Cover Crops for Wisconsin

Heidi Johnson
Dane County UW-Extension
Crops and Soils Agent
Giving cover crop recommendations to farmers

- Encourage farmers to determine their goal
  - Erosion control – minimum percent cover
  - Growing nitrogen – credit reached that covers cost
  - Growing feed – enough forage to cover costs?
- Agronomically sound
  - Creating more work or decreasing cash crop yields hurts adoption
- Cost effective
  - Finding systems that farmers can pay for without cost share
Keep in mind adoption level

- **Beginning** – give recommendations that we KNOW work
  - A bad experience will turn a beginner off forever
  - Keep costs down to show them it is workable without cost share
  - First timers with a bad experience will share that experience
- **Middle** – give recommendations of some things others are experimenting with in region
  - They are willing to try some new things – stretch their experience
- **Advanced** – give recommendations of things you’ve hear of from other regions
  - Small acreage experiments
Selecting a cover crop

- Midwest Cover Crop Council – selector tool
  - http://mcccdev.anr.msu.edu/VertIndex.php

- But what do we know works in WI????
  - Wheat
  - Corn Silage
  - Soybeans
  - Corn Grain

http://fyi.uwex.edu/covercrop
Wheat

- Many options - easiest crop to integrate cover crops
  - 40% of GDD left
- Why not just leave volunteer wheat?
- Cover crop options are endless
  - Perfect opportunity for mixes
- Only niche for radishes
  - Always combined with a grass!!! Erosion potential on slopes
  - Research on nitrogen credit from radishes
- Only niche for legumes – grow nitrogen ahead of corn
  - Research on red clover frost seeded – 60-80 lb credit
  - Research on annual legumes – Crimson and Berseem
Frost Seeding Red Clover in Winter Wheat

Jim Stute, University of Wisconsin (UW) Extension, Rock County
Kevin Shelley, UW Nutrient and Pest Management Program

Grow your own nitrogen

If you plant winter wheat, you have an opportunity to “grow” your own nitrogen (N) to help manage input costs and accrue soil quality benefits. The age-old practice of green manuring, especially in conjunction with wheat, can produce significant creditable N for corn the next year. It also protects the soil and may be eligible for cost share under local and Federal conservation programs.

Multi-year research in Wisconsin has demonstrated that red clover (*Trifolium pratense*) is the most productive and reliable legume choice for green manuring if interseeded into winter wheat in early spring (table 1). Interseeded red clover captures the entire growing season which helps maximize nitrogen credits. Seeding clover or other forage legumes after wheat harvest is more risky due to the potential for dry conditions and a shorter growing season. Delayed germination and slow growth frequently limit seeding year yield and N production when seeded after wheat harvest. Adequate rainfall in August is critical for producing acceptable yield for summer seedings (figure 1). Red clover offers the additional advantage of being a non-host for soybean cyst nematode, a problem with many of the other legume

<table>
<thead>
<tr>
<th>Legume</th>
<th>Above Ground Biomass Yield Mean* (tons/a)</th>
<th>Range</th>
<th>Site Years of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interseeded</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red clover</td>
<td>1.70</td>
<td>0.33 - 3.26</td>
<td>24</td>
</tr>
<tr>
<td><strong>Seeded after harvest</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hairy vetch</td>
<td>1.37</td>
<td>0.67 - 2.16</td>
<td>10</td>
</tr>
<tr>
<td>Crimson clover</td>
<td>0.83</td>
<td>0.69 - 0.97</td>
<td>2</td>
</tr>
<tr>
<td>Berseem clover</td>
<td>1.00</td>
<td>0.31 - 1.58</td>
<td>9</td>
</tr>
<tr>
<td>Annual sweetclover</td>
<td>0.88</td>
<td>0.18 - 1.72</td>
<td>3</td>
</tr>
<tr>
<td>Annual medic</td>
<td>1.00</td>
<td>0.51 - 1.94</td>
<td>8</td>
</tr>
<tr>
<td>Chickling vetch</td>
<td>0.49</td>
<td>0.39 - 0.59</td>
<td>2</td>
</tr>
<tr>
<td>Annual alfalfa</td>
<td>0.39</td>
<td>0.38 - 0.40</td>
<td>2</td>
</tr>
</tbody>
</table>

Summer seeded legumes

Berseem

Crimson

Oct. 25, 2013
Ballweg, UWEX
Clovers increase yield by up to 20 bu/ac; reduction in N rate.
Corn silage

• Selecting a cover – research in Dane County
  • Legumes (clovers) and Brassicas (turnips, radishes, etc.) don’t work well – not enough time
  • Grasses are best option – select grass based on planting date, desire for winter survival and need for feed
    • Sept 1-Sept 20 – Oats and Barley are options (winterkill/ no forage option)
    • After Sept 20 – Wheat, Rye or Triticale (survive winter/ spring forage option)
Oats
September 10th Planting

Barley
Oats

September 23rd Planting

Barley

23rd Planting
Oats

September 30th Planting

Barley

30th Planting
Oats

October 10th Planting

Barley
Cover crops and corn silage

- If you plan to use barley or oats – plant them AS SOON AS POSSIBLE to capture all available sunlight
  - Plant immediately after harvest
  - Highboys and airplanes are an option
    - Seed no more than 2 weeks prior to harvest!!!
      - Sunlight critical

- BUT WHAT ABOUT MANURE?!?!?!?!
Cover crop as a forage

- Growing a cover crop as an alternative forage between silage crops
  - Cover crops can add to feed inventory – mainly heifers
  - Has to work with all other factors on the farm

- Research at Arlington – silage → rye → silage
  - 2 out of 4 years corn silage was equal, 2 out of 4 it was reduced

- Research at Marshfield – silage → triticale → soybeans
  - Soybean yield was equal in the one year of study, reduced in the second year
Soybeans / Corn Grain

- Soybean easier than corn
- RYE
- Southern WI – possible to drill or broadcast after harvest
- What about interseeding at V5?
  - Research in WI – some species work sometimes
  - Residual herbicides are a problem
- Aerial seeding late season is also option
  - When corn senesced up to ear
    - Works better in lower yielding or earlier harvested fields
  - When soybeans are turning yellow
Grain corn harvest date has significant impact on success

30#'s cereal rye flown on 09/10/14 across entire field

Strip harvested 11/14/14 for an insurance check

Rest of field harvested 10/06/14
Issues with rye before corn

- Research from USDA in Iowa – suggestions to minimize problems
  - Rye should be sprayed at least 10-14 days before planting and killed completely
- Planter set-up
  - Residue should be managed in the seed bed - trash whippers
  - Good down pressure
  - Makes sure slots are closing
- Don’t plant wet = side wall compaction
- Nitrogen should be applied at planting – rye ties up nitrogen
- Allelopathy??
Conclusions

• Select the right cover crop – pick one that will realistically meet your goals
  • Wisconsin research is happening – use those results to make sure you are getting the benefits that you think you are getting

http://fyi.uwex.edu/covercrop