

Grazing Cover Crops

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In a Nutshell

- Planting cover crops into cash crop fields improves soil and water quality
- Cover crops may be used as forage for livestock
- PFI farmers have extended their grazing seasons and improved pasture management
- Timing of grazing or harvesting affects nutrient content and forage biomass



Cows grazing in a mob grazing system.

Background

Cover crops are normally planted without the intention of a direct harvest. Rather, they are planted for the multiple benefits they provide to the farmer and the environment. These include:

- Soil quality improvements by protecting soil from erosion
- Protecting against nutrient runoff and leaching
- Increasing soil water-holding capacity
- Increasing soil microbial activity; and
- Cycling nutrients and adding soil organic matter

Keeping year-round cover, capturing more sunlight to grow plants that build soil and capturing any excess nitrogen are features of cover crops – and are proven methods to stop soil and nutrient loss.

Cost-Saving Opportunity for Livestock Farmers

Cover crops are planted in the fall into standing corn and soybeans and are typically chemically killed or incorporated in the spring. However, they may also be grazed or harvested before planting the subsequent cash crop. This represents an opportunity for livestock. In drought years, ensuring a stable supply of affordable feed is the difference between getting by and getting out for livestock producers. For instance, by September 2012 the precipitation deficit was 8.73 inches for the state of Iowa and many livestock producers, particularly beef, were forced to feed hay or other stored forages, raising the cost of production and over-extending permanent pastures. Increasing

pasture productivity and reducing reliance on harvested forages are two ways beef producers can ensure they and their herds survive a drought.

Planting cover crops, such as winter rye, triticale, or wheat, into standing or stubble corn and soybeans, effectively increases the pasture acreage on a crop-livestock operation. It also provides a slew of environmental benefits, as mentioned above.

Can Grazing Cover Crops Work for You?

Here are some things to keep in mind when considering cover crops:

- **Harvesting early** yields less cover crop

biomass, but grazing before the freeze-thaw period helps protect against compaction

- ▶ Strip-graze a cover crop to encourage efficient utilization of available forage
- **Harvesting later** ensures more cover crop biomass, but of greater maturity (less nutrient-dense); soil moisture must be monitored to prevent compaction and prevent loss of too much soil water through cover crop evapotranspiration
 - ▶ Harvest for silage to avoid possible compaction and improve nutrient value
 - ▶ Harvest before cover crop uses too much soil moisture
- **Crop insurance:** In 2013 it is okay to graze or harvest cover crops and still insure the following cash crop. While there are efforts to make this permanent, at the moment it will not be allowed for the 2014 crop year.

Testimonials of Farmers who Grazed Cover Crops During the 2012 Drought

Has it worked? Here are some testimonials from PFI members and cooperators who combined cover crops and grazing during 2012:

- *"We used sorghum-sudangrass as a cover crop in a fallow area of the garden, and got two grazings on it (with the plants about eight feet tall, so lots of biomass there) with the sheep herd (about 50 sheep) over the summer and will probably get one more stockpiled graze. This helped us keep the sheep off the permanent pastures so that the cattle could have longer access to those."* – (Dana Foster, Springdale, Iowa)
- *"We have observed several things this summer that have shown benefit to both cover crops and managed pastures. The first thing we noticed this spring was the ability of our small grain fields to stop runoff after a very heavy rainstorm (fall rate 5 inches per hour for 20 minutes). . . . Our side of the ditch had no water running down it while the conventional tilled farm on the opposite side of the road was plumb full of water running to the creek. . . . It looks like the oats we seeded at last cultivation will significantly increase the value of grazing cornstalks for our sheep and beef cattle. I believe it will increase the days of grazing we get by 30-50 percent."* – (Torray Wilson, Paullina, Iowa)

What PFI Cover Crop Research Data Show

Practical Farmers of Iowa members have conducted research and collected data on a variety of cover crops, the averages for which are presented below. The "lb DM/A" indicates "pounds of dry matter per acre."

- **Winter Rye**
 - ▶ Planted Fall 2008, sampled mid-April to mid-May 2009: 575 lb DM/A
 - ▶ Planted Fall 2009, sampled mid-April to mid-May 2010: 765 lb DM/A
 - ▶ Planted Fall 2010, sampled mid-April to mid-May 2011: 1,138 lb DM/A; 18.1 percent crude protein
 - One farm (sampled May 30, 2011): 2,958 lb DM/A, 16.8 percent crude protein; relative feed value of 89
 - ▶ Planted Fall 2011, sampled mid-April to mid-May 2012: 2,055 lb DM/A
- **Winter Triticale**
 - ▶ Planted Fall 2010, sampled May 30, 2011: 2,375 lb DM/A; 20 percent crude protein; relative feed value of 112
 - ▶ Planted Sept 15-16, 2011, sampled April 20-26, 2012: 1,535 lb DM/A
- **Winter Rye Planted in Fall**
 - ▶ If harvested in March (before much spring growth), one might expect 200-300 lb DM/A
 - ▶ If harvested in mid-April, one might expect 800-1,000 lb DM/A
 - ▶ If harvested in early May, one might expect 2,000-3,000 lb DM/A

Measure Biomass to Determine Your Cover Crop Quantity

So how can you tell how much cover crop you've produced that can be used to feed livestock? Measuring biomass will help you determine tonnage and estimate your grazing period on cover crops. To measure biomass:

1. Create a 1x1 foot square. (Tip: An easy way to do this is to bend a coat hanger)
2. Toss the square into the field randomly in order to select sampling sites. (Tip: Try for at least five to 10 random samples).
3. Using scissors or shears, clip the above-ground forage that's inside the square. You'll want to clip the forage close to the ground.
4. Put the clipped forage in a paper bag and leave to dry for four to five days. (Tip: The forage should be dry and crunchy.)

A wintry pasture that can be grazed due to cover crop plantings.



5. Weigh the dry forage.
6. Calculate dry matter (DM) yield, using the following formula:
7. Calculate grazing days:

$$\text{DM Yield} = (\text{Mass of dry forage}) \times \left(\frac{43,560}{\text{number of squares sampled}} \right)$$

Conversions

- ▶ 1 lb = 453.6 g
- ▶ 1 kg = 2.2 lb
- ▶ 1 acre = 43,560 ft²

Example: 50 g of dry forage from 5 squares

$$\text{DM Yield} = \left(\frac{50 \text{ g}}{453.6 \text{ g/lb}} \right) \times \left(\frac{43,560 \text{ ft}^2 / \text{acre}}{5 \text{ ft}^2} \right) = 960 \text{ lb / A}$$

Grazing Days = $\frac{\text{dry matter yield of forage}}{\text{dry matter intake of cows}}$

Example: 10 cows, 1,300 pounds each, consuming 2.5 percent of their body weight daily

Daily Dry Matter Intake = 1,300 x 0.025 = 32.5 lbs
Daily Dry Matter Intake for All Cows: 325 lb / day total

Grazing Days = $\frac{960 \text{ lb / A}}{325 \text{ lb / day}} = \sim 3 \text{ days / acre}$

8. Using the estimates of biomass at different harvest dates:
 - ▶ **March harvest:** 200-300 lb DM/A could support 10 cows for less than 1 day
 - ▶ **April harvest:** 800-1000 lb DM/A could support 10 cows for roughly 2.5-3 days
 - ▶ **May harvest:** 2,000-3,000 lb DM/A could support 10 cows for roughly 6-9 days

PFI Cooperators' Program

PFI's Cooperators' Program gives farmers practical answers to questions they have about on-farm challenges through research, record-keeping, and demonstration projects.