

Frosted alfalfa might have lower NDF concentration than predicted by growing degree-days.

Phil Kaatz, Faith Cullens, Kathy Lee, Roberta Osborne, and Mike Allen
Michigan State University Extension educators and Extension Dairy Specialist

Scissors cutting program suggests optimal growing degree-days for first harvest alfalfa is likely higher this year.

The old proverbial saying about a fly in the ointment is certainly true this year when it comes to predicting when alfalfa will be ready to harvest. Record warm temperatures in March followed by multiple frost events with temperatures in the low 20's have left producers wondering when they should harvest first cutting alfalfa. The growing degree days (GDD) are running about two weeks ahead of the 30-year average. Producers and MSU Extension educators have been concerned about the impact of multiple frosts on the alfalfa and several differing ideas were being considered to address the issue. Producers are faced with the challenge of determining the right time to harvest alfalfa for their livestock operation. For the dairy producer, cutting alfalfa too late results in high neutral detergent fiber (NDF), increasing supplementary feed cost, whereas, if they cut too early they run the risk of inadequate NDF fiber concentration for proper rumen function.



Figure 1. Heavily damaged alfalfa plant due to frost.

To help solve the issue several members of the MSU Extension Dairy and Forage Teams are collecting scissor-cut samples of alfalfa to get a snapshot on alfalfa quality. Samples represent multiple sites in Michigan and will be taken weekly until first harvest. Forage quality will be evaluated using wet chemistry analysis for NDF.

Historically, alfalfa producers have relied on several factors to help predict the ideal time for first cutting alfalfa. Several different management tools have been used in combination or alone and include:

- GDD (base 41⁰F)
http://fis.msue.msu.edu/extension_documents/Timing_First_Spring_Alfalfa_Harvest.htm
- Predictive Equations for Alfalfa Quality (PEAQ) stick
<http://www.uwex.edu/ces/crops/PEAQTabl.PDF>
- alfalfa growth stage
<http://css.cals.cornell.edu/cals/css/extension/upload/AlfalfaBulletin.pdf>
- the calendar

Location	Lab NDF	GDD	GDD NDF	PEAQ Avg	GDD on May 7	Predicted NDF 5/7/12
West Olive	28.7	515	32.3	30.2	681	34.3
Zeeland	29.7	515	32.3	31.6	681	35.3
Zeeland	30.5	515	32.3	29.4	681	36.1
St Johns	28.3	481	30.9	27.6	604	32.9
St Johns	30.5	481	30.9	29.3	604	35.1
St Johns	29.4	481	30.9	28.6	604	34
Portland	31.1	475	30.7	31.2	611	36.1
Coldwater	31.0	585	34.8	31.0	753	36.2
Quincy	29	585	34.8	31.6	753	34.2
Jonesville	30.6	555	33.8	29.9	712	35.7
Brown City	26.4	459	30.1	25.8	557	30.1
Brown City	28.1	515	32.3	27.1	611	31.5
Marlette	26.4	441	29.3	25.2	525	29.7
Average	29.2		32.0	29.1		

Most dairy producers and nutritionists prefer alfalfa to be harvested in the bud stage when NDF concentration is 40%, which corresponds to 750 GDD in normal years. Producers with bunk silos that harvest many acres and have an extended cutting window are encouraged to start cutting alfalfa at 680 GDD. However, the hard frosts that occurred after substantial growth this spring might alter this relationship. The PEAQ stick method is a quick way to estimate alfalfa quality and incorporates the different growth stages of the alfalfa plant.

The table above shows actual NDF concentration for alfalfa harvested on May 1 or 2, 2012 as measured by wet chemistry, as well as NDF concentrations predicted by GDD or PEAQ. At this point in time the PEAQ method predicted NDF well but NDF predicted by GDD was 2.8 percentage units higher than measured in the laboratory.

The last column shows the NDF concentration predicted by GDD on May 7, 2012 corrected for the difference observed with wet chemistry a week earlier. This corrected NDF indicates that the NDF is several percentage units lower than what is expected based on the temperature accumulation. To compensate for the differences producers should consider delaying cutting instead of basing the first cutting on GDD. Additional samples have been taken on May 7 and updates will be provided by May 14.

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