*Field Crops, Forages and Soils Updates for NNY*          *6 November 2018*

# New Crop Maturity Planning Tool Online

By Kitty O'Neil, Ph.D, CCA

Farmers here in NNY and elsewhere in the Northeast have been dealing with some pretty noisy weather patterns over the past handful of growing seasons. 2016 was a drought for most farms in NYS, 2017 brought way too much rain and disrupted most cropping operations all season. 2018 was a little of both – cold and wet early, then we enjoyed a nice dry planting season, the summer was far too dry for some and just a bit dry for others, then our fall has been wet again. Precipitation is not the only shifting weather feature. Temperatures are generally warming from season to season. Forecasters tell us that these will be our trends in the future – generally warmer temperatures and more dramatic swings in precipitation.

To help farms consider these weather trends when planning crops, the Cornell Smart Farming program has developed almost a couple dozen different decision support tools for the Northeast US. Find them at http://climatesmartfarming.org/tools/. Each tool is designed to help improve farm productivity and resiliency in the face of a changing climate. These tools are all based on location-specific climate data, weather forecasts, and future outlooks. Each CSF tool permits selection and saving of multiple locations, at the field level, in order to use the best local and relevant data for each calculation.

The CSF Growing Degree Day Calculator is the tool I want to highlight here. It's undergone some pretty helpful changes recently and is now designed to help you look at the season length, and associated risks, needed for your chosen crop varieties. Let's look at an example. Direct your browser to http://climatesmartfarming.org/tools/, select the CSF Growing Degree Day Calculator and play along.

Hugh deMaan farms near Constable, NY and usually plants a 95-day silage corn hybrid with appropriate disease resistance and nutritional characteristics for his herd. Given the warming seasons, could he get away with a 105-day variety? From the seed company literature, it looks like the 95-day hybrid needs about 2050 $GDD_{86/50}$ to reach harvest at silage moisture near early dent. The 105-day hybrid needs about 2150.

Using the CSF GDD Calculator, first select a field near Constable by clicking the 'Edit' button under the Current Location and zooming in on the correct field. The map may be changed to a satellite image by clicking the 'Map' button in the upper right hand corner of the map and selecting 'satellite.' 'Select and save' your field location choice once you've marked it so you can use it again sometime. The map goes away and you come back to the GDD graph, which now shows your selected location across the top. The 86/50 GDD calculation method is most appropriate for corn, so make sure that is selected as the GDD Base (°F).

Hugh imagines a perfect planting season where he can plant this field on May 15, so select that date using the calendar button under 'Planting Date.' Ooh, when you look at the May 15, bottom leftmost part of the graph, you notice that, over the past 15 years, there's been a frost after May 15 a few times. Hmmm, maybe May 25 is a more ideal planting date. Hugh is not a risk taker. Change the planting date to May 25th. There has only been 1 frost in the last 15 years on or after May 25th.

Click the 'enable targets' clickbox and slide the slider to 2050 GDD. You'll notice a vertical green line appears on the graph indicating that 2050 $GDD_{86/50}$ was reached in 2018 on (green curve) September 1st. First frosts for the past 15 years are well past this date, mostly beginning about Oct 1. Before he feels too confident, Hugh notices that the 2018 GDD accumulation is pretty far above the 15-year average. Hover your mouse over graph and move it to the right while you watch the numbers change inside the box in the upper left hand corner of the graph. The 15-year average (blue line) reaches 2050 $GDD_{86/50}$ on about September 30th, just before all the first frosts start to creep in. The box reports that on September 30th, the GDD86/50 totals range from less than 1800 to just over 2300 in the entire 30-year data set. Hovering the mouse again, you can see that to accumulate 2150 $GDD_{86/50}$ for the 105-day hybrid, it'd need to develop until about October 16th, on average, well into the range of

first frosts.  Hugh decides to stick with his 95-day hybrid so that he has a little bit of flexibility in a wet spring if the seasonal temperatures are more typical.

The Growing Degree Day Calculator is a useful tool to get a visual understanding of season length, frost risks and temperature variability in your specific area.  The tool uses grid data, so lack of weather stations is not an impediment.  Play around with it to see if your habitual choices of varieties and maturities are the best for your area.

