



Managing Late Harvested Corn Silage

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Manitoba continues to deal with and experience above-average moisture conditions making corn and hay harvest extremely difficult. With about 50 per cent of the corn silage crop off, producers who have yet to complete their corn silage could experience problems. For every day that corn goes uncut, the crop continues to mature and corn plants are drying out.

Many producers are trying to obtain as much silage as possible, however, with the wet field conditions there isn't much more that can be done at this time. Waiting for conditions to improve may be the only option and it's important to know what may happen to the quality of your silage and how it may be managed.

The ideal time to cut corn for silage is when plants have 35 per cent dry matter. Starting to harvest a little early, at 32 per cent dry matter, lets most of the crop reach that ideal moisture content of 35 per cent during the duration of harvest window. Ensiling at the correct whole-plant moisture level and optimum stage of maturity is critical. Corn maturity is very dynamic. As corn moves from dent to black layer, yield increases, starch increases, starch digestibility decreases, and fibre and fibre digestibility decrease.

As feed, if we look at how the corn plant changes during the maturation process we can have a better understanding of how waiting can affect quality. We know there is an increase in grain content as the plant matures. At the milk stage, the plant is comprised of approximately 10 per cent grain as compared to 30 per cent at one-third milkline and almost 50 per cent grain at physiological maturity. Along with the increasing grain (and starch) content, there is a corresponding decrease in whole plant Acid Detergent Fibre (ADF) and Neutral Detergent Fibre (NDF) due to the dilution effect. Despite increasing starch and decreasing fibre components, mature corn silage has lower digestibility of both the grain and fibre components. Starch becomes less available as kernels dry down, harden and become more resistant to digestion. Forage becomes less digestible as the sugars in the stalks and leaves move into the kernel during grain filling and are converted to starch. The extent of the changes in digestibility depends on the hybrid grown; unfortunately at this time of year this isn't usually an option.

Kernel processors can be used to increase starch digestibility. Low-moisture corn silage that is not harvested using a kernel processor can be lower in starch digestibility. Kernels that are too dry will become hard and pass through the cow undigested. Fibre digestibility has been found to decrease by over 10 per cent as moisture decreases from 70 per cent to 58 per cent.

A delayed or extended harvest season will result in a crop which exceeds the "ideal" moisture and maturity stage. Digestibility of both the fibre and grain will be lower thus lowering overall feeding value. Corn silage harvested at the black layer stage produces significantly less milk than corn silage harvested at one-half to two-thirds milkline.

Another problem with a mature crop is the low moisture content. Adequate moisture (more than 40 per cent) is essential to ensure good packing and exclusion of oxygen from the silo. Lower moisture contents will result in poor fermentation, heat damage, poor bunk life and poor intake. Even corn silage with only 55 per cent moisture can be difficult to ensile. Several options may be considered to "salvage" some feed value from a dry crop. Storing the crop in Ag-Bags is an effective way to remove oxygen and improve fermentation. Anhydrous ammonia injected into a covered pile of plant material will kill aerobic bacteria and improve fermentation and stability.

Harvesting corn silage at moistures that are too low will result in poor packing, inadequate air exclusion, poor fermentation and heating. This will mean higher dry matter losses, greater spoilage and poor bunk life.

Some suggestions that may improve the ensiling process are:

- Reduce chop length to release more plant fluids and improve packing.
- Use a kernel processor to improve digestibility.
- Use silage inoculants to improve fermentation.
- Use extra heavy tractor for packing and pack no more than 6 inches at a time
- Blend wetter feeds with your dry silage.
- Place your wettest forage on the top layer for sealing and weight. Adding water to this layer may also help.
- Cover tightly to keep the environment as anaerobic as possible.

Adding water might be an option but it requires about 7 gallons/ton to bring the silage up one point but remember silage doesn't re-absorb water easily.

In general, mechanical processing of mature whole plant corn can result in forage that ensiles faster, has less dry matter loss during ensiling and has increased digestibility of starch and fiber.

Mature, dry silages are prone to heating and subsequent protein damage. Once heating has occurred there is little that can be done other than recognizing the problem and formulating the ration accordingly. It is recommended that dry silages (less than 50 per cent moisture) be tested for heat damage. The protein value of the silage can then be adjusted before balancing the ration.

Although not recommended, baling standing corn can be accomplished in some cases. Dry matter levels should be 80 per cent or more when baling. Stalks should be conditioned or cut with a rotary mower to allow moisture to escape. Getting stalks dry for baling, keeping bales tight, and avoiding ear molds in this case can be very difficult. If a producer does bale standing corn it is best to feed bales quickly to avoid storage problems.