

## Putting forages to work in your transition cow program

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Cows in early lactation have very high energy demands that are not entirely met through feed intake, therefore they mobilize body fat reserves to make up for the deficit in energy intake. This is known as negative energy balance (NEB). While we cannot prevent this period of NEB, we may be able to lessen the deficit by promoting greater energy intake during early lactation. One common practice to promote greater energy intake is to include more grains or fats in the diet; however, silages from improved corn hybrids may also be viewed as complementary feed to increase dry matter or energy intake.

It is common to see that the greatest responses when feeding silage from improved hybrids are observed in cows in early lactation. This is because the NEB makes them more responsive to increased energy intake. Therefore, if management and resources allow, producers may decide to preferentially feed fresh cows corn silage from these improved hybrids and utilize conventional corn silage for cows in mid to late lactation. According to recent research data, the following examples of corn hybrids with forage specific traits may support or improve cow performance:

Common name of trait	Mode of action	Response over conventional dual purpose hybrids		
		Dry matter intake, pounds	Milk production pounds	Fiber digestibility, % units
bm3 BMR Brown midrib	Less lignin content makes the plant frail, therefore cows may be able to consume more nutrient by consuming more pounds of feed.	+2	+3	+3
High fiber digestibility	The fiber is more digestible than conventional hybrids which may result in improved nutrient utilization	+1	+2	+5

Adapted from: Ferraretto, L. F., and R. D. Shaver. 2015. Effect of whole-plant corn silage hybrid type on intake, digestion, ruminal fermentation, and lactation performance by dairy cows through a meta-analysis. *J. Dairy Sci.* 98:2662-2675

Other corn hybrids have been selected to improve the nutrient content within the kernel. Research data is much more variable for this type of hybrids and results may vary depending on feeding practices, nutrient composition of the total diet and stage of lactation. Because of this, it is not well established what the outcome may be. The following are examples of hybrids with improved kernel composition.

Common name of trait	Mode of action
NutriDense grain	The germ is the part of the corn kernel that contains oil which is a rich source of energy. This type of hybrids have a larger germ, thus more energy. Protein content is also slightly greater than in conventional corn kernels.
Waxy grain	From a chemical standpoint, these kernels have more branched starch which offers more attachment sites for the bacteria that break down starch in the rumen and produce energy for the cow.

It is highly recommended to invest time learning what hybrids are available for certain geographical areas and select hybrids well adapted to the conditions of each farm; seed company representatives can help with hybrid selection and recommend specific agronomic management. Regardless of the type of hybrid, the following are general management practices that improve quality of corn silage for dairy cows:

1. Harvest and pack at the right moisture content. Final moisture content in corn silage is typically 68-65%, or 32-35% dry matter. Take some plants from the middle of a field, determine dry matter/moisture content and estimate an approximate harvest date by calculating 0.5% dry down after each day following the sampling date.
2. Chop corn silage at the right length, these are common guidelines for theoretical length of cut:
  - a. Unprocessed corn silage: 3/8 to 5/8-inch
  - b. Processed corn silage: 3/8 to 3/4-inch
3. If the forage is to be stored in silo bags it is recommended to monitor particle size as it is being bagged because the bagging process tends to reduce particle size. If too small, then communicate with the harvesting crew to chop at a longer particle size.
4. Maintain an evenly shaved face. When the face of the silage is uneven, there is more surface area exposed to oxygen which leads to nutrient loss and spoilage due to molds and yeast.
5. Corn silage that is harvested too wet with more than 65% moisture may lead to clostridial fermentation. This type of fermentation results in formation of butyric acid. This acid has a strong off-putting effect and cows will consume less feed. If possible avoid feeding this type of silage to transition cows at all costs possible.
6. The starch in corn silage may be more digestible the longer is left to “cook”. Research has shown that starch from corn silage ensiled for 8 months is more digestible. This may be impractical for some farms but if time allows, let corn silage ferment for 4-6 months or longer.