Issue 469

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Extension Agronomy

eUpdate

08/08/2014

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. Fall planting of tall fescue pastures

Tall fescue is best seeded in the fall in Kansas. Where there is adequate soil moisture, this would be a good time to establish a tall fescue pasture or hay meadow. By starting now with soil tests, variety selection, and seedbed preparation, tall fescue can be a productive pasture for many years to come.

Both tall fescue and smooth brome make good cool-season permanent pasture in eastern Kansas. Tall fescue is more hardy and grazing tolerant that smooth brome. Tall fescue can be utilized for fall and winter grazing much better than smooth brome.

Be sure to use either endophyte-free or nontoxic (sometimes called novel or "friendly" endophyte-infected) varieties of tall fescue when establishing a new pasture, or renovating an old pasture.

Soil selection

Fescue will grow on almost any soil but produces best on fertile moist soils. The ability of fescue to withstand low fertility and wet soil is excellent. Tall fescue also can withstand submersion for a few days. It will produce on soils with pH of 5.2 to 8.0, but optimum growth occurs in the 5.8 to 7.0 pH range.

Varieties

Several new varieties are suitable for Kansas. New certified varieties are either free of the endophyte fungus or contain the "friendly" nontoxic endophyte that does not produce the ergovaline toxin detrimental to livestock. Endophyte-free seed of older varieties like Kentucky-31 are also available. Check the seed tag to be sure of the endophyte level and type. To avoid reduced animal performance resulting from toxic endophyte-infected grass that is fed or grazed, livestock producers should plant the seed free of live endophyte or the novel endophyte. Plants produced from fungus-free seed remain free of the endophyte.

The Southeast Agricultural Research Center tests tall fescue varieties every year. The table below is from the SEARC's 2014 Agricultural Research report (K-State Research and Extension publication SRP1105). All varieties in this test are endophyte-free or nontoxic ("novel") endophyte .

Forage yield of tall fescue varieties, Mound Valley Unit		
Cultivar	3-year total forage yield (tons/acre at 12% moisture)	2013 total forage yield (tons/acre at 12% moisture)
Texoma MaxQ II	15.30	5.85
Martin 2 647	15.15	5.65
Jesup MaxQ	14.56	5.47
AGRFA 177	14.37	5.66
AU Triumph	14.26	5.44
BAR FA 80DH	14.17	5.72
Duramax GOLD	14.11	5.21

Ky 31 HE	14.10	5.35
BAR FA 70DH	13.98	5.39
Bardurum	13.95	5.70
Drover	13.94	5.30
Ky 31 LE	13.69	5.25
AGRFA 178	13.66	5.21
AGRFA 111	13.31	5.44
BarOptima PLUS E34	13.24	5.11
Bar Elite	13.19	5.18
AGRFA 179	12.99	4.99
Bariane	12.96	5.29
Average	13.94	5.40
LSD (0.050	1.25	0.75

Source: SEARC 2014 Agricultural Research report, K-State publication SRP1105: http://www.ksre.ksu.edu/bookstore/pubs/SRP1105.pdf

Kentucky-31 is the most popular variety in Kansas. It was released in the early 1940's by Kentucky. This variety grows on a wide variety of soils types, is highly productive, but has lower palatability. It remains green well into winter.

Seedbed preparation

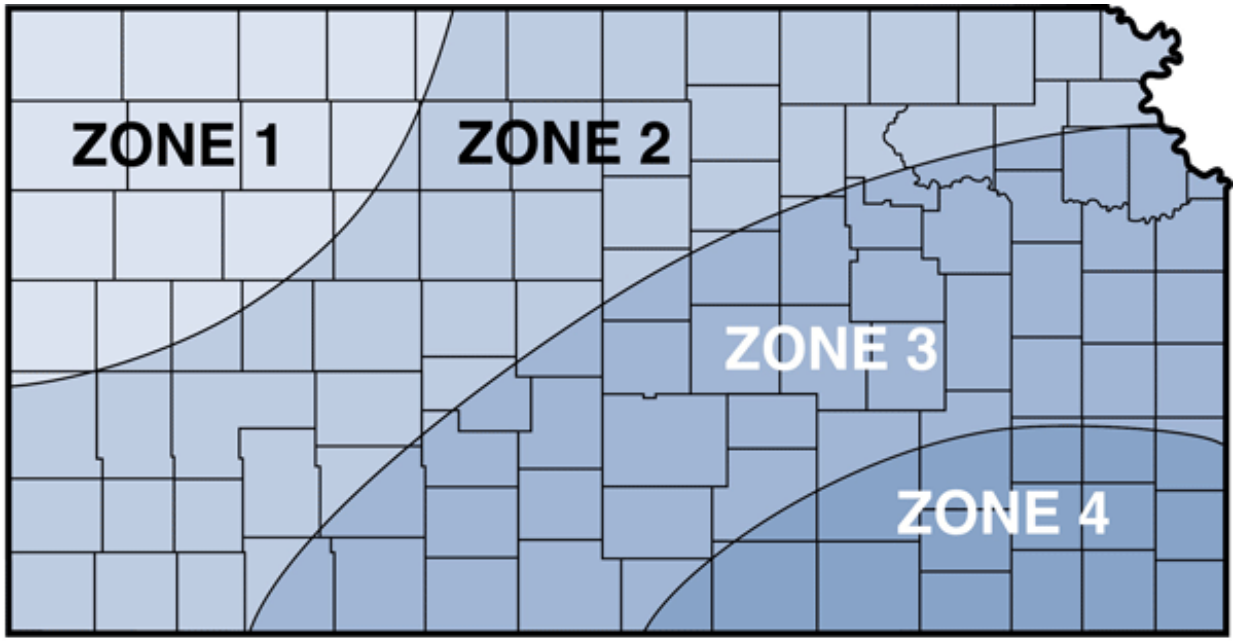
Fescue establishes best in a well-limed and fertilized seedbed that has been tilled 4 to 6 inches deep, leveled, and firmed before seeding. Several producers report successful stands by simply broadcasting or no-tilling the seed into existing overgrazed grass pastures in the fall. Even though the practice works, it is not recommended. A well-prepared seedbed improves chances of rapid stand establishment.

A soil test should be taken well ahead of planting to determine lime and fertilizer needs, and needed lime and phosphate should be incorporated into the seedbed before planting. About 30-40 pounds of N per acre should be applied at or before planting.

An existing tall fescue stand will tolerate pH as low as 5.0. On existing pastures with pH less than 6.0, 2 tons of agricultural lime per acre, topdressed, will increase life of the stand and growth of legumes if present.

Stand establishment

Figure 1 shows the recommended planting dates for tall fescue for each area in Kansas.



Optimum Planting Dates for Cool-season Grasses

	Zone 1	Zone 2	Zone 3	Zone 4
Fall	Aug 10–Sept 10	Aug 15–Sept 15	Aug 20–Sept 20	Aug 15–Oct 1
Winter	Not recommended	Not recommended	Not recommended	Not recommended
Spring	Mar 1–Apr 1	Feb 15–Mar 15	Feb 15–Mar 15	Not recommended

Figure 1

On droughty, claypan soils, only fall plantings are recommended because winter and spring plantings may not survive if summers become hot and dry. Deeper soils and/or good moisture supplies will result in successful winter or spring seedings. When planting in a well-prepared seedbed, 12-20 pounds per acre of pure live, high-germinating seed is adequate. When seed germination is not known or the seedbed is less than desirable, a rate of 20 to 25 pounds per acre may be required for a satisfactory stand. For no-till planting, use the lower end of that seeding rate range. For broadcast incorporation, use the higher end of the range.

For best results, seed should be covered with 1⁄4 to 3⁄8 inch of soil. Seeding fescue with winter wheat is often desirable. The wheat seeding rate should not be much higher than 60 lb/acre. Planting a cover crop like wheat can protect the soil from erosion and furnish additional grazing or grain production income in the seeding year. If wheat is grazed, avoid grazing in fall or spring when new grass seedlings could be injured by trampling during wet weather.

Converting endophyte infested pastures

Establishing a new tall fescue pasture on ground with existing endophyte-infected pasture requires some special care. The endophyte fungus that infects many tall fescue pastures in Kansas will survive in the seed up to 14 months. For that reason, you should prevent seed production on established endophyte pasture for 14 months before renovating with fresh seed. Otherwise, infected seed from the previous fescue may emerge along with the newly planted seed.

You can kill existing endophyte-infected fescue by applying glyphosate at the rate of 0.75 to 1.5 lb

ae/acre when new growth is about 4 inches tall. It is easier to control fescue in the fall than in the spring however excellent spring control can be achieved. After the fescue has been killed, producers could grow an alternative crop for one year that will allow the use of herbicides to control any volunteer fescue that emerges.

After 14 months without seed production from the old fescue, replant the field with an endophyte-free variety or a nontoxic endophyte variety. There are several nontoxic endophyte varieties on the market including MaxQ, DuraMax Gold, and BarOptima Plus E34.

More information

For more information, see Tall Fescue Production and Utilization, K-State Research and Extension publication C729, at: http://www.ksre.ksu.edu/bookstore/pubs/c729.pdf. In addition, fall vs. spring forage yields for Joe Moyer's fescue trial can be located in the 2014 progress report at: http://www.ksre.ksu.edu/bookstore/pubs/SRP1105.pdf

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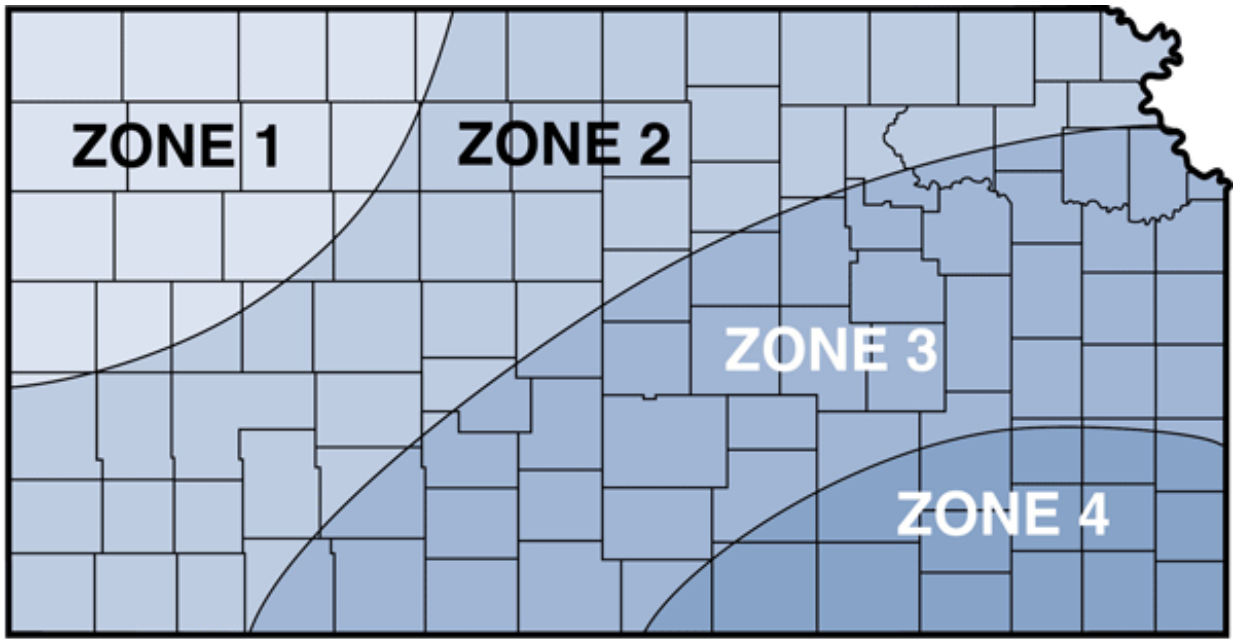
2. Fall planting of smooth brome pastures

Now would be a good time of year to plan for fall seeding of smooth brome pastures and/or hay meadows. If you start planning now, you should have plenty of time to have the soil tested, add lime and nutrients, especially phosphorus (P) if necessary, and adequately prepare the seedbed so that you can have many years of productive forage from your pasture/meadow.

