Issue 594

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eUpdate

09/30/2016

These e-Updates are a regular weekly item from K-State Extension Agronomy and Steve Watson, Agronomy e-Update Editor. All of the Research and Extension faculty in Agronomy will be involved as sources from time to time. If you have any questions or suggestions for topics you'd like to have us address in this weekly update, contact Steve Watson, 785-532-7105 swatson@ksu.edu, or Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.

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1. Using 2,4-D and glyphosate as burndown prior to planting wheat

Sometimes a single early preplant burndown treatment prior to planting wheat does not hold down grass and broadleaf weed pressure all the way until the time wheat is planted. In some areas of Kansas this year, higher-than-normal rainfall in August and September has led to a flush of grasses, volunteer wheat, and broadleaf weeds on some fields that had received an earlier burndown treatment.

When this occurs, producers may want to add another herbicide to glyphosate for additional broadleaf weed control in the second burndown treatment closer to the time of wheat planting. Is 2,4-D a good option for tankmixing with glyphosate in this situation?

The label for 2,4-D LV, which is the best form of 2,4-D to use in this case, is a little vague about the required waiting time between application on fallow or stubble ground and the planting of wheat. When used on fallow ground or crop stubble, the label states you can plant only those crops listed on the label within 29 days after application of 2,4-D LV4. Wheat is one of the crops listed on the label, so that's fine. Corn and soybeans have specific guidelines for preplant application on the label, but small grains and sorghum do not.

The label also states that wheat and other crops listed on the label may be at risk of crop injury or loss if planted soon after application, especially during the first 14 days. The risk of injury to wheat following a 2,4-D application to fallow or crop stubble increases: (1) at higher use rates, (2) if soil temperatures have been cold, or (3) if soils have been excessively wet or dry in the days following application. All of these factors affect the degradation of 2,4-D LV4 after application. In practice, the risk of injury is probably minimal if you allow a 7-day waiting interval between application of up to 1 pt/acre of 2,4-D LV4 and planting wheat.

The greatest risk of crop injury to wheat would occur with 2,4-D application close to planting and a good rainfall shortly after planting.

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2. Green stem syndrome in soybeans

Soybean harvest is slowing starting across the state (2% complete, according to the USDA Kansas Agricultural Statistics report of Sept. 25), which is slightly behind schedule the 5-year average of 4% at this point in the season. Soybean grain filling conditions were close to optimal in many areas but greenness still remains in several fields.

Green stem syndrome in soybean is a condition by which the stem remains green while the seeds are mature and ready to harvest. In parts of the state, there are many fields of soybeans with brown pods but green stems (Figure 1). A hard freeze will kill the leaves and stems, but it still may take a while for the leaves to drop if leaves are still green.

Producers can either harvest these soybeans now if the seed moisture is dry enough, or wait until the leaves have dropped and the stems have dried down. In most cases, it would be best to harvest sooner rather than later to reduce losses from shattering and lower seed quality. Harvesting beans before the leaves have dropped can be messy and gum up the combine, but at least the yield level will be maintained. Make sure harvesting equipment is sharp and in top condition, and take it slow in the field. Harvesting soybeans with green stems can be challenging.

Figure 1. Green stem syndrome in soybean is characterized by green stem and brown pods (seeds are mature). Photo by Ignacio Ciampitti, K-State Research and Extension.

