



Harvesting Corn and Soybeans for Forage

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Manitoba livestock producers continue to look for additional alternative crops to meet feeding needs for the coming months. Two of the remaining crops still standing are corn and soybeans and, like cereals, if they have been negatively impacted by drought they could be a consideration as an affordable forage alternative.

Drought-stressed corn

It is often best to delay corn silage harvest as long as possible to allow for maximum development of the kernels and total dry matter.

Check for pollination.

If corn successfully pollinated and has developing kernels, it is best to wait to chop for silage to allow more dry matter to accumulate. If it receives rainfall it may continue to accumulate dry matter and fill the kernels. This will increase starch levels in the plant and could result in better silage. If there is little grain you should expect higher crude protein levels. If plant moisture falls below 70%, it may be necessary to begin silage harvest, depending on how the silage will be stored. For silage piles moisture levels should be in the 60-70 percent range. If you are putting it up as baleage, target 40-55 percent moisture. If leaf tissue has already turned brown due to drought, these leaves will no longer photosynthesize, even if rainfall is received. Green leaves that have rolled continue to photosynthesize.

Check for nitrates.

Drought conditions can cause nitrates to accumulate in the plants, especially in the lower one-third of the stalk. Raising the cutting deck to a height of 10-12 inches to avoid the stalk that is highest in nitrates will decrease the nitrates in the silage, but also decreases tonnage. The whole-plant nitrate concentration should factor into the decision of cutting height. If ensiled properly, one-third to one-half of the nitrates may be converted and released as a gas.

Plant part	Nitrate-nitrogen
	ppm
Leaves	64
Ears	17
Upper 1/3 stalk	153
Middle 1/3 stalk	803
Lower 1/3 stalk	5524
Whole plant	978

If you are planning on baling drought-stressed corn as dry hay, make sure to dry down to <20% moisture to avoid storage issues. This can be nearly impossible to do without

ideal drying conditions. Since this material isn't ensiled, it is especially important to test for high nitrates. **Baleage** is a better alternative to baling corn dry, as it excludes oxygen and will ensile if dense bales are made and wrapped properly. For bale silage it is best to bale at 40-55 percent moisture and wrap with a minimum of 6 millimeters of plastic (about 7-8 wraps). Net wrapping the bales before wrapping in plastic can help to reduce the stalks from punching the plastic leading to storage spoilage.

One other consideration is grazing of the standing corn. This may be an alternative if the field is close to your operation and fencing and water are available. For more information on grazing corn go to https://www.gov.mb.ca/agriculture/crops/crop-management/forages/pubs/grazing_cattle_on_corn.pdf

Check pesticide labels to ensure pre-harvest intervals are followed and finally before you make any decisions **check with crop insurance before harvesting.**

Soybeans as forage

Soybean were initially used as a forage crop when introduced into the United States in the 1800's and can still be harvested as high-quality forage. Even grain-type soybean varieties can be harvested for hay or silage. Despite its forage value, there are some restrictions and management considerations to explore before putting soybeans up for forage.

Soybeans can be harvested for forage as hay or silage. Forage yield and quality are affected by stage of development. It is a challenge to dry soybeans to <20% moisture to successfully store as dry hay because of soybean stemminess and presence of pods. At low moisture leaf loss and seed shattering can be extensive. Soybeans harvested as silage or baleage at higher moisture levels will reduce field losses. Standing soybeans should be cut with a mower-conditioner to crimp stems and decrease drying time. Raking should be minimized as leaves and pods shatter easily. There is high potential for field losses of leaves and pods during the harvest process. Use a mower-conditioner to speed drying, and minimize raking to preserve leaves and pods.

Silage or baleage is a better fit for soybean forage harvest. The target silage moisture content varies with how it is being stored. Ensiling soybean will maximize palatability, reduce wastage, and provide feeding flexibility. Similar to alfalfa, the buffering capacity of soybean silage is relatively high and can result in poor fermentation. High-quality silage inoculants will improve fermentation.

Soybeans are typically harvested for forage from R3 (beginning pod) to R5 (beginning seed) stage, but earlier maturity at harvest is recommended. Soybean forage at the R3 stage has high quality because of leafiness and higher quality stems.

Soybean can be fed to cattle but feeding practices may need to be adjusted. Dry soybean hay is not particularly palatable. When fed as the exclusive roughage source, cattle will actively sort out the stem material leaving 30 to 40 percent of available dry matter as wastage. Furthermore, dry soybean hay can cause bloat in cattle, particularly when fed as the sole roughage source. Soybean silage should be introduced at an inclusion rate of <50% of the diet on a dry basis to Beef cattle. For Dairy cattle there is limited research but soybean forage can make up 15 to 20 per cent of a dairy ration without having a significant effect on intake or milk production.

Check pre-harvest intervals for all pesticides applied. The restriction may be related to health effects they cause in livestock, or it is possible they cause unsafe pesticide residues that end up in milk or meat products. Before taking a soybean crop as forage you should consider the value of the grain versus the forage value and weigh the cost of harvest versus the yield and quality of forage.

Finally contact crop insurance before taking any action.

Sources for this article

<https://blog-crop-news.extension.umn.edu/2021/08/harvesting-drought-stressed-corn-for.html>

<https://blog-crop-news.extension.umn.edu/2021/08/soybeans-as-forage.html>