Planting dates

Smooth brome can be planted in late summer, early fall, winter or early spring (Figure 1).



Optimum Seeding Dates for Smooth Brome

	Zone 1	Zone 2	Zone 3	Zone 4
Fall	Aug 10–Sept 15	Aug 15–Sept 20	Aug 15–Sept 20	Aug 15–Oct 1
Winter	Nov 1–Mar 1	Nov 15–Feb 15	Dec 1–Feb 15	Not recommended
Spring	Mar 1–Apr 1	Feb 15–Apr 1	Feb 15–Apr 1	Not recommended

Figure 1

Winter and spring plantings are not recommended on droughty claypan soils because smooth brome will not survive if a hot, dry summer follows planting. Cool-season grasses are established most successfully with late summer or fall plantings. Adequate time must be allowed for summer tillage and soil moisture storage.

Good weed control is essential. Germinating weeds can be destroyed by light tillage operations or burndown applications of glyphosate. Tillage should be done no later than mid-August for a late August or early September planting. When moisture is available, several tillage operations may be needed to control weed growth and thus conserve soil moisture. Excess tillage may increase

moisture loss and stand establishment failure.

No-till seeding of brome has emerged as a viable planting method, IF you do not need to incorporate lime or phosphorus to a 6-inch depth prior to planting. With no-till seeding, nonselective herbicides such as glyphosate are heavily relied upon to control existing weeds.

Seedbed preparation

Proper seedbed preparation is essential for a good stand. The ideal seedbed is firm, moist, free of weeds, and adequately fertilized and limed. Such a seedbed can be obtained by planning and using good techniques. Seedbed preparation on land suited for cultivation is relatively simple. For best results, minimize weed competition, obtain uniform seed distribution, plant shallow and evenly cover seed with soil. Many smooth brome pastures have been established on sites that cannot be adequately tilled because soil is too shallow and/or slopes are too steep. On these areas, little seedbed preparation is possible.

Lime. Soil testing is essential to determine lime needs. Smooth brome will grow on moderately acid soils, but does best on near neutral pH soils. Because smooth brome stands can remain productive for 20 years or longer, correcting soil pH prior to seeding is essential. Needed lime should be added and thoroughly mixed to a soil depth of six inches as far ahead of planting as possible.

Nitrogen. Figure 2 shows nitrogen recommendations for new seedings of smooth brome. Applying 30-40 pounds of nitrogen before seeding will help ensure vigorous establishment of brome. Nitrogen could be applied with needed phosphorous and potassium and incorporated prior to seeding or broadcast after planting.

Phosphorous and Potassium. Soils in Kansas vary in levels of phosphorous and potassium present. A soil test is essential to determine requirements for these nutrients. Based on the soil test, addition of phosphorus and potassium will help establish smooth brome stands and ensure subsequent growth. Figure 2 lists phosphorus and potassium recommendations for establishing new stands of smooth brome. Broadcasting and incorporating recommended rates of phosphorus and potassium during seedbed preparation is the most desirable practice. Phosphorus and potassium also may be applied with the drill at seeding. Avoid placing more than 20 pounds per acre of nitrogen plus potash in direct contact with the seed at planting.

Nutrient recommendations for new seedings of smooth brome					
Nutrient	**Recommended rates**				
Nitrogen	30-40 lbs/acre				
Phosphorus	Soil test level (ppm P)				
	Very low (0-5)	Low (6-12)	Medium (13-25)	High (26-50)	Very high (51 or more)
	60-80 lbs/acre	40-60 lbs/acre	20-40 lbs/acre	None	None
Potassium	Soil test level (ppm K)				
	Very low (0-40)	Low (41-80)	Medium (81-120)	High (121-160)	Very high (161 or more)

	80-100 lbs/acre	60-80 lbs/acre	30-60 lbs/acre	0-30 lbs/acre	None

Source: Smooth Brome Production and Utilization, K-State publication C402

Seed source and rate

High-quality seed of known germination and purity is important. Seeding rate depends on seed quality and method of seeding. When planting in a well prepared seedbed, 10–15 pounds of pure live seed (PLS) per acre is adequate. PLS refers to the amount of live seed of the desired species in a bulk lot. As an example, 100 pounds of bulk smooth brome seed that has a germination of 90 percent and a purity of 95 percent contains 85.5 pounds of pure live seed (100 x .90 x .95= 85.5). Seeding rates of 15-20 pounds of PLS should be adequate if planting with a good no-till drill.

If a poor seedbed exists, or if the seed will be broadcast with shallow incorporation with a harrow, seeding rates as high as 20 pounds PLS per acre may be required to obtain satisfactory stands. Higher seeding rates should be used when brome is broadcast on the surface and covered.

Method of seeding

Drilling smooth brome seed is the preferred method of seeding. Drilling ensures uniform seed distribution, accurate seeding rates, and uniform depth of coverage. For best results, smooth brome should be seeded ¼ to ½ inch deep.

Broadcasting brome on the surface with shallow incorporation can result in good stands of brome. Wheat can be used as a cover crop in establishing a stand of smooth brome. Start by broadcasting 20 pounds PLS of brome seed on the surface of soil prior to wheat seeding. As the wheat is drilled, the brome seed is covered. After the wheat is taken for hay or grain, the brome is usually established, provided sufficient moisture is available for both crops. This is a slow establishment method, but it is desirable on soils subject to erosion or to obtain a return from the field the first year.

Grazing new stands

New stands of brome should be protected from grazing until the grass is well established. With proper management, fall seeded smooth brome usually can be grazed the next year. Light grazing with haying at the bloom stage should be considered the first spring. Spring seedings should not be grazed until the following spring.

Weed control in new stands

Broadleaf weeds can be an issue in new stands of brome, but as with grazing, the new crop should be well established before using herbicides. The brome should have at least three leaves with collars and the crown root system should be established before any herbicide application is made. Weeds can be trimmed at 6-8-inches tall with a rotary mower in spring seedings until the brome has developed the three leaves and adequate root system.

More information

For more information, see Smooth Brome Production and Utilization, K-State Research and Extension publication C402, at: http://www.ksre.ksu.edu/bookstore/pubs/c402.pdf

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3. Preemergence herbicide use on wheat

Preemergence herbicides with residual activity are used routinely in most crops, including corn, grain sorghum, and soybeans. They have not, however, commonly been used in wheat.

There are five ALS-inhibiting herbicides labeled for preplant or preemergence use in wheat: Amber, Finesse, Maverick, Olympus, and Pre-Pare. The newest product in the preemergence wheat market is Zidua. Zidua has a different mode of action than the other preemergence herbicides in wheat and should only be applied as a delayed preemergence or early postemergence treatment.

In wheat, preemergence herbicides are often used in no-till situations where they can be tankmixed with glyphosate during burndown applications just prior to or at planting. The addition of one of the preemergence herbicides at the time of the final burndown application can give residual control or suppression of susceptible broadleaf and grass weeds.

Preemergence treatments in wheat can be inconsistent in effectiveness. They require rainfall to be activated. If weeds emerge before the herbicide is activated, control may be poor, especially the grasses. But when there is enough rain to activate the herbicide before weeds emerge, control or suppression can be good. However, all else being equal, most of the herbicides labeled for preemergence applications will be most consistent when applied as fall postemerge treatments. The one exception is Zidua, which has minimal activity on emerged weeds.

The labels of these herbicides differ somewhat in what is allowed with a preemergence application.

Finesse allows for a higher use rate when applied preemergence than when applied as a postemergence treatment. This can provide for good season-long control of susceptible broadleaf weeds, unless they are ALS resistant. However, it does not allow for a follow-up postemergence treatment later with Finesse, although a follow-up treatment with Olympus or PowerFlex is allowed.

With Amber, the top-end of the range of rates allowed is a little higher for preemergence applications than with postemergence applications. As with Finesse, if Amber is used at the higher rates preemergence, producers cannot come back later in the season with another application of Amber, although a followup treatment with Olympus or PowerFlex is allowed.

With Olympus, the allowable rate as a preemergence application is 0.6 oz/acre, which is lower than the rate allowed if Olympus is used as a postemergence treatment. However, producers are allowed to follow up later with another 0.6 oz/acre of Olympus if needed.

Maverick has a single standard rate for all application timings. Pre-Pare is marketed primarily in the northern plains and has not provided very good preemergence cheatgrass control in research at K-State.

Zidua has a different mode of action than the other preemergence wheat herbicides and may be especially helpful to manage ALS-resistant weeds. Zidua is very effective for control of Italian ryegrass, but can also provide suppression of winter annual brome species and some broadleaf weeds. Zidua should not be applied until 80% of the germinating wheat seedlings have a shoot at least ½ inch long. It can also be applied early postemergence to wheat, but primarily has preemergence activity and generally will not control emerged weeds.

Application rates of Zidua range from 0.7 to 2 oz/acre depending on application timing and soil texture. Zidua should not be applied preplant to wheat and wheat should not be seeded more than 1.5 inches deep prior to a delayed preemergence application. Zidua can cause some temporary stunting of wheat if soils are excessively wet during the early seedling stages of wheat development.

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4. 2014 Forecasted corn yield potential for Kansas: Model projections on August 1

Most of the corn in Kansas is at the reproductive stages now. The latest Kansas Agricultural Statistics Service crop progress report (August 3) projected that almost 94% of the Kansas' corn crop is at the silking stage, with more than 50% of the crop already at the dough stage, well ahead of last year (38%). The USDA classified the corn as 43% good and 14% excellent, similar to the previous week. In areas that have not received rain recently, corn is showing an anticipated and rapid senescence, moving from the bottom part of the plant to the upper leaves.