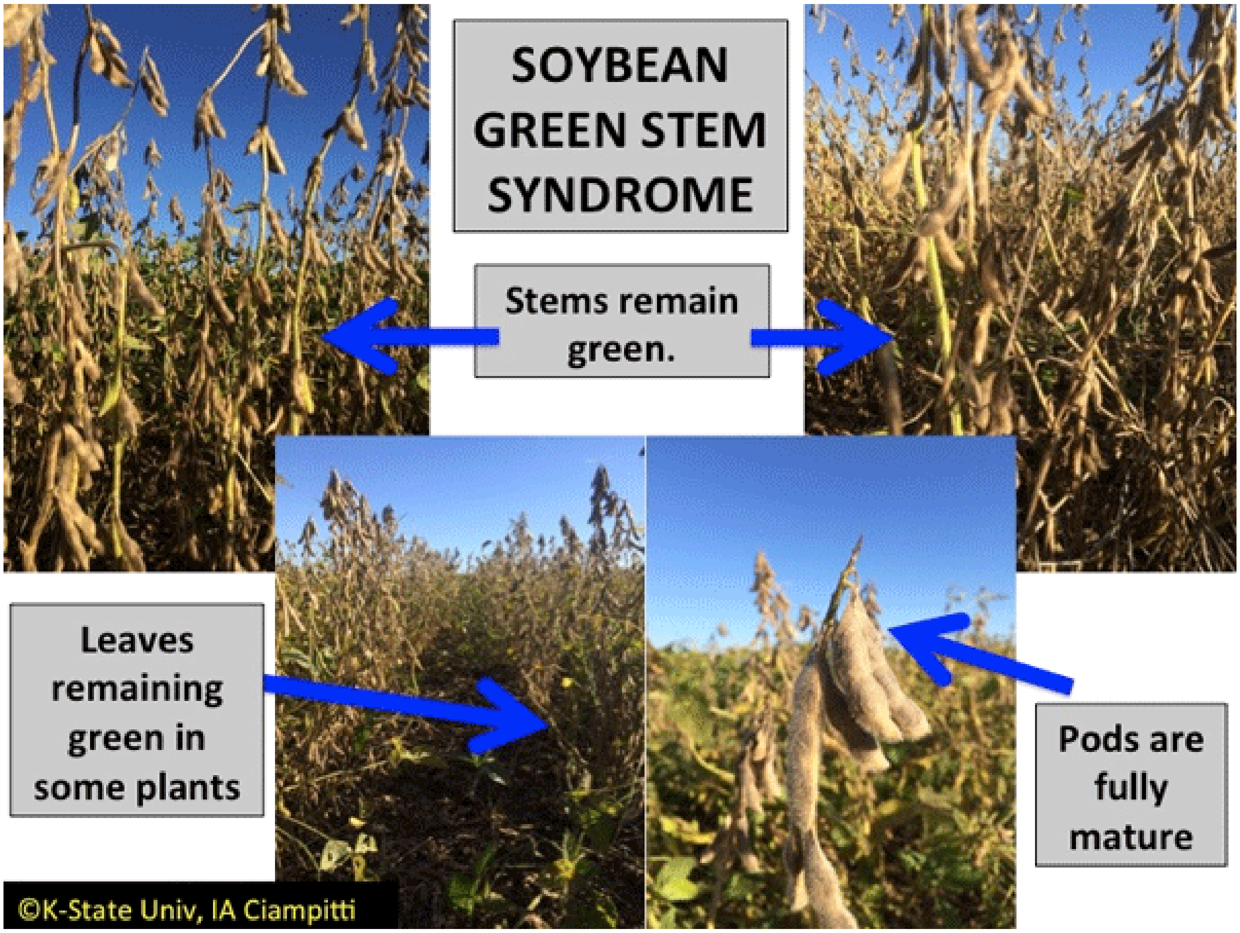

Figure 2. Green stem syndrome in soybeans. Photos by Ignacio Ciampitti, K-State Research and Extension.

Causes of green stem syndrome

What causes this unusual situation? It's most likely due to a combination of early-season stress, low pod counts, and improved late-season crop growing conditions.

In a normal situation, soybeans will accumulate carbohydrates and proteins in the leaves and stems up until seeds begin to form (R5). The leaves provide the photosynthates needed by the newly formed seeds as they begin filling. As the seeds continue to get bigger, their need for photosynthates will eventually become greater than what the leaves can provide through normal photosynthesis. As this happens, the plants will move carbohydrates and proteins from the leaves and stems into the seeds. This can be referred to as "cannibalization" of the vegetative tissue (rapid senescence process and defoliation), but it's a normal process. This eventually causes leaves to turn yellow and drop, and the stems to turn brown and die.

The fewer the number of seeds, due to abiotic or biotic stresses, the lower the demand for photosynthates produced by leaves and stems. If demand is low enough, the leaves and stems are never "cannibalized" for their carbohydrates and protein. As a result, the leaves and stems will remain green longer than normal, even up through physiological maturity of the beans. Late-season rainfall can make the problem worse by keeping the plants alive as the seeds have dried down. It will take either a frost or a desiccant to kill the leaves and stems in this situation.

If the leaves are still green and intact when pods have turned brown and have reached 13-14% moisture, it's almost always an indication of mid-season stress around flowering/pod set and low yield potential – at least relative to the amount of foliage produced.

