



Silage Harvest Timing

by Paul Hermans, CCA-ON

The corn silage you harvest this fall will be fed to your cows over the next 365 days! So making sure you harvest at the right time is critical for your livestock production whether it is for milk or beef.

Picking the right harvest date depends on a lot of factors, including hybrid selection, weather patterns, storage structure, harvest equipment and ultimately nutritional and yield goals for your livestock enterprise.

As the corn plant matures, plant sugars are converted to starch in the kernel. From the early dent stage (+/- 25% whole plant dry matter) to black layer formation (+/- 40% whole plant dry matter), starch content will increase approximately 0.7 percentage units for each one percentage unit increase in dry matter. Furthermore, fiber (NDF and uNDF) content will decrease as a function of starch diluting fiber in the stalk and leaves. This results in an overall increase in both yield per acre and energy concentration as the corn plant develops from 1/4 milk line to 3/4 milk line to full maturity at black layer, provided the silage is harvested and stored properly.

Traditionally 1/2 milk line has been the target harvest maturity time.

This equates to approximately 40-45 days from tassel time. If you mark your corn silage tassel date on your calendar and count 40-45 days forward, this will give you an estimate for when your corn will typically reach 1/2 milk line. However, with modern hybrids containing much improved late-season plant health, silage producers should consider targeting closer to 3/4 milk line to optimize starch yields. It is starch deposition in the kernel that dries out the silage mass. Targeting 3/4 kernel milk line will typically result in drier silage (~36-38% dry matter) suitable for tower silos. It is also a manageable dry matter for bunkers/piles for producers with adequate pack tractor capacity and who adhere to packing only six inches at a time.

Some producers like to harvest at a more immature kernel maturity for fear of losing fiber digestibility. However, if the plant is green and healthy, the fiber digestibility will not be declining significantly from 1/2 to 3/4 milk line. It is only when the plant starts to die (or is severely frosted) that the fiber digestibility begins to plummet.

The only caveat to harvesting more mature kernels is the ability to process (crack) the kernels with an on-chopper kernel processor. If kernel processing is not available, silage producers will

have to sacrifice starch yield by harvesting closer to 1/4-1/2 kernel milk line and chop shorter (~1/2 in, 12.7mm) so that adequate kernel damage can be accomplished at the cutter-head.

Once you have established the approximate kernel maturity of the standing crop, you can target the actual harvest start date.

Typically there is about seven days between 1/4 milk line and 1/2 milk line and another seven days between 1/2 milk line and 3/4 milk line. Whole plant moisture will typically drop between 1/2 to 1% per day depending on several conditions including soil type, soil moisture, plant health and environmental conditions. This drop in moisture is reflective of the concurrent increase in starch deposition in the kernel. The actual kernel maturity and moisture level at which you start harvest will depend upon the total number of acres you plan to harvest, the maturity spread of hybrids planted, the number and capacity of choppers, and the estimated harvest window.

The ideal chop length of corn silage is based on the need for effective fiber (chewing stimulation) in the entire diet. Theoretically, chopping finer allows for better kernel damage, greater silage compaction and faster attachment to the fiber by rumen bacteria. However, if feeding high levels of corn silage and relying on the corn silage (rather than alfalfa/grass) to provide effective fiber, a longer chop of closer to 3/4 inch (19mm) is recommended. Some of the newer kernel processors allow for chopping as long as an inch (26mm) or longer and still achieve excellent kernel damage.

Finally, utilizing a corn silage specific inoculant from a reputable company will reduce dry matter losses, ferment forages faster while retaining more energy for better livestock feeding. Given that corn silage (and high-moisture corn) is typically loaded with yeast, a combination inoculant containing both fermentation strains and *Lactobacillus buchneri* is highly recommended. The fermentation strains drop pH efficiently with a minimal loss of sugar. The *L. buchneri* inhibit yeast growth during feed-out which improves freshness and palatability of the silage (and even the entire TMR), given that yeast initiate the cascade of events leading to spoilage and heating.

Proper harvest management for corn silage is an art; however, using a little science goes a long way in ensuring you get it done right!

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Paul Hermans is a Certified Crop Adviser working as an Area Agronomist for DuPont Pioneer covering Eastern Ontario and the Maritimes. He can be reached at paul.hermans@pioneer.com

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