Potential vs. attainable yields in corn

Two weeks ago a summary of the forecasted corn yields was presented in the Agronomy eUpdate for the selected locations around the state of Kansas (http://ksu.ag/1tKVL9c ; Figure 1). A new round of simulations was performed by lead investigators at the University of Nebraska (Professors Patricio Grassini, Roger Elmore, Haishun Yang, and Ken Cassman) in collaboration with Extension educators around the Corn Belt. The change in the median yield potential (Yp) since the last forecast is presented in Table 1 (last column on the right) as a way to understand the impact the weather has had on projected corn yields during the last two weeks. As the crop matures, the yield range observed between 25% (accounting for above-normal growing conditions from now until harvest) and 75% (accounting for below-normal conditions) will converge towards the median yield value.

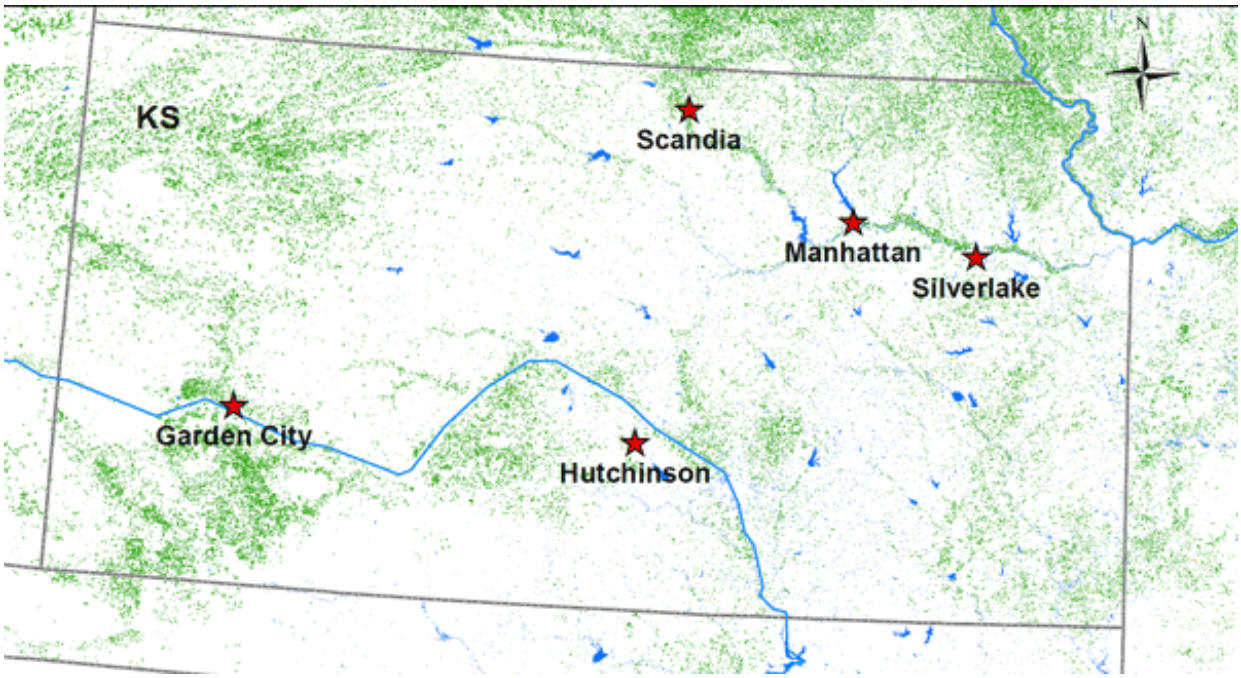

Figure 1. Locations utilized for simulation purposes for Kansas.

The corn simulation model Hybrid-Maize Model (http://hybridmaize.unl.edu) presents reliable estimations under well managed, with optimum planting time and good stand uniformity, and without the influence of biotic or abiotic stresses (e.g., hail, flooding, diseases, weeds, and insects). Under stress conditions, we can expect that the model will overestimate yields as compared with the final observed yields on these locations. Likewise, under severe stress conditions such as heat and

drought during the early reproductive period, a large kernel abortion is expected. The model does not take into account the effect of the stress conditions on the reproductive structures such as the kernels. Therefore, the model will overestimate the final yield for environments with mild to severe stress that impacts the final grain number.

Impact of the current weather was reflected in the simulation performed on August 1. Further details related to the model employed for performing these simulations can be found at: http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/2014-forecasted-corn-yields-based-on-hybrid-maize-model-simulations-as-of-july-20th

Simulations performed during the last week in all five locations around the state (Garden City, Hutchinson, Silver Lake, Manhattan, and Scandia) for both dryland and irrigated environments show mostly only minor or no changes in yield potential compared to the results from the model simulations performed on July 20. An exception to this rule is the Manhattan location, which has a reduction in projected yields of 9% under a dryland environment. A similar reduction in yield since the July 20 projections can be extrapolated for most dryland corn in east central Kansas. Again, the model does not account for a direct impact of stress conditions on the kernel abortion process and final grain number. The estimated impact on yield can be even higher if conditions were severe enough to impact the final grain number component.

For most of the locations simulated in Kansas the 2014 median yield potential forecasted as of August 1 is 10% above the long-term yield potential -- except for Manhattan dryland and Garden City under irrigation. In Manhattan and Garden City, if the conditions until harvesting worsen (represented by the 75% column in Table 1), the final yield for current season can be predicted to be similar to the long-term average yields. Favorable grain-filling environments will promote higher-than-average corn yields at all locations (the 25% column in Table 1).

As it was emphasized in the first round of the corn forecasted yields, 2014 potential corn yields are promising regardless of the weather conditions experienced from now until harvest.

Table 1. 2014 In-season Yield Potential Forecasts for Kansas (August 1).

Location	Water regime	Long-term average Yp (bu/ac)§	Yp forecast as of Aug 1st (bu/ac) 25%¶	Median†	75%‡	Change in median Yp forecast since July 20 (%)
KANSAS						
Manhattan	Dryland	138	160	145	133	-9%
Scandia	Irrigated	187	215	209(+)	194	0%
	Dryland	151	184	179(+)	165	+1%
Silverlake	Irrigated	177	225	205(+)	191	0%
Hutchinson	Dryland	123	168	148(+)	136	+1%
Garden City	Irrigated	176	191	187	175	+1%

§Average (25+ years) simulated yield potential (Yp) based on dominant soil series, average planting date, plant density and relative maturity of most widespread hybrid at each location. ¶25% probability of obtaining a yield equal to or higher than the value shown based on long-term weather data to finish the season. † Median Yp forecast with minus ('-') and plus ('+') signs indicating that median Yp is forecasted to be well below (<-10%) or well above (>10%) the long-term average Yp, respectively. ‡75% probability of obtaining a yield equal to or higher than the value shown based on long-term weather data to finish the season.

Conclusions

Yield forecasts from 5 locations across Kansas indicate above-average corn yield potential for the current season as compared with the long-term average. For central and east central Kansas, dry conditions can increase the discrepancy between the observed (on-farm) and forecasted (predicted by the model) yields. Irrigated corn yield potential looks to be above the average, especially for the Scandia and Silver Lake areas. Yield forecasts can go up if favorable conditions occur throughout August.

Stress conditions impacting corn in the next coming weeks will be likely to reduce yields via an impact on the final kernel weight. However, these conditions on corn yield will be less effect on yields as the crop progresses into later reproductive stages. From now on, there is a perfect time to go out and start to perform yield estimation following the method presented in our previous Agronomy eUpdate article on August 1, http://ksu.ag/XpLTak

You can read the full paper related to forecasted yields in 25 locations around the Corn Belt at: http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/2014-forecasted-corn-yields-based-on-aug-1-hybrid-maize-model-simulations

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5. Test wheat seed germination if harvest aid herbicides were used

Welcomed, but perhaps untimely rains delayed wheat harvest in some areas of Kansas to the extent that herbicide applications had to be made to burn down weeds prior to harvest. Farmers intending to hold back some of their harvest for use as seed this fall should have that wheat tested for germination.

Some herbicides, such as glyphosate, are not recommended on wheat to be saved as seed. Most, if not all, of the common herbicides used as pre-harvest aids in wheat require that the grain be below 30 percent moisture before application. At or below this moisture content, the grain is post-physiological maturity and unlikely, or less likely, to be adversely affected. Seed germination can be greatly inhibited if pre-harvest herbicide applications are made at an improper stage of grain maturity.

The only way to be sure that germination has not been harmed by herbicide application is to have the seed tested by a professional laboratory such as Kansas Crop Improvement Association's (KCIA's) Seed Quality Testing Lab. A producer may be tempted to conduct their own germination test, but home tests may not tell the whole story.

Whether seed germination has been harmed by a herbicide is really only part of the story. Seed germination is relatively easy to conclude from a germination test. What is not quite so obvious is the potential damage may have been done to seed even though it appears to germinate.

The trained analysts at KCIA evaluate each seedling in a test to make sure it has all the essential structures to establish a plant in the field. The lack of roots or a damaged coleoptile resulting from a herbicide application may have a profound effect on that seed's ability to establish itself when planted.

It would be good if every producer plant Kansas certified seed, which has been professionally cleaned and tested, but if a producer has a legal right to use saved seed, we think it is a prudent step to have that seed professionally tested.

Information on KCIA seed laboratory services can be found at www.kscrop.org/labservices.aspx or, call 785-532-6118.

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6. Kansas River Valley Experiment Field fall field day, August 12

The Kansas River Valley Experiment Field near Rossville will host its fall field day on Tuesday, August 12. The field day begins at 6 p.m. sharp.

Field day topics and K-State presenters include:

- Strategies and Products for Weed Control in Corn – Curtis Thompson
- Dealing in Challenges in Soybean Production: SDS, Seed Treatments, Iron Chlorosis – Bill Schapaugh
- Utilization of Drought-Tolerant Corn – Eric Adee
- Abnormalities in Corn Ears: What Do They Tell Us? – Ignacio Ciampitti

The field is located 1 mile east of Rossville on U.S. Hwy 24, on the south side of the road.

A BBQ meal will be provided after the field day, sponsored by Wilbur-Ellis. To pre-register, call Joanne Domme at the Shawnee County Extension office at 785-232-0062, ext. 100 by 5 p.m. on Monday, August 11.

