extension AGRONOMY e-Updates

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March 22, 2013

1. Kochia control in March and early spring

Kochia emergence is underway in Kansas, helped by the snow and rainfall received during that last couple weeks. There is a good flush of kochia up now in many row crop stubble and fallow fields, and in some wheat fields. Control measures should begin as soon as possible.

The control measures to take now will depend on the situation. One factor applies to all situations, however: When treating kochia with postemergence burndown or in-crop herbicides, spray early when the plants are small, preferably less than 3 inches tall – and the sooner the better.

Kochia seedlings. Photo by Anita Dille, K-State Research and Extension.

Fields going to corn or sorghum this spring

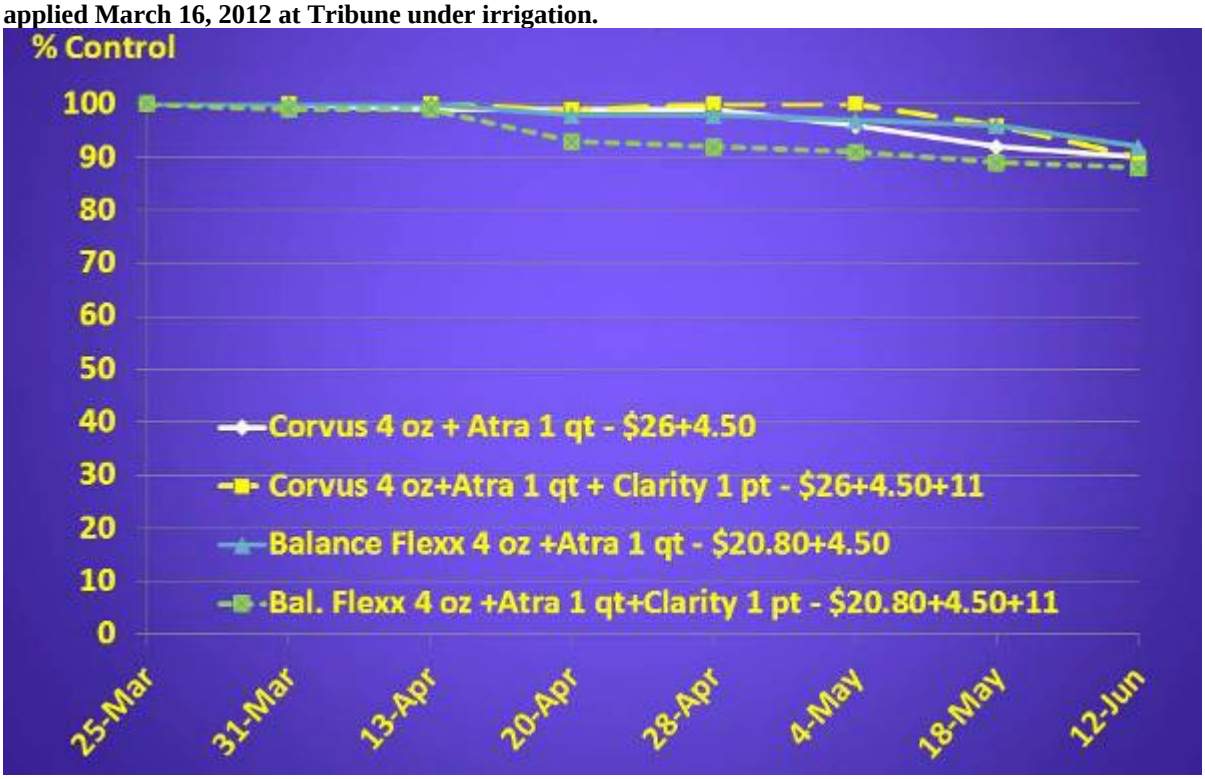
For fields that will be planted to corn this spring, a combination of glyphosate (using a minimum of 0.75 lb ae/acre) with herbicides that have PRE and POST activity on kochia are most valuable. Tank mixing 8 to 16 oz of dicamba and or 1 to 2 pints of atrazine, will control small kochia, and other existing broadleaf and grass weeds. If producers wait until later so they can apply the burndown and preemergence herbicide in the same application, the kochia will be larger and most likely will not be controlled adequately. If that occurs, the surviving plants will go on to cause problems throughout the growing season.

Other herbicides that could be tankmixed with the glyphosate include Lexar or Lumax, or for CORN ONLY, 3 to 4 fl oz of Balance Flexx or Corvus. Be sure to include some atrazine.

Figure 1 shows the effectiveness of these herbicides for controlling kochia. Many of the chloracetamide /atrazine prepack mixtures could be used at this time to manage this early flush of kochia. However, keep in mind that atrazine is the primary work horse. If the kochia is triazine-resistant, these chloracetamide/atrazine mixtures will not be effective.

The results in all the figures below are from research conducted at Tribune under irrigation, so the PRE residual herbicides were properly activated. Under dryland conditions, the results may be more variable, depending on the amount and timing of precipitation received.

Figure 1. Corvus and Balance Flexx gave long-lasting residual control of kochia ahead of corn. Herbicides were applied March 16, 2012 at Tribune under irrigation.



Figures 2, 3, and 4 show the value of atrazine, dicamba, and other herbicides for residual control of kochia. In Figure 2, the main difference between Harness Xtra (acetochlor + atrazine) and Warrant (acetochlor) is the atrazine. Verdict and Warrant, without atrazine were not effective.

Figures 3 and 4 have 8 and 16 oz of Clarity compared. In 2011 similar control occurred with both rates, however, in 2012 there was a significant advantage to having a full pint of Clarity applied. The 1.0 lb of

atrazine in Figure 3 did provide excellent kochia control into May. Keep in mind that the population of kochia in this trial was susceptible to triazines.

Figure 2. Early Preplant treatments applied March 22, 2011 for kochia control ahead of corn at Tribune under irrigation. Balance Flexx and Harness Xtra gave longer residual control than Verdict or Warrant. Harness Xtra and Warrant can also be applied ahead of grain sorghum.

