



Information Sheet

Grazing Beef Cattle on Crop Aftermath



Information on grazing cattle on corn, alfalfa, and sorghum residue.

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Is there value in grazing beef cattle on crop aftermath?

Absolutely! However, many cattle producers would profess that the number of days they can run cows on corn stalks is getting fewer and fewer compared to the 80's and 90's, which is likely due to less ear drop in fields, improved harvesting technology, and increasing body weight of cattle. Bruce Anderson, Professor of Agronomy and Extension Forage Specialist for the University of Nebraska has been previously quoted, saying that a quarter section of stalks won't carry as many cows as it once did.¹ He estimates that grain left after harvesting has been cut in half in recent years and that modern hybrid corn plants leave behind a less-nutritious stalk. Feeding corn stalks is the most popular crop residue due to the high energy available in fallen ears. An 8-inch ear of corn contains ~1/2 lb of corn grain.² Sorghum (milo) or alfalfa (legume) aftermath fields can also be grazed, but are not as preferred as corn stalks due to decreased digestibility of milo, and increased potential for bloat.

Are there any concerns I should be aware of?

Yes, there are a handful of nutritional-related problems that can arise from grazing cattle on crop aftermath:

All crop residue - Fields that were weather damaged (by drought or hail storms) can often be high in nitrates, as can the stalks/stubble that remain after harvest. Pregnant cows **should not** be grazed on high nitrate feedstuffs (due to potential for abortions). However, stocker cattle and immature replacement heifers can be fed on fields where nitrates are elevated, as long as the fields are not overgrazed, the cattle are frequently rotated, and high-energy tubs or blocks are available at all times. Regardless, there are limitations based on the concentration of nitrate, so work closely with a nutritionist on how to best manage high nitrate forages. It worth mentioning that any feed supplements (liquid or dry - pellets, cake, tubs, or blocks) that have added NPN (non-protein nitrogen) in the form of urea and/or biuret can add to total nitrate intake, and should therefore be avoided when nitrates are also elevated in fields.

Corn Stalks - The biggest risk is typically with older cows that have had previous experience on cornstalks as they seem to be able to "vacuum" up corn, very quickly, in a short amount of time. For this reason, older, experienced cows are the most susceptible to acidosis and founder. A successful strategy to help ameliorate this problem is to introduce younger cattle, such as heifers or yearling stocker cattle, for a short time to "sweep" the field and then rotate them out before turning the older cows out. Younger, inexperienced cattle are less aggressive at finding corn, therefore their grain intake tends to increase gradually and more safely. Also, as an alternative to fencing an entire field and exposing cows to the whole field at once, use temporary high tensile fence to divide fields into sections and rotate young cattle, followed by older cows, through each section to level-out grain intake. This helps reduce the risk of acidosis and reduces overgrazing, plus it reduces damage to the field (which the farmer will appreciate).

Sorghum residue - Sorghum fields have the potential to remain green or develop new growth (a.k.a. "sucker" growth), after harvesting, which can be high in prussic acid. Prussic acid (cyanide) poisoning can cause death within minutes of consumption.³ Therefore, if "sucker" growth occurs, cattle should not be allowed to graze those fields for at least 7 days after a hard freeze.²

Legume stubble - Legume fields (such as alfalfa, clover, beans, and soybeans) can all cause bloat. Cattle are most susceptible to bloat prior to passage of a weather front or following a hard frost. Never turn hungry cattle into a lush legume field, always allow cattle to fill on a grass hay first. Additionally, "Bloat Guard" blocks that contain Poloxalene, a bloat preventative, can be offered to cattle both prior to and during grazing of legume fields.



How do I test my forages for nitrate or prussic acid?