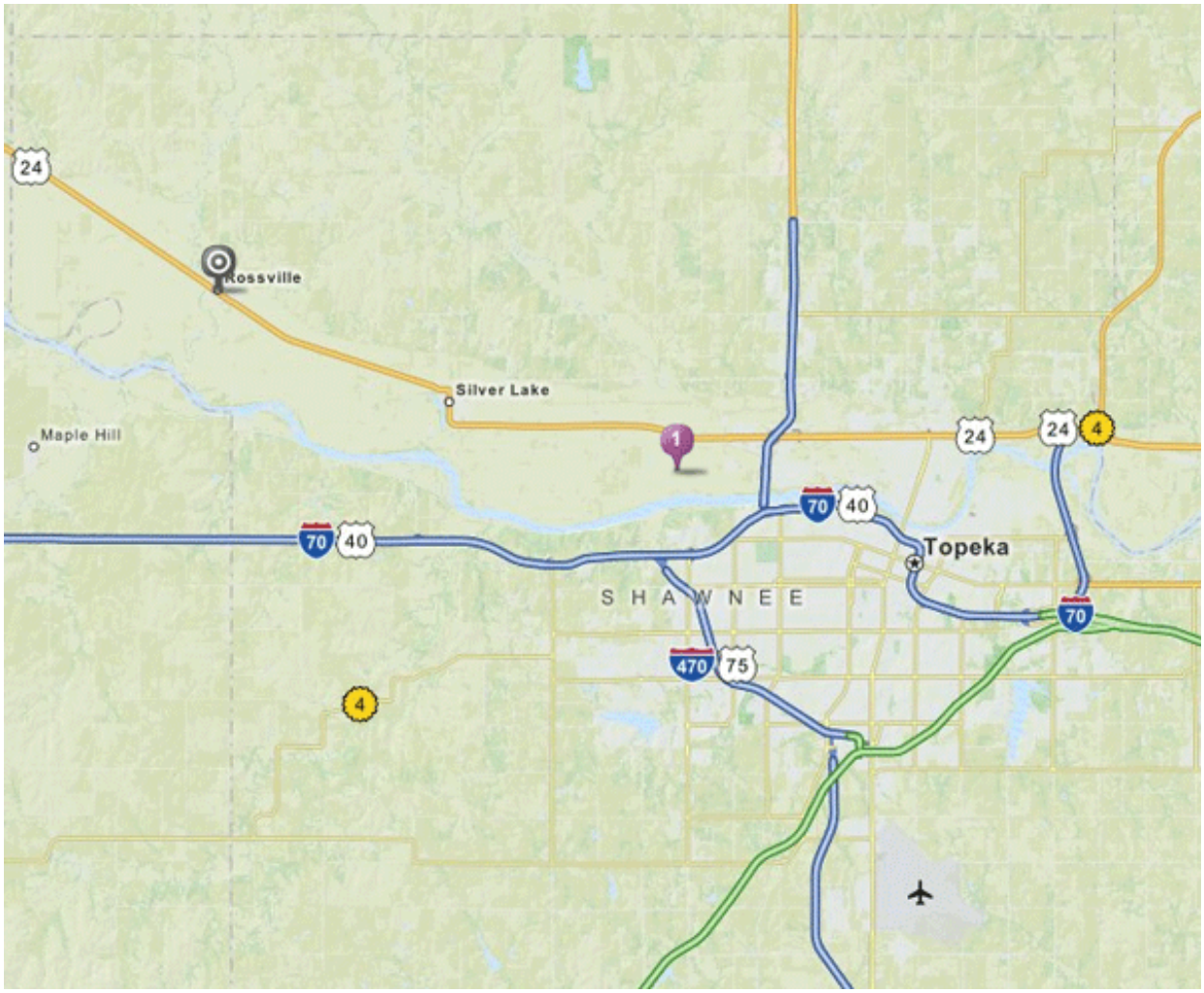


Figure 1. Map to Rossville. The Kansas River Valley Experiment Field is on Hwy 24, just east of Rossville on the south side of the highway.

7. North Central Kansas Experiment Fields fall field day, August 19

The North Central Kansas Experiment Fields Fall Field Day will be held Tuesday, August 19 at the Belleville field approximately 2 miles west of Belleville on U.S. Hwy 36. The Field Day will start at 6 p.m. sharp.

Field Day Topics:

- New Wheat Varieties and Variety Selection
- Chloride Fertility Needs in Sorghum
- Corn and Soybean Population On-Farm Research
- Soil Water Depletion by Cover Crop Species and Mixtures

A meal, compliments of K-State Research and Extension, will follow the presentations.

8. 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 20. 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:

- Phosphorus and Potassium Fertilization – Dorivar Ruiz Diaz
- Corn Growth and Development – Ignacio Ciampitti
- What Is Causing Yellow Corn in the Spring? – Doug Shoup
- Drought-tolerant Corn – Eric Adee

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.

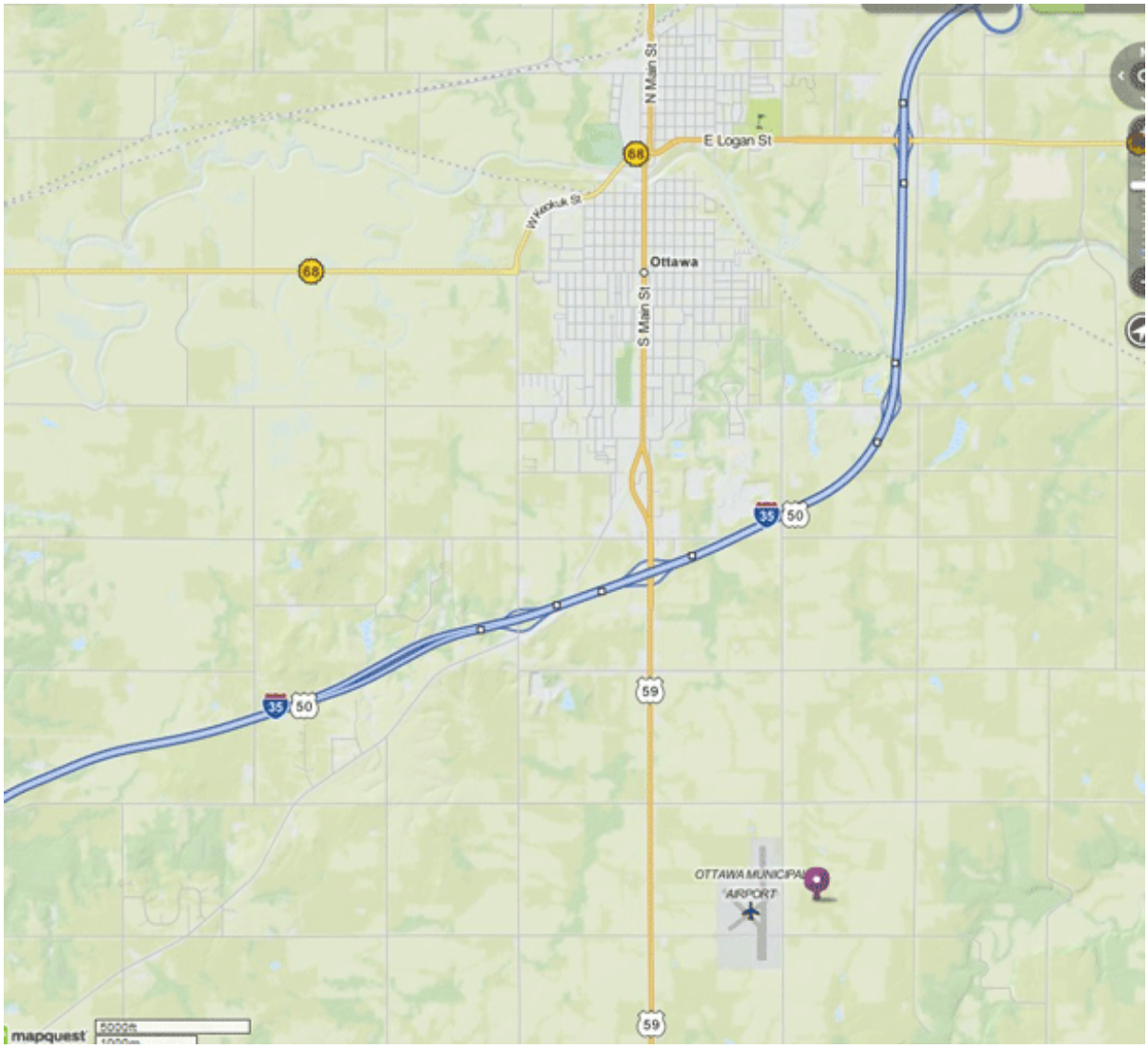


Figure 1. Map to East Central Kansas Experiment Field, just south of Ottawa and east of Hwy 59.

9. Dryland Ag Day, Southwest Research-Extension Center, Tribune, August 21

The 2014 Dryland Ag Day will be held Aug. 21 at K-State's Southwest Research-Extension Center one mile west of Tribune on Kansas Highway 96. Registration and refreshments are available at 8 a.m. MDT, followed by field tours, indoor seminars and a sponsored lunch.

Field tours starting at 8:30 a.m. MDT include:

· Inzen Grain Sorghum – Post Emergence Grass Control

· Solid Stem Wheat Update

· Wheat Varieties

· Volunteer Roundup Ready Corn on Wheat Yields

· Tillage in Dryland Systems

· Dryland Crop Rotations

Indoor seminar topics beginning at 10:30 a.m. MDT include:

· Drought-Tolerant Corn

· Managing Glyphosate-Resistant Weeds

· Cover and Forage Crops in Dryland Systems

More information is available by calling 620-376-4761.

10. K-State Agricultural Research Center-Hays Fall Field Day, August 27

An alternative crop for fallow and a tiny pest that may be a new threat to sorghum are among the topics to be covered at the Kansas State University Agricultural Research Center's Fall Field Day in Hays on Wednesday, Aug. 27. The center is located at 1232 204th Ave.

Registration and refreshments start at 9 a.m., followed by the program and field tours beginning at 9:30 a.m. Lunch and two presentations indoors will close out the day.

