



K-STATE
Research and Extension

Extension Agronomy

eUpdate

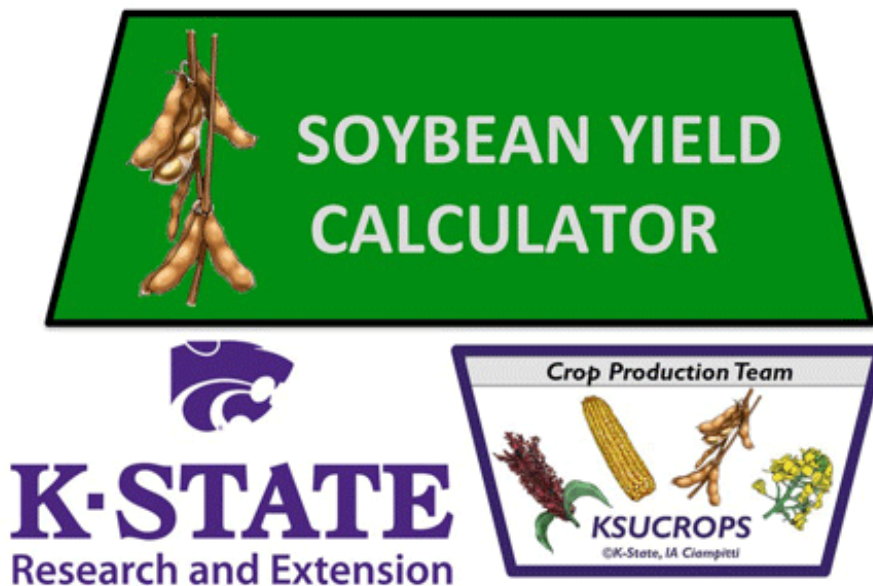
07/24/2015

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.

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1. New soybean yield calculator app from K-State

A new app for estimating soybean yields is now available from K-State Research and Extension. KSUSoyYieldCalc is a native Android application that helps with yield estimation of soybeans before harvest following the conventional approach of counting or estimating plant populations, pods per plant, seeds per pod, and seed size. This approach was explained in detail in a previous eUpdate article: https://webapp.agron.ksu.edu/agr_social/eu_article.throck?article_id=313



The soybean yield calculator has only four inputs for predicting the final yield:

1. Plant population (plants/acre). This component can be estimated by counting the number of plants in a 21-inch row length for 30" row spacings (1/10,000th of an acre), and by multiplying that number by 10,000. For example, 10 plants in the 21-inch length of row would be the equivalent of 100,000 plants per acre.
2. Pods per plant. This factor can be obtained by counting all pods per plant in the 21-inch row length.
3. Seeds per pod. A good average number is 2.5 seeds per pod, but the range available on the app is from 1 to 4 seeds per pod.
4. Seed size. Seed size typically ranges from 2,000 (large) to 3,500 (small seeds) seeds/lb, with an average of 2,800 seeds/lb.

The last factor, seed size, is the same as the one presented in the "conventional approach." This factor normally varies from 2,400 to 3,200 seeds/lb. If the conditions until harvest will be favorable, then the seed size component should be a lower number (e.g., 2,400 seeds/lb). If conditions are likely to be unfavorable, resulting in a short seed-fill period, then this factor should be higher (e.g., 3,200 seeds/lb). This factor will be ultimately determined as the crop approaches maturity, but an estimation is needed considering the importance of this factor for influencing final soybean yields.

Here is one example of how to use this app:

INPUTS:

1. Plant population: 13 plants (measured at 12 sites within the field) in 21-inch row length x 10,000 = 130,000 plants/acre (measure 1 row for 30" row spacing; 2 rows for 15"; and 4 rows for 7.5" row spacing)
2. Pods per plant: 24 pods per plant, averaged over the number of plants counted
3. Seeds per pod: 2.5 seeds per pod (estimation)
4. Seed size: 3,000 (assuming "normal" conditions during seed-fill period)

OUTPUT:

Final yield estimation: 43 bu/acre

21°



77%



09:29

KSUSoy YieldCalc



Plant Population (pl/acre)

130000

Pods Per Plant (pods/pl)

25

20

32

18

28

20

34

16

29

0

Seeds per Pod (seed/pod)

2.5

Seed Size (seeds/lb)

