Issue 859

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eUpdate

06/10/2021

These e-Updates are a regular weekly item from K-State Extension Agronomy and Kathy Gehl, Agronomy eUpdate 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 Kathy Gehl, 785-532-3354 kgehl@ksu.edu, or Dalas Peterson, Extension Agronomy State Leader and Weed Management Specialist 785-532-0405 dpeterso@ksu.edu.

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1. Late planting of soybeans: Management considerations

Soybean planting in Kansas is progressing but there are still soybean fields to get planted. In the latest USDA Crop Progress and Condition report (June 7, 2020), soybeans planted was at 68% complete, behind 77% last year but ahead of the long-term average of 62%.

Looking back a little to the historical planting dates for our state, in recent decades Kansas producers have been planting soybeans slightly earlier -- at the rate of about one-third day per year (Figure 1). In the past five growing seasons (2015-19, except for 2018), the "50% planting date" mark was achieved at a similar time (first week of June) statewide. Moreover, the same "50% planting date" mark was attained in 1980 as this current growing season, averaging 50% planting progress by June 1. The largest delay experienced in Kansas was in 1982 with 50% achieved close to the end of June, and getting closer in 2019 with 50% achieved after June 9.

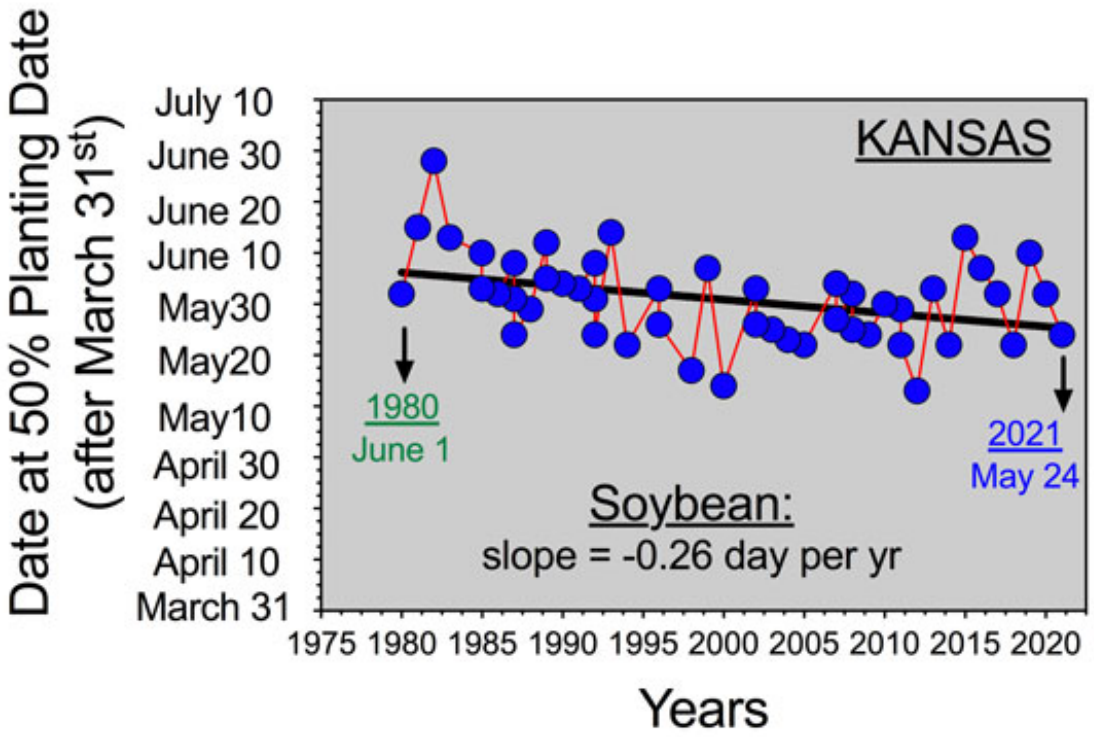


Figure 1. Trend in the date at which 50% of planting progress was achieved for soybean from 1980 to 2021 in Kansas (the last four decades of soybean progress in Kansas). Source: USDA-NASS.