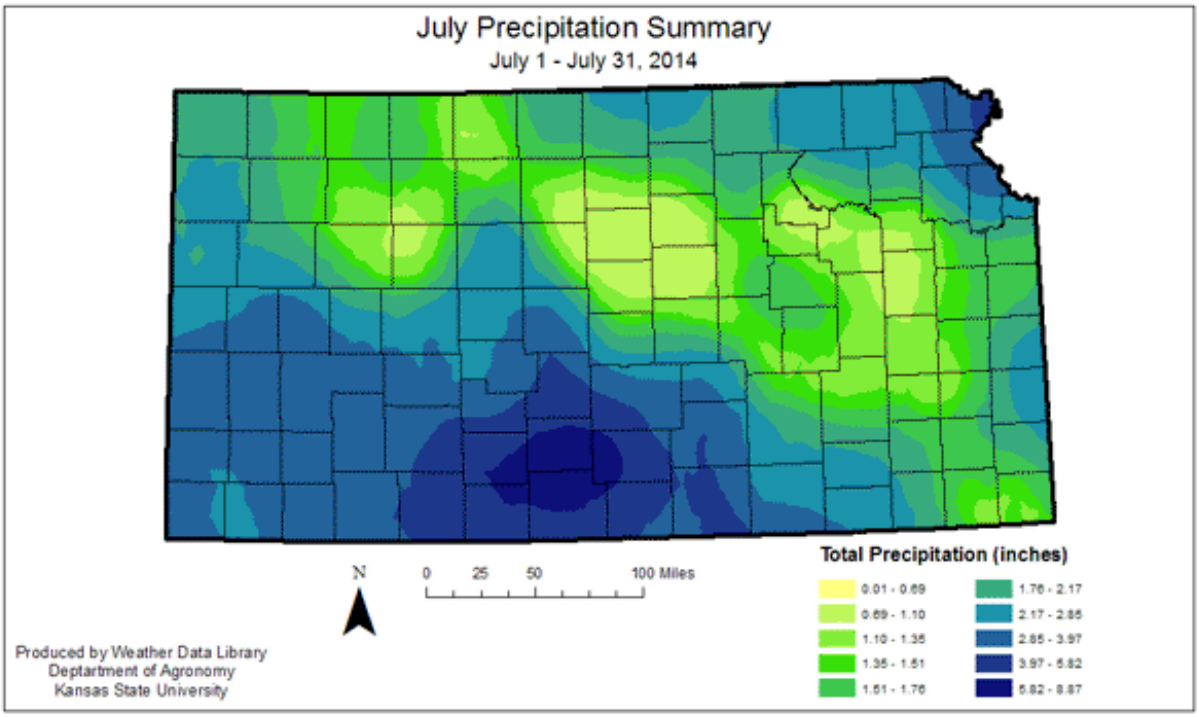
Field tour and auditorium presentation topics include:

- Camelina sativa as an alternative fallow replacement – Augustine Obour, soil scientist, ARC-Hays
- Glyphosate-resistant weeds: update and management – Phil Stahlman, weed scientist, ARC-Hays
- New sorghum parents and current commercial hybrids – Ramasamy Perumal, sorghum breeder, ARC-Hays
- Potential for cool-season grass legume mixtures – Augustine Obour
- Grain yields after 40 years of no-till – Augustine Obour
- Sugarcane aphid, a new threat to grain sorghum (auditorium) – J.P. Michaud, entomologist, ARC-Hays
- Grain market and farm profitability outlook 2014-2015 (auditorium) – Dan O'Brien, agricultural economist, K-State Northwest Research-Extension Center-Colby

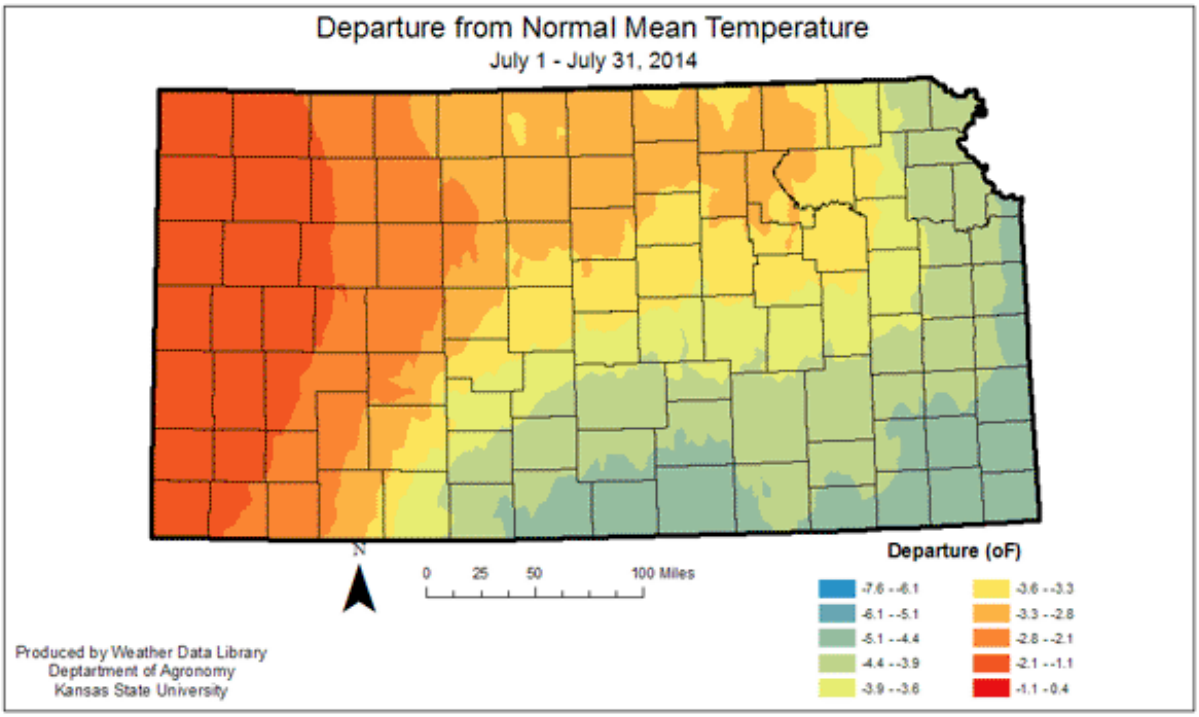
More information is available by calling 785-625-3425.

11. July weather summary for Kansas: Rain shifts

The wet weather in June, shifted to much drier conditions in July. The exception was southwest and south central Kansas. These divisions saw much needed drought relief. The South Central Division had the greatest departure from normal, with an average of 4.53 inches, which was 131 percent of normal. The Southwestern Division averaged 3.16 inches, which was 113 percent of normal. In contrast, the East Central division averaged 1.29 inches. The statewide average precipitation was 2.24 inches. That placed July 2014 as the13th driest since 1896.



The statewide average temperature for the month was cooler than normal, at 75.5 degrees F, or 3.2 degrees cooler than normal. As in June, the range of temperatures was quite wide. The warmest reading reported was 109 degrees F on July 7 at Great Bend. The coolest reading was 40 degrees on the 17th at Pratt. No new daily maximum temperature records were established, although 8 records were tied. There were 186 record low maximum temperatures recorded. On the cold side of temperatures, there were 6 new daily high minimum temperature records set, and 102 record low minimum readings set.



With the lack of rainfall, it isn't surprising that severe weather was not as extensive as in June. There were no tornadoes reported, and only 26 hail reports with 74 wind damage reports. This total of 100 severe storm reports was much less than June's total of 814 severe weather events.

Drought conditions persist across the state, but there was significant improvement in western Kansas, as would be expected with the above-average precipitation and cooler-than-normal temperatures. Only a tiny sliver of extreme northeast Kansas is in near normal conditions. However, the area of extreme drought has been reduced, particularly in central and south central Kansas. There was a small increase in extreme drought in extreme southwest Kansas, where rainfall was more limited. Less than 10 percent of the state is in extreme drought, and an additional 24 percent is in severe drought. The cooler temperatures in July moderated the negative impact of the lack of moisture.

The El Niño/Southern Oscillation (ENSO) is expected to switch to an El Niño event by late summer, but it remains to be seen what impact will be felt. The August temperature outlook is for cooler-than-normal temperatures across most of Kansas, with the southern counties likely to have near-normal temperatures. The precipitation outlook is for above normal from the northwest through the southeast, and neutral for north central and northeast Kansas. This does not indicate how that moisture might be distributed, and means heavy rains or extended dry periods are both possible.

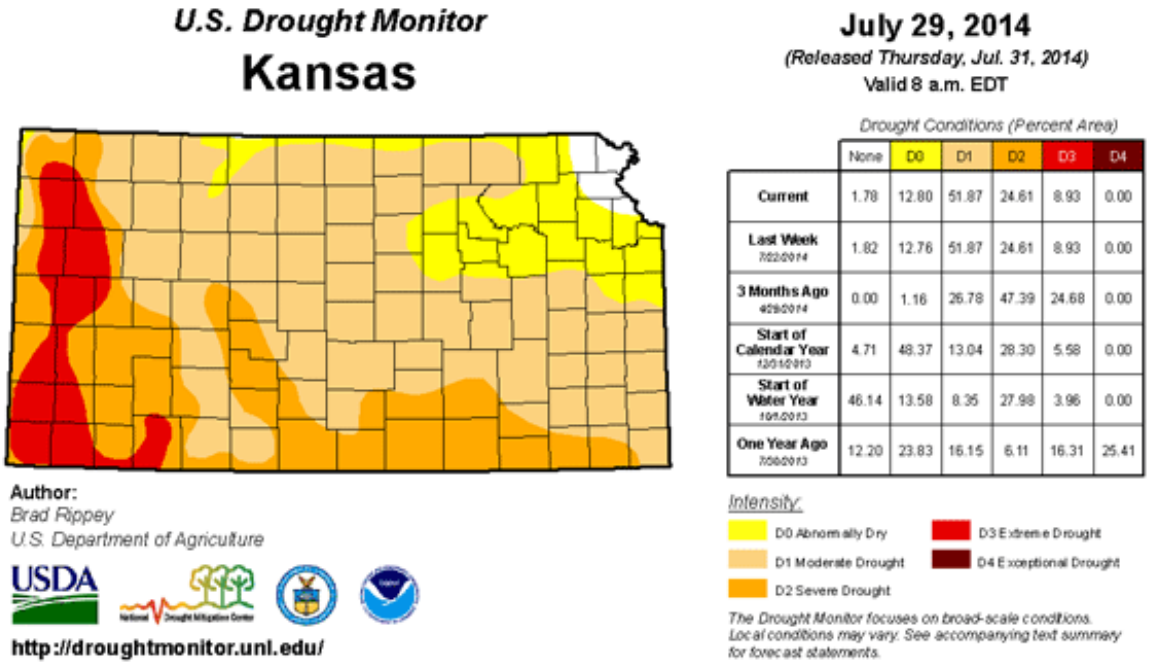


Table 1

July 2014

Kansas Climate Division Summary

	Precipitation (inches)						Temp
	July 2014			2014 Jan through July			
Division	**Total**	**Dep.[1]**	**% Normal**	**Total**	**Dep.[1]**	**% Normal**	**Ave**
Northwest	1.31	-2.18	37	10.28	-3.88	72	74.9
West Central	2.04	-1.40	63	12.55	-1.14	90	75.5
Southwest	3.17	0.40	116	11.59	-1.14	89	76.7
North Central	1.31	-2.80	32	12.73	-5.28	70	76.0
Central	1.55	-2.39	39	15.20	-3.71	80	76.8
South Central	4.54	1.01	131	17.27	-2.76	86	75.8

Northeast	2.04	-2.34	45	15.88	-5.89	73	74.3
East Central	1.29	-3.01	29	15.53	-7.98	65	74.7
Southeast	1.85	-2.22	46	16.82	-8.85	65	74.8
STATE	2.24	-1.49	64	14.26	-4.41	77	75.5

1. Departure from 1981-2010 normal value

Source: KSU Weather Data Library

Mary Knapp, Weather Data Library
mknapp@ksu.edu

12. Comparative Vegetation Condition Report: July22 - August 4

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 25-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, service climatologist:

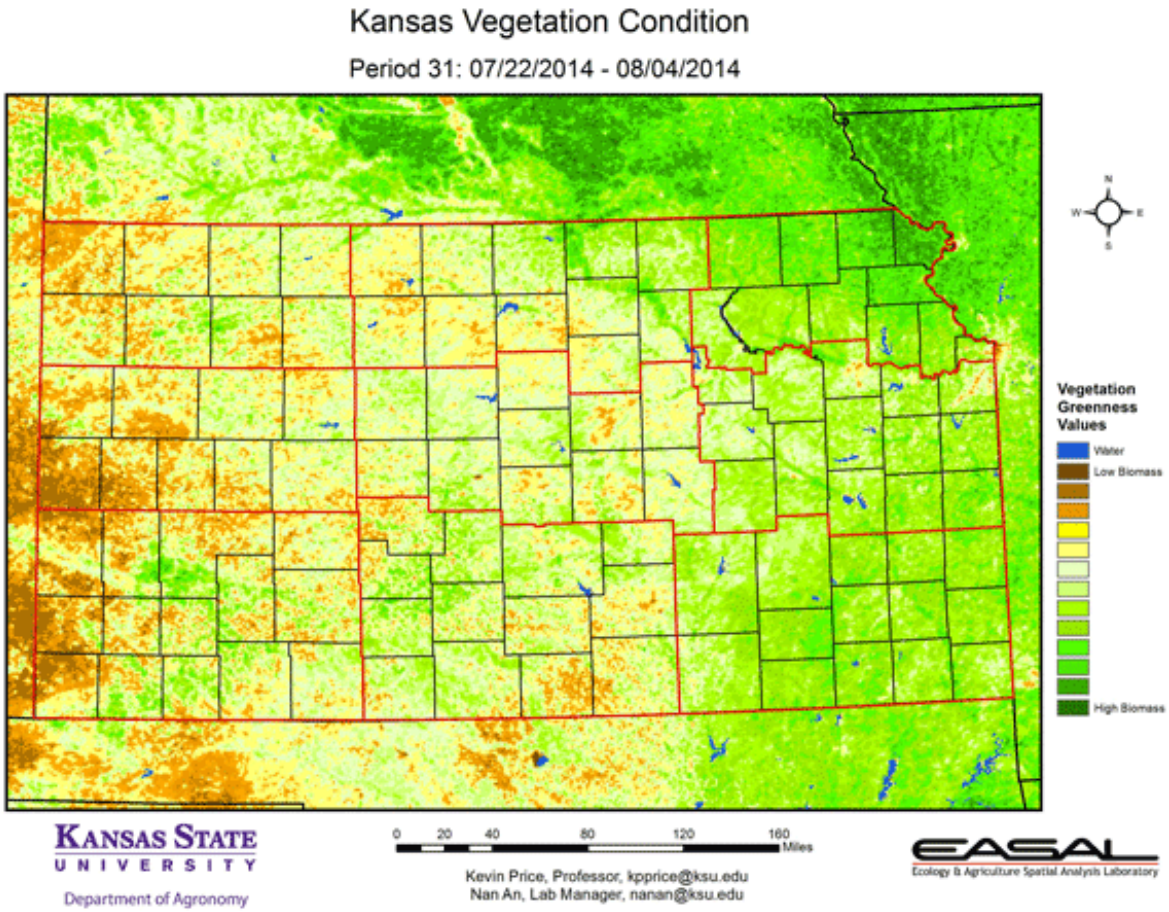


Figure 1. The Vegetation Condition Report for Kansas for July 22 – August 4 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the area of highest vegetative activity is in the extreme northeastern part of the state. This matches with the area reported as drought-free in the U.S. Drought Monitor. Low biomass production continues to be a problem in west central and southwest Kansas, where extreme to severe drought remains.

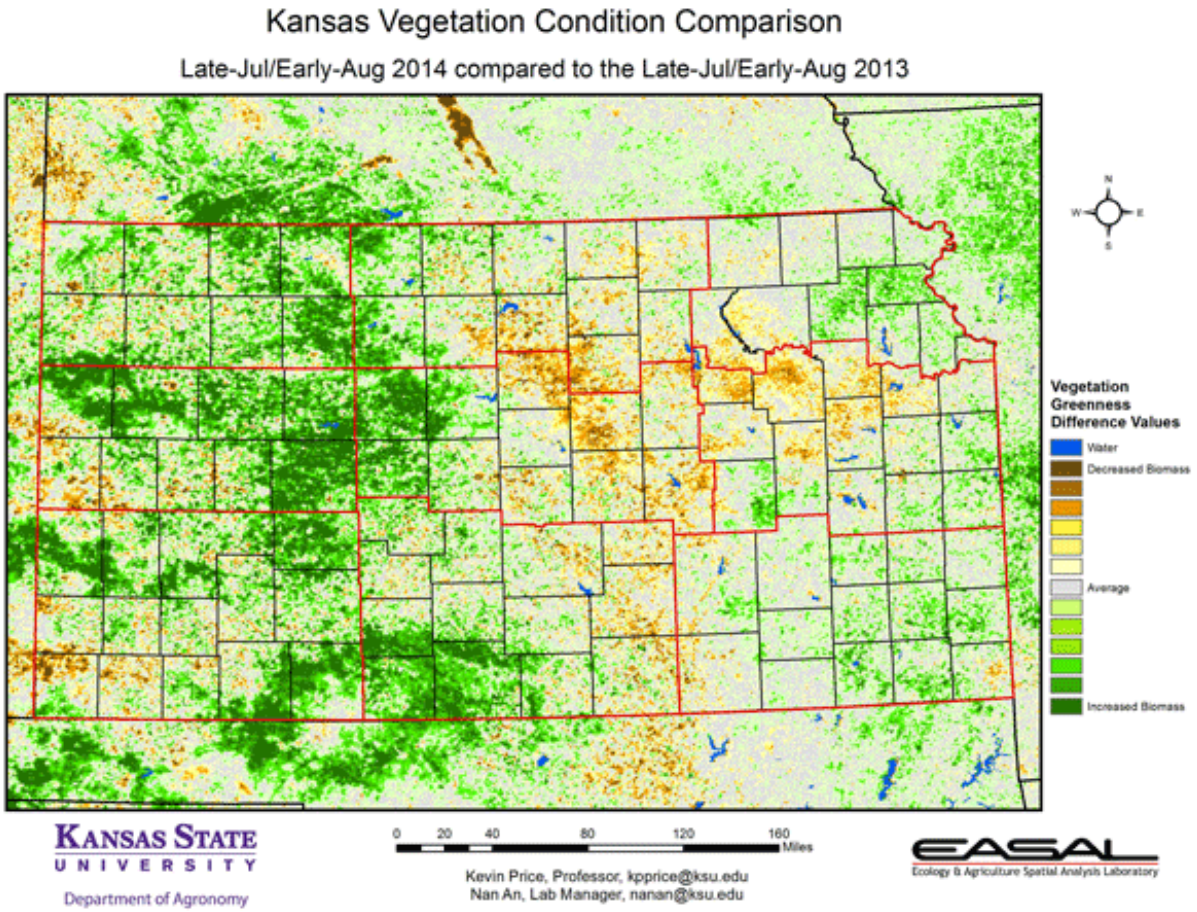


Figure 2. Compared to the previous year at this time for Kansas, the current Vegetation Condition Report for July 22 – August 4 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the biggest increase is in the western half of the state. Conditions were so poor in that region last year that even areas with low biomass production this year are much better than last. Hamilton County is a good example. Last year, precipitation in the county averaged less than 2 inches in July; this year the average is 4 inches.

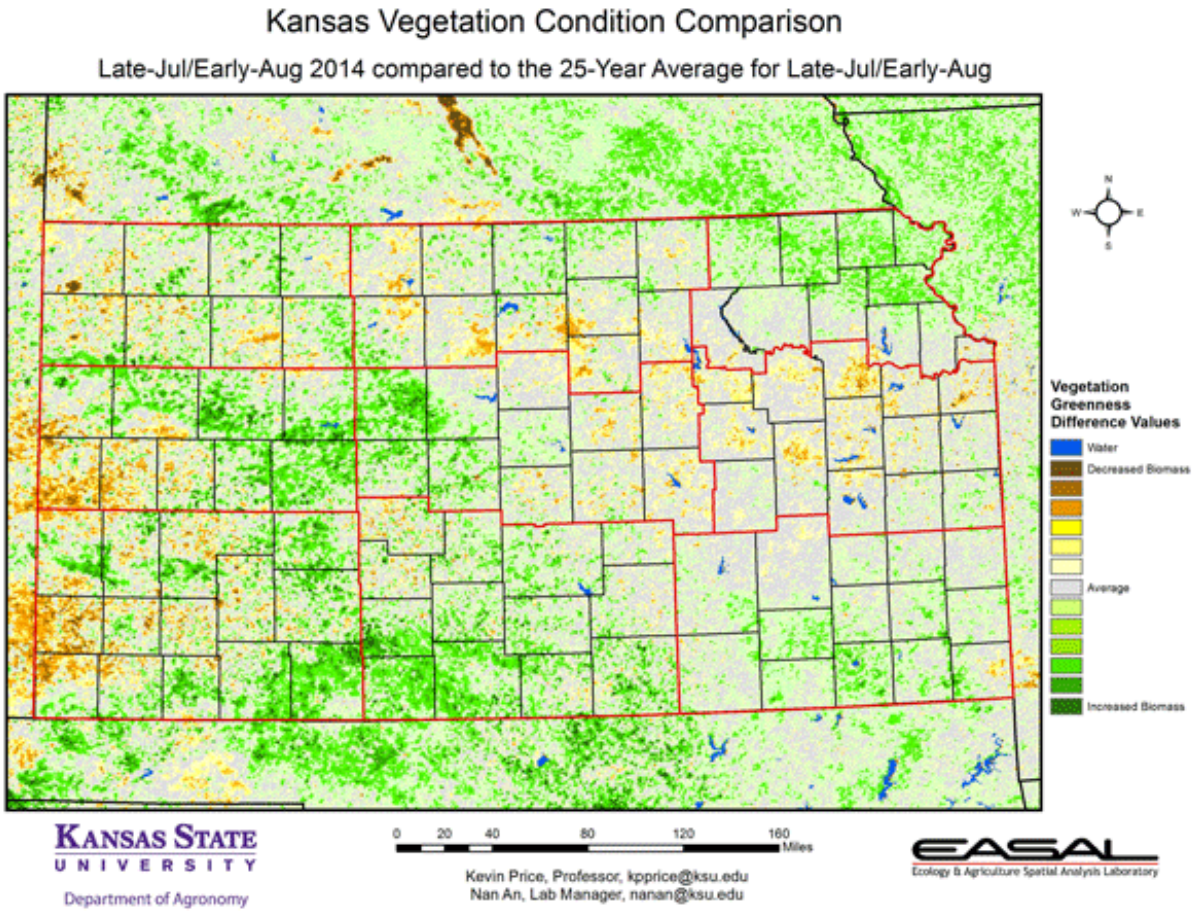


Figure 3. Compared to the 25-year average at this time for Kansas, this year's Vegetation Condition Report for July 22 – August 4 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows above average productivity in parts of central Kansas, from Trego to Barber counties and in northeast Kansas in the Nemaha, Brown, Doniphan, and Atchison county areas. Pockets of below-average production can be seen along the Smoky Hill and Kansas River Valleys, and in western Kansas. This is particularly prominent in Stanton and Greeley counties.