3000

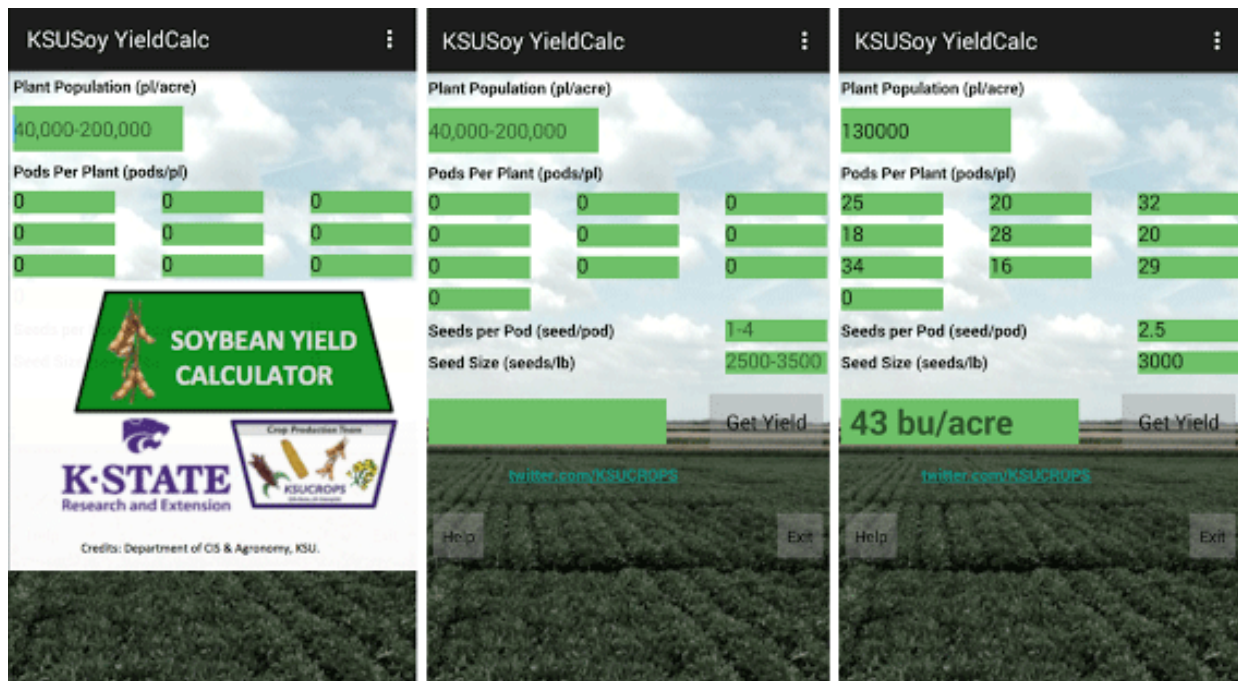
43 bu/acre

Get Yield

twitter.com/KSUCROPS

Help

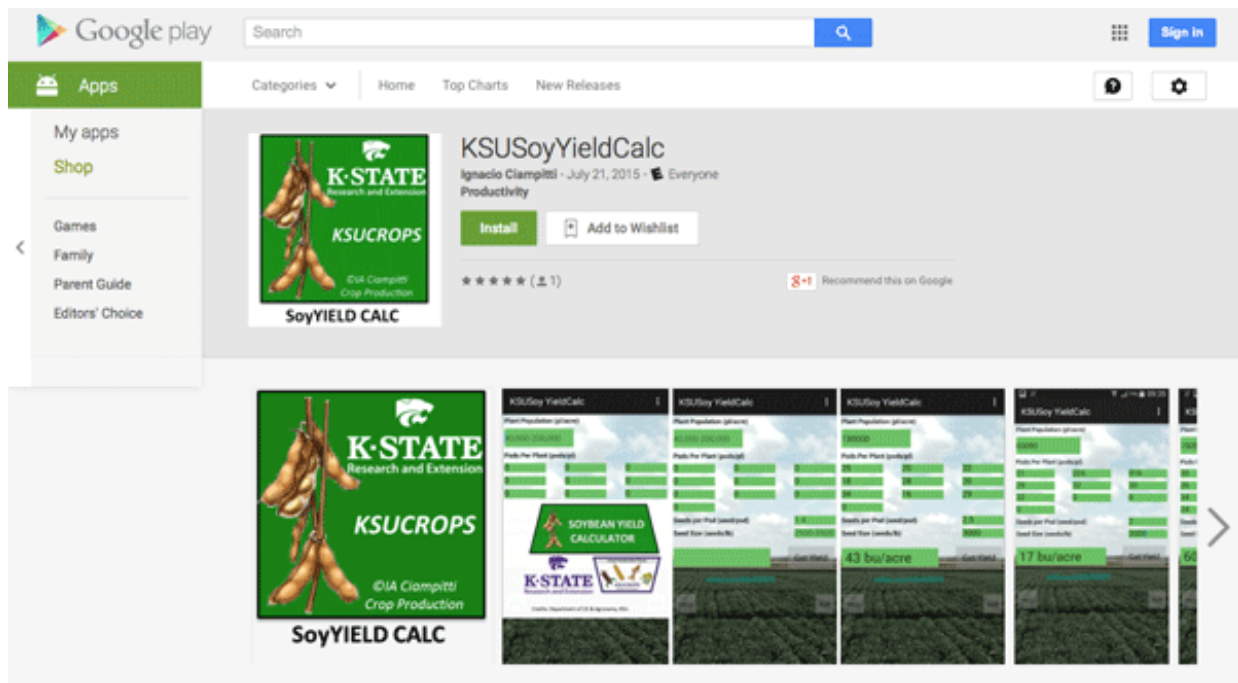
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The coding for the KSUSoy YieldCalc app was developed by Tania Bandyopadhyay, Department of Computing and Information Sciences (CIS) graduate student, under the supervision of Dr. Dan Andresen, Department of CIS, in combination with Dr. Ignacio Ciampitti, Department of Agronomy. Credits: Departments of CIS and Agronomy, K-State. Downloads are free. You can download from the Google Play link:

<https://play.google.com/store/apps/details?id=com.ksu.tania90.soya1&hl=es>

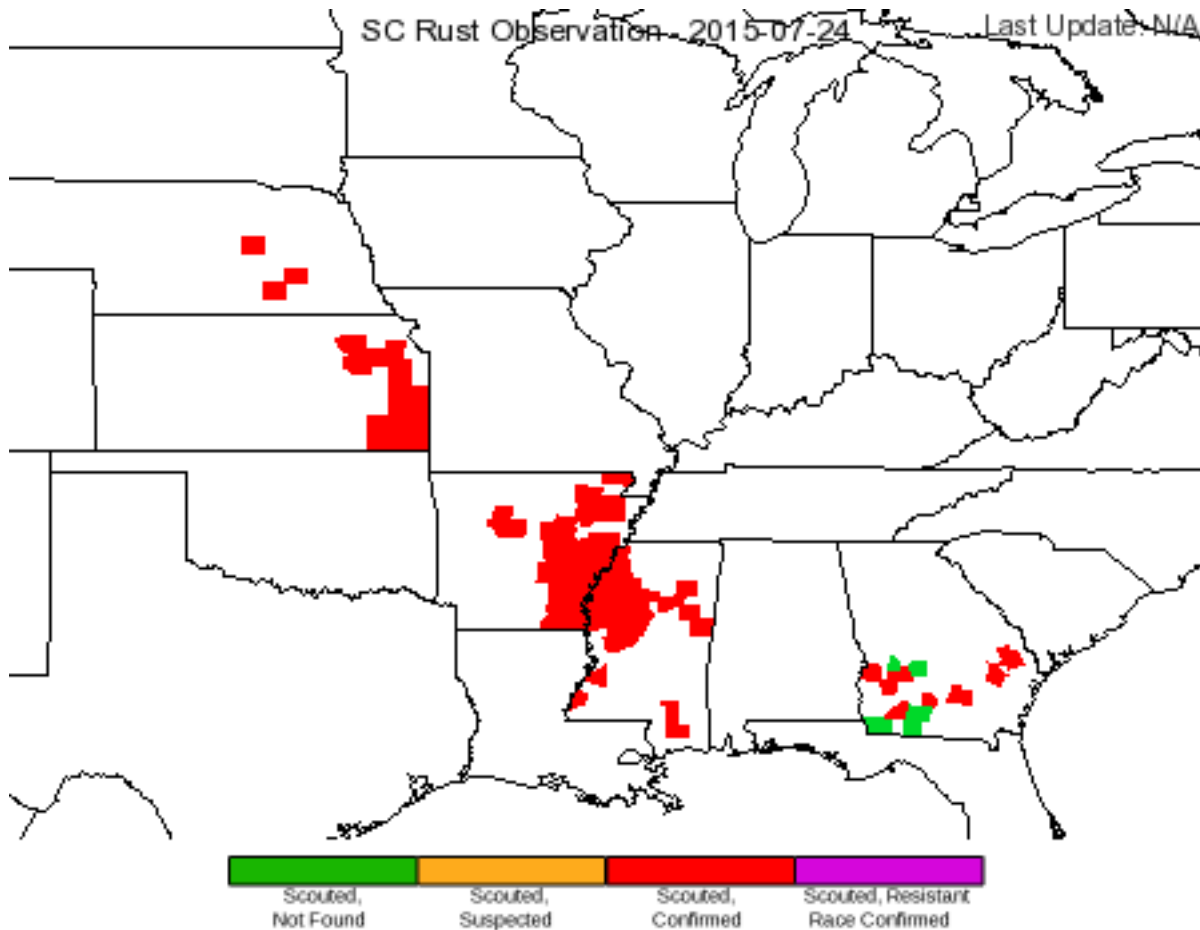
Go to the above link or search for "soybean yield" within the Google Play website and download the application.



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2. Southern rust alert on corn! / Gray leaf spot update

Southern rust is now active on corn in Kansas and Nebraska (see map below). This disease normally arrives in Kansas around the first of August, but in 2015 it has likely been in the state since July 1. This combined, with very late corn planting in many areas of the state, increases the threat that this disease could cause significant yield loss problems in 2015. How severe it could become is related to the weather. As of now, the 30-day forecast would suggest that weather will be favorable for the disease. Southern rust likes 90-degree days and high humidity.



Symptoms of southern rust include pustules that are usually circular to oval, with a diameter of 0.2 to 2.0 millimeters. They typically are densely scattered on the upper leaf surface (Figures 1 and 2). Occasionally pustules can be seen on the underside of the leaf near the midrib; however they are usually confined to the top side of the leaf.

Sporulation can be so profuse that the leaf surface becomes covered with a layer of "spore dust" that transfers easily to clothing as a person walks through an infected field. Light-colored clothing will quickly take on an orange-brown color. Southern rust can sometimes be confused with common

rust. For more information on identify corn rusts see K-State Research and Extension Bulletin MF3016, [Corn Rust Identification and Management in Kansas](#).



Figure 1. Southern rust on corn. Photo courtesy of Doug Jardine, K-State Research and Extension.



Figure 2. Close-up of southern rust on corn. Photo courtesy of Tom Allen, Mississippi State University.

Fields that have been sprayed for gray leaf spot should be protected from southern rust as well for three to four weeks after application. Fields that have not received a fungicide application at tasseling should be regularly monitored for the build-up of southern rust. Fungicide applications as late as hard dough have been reported to provide economic returns in some instances. Most of the commonly used corn fungicides will provide adequate protection against southern rust.

Gray leaf spot update

Gray leaf spot continues to develop in many areas of the state. A corn field near Rossville, in Shawnee County, had gray leaf spot lesions on the ear leaf +3 and was only at the R2 stage of development. Active scouting for gray leaf spot on late-planted corn fields is encouraged. While the optimum time to apply fungicides for gray leaf spot is between tasseling and brown silk, later applications during the R2 stage of development when disease pressure is severe can still provide a good economic return on investment. The 10-day weather forecast is less favorable for gray leaf spot development, but scouting is encouraged.

