Issue 1019

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eUpdate

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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. Wheat planting: Be cautious of planting too early

The general target date for planting wheat for optimum grain yields in Kansas is within a week of the best pest management planting date, or BPMP (formerly known as the "Hessian fly-free") date (Figure 1). If forage production is the primary goal, earlier planting (mid-September) can increase forage yield. However, if grain yield is the primary goal, then waiting until the BPMP date to start planting is the best approach (Figure 2). Planting in mid-September is ideal for dual-purpose wheat systems where forage yields need to be maximized while reducing the effects of early planting on reduced grain yields.

Optimum wheat planting dates in Kansas depend on location within the state. Suggested planting dates by zone are as follows:

Zone 1: September 10-30

Zone 2: September 15 – October 20

Zone 3: September 25 – October 20

Zone 4: October 5 – 25

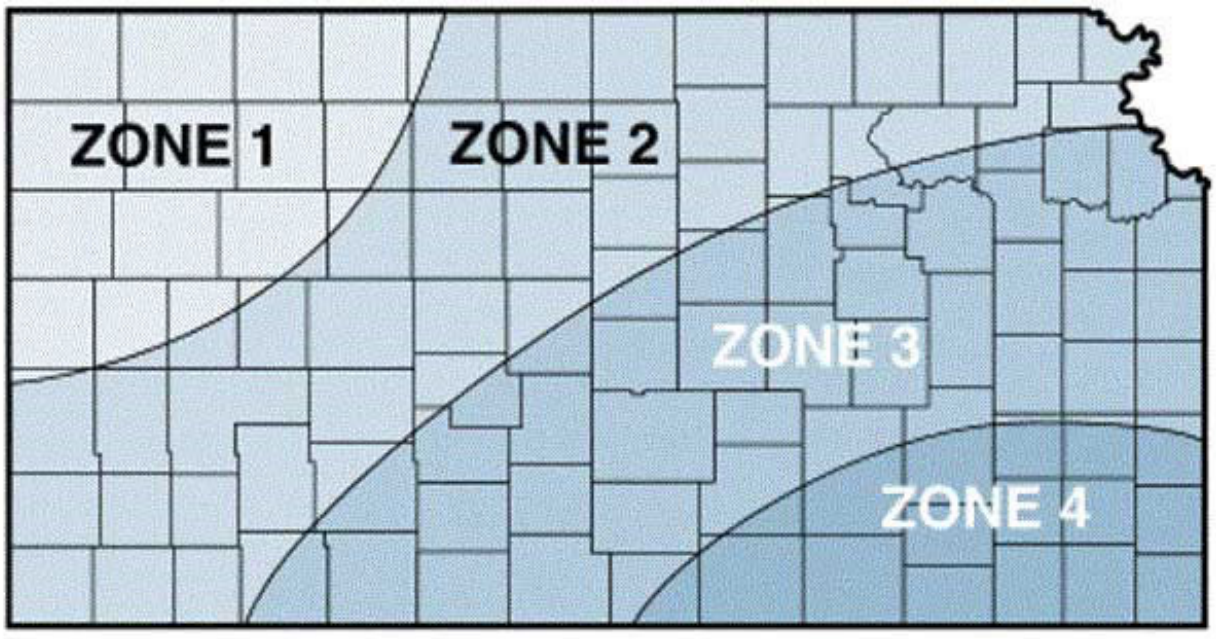

Figure 1. Optimum wheat planting dates by zone in Kansas.