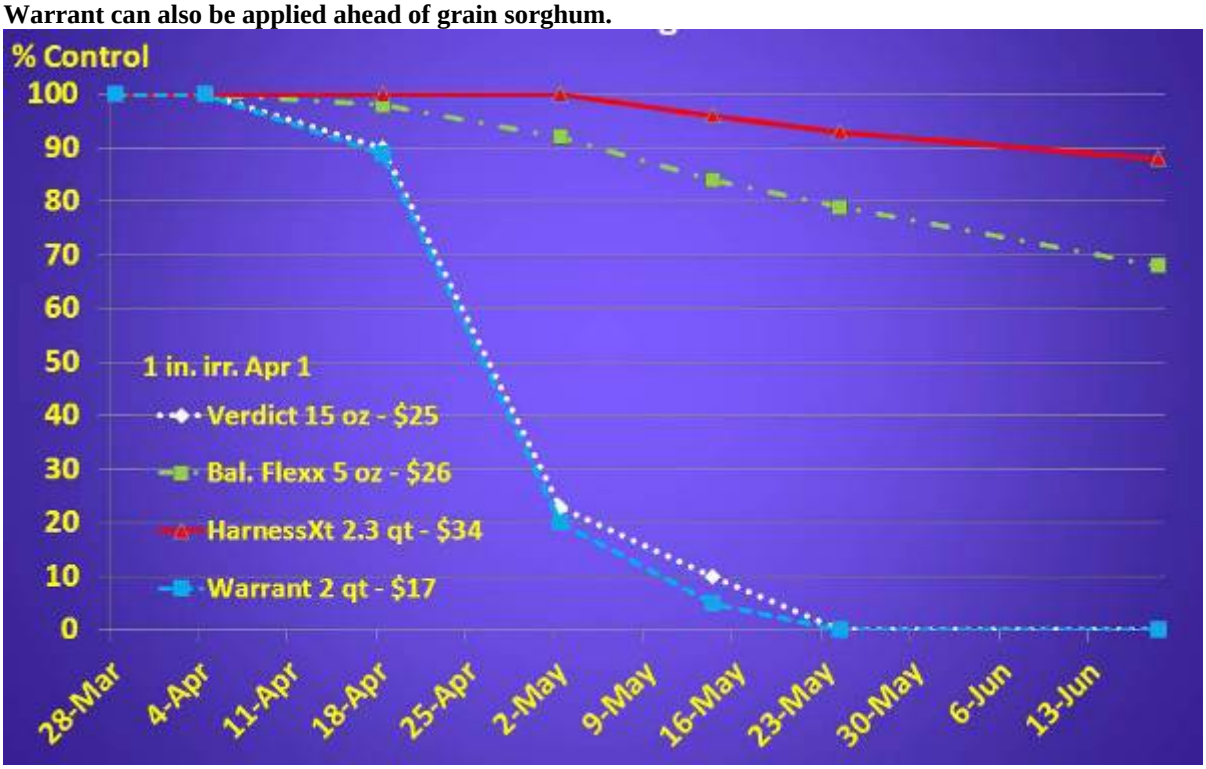


Figure 3. Shorter residual herbicide options for Early Preplant control of kochia. Treatments were applied March 22, 2011, at Tribune under irrigation.

Figure 4. Early Preplant treatments applied March 16, 2012 for kochia control at Tribune under irrigation. Atrazine and Clarity can be used ahead of corn or sorghum. Metribuzin can be used ahead of soybeans or wheat. Clarity used alone had less residual control than treatments that include atrazine or metribuzin. This population of kochia was susceptible to triazine herbicides.

Fields going to sunflowers this spring

It is important to plant sunflower into a weed-free seedbed. This will help in getting good season-long control of all broadleaf and grassy weeds. But it is especially important for getting good control of any weed populations, such as kochia, that are resistant to glyphosate or ALS-inhibitor herbicides.

The best approach to kochia control in sunflower is to start in March with a tankmix of glyphosate (using a minimum of 0.75 lb ae/are) and Spartan (sulfentrazone) or Spartan Charge (sulfentrazone+Aim). The sulfentrazone will provide excellent preemergence control of kochia ahead of sunflower planting. Figures 5 and 6 indicate that 6 oz of Spartan controlled kochia very effectively in the Tribune experiments. It is very possible that as little as 4 oz could have done a similar job at the Tribune location. Monitor the field closely as additional glyphosate or Gramoxone SL treatments maybe required prior to sunflower planting. Select PRE emergence products that are effective on kochia and apply at planting to extend control of kochia and other weeds.

Figure 5. Spartan 4F at 6 oz/acre gave longer residual control of kochia than Tripleflex at 1 qt/acre or Valor SX at 3 oz/acre. Herbicides were applied March 22, 2011 at Tribune under irrigation.

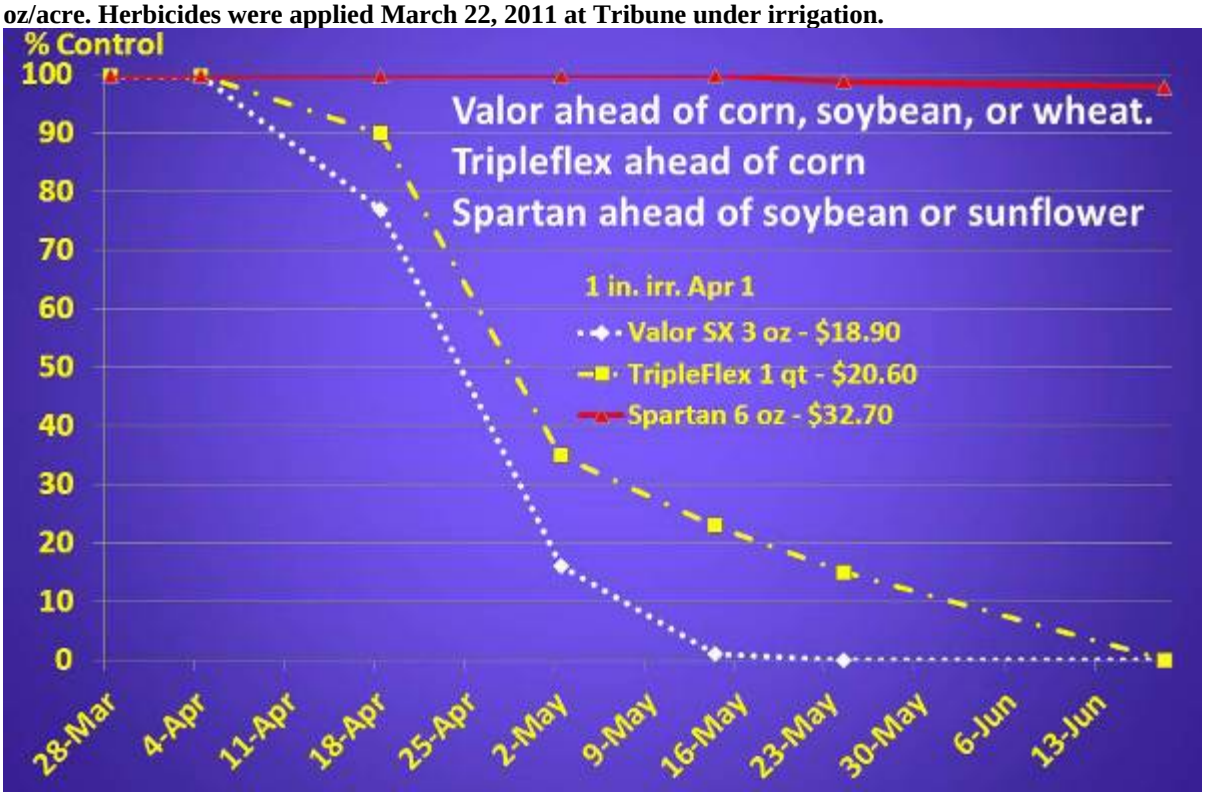
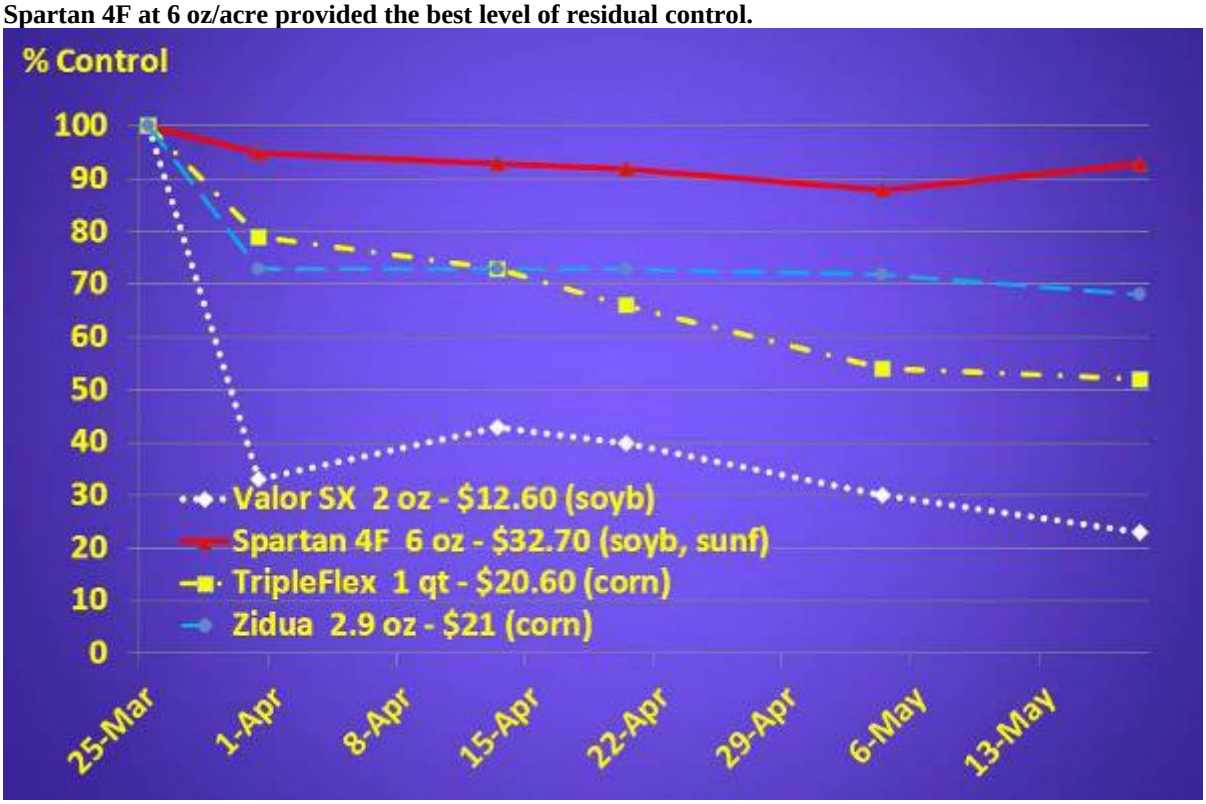


