Inside the ZONE™

Preparing for Corn Silage Harvest

Early July may seem like an unlikely time to prepare for corn silage harvest. However, it is an excellent time to begin the process of harvest timing by monitoring corn plant tasseling and silking progress.

Many producers have experienced an extended corn planting season, and the range of harvest maturity for silage will vary considerably.

In addition to monitoring corn plant maturity, now is a good time to review key success factors for harvesting and storing the best quality corn silage possible. Our goal is to prepare for the inevitable challenges of weather, equipment breakdowns, and other factors.

Maturity and Moisture Matters

Growers can start to estimate when a corn field will be ready for silage harvest by knowing the tassel or silk date. Silk dates (R1) occur when corn plants are at maximum or near maximum height and have maximum vegetative dry matter.

The silking period is the most sensitive period for the crop. Silks on the ear must be present while pollen shed occurs for successful pollination and fertilization. Producers can use the day of silking as the start of the reproduction process and a guide for when to harvest. When the corn plant reaches the half-milk line, approximately 42 to 47 day after silking, plants will normally have 40 percent moisture and 97 percent of their total dry weight.

Target the right moisture for your silo: Harvest moisture is dependent on the silo structure used and processing of the crop. The following table provides harvest moisture/maturity guidelines along with recommended chop lengths. Achieving proper moisture is the most important factor in making high quality corn silage.

There are three thumb rules or steps that you can follow to help determine when fields are getting close to desirable harvest moisture.

1. The tassel is our friend. The first indicator is to take note of when the field is at tassel or silk stage. Research shows that approximately 40-45 days from that date, the grain should be in ½ milk line stage. This assumes that corn forage moisture decreases anywhere from ½ to 1½ percent per day; however, the rate of advancing maturity depends on the growing environment.
2. Is your milkline showing? Once you reach 30-40 days post-tassel, it's time to take a walk in the fields. Pick a handful of ears and determine where the crop is in regards to milkline. It could be anywhere from a dent to one-third milkline. The moisture should be around 72 percent.
3. It's time for a cookout! The only true way of knowing when to start chopping is to get an accurate moisture level via some samples. Either chop some forage or cut 4-5 plants and shred them with a chipper/shredder. Get out the Koster Moisture Tester or microwave and determine the actual dry matter and moisture content.

Recommended % Moisture Content of Corn Silage for Ensiling with Sila-Bac® brand Inoculants					
Silo Type and Processing	Bunker	Stave	Sealed	Bagged	Theoretical Length of Cut
Non-processed	67-72	63-68	55-60	60-68	3/8-5/8"
Processed (Roller setting 1-3mm based on moisture)	63-72	60-68	55-60	60-68	5/8-3/4"

Equipment and Facility Prep

Properly prepped and adjusted harvest equipment can help prevent fermentation and nutritional issues. For instance, when equipment is picking up too much soil during the harvest process, the buffering capacity of the forage is greater. This makes the fast reduction of pH during fermentation more difficult and can result in a clostridial fermentation.

Theoretical length of cut (TLC) is determined by the shear bar setting on the chopper and greatly influences how well the crop packs in the silo. As forage becomes dryer, shorten the TLC setting to minimize air entrapment in the silo for better packing. The TLC setting also determines how much effective fibre will be available to the dairy cow. Do not reduce particle size too much or effective fibre levels in forage will lead to animal production challenges.

Use a kernel processor or shredlage processor: When possible, use a kernel processor or a Shredlage® processor when chopping corn silage. Size reduction of kernels and cobs is achieved during passage through two rollers with a roll clearance about the thickness of a dime. Kernel processors require additional horsepower and fuel. However, corn silage that is processed typically increases dry matter digestibility and improves ruminal digestion of corn silage. Carefully monitor roll clearance and kernel processing success. Check loads frequently to determine that >90 percent of the kernels are cracked. Most processors will achieve this at a roller setting between 1-3-mm, depending on kernel moisture.

Prior to harvest, ensure forage equipment and silos are in good repair. Downtime is costly and even short delays can seriously affect silage quality. Leaky silos allow more air into the forage mass, leading to more problems with heating and spoilage. Finally, make sure silos are sized correctly in order to maintain the necessary feed-out rates and to avoid silage losses due to heating.

Inoculants Preserve and Protect

One of the most critical steps in preparing for a successful corn harvest is your selection of a silage inoculant. Leading edge inoculants from DuPont Pioneer not only help prevent shrink losses (efficient fermentation), but also help silage remain stable on feed-out (aerobic stability)

The key corn silage inoculants include Sila-Bac® inoculants 11CFT and 11C33 (contains *L. buchneri*), and 1174. Contact your local Pioneer sales representative for more information about these products.

Plan Now for Safety

A key to profitability and continued enjoyment of farming is on-farm safety. No amount of good intention can replace actual planning for safety in your harvest and ensiling operations. This is not an option for a successful forage season.

Sit down now with your family and employees and discuss key strategies to avoid unsafe and potentially life-threatening activities. Here is a short list of safety considerations to think about:

- Pre-harvest training sessions for all parties involved including any custom operators.
- Personal protection equipment: close-fit clothing, safety glasses, hi-visibility vests, hearing protection, and slip-resistant footwear.
- Build in breaks (15-20 minutes) to reduce fatigue, worker shift rotations.
- Inspect fields, field entrances and roads looking for obstructions, difficult corners and dangerous intersections.
- Plan and practice properly turning onto and off of highways with equipment, especially with new employees.
- Safety lighting and markers for tractors, self-propelled choppers, trucks and wagons.
- Ensure all safety guards and shields are in place.
- Use seatbelts. Expect their use and inspect to ensure use.
- Make sure all machinery has fire suppression equipment.

Improving Fibre Digestibility at Harvest

At corn silage harvest time, there are two ways to gain more energy from the fibre portion of the plant.

- High chopping corn plants helps improve fibre digestibility (+2-4 points of NDFd) by leaving the most indigestible portion of the plant behind in the field.
- Sila-Bac® inoculant 11CFT is a Fibre Technology inoculant from DuPont Pioneer that also helps deliver more digestible energy. Fibre digestibility is improved during storage through a bacteria-produced enzyme breaking bonds between lignin and cellulose. Research shows on average NDF fibre digestibility rates increased by 30-35% due to the action of bacteria-produced enzymes on cell wall components. This fibre technology is delivered through an inoculant providing fermentation and aerobic stability benefits in addition to increased fibre digestibility.