



Wisconsin On-Farm Testing Program

Protocol for Monitoring Corn Silage Drydown

Contacts

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Goal: To properly time corn silage harvest for long-term storage and preservation. We are most interested in determining a) the rate of silage moisture drydown during September, and b) predicting the start of silage harvest for a farmer's field.

Treatment and Field Selection

1. Pick fields within your region that best represent your conditions for the production year. For example, select fields planted around May 1 in the northern, central and southern portions of your county. To further characterize the corn production conditions for the region, concentrate on planting date and hybrid relative maturity differences. Picking cornfields that will be harvested for grain will allow sampling dates well into the fall.

Planting date	Relative maturity
Early (April 20 to May 15)	Full-season hybrid Shorter-season hybrid
Late (May 15 to June 1)	Full-season hybrid Shorter-season hybrid

2. Sample at 2x weekly (minimum weekly) intervals. Also, consider allowing all farmers to bring in samples on a predetermined day to predict the start of silage harvest for their specific fields.
3. Identify two to four sampling locations in the field that best represent the field. The sampling locations should not border a creek, fenceline, road, or edge of the field to avoid favoring or penalizing one treatment. Nor should the sample locations run along the field contour, such that treatments are on different positions along the slope of the field. In this situation, treatments on the lower slope positions would likely have higher moisture levels. On the other hand, the plots should be less than a five-minute walk from a road.
4. On each sample date, sample 2 to 4 plants from each sample location. Return to the same sampling locations on each sample date.

5. Cutting height should be 6 inches aboveground. Chop sampled plants as quickly as possible. Place plants in large plastic trash bag. Do not leave plants in the sun (at least store in shade), because desiccation and transpiration continues to occur rapidly and will affect whole-plant moisture results.

6. Record the following data:

Location	Sample date	Hybrid	Planting date	Kernel milk	Whole-plant moisture	Target harvest moisture	Predicted date to start harvest

Calculate whole-plant moisture using the formula:

$$\text{Whole-plant moisture (\%)} = \frac{\text{Weight of wet sample} - \text{Weight of dry sample}}{\text{Weight of wet sample}} \times 100$$

Calculate the predicted date to start harvest using an average drydown rate of 0.5 (% day⁻¹) and the following formula:

$$\text{Predicted harvest start (date)} = \text{Sample date} + \frac{(\text{Sample date moisture} - \text{Target harvest moisture})}{0.5 (\% \text{ day}^{-1})}$$

Kernel milk “triggers” for timing silage harvest

Silo structure	Recommended moisture content for ensiling	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	60 to 50	40

"trigger": kernel milk stage to begin checking silage moisture

Silage moisture decreases at an average rate of 0.5% per day during September

Submitting data: E-mail the results to jglauer@facstaff.wisc.edu and I will post on the internet at <http://corn.agronomy.wisc.edu>.