In the places where soybean planting has been delayed (or in double crop soybean systems), producers should consider a few key management practices. Planting soybeans in the right soil conditions is essential for establishing an adequate soybean canopy and improving chances to increase yield potential.

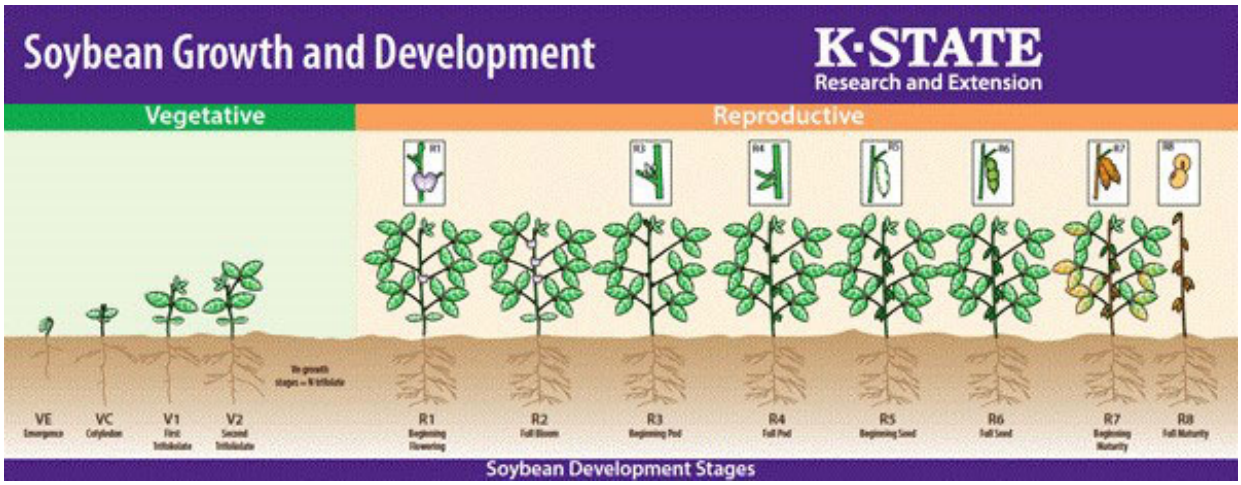
Figure 2. Late-planted soybeans (June 10) into adequate soil conditions. Photo by Ignacio A. Ciampitti, K-State Research and Extension.

Maturity group factor: From our 'planting date x maturity group' study in 2014, 2015, and 2016, late planting did not clearly result in a yield reduction at the dryland sites, and caused only a minimal yield reduction at the irrigated site. Medium maturity groups (ranging from 3.8 to 4.8) yielded better, depending on the site and growing season evaluated (Figures 3, 4, and 5). More information related to this study can be found in Agronomy eUpdate issue 851: April 22, 2021.

Seeding rate factor: Increasing the seeding rate of late-planted soybeans by 10-20% as compared to the optimal seeding rate can help compensate for the shortened growing conditions. Research information on seeding rate and late planting of soybeans is currently being investigated further, with more updates on this topic in future issues of the Agronomy eUpdate. The same soybean cultivar planted early in the planting window, under normal conditions, will develop nearly 50% more productive nodes than when planted in late June: 19-25 nodes when planted early vs. 13-16 nodes when planted late. For soybean seeding rates and optimum plant populations, see the associated article from eUpdate issue 852: April 29, 2021.

Row spacing factor: Information on late-planted soybeans across multiple row spacing suggests that narrow-rows (e.g. 7" or 15" vs. 30") can hasten canopy closure, increasing season-long light interception, weed suppression, and potentially improving biomass and final yield. In some cases, the likelihood of a positive yield response to narrow rows increases as the planting is delayed later in the season.

