



ACS

Agricultural Consulting Services

1st Cutting Newsletter 2015

ACS Update: Timing of First Cutting

It is imperative to measure what is out in the field in order to make the best decision for a first cutting start date and to prioritize fields. First cutting can represent up to 60% of the forage harvested for the year. At ACS, we recognize the importance of the first cutting start-date decision and we conduct a two state forage scissors cut program every year to measure %NDF of standing forage. We sample about 100 fields across the state and return results in less than 36 hours to our clients.

In addition to measuring field samples for %NDF, a first-cutting start date can also be estimated using an equation known as the PEAQ equation and Base 41 Growing Degree Days. By looking at all three tools and considering plant maturity, producers can decide on a weather window that is right for their forage program to start this year's first cutting, and also to prioritize fields for cutting.



Estimating First Cutting Start Date in 2015

Scissors Cut Estimate

The scissors cut method provides the most reliable forage quality information. This method relies on taking a representative sample of the forage in the field, cutting it at cutting bar height and submitting it to a lab for %NDF analysis. ACS conducted a forage

scissors cut for their clients in New York and Vermont on Tuesday, May 19, 2015 and the entire company collaborated to sample 68 fields with straight alfalfa, alfalfa grass mixes, grass fields and triticale. The results are turned around in less than 36 hours and can be found in Table 1.

PEAQ Equation Estimates

Some producers like to use the PEAQ method to gauge when to start first cutting. In this method, plant height and maturity ratings are used to estimate %NDF (Table 2). A strength of the PEAQ equation is that it considers plant maturity. Plant maturity must be considered when planning first cutting because harvesting young stands prior to bud stage multiple times during the season can harm plants and stand longevity, especially in moderate and low fertility conditions. The PEAQ method is most accurate under "normal" growing conditions and in pure alfalfa; we don't typically have pure alfalfa stands in New York and Vermont, but PEAQ was calculated for each field that was sampled in our statewide program and is also presented in Table 1.

Growing Degree Day Estimates

Base 41 Growing Degree Days (GDD) are used to estimate when to start first cutting with recommendations to start around 680-700 GDDs. GDDs can be calculated from daily minimum and maximum temperatures. However, the information does not correlate every year to a good start date for first cutting for grass hay or mixed stands where grass dominates, so use the information below as a guide for stands where alfalfa dominates the mix.

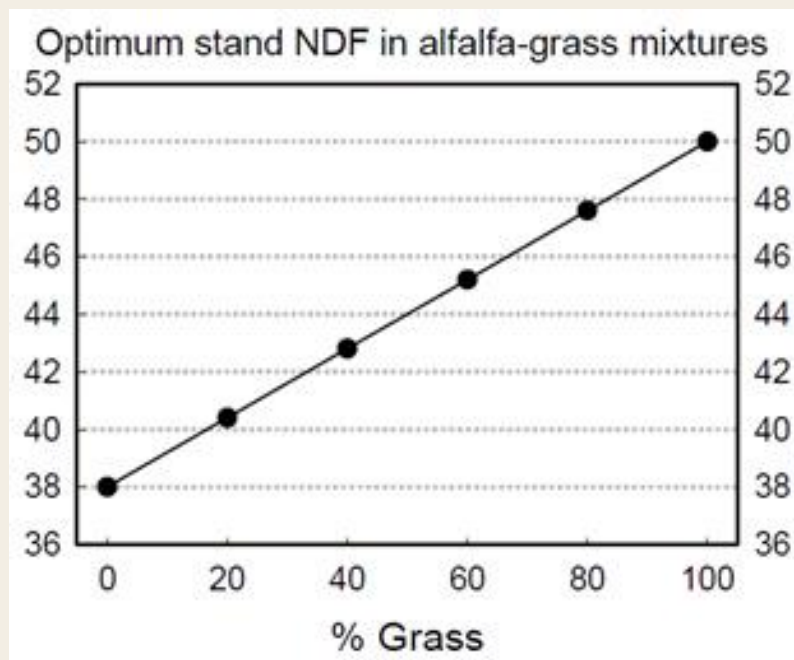
Using the Base 41 GDD from the Northeast Regional Climate Center, 579 GDDs have been accumulated in Auburn, New York; 730 in Batavia, New York; 584 in Glens Falls, New York; and 578 in Essex Junction Vermont between March 1st and May 19th. Batavia has already surpassed guideline GDDs, while Auburn, Glens Falls, and Burlington will reach 680-700 around the 23rd.