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3. Sugarcane aphids: A potential threat to grain sorghum in Kansas

Producers in southern Kansas should start scouting their grain sorghum fields for the sugarcane aphid. As of last week, this relatively new pest had spread quickly from Texas into the northern Oklahoma counties of Noble, Kay, and Grant. This means the aphid was on the Oklahoma-Kansas state line last week. It is very possible that the aphids have already moved northward into Kansas. Sustained southerly winds will make their arrival a virtual certainty.

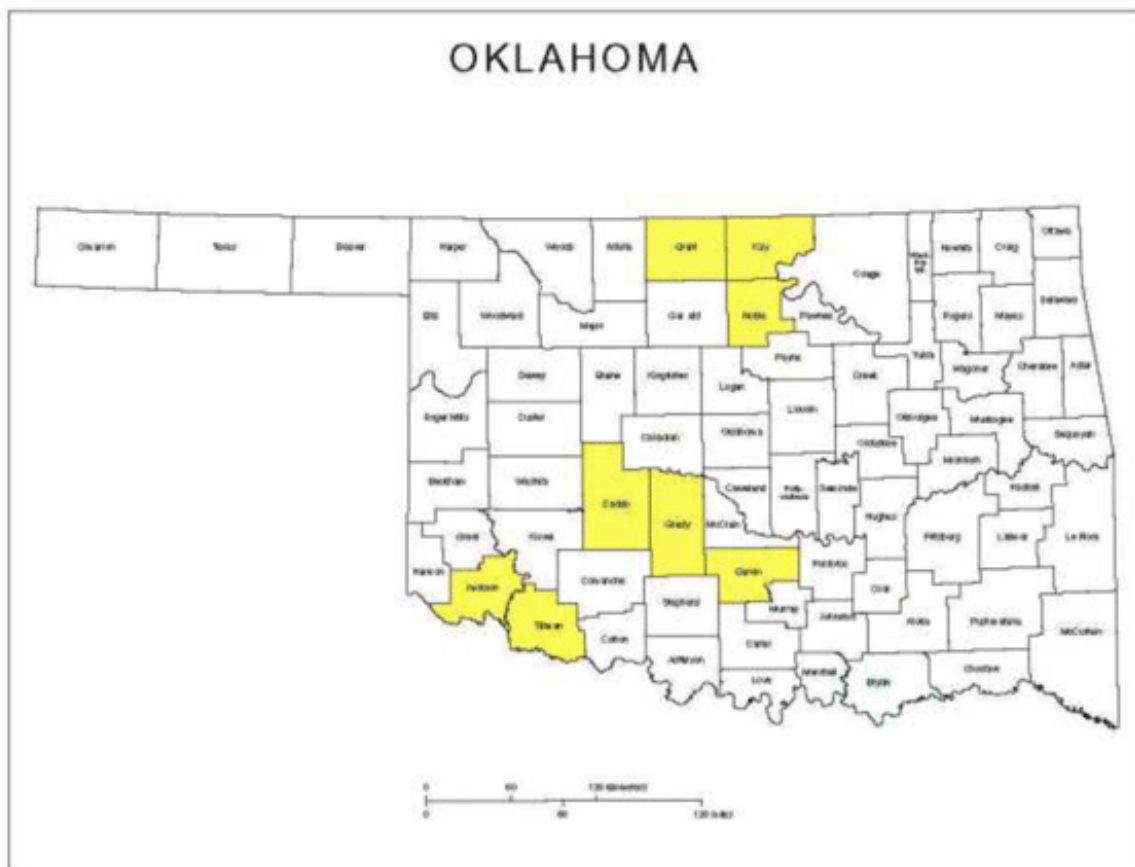


Figure 1. Counties in Oklahoma with confirmed infestations of sugarcane aphid on grain sorghum.



Figure 2. Sugarcane aphids on a sorghum leaf. Photo courtesy of J.P. Michaud, K-State Research and Extension.

The sugarcane aphid, *Melanaphis sacchari*, has been in the U.S. for quite a while as a minor pest of sugarcane in Florida and Louisiana. But in 2013 it suddenly began infesting sorghum fields and Johnsongrass in southern states. It has been confirmed in 12 southern states so far, and is likely to be confirmed in more states in the near future.

Much of what is known about this new pest comes from the southern states affected so far. A good publication is *Sugarcane Aphid, a New Pest on Grain Sorghum in Arkansas* from University of Arkansas Extension: <http://www.uaex.edu/publications/FSA-7087.pdf>

This aphid begins its infestation on the underside of sorghum leaves, multiplies rapidly, then moves onto other parts of the plant. The first thing you may notice is a glossy coating of a sticky honeydew on the leaves. Sooty mold can begin growing on this honeydew, which is the excrement of the aphids, and this black film on the leaves can reduce photosynthesis.

Entomologists and agronomists in southern states have found that a heavy infestation of the sugarcane aphid can kill grain sorghum plants or reduce or prevent head emergence, depending on the timing of the infestation. The aphids can also reduce grain size and grain quality. The bottom line is that this aphid can both reduce yields and lead to late-season lodging by killing plants prematurely. There can also be serious problems harvesting grain when aphids have feeding in the panicle during grain fill.

Effective control of sugarcane aphids in sorghum requires timely treatment of the aphid population before colonies become too large. To estimate the number of sugarcane aphids in a field and whether they require treatment, use the following sampling protocol:

- Once a week, walk 25 feet into the field and examine plants along 50 feet of row.
- If honeydew is present, look for sugarcane aphids on the underside of leaves above the honeydew.
- Inspect the underside of 2 leaves, one upper leaf and one lower leaf, from each of 15-20 plants per location.
- Sample each side of the field as well as sites near Johnsongrass and tall mutant plants.
- Check at least four locations per field for a total of 60-80 plants.

If no sugarcane aphids are present, or only a few wingless/winged aphids are on upper leaves, continue once-a-week scouting.

If sugarcane aphids are found on lower or mid-canopy leaves, begin twice-a-week scouting.

If the field average sugarcane aphid infestation is 50-125 aphids or more per leaf, apply an insecticide within 4 days and evaluate control after 3-4 days. Consider treatment at 50 aphids per leaf if the field will be scouted just once a week. Due to a very high rate of reproduction on susceptible sorghums, this aphid can build populations rapidly, and a small infestation can get out of control in less than a week.

If the sugarcane aphid is found, but the population level is below the threshold, continue scouting twice a week. It is important not to spray before threshold is reached, as this will provide an opportunity for aphid predators to control the population naturally, and also to increase their numbers. There is also the risk that, by spraying too early, additional applications may be required and the grower can run into limits on repeated applications of the more effective products.

Many insecticides labeled for use against aphids have proven largely ineffective for control of sugarcane aphids, but there are exceptions. Kansas has received "section 18" emergency registration for Transform (Dow Agrosiences) and Sivanto (Bayer CropScience). Both are highly systemic within the plant, have translaminar activity (they can kill an aphid on the opposing side of the leaf), and have been proven effective for controlling sugarcane aphid provided they are properly applied. This requires ground application in a large volume of water (10-20 gal/acre), preferably using drop nozzles. There is a limit of 2 applications of Transform on the same field in one year. Note also that aphids may require up to 48 hours to die, but this material has proven very effective and, significantly, quite safe for most aphid predators. Even so, continued weekly scouting is advised until grain is filled, as reinfestation can occur if winged aphids are still flying.

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4. Newly revised K-State publication on seed treatments for wheat now available

Fungicide seed treatments are an important part of wheat production in Kansas. Seed treatments can effectively manage seed-borne disease, such as common bunt, flag smut, and loose smut; generally improve stand establishment; suppress the development of root rot diseases; and inhibit the development of foliar diseases in the fall. Products containing insecticides also can reduce fall aphid populations.