Finally, proper identification of soybean growth stages can make a difference in yield. We have worked with the United Soybean Board and the Kansas Soybean Commission recently to produce a soybean growth and development chart. It can be downloaded at:
https://www.bookstore.ksre.ksu.edu/pubs/MF3339.pdf



More information about key aspects of each growth stage and management practices can be found in that soybean chart.

Ignacio Ciampitti, Farming Systems
ciampitti@ksu.edu

Stu Duncan, Northeast Area Crops and Soils Specialist
sduncan@ksu.edu

2. Early summer control of sericea lespedeza using herbicides

Sericea lespedeza is a major invasive species of concern on rangeland, pasture, and some CRP acres in Kansas. This state-wide noxious weed infests over 600,000 acres in Kansas (Figure 1).

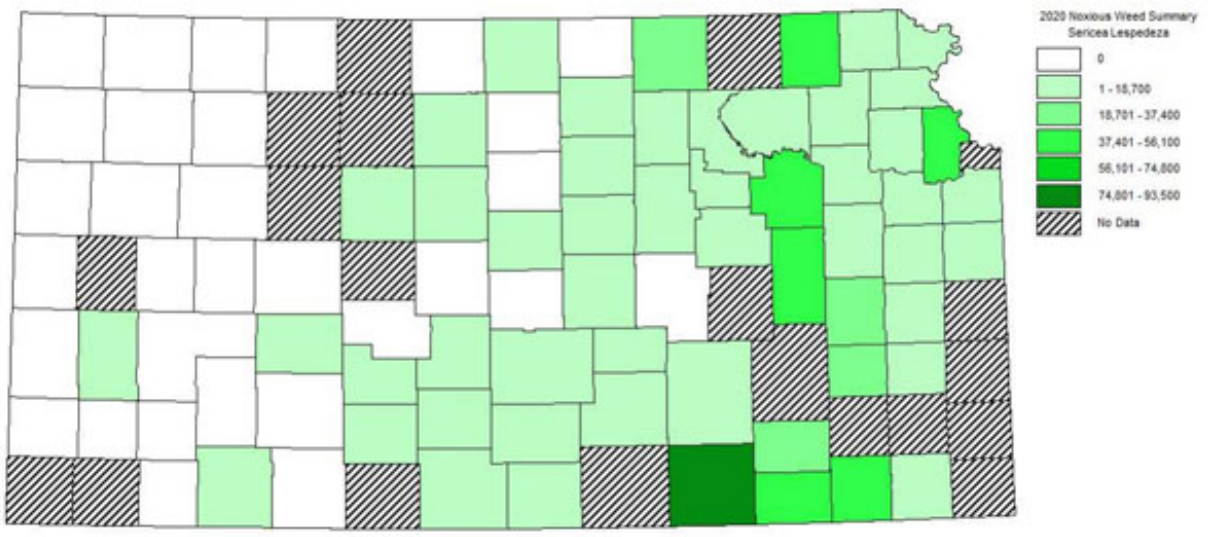


Figure 1. Distribution of sericea lespedeza in Kansas.

Sericea lespedeza is a perennial legume with trifoliate leaves. The leaves are club or wedged shaped (Figure 2). Plants are usually about 3 feet tall, but can grow to several feet in height under ideal conditions. Plants will start to bloom in August with white to cream-colored flowers with a purple throat. Most seed production occurs in September.

Figure 2. Trifoliate, wedge-shaped leaflets of sericea lespedeza. Photo by Walt Fick, K-State Research and Extension.

June is a good time for control of sericea lespedeza using herbicides. At this time, sericea lespedeza is in a vegetative growth stage (Figure 3) and is rapidly growing. By the end of June plants will begin to branch and become woodier.

