

Cover Crops after Corn Silage

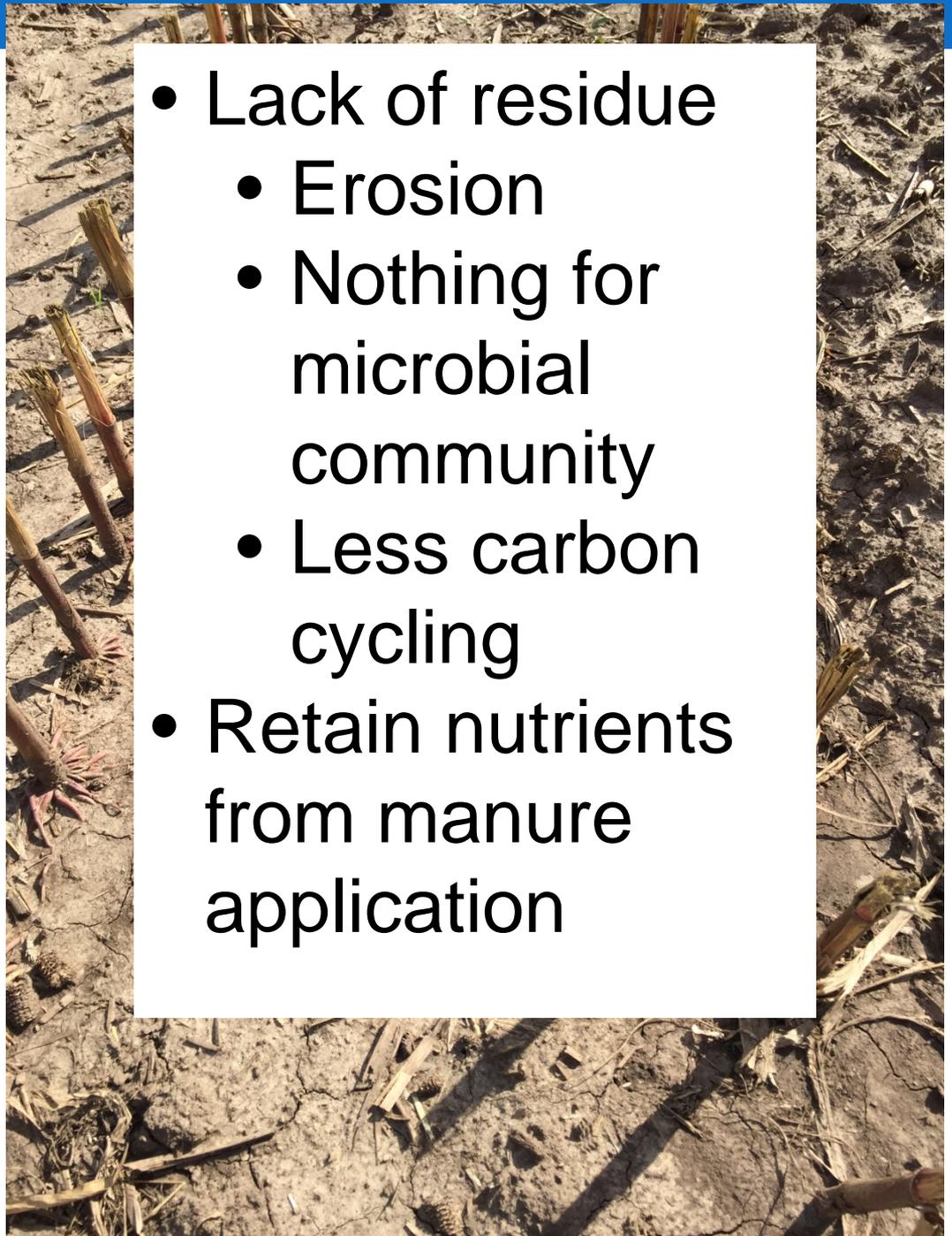
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Cover Crops after Corn Silage