Figure 6. Early preplant treatments for control of kochia, applied March 16, 2012 at Tribune under irrigation. Spartan 4F at 6 oz/acre provided the best level of residual control.



Fields going to soybeans this spring

The best management strategy for controlling kochia in soybeans is similar to sunflowers, but there are more herbicide options in soybeans than in sunflower. Start in March with a tankmix of glyphosate (using a minimum of 0.75 lb ae/are) and 8 to 16 oz/acre of Clarity. The use of Clarity requires a minimum accumulation of 1 inch of rain and then 28 days prior to planting soybeans. As indicated in the label, Clarity should not be used as a preplant treatment in soybeans in areas with less than 25 inches of annual precipitation.

Gramoxone Inteon tankmixed with metribuzin (Dimetric, Metribuzin, Sencor) will control the very small kochia, and metribuzin will provide extended residual control of kochia, as long as the population of kochia is susceptible to triazine herbicides.

Figure 4 (above) shows the effectiveness of a full pound of metribuzin. It is very likely that a lower rate of metribuzin would also be very effective to provide residual kochia control in western Kansas, if the population of kochia is susceptible to triazines. Metribuzin can injure soybeans depending on soil texture, organic matter and soil pH, so be sure to follow label guidelines regarding soil characteristics and rate guidelines regarding use on soybeans.

Authority-based herbicides that contain sulfentrazone could be considered for use in March to manage an early flush of kochia. It's important to note crop rotation restrictions on these products, however. The Valor-based products have provided less effective control of kochia (see Figures 5 and 6 above).

Fields going to wheat this fall

If kochia is emerging in row crop stubble intended to be planted to wheat this fall, herbicide options exist that provide residual kochia control. Atrazine should not be used in this situation, however. The following herbicides could provide effective residual control of kochia for fields to be planted to wheat this fall: Dicamba, Metribuzin or Dimetric (Dimetric label indicates ½ to 2/3 of a pound), Corvus, Balance Flexx, or Lumax. These products allow wheat to be planted 4 months following application.

Fields of standing wheat

If kochia is emerging in a field of standing wheat, the options for control depend on whether the population of kochia is susceptible or resistant to ALS-inhibitor herbicides and whether or not, wheat has reached the jointing stage. There are three big challenges to kochia control in wheat:

* There are many populations of kochia with resistance to either ALS-inhibitor herbicides, or glyphosate. There may even be some populations resistant to dicamba.
* A majority of kochia emerges early in the spring, but some emergence can extend over a period of weeks or months. A herbicide applied early in the spring will need to have residual activity to be effective on later-emerging kochia. Several ALS-inhibitor herbicides have good residual activity, but are ineffective on ALS-resistant kochia.
* Dicamba, a non-ALS herbicide is one of the more effective products on most populations of kochia, but must be applied before the jointing stage of wheat.

Many populations of kochia present in wheat in western Kansas are resistant to ALS-inhibitor herbicides, however tank mixtures with dicamba and Starane can be very effective to control kochia. In general, 2,4-D, MCPA, Aim, and Cadet, are not very effective on the vast majority of kochia currently present in western Kansas.

Additional products containing dicamba, include Rave (Amber + dicamba) or Pulsar (Starane + dicamba). These products have to be applied before the jointing stage of wheat. Dicamba has some residual soil activity, but not as much as most sulfonylurea herbicides. Rave will have residual activity from the Amber, but since Amber is a sulfonylurea herbicide, it would not provide any residual control of kochia populations that are resistant to ALS-inhibitor herbicides. Both ingredients in Pulsar have limited residual activity.

Another option producers have for kochia control is Starane or other fluroxypyr products. Like dicamba, Starane is a growth regulator herbicide, but it can be applied up to the early boot stage of wheat. Starane also has limited residual activity, so good coverage is still important for control. Starane is weak on mustard control.

Huskie is also effective on kochia. It is a broad-spectrum herbicide effective on most broadleaf weeds in wheat, and can be applied up to the boot stage of wheat. Huskie also has limited residual activity, so producers will need to make sure kochia plants are thoroughly covered with Huskie to get the best control. Ideally, the Huskie should be timed for application after the majority of kochia has emerged, but before the wheat canopy has become thick.