Figure 3. Vegetative growth stage of sericea lespedeza. Photo by Walt Fick, K-State Research and Extension

Chemical control options

The most effective herbicides to treat sericea lespedeza during the vegetative growth stage are Remedy Ultra (triclopyr) and PastureGard HL (triclopyr + fluroxypyr). Broadcast applications of Remedy Ultra at 1 to 2 pints/acre and PastureGard HL at 0.75 to 1.5 pints/acre should be applied in spray volumes of 10 to 20 gallons/acre. Another herbicide option would be Surmount (picloram + fluroxypyr) at 2 pint/acre. Surmount is a restricted-use pesticide and would be a good choice if you are wanting to treat roughleaf dogwood at the same time.

For spot application, mix 0.5 fl oz PastureGard HL per gallon of water or use a 1% solution of Remedy

Ultra in water. Aerial applications of these products should be done with a minimum spray volume of 3 gallons per acre. Higher volumes, e.g. 5 gallons per acre, will generally be more effective.

There are no grazing and haying restrictions for livestock and lactating grazing animals following use of Remedy Ultra and PastureGard HL. There is a 14-day waiting period prior to hay harvest using these two herbicides. If Surmount is used, there is no waiting period before grazing all livestock, except for lactating dairy animals (14-days before grazing). Surmount also requires a 14-day waiting period prior to hay harvest.

Sericea lespedeza is a state-wide noxious weed in Kansas and therefore needs to be controlled. Sericea lespedeza has a tremendous seed bank that helps reestablish stands.

Herbicide treatments will need to be repeated every 2 to 4 years to keep this invasive species in check. Initial treatments should reduce dense stands to the point where spot treatment can be used in future years. Left untreated, sericea lespedeza will dominate a site, greatly reducing forage production and species diversity.

Walt Fick, Rangeland Management Specialist
whfick@ksu.edu

3. Double crop options after wheat

Double cropping after wheat harvest can be a high-risk venture. The available growing season is relatively short. Heat and/or dry conditions in July and August may cause problems with germination, emergence, seed set, or grain fill. Ample soil moisture this year can aid in establishing a successful crop after wheat harvest.

The most common double crop options are soybean, sorghum, and sunflower. Other possibilities include summer annual forages and specialized crops such as proso millet or other short-season summer crops – even corn. Cover crops are also an option for planting after wheat.

Be aware of herbicide carryover potential

One major consideration before deciding to plant a double crop or cover crop after wheat is the potential for herbicide carryover. Many herbicides applied to wheat are in the sulfonyl urea herbicide family and have the potential to remain in the soil after harvest. If an herbicide such as Finesse, Glean, or Ally has been used, the most tolerant double crop will be sulfonylurea-resistant varieties of soybean (STS, SR, Bolt) or other crops. If you chose to use herbicide-resistant varieties, be sure to match the resistance trait with the specific herbicide (not just the herbicide group) that you used.

Less information is available regarding herbicide carry over potential of wheat herbicides to cover crops. There is little or no mention of rotational restrictions for specific cover crops on the labels of most herbicides. However, this does not mean there are no restrictions. Generally, there will be a statement that indicates "no other crops" should be planted for a specified amount of time, or that a bioassay must be conducted prior to planting the crop.

Burndown of summer annual weeds present at planting is essential for successful double-cropping. Glyphosate used to be effective, but if glyphosate-resistant kochia and pigweeds are present, alternative treatments such as paraquat may be required. Dicamba or 2,4-D may also be considered, if the soybean varieties with appropriate herbicide resistance traits are planted.

Management, production costs, and yield outlooks for double crop options are discussed below.

Soybeans

Soybeans are probably the most commonly used crop for double cropping, especially in central and eastern Kansas (Figure 1). With glyphosate-resistant varieties, often the only production cost for planting double crop soybeans in recent years has been the seed, an application of glyphosate, and the fuel and equipment costs associated with planting, spraying, and harvesting. However, with the development of glyphosate-resistant weeds, additional herbicides may be required to achieve acceptable control and minimize the risk of further development of resistant weeds.

Figure 1. Soybeans planted as a double crop following wheat at the Ashland Bottoms Research Farm in Manhattan. Photo by Kraig Roozeboom, K-State Research and Extension.