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

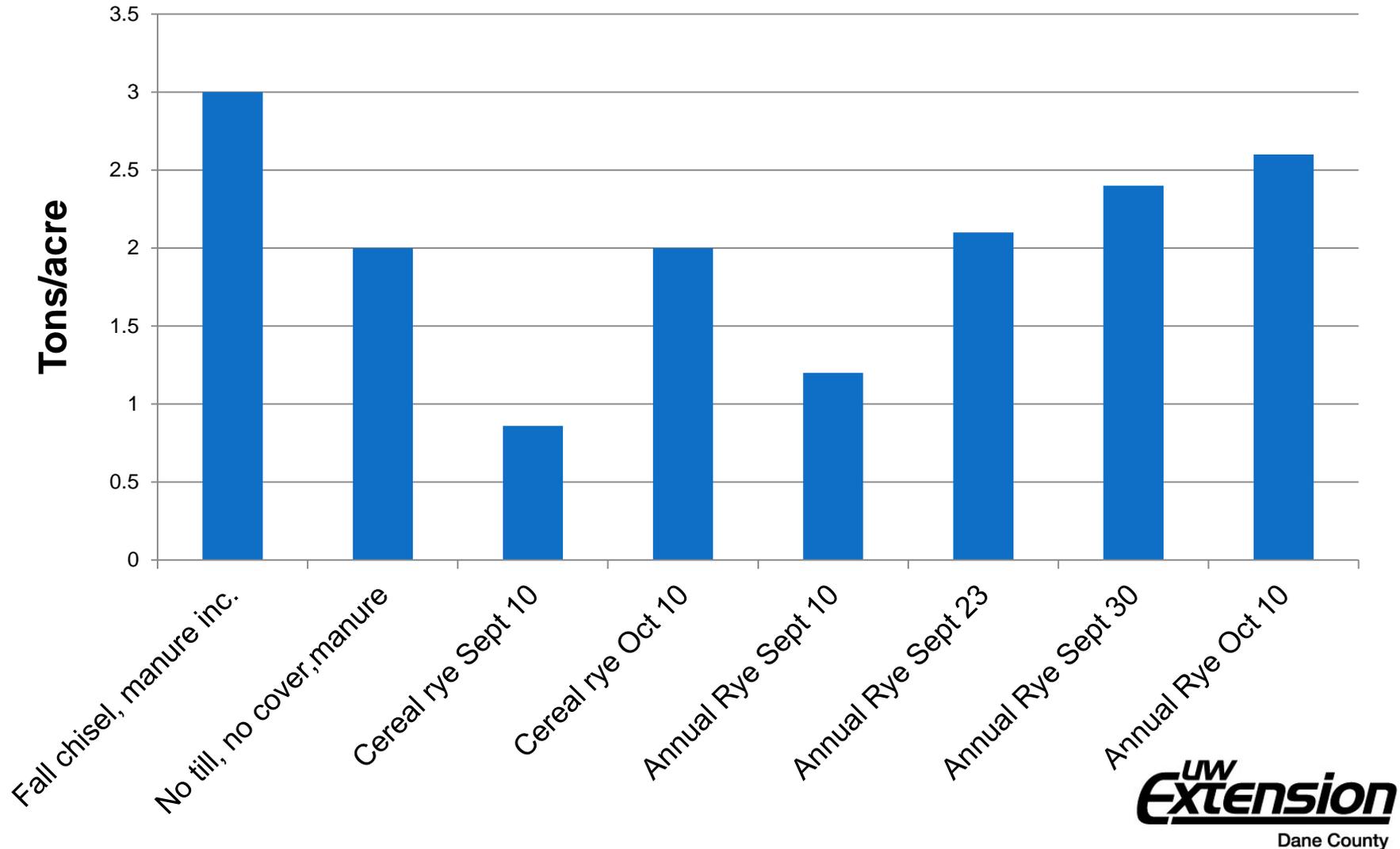


Goals should drive cover crop selection

- 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



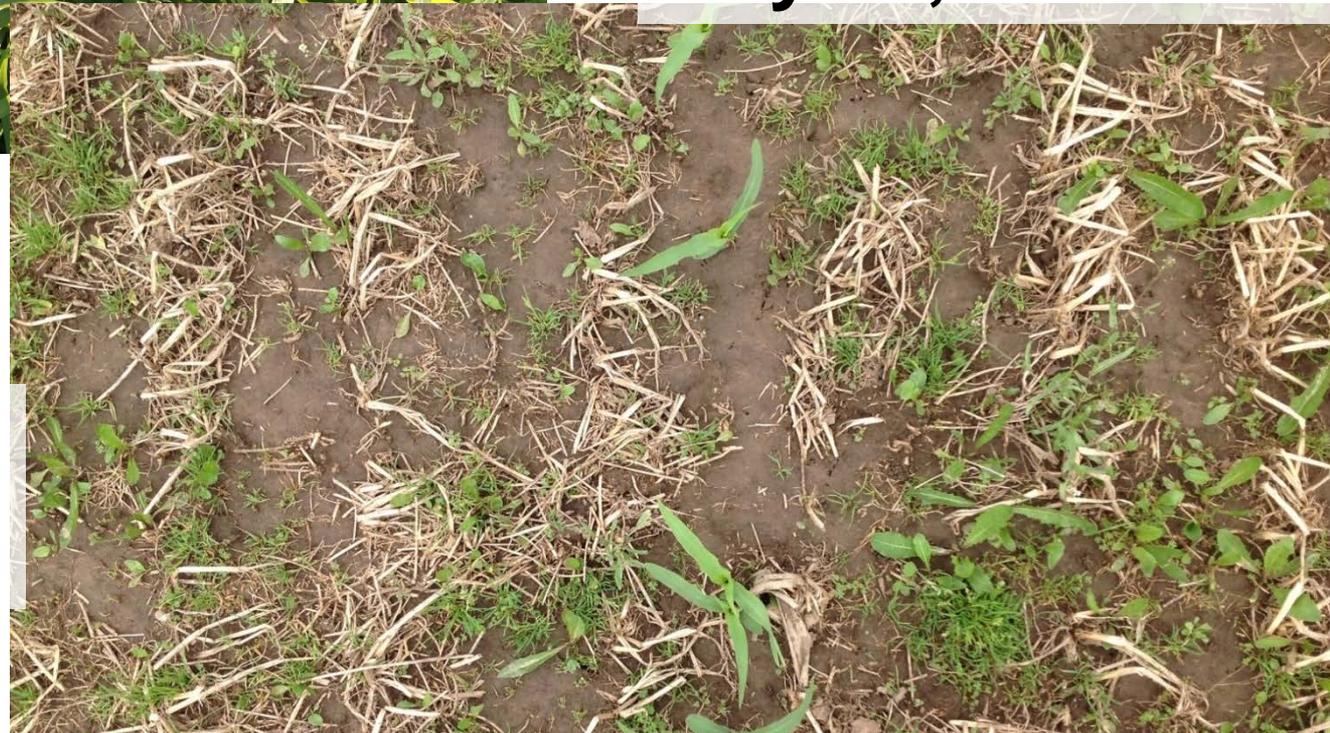
Species selection for after silage

- 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)??

November 9, 2013



May 28, 2014



**Barley planted:
9/9/2013**

November 14, 2014



Barley planted:
9/18/14

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



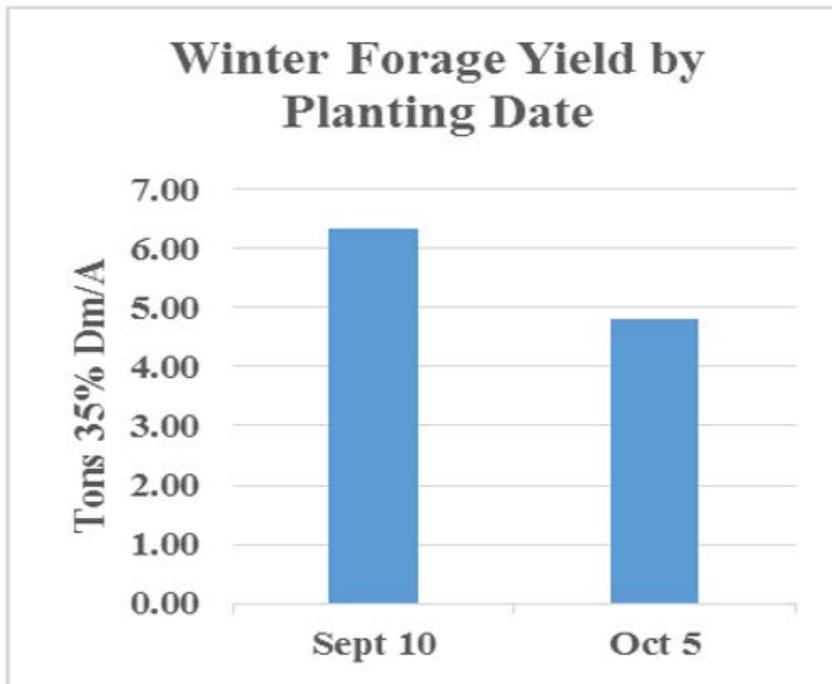
Research from USDA in Iowa – ways to minimize problems in corn following rye

- 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



	Average	Low	High
DM	24.28	19.93	27.5
Crude Protein	20.35	19.71	21.07
ADF	25.42	24.06	27.53
aNDF	40.28	38.54	42.58
aNDFom	37.91	35.88	40.12
RFQ	193	176	206
RFV	160	147	169

Source: Tom Kilcer, <http://advancedagsys.com/>

Cover Crop Economics – short term

- Seed costs:

Cover crop	Price	Rate/acre	Total/acre
Rye	\$21.00/ bushel	50 lbs. (or less)	\$19
Triticale	\$28.00 / 50#	50 lbs. (or less)	\$28
Barley	\$21.00/ bushel	50 lbs. (or less)	\$19

- 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 $6 \text{ ton} * \$4/\text{Ton} = \$ 24$
 - Value of 1% SOM Nutrients/Acre = **\$684**

Questions?

- Ask me!

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- Website for WI cover crops
 - fyi.uwex.edu/covercrop