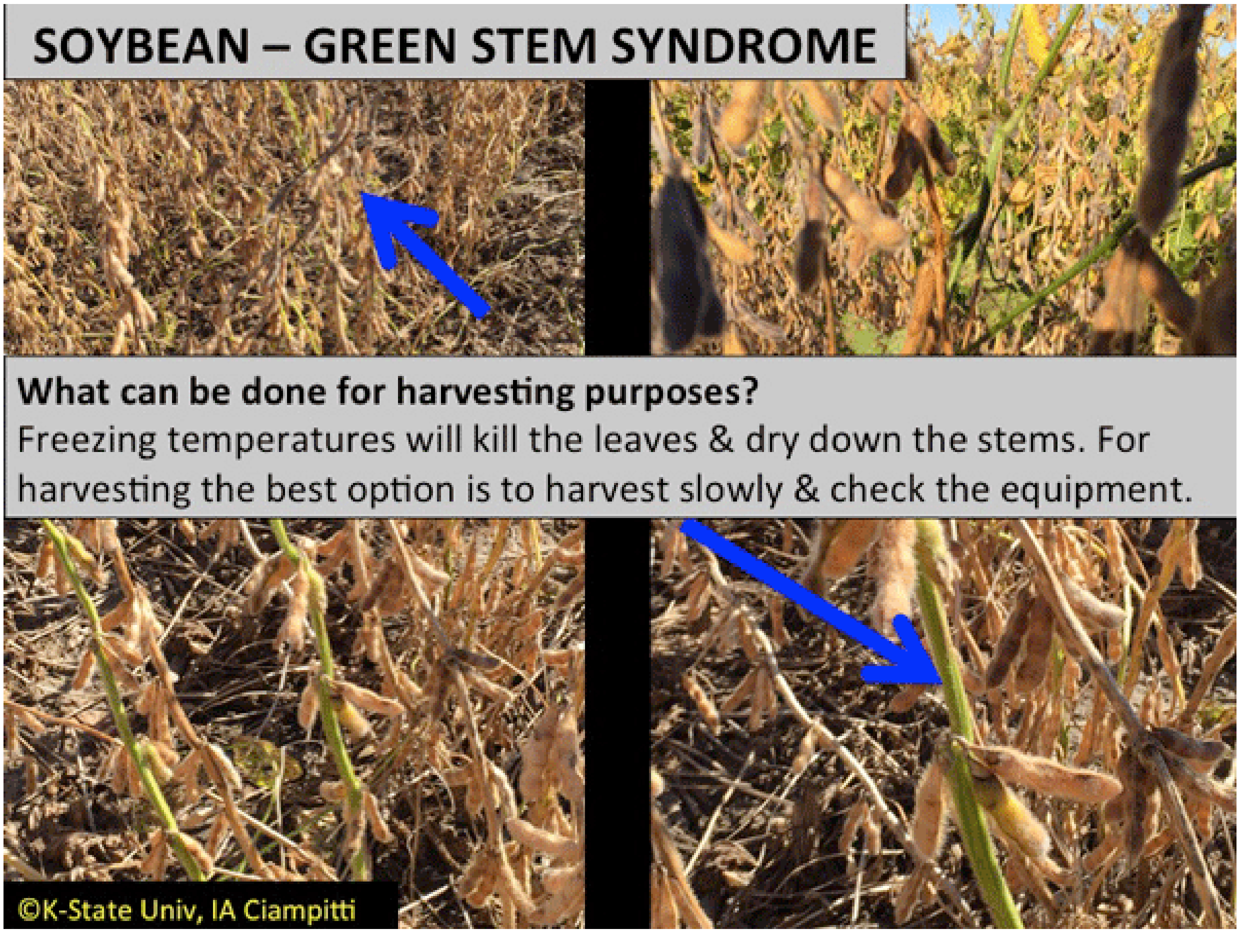

Figure 3. Green stem syndrome in soybeans and suggested harvesting operations. Photos by Ignacio Ciampitti, K-State Research and Extension.

What can be done for harvesting purposes?

Eventually, freezing temperatures will kill the leaves and dry down the stems. Otherwise, the utilization of desiccants to kill leaves and drop the stem moisture down is a viable option, but only if the producer wants to harvest the field soon, before a freeze is likely to occur. If the stems and/or leaves are still green when the field is harvested, the best option is to harvest slowly and make sure the harvesting equipment is sharp and in excellent condition.

We recommend scouting your field right before harvest to better understand what environmental conditions led to the green stems.

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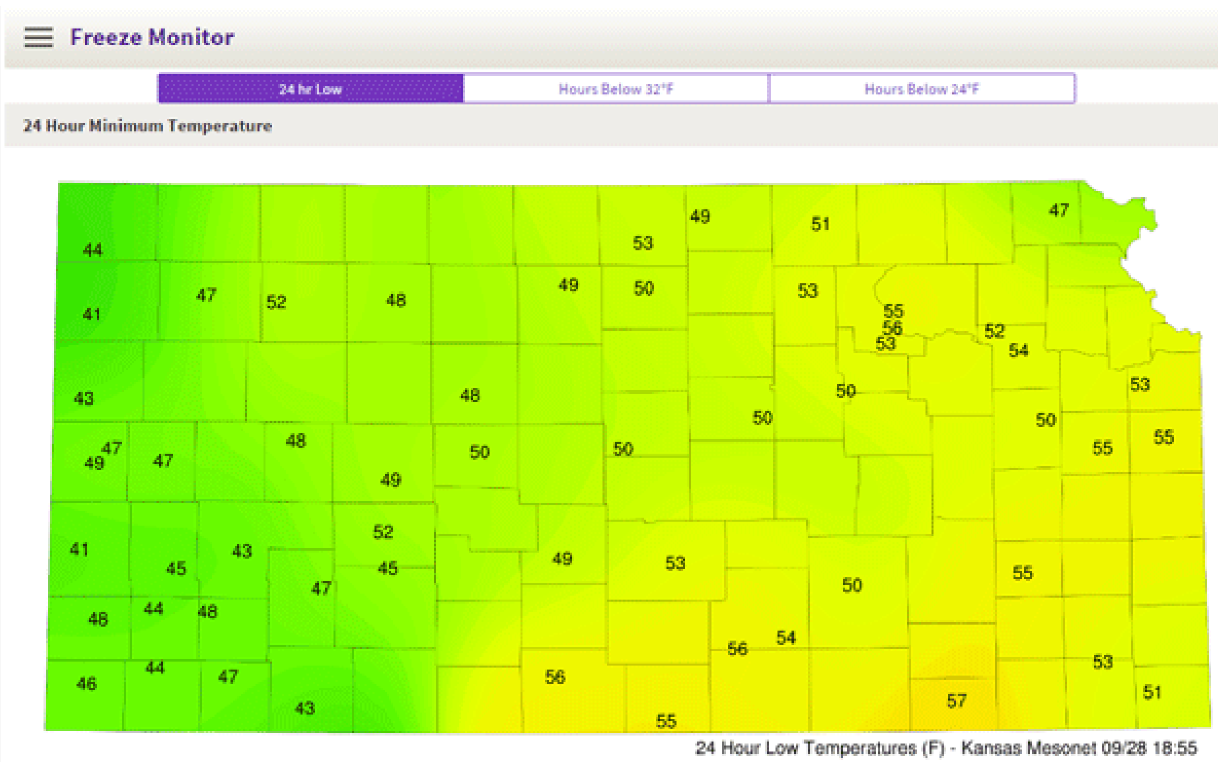
3. Mesonet freeze monitor returns

The cold is coming. The Kansas Mesonet's Freeze Monitor (mesonet.ksu.edu/freeze) returns again for the fall frost/freeze season. It contains some new features. This tool focuses on displaying the coldest temperatures observed across Kansas during the previous 24 hours. This answers the frequent question: How cold did it get last night? It also tracks the first fall freeze date for each station for comparison to local climatology. Data will update every five minutes on both the map and table.

Important for producers and gardeners, the lowest temperatures below freezing will also be addressed in a new feature this year. This feature allows users to select options to view maps/data of the duration below freezing (32 degrees Fahrenheit) and also the number of hours below 24 degrees. While both are of interest, the lower threshold is of great importance to wheat growers later into the fall season.