Weed control. The cost for weed control cannot really be counted against the soybeans, since that cost should occur whether or not a soybean crop is present. In fact, having soybeans on the field may reduce herbicide costs compared to leaving the field fallow. Still, it is recommended to apply a pre-emergence residual herbicide before or at planting time, especially if weed resistance to glyphosate has been a problem. Later in the summer, a healthy soybean canopy may suppress weeds enough that a late-summer post-emergence application may not be needed.

Variety selection for double cropping is important. Soybeans flower in response to a combination of temperature and day length, so shifting to an earlier-maturing variety when planting late in a double crop situation will result in very short plants with pods that are close to the ground. Planting a variety with the same or perhaps even slightly later maturity rating (compared to soybeans planted at a typical planting date) will allow the plant to develop a larger canopy before flowering. Planting a variety that is too much later in maturity, however, increases the risk that the beans may not mature before frost, especially if long periods of drought slow growth. The goal is to maximize the length of the growing season of the crop, so prompt planting after wheat harvest time is critical. The earlier you can plant, the higher the yield potential of the crop if moisture is not a limiting factor.

Fertilizer considerations. Adding some nitrogen (N) to double crop soybeans may be beneficial if the previous wheat yield was high and depleted soil N. A soil test before wheat harvest for N levels is recommended. Use no more than 30 lbs./acre of N. It would be ideal to knife-in the fertilizer. If that is not possible, banding it on the soil surface would be acceptable. Do not apply N in the furrow with soybean seed as severe stand loss can occur.

Seeding rates and row spacing. Seeding rate can be slightly increased if soybeans are planted too late in order to increase canopy development. Narrow row spacing (15-inch or less) has often resulted in a yield advantage compared to 30-inch rows in late plantings. Soybeans planted in

narrow rows will canopy over more quickly than in wide rows, which is important when the length of the growing season is shortened. Narrow rows also offer the benefits of increasing early-season light capture, suppressing weeds and reducing erosion. On the other hand, the advantage of planting in wide rows is that the bottom pods will usually be slightly higher off the soil surface to aid harvest. The other consideration is planting equipment. Often no-till planters will handle wheat residue better and place seeds more precisely than drills, although the difference has narrowed in recent years.

What are typical yield expectations for double crop soybeans? It varies considerably depending on moisture and temperature, but yields are usually several bushels less than full-season soybeans. A long-term average of 20 bushels per acre is often mentioned when discussing double crop soybeans in central and northeast Kansas. Rainfall amount and distribution can cause a wide variation in yields from year to year. Double crop soybean yields typically are much better as you move farther southeast in Kansas, often ranging from 20 to 40 bushels per acre.

A recent publication explores the potential yield of double crop soybeans relative to wheat yield and the most limiting factors affecting the yields for double-crop soybeans. The link to this article is: **https://bookstore.ksre.ksu.edu/pubs/MF3461.pdf**

Sorghum

Sorghum is another double crop option. Unlike soybeans, sorghum hybrids for double cropping should be earlier maturing. Sorghum development is primarily driven by accumulation of heat units and the double crop growing season is too short to allow medium-late or late hybrids to mature before the first frost in most of Kansas.

Late-planted sorghum likely will not tiller as much as early plantings and can benefit from slightly higher seeding rates than would be used for sorghum planted at an earlier date. Narrow row spacing is advised, especially if the outlook for rainfall is good.

A key component for estimation of N application rates is the yield potential. This will largely determine the N needs. It is also important to consider potential residual N from the wheat crop. This can be particularly important when wheat yields are lower than expected. In that situation, additional available N may be present in the soil.

Double crop sorghum planted into average or greater-than-average amounts of wheat residue can result in a challenging amount of residue to deal with when planting next year's crop. Nitrogen fertilizer can be tied up by wheat residue, so use application methods to minimize tie-up, such as knifing into the soil below the residue.

