



Ridin' Herd

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Take advantage of crop residues

Many areas of the United States have an abundance of crop residue available for late fall and winter grazing. Although corn crop residue grazing is quite effective in reducing feed costs, some producers are concerned that it will have an adverse effect on subsequent crop yields. Another concern when grazing corn residue is the notion that genetic enhancements to corn may affect cattle performance. Residue grazing is an important management practice for many cattle operations, primarily as either a winter feed resource for maintaining the breeding herd or putting weight on cull cows.

Nutrient characteristics

The corn cob and stalk are lowest in protein, energy and palatability. The leaf and husk are intermediate in nutrient quality, but high in palatability. The grain is highest in nutrient quality.

The amount of residual grain left in the field varies depending on factors such as harvest date, lodging due to insects and disease, and harvest efficiency. Low amounts of ear-drop in cornfields is more common today due to genetic advances that result in stronger stalks and the technical advances in combines that do a better job of harvesting the corn.

Many of the nutrient quality aspects described for corn can also be applied to

grain sorghum stubble; however, there are at least two differences: The grain sorghum leaf is generally higher in protein than a corn leaf; however, sorghum grain is not utilized as well as corn grain. The sorghum berry's hard outer coat makes it more difficult for the animal to digest. Cattle can founder in grain sorghum fields with excessive amounts of grain left after harvest, indicating there is some utilization.

Although cows spend time in soybean stubble when they have access to both cornstalks and soybean stubble, overall nutrient quality is low. The total digestible nutrient (TDN) contents of the soybean leaf, pod and stalk are low (35% to 41%). The low energy content for soybean stubble

residue is due to the high lignin content, especially in the stalk. Lignin is the indigestible cell wall component of the plant.

Grazing characteristics

Cows are selective grazers. When grazing residue, cattle will select and eat the grain first, followed by the husk and leaf, and finally the cob and stalk. Because of this selection process, the cornstalk residue diet consumed could range from very high in energy content (70% TDN) at first to very low (45% TDN) at the end of grazing. Also, as the stocking rate (number of cows per acre) increases, the nutrient content of the residue declines more rapidly as the grain, leaf and husk are being removed at a much faster rate.

Residue (leaf and husk) yield is related to grain yield, but hybrids obviously vary in this relationship. If we assume that 50% of the leaf and husk are available for cattle to eat, 150-bushel (bu.)-per-acre corn produces 2,400 pounds (lb.) leaf and husk per acre on a dry-matter (DM) basis and 1,200 lb. (50% of the total 2,400 lb.) of husk and leaf on a DM basis available for the animal. This is equivalent to about 1.76 animal unit months (AUM) (1,200 lb. of husk and leaf per acre at 50% use ÷ 680 lb. of feed per AUM).

One AUM is the amount of forage required to sustain a 1,000-lb. cow or equivalent for one month, and it has been determined that a 1,000-lb. cow will consume 680 lb. of dry matter monthly. A 1,200-lb. cow is 1.2 animal units (AU) and would consume 816 lb. (680 lb. × 1.2 AU) of forage DM per month.

If the corn yield was 150 bu. per acre and that yield produced 2,400 lb. of husk and leaf per acre on a DM basis and 50% of the husk and leaf were consumed, the residue field would provide 1.5 months' grazing (1,200 lb. of husk and leaf on a DM basis per acre ÷ 816 lb. of forage per month for a 1,200-lb. cow = 1.47 months) per acre for a 1,200-lb. cow, or 44 days of grazing (30 days per month × 1.5 months = 44 days of grazing). If one acre would feed a 1,200-lb. cow for 44 days, then it would feed a 600-lb. calf for 88 days.

Strip-grazing (fencing off portions of a residue field) or moving cattle from field to field provides a more uniform nutrient intake. Daily gains of cattle are greater when fields are strip-grazed vs. whole-field grazing. However, if residue fields are strip-grazed and there are extended periods of deep snow, some of the best feed may be ungrazed because of snow cover. Whole-field grazing is the most common grazing strategy. Early whole-field grazing has the potential to allow cattle to consume the best feed (grain and husk) prior to snowfall or

muddy conditions. Whole-field grazing should allow cows to put on weight during the early phase, with weight being maintained or lost after grain has been consumed.

Periodically, producers should check what nutrients are available in the residue field. If corn is visible in the manure of gestating cows grazing corn residue, supplementation other than vitamins and minerals is probably not necessary. Cows in mid- to late gestation forced to eat the cob and stalk will lose weight and body condition. It is essential to monitor body condition of cows and manage them to achieve moderate body condition before calving [moderate being condition score (BCS) 5 for mature cows and BCS 6 for first-calf heifers].

Subsequent yield

A crop owner may think that when cattle are grazing a cornstalk field nutrients are being removed. If cows maintain weight while grazing a stalk field, by definition, no nutrients are lost. Cows grazing a cornstalk field eat about 30% of the residue and digest about half, so about 15% of the organic matter is potentially lost. There will be some weathering and residue lost to wind.

With this in mind it can almost be assumed that essentially no organic losses can be attributed to cows grazing the residue. This concept is supported by many years of cornstalk grazing and measuring subsequent corn yield and finding no difference between grazed and ungrazed fields. If calves graze cornstalk residue and are supplemented, more nutrients may be added to the field than removed due to grazing.

Final thoughts

Crop residues provide producers an opportunity to reduce cow costs. Don't leave cows on stalks after the grain, husk and leaf have been removed since they will lose weight. In addition, there are no performance differences when cows graze genetically modified stalks compared to non-genetically modified corn residue fields. Continue to strive to investigate avenues to be a least-cost producer.



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Editor's Note: "Ridin' Herd" is a monthly column written by Rick Rasby, professor of animal science at the University of Nebraska. The column focuses on beef nutrition and its effects on performance and profitability.