Producers and others can get the latest information on seed treatments in the newly revised version of *Seed Treatment Fungicides for Wheat Disease Management 2015*, K-State Research and Extension publication MF2955 at: <http://www.bookstore.ksre.ksu.edu/pubs/MF2955.pdf>

Priorities for use of wheat seed treatment fungicides include:

1. Seed lots from fields known to have low levels of loose smut, flag smut, or common bunt.
2. Wheat intended for seed production in following years.
3. Seed lots that have low germination caused by seed-borne Fusarium or other fungi.
4. When adverse weather delays planting and necessitates planting wheat into cool/wet soils.

The newly revised version of this publication now includes information on the efficacy of various seed treatments on flag smut. Flag smut was found this year in parts of central and western Kansas for the first time since the 1930's. Flag smut is a concern because some countries have import restrictions on grain produced in areas where flag smut is known to occur.

Seed treatments are the most effective way to manage flag smut. For more information on this disease, see the new K-State Research and Extension publication *Wheat Flag Smut*, MF3235, at: <http://www.bookstore.ksre.ksu.edu/pubs/MF3235.pdf>

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5. On-farm research, dryland corn plot tour scheduled in Saline County July 27

K-State Research and Extension will be hosting a tour of farms in Saline County to view on-farm research plots and dryland corn plots.

The four producers on the tour have all participated in K-State's new on-farm testing program conducted by Ignacio Ciampitti, crop production and cropping systems specialist; Stu Duncan, northeast area Extension agronomist; and county Extension personnel such as Tom Maxwell, Central District crop production agent, and others.

On this tour, we will be demonstrating how we work with producers to help them design an on-farm test of plant populations, hybrids or varieties, nutrient rates, or other variables. And we'll talk about how we analyze the results after harvest for the producers.

Local Extension agents are an integral part of the on-farm testing program. The agents work closely with both the producers, area agronomists, and state specialists.

The local agents help ensure each of the on-farm tests is matched to what the individual producers wants. The goal is to get practical information on farming practices that producers use, and to make sure the results are in a user-friendly format and available to anyone who is interested.

The tour on July 27 will visit the farms and research plots set up in Saline County this year. The producers involved will be available to explain the program and talk about how it has been working for them.

Focus of the tour stops will be to highlight the on-farm research plots at each farm evaluating corn seeding rates and twin row vs. 30-inch row corn. A discussion at each stop will include dryland corn production and management practices, including seeding rates, and insect control.

Tour times and places:

8 a.m. at the Paul and Robert Karber Farm located 4 miles south of Gypsum on Gypsum Valley Rd., 1 mile west on Hobbs Creek Rd., then 1/4 mile south on Kipp Rd. An on-farm research plot featuring corn seeding rates of 18, 22 and 26,000 seeds per acre will be discussed.

9 a.m. at the Dwight Conley farm located ½ mile south of Gypsum on Gypsum Valley Rd. An on-farm research plot comparing twin row corn vs. 30-inch row corn at five different seeding rates will be discussed.

10 a.m. at the Justin Knopf farm located 1 mile north of Gypsum at the corner of Gypsum Valley Rd. and McReynolds Rd. An on-farm research plot featuring four corn seeding rates will be discussed.

11 a.m. at the Mark Pettijohn farm located approximately 2 miles south of Solomon on the blacktop and 1/2 mile east of the Barn Rd./ 2000 Avenue intersection in Dickinson County. An on-farm research plot featuring five corn seeding rates of 14, 18, 22, 26, and 30,000 seeds per acre will be discussed.

Speakers:

- Ignacio Ciampitti, Crop Production and Cropping Systems Specialist
- Stu Duncan, Northeast Area Extension Crops and Soils Specialist
- Jeff Whitworth, Extension Entomologist
- Tom Maxwell, Central Kansas District Extension Crop Production Agent

All interested persons are invited to attend any or all of the tour stops, no RSVP is needed.

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Tom Maxwell, Central Kansas District Agent

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6. East Central Experiment Field fall field day, August 20

The East Central Experiment Field in Ottawa will host its fall field day on Wednesday, August 19. The field day begins at 9 a.m. with registration, coffee and doughnuts, and the program starts at 9:30 a.m. A complimentary lunch will be served.

Field day topics and K-State presenters include:

- Benefits of Grid Soil Sampling – Dorivar Ruiz Diaz
- Cover Crops in Cropping Systems – DeAnn Presley
- Doublecrop Soybean Management – Ignacio Ciampitti and Doug Shoup
- High Yielding Wheat – Romulo Lollato

From I-35 at the Ottawa exit, the East Central Experiment Field is south 1.7 miles on Kansas Highway 59, then east 1 mile, and south 0.75 mile.

More information, including Certified Crop Advisor Credits, is available by contacting the East Central Experiment Field at 785-242-5616.

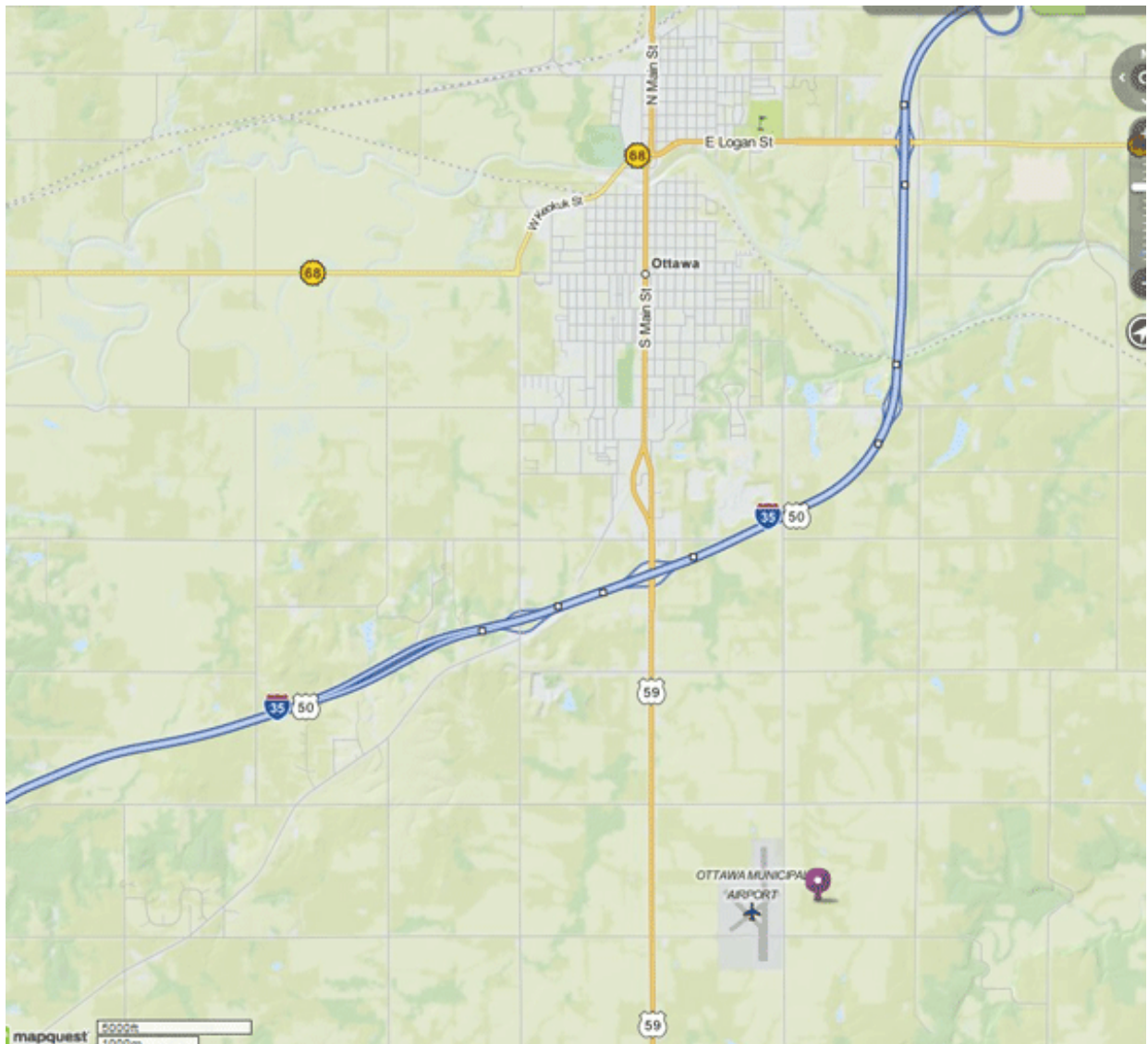


Figure 1. Location of East Central Experiment Field, south of Ottawa.

