Cover Crop and Small Grains

The use of winter annual grasses, particularly the small grains, is widely advocated as a best management practice not only to reduce soil erosion but to immobilize residual nitrogen from the previous crop that might otherwise be leached out of the root zone. The widespread use of small grain cover cropping in the Mid-Atlantic Region offers the opportunity for complimentary livestock enterprises. Cereal forages fill a unique niche in the U.S. cattle industry, especially in the Southeast, southern Great Plains and Southwest. They provide supplemental nutrients for cow-calf herds, support major elements of the stocker cattle industry and have demonstrated potential to produce acceptable finished beef. They can be used in similar ways here as well if we want to take advantage of the opportunities.

High quality forages associated with cereal grain production meet or exceed nutrient requirements of grazing livestock regardless of class or species (Horn, 1985). Small grain forage is lush, high in protein (15-34% of DM), and low in fiber during most of the winter grazing season. Unsupplemented heifers grazing moderately stocked winter wheat pasture in Oklahoma gained an average of 1.21 lb/day. In a review of forage-livestock production systems used in the subhumid and semiarid southwestern U.S. it was reported that ADGs of stocker calves frequently exceeded 1.54 lb (Horn and Taliaferro, 1975). In a comparison of wheat, winter rye and triticale forage in a beef finishing program in Alabama, steer gains of 2.84, 3.10 and 2.22 lb/hd/day, respectively, were reported but the animals were fed considerable quantities of a high energy supplement (Patel and Nishimuta, 1978).

When small grains are sown as a dual purpose crop for harvest of both forage and grain or as a cover crop for forage, the recommended seeding date is three to four weeks earlier than for grain production alone. In Tennessee research trials, wheat or rye planted between September 1 to 15 produced twice as much forage by March 15 as when planted October 15. If planted mid-August to early September in Piedmont and Coastal Plain regions, they can be utilized for grazing from October to late December and again in early spring. However, be aware that early plantings may be affected by the Hessian fly, crown and root rot diseases and various mosaic viruses. Rye has an advantage in that it is not damaged by Hessian flies when planted early. Also, grazing reduces the incidences of diseases and viruses that otherwise may occur with early plantings.

If forage production is an important consideration in these plantings, it is generally recommended that the seeding rate be increased 50 to 100%. The amount of fall grazing from small grains can be doubled by using higher seeding rates than used for grain production. For rye
or wheat planted alone, use 2-3 bu/ac.

Small grain forages vary in their seasonal growth curves, thus, if the crop will not be harvested for grain it can be useful to seed mixtures of species. For grazing purposes, the distribution of forage production is usually as important as forage yield. Rye grows at cooler temperatures and provides later fall and earlier spring grazing than other winter grains. It is more winter hardy than wheat, barley, oats or annual ryegrass and has a more extensive root system. Wheat, in combination with annual ryegrass, is used widely in the South for high quality winter pastures. Ryegrass produces high quality forage equal to that of small grains. Its total forage production is usually as high or higher than small grains, but most of this production occurs in early fall and late spring. Since late fall and winter production of ryegrass is less than that of rye, wheat or triticale, ryegrass is generally planted with these small grains to increase the length of the grazing season.

Early fall growth on winter small grain crops can be grazed during late fall and winter. Moderate fall and winter grazing (down to 2 in.) has little deleterious effect on subsequent grain yields. Damage occurs from heavy or late spring grazing which can seriously reduce grain production. Precautions for grazing small grains are: (1) don't graze when the ground is soft and wet, (2) remove animals when plants reach early jointing stage, and (3) if seed was treated with fungicide before seeding, be sure to follow grazing restrictions on the label. In some cases the forage may not be grazed for 6 weeks after planting.

_Crop residues_

Crop residues are an untapped resource for livestock production in the Mid-Atlantic Region. Corn and grain sorghum residues can be used to advantage, particularly for beef cows. The most common means of feeding beef cows during late fall and early winter in Iowa, Nebraska and Kansas is by grazing of corn and sorghum residues.

The corn stalk is of good quality at physiological maturity of the corn plant, but quality decreases with time as the grain dries. At high-moisture grain harvest (25-30% grain moisture), the stalk is still of good quality. At dry grain harvest, quality has decreased considerably. The husk is highly digestible, often being above 60% dry matter digestibility.

Generally, the quality of grain sorghum stubble is not as high as that of corn stalks at physiological maturity, however, grain sorghum stubble does not decrease in quality as much or as rapidly. There is considerable residue produced in soybean production, but it is of low quality. Straws of small grains are generally lower in quality than corn residues. Barley and oat straws are typically slightly higher in quality than wheat straw.
A beef cow can be maintained for about 80 days on 2.25 ac of corn or sorghum residue. In Iowa, Nebraska and Kansas, calves are often weaned in mid-October when corn and sorghum are being harvested. The cows then graze the residues until early to mid-January. Often 300 to 850 lb of corn grain remain in the field after harvest. While the grain is an excellent source of feed for the cattle, over consumption of corn can produce acidosis or founder. This can be overcome by ration or strip grazing.

If ration or strip grazing is not practiced, in essence all of the grain left in the field is available to the animals on the first day of grazing, with less available each succeeding day. Also, animals select the more digestible forage portions early, thus decreasing feed quality the longer they are on stalk fields. Cows will often gain 1.0-2.0 lb/day during the first 30 days on corn stalks. For the next 30-50 days, weight may just be maintained. Little supplementation is needed during the first 30 days, but some protein supplement is generally needed thereafter. Restricting access to only enough area to supply feed for several days (ration or strip grazing) will supply more uniform feed quality.

Corn stalks or grain sorghum stubble can also be used for backgrounding stocker cattle. Fall weaned calves can be expected to gain about 1 lb/day during November and December on corn residue or grain sorghum stubble. These animals do need to be supplemented with protein.

New fencing technologies make it feasible and economical for livestock producers to fence fields to utilize cover crops and residues for grazing. Weather conditions for much of the mid-Atlantic Region permit year-round grazing and the grazing season can be extended with fall and early winter grazing in other areas. Crop residues and small grain cover crops are substantial potential feed resources in the region that are largely unutilized. A small grain cover crop grown in association with corn residue provides a nearly complete ration for many classes and ages of livestock. The high protein, highly digestible small grain forage complements the low protein, lower digestible corn residue as the primary energy source. We believe that mid-Atlantic area farmers have not capitalized sufficiently on their regional advantage in beef cattle production through utilization of these feed resources. These resources can also be used to advantage in wintering dairy heifers and dry cows.

References


Horn, F. P., and C. M. Taliaferro. 1975. Existing and potential systems of finishing cattle on forages or limited grain rations in the semi-arid southwest. p. 401-417. In Forage Fed Beef: