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Key Points to Consider When Harvesting Corn Silage

Written by: Kristin Thompson, Ruminant Nutritionist, MSc., PG

Corn silage is a key component of dairy rations. Below are four commonly asked questions:

remembered that as a corn crop matures, starch and fiber digestibility are reduced.

When is the optimal time to harvest corn silage?

When determining the appropriate time for harvesting corn silage, both milk line (ML) and dry matter (DM) content should be considered. For maximum performance by lactating dairy cows the ideal ML is at two-thirds (2/3) and a DM content of approximately 35 percent (optimal range of 32-40%). However, it should be remembered that ML and whole plant moisture content are not directly correlated. Weather conditions, hybrid selection and planting date all have an impact on the relationship between these two factors.

Measurement of the kernel ML can be used as an indication of the maturity of corn silage and used to determine when to sample fields to measure DM. Dry matter recommendation will vary depending on storage conditions. However, a DM value of less than 30%, will increase losses due to nutrient leaching, particularly in tower silos, and decrease yield and dry matter intake of dairy cows. On the other hand, a DM content of over 40% will be more difficult to compact (especially in bunker silos). It should also be

At what height should corn silage be harvested?

The first step in determining the appropriate cutting height is to evaluate forage requirements on farm. For example, if you have limited forage availability, it is recommended to keep the cutting height between 4 to 9 inches, which will allow for maximum DM yields. However, if other forages are poor in quality, it might be worth sacrificing some dry matter yield and increase cutting height above 10 inches to increase nutrient density as well as starch and fiber digestibility.

Key points to consider:

- High cut will result in lower yields per acre.
- Harvest can occur 3 to 5 days sooner with high cut corn silage.
- The nutritive value of high cut corn silage is superior to low-cut corn silage due to increased DM content, improved fiber digestibility and increased starch.
- The increased energy density of high-cut corn silage can provide an economic benefit by reducing the concentrate inclusion in the

ration.

- High producing cows have been shown to have improved milk yield when fed high-cut corn silage. However, attention needs to be paid in formulation to maintain desired butterfat levels.

Recommendations for cutting height do not apply to BMR corn hybrids, as research has shown superior nutritional composition for these varieties independent of cutting height.

How to determine appropriate chop length?

Corn silage needs to be processed/chopped at a minimum length to ensure adequate silage compaction and fermentation, but long enough to provide cows with a supply of effective fiber. When DM is within the optimal range of 32-40%, a 3/4 inch chop length is recommended. However, as stated previously, a higher than optimal DM content results in reduced starch and fiber digestibility. Therefore, when the DM is above 40%, reducing the chop length to 3/8 inch can help to mitigate the negative impacts on digestibility.

What degree of kernel processing is necessary?

Starch digestibility is one of the main sources of energy supply in the diet and an important factor in the performance of lactating dairy cows. Starch is fermented by rumen microbes into propionate, which is the main precursor for glucose in the liver. The digestibility of the starch in the kernel is key to determining how much will be available for the cow. For the starch in the corn kernels to be available to rumen microbes, the hard structure (pericarp) surrounding the starch reservoir (endosperm) needs to be broken. Therefore, one of the main goals of processing corn silage at harvest is kernel breakdown.

A roller gap setting of 1 to 3 millimeters is adequate for processing corn silage harvested at 32-40% DM. However, as corn matures, the kernels become harder and less susceptible to breakage. Adjusting the roller gap to 2-3 mm might be more appropriate for corn silage at over 40% DM. The kernel processing score should be continuously monitored during harvest to ensure appropriate kernel breakdown.

Conclusion

High quality corn silage is essential to promote maximum milk and milk protein yields in dairy cows. Harvesting high quality corn silage relies on careful evaluation of harvest parameters such as plant maturity, cut height, chop length and kernel processing. When corn silage is harvested too late, both starch and fiber digestibility are decreased along with reduced compaction at the storage bunk. Increasing chop height and reducing chop length may help to alleviate these negative impacts. Discuss with your Nutrition Team what alternatives might be appropriate for this year's harvest.

Company Update

By: Phil Roberts, National Sales and Marketing Manager

Over the past six months, we have experienced firsthand how connected our world is and how dependent supply chains are on each step in the process. Thankfully, agriculture is a remarkable sector to work in and is quite familiar with being adaptable and flexible while working through challenges. New-Life Mills took numerous steps, through various practices to ensure we were able to meet the needs of our clientele, while ensuring the well-being of our staff, our clients, and their businesses.

Today we continue to navigate the diverse challenges the pandemic has created, and I am overwhelmed with how the New-Life Mills team came together and demonstrated their ability to be creative in finding ways to meet the needs of our clients and the industry. Looking ahead through the ongoing challenges, our mission continues to remain front of mind. We are committed to building long-lasting business relationships, where we exceed your expectations and work alongside our clients to add value to their business. We are continuously striving to provide the best combination of people, products, and services to meet your on-farm needs and support you in the development of your business.

New-Life Mills Robotic Pelleted Feeding Program

NAME	MilkTech™ Power Match	MilkTech™ Energy	MilkTech™ Extra Touch	MilkTech™ Ultra Fresh
ROBOTIC SYSTEM	Free Flow	Directed Flow*	All Systems	All Systems
INCLUSION RATE	Wide Range	Controlled	0.5 to 2.5 kg/h/d	min 2 kg/h/d
FEATURES	Balanced protein and energy pellets	High energy pellet	Protein & sugars complement for high producers	Protein & sugars complement, plus Choline and Methionine fortification for fresh cows

* or free flow under controlled inclusion rates



Selecting The Right Pellet For Your Robotic Milking System

Written by: Sylvia Borucki, Ruminant Nutritionist, PhD

Preparing the correct feeding program for your robotic herd requires a balance between the ingredients of your partially mixed ration (PMR), which includes your forages, grains, commodities and premix, and the pellet selected for the automated milking system (AMS) station. So, what should you consider when selecting the correct pellet?

DRIVE TO THE ROBOT

Energy and palatability are the main drives to the robot in the free-flow system. The PMR is balanced to target a milk production of approximately 6-7 litres lower than the farm's average production and the feed at the robot will supply the rest. The robot feeding table is then prepared to feed based on days in milk and production.

Research supports that wheat-based concentrates and barley & oats pellets are preferred compared to corn or barley alone. Fat rich or dried grass concentrates where not good drivers to the robot, and they are also expensive. Feed acceptance can be improved by adding molasses and flavour, or by either pelletizing or rolling the grains (pelletized > rolled). It should be noted that pellets tend to have more visits than mash robot feeds.

AMOUNT FED AND ENERGY

Current research indicates that increasing the level of pellets at the robot did not increased the number

of visits when the basal diet was rich in corn silage, and the need for fetching cows remained the same. Comparatively, when the PMR was lower in energy, higher amounts of pellets offered increased the visit frequency. In this case, a high energy pellet such as "MilkTech™ Energy", would be desirable. It should be noted, that feeding more than 2.3 kg per visit in the AMS increases the amount of feed wasted.

AMOUNT FED AND TYPE OF FLOW

In a guided flow, feed-first system, feeding a high level of pellets results in more variable day-to-day consumption at the AMS. This leads to more or variable amounts of pellet-refusals. A program with a high concentrate PMR (54:46 forage/concentrate) was found to have a greater holding area time and a reduced motivation to enter the AMS when compared to the cows fed a high forage PMR (64:36 F/C). The hours standing increased and the transit in the barn changed. The time spent standing and blocking the AMS entrance reduces the flow and affects hock health which brings other management challenges.

RUMEN FUNCTION

In a free-flow AMS, the cows usually consume approximately 3 to 4 kg/d of high-energy pellets in the robot. This should be complemented with an energy-balanced PMR according to the farm's average level of production. For high-yielding cows (50 to 60 L/d) increasing the pellets in the AMS is desirable to match higher energy requirements. However,

high intakes of starch in the robot will decrease the consumption at the bunk, and reduce the fiber intake and rumination. Furthermore, a high intake of pellets in a short time, will cause inhibitory effects on fiber digestion, lower the rumen pH and in acute cases, the voluntary intakes drop creating further negative effects on rumen health and milk production.

We must encourage a higher frequency of visits to the robot without upsetting the rumen or dramatically decreasing the PMR consumption and total dry matter intake per day. In 2006, a study found that more fiber and less starch could be used in the pellets without affecting the milking frequency or the milk yield & composition in a semi-free flow. This finding suggests that both types of pellets have an accepted palatability, and that pellets with more fiber, such as "MilkTech™ PowerMatch", may be used to partially or totally replace high energy pellets in the robot. This would allow larger allocations of pellets or having two different pellet options in the robot that will not interfere with the consumption at the bunk.

The optimal situation to match production levels and specific requirements is the option to feed two different pellets in the robot. "MilkTech™ Extra Touch and MilkTech™ Ultra Fresh" are designed to allow a closer customization of the ration for high producing and fresh cows, respectively. This allows higher protein and fortified formulas to be fed according to the requirements of the cows grouped by production, days in milk or lactation number.

PELLET SELECTION

Select the appropriate New-Life Mills MilkTech™ robot pellet for your farm and be more precise and close-to-nutrient requirements. Discuss your feeding program with your Nutrition Team. Do not forget other important aspects of the PMR like mixing, monitoring moisture, and bunk management. Continuous review of your feeding program as part of the on-farm management strategy ensures that robot feeds are being used to maximum benefit for on farm profitability.

Giving New-Life to Premiere 4:1 Dairy Premix. Now introducing...

VitaLac™ Dairy Premix

1 Fortified with chelated trace minerals, including Selenium yeast
compensates for variability in forage and water sources of these nutrients

2 Low inclusion rate
convenient, improved time management

3 Low cost – improve cost-effectiveness

4 Used in formulation to accommodate different commodity blends and forage types.

Contact Information

Sales & Nutrition Office
1-800-463-1196
info@newlifemills.com
www.newlifemills.com

Clavet Mill
1-800-667-4693

Inkerman Mill
1-800-565-5175
Wyoming Mill
1-800-265-7507

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