Cover Crops after Corn Silage

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Cover Crops after Corn Silage

THE MOST IMPORTANT CROP IN WI TO FOLLOW WITH COVER CROPS!!

- Lack of residue
- Erosion
- Nothing for microbial community
- Less carbon cycling
- Retain nutrients from manure application
Covers after Corn Silage
Goals should drive cover crop selection

- Erosion control (usually at least one goal)
- Growing nitrogen
- Growing an alternative forage
- Soil improvement
- Disease management

What determines success?
- Erosion control – how much cover is enough?
- Nitrogen growing – enough N to cover seed and planting cost?
- Increasing organic matter – what time frame is reasonable?
Erosion control – soil loss estimates

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Tons/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall chisel, manure inc.</td>
<td>3.0</td>
</tr>
<tr>
<td>No till, no cover, manure</td>
<td>2.0</td>
</tr>
<tr>
<td>Cereal rye Sept 10</td>
<td>1.5</td>
</tr>
<tr>
<td>Cereal rye Oct 10</td>
<td>2.0</td>
</tr>
<tr>
<td>Annual Rye Sept 10</td>
<td>1.0</td>
</tr>
<tr>
<td>Annual Rye Sept 23</td>
<td>2.2</td>
</tr>
<tr>
<td>Annual Rye Sept 30</td>
<td>2.5</td>
</tr>
<tr>
<td>Annual Rye Oct 10</td>
<td>3.2</td>
</tr>
</tbody>
</table>

[Source: UW Extension Dane County]
Species selection for after silage

- Dependent on date you can get it planted
- In Southern Wisconsin
  - Early September—Oats and **Barley** are options
    - Advantages—winter kill
    - Disadvantage—need sufficient fall growth to prevent spring erosion
  - After Sept 15—Wheat, **Rye** or Triticale
    - Advantage—grow in the spring and protect soil, provide spring forage option
    - Disadvantage—require spring management, more potential for negatively impacting subsequent cash crop
- What about the Radishes (Brassicas) and Clovers (Legumes)??
Barley planted: 9/9/2013

November 9, 2013

May 28, 2014
Barley planted: 9/18/14

November 14, 2014

April 28, 2015
Planting method – post harvest

- **Drilling**
  - Better soil to seed contact = quicker growth

- **Broadcast seeding** - (with or without vertical or turbo tillage pass)
  - May take less time to plant than drill depending on equipment
  - Soil to seed contact may not be as good – reduced stand
  - Slower emergence = less fall growth

- Planting after harvest (and after manure application) can push cover crop planting date and change species choice, etc.
  - Every day that the cover crop is not planted, opportunity is lost to harvest sunlight
Planting method – late season

- Broadcast seeding
  - Highboy, airplane or helicopter
    - No more than 2 weeks prior to corn silage harvest
      - Too much competition for light
        - Plants will grow very tall, turn white and then fall over
        - Shallow root system – not able to withstand dry spells
  - Cover crop will be destroyed by harvest wheel traffic but, depending on timing, can fill in after harvest

- Slug-free fields!!
  - Put out a board overnight in field
  - Scout field within 2-3 days after seed application
Aerially planted – September 26

Mid- November

October 9th
Planting method – early season (V5)

- **Drilling (interseeding) or broadcast**
  - Modified drill
  - Seed can be broadcast alone or with fertilizer

- **Does it work??**
  - Not a lot of proven success yet in WI
  - Red Clover has had the most success
  - Cereal rye has also been moderately successful
  - Annual ryegrass has been tried in NE WI with limited success
  - Herbicides programs need to be compatible
  - Still kinks that need to be worked out

- **Wanna try it??**
  - Small acreage
So if you plant cover crop before harvest – what about manure?

• Manure can be applied to growing cover crops
  • Successes in Dane County with Aerway, Low Disturbance Injectors and broadcast applications
  • Aerway and LDI applications have been done with fairly high rates of liquid dairy
• This is a legal practice for CAFOs
• Cover crops must be big enough to tolerate the traffic, disturbance and manure application
• Great way to take the most advantage of fall growing degree days
Termination

• Winter killed cover crops – no termination necessary
  • Research in Iowa suggests cover crop can reduce herbicide passes due to weed suppression

• Winter surviving cover crops – termination dependent on what next crop is
  • Soybeans
    • Termination timing not a big deal
    • Soybeans generally do very well after cover crops
  • Alfalfa
    • Generally been great crop to follow rye or triticale
    • Problems in 2016
  • Corn
    • More consistent issues following cover crops with corn
Research from USDA in Iowa – ways to minimize problems in corn following rye

- Rye should be killed at least 10-14 days before planting and killed completely
- Residue should be managed in the seed bed – trash whippers and good down pressure on press wheel
- Don’t plant wet = side wall compaction
- Nitrogen should be applied at planting – rye ties up nitrogen (50-70lbs. at planting)
- Allelopathy??
Cover crops as an alternative forage

• Great way to make a cover crop cover its costs!
• Rye or Triticale – most popular, likely best options
• Research results:
  • Tonnage from cover crop can sometimes makes up for reduction in subsequent corn silage
  • Quality can be excellent if timing is right
• Challenges
  • Timing of harvest
    • Same time as first crop hay
  • Quality declines rapidly if conditions aren’t ideal for harvest
  • Impact on following corn crop – moisture penalty or other things
  • The logistics of putting up another and separate forage
• Rye research in WI – quality is great if timing is right
• Triticale– research in WI and NY
  • Harvest window for triticale is more forgiving while maintaining quality
  • Tonnage can be slightly better with good triticale varieties

Cover Crop Economics – short term

• Seed costs:

<table>
<thead>
<tr>
<th>Cover crop</th>
<th>Price</th>
<th>Rate/acre</th>
<th>Total/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rye</td>
<td>$21.00/ bushel</td>
<td>50 lbs. (or less)</td>
<td>$19</td>
</tr>
<tr>
<td>Triticale</td>
<td>$28.00 / 50#</td>
<td>50 lbs. (or less)</td>
<td>$28</td>
</tr>
<tr>
<td>Barley</td>
<td>$21.00/ bushel</td>
<td>50 lbs. (or less)</td>
<td>$19</td>
</tr>
</tbody>
</table>

• Planting
  - Aerial seeding ~ $20/acre
  - Drill - $16-18/acre (custom)
  - Broadcast with vertical tillage - $18.50/acre (rental)
Cover Crop Economics – long term

• Long term
  • Reducing erosion – keeping top soil in the field
  • $2.10 per ton of erosion in nutrient loss
  • $5.00 per acre in water quality costs
  • Reduction in land value 3 to 7% (Iowa analysis, through a reduction in yield potential)
• Increase in organic matter
  • Nutrients:
  • Nitrogen: 1100# * $.50/#N = $550
  • Phosphorous: 116# * $.40/#P = $ 46
  • Potassium: 105# * $.25/#K = $ 26
  • Sulfur: 145# * $.26/#S = $ 38
  • Carbon: 12,000# or 6 ton * $4/Ton = $ 24
  • Value of 1% SOM Nutrients/Acre = $684
Questions?

• Ask me!
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• Website for WI cover crops
  • Fyi.uwex.edu/covercrop