7. Comparative Vegetation Condition Report: July 7 - 20

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=CRP3Y5Nlggw>

<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 26-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 Nan An at nanan@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, assistant state climatologist:

Kansas Vegetation Condition

Period 29: 07/07/2015 - 07/20/2015

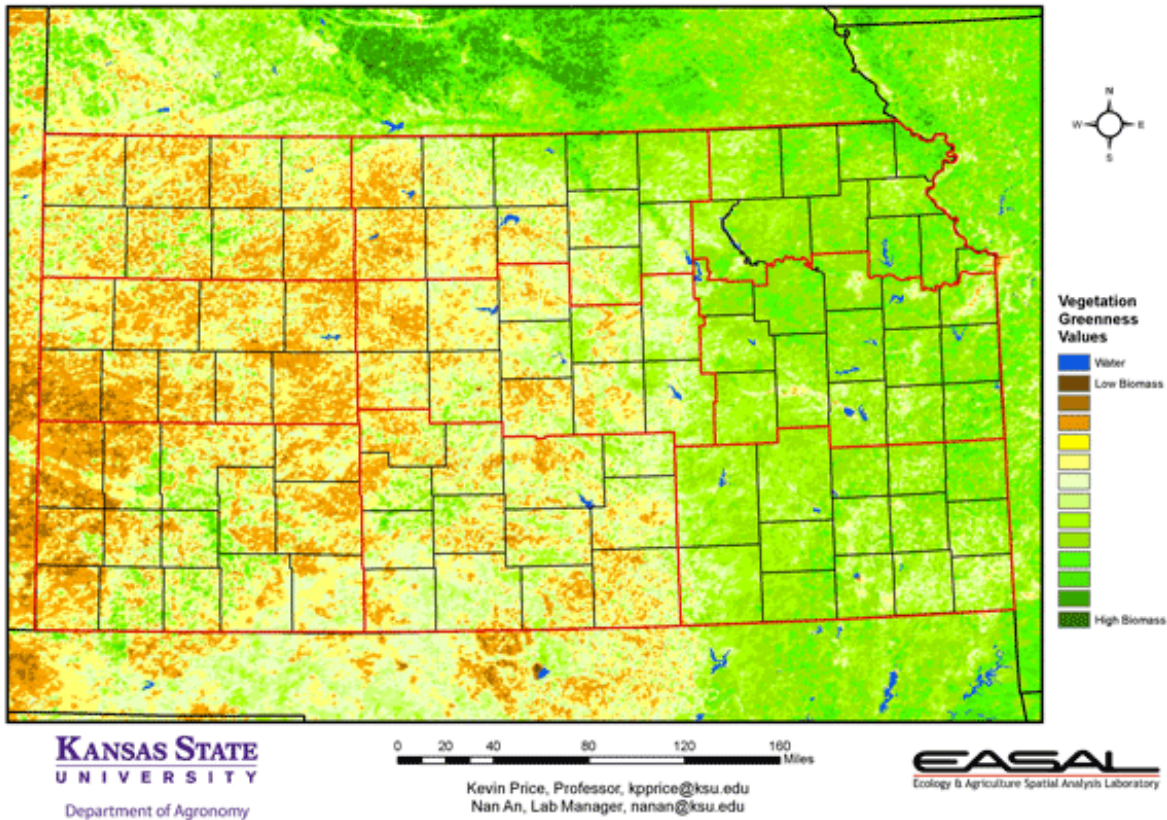


Figure 1. The Vegetation Condition Report for Kansas for July 7 – 20 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that the area of greatest biomass production continues to be in the eastern third of the state. There also tends to be higher photosynthetic activity along the river basins in western Kansas, particularly along the Arkansas River. Rainfall in this area has been above normal all season.

Kansas Vegetation Condition Comparison

Mid-July 2015 compared to the Mid-July 2014

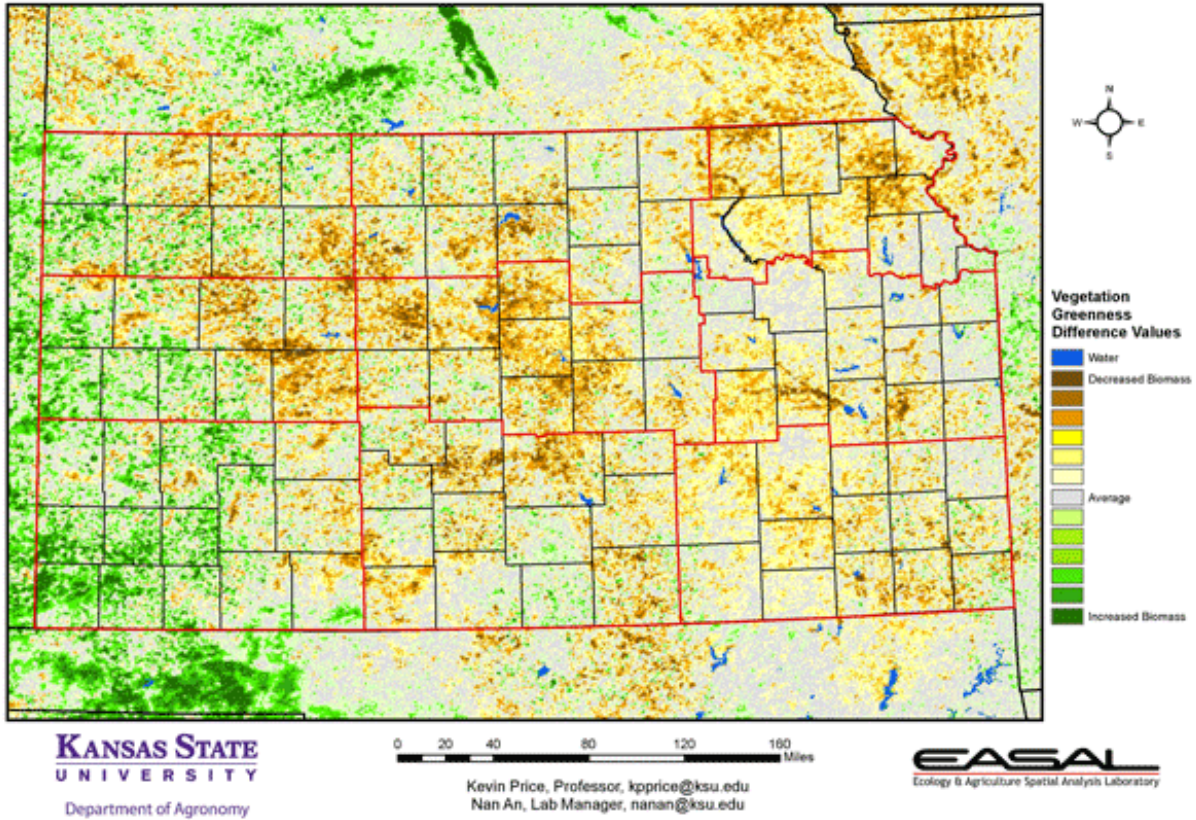


Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for July 7 – 20 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows western Kansas has higher photosynthetic activity. Rainfall has been above average in this area for the entire growing season. There is a sharp drop in biomass production compared to last year in the eastern areas of west central into central Kansas. These regions have had lower-than-normal precipitation in the last 6 weeks.