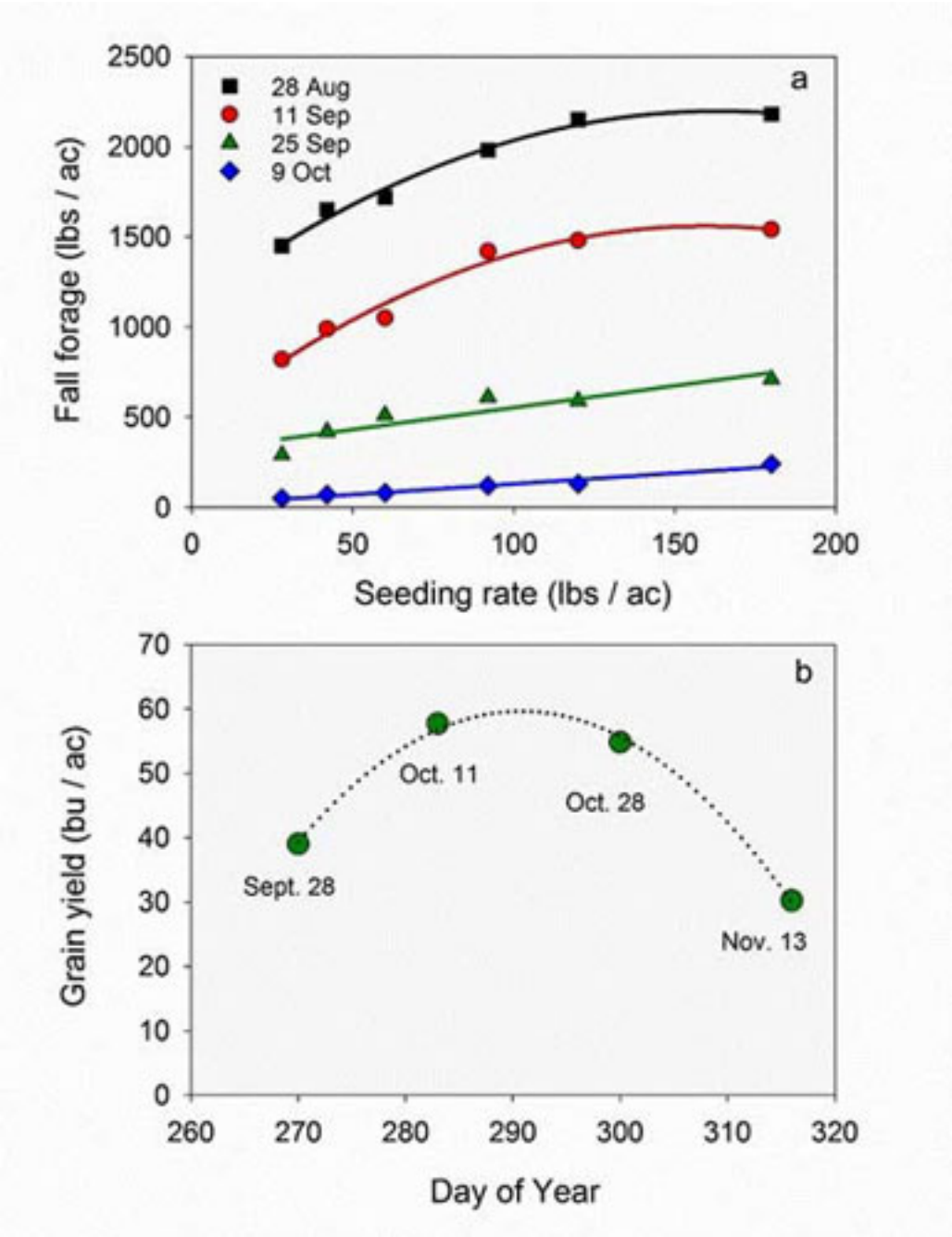

Figure 2. Effect of planting date and seeding rate on wheat fall forage yield in Lahoma, north-central Oklahoma (a) and effect of planting date on wheat grain yield near Hutchinson, south-central Kansas (b). Figure adapted from KSRE numbered publication MF3375.

While the effects of planting date on wheat yield shown in Figure 2 will hold true for most years, they will largely depend on environmental conditions and disease pressure during the growing season. In some years, earlier-planted wheat does best and some years the later-planted wheat does best, and these year-specific performances usually relate to the weather experienced in the fall and spring. For instance, early-planted fields in growing seasons with a warm fall might produce excessive biomass that will use an excessive amount of water during the fall. If the following spring is dry, soil water deficit during grain filling then can reduce grain yield. Conversely, a warm fall would favor tillering of a later-planted wheat crop, helping to compensate for this delay. The opposite is also true: in years

with an early onset of cold temperatures during the fall, an earlier planted crop might perform better than a later planted crop due to its ability to produce enough fall tillers to still maximize grain yield. Research conducted by Merle Witt with late-sown wheat in Garden City from 1985 through 1991 is summarized in Figure 3. Averaged across all these years, delaying wheat sowing from October 1 to November 1 delayed heading date by 6 days and decreased wheat yields in 23%. The grain-filling period was progressively shortened by about 1.7 days and occurred under hotter temperatures (about 1.5°F) for every month of delay in sowing date.