Using the Information

Forage samples collected on Wednesday show grass hay species in New York and Vermont at all locations are currently in a range to cut if supplying high quality dairy forage is your goal. Similarly, mixed stands of alfalfa/grass that are 50% grass hay or more, although not quite as high in NDF as the straight grass stands, should also be considered for harvesting if forage is used to feed lactating dairy cattle. Stands of dairy forage being managed for alfalfa either as clear seeded alfalfa or mixed stands with greater than 80% alfalfa are showing an average NDF of 33.7 and average height of 18.6 inches and in a vegetative stage. This information correlates more with the GDD estimate methods and indicates that there is an opportunity to increase the yield potential of the first cutting without sacrificing high quality alfalfa and alfalfa mixed grass dairy forage by waiting 6-8 days.

ACS recognizes there are many factors that must be considered as farms make decisions relative to their own forage goals. Timing of first cutting must recognize current farm forage inventories, stage of alfalfa, weather windows, soil conditions and forage quality goals (heifer feed versus dairy feed). The best information for making a decision about the timing of first cutting for your farm will come from the needs and stage of the forage species on your farm. Talk with your ACS Service Manager to help you decide on a cutting window that is right for your forage program.



Optimum NDF varies depending on the percent of alfalfa and grass in the stand. (source: Cherney and Cherney, Grass for Dairy Cows)

General %NDF guidelines for high quality dairy feed are as follows:

Stand Mixture	% NDF Goal
Pure Alfalfa	38% - 42%
Mixed Stand	43% - 47%
Pure Grass	48% - 55%

Once a goal is identified, a couple of other steps can help you manage the cutting of high quality mixed alfalfa/grass forage for lactating cows:

Rate fields according to grass content. Fields with the highest percentage of grass should be harvested first if they are to be used in the dairy ration. Fields with the highest percentage of alfalfa should be harvested last.

Figure out how many days to harvest all dairy forage. Time the middle of the harvest for the day when alfalfa NDF is at the preferred level for your management, e.g. if it takes 10 days to harvest all fields, on day 5 of harvest NDF should be at your preferred level.

Aim to be chopping at your optimum %NDF halfway through the number of days it will take to chop all first cutting. This could mean that %NDF might be a little lower than the goal %NDF at the beginning of mowing and end a little higher than the goal %NDF. The rate at which alfalfa and grasses accumulate % NDF points can be estimated as 0.5-0.7 %NDF per day for alfalfa and 0.8-1.2 %NDF for grasses. Use the lower estimates if days are cool and the higher estimates if days are hot. Making field lists for fields that are maturing early and fields that are maturing later can help direct where to send the mower so that more acres can be harvested at the ideal %NDF.

Variability seems to be the only constant across the landscape. Slope aspect, distance from lakes, and micro-climates all play a role in determining how advanced forages are this week and how they will continue to mature. Measured %NDF will provide the best information to guide one of the most important decisions you make in your forage program this year.

Have a great first cutting and be safe!