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Kansas Vegetation Condition Comparison
Mid-July 2015 compared to the 26-Year Average for Mid-July

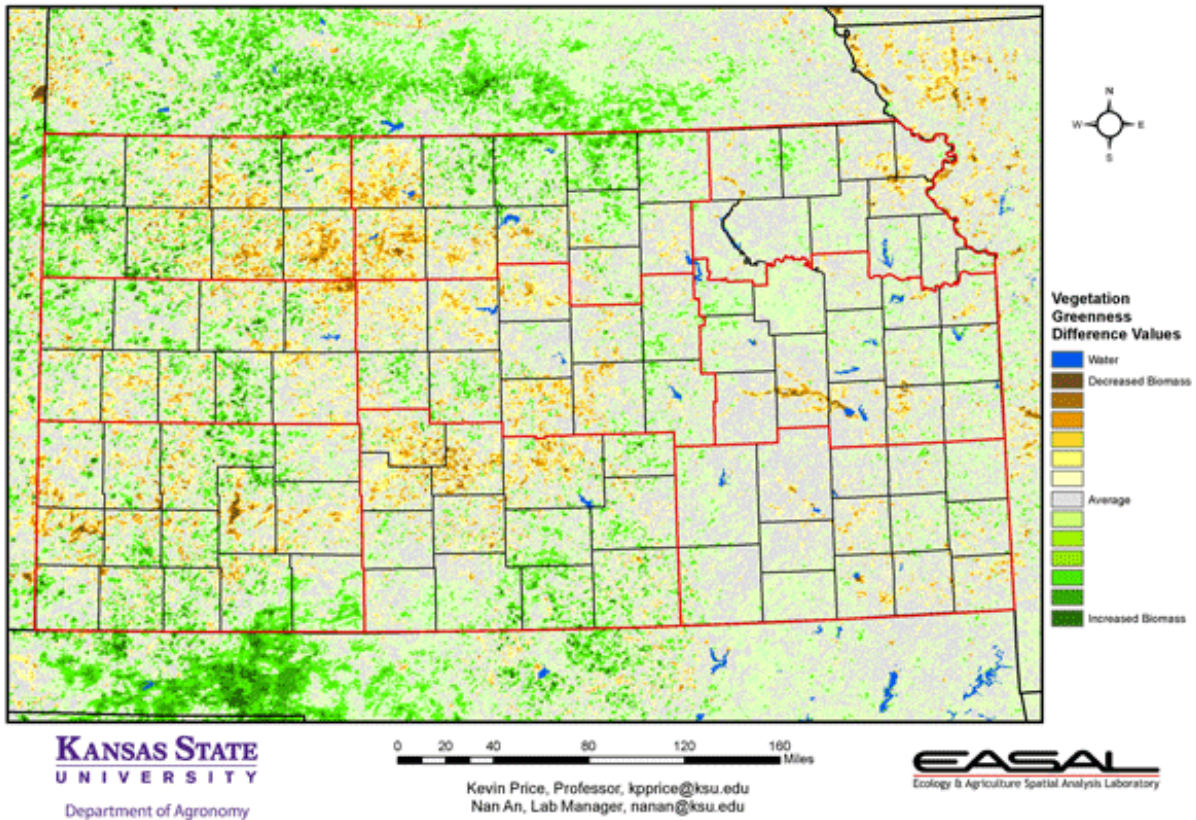


Figure 3. Compared to the 26-year average at this time for Kansas, this year's Vegetation Condition Report for July 7 – 20 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that most of the state has average to above average biomass production. The biggest decrease in production is in parts of Graham, Rooks, Phillips, and northeastern Ness counties. These areas have missed out on much of the rainfall that has been recorded in the rest of the state. The impacts from recent rains are not yet visible.

U.S. Corn Belt Vegetation Condition

Period 29: 07/07/2015 - 07/20/2015

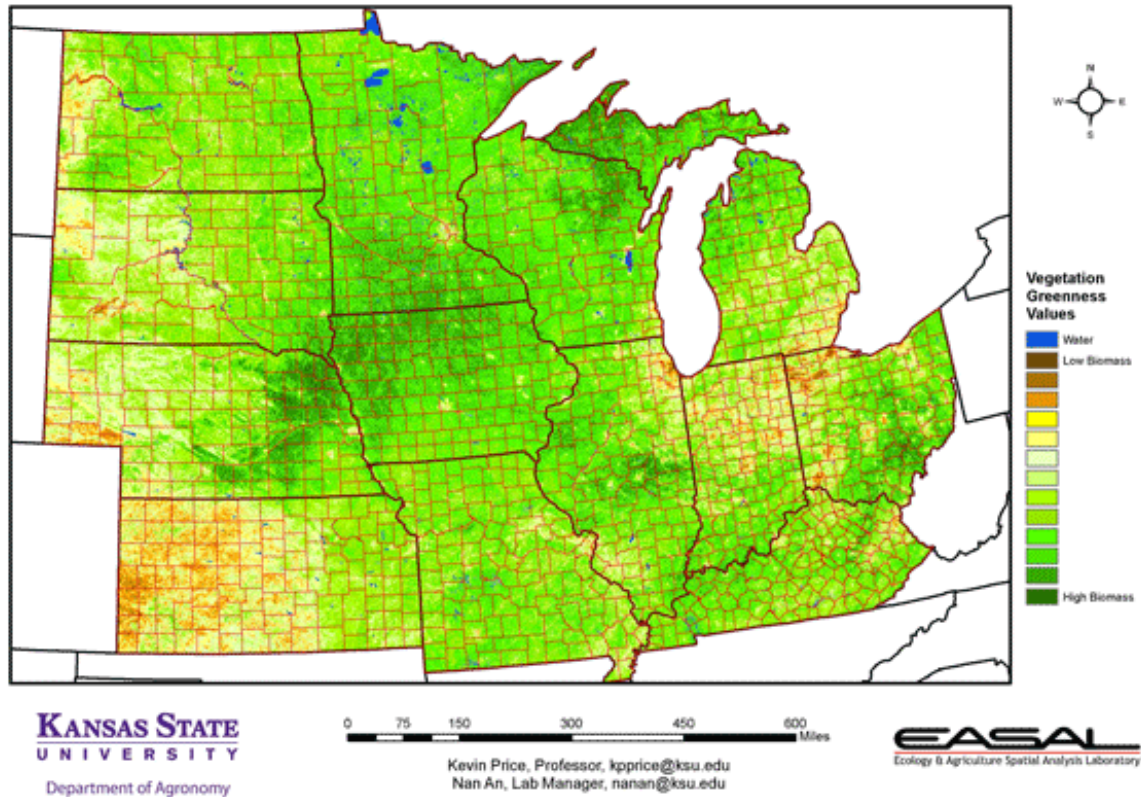


Figure 4. The Vegetation Condition Report for the Corn Belt for July 7 – 20 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that the greatest photosynthetic activity runs from central Nebraska through the Upper Peninsula of Michigan. Favorable precipitation and temperatures have spurred biomass production in these areas.