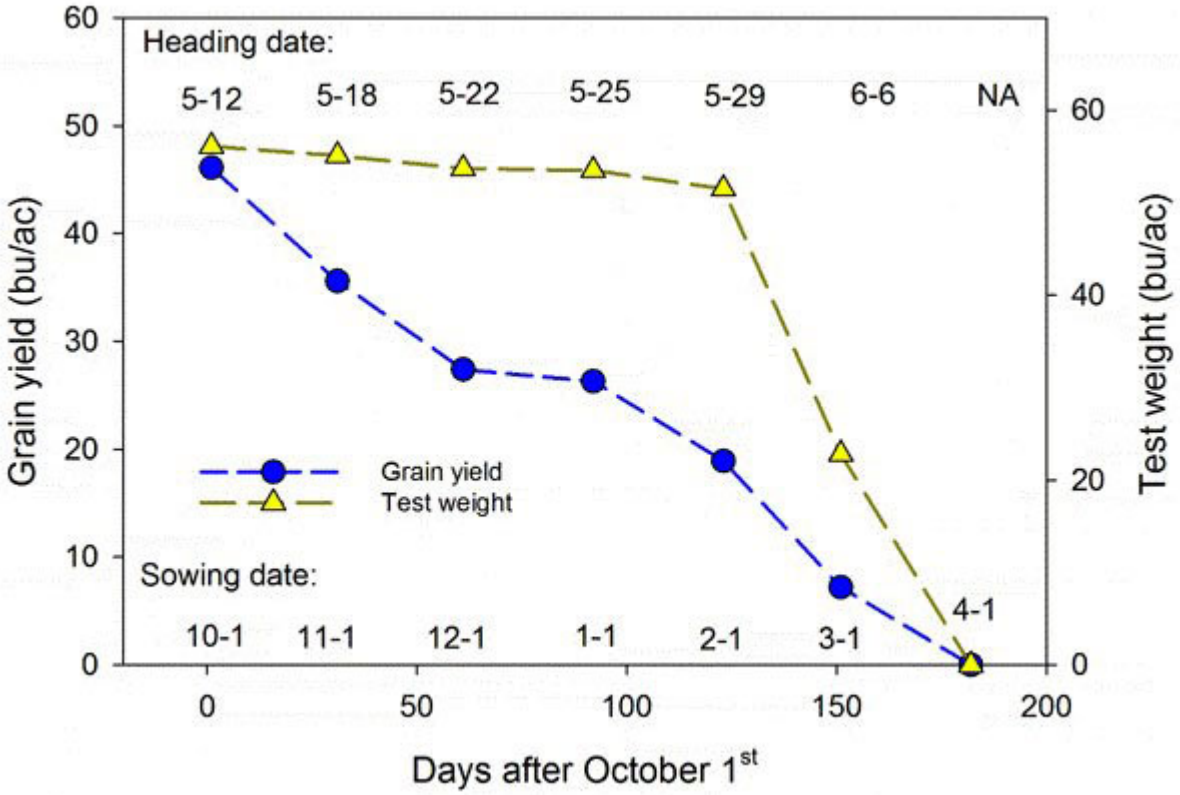

Figure 3. Wheat grain yield, test weight, and heading date responses to sowing date between 1985 to 1991. Data adapted from Kansas Agric. Exp. St. SRL 107.

In dry years, seedling emergence and stand establishment can be uneven. These dry conditions can also lead to poor crown root development and fall tillering. If fields become too wet to plant by mid-October and stay that way through the remainder of the fall, then producers end up planting much later than the optimum planting date. Following an unusual year, producers will often start planting earlier than the recommended date if soil conditions are good, because the negative consequences of adverse conditions are fresh on their minds. However, planting early also increases the risk of other production problems including multiple diseases, insect pests, weed infestations and undesirable growth of the crop.

