BeefProducer


*Choices: Drought-damaged crops can be used many ways. In this case, cattle are grazing standing corn in winter.*

**CROPS > FORAGE**

# How to safely use drought-stressed crops as feed

*One key is to test for nutrients and toxic compounds such as nitrates before feeding.*

Heather Smith Thomas | May 16, 2018

In drought years, with forage in short supply, producers sometimes find it necessary to feed drought-stressed or salvaged crops, but the key is to test and verify.

Beef and Forage Specialist Barry Yaremcio of Alberta Agriculture and Forestry says if you harvest such crops for feed, once you have it baled or in a silage pit you need to know the quality.

Baled crops are easy to sample with a probe, but with silage a good way to get a sample is when trucks are unloading from the field. He says to use a five-gallon bucket with a lid, take one handful of silage out of each load, put it into the bucket, and keep the lid on to prevent moisture loss.

When you are finished filling the pit or bag, stir the samples around in the bucket. Then you can take out a representative sample, which would be about half a bread bag full, put it into a plastic bag, and squeeze out as much air as possible. Seal the bag and freeze the sample before you send it for analysis. Freezing the sample will prevent deterioration during transit to the lab, he says.

This will provide information on nutrient levels going into the pit. If you do a good job of packing and sealing the pit, that should also be the quality coming out when you start feeding it. It shouldn't change, including nitrate levels.

Yaremcio says he is often asked by producers who are salvaging a hailed-out crop as silage if there might be a 25-35% reduction in nitrate content if it's made into silage.

"I've been studying nitrates since 1992," he answers. "Research papers indicate that to achieve a 25-35% reduction in nitrate, either a good job of packing wasn't done, or the pit wasn't covered, or both."

In those instances, the quality of silage coming out to feed was much lower than when it was put in. It's better to do a good job of packing and sealing and covering the pit or pile to get proper fermentation, he explains.

You should also double-check the nutrient content in the silage coming out of the pit prior to feeding. Then if you have to deal with nitrates you can modify your ration to adjust for nitrate content.

## Nutrient damage

Drought-damaged crops may also be lower in nutrients than you expect.

“Crops mature much quicker in dry, hot conditions,” says Yaremcio. “Plants are programmed to mature and head out as quickly as possible when short on water to make seed and propagate the species.”

Yaremcio describes research he was involved in about forage quality in 1992-1993, measuring 13 different grass species.

“We cut some of it every week, starting the first week of June, finishing in September. One year was normal, the other dry. Loss of quality and drop in protein and energy content started about three weeks earlier than normal in the drought year,” he says.

Further, he explains the plants were a bit shorter but looked normal. Still, the feed test results showed the plants were losing 1% to 1.5% protein and about 5% energy per week after heading.

Once a plant starts to mature, nutrient levels in leaf and stem drop because most of the nutrients are being used to develop viable seeds.

## Not tasty

Bart Lardner, researcher for the Department of Animal and Poultry Science, University of Saskatchewan, says besides nitrates and quality, palatability can be an issue with some crops.

“There are a number of drought-stressed crops in our area, like canola and canola hay,” Lardner says. “When feeding canola hay, it can be surprisingly good quality, but feeding it straight is less palatable. It can also accumulate nitrates, as well. So do a feed test."

He notes protein levels in this crop cut at mid-pod stage average about 15%, with energy at 60%, while later stages of development when the plant is fully podded and stemmy, with little or no leaf, can be about 10% protein with energy levels around 50%.

Because it is less palatable than a typical grass/legume hay you should blend it into the diet at something less than half by volume, he says. Also make sure cows are on a good mineral program if you are looking at drought-stressed canola as a forage source.

Other crops may also work for feed, Lardner says, adding that anything you are considering as feed should be feed tested. He warns this is doubly important because in a drought, the plants will tend to increase concentration of various constituents, as they may with nitrates, and they may not be what you expect.

## Weeds as feed

Some crops that don’t germinate properly in a dry spring are full of weeds. Yaremcio says most weeds are not a problem and make good forage or silage, but some may contain toxins. Some weeds are nitrate accumulators and may or may not be toxic. “Kochia and lambs quarters for example, can have high levels of oxalates, which reduce the animal’s ability to use the calcium present in those feeds," he says. "Silage or green feed containing a lot of weeds should not be fed at more than 50% of the total ration.”

“Common milkweed (*Asclepiadacea syriaca*), for example, contains hydrocyanic acid which is highly poisonous. Death is rapid when ingested. This is more of a problem in dry years,” Yaremcio says.

If you are not sure about certain weeds, have someone check them for you. Your extension agent or an agronomist can usually identify them and tell you if they might be a problem.

## Solving pellet problems

In a drought situation there is always a huge demand for pelleted products, says Bart Lardner, researcher at University of Saskatchewan.

“Many producers try to build a ration that’s 50:50 straw-hay or a 50:50 straw green-feed diet and then use a supplemental range pellet purchased from a feed mill. Pellets usually consist of either barley or peas, with grain screenings. The screening ingredients might sometimes bring in the unwanted issue of a fusarium (a type of fungus) or ergot problem,” Lardner says.

“There are also some disease issues in some drought-stressed crops. There may be fusarium mycotoxins or ergot. This is why it’s always good to send away a sample and make sure there isn’t an issue with something like that,” he explains.

“We had calves on a research trial one winter and they were doing fantastic on the first load of pellets during the study. Then we brought in a new truckload and the calves went off feed. We sent test samples to a lab and the report showed high levels of fusarium."

That's why it pays to closely monitor livestock when feeding drought-stressed crops, and be alert to any usual activity or signs of illness or going off feed, he says.

## Change diets gradually

When cattlemen have to use non-traditional forages and supplements or concentrates like cereal grains or by-product feeds such as dried distillers grains, or utilize drought-damaged forages, the switchover from one feed to the other should be gradual.

“When changing from hay or green feed to canola silage, for example, include only about 25% silage (dry matter basis), in the total ration the first three or four days, to allow cattle to adjust to the different texture and taste," says Barry Yaremcio, beef and forage specialist from Alberta.

Yaremcio says you’ll see a difference in the manure when going from a green feed to canola silage. It will be looser, softer and wetter. If manure is not watery and appears normal, it is safe to increase the silage to 50% of the ration, he adds.

After a few days you can take it up to 75%, and then on up to 100%, giving the animals a chance to adjust to each new level. This type of gradual switch-over works for any kind of forage, he explains. The gradual switch facilitates a change in rumen microbes, enabling their population to change and come into balance to handle the new feed.