U.S. Corn Belt Vegetation Condition Comparison
Mid-July 2015 Compared to Mid-July 2014

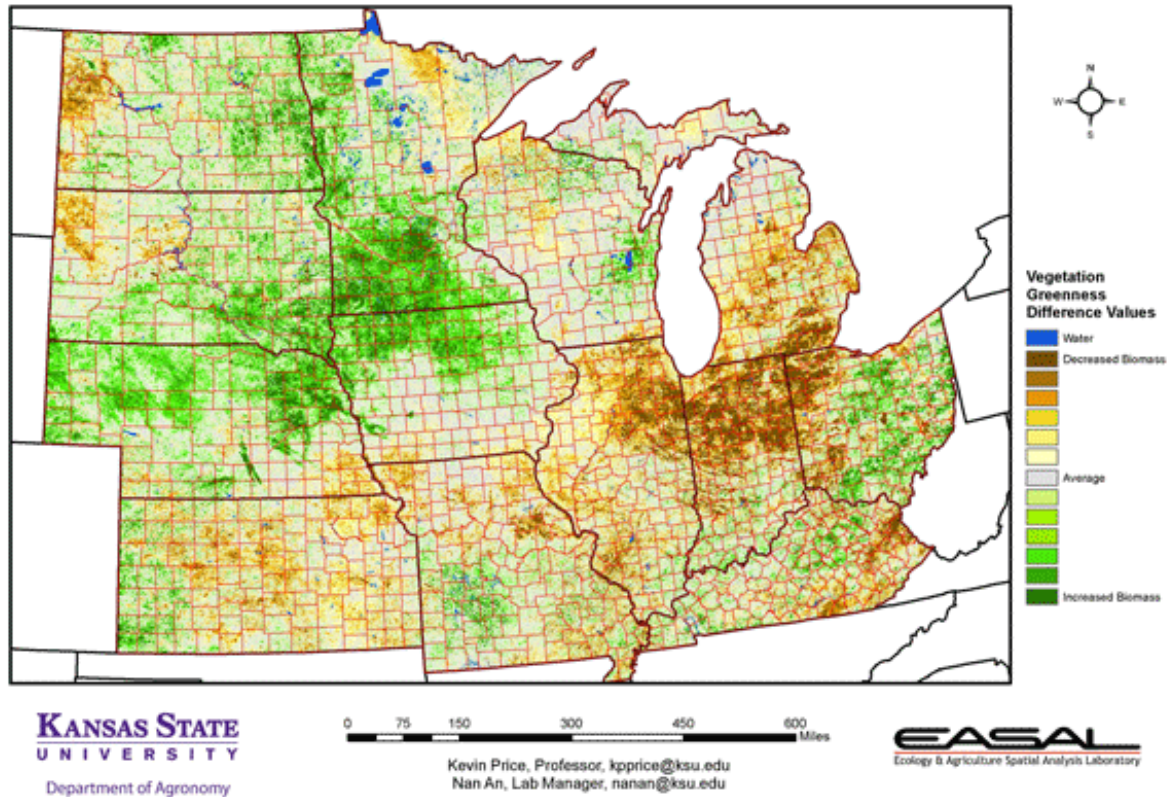


Figure 5. The comparison to last year in the Corn Belt for the period July 7 – 20 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that from eastern Illinois to western Ohio, biomass production has been suppressed. Excess moisture is a major culprit in the lower biomass production. In contrast, areas from Nebraska through southern Minnesota have benefitted from a favorable weather pattern and show much higher photosynthetic activity than last year.

U.S. Corn Belt Vegetation Condition Comparison
Mid-July 2015 Compared to the 26-Year Average for Mid-July

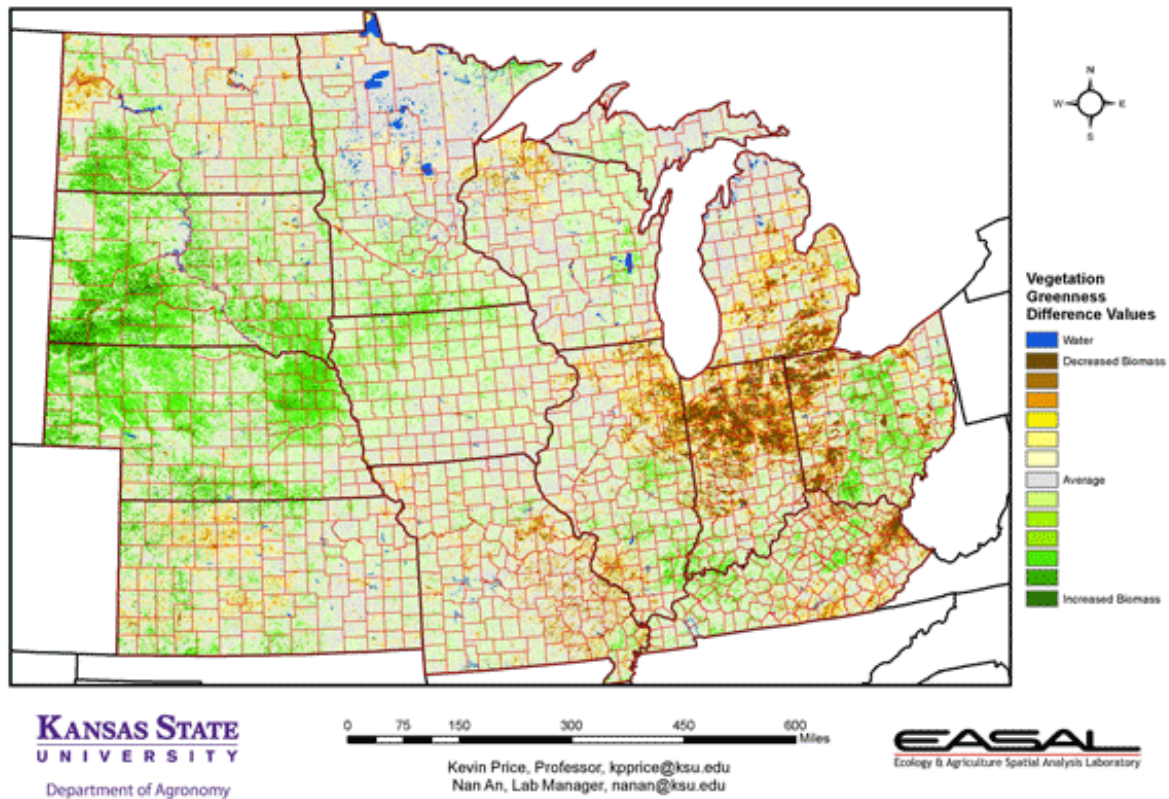


Figure 6. Compared to the 26-year average at this time for the Corn Belt, this year's Vegetation Condition Report for July 7 – 20 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the eastern portions continue to see the impact of excess moisture have generally below-average biomass production. In contrast, the favorable moisture in the western portions of the region have resulted in above-average levels of photosynthetic activity.

Continental U.S. Vegetation Condition

Period 29: 07/07/2015 - 07/20/2015

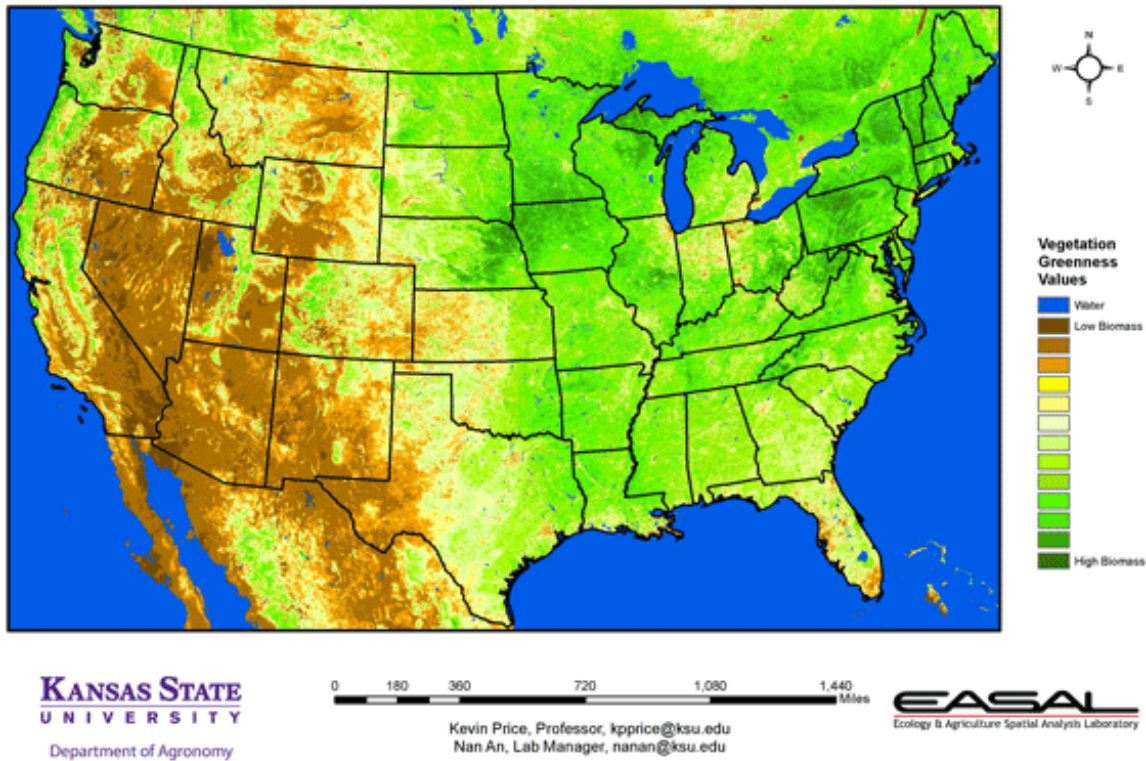


Figure 7. The Vegetation Condition Report for the U.S. for July 7 – 20 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that the greatest level of photosynthetic activity is concentrated in the Northern Plains and New England. Lower biomass production is visible in the Pacific Northwest into Montana.