-The ACS Agronomy Team

TABLE 1

County	Town	State	Crop	Growth Stage**	Plant Height	% NDF (PEAQ)	% NDF (NIR)
Broome	Whitney Point	NY	grass	boot	26		56.3
Cayuga	King Ferry	NY	alfalfa/grass	late veg	29	37.5	40.9
Cayuga	King Ferry	NY	alfalfa/grass	early bud	29	38.7	37.5
Cayuga	Auburn	NY	alfalfa/grass	late veg	35	41.6	43.3
Cayuga	Venice	NY	alfalfa/grass	late bud	30	39.4	47.5
Cayuga	Venice	NY	alfalfa/grass	late bud	28	38	36.7
Cayuga	Venice	NY	alfalfa/grass	early bud	23	34.6	47.2
Cayuga	Scipio	NY	alfalfa/grass	early bud	26	36.6	43.3
Cayuga	Genoa	NY	grass hay	early boot	39		59.8
Cayuga	Genoa	NY	alfalfa/grass	early bud	25	35.9	36.8

Cortland	Harford	NY	alfalfa	late bud	30	39.4	34.4
Cortland	Harford	NY	triticale	early boot	23		52.7
Cortland	Harford	NY	alfalfa	early bud	26	36.6	37.9
Genesee	Byron	NY	alfalfa/grass	early bud	27	37.3	41.4
Genesee	Batavia	NY	alfalfa/grass	early bud	28	38	53.4
Livingston	Groveland	NY	alfalfa/grass	late veg	30	38.2	32.7
Livingston	Groveland	NY	alfalfa/grass	late veg	26	35.4	40.4
Livingston	Sparta	NY	alfalfa/grass	early bud	29	38.7	48.4
Livingston	Groveland	NY	alfalfa/grass	late bud	32	40.8	34.5
Livingston	Groveland	NY	alfalfa/grass	early bud	29	38.7	41.1
Livingston	Avon	NY	alfalfa/grass	late veg	27	36.1	36.7
Livingston	Avon	NY	alfalfa/grass	late veg	28	36.8	45.2
Livingston	Perry	NY	alfalfa/grass	late veg	30	38.2	31.2
Livingston	Perry	NY	alfalfa/grass	late veg	25	34.7	52.7
Livingston	Wayland	NY	alfalfa/grass	early bud	29	38.7	37.3
Livingston	Wayland	NY	alfalfa/grass	early veg	28	36.8	40.2
Onondaga	Fabius	NY	alfalfa	early bud	25	35.9	32
Onondaga	Fabius	NY	grass	flag leaf	28		59.2
Ontario	Seneca	NY	alfalfa	late veg	25	34.7	38.6
Ontario	Seneca	NY	alfalfa	early bud	29	38.7	42.1
Orleans	Albion	NY	alfalfa/grass	late veg	29	37.5	43.3
Orleans	Albion	NY	alfalfa/grass	late veg	22	32.7	43.7
Steuben	Prattsburgh	NY	alfalfa/grass	late veg	26	35.4	44.4
Steuben	Prattsburgh	NY	grass/alfalfa	mid veg	27	36.1	54.4
Steuben	Prattsburgh	NY	grass	emergent	29		57.4
Steuben	Prattsburgh	NY	grass	emergent	26		56
Steuben	Prattsburgh	NY	grass	emergent	27		62.8
Tompkins	Lansing	NY	alfalfa/grass	early bud	23	34.6	45.1
Tompkins	Lansing	NY	alfalfa/grass	late veg	25	34.7	46.6
Washington	Schaghticoke	NY	grass	flag leaf	25		56.5
Washington	Schaghticoke	NY	alfalfa/grass	late veg.	22	32.7	44.7
Washington	Schaghticoke	NY	alfalfa	early bud	27	37.3	40.9
Washington	Eagle Bridge	NY	alfalfa/grass	late veg	18	29.9	44.9
Washington	Eagle Bridge	NY	alfalfa	late veg.	23	33.4	37
Washington	Eagle Bridge	NY	grass	flag leaf	25		54.8
Wayne	Savannah	NY	alfalfa/grass	early bud	25	35.9	38.1

