Volume 2 Issue 8 | August 6, 2012

Checking the Back Forty

Kevin H. Ganoe
Regional Field Crop Specialist
Central New York Dairy & Field Crops Team
Cornell Cooperative Extension of
Chenango, Fulton, Herkimer, Montgomery,
Otsego and Schoharie Counties
5657 State Route 5, Herkimer, NY 13350
Phone: 315-866-7920
FAX: 315-866-0870
khg2@cornell.edu

Weather Data for Week Ending Sunday, August 5, 2012

As of the week ending August 5 corn continues to be ahead for GDDs and it looks as if we are moving in on silage harvest by the end of August for planted early corn fields. We need in the range of 1950 to 2100 GDDs (early maturing to later maturing hybrids) to arrive at harvest and I think in the next two weeks we may have sufficient GDDs in fields that it will be time to check dry matters. I wouldn't encourage a rush to harvest but I would be prepared for early.

To say rain has been variable is an understatement, some locations have got inches, others tenths. We still haven't had all that is needed but in many instances it was enough to save a corn crop . That isn't to say we have gained back what we lost we haven't and won't. But there is more corn out there with some kind of ear on it than I might have thought there would be.

Table 1. Growing Degree Days

	Temperature (°F)				Growing Degree Days (GDD)-Base 50°F						
Station	High	Low	Avg	Departure from normal	Week of August 5	Since April 22, 2012	Departure from normal	Since May 7, 2012	Departure from normal	Since May 20, 2012	Departure from normal
Cobleskill	91	59	74	7	170	1596	341	1570	351	1452	310
Morrisville	91	56	73	6	159	1410	211	1368	202	1268	176
Norwich	92	57	73	6	164	1591	333	1542	322	1432	291
Oneonta	94	60	77	11	186	1677	513	1622	489	1493	429

Table 2. Rainfall Data

	Precipitation (Inches) 1/			
Station	Week	Departure from normal	Season	Departure from normal
Cobleskill	0.59	-0.18	12.59	-2.61
Morrisville	0.42	-0.35	13.5	-1.50
Norwich	0.1	-0.6	13.42	-1.69
Oneonta	0.63	-0.21	13.13	-3.39

From the USDA National Agricultural Statistics Service New York Field Office and the New York Department of Agriculture and Markets

1/ Season accumulations are for April 1st to date. Weekly accumulations are through 7:00 AM Sunday Morning

Continued…..

Corn development from R1 to R6

http://www.agronext.iastate.edu/corn/production/management/growth/yield.html

Often we will get to the end of the season and look at ears that have aborted kernels, abnormal fill patterns, or other anomalies and wonder what happened. Yet, it is possible to know why the ears appear this way if we understand when certain stresses occurred. Prior to the tassel stage, corn is staged by the leaf collar method, which is based on identifying the uppermost leaf with a collar. The final vegetative stage is reached when the entire tassel is visible. This is denoted as VT. R1 is the first reproductive stage and will occur about two to three days after VT (figure 1).

The plant's pollination and fertilization processes take place during R1 (silking). R1 occurs when silks have emerged from the tip of the ear shoot on at least 50% of the plants. Emerged silks are viable and receptive to pollen up to 10 days. Each silk is connected to a potential kernel on the cob. During pollination the female portion of the plant (ear) receives pollen from the tassel, resulting in fertilization of the ovule (kernel). Typically, silks attached to potential kernels at the base of the cob will emerge first with tip silks emerging last. The kernel is white on the outside and the inner components are clear. Poor pollination can result in non-fertilization of kernels. Since silks emerge in different increments based on which potential kernels they are attached to, it is possible to have variability in the fill pattern.

Figure 1. VT indicates the final vegetative stage and R1 is the beginning of the reproductive stage.

The plant uses the most water per day (0.35 inches) during R1. The silks have the highest water content among all parts of the corn plant. Therefore, if possible, plants should especially not be under water stress during R1.

R2 or the blister stage occurs about 10-14 days after silking. The kernel is visible and resembles a blister on the cob at this stage. The kernel is filled now with clear fluid. If you dissect the kernel you will be able to see an embryo, this is the portion that sprouts the next year when the seed is planted. The kernels are approximately at 85% moisture content and this will decrease as they near maturity. If severe stress occurs now or during R3, kernels may be aborted from the tip-down to lessen the load on the plant.

Continued…..

R3 or the milk stage will occur approximately 18-22 days after silking. The kernel is now yellow on the outside with the inside containing milky white fluid. Starch is rapidly accumulating in the kernel. By R3 cell division in the endosperm is complete and kernel growth that occurs now is due to cell expansion and starch-fill in the individual kernels. At this point it is possible to estimate yield with the Yield Component Method described in the publication cited below, Estimating Corn Grain Yield Prior to Harvest. These estimates will be about 30 bushels plus/minus actual yield.

R4 or the dough stage will occur approximately 24-28 days after silking. The interior of the kernel has now thickened to a dough or paste-like substance. The kernels have now accumulated about half of their mature dry weight. Stresses will not likely cause kernel abortion by this stage. Prior to R5 the kernels at the tip of the ear will begin to dent (beginning dent).

R5 or the dent stage will occur approximately 35-42 days after silking. Kernels are dented in at the top and are drying down. Kernels have 55% moisture content at the beginning of R5. You will be able to see a line separating yellow from white on the kernel; this will progress downward as the kernel matures and the starch hardens. Stress is only able to reduce kernel weight at this time by hindering dry matter accumulation.

R6 or physiological maturity occurs approximately 55-65 days after silking. All kernels have reached their maximum dry matter accumulation now since the starch layer has moved completely to the cob. A black or brown layer will be visible at the base of each kernel. Tip kernels will first reach this black layer stage followed by basal kernels. Kernel moisture is now between 30-35% with much variability due to hybrid and environment. Moisture moves out of the kernel easily if the plant is still green. Stress that occurs now will have little effect on yield except if plant lodging or insect feeding on the ear occurs.

References:

Hanway, J.J. and S.W. Ritchie. 1984. How a Corn Plant Develops: Special Report No. 48, Iowa State University.

Nielsen, R.L. 2004. http://www.agry.purdue.edu/ext/corn/news/timeless/YldEstMethod.html Purdue University.

Portions of this text, written by Lori Abendroth, are taken from a Crop Watch article (University of Nebraska extension newsletter) written July 15, 2005.

Continued…..

Local looks at corn growth
Time for you to look at you corn… What do you have?

Spent a little time in several fields today and the pictures here are very typical of what I am seeing in the region in general. Fields are very uneven with droughty areas extremely short. This is the reverse of what we see in rainy years where you can tell the wet areas by how short and yellow the corn is. Picture at right is case in point. This is from the parts of the field that held more moisture. Corn is 6-8 feet tall and has a reasonable ear given the lack of rain fall. Color is actually decent and no showing any firing of lower leaves.

However you only need to take two steps in the row and the world changes as the soil becomes more gravelly. The picture at right is where the corn is 3-4 feet high. The pollination is poor with few kernels formed. What kind of corn silage yields can you expect? One estimate for corn silage yield where there are few or no kernels present is about one ton of dry matter for every foot of plant height. Now may a good time to go look to see what potential yield you really have in your fields.

References:
http://www.uwex.edu/ces/crops/uwforage/BuyingSellingCS.pdf