Buctril can control kochia and can be applied at later stages of wheat development, but is a contact herbicide with no soil residual activity. Consequently, Buctril has similar challenges as Starane and Huskie in terms of getting good coverage. Getting thorough coverage is even more critical with Buctril since it is a true contact herbicide and not translocated in plants. Buctril is effective on very small kochia only.

Summary

Kochia control should begin early, regardless of whether the field is currently in row crop stubble, fallow, or standing wheat. To begin control strategies in mid- to late-April on glyphosate-resistant kochia is risky and most likely will not be successful.

Burndown applications with glyphosate or paraquat, tankmixed with the residual herbicides discussed above, can be effective on the small kochia plants that have recently emerged. The level of residual control will depend on getting precipitation or irrigation to properly activate the herbicides. Also, the level of residual control from atrazine will depend on whether the population of kochia is susceptible or resistant to atrazine.

The burndown treatment should be followed by an effective preemergence herbicide application. Use atrazine as part of the preemergence mix on fields that will be planted to corn or sorghum. For fields that will be planted to corn, atrazine with Corvus or Balance Flexx will provide good residual control of kochia. Corvus or Balance Flexx with metribuzin can also be used to effectively control kochia on fields intended for wheat planting this fall.

For fields that will be planted to soybeans or sunflower, use a product containing sulfentrazone (such as Spartan, Spartan Charge, Authority MTZ (soybeans only), Authority XL (soybeans only), or Authority Assist (soybeans only). Any of these herbicides will be effective as a preemergence treatment for kochia. Be sure to review crop rotation restrictions for each of the Authority products.

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2. Early season wheat disease update

March is an important month for wheat disease development in Kansas. This statement may surprise some of you, because the wheat is only just greening up in some areas of the state.

As it turns out, February and March are important because we often receive our first reports of disease activity from states to our south. This is particularly relevant for the rust diseases, which often survive the winter in these southern climates.

So far this year there are several reports of rust developing in Texas, Arkansas, Louisiana, and Mississippi. Stripe rust has been observed in all four states and appears to be spreading beyond the initial foci of infection. Leaf rust has been reported in Texas but not the other states.

The reports of stripe rust and leaf rust from Texas are the most important for us, because weather systems often transport the rust spores from these regions into Oklahoma and Kansas. Varieties such as Everest, Armour, and TAM 111 are being affected in Texas this year. This is similar to what was observed in 2012 and there are no reports of new races of stripe rust to date.

Bob Hunger, wheat disease specialist for Oklahoma State University, is reporting no finds of rust in Oklahoma as of March 21. Growers in Kansas should be monitoring the situation in Texas and Oklahoma. If the disease continues to develop in Texas or is reported in Oklahoma, we will need to evaluate the need for fungicides to suppress rust development in fields planted to susceptible varieties.

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3. Wheat and Canola In-Depth Diagnostic School in Garden City, May 8-9

The Southwest Research and Extension Center (SWREC) will hold its 2013 Wheat and Canola In-Depth Diagnostic School on May 8 and 9 at the Center, 4500 E. Mary St. in Garden City. On May 8, the hours are from 8 a.m. until 5 p.m. On May 9, the school begins at 7:30 a.m. and ends at 1 p.m.

Topics and presenters will include:

- Aerial Imagery and Crop Scouting
  - By Kevin Price
- Canola Production
  - By Mike Stamm
- Commercial Pesticide License Recertification Core-hour
  - By Kansas Department of Agriculture
- Crop Growth, Development, and Staging
  - By Doug Shoup, Stu Duncan, and Jeanne Falk
- Enhanced Efficiency Fertilizers and Methods
  - By Dave Mengel and Dorivar Ruiz-Diaz
- Entomology
  - By JP Michaud and Sarah Zukoff
- Fertilizer Rate and Placement
  - By Dorivar Ruiz-Diaz and Dave Mengel

- Seeding Management and Tillage
    - By Kraig Roozeboom, Jeanne Falk, and Stu Duncan
- Weed Control and Crop Herbicide Injury
    - By Curtis Thompson, Dallas Peterson, and Randall Currie
- Weed Identification
    - By Dallas Peterson, Curtis Thompson, and Randall Currie
- Wheat and Canola Diseases
    - By Erick DeWolf

The school has approval for 11 hours of CCA Continuing Education credits, 5 hours of Commercial Pesticide Applicator credits, and 1 Commercial Pesticide Applicator core hour. This school is open to everyone interested in wheat and canola production. The cost is $100 for both days for those who RSVP by May 1. After that date, the cost is $125 for both days.

To register for the school, contact Ashlee Wood at 620-276-8286 or awood22@ksu.edu. For more information, contact John Holman at 620-276-8286 or jholman@ksu.edu.

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4. Comparative Vegetation Condition Report: March 5 – 18

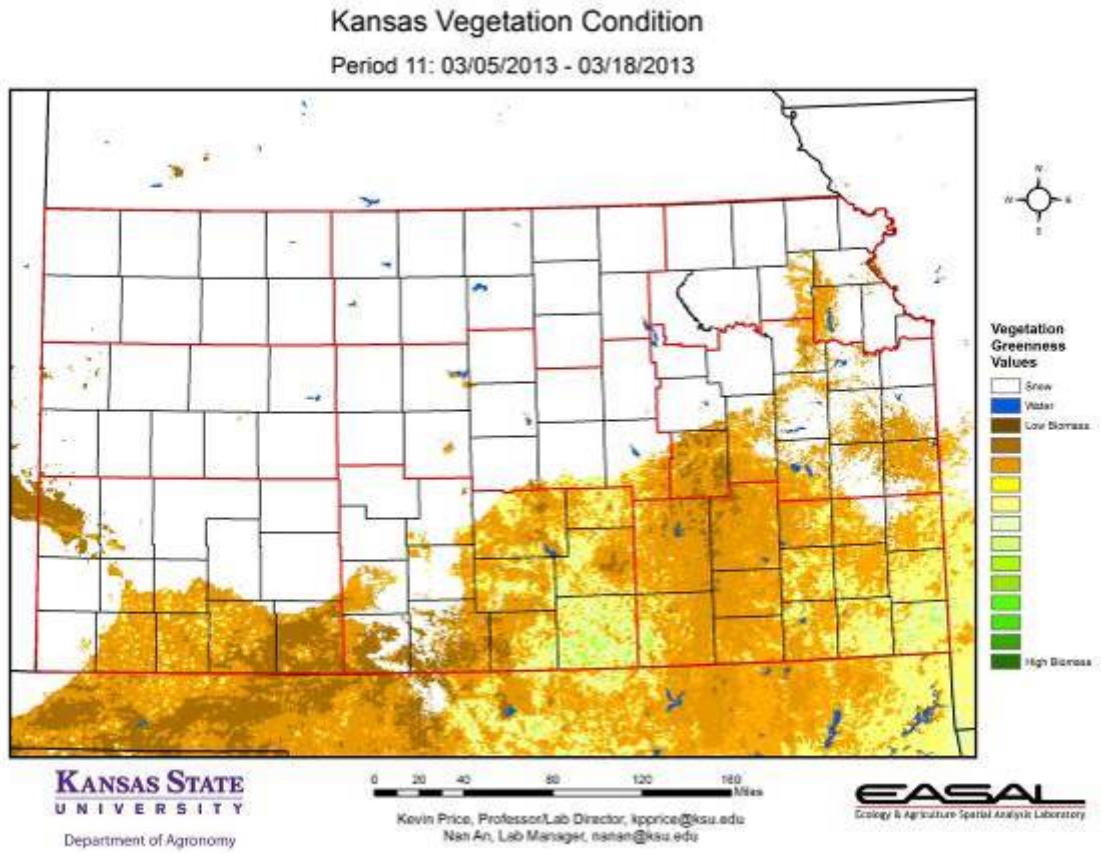
K-State's Ecology and Agriculture Spatial Analysis Laboratory (EASAL) produces weekly Vegetation Condition Report maps. These maps can be a valuable tool for making crop selection and marketing decisions.

