



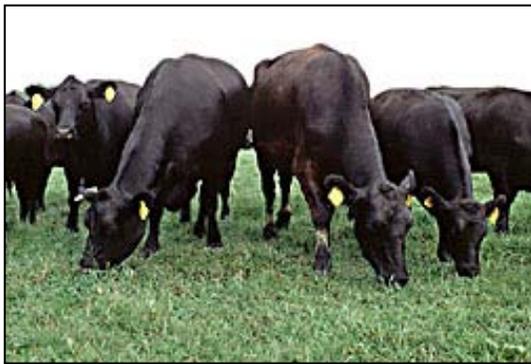
Cover Crop Species Selection for Grazing

SD-FS-56
July 2011

Forage Production

Warm- or Cool-Season Cover Crops

Cover crops can provide an opportunity for producers to both extend the grazing season and provide a rest period for cool-season pasture or rangeland. Following small grain harvest, cover crop mixtures can provide high quality forage late into the fall.



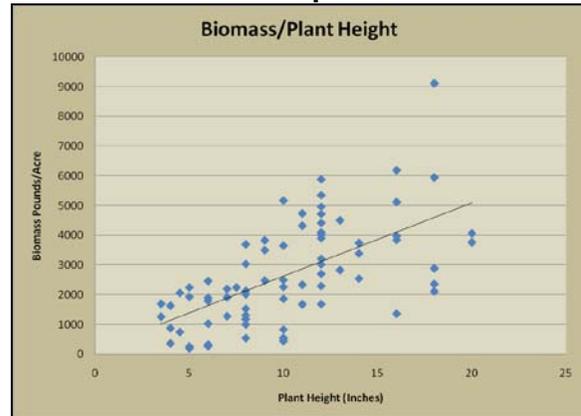
Field observations and measurements over the last three growing seasons in the eastern portion of South Dakota have shown that the production of cover crop forage mixtures can be estimated similar to production estimates in rangeland or pasture situations. The production of cool-season cover crop mixes can be estimated by measuring the forage height. The first 4 inches = 140 pounds (lbs.) with an additional 250 lbs. for each additional inch of forage height. Example: Measured forage height of 12 inches would result in production estimate of 2,140 lbs. Cover crop mixtures with warm-season grass species (i.e., sorghum, sudangrass, millet) can also be estimated and will produce even greater amounts of forage at a slightly different rate. The first 4 inches of warm-season cover crop mix = 1,275 lbs. with an additional 200 lbs. for each additional inch of forage height.

The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.

Helping People Help the Land

An Equal Opportunity Provider and Employer

Relationship of Plant Height to Cover Crop Biomass



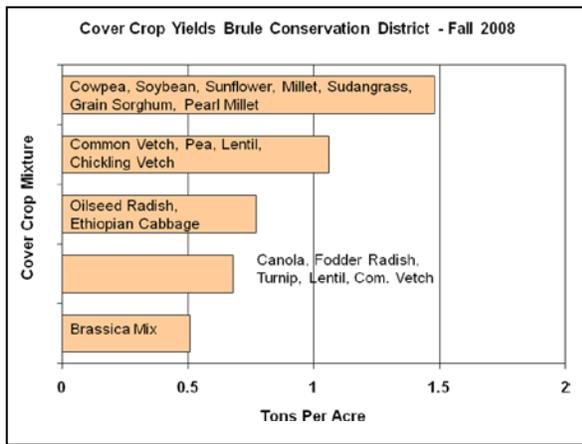
Forage Quality: Cover Crops

Cover crop mixtures planted after wheat harvest can provide a very high-quality fall forage. Crude protein values may range from 5 to 25 percent with relative feed value close to 300. Warm-season grass mixtures have forage characteristics lower in crude protein however usually higher in total production. Cool-season grasses including legumes or brassica mixes are high in forage quality and lower in total production.

Forage Quality Table 2.				
Primary species in Mix	Crude Protein	RFV	Production (Tons)	Peak Quality
Cool-season Mix	High	Very High	Moderate	Late
Warm-season Grasses	Low	High	High	Early

Brassicac (turnip, radish, and rape) as a group will typically stay green into November providing excellent forage quality for that time of year. Crude protein values can range from 10-12 percent with low residual soil nitrogen (N) levels and 15-20+

percent with high residual soil N. This late fall growth also occurs at the time of year when protein is often the most limiting nutrient for cattle on pasture. Protein levels vary in cover crop mixtures containing warm-season grasses. Mixtures of warm-season grass yielding 4-5 tons may have protein levels of 3-5 percent where those mixes yielding as low as ½ ton/acre may have protein levels as high as 20 percent. In 2008, a random sample of cover crop fields found cover crop dry matter production after wheat harvest as high as 3.5 tons/acre containing warm-season grasses.



Additional field observations have indicated that the amount of forage produced by non-legume species (specifically the brassicas: i.e., rape, radishes, and turnips) is directly related to the amount of residual N in the field. Producers that plan to plant cover crops for grazing should consider soil testing and monitor the amount of residual N in the profile after small grain production. When residual N is not available in the profile, addition N may need to be applied as manure or commercial fertilizers. Another alternative may be to plant a mix of legumes (such as field peas, lentils, clover, or vetch) along with forage grasses to maximize production. If there is residual N in the profile, producers could maximize production by using the residual N with a mix of brassicas (turnip, radish, and rape) and grass species (sorghum, millet, oats, wheat, rye, and triticale) without applying additional N.

Forage Composition Mixtures vs. Monocultures

Field observations and current research have shown that cover crop mixtures out produce monocultures. The dry matter production of a cover crop mixture has been observed to be twice that of a single species cover crop. This phenomenon is not well understood and could be the result of plant competition, nutrient availability, increased soil biology, or a symbiotic relationship.

Bloat Concerns

Bloat can be a major concern when turning cattle out into a lush cover crop field.

Some ways to reduce the risk of bloat are:

- do not introduce hungry animals in to a field;
- introduce animals slowly or restrict access over a 7 to 10 day period;
- provide dry matter (hay, millet hulls, dry pasture, or crop stalks) to the cattle when they are grazing in the cover crop field;
- the cover crop species should be at least 25 percent grasses and not be more than 70 to 80 percent brassicas;
- strip graze if possible to get the best utilization of the cover crop plants. Strip grazing will cause the animal to utilize the entire plant instead of the leafy portion of the brassica plant first and the bulb later;
- use bloat blocks where ever practical.

Additional Information

A full list of cover crop characteristics is available in *Table 1 Common Species and Characteristics* which is attached to the NRCS Conservation Practice Standard Cover Crop (340). Also, the NRCS Cover Crop Seeding Plan and Record, SD-CPA-62, addresses possible herbicide carryover issues and provides help with calculating the pounds of pure live seed that a producer needs to plan.

Reference

USDA-ARS. Personal Correspondence.