Data as of Wed Sep 28 2016 19:35 (CDT) -- Click column headers to sort data

Station	24 Hour Observations		Yesterday's Records			Today's Records		
	Lowest Temp (°F)	Time of Lowest Temp (CDT)	Normal Low (°F)	Record Low (°F)	Year	Normal Low (°F)	Record Low (°F)	Year
Miami	54.8	09-28 07:30	51.0	36.0	1989	51.0	29.0	1908
Ashland Bottoms	52.6	09-28 05:00	50.0	36.0	1964	49.0	34.0	1996
Mitchell	50.4	09-28 07:35	51.0	35.0	1917	51.0	33.0	1976

Figure 1: Preview of the Freeze Monitor webpage: mesonet.ksu.edu/freeze

Also new this year, the data displayed in the tables below the maps are sortable. By clicking on the header of a particular column, it will sort the table by that column. This makes it much easier to see what area was the coldest in the state, as well as earliest freeze and earliest climatological freeze data. This table can also be copied from the browser and pasted into a spreadsheet for further analysis.

Data as of Wed Sep 28 2016 19:35 (CDT) – Click column headers to sort data

	24 Hour Observations		Yesterday's Records			Today's Records		
Station	Lowest Temp (°F)	Time of Lowest Temp (CDT)	Normal Low (°F)	Record Low (°F)	Year	Normal Low (°F)	Record Low (°F)	Year
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Ashland Bottoms	52.6	09-28 05:00	50.0	36.0	1964	49.0	34.0	1996
Mitchell	50.4	09-28 07:35	51.0	35.0	1917	51.0	33.0	1976
Cherokee	51.1	09-28 07:25	54.0	33.0	1942	54.0	33.0	1967
Butler	50.4	09-28 07:05	52.0	33.0	1942	52.0	33.0	1967
Ness City	48.5	09-28 07:50	47.0	33.0	2000	46.0	29.0	1976
Colby	46.8	09-28 07:20	44.0	30.0	1985	44.0	29.0	1976
Cheyenne	43.6	09-28 06:30	44.0	24.0	1908	43.0	29.0	1916
Clay	52.6	09-28 07:55	50.0	32.0	1910	49.0	31.0	1942
Osage	49.5	09-28 05:00	51.0	40.0	1993	51.0	38.0	1967
Gypsum	50.4	09-28 06:55	50.0	38.0	1993	49.0	38.0	1996
Garden City	42.9	09-28 07:50	48.0	34.0	1996	47.0	33.0	1976
Grant	44.1	09-28 07:05	46.0	32.0	1903	46.0	32.0	1945
Gray	47.0	09-28 06:45	50.0	33.0	1970	50.0	30.0	1927
Parsons	53.1	09-28 05:55	52.0	32.0	1942	52.0	36.0	1942
Haysville	53.7	09-28 05:25	52.0	39.0	1967	52.0	35.0	1967
Hamilton	41.1	09-28 07:40	48.0	30.0	1942	48.0	31.0	1945
Harper	55.4	09-28 07:45	54.0	34.0	1942	54.0	35.0	1927
Haskell	48.3	09-28 07:40	49.0	29.0	1942	49.0	30.0	1945
Hays	48.4	09-28 07:30	50.0	30.0	1903	49.0	31.0	1976
Rocky Ford	54.8	09-28 03:50	49.0	33.0	1975	49.0	32.0	1967
La Crosse	49.6	09-28 04:15	48.0	32.0	1985	48.0	33.0	1976
Hiawatha	47.3	09-28 07:40	51.0	40.0	2007	50.0	41.0	2007
Hill City	48.0	09-28 08:05	46.0	33.0	1964	45.0	20.0	1910
Hodgeman	52.1	09-28 07:00	49.0	35.0	2006	48.0	37.0	1996
Hutchinson 10SW	53.2	09-28 05:10	50.0	37.0	1989	50.0	35.0	1967
Jewell	53.0	09-28 07:45	48.0	32.0	1984	48.0	31.0	1984
Scandia	49.3	09-28 05:35	49.0	38.0	2000	48.0	34.0	1967

Figure 2: Select headers (highlighted) to sort the table data from lowest to highest.

For cold temperatures further into winter, the Freeze Monitor will not be active but the maximum and minimum temperatures can still be viewable on their particular pages along with the maximum wind gusts: http://mesonet.k-state.edu/weather/maxmin/

Expect the Freeze Monitor to return in the spring as a new growing season arrives.

The Freeze Monitor is available at: http://mesonet.k-state.edu/freeze/

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4. Comparative Vegetation Condition Report: September 20 - 26

The weekly Vegetation Condition Report maps below can be a valuable tool for making crop selection and marketing decisions.

The objective of these reports is to provide users with a means of assessing the relative condition of crops and grassland. The maps can be used to assess current plant growth rates, as well as comparisons to the previous year and relative to the 27-year average. The report is used by individual farmers and ranchers, the commodities market, and political leaders for assessing factors such as production potential and drought impact across their state.

The Vegetation Condition Report (VCR) maps were originally developed by Dr. Kevin Price, K-State professor emeritus of agronomy and geography. His pioneering work in this area is gratefully acknowledged.

The maps have recently been revised, using newer technology and enhanced sources of data. Dr. Nan An, Imaging Scientist, collaborated with Dr. Antonio Ray Asebedo, assistant professor and lab director of the Precision Agriculture Lab in the Department of Agronomy at Kansas State University, on the new VCR development. Multiple improvements have been made, such as new image processing algorithms with new remotely sensed data from EROS Data Center.