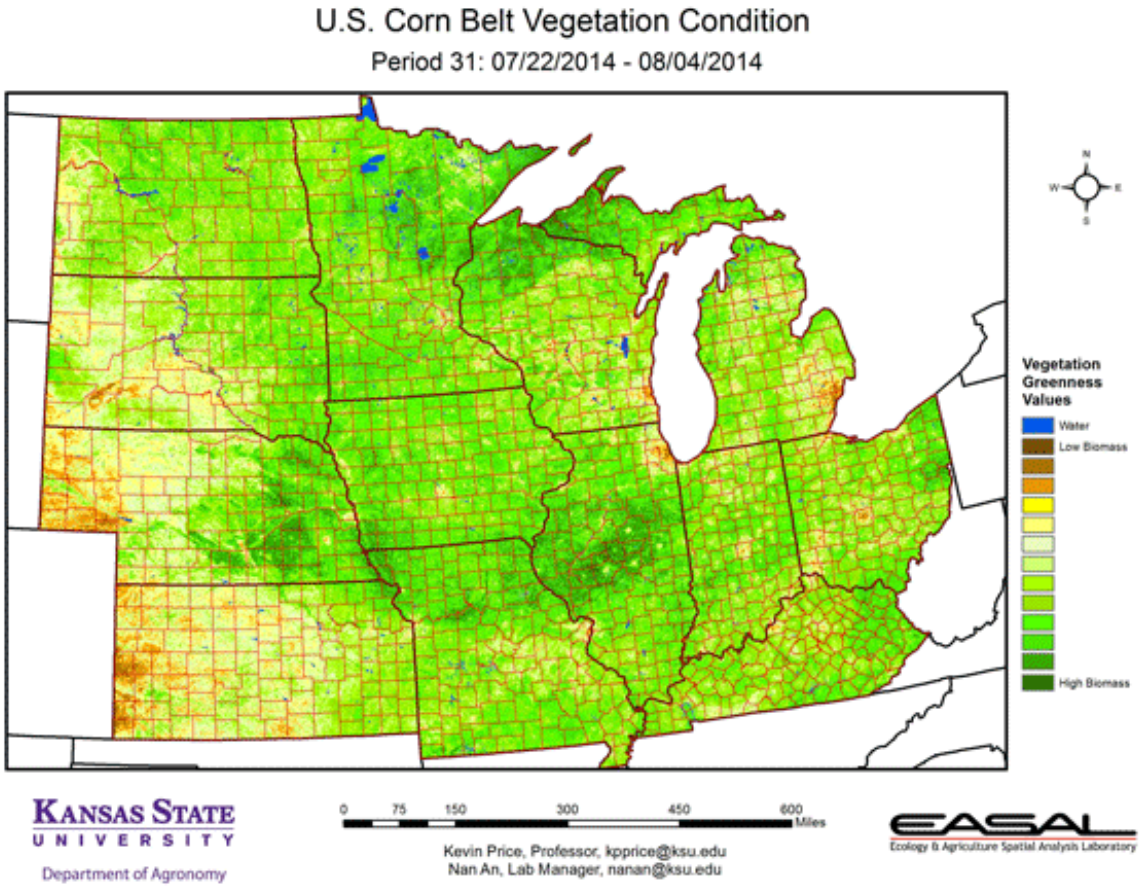


Figure 4. The Vegetation Condition Report for the Corn Belt for July 22 – August 4 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that most of the region has a high level of productivity. Activity is particularly high in northern Wisconsin and along the upper peninsula of Michigan. Another area of high productivity is centered from eastern Nebraska across northern Missouri and into central Illinois. In Illinois, corn condition is reported at 81 percent good to excellent conditions, with more than half the crop in dough stage.

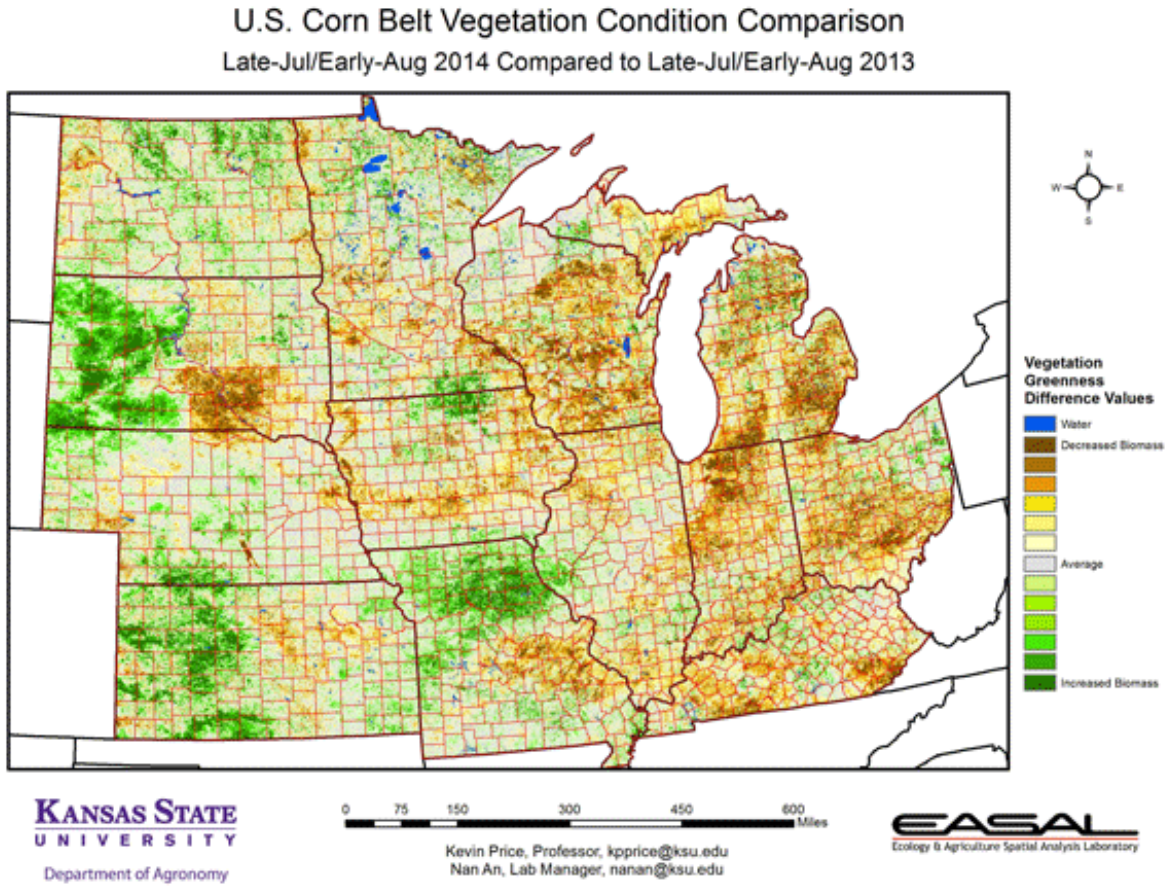


Figure 5. The comparison to last year in the Corn Belt for the period July 22 – August 4 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the western portions of the region together with northern Missouri have much greater biomass production. These areas were severely limited by last year's drought. In contrast, the eastern portion of the Corn Belt has generally lower biomass productivity than last year.

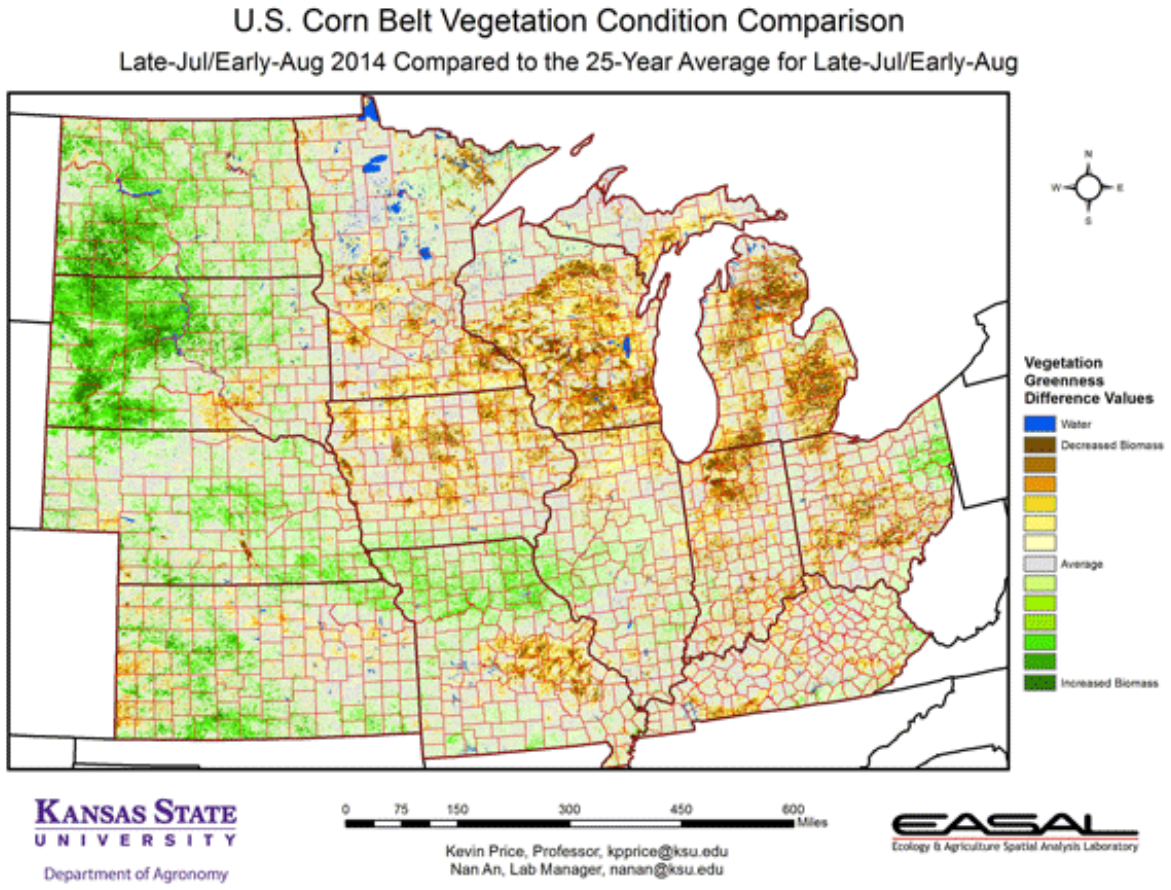


Figure 6. Compared to the 25-year average at this time for the Corn Belt, this year's Vegetation Condition Report for July 22 – August 4 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the largest areas of below-average productivity are in Wisconsin and Michigan. In Wisconsin, observers reported that dry soils and cool temperatures were delaying corn development, particularly in late-planted fields. Still, 72 percent of the corn crop is reported to be in good to excellent condition.

