr>
<td>Corn Stalk Silage</td>
<td>Dry Cows and Heifers</td>
<td>Hard on Chopper Knives</td>
<td>Equipment Challenges and Moisture Control</td>
</tr>
<tr>
<td>Millets</td>
<td>Average Yielding Grass</td>
<td>Warm Season</td>
<td>Better Alternatives</td>
</tr>
<tr>
<td>Tropical Corn Silage</td>
<td>High Yielding</td>
<td>After Frost Harvest</td>
<td>Seed Availability</td>
</tr>
<tr>
<td>Gamagrass</td>
<td>Perennial</td>
<td>Slow Establishment</td>
<td>Equipment Compatibility</td>
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</tbody>
</table>

### Double-cropping Options for Today’s Dairies

- Double Crop Fall Cereal Forages Capitalize on Sept-Oct and March-April Photosynthesis
- Can Increase Forage Yield/Acre/Year
- Meet Many Dry Cow and Heifer Forage Needs
- Increase Manure Application Opportunities
- Expect Lower CP, Ca, NDFD and Higher in NDF
- Require Seasonal Timing: Work With a Regional Agronomist