These improvements increase sensitivity for capturing more variability in plant biomass and photosynthetic capacity. However, the same format as the previous versions of the VCR maps was retained, thus allowing the transition to be as seamless as possible for the end user. For this spring, it was decided not to incorporate the snow cover data, which had been used in past years. However, this feature will be added back at a later date. In addition, production of the Corn Belt maps has been stopped, as the continental U.S. maps will provide the same data for these areas. Dr. Asebedo and Dr. An will continue development and improvement of the VCRs and other advanced maps.

The maps in this issue of the newsletter show the current state of photosynthetic activity in Kansas, and the continental U.S., with comments from Mary Knapp, assistant state climatologist:

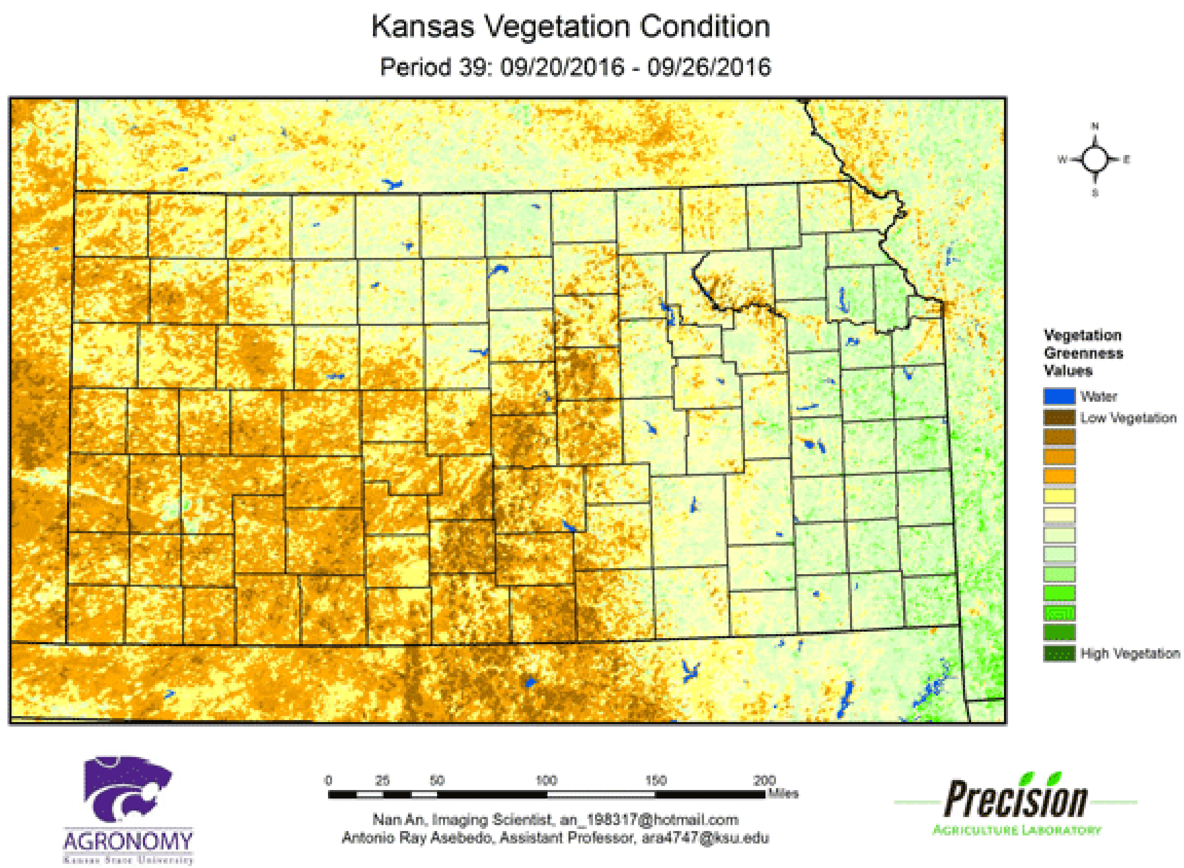

Figure 1. The Vegetation Condition Report for Kansas for September 20 – September 26, 2016 from K-State's Precision Agriculture Laboratory shows a continued decrease in the area of highest NDVI values. Moderate NDVI values continue in the eastern portions of the state, as vegetation begins to go dormant.