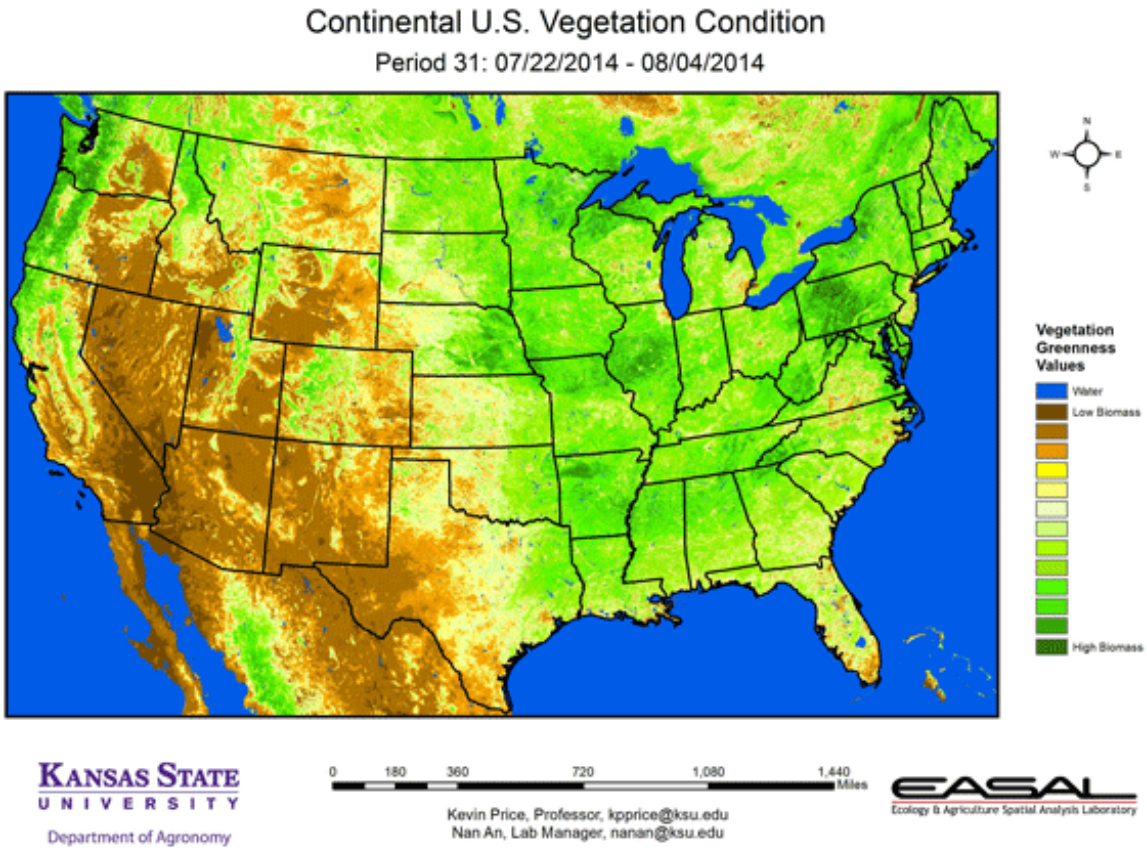


Figure 7. The Vegetation Condition Report for the U.S. for July 22 – August 4 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that the highest level of vegetative production is in the eastern half of the region. Western Pennsylvania has particularly high NDVI values for the period. In contrast, the lowest biomass production is in the Desert Southwest, particularly in eastern California and western Arizona.

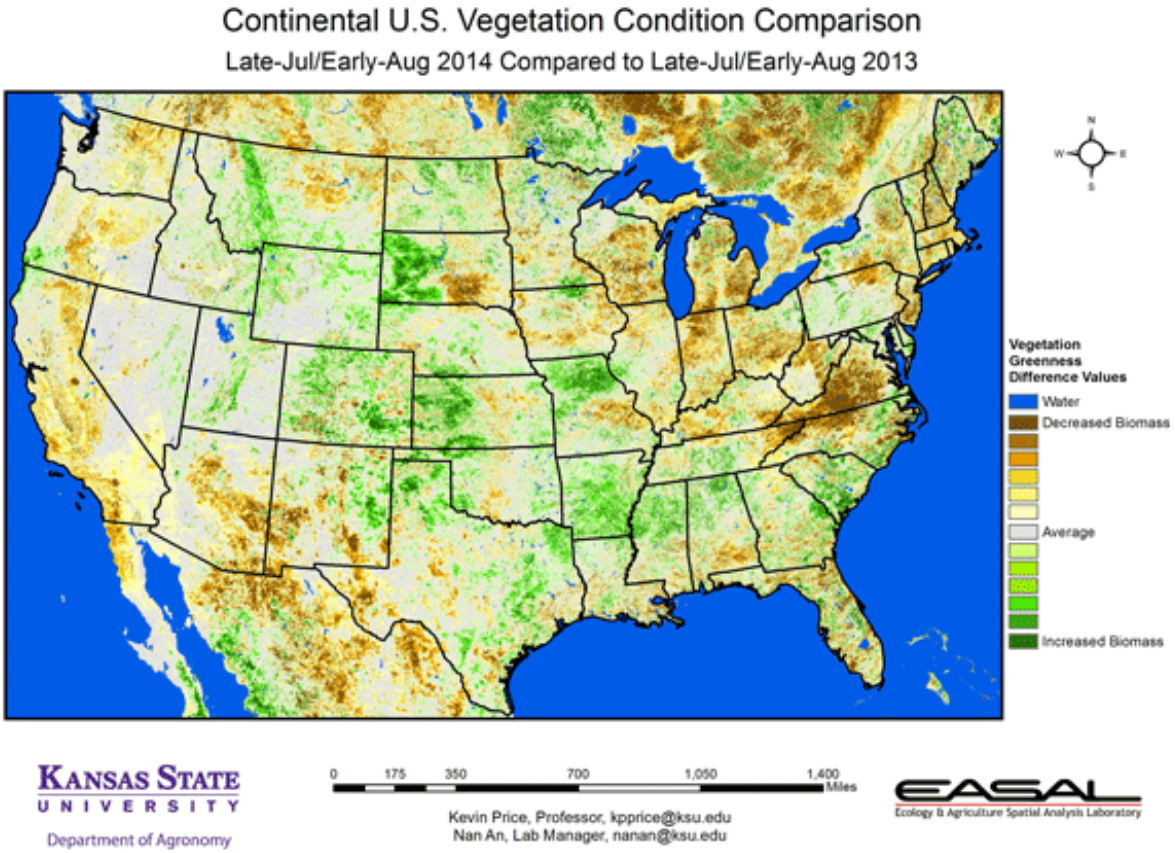


Figure 8. The U.S. comparison to last year at this time for the period July 22 – August 4 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that reduced biomass production is particularly evident in the east central states, with highest departures in North Carolina and Virginia. In Virginia, 25 percent of the pastures were reported to be in poor to very poor condition.

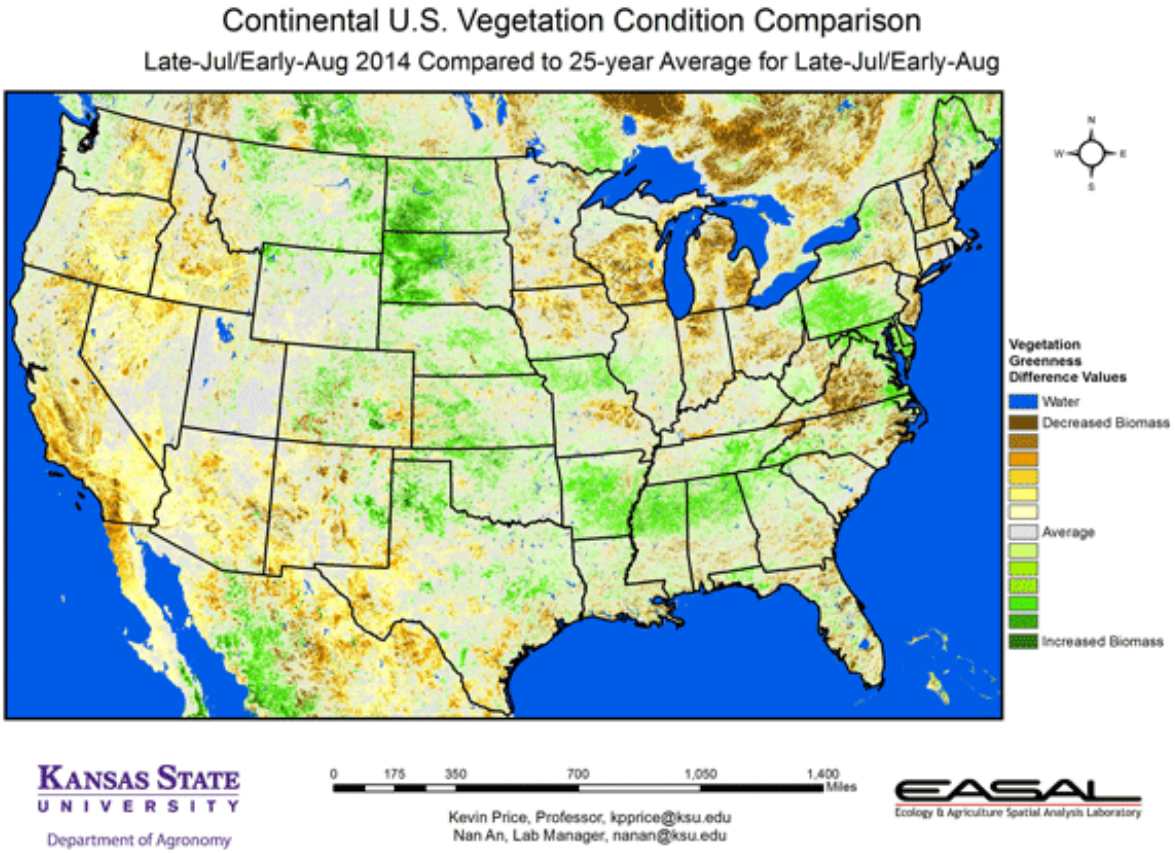


Figure 9. The U.S. comparison to the 25-year average for the period July 22 – August 4 from K-State's Ecology and Agriculture Spatial Analysis Laboratory shows that below-average vegetative production is common in the upper Midwest, where cool weather continues to hamper crop progress.

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