Weed control can be important in double crop sorghum. Warm-season annual grasses, such as crabgrass, can reduce double crop sorghum yields. Using a chloroacetamide-and-atrazine pre-emergence product may be key to successful double crop sorghum production. Herbicide-resistant grain sorghum varieties will allow use of additional herbicides that are effective on summer annual grasses.

No-till studies at Hesston documented 4-year average double crop sorghum yields of 75 bushels per acre compared to about 90 bushels per acre for full-season sorghum. A different 10-year study that did not have double crop planting but did compare early- and late-planting dates averaged 73

bushels per acre for May planting vs. 68 bushels per acre for June planting.

Sunflowers

Sunflowers can be a successful double crop option anywhere in the state, provided there is enough moisture at planting time to get a stand. Sunflowers need more moisture than any other crop to germinate and emerge, so the biggest hurdle to sunflower production is getting a successful stand. Once that hurdle is overcome, sunflowers are more drought-tolerant than most crops so the chances of having a yield in any kind of environment are good.

When double cropping sunflowers, producers should use slightly lower seeding rates to reflect the lower yield expectations compared to full-season sunflowers. It is also necessary to use shorter-season hybrids so they bloom and mature before frost.

Weed control can be an issue with double crop sunflowers since herbicide options are limited, especially post-emergence. Thus, controlling weeds prior to sunflower planting is critical and may be complicated by the presence of glyphosate-resistant weeds and pre-plant restrictions with other herbicides. Consequently, double crop sunflowers may be most successful where glyphosate-resistant weeds are not present. Planting Clearfield or Express Sun sunflowers will provide additional post-emergence herbicide options, but ALS-resistant kochia and pigweeds still won't be controlled. Beyond, the product used in Clearfield sunflower, does have activity on small annual grasses as well as broadleaves (except for ALS-resistant biotypes).

Summer annual forages

With mid-July plantings, and where herbicide carryover issues are not a concern, summer annual sorghum-type forages are also a good double crop option. A study planted July 21, 2008 near Holton, when summer rainfall was very favorable, provided yields of 2.5 to 3 tons dry matter/acre for hybrid pearl millet and sudangrass at the low end to 4 to 5 tons dry matter/acre for forage sorghum, BMR forage sorghum, photoperiod sensitive forage sorghum, and sorghum x sudangrass hybrids. Earlier plantings may produce even more tonnage, as long as there is adequate August rainfall.

One challenge with late-planted summer annual forages is getting them to dry down when harvest is delayed until mid- to late-September. Wrapping bales or bagging to make silage are good ways to deal with the higher moisture forage this late in the year.

Corn

Is double crop corn a viable option? Corn is typically not recommended for June or July plantings because yield is usually substantially less than when planted earlier.

Typically, corn planted in mid-July has a difficult time pollinating and seldom receives sufficient heat units to fill grain before frost. Very short-season corn hybrids (80 to 95 RM) have the greatest chance of maturing before frost in double crop plantings, but generally have less yield potential than hybrids that are 100 RM or more used for full-season plantings. Short-season hybrids often will set the ear fairly close to the ground, increasing the difficulty of harvest. Glyphosate-resistant hybrids will make weed control easier with double crop corn, but there may still be problems with late-emerging summer weeds such as pigweeds, velvetleaf, and large crabgrass. Keep in mind that corn is very susceptible to carryover of most residual ALS herbicides used in wheat.

Volunteer wheat control

One of the issues with double cropping often overlooked by producers is the potential for volunteer wheat in the crop following wheat. If volunteer wheat emerges and goes uncontrolled, it can cause serious problems for nearby planted wheat fields in the fall.

Volunteer wheat can generally be controlled fairly well with glyphosate in Roundup Ready crops. It can also be controlled in sunflowers and soybeans with the labeled post-emergence grass herbicides such as Assure II, Select, or Poast Plus, but control is reduced during times of drought stress. Atrazine can provide control of volunteer wheat in corn and sorghum, but can be erratic depending on rainfall patterns.