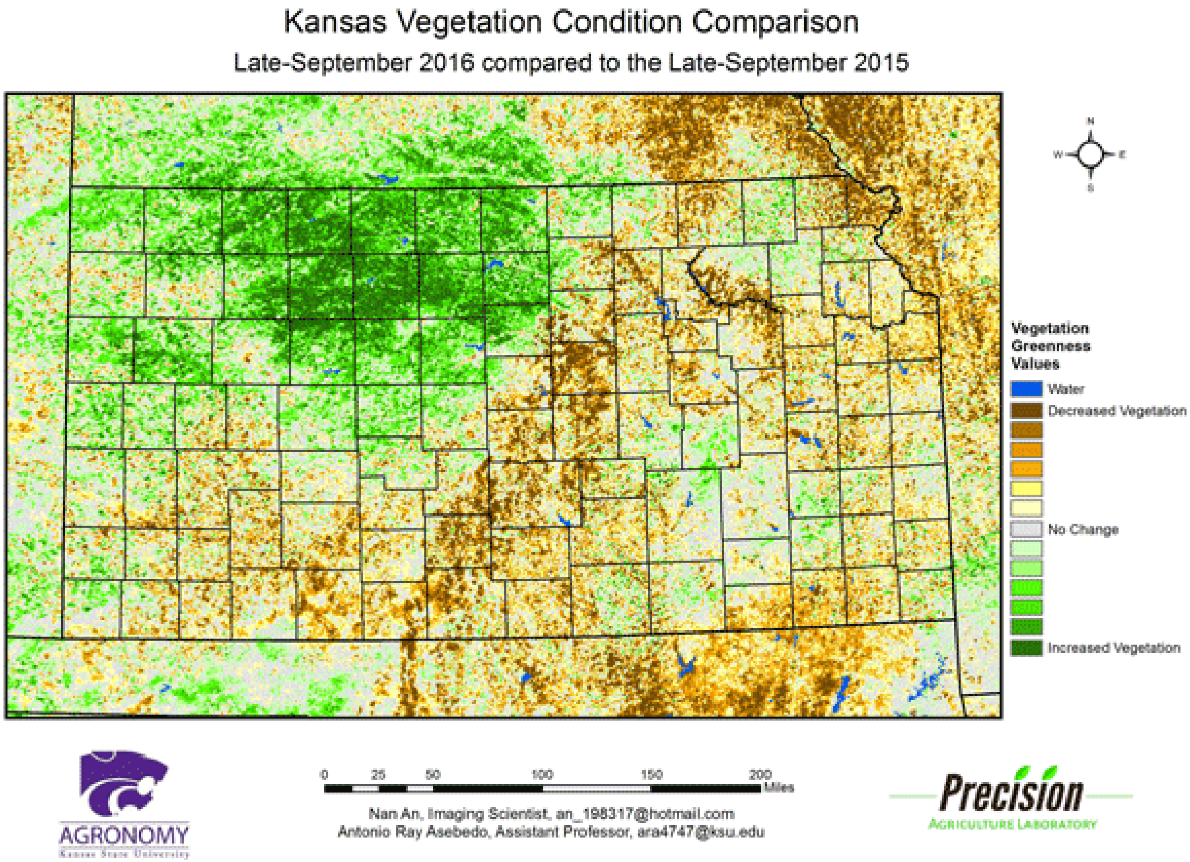

Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for September 20 – September 26, 2016 from K-State's Precision Agriculture Laboratory shows the largest area of increased vegetative production is in north central Kansas. Currently this area is drought-free, whereas last year there was moderate drought in the area. The pockets of decreased photosynthetic activity from south central Kansas through northeast Kansas are evident in areas where heavy rain and cloud cover during this period this year masked the vegetative activity.

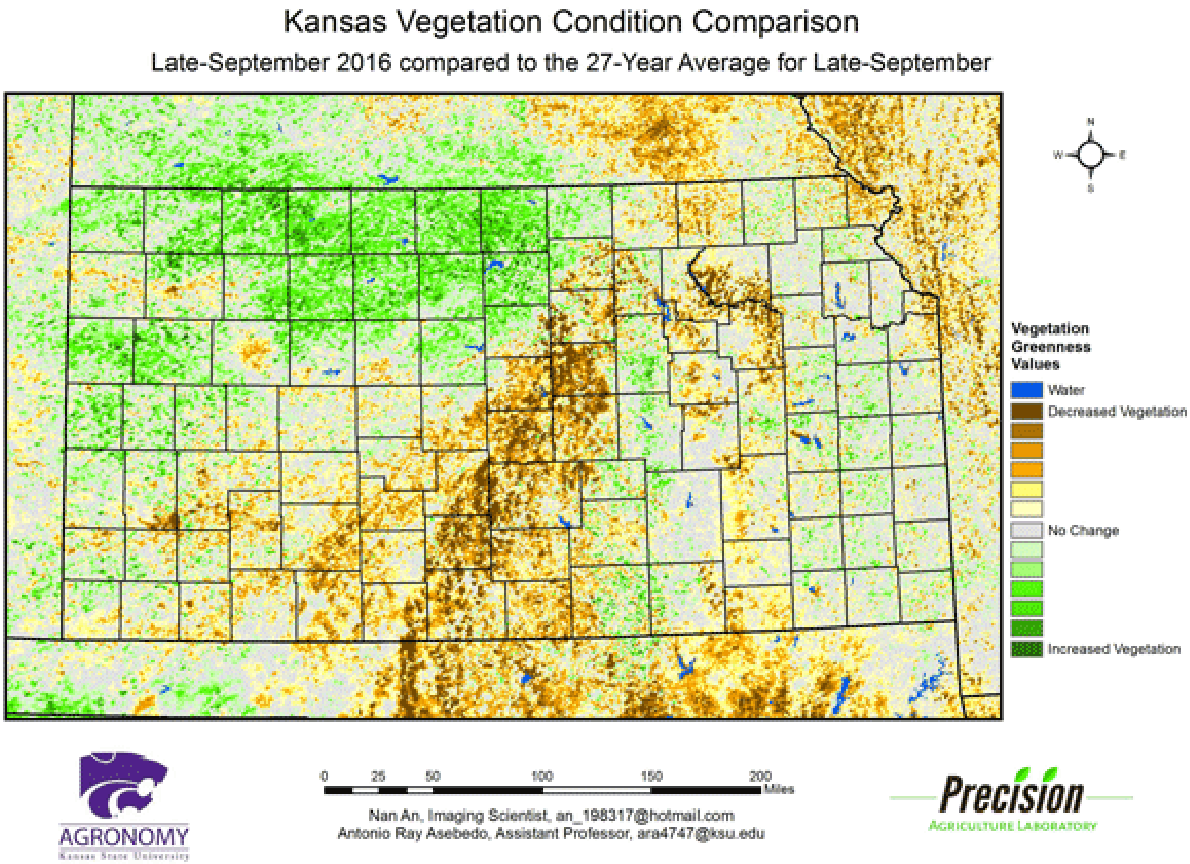

Figure 3. Compared to the 27-year average at this time for Kansas, this year's Vegetation Condition Report for September 20 – September 26, 2016 from K-State's Precision Agriculture Laboratory shows below-average vegetative activity is concentrated in the central parts of the state. These low NDVI values are the result of heavy rains and cloud cover in this area. Warm temperatures and seasonal rainfall have favored plant growth across most of the state.