Potential risks of planting wheat early

Increased risk of **wheat streak mosaic and related diseases**. Wheat curl mites that spread these diseases survive the summer on volunteer wheat and certain other grasses. As those plants die off, the wheat curl mites leave in search of new plants to feed on. Early-planted wheat is likely to become

infested, and thus become infected with wheat streak mosaic virus, high plains virus, and Triticum mosaic virus. The wheat curl mites are moved by wind and can be carried a mile or more before dying, so if wheat is planted early, make sure all volunteer wheat within a mile is completely dead at least two weeks before planting. For growers considering planting early, a good management consideration would be to select wheat varieties with resistance to the wheat streak mosaic virus and/or with tolerance to the wheat curl mite, especially in the western portions of the state.

Increased risk of **Hessian fly**. Over the summer, Hessian fly pupae live in the old crowns of wheat residue. After the first good soaking rain in late summer or early fall, these pupae (or "flaxseed") will hatch out as adult Hessian flies and start looking for live wheat plants to lay eggs on. They are most likely to find either volunteer or early-planted wheat then. After the BPMP date, many of the adult Hessian flies in a given area will have laid their eggs, so there is generally less risk of Hessian fly infestation for wheat planted after that date. Hessian fly adult activity has been noted through November or early December in Kansas. If planting early, consider varieties with improved tolerance to Hessian fly.

Armyworms and other lepidopteran larvae may also still pose a serious problem to early planted wheat. They may feed on the green wheat plants until the first cold front comes through (temperatures in the mid-20-degree F range for a couple of hours). Insecticide seed treatments do not work well against lepidoptera larvae.

Most wheat insect and mite pests can be effectively managed in the fall by planting as late as agronomically feasible in your area and destroying all volunteer wheat at least two weeks before planting.

Volunteer wheat herbicide applications and insecticides

Because of the relatively large and widespread populations of armyworms/fall armyworms in 2020 and 2021, many wheat producers have been talking about adding an insecticide to their herbicide application this year for volunteer wheat in order to save on application costs. In 2021, many fields of volunteer wheat were heavily infested with these caterpillars, which wasn't bad as they helped control some volunteer wheat stands, but some were still around when the planted wheat germinated. The addition of an insecticide to a volunteer wheat herbicide application is probably not a good idea for several reasons: 1) If armyworms/fall armyworms are present in the volunteer now, killing the volunteer should cause the larvae to starve, or initiate pupation if they are far enough along in their development, or expose them to birds and/or other predators; 2) you should NOT use an insecticide unless the pest is at a vulnerable stage and has reached a treatment threshold; and 3) insecticides applied with a herbicide will not have insecticidal activity by the time the planted wheat germinates anyway. Please resist the urge to mix an insecticide with a volunteer wheat herbicide application, but do control the volunteer wheat.

Increased risk of **barley yellow dwarf**. There are over 20 species of aphids that use wheat as a host. Many types of aphids can spread barley yellow dwarf. In Kansas, greenbugs and bird cherry-oat aphids are the primary vectors of this viral disease. These insects are more likely to infest wheat during warm weather early in the fall than during cooler weather. Planting wheat after the BPMD reduces the risk of problems with aphids and barley yellow dwarf. If planting early, consider varieties with improved tolerance to Barley Yellow Dwarf virus, especially in central and eastern Kansas, or consider using seed treatments with imidacloprid (such as Gaucho XT or Rancona Crest).

Increased risk of **excessive fall growth and excessive fall tillering**. For optimum grain yields and winter survival, the goal is for wheat plants to go into winter with established crown roots and 3-5 tillers. Wheat that is planted early can grow much more than this, especially if moisture, temperature, and nitrogen levels are not limiting. If wheat gets too lush in the fall, it can use too much soil moisture in unproductive vegetative growth. These fields often experience more drought stress in the spring if soil conditions remain dry and can show more symptoms of low-temperature damage during the winter (Figure 4). The wheat on the left (showing white discoloration of the leaves) was planted in mid-September for dual-purpose evaluation and had excessive fall growth (nearly 3,000 pounds of dry matter per acre). The wheat on the right was planted early to mid-October for grain-only purposes and had much more limited fall biomass. The white discoloration of the high biomass plots occurred after a late-winter, early-spring freeze that was more damaging to the dual-purpose crop. Notice the darker green plots in the upper left corner amid discolored plots: while these were planted early, their growth was cut back by simulated grazing.