Continental U.S. Vegetation Condition Comparison
Mid-July 2015 Compared to Mid-July 2014

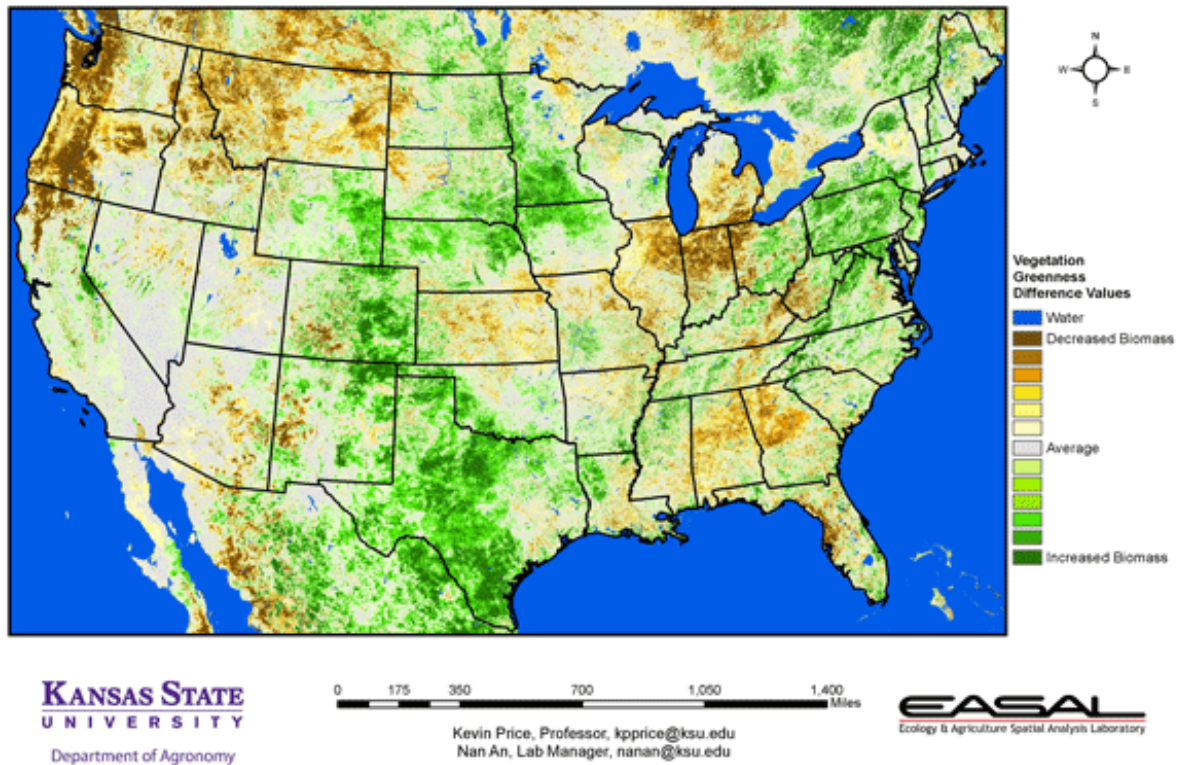


Figure 8. The U.S. comparison to last year at this time for the period July 7 – 20 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that the Pacific Northwest has much lower biomass production. The expanding drought is greatly reducing photosynthetic activity in the region. In California, the lower photosynthetic activity is confined to the northern parts of the state. Biomass production was low last year in much of the state, and there has been little change. Increased photosynthetic activity is most notable in the western High Plains, where a much wetter pattern has prevailed this year. The lower photosynthetic activity in the Midwest is mainly due to excess moisture,

Continental U.S. Vegetation Condition Comparison
Mid-July 2015 Compared to 26-year Average for Mid-July

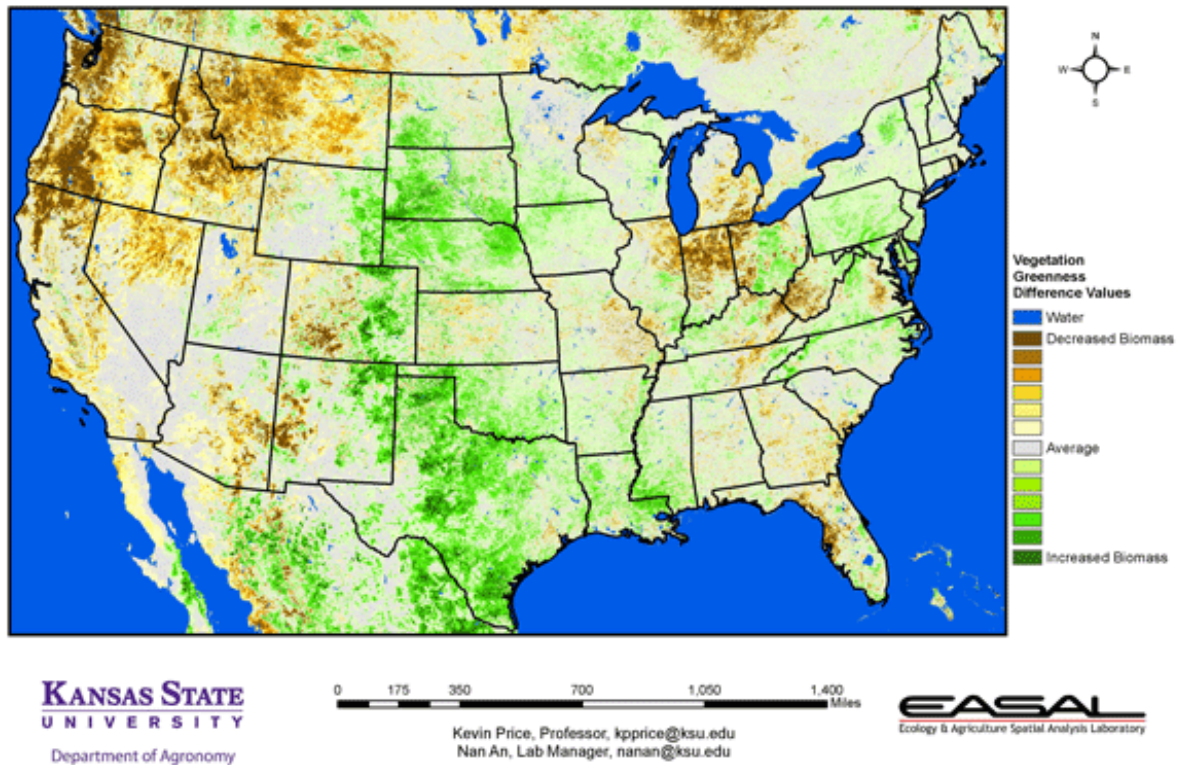


Figure 9. The U.S. comparison to the 26-year average for the period July 7 – 20 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that higher-than-average biomass production dominates the Plains from South Dakota through Texas. In contrast, the Pacific Northwest has much lower-than-average photosynthetic activity, as drought intensifies in this region. Pockets of below-average photosynthetic activity are also visible in western Florida, where drought is also intensifying. In contrast, the area of below-average photosynthetic activity centered in Indiana is due more to excess moisture than drought.

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