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Silage Harvest Tips

SITUATION

Silage harvest will soon be upon us and the decisions made at chopping will affect silage quality. Determining when to harvest silage (at the right whole-plant moisture) can be difficult. Harvesting corn that is too wet or too dry reduces yield and can reduce the quality of your silage. So how do we avoid problems and get the best quality silage possible? By starting with a harvesting plan!

FACTORS TO CONSIDER

Whether you chop your own silage, or have it chopped by a custom chopper, it is important to have a plan in place. Here are some factors to consider:

- Harvest moisture levels
- Determining silage moisture
- Appropriate chop length
- Level of kernel processing
- Filling and packing the pile
- Covering the bunker or pile

ACTION PLAN

1. **Harvest moisture levels:** A key to success for producing quality corn silage is harvesting silage at the appropriate moisture content. If silage is harvested too wet it can lose soluble nitrogen and carbohydrates. Harvesting a little on the wet side allows the silage to be packed and have optimum digestibility, but the starch may not have fully accumulated. Silage chopped too dry will not pack well and will have less vigorous fermentation. This can lead to the development of undesirable yeast and molds plus there could be poor starch digestibility.

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a. Table 1 below shows the recommended moisture contents for corn silage based on the type of storage structure.

Table 1. Kernel milk stage "Triggers" for timing silage harvest		
Silo Structure	Ideal Moisture Content	Kernel Milk Stage "Trigger"
	%	%
Horizontal bunker	70 to 65	80
Bag	70 to 60	80
Upright concrete stave	65 to 60	60
Upright oxygen limiting	50 to 60	40
"Trigger": Kernel milk stage to begin checking silage moisture		

2. **Determining silage moisture:** Dry matter content of the whole plant can vary with maturity; therefore, it is important to know when the field is ready for harvest. Harvest timing can be estimated using the kernel milk-line as it is a good indicator of when to start sampling fields to measure plant dry matter. The only reliable method of determining the optimal harvest time is to sample the crop and measure the dry matter percentage of whole plants. To accurately determine whole-plant moisture, use moisture testing techniques, such as the Koster tester and microwave oven.
3. **Appropriate chop length:** Particle length affects rumen function and dry matter intake (DMI) which in turn influences milk production. If corn silage is harvested at optimum moisture, use a cut length of ½ inch to ¾ inch. Drier corn silage may need to be cut shorter to help improve packing. If processed, the theoretical length of cut (TLC) should be ¾ inch to 1 inch. You should discuss with your nutritionist what the proper chop length and proper particle size is for your herd.
4. **Level of kernel processing:** Processed silage has the potential to offer better nutrient utilization and can help improve milk production. Using a kernel processor exposes the kernels to rumen bacteria allowing for better digestion. Dr. Limin Kung, Jr., Professor of Dairy Nutrition at the University of Delaware, recommends that 70 percent of the kernels be smaller than one-quarter of the full kernel size and cobs should be broken into more than eight pieces. Monitor particle size and kernel processing throughout the harvest window. Moisture, ground speed, field, and hybrid variations can change frequently.
5. **Filling and packing the pile:** Air is the enemy when it comes to silage, so it is important to fill and pack the pile quickly to prevent spoilage. During storage and during feed out, air stimulates the yeast growth. Properly packing the bunker soon after harvesting provides the anaerobic environment that is needed for effective fermentation. Silage that is densely packed will have less dry matter loss and higher feeding quality than less densely packed silage.

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6. **Covering the bunker or pile:** The final step in your silage production is to cover the silage pile as quickly as possible. Make sure that you have all the supplies that are needed: plastic, tires, or other covering materials. When covering the pile, pay special attention to edges and seams since these gaps can easily let air in. It might be wise to consider placing sandbags at the edge of the bunker to keep the sides airtight. Remember that bags and plastic coverings are only effective if they are intact. You will need to monitor frequently and make sure to patch holes as needed.

SUMMARY

Accurately determining the moisture content of corn silage is a challenging process but is very important. Once you have the results of your moisture test you are one step closer to knowing when to start chopping. Use a dry-down rate of 0.5 percent - the average percent moisture which corn plants lose per day - to predict when the field will be ready for the storage structure.

RESOURCES

It's all About Starch – Progressive Dairyman
Silage Harvesting and Storage - Wisconsin Corn Agronomy
Timing Corn Silage Harvest - Integrated Pest and Crop Management

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