Two short videos of Dr. Kevin Price explaining the development of these maps can be viewed on YouTube at:
http://www.youtube.com/watch?v=CRP3Y5NIggw
http://www.youtube.com/watch?v=tUdOK94efxc

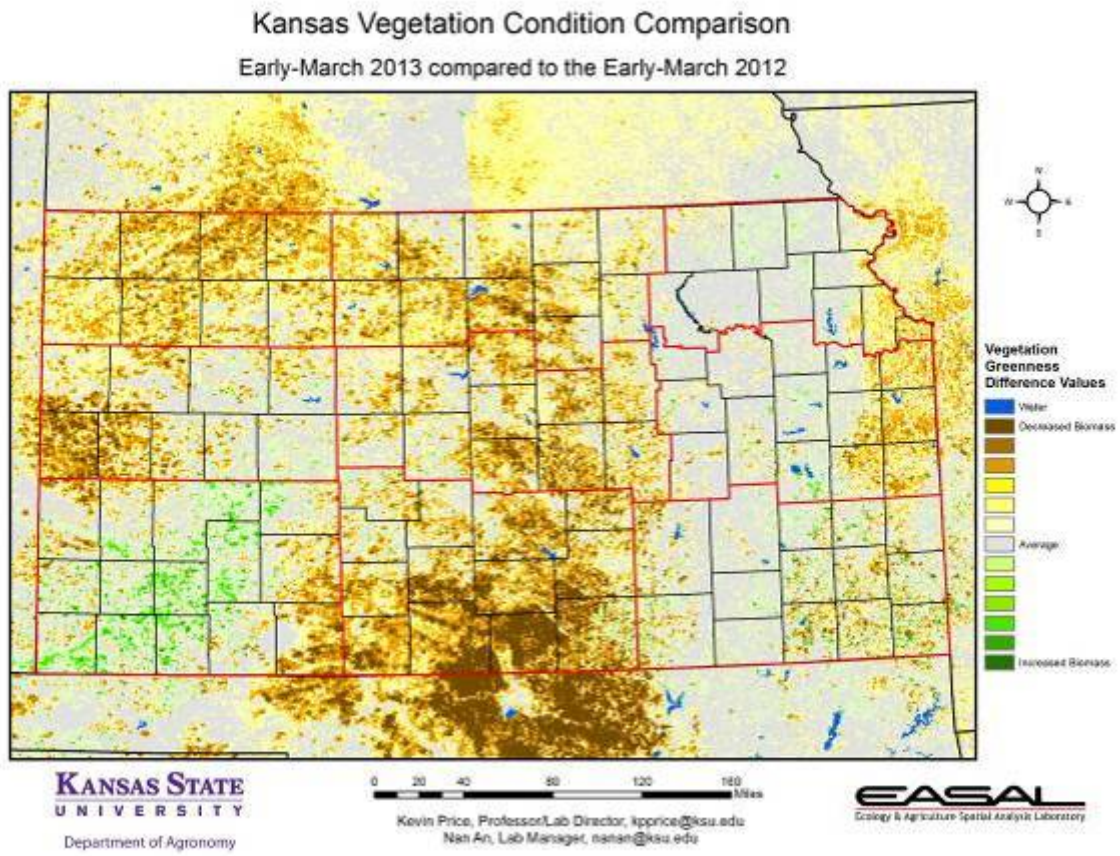
The objective of these reports is to provide users with a means of assessing the relative condition of crops and grassland. The maps can be used to assess current plant growth rates, as well as comparisons to the previous year and relative to the 24-year average. The report is used by individual farmers and ranchers, the commodities market, and political leaders for assessing factors such as production potential and drought impact across their state.

NOTE TO READERS: The maps below represent a subset of the maps available from the EASAL group. If you'd like digital copies of the entire map series please contact Kevin Price at kpprice@ksu.edu and we can place you on our email list to receive the entire dataset each week as they are produced. The maps are normally first available on Wednesday of each week, unless there is a delay in the posting of the data by EROS Data Center where we obtain the raw data used to make the maps. These maps are provided for free as a service of the Department of Agronomy and K-State Research and Extension.

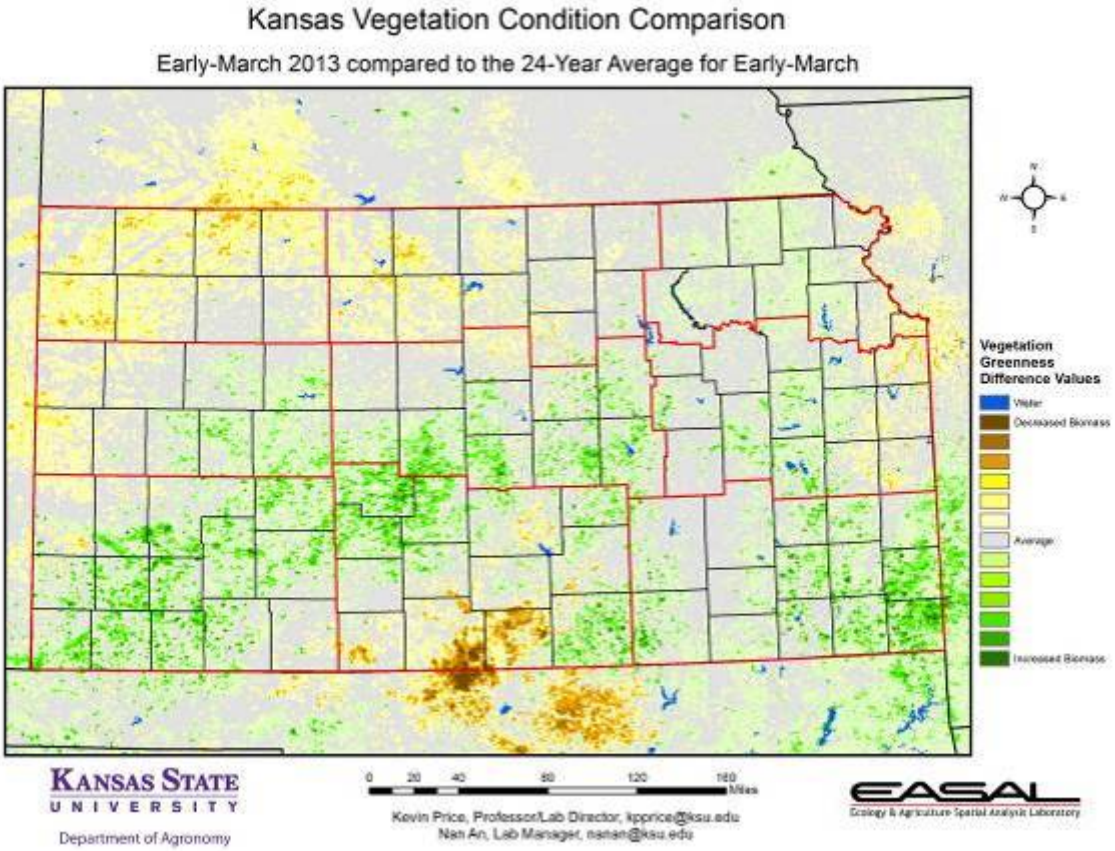
The maps in this issue of the newsletter show the current state of photosynthetic activity in Kansas, the Corn Belt, and the continental U.S, with comments from Mary Knapp, state climatologist:



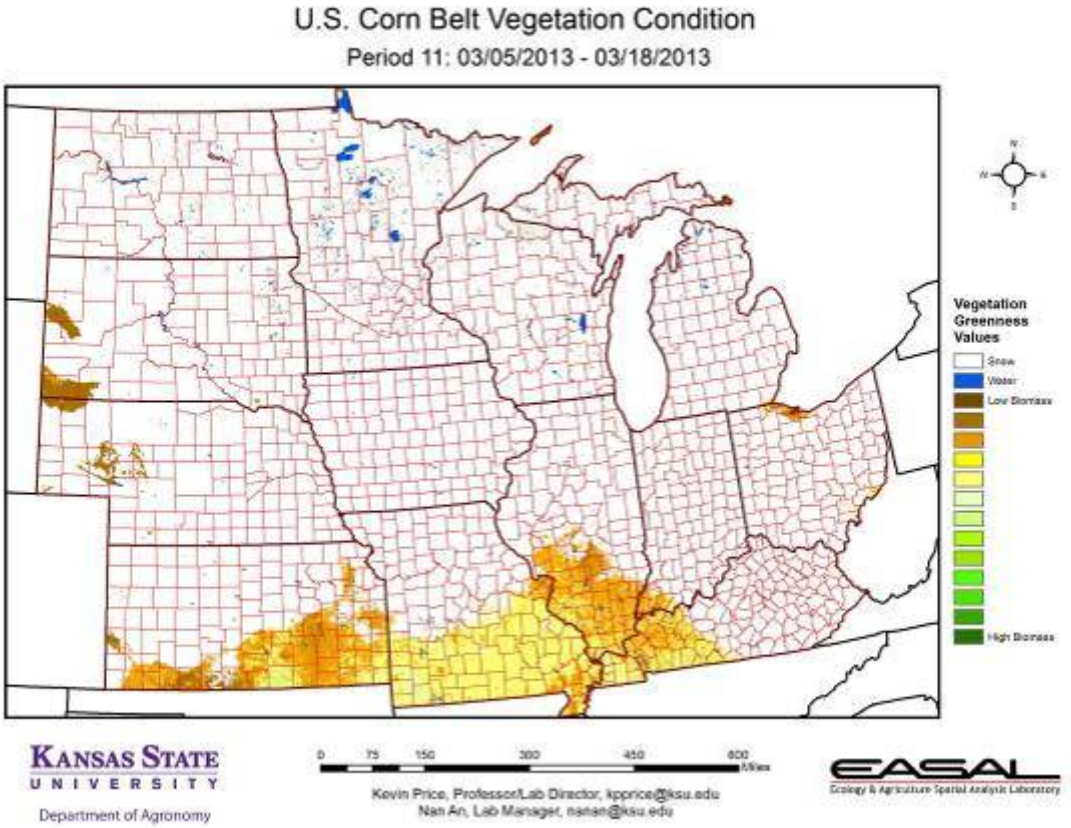
Map 1. The Vegetation Condition Report for Kansas for March 5 – 18 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that during this period snow was confined more to the northern areas of the state. Most of that snow cover had melted by the end of the period. Temperatures continue to run below average, except in the western third of the state. The warmest area during this period was the southwest, which averaged 2.3 degrees F above normal for the period.



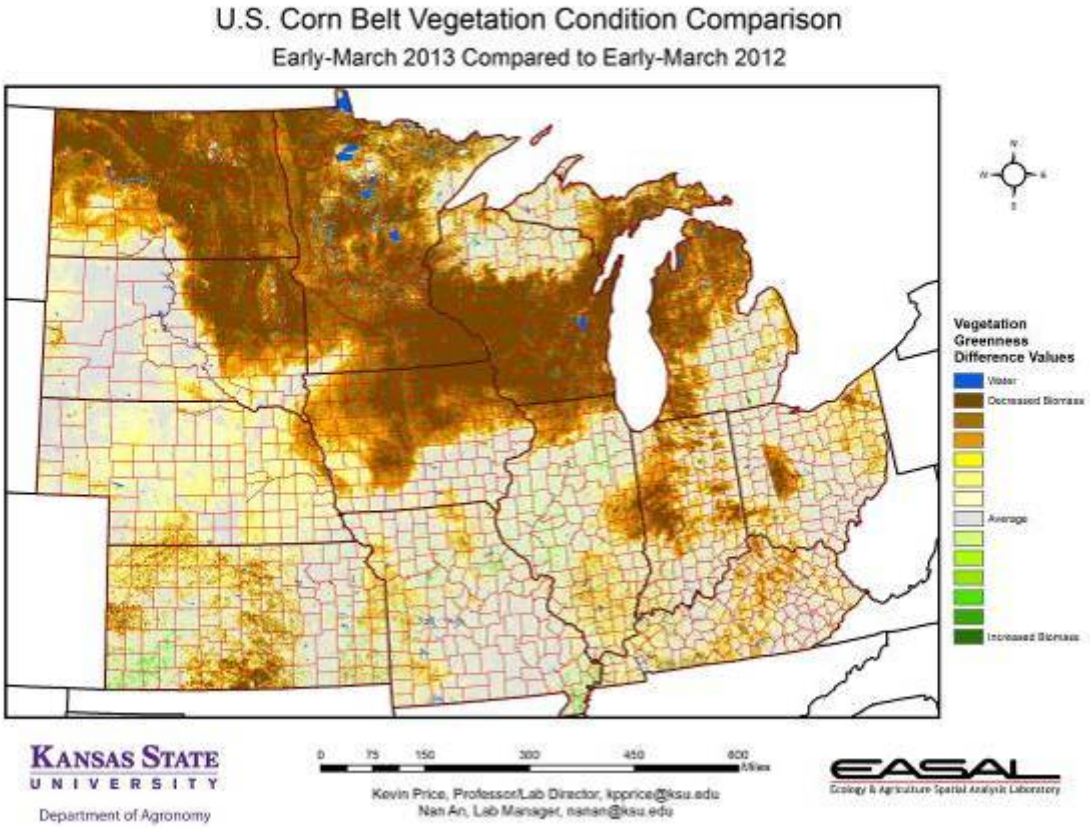
Map 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for September March 5 – 18 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the Southwestern division has the greatest increase in photosynthetic activity. The South Central division has much lower moisture available than last year at this time and this has resulted in much lower biomass production.