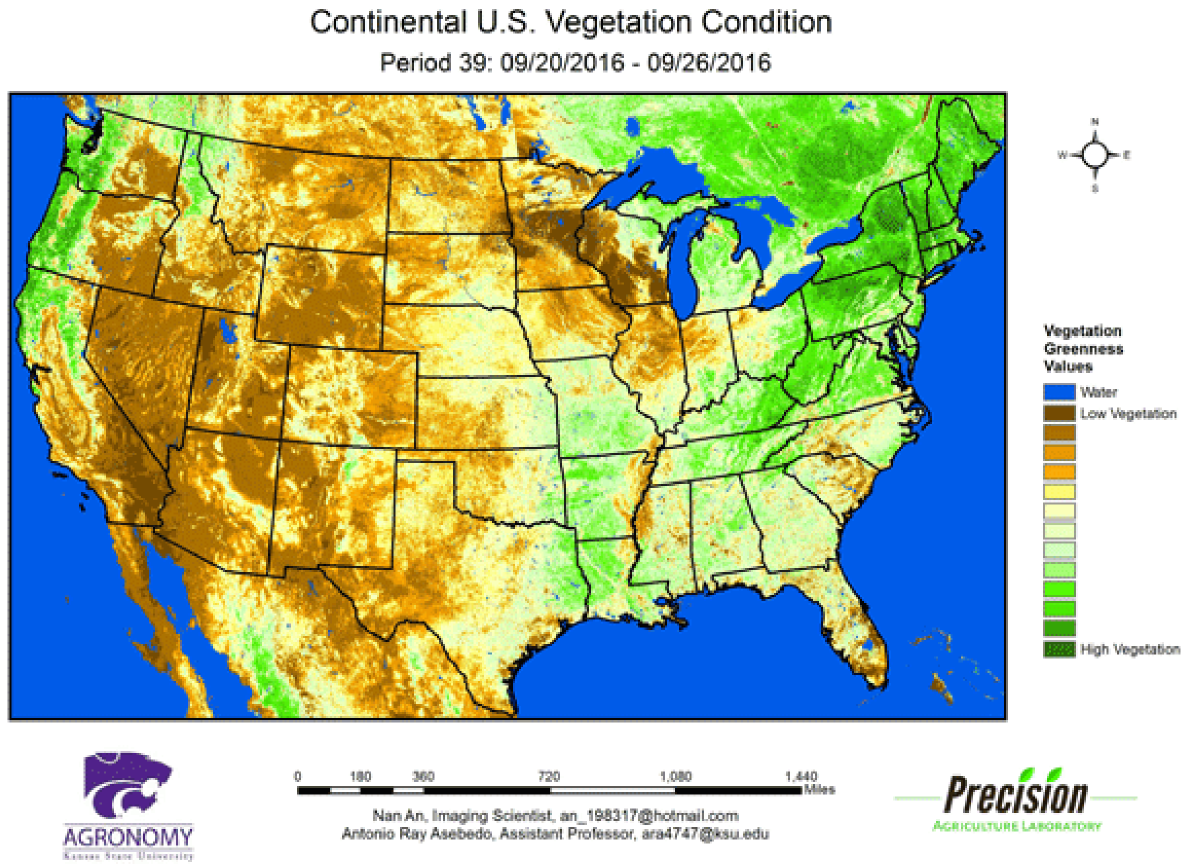

Figure 4. The Vegetation Condition Report for the U.S for September 20 – September 26, 2016 from K-State's Precision Agriculture Laboratory shows the area of highest NDVI values is in New England, where mild temperatures have extended the growing season. Low NDVI values in Minnesota and Wisconsin correspond to areas of saturated soils.