Figure 4. Aerial photo of side-by-side wheat trials near Hutchinson, KS, during the 2021-22 growing season. Photo taken March 2022 by Jorge Romero Soler.

Increased risk of **take-all, dryland foot rot, and common root rot**. Take-all is usually worse on early-planted wheat than on later-planted wheat. In addition, one of the ways to avoid dryland foot rot (*Fusarium graminearum* and other *Fusarium* species) is to avoid early seeding. This practice promotes large plants that more often become water-stressed in the fall, predisposing them to invasion by the fungi. Early wheat planting also favors common root rot because this gives the root rot fungi more time to invade and colonize root and crown tissue in the fall. Seed treatments are an option for early-season seedling diseases. More information: https://bookstore.ksre.ksu.edu/pubs/MF2955.pdf

Grassy weed infestations become more expensive to control. If cheatgrass, downy brome, Japanese brome, or annual rye come up before the wheat is planted, they can be controlled with glyphosate or tillage. If wheat is planted early and these grassy weeds emerge after the wheat, producers will have to use an appropriate grass herbicide to control them. If a field has a history of grassy weed problems, consider planting a Clearfield or CoAxium wheat variety.

Germination problems due to high soil temperatures. Early-planted wheat is sown in hotter soils, which may become problematic because some wheat varieties are sensitive to high temperatures during germination. In fact, some varieties will not germinate when soil temperatures are greater than 85°F. Additionally, some varieties can have their coleoptile length reduced by as much as 40% in hot compared to cool soils. If planting early, it is important to select varieties that do not have high-temperature germination sensitivity or sow sensitive varieties later in the fall when soil temperatures have cooled down.

Emergence problems due to shortened coleoptile length. Hotter soils tend to decrease the coleoptile length of the germinating wheat. Therefore, deeply planted wheat may not have long enough coleoptiles to break through the soil surface, resulting in decreased emergence and poor stand establishment. When soil temperatures are hot, it is often better to plant wheat at a shallower depth (3/4 to 1 inch deep), even if moisture is absent in the top layers of soil. Planting wheat deep (>2 inches) increases the risk of poor emergence and unacceptable stands.

Summary

Early sowing of wheat can lead to several problems, from increased chances of insect- or mite-transmitted viral diseases to decreased emergence due to high temperatures and its consequences on wheat germination of particular varieties and reduced coleoptile length. Ideally, growers would consider planting around the optimum window, but if planting early due to moisture availability or a dual-purpose system, growers should consider selecting wheat varieties with tolerance to the major yield-reducing factors in their respective region. Growers should strongly consider a seed treatment with both fungicides and insecticides if wheat is planted early in Kansas.

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2. In-furrow fertilizers for wheat production

Wheat is considered a highly responsive crop to band-applied fertilizers, particularly phosphorus (P). Application of P as a starter fertilizer can be an effective method for part or all the P needs. Wheat plants typically show a significant increase in fall tillers (Figure 1) and better root development with the use of starter fertilizer (P and N). Winterkill can also be reduced with the use of starter fertilizers, particularly in low P testing soils.