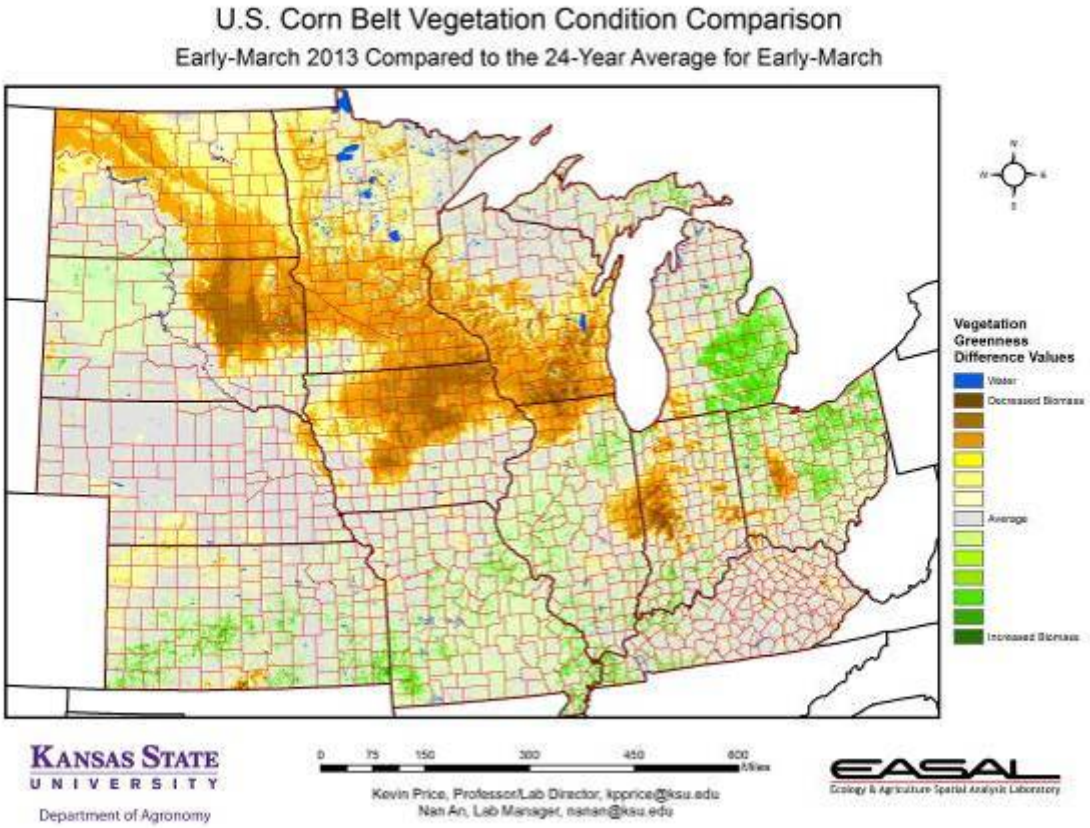
Map 3. Compared to the 24-year average at this time for Kansas, this year's Vegetation Condition Report for March 5 – 18 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows a streak of above-average photosynthetic activity from southwest to central Kansas. This follows the line of higher moisture. It is repeated in extreme southeast Kansas, which also has had favorable moisture in February. Limited moisture in March has been somewhat offset by cooler-than-average temperatures in the period.



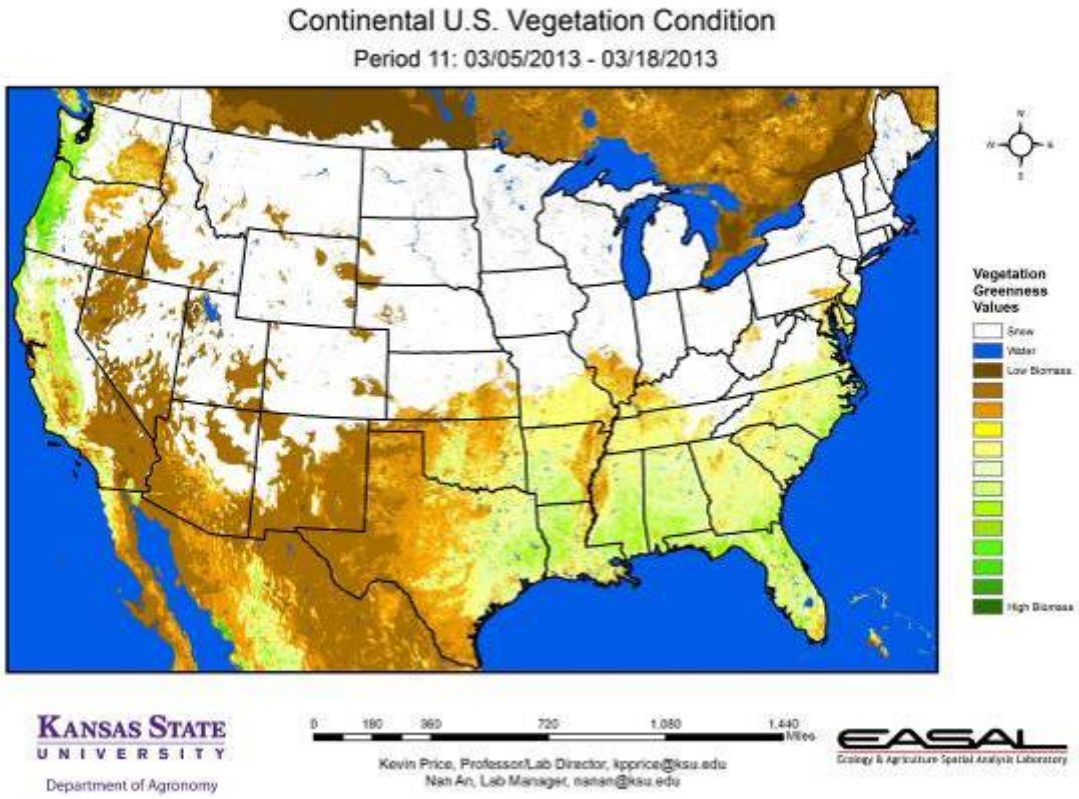
Map 4. The Vegetation Condition Report for the Corn Belt for March 5 – 18 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that snow has favored all but the extreme southern areas of the region. By the end of the period, only pockets of snow cover remained in all but the northernmost areas.