Ignacio Ciampitti, Farming Systems
ciampitti@ksu.edu

Sarah Lancaster, Extension Weed Specialist
slancaster@ksu.edu

4. Wheat harvest: Identifying disease problems and setting harvest priorities

As we look toward harvest in parts of the state, we wanted to provide some reminders about diseases that may affect either grain quality or the viability of grain that is destined to be saved for seed. At this point in the season most disease management decisions have been made, but there are some strategies for mitigating losses on heavily infected fields. Additionally, decisions can be made about variety selection and seed preparation for next season.

Fusarium head blight (head scab)

We have been seeing Fusarium head blight in several parts of Kansas where wet weather was present during and after flowering. This disease (Figure 1) can lead to lightweight, damaged kernels which may contain the mycotoxin deoxynivalanol (DON) (Figure 2). DON is sometimes referred to as "vomitoxin" because it can lead to vomiting and feed refusal in animals. Fields known to have high levels of Fusarium head blight should be harvested separately from fields that are unaffected. It may be prudent to harvest infected fields as early as possible to avoid further accumulation of DON in grain. Producers should carefully consider if they want to blend seed from infected and uninfected fields, as this may result in reduced quality of uninfected grain. Research has indicated that adjusting combine fan speeds may help blow out lightweight Fusarium damaged kernels. Fan speeds that are too high, however, may remove too much healthy grain as well. Additionally, blowing out scabby kernels may increase levels of this pathogen in the field for subsequent seasons and may increase the chance and abundance of volunteer wheat. If you are considering saving back seed from affected fields, seed should be professionally cleaned. If seed from fields with Fusarium head blight is saved, a seed treatment may help improve emergence. Fusarium head blight is not seed transmitted, however, so infected seeds themselves will not result in head bight problems in the subsequent season.

Figure 1. Symptoms of Fusarium head blight (head scab) appear as bleached spikelets anywhere on the head, and will spread through the head when conditions are favorable. When there is high humidity, salmon colored fungal structures can be seed some infected heads. Photo by Kelsey Andersen Onofre, K-State Research and Extension.

Figure 2. Chalky wheat kernels resulting from severe infection of Fusarium head blight. Photo by Erick DeWolf, K-State Research and Extension.

Loose smut

We have scouted many fields with loose smut this year across Kansas. Loose smut can be easily identified by masses of black spores that appear on heads in place of spikelets (Figure 3). At this point in the growing season, most of the black, powdery spores are gone, leaving only the central stem of the head (rachis). Individual heads with loose smut will not produce any grain. Earlier in the growing season, spores from infected heads may spread to neighboring plants and infect developing seed. Cool, wet weather during the flowering period this season was favorable for spread of this disease. Although this disease will not affect grain quality in the current season, the disease can persist within the infected kernels if the grain is saved for seed. The best option for control of grain being saved for seed is the use of a fungicide seed treatment. Coverage is key to ensure success of the treatment. More information about wheat seed treatment options can be found in this K-State wheat seed treatment publication: https://bookstore.ksre.ksu.edu/pubs/MF2955.pdf.

Figure 3. Loose smut symptoms caused by the fungus Ustilago tritici**. Photo by Kelsey Andersen Onofre, K-State Research and Extension.**

Common bunt (stinking smut)

We know that last year there were higher than normal levels of common bunt in parts of the state. This is a disease that is nearly impossible to detect within the field when levels of the disease are low. This disease can be from infested seed or from the soil surface. Infection occurs in the fall when wheat germinates but does not present symptoms until grain fill. Kernels infected by common bunt are dark and discolored and are filled with black spores called teliospores (Figure 4). Teliospores can be released when wheat is harvested and can release a foul odor. Heavily infected fields can have reduced grain quality and yield. Very smutty grain can be discounted. The best way to manage common bunt is to purchase certified, fungicide treated seed or to have saved seed commercially cleaned and fungicide treated.

Figure 4. Wheat infected with common bunt. Photo by Kelsey Andersen Onofre, K-State Research and Extension.