Wayne	Rose	NY	alfalfa/grass	late veg	26	35.4	42
Addison	Whiting	VT	alfalfa/grass	bud	27	37.3	25.9
Addison	Orwell	VT	grass	flag leaf	21		56.6
Addison	Addison	VT	alfalfa/grass	late veg	20	31.3	32.6
Addison	Addison	VT	grass	flag leaf	20		50
Caledonia	Sutton	VT	grass	flag leaf	25		49.6
Chittenden	Richmond	VT	grass	flag leaf	25		46.5
Chittenden	Richmond	VT	alfalfa/grass	bud	24	35.3	28.3
Franklin	St. Albans	VT	alfalfa	bud	19	31.8	25.5
Franklin	St. Albans	VT	grass	flag leaf	19		50.9
Franklin	Enosburg Falls	VT	grass	boot	26		48.1
Franklin	Swanton	VT	grass	flag Leaf	16		43.8
Franklin	Swanton	VT	alfalfa/grass	bud	20	32.5	29.8
Orange	Bradford	VT	grass	boot	31		48.6
Orange	Bradford	VT	alfalfa/grass	late veg	22	32.7	45.7
Orange	Bradford	VT	grass	flag leaf	22		46.2
Orange	Brookfield	VT	grass	boot	25		53
Orange	Brookfield	VT	triticale	flag leaf	27		44.1
Orleans	Craftsbury	VT	grass	flag leaf	13		47.6
Orleans	Irasburg	VT	grass	flag leaf	13		49.3
Orleans	North Troy	VT	grass	flag leaf	12		47.7

Estimation of alfalfa NDF using PEAQ with a simplified staging scale

1. Choose a representative 2-square-foot area in the field.
2. Determine the most mature stem in the 2-square-foot sampling area using the criteria shown in the table at right.
3. Measure the length of the tallest stem in the 2-square-foot area. Measure it from the soil surface (next to plant crown) to the tip of the stem (NOT to the tip of the highest leaf blade). Straighten the stem for an accurate measure of its length. The tallest stem may not be the most mature stem.
4. Based on the most mature stem and length of the tallest stem, use the chart at the right to determine estimated NDF content of the standing alfalfa forage.
5. Repeat steps 1 to 4 in four or five representative areas across the field. Sample more times for fields larger than 30 acres.

Length of Tallest Stem (from soil to stem tip)	Stage of Most Mature Stem		
	Late Vegetative (No buds visible)	Bud Stage (1 or more nodes with buds visible)	Flower Stage (1 or more nodes with 1 open flower)
inches	% NDF		
16	28.5	29.7	31.4
17	29.2	30.4	32.0
18	29.9	31.8	32.7
19	30.6	31.8	33.4
20	31.3	32.5	34.1
21	32.0	33.2	34.8
22	32.7	33.9	35.5
23	33.4	34.6	36.2
24	34.0	35.3	36.9
25	34.7	35.9	37.6
26	35.4	36.6	38.3
27	36.1	37.3	38.9
28	36.8	38.0	39.6
29	37.5	38.7	40.3
30	38.2	39.4	41.0
31	38.9	40.1	41.7
32	39.6	40.8	42.4
33	40.3	41.5	43.1
34	40.9	42.2	43.8
35	41.6	42.8	44.5
36	42.3	43.5	45.2
37	43.0	44.2	45.8
38	43.7	44.9	46.5
39	44.4	45.6	47.2
40	45.1	46.3	47.9

Table 2 - Estimation of alfalfa NDF using PEAQ with a simplified staging scale

NOTE: This procedure estimates alfalfa NDF content of the standing crop. It does not account for changes in quality due to wilting, harvesting, and storage. These factors may further raise NDF content by 3 to 6 units, assuming good wilting and harvesting conditions. This procedure is most accurate for good stands of pure alfalfa with healthy growth.

ACS recognizes the value of this timely information to our clients and subsidizes the cost of this project and works with area labs to negotiate a low-cost analysis in order to conduct this program. A special THANKS to the Dairy One Forage Lab for analyzing our New York samples and Poulin Grain for free analysis of our Vermont samples!



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