



# Ridin' Herd

► by **Rick Rasby**, beef specialist, University of Nebraska

## Corn-crop residue as a feed source this winter

*The widespread drought of 2012 has challenged cow-calf producers to source feeds for the cow herd this winter. Many areas of the United States have an abundance of crop residue available for late fall and winter grazing. A number of those acres are corn crops that were irrigated this summer. However, a large number of acres are associated with corn grown on dryland acres. Because of the widespread drought, there will be more corn-residue acres grazed this year than any previous years.*

### Some concerns

Drought resulted in lower yields of hays and other harvested forages. Some row-crop producers are concerned that grazing corn residue will reduce yield of the subsequent crop, whether it be corn following corn or soybeans following corn. This year, there may be some concern about grazing corn residue of a field that experienced drought during the growing season.

### 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. In fields where the corn has been harvested as grain, there is very little grain left in the field. 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.

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) content of the soybean leaf and pod are relatively high in protein and energy; however, there is not a lot of the leaf and pod left in the field. Sometimes there are some whole beans left in the field, but, again, not many. Soybean stems are low in energy and protein, similar to wheat straw or lower. The low energy content of the soybean stem left in the field after harvest is due to the high lignin content. Lignin is the indigestible cell wall component of the plant.

### Grazing characteristics

Cows are selective grazers. When grazing residue, cows will select and eat the grain first, followed by the husk and leaf, and finally the cob and stalk. Because of this selection

process, a corn-residue diet could range from very high in energy content (70% TDN) at first, when there is corn left in the field, to very low (40%-50% 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.

The amount of leaf and husk left in the field is related to grain yield, but hybrids obviously vary in this relationship. For every 1 bushel (bu.) of corn produced, about 15-16 pounds (lb.) of husk and leaf are produced. When determining stocking rates, calculate so that cows consume half the husk and leaf, leaving the other half as organic matter to be trampled into the soil.

Remember, there is also cob and stalk in corn residue, and the stocking calculations don't have the cows eating the cob and stalk.

**The highest nitrate content will be in the lower one-third of the stalk. There will be less in the middle one-third, and even less in the upper one-third of the stalk. The husk, leaf and cob will contain low, if any nitrates. The grain will not contain nitrates.**

Although in the grazing calculations the cows are removing half the husk and leaf, in reality, cows are actually removing less than 15%-25% of the residue as they are redepositing organic matter back onto the field in the form of manure and urine.

If we assume that 50% of the leaf and husk are available for cattle to eat, 150-bu.-per-acre corn produces 2,400 lb. of husk and leaf per acre on a dry matter (DM) basis (150 bu. per acre × 16 lb. of leaf and husk per acre

for every bushel of corn per acre = 2,400 lb.). Therefore, 1,200 lb. on a DM basis is grazed. If a 1,200-lb. cow eats 2.0%-2.2% of her body weight on a DM basis daily while grazing corn residue, she will eat 24-26 lb. daily.

Using these calculations, an acre of residue produced by corn with a yield of 150 bu. per acre should feed a cow for about 45-48 days.

The cornstalk grazing calculator on the University of Nebraska (NU) beef website (<http://beef.unl.edu/web/beef/learning/cornstalkgrazingcalc.shtml>) can help you determine stocking rate based on yield. If the cows are about a body condition score (BCS) of 5 at the beginning of the residue grazing period, using these stocking rates, the NU data would suggest that the only supplementation needed would be salt and mineral.

### Managing drought-affected fields

There is always some risk to cows grazing corn residue, though less in non-drought years. Irrigated cornfields in drought years



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are low-risk residues for cows to graze. Nonirrigated corn residue in drought years has some risk because of nitrates. The highest nitrate content will be in the lower one-third of the stalk. There will be less in the middle one-third, and even less in the upper one-third of the stalk. The husk, leaf and cob will contain low, if any nitrates. The grain will not contain nitrates. There is less risk in nonirrigated fields that have been harvested as grain.

Remember, cows grazing a corn-residue field are selective grazers and will select any grain left in the field first, followed by husk and leaf. Cows will not want to eat the stalk unless forced to. By selection, cows will not want to consume the portion of the corn residue that is high in nitrates. Some areas in the drought-affected cornfield will have cornstalks that are smaller in diameter, and cows may be attracted to them. These stalks may be fairly high in nitrate.

For cows that will graze nonirrigated, drought-affected cornfields:

1. Fill cows up with forage that has little or no nitrates before turning them out on a corn-residue field. Cows coming off of pastures with limited amounts

of grass will be hungry. Filling cows up with forage will help adapt cows to residue.

2. Check the field for weeds, like pigweed, that could contain high nitrates. These weeds are usually green in color, and cows will be attracted to them.
3. Don't force cows to consume the stalk by grazing a field too long or with too many cows for too many days.
4. Corn harvest was early this year compared to past years. Rent more corn residue so cows can be moved to a new field instead of overgrazing a field, forcing them to consume the stalk.

Cows can be adapted to nitrates in feed, but it must be done gradually over time. That is why it is important to fill cows up with forage before turning them out to graze a cornfield that has experienced drought.

#### **Effect on 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. There will be some

weathering and residue lost to wind. With this in mind, it can be assumed there are minimal organic losses attributed to cows grazing the corn 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. There is some need to expand this database to more soil types and landscape erosion potential. 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 as they will lose weight and nitrates may become an issue.



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**Editor's Note:** "Ridin' Herd" is a monthly column written by Rick Rasby, beef specialist at the University of Nebraska.