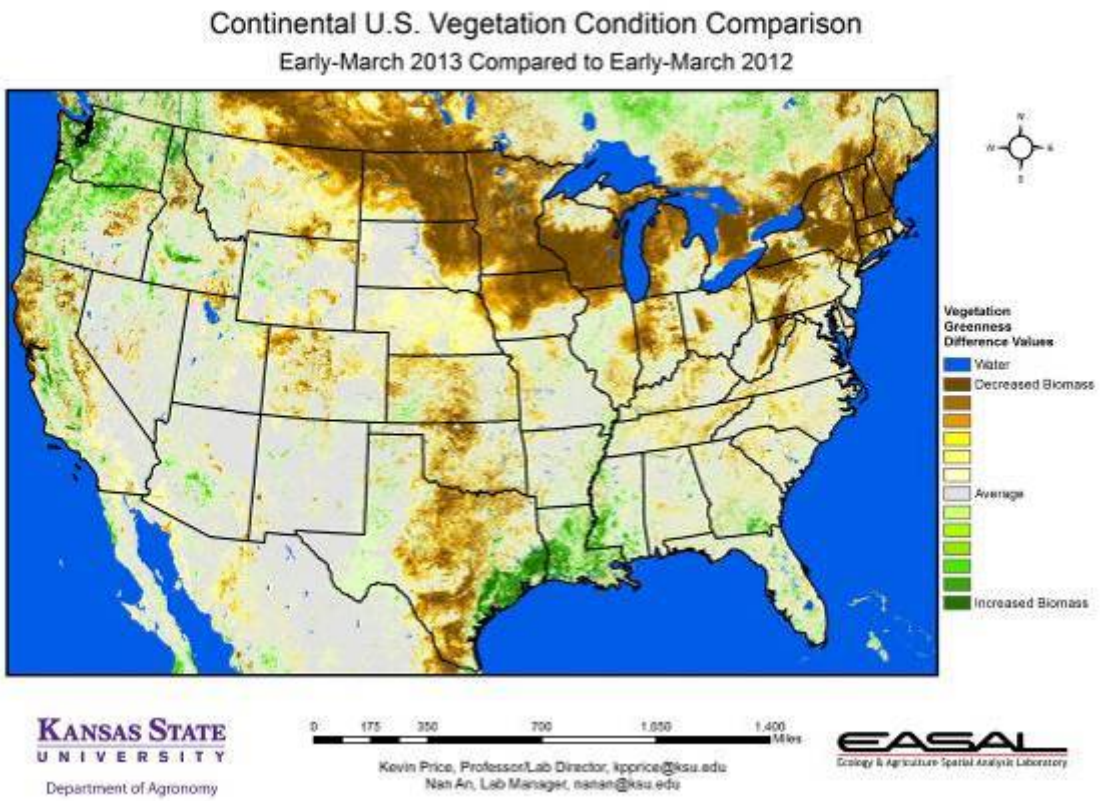
Map 5. The comparison to last year in the Corn Belt for the period March 5 – 18 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows the biggest departure in photosynthetic activity is across northern areas of the region. Temperatures have been much cooler than last year, and snow cover has been more persistent. This has limited vegetative activity.



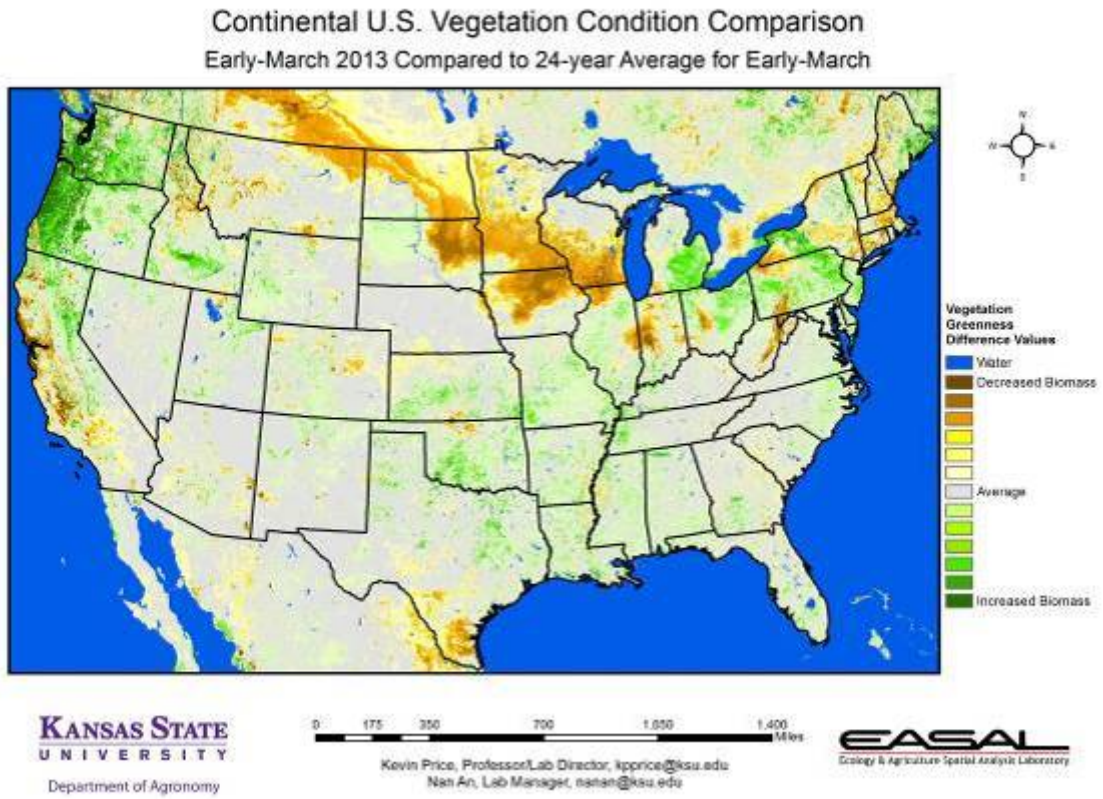
Map 6. Compared to the 24-year average at this time for the Corn Belt, this year's Vegetation Condition Report for March 5 – 18 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that photosynthetic activity has been most limited in the northern areas of the region. Due to lingering drought and cooler-than-average temperatures in early March, plant development has been limited.



Map 7. The Vegetation Condition Report for the U.S. for March 5 – 18 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that snow cover persists across the northern half of the region.



Map 8. The U.S. comparison to last year at this time for the period March 5 – 18 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the Northern Plains have much lower productivity. Improved conditions are present in southeastern Texas and Louisiana.



Map 9. The U.S. comparison to the 24-year average for the period March 5 – 18 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that below-average photosynthetic activity is prevalent in the Upper Midwest, particularly eastern South Dakota, Minnesota, and southern Iowa. There is a region of above-average biomass productivity along the Pacific Northwest.

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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, Jim Shroyer, Crop Production Specialist 785-532-0397 jshroyer@ksu.edu, or Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.