<u>References and Further Reading</u>

Climate Smart Farming Tools, Cornell Institute for Climate Smart Solutions, Cornell University, Ithaca, NY USA.  http://climatesmartfarming.org/tools/
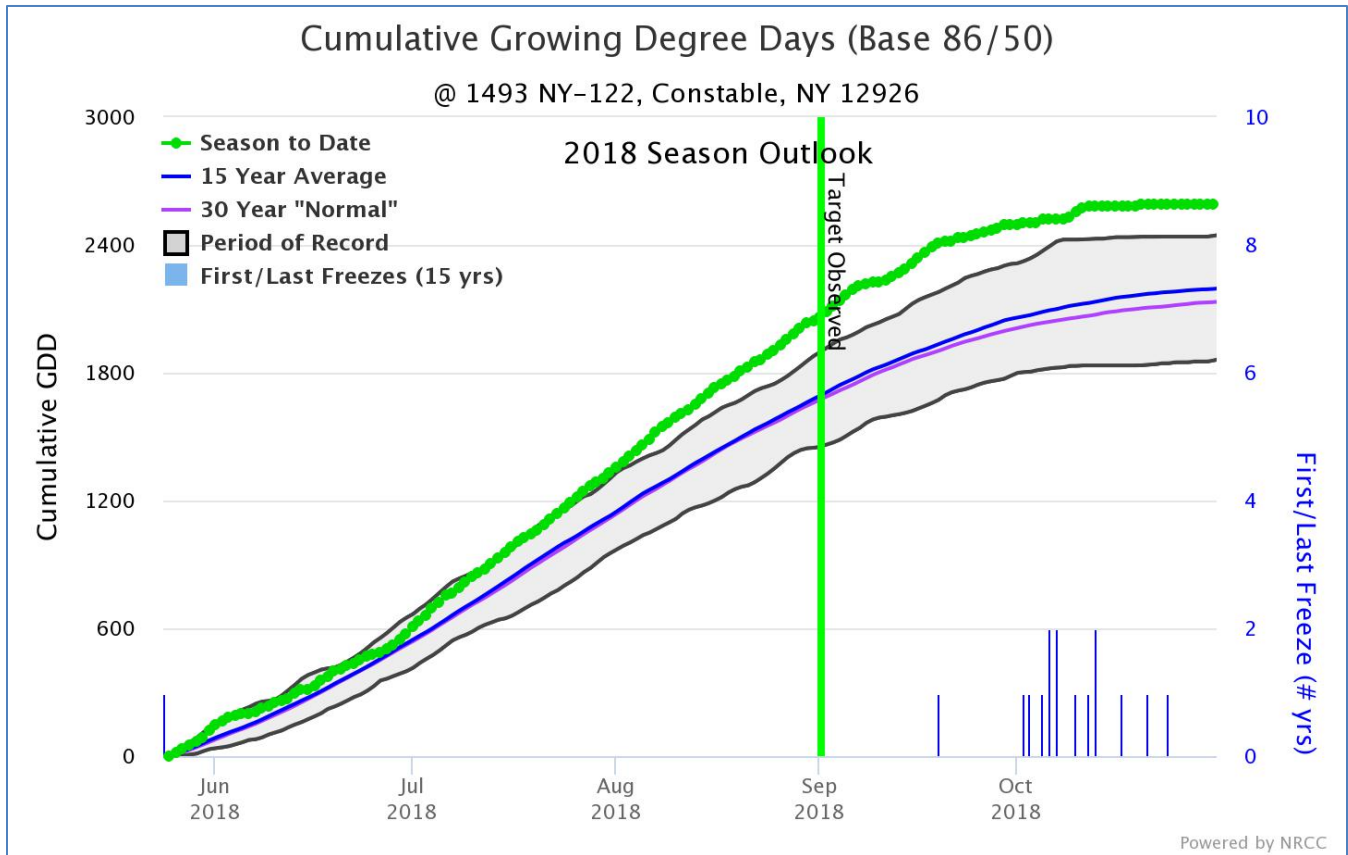


For more information about field crop and soil management, contact your local Cornell Cooperative Extension office or NNY Cornell University Cooperative Extension Regional Field Crops and Soils Specialists, Mike Hunter and Kitty O'Neil.

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