Any forage can be tested for nitrate or prussic acid. The key for accurate lab analysis results is to obtain a representative sample from the field. The best rule of thumb for gathering standing forage samples is to fill a 1-gallon baggie with clippings from 4-5 different locations across the field. Be sure to get samples of the plants/plant parts that the cattle are actually grazing (and not just the tallest standing plants). Cattle prefer the shortest, softest plants and do not like the long, hard stems/stalks. With that said, the majority of nitrate is found in the stems. So, for the purpose of testing nitrates, be sure to get stems in the samples. For prussic acid testing, selectively remove the newest, upper leaves from plants that show new growth and send over-night, on ice, to a lab. Prussic acid concentration can

quickly dissipate from plants and can be hard to analyze, hence the reason that samples should be shipped immediately, and on ice. If you would like assistance with obtaining forage samples, submitting to a lab, or deciphering your analysis, you can contact Ranch-Way's Tech Services for assistance: 800.333.7929. At the very least, we can recommend a reputable lab for you.

How much feed is available to cattle after the field has been harvested?

This largely depends if the field was grown as dryland or if it was irrigated. Dryland crops will usually have greater protein and energy content than irrigated, but will be lower yielding, and therefore leave behind less aftermath for grazing. Dryland fields will provide ~5,000 lbs/acre, whereas irrigated fields will provide ~9,000 lbs/acre.² A good rule of thumb to follow (on fields that have not been pest or drought damaged), is that one cow can graze one acre for about 30-45 days. Alternatively, once you stop seeing corn in the manure pats, it's time to rotate fields. If cattle start vocalizing/complaining for lack of feed, you've left them out there too long!

What is the nutritional value of crop aftermath?

Cows will usually graze corn stalks in this order: corn grain, leaf and husk, and then cobs and stalks. Each part of the plants varies in protein and digestibility, therefore, the cow's nutrient intake changes over the course of time that they are on a field. The protein and digestibility for each of these components is shown on Table 1 (below).

Table 1. Average nutrient composition of harvest crop residues (on a Dry-Matter basis).¹

Crop	Nutrients ²	
	CP, %	TDN, %
Corn		
Grain	10.2	90.0
Leaf	7.0	58.0
Husk	3.5	68.0
Cob	2.8	60.0
Stalk	3.7	51.0
Milo		
Grain	10.5	90.0
Leaf	10.0	56.0
Stalk	3.6	57.0
Legume		
Leaves	12-20	38.0
Stems	4.0	35.0

Initially, when there is a lot of available corn grain, cows will have the highest intake of protein and energy, and then once the grain and husks are gone, the nutritional value declines rapidly. Consequently, cows can lose condition and will need additional supplementation. The most preferred mode of delivering supplementation to cattle on crop aftermath is through protein blocks or tubs. Mature beef cows (during the last trimester of pregnancy) require ~8-9% CP and ~55-56% TDN (an estimate of digestible energy) in their total diet. As indicated in Table 1, cows will usually meet their energy needs, but not their CP needs while maintained on corn stalks (especially after the grain is gone). Typically, a protein supplement of 28% - 32% with or without NPN (or urea) fed at the rate of 1 to 3 lbs/hd/day will fill their protein gap (cows can be offered protein supplements with NPN as long as the crop is known not to have elevated nitrates). Additionally, corn stalks are deficient in necessary vitamins and minerals, and should therefore also be supplemented in the blocks or tubs to support last trimester fetal calf growth and the cow's future reproductivity. Ranch-Way offers a full line of protein blocks and tubs that will suite your needs, for a full list of current products, visit www.Ranch-Way.com.

REFERENCES:

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- Stichler, C. and J. C. Reagor. 2001. Nitrate and prussic acid poisoning. Accessed Oct. 28, 2011. Available at: <http://varietytesting.tamu.edu/criticalinformation/drought/Nitrate%20and%20Prussic%20Acid%20Poisoning%20L-5231.pdf>

¹Values in this chart are derived from Rasby et al² and NRC's Nutrient Requirements of Beef Cattle, 2000.

² CP = crude protein.

TDN = total digestible nutrients. The original Rasby et al² paper reported TDN as in vitro dry matter digestibility (IVDMD), which can be used interchangeably.