Kelsey Andersen Onofre, Extension Plant Pathologist
andersenk@ksu.edu

5. Kansas Ag-Climate Update for May 2021

The Kansas Ag-Climate Update is a joint effort between our climate and extension specialists. Every month the update includes a brief summary of that month, agronomic impacts, relevant maps and graphs, 1-month temperature and precipitation outlooks, monthly extremes, and notable highlights.

May 2021: Typical Atmospheric Cooling Pattern in Kansas

Due to precipitation abundance, drought was essentially eliminated in May. At the end of the month, 97 percent of the state was drought-free and only 3 percent was abnormally dry. The June precipitation outlook favors neutral conditions across the state. The temperature outlook calls for cooler-than-normal conditions across much of the state. If a warm, dry pattern develops instead, it could result in a rapid return of drought conditions.

Severe weather season exploded in May with the report of 34 tornadoes, 159 hail events (Figure 1), and 116 damaging wind events due to unstable atmospheric conditions. In addition, there were numerous flash flood events across the state. The excess moisture, in addition to creating flood issues, also caused damage to wheat. Additional agricultural issues came in the form of delayed planting and emergence of corn and soybeans, problems with weed, fungicide, and pesticide applications, and delays in cutting hay.

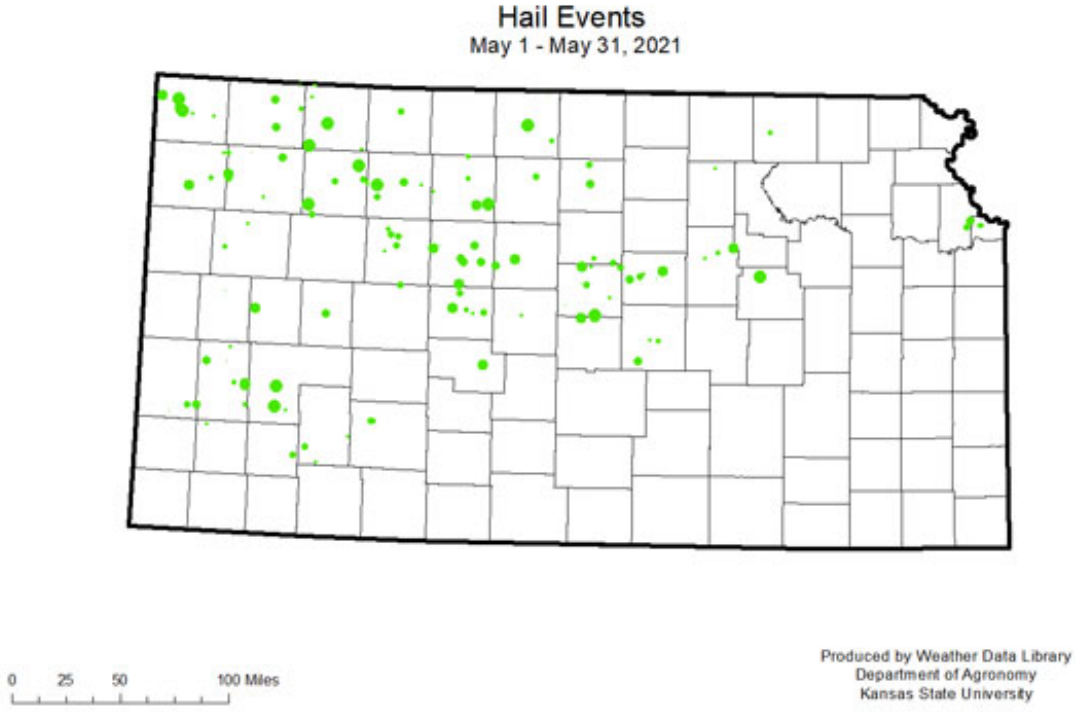


Figure 1. Hail events in Kansas for May 2021. Source: Kansas Weather Data Library.

View the entire May Ag-Climate Update, including the accompanying maps and graphics (not shown in this short article), at http://climate.k-state.edu/ag/updates/.