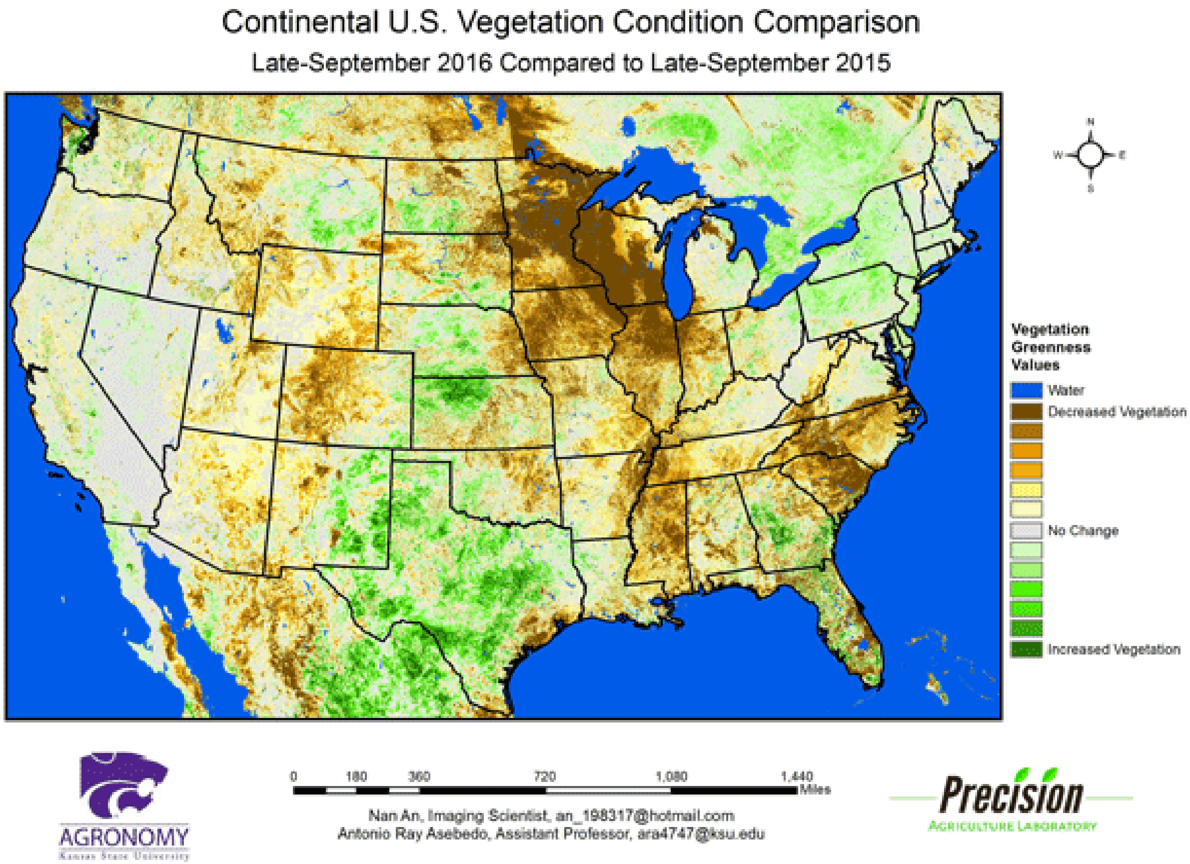

Figure 5. The U.S. comparison to last year at this time for September 20 - September 26, 2016 from K-State's Precision Agriculture Laboratory shows lower NDVI values in the upper Midwest, particularly in Minnesota and Wisconsin. Persistent rain continues to mask vegetative activity in these areas.

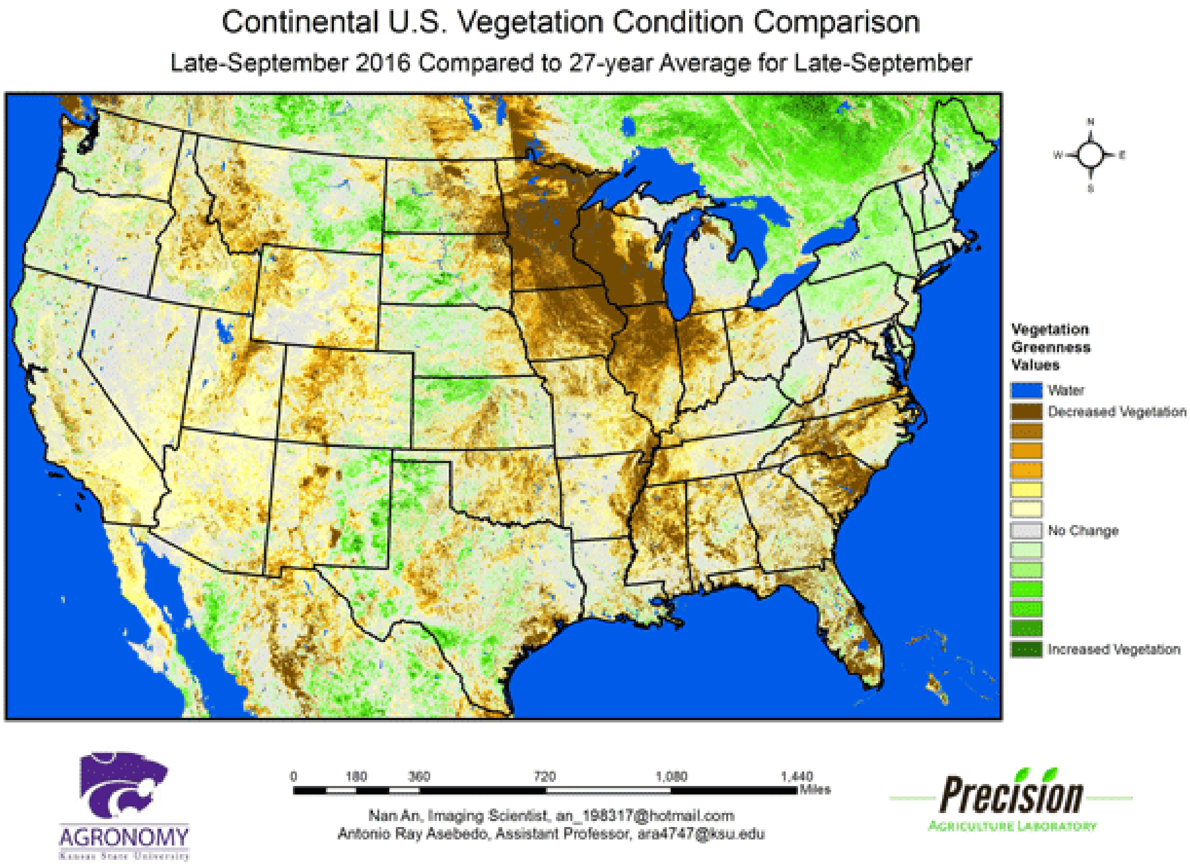

Figure 6. The U.S. comparison to the 27-year average for the period September 20 – September 26, 2016 from K-State's Precision Agriculture Laboratory shows below-average photosynthetic activity in the Upper Midwest. Heavy rains and saturated soils have limited photosynthetic activity in that region, particularly as the growing season comes to a close.

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