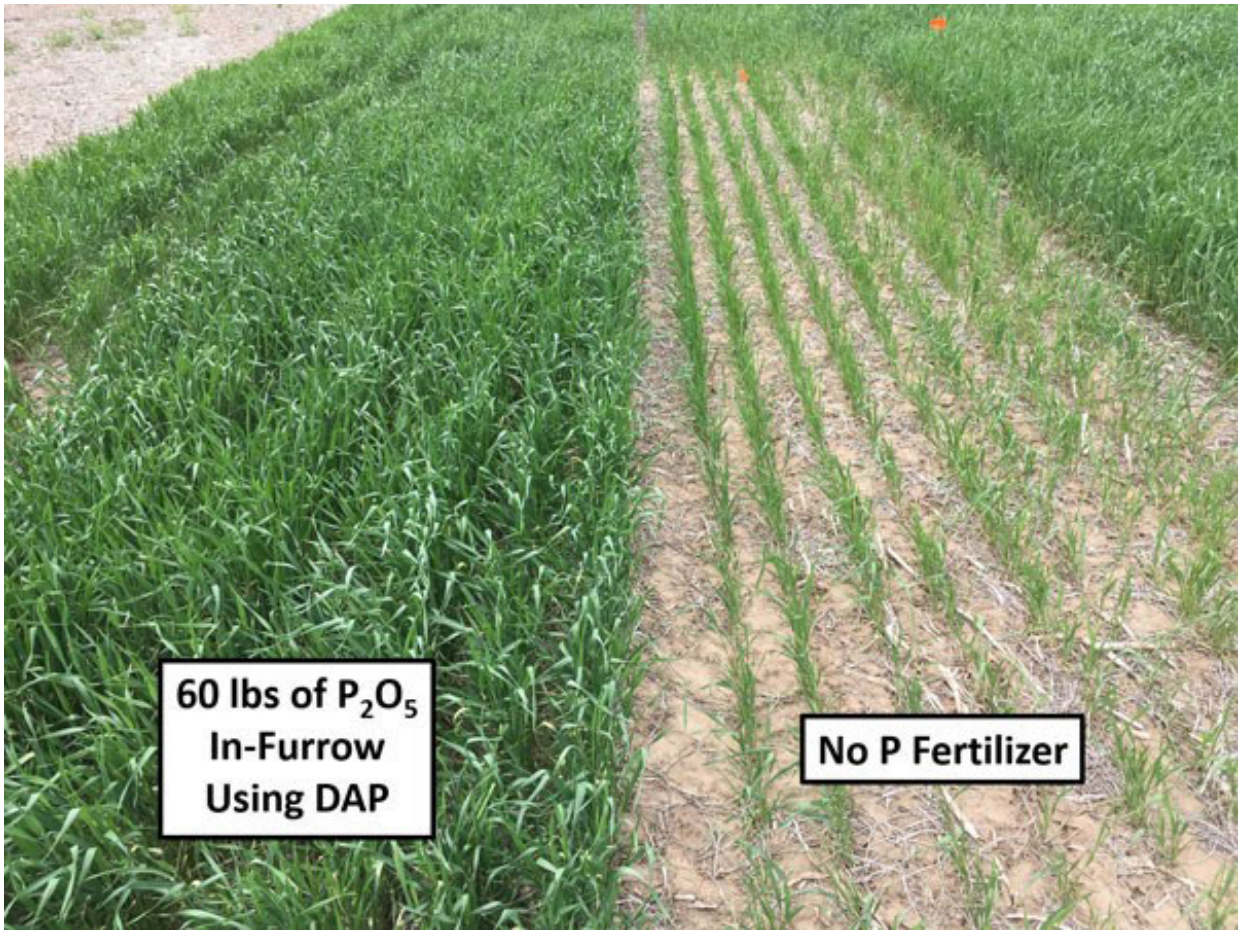

Figure 1. Effects on wheat tillering and early growth with in-furrow P fertilizer on soil testing low in P. Photo taken in 2020 in Manhattan, KS. Photo by Chris Weber, K-State Research and Extension.

In-furrow fertilizer application

Phosphorus fertilizer application can be done through the drill with the seed. In-furrow fertilizer can be applied, depending on the soil test and recommended application rate, either in addition to or instead of, any pre-plant P applications. The use of dry fertilizer sources with air seeders is a very popular and practical option. However, other P sources (including liquid) are agronomically equivalent and decisions should be based on cost and adaptability for each operation.

When applying fertilizer with the seed, rates should be limited to avoid potential toxicity to the seedling. When placing fertilizer in direct contact with wheat seed, producers should use the

guidelines in Table 1.

Table 1. Suggested maximum rates of fertilizer to apply directly with the wheat seed

	Pounds N + K_2O (No urea containing fertilizers)	
Row spacing (inches)	Medium-to-fine soil textures	Course textures or dry soils
15	16	11
10	24	17
6-8	30	21

Air seeders that place the starter fertilizer and seed in a 1- to 2-inch band, rather than a narrow seed slot, provide some margin of safety because the concentration of the fertilizer and seed is lower in these diffuse bands. In this scenario, adding a little extra N fertilizer to the starter is less likely to injure the seed - but it is still a risk.

What about blending dry 18-46-0 (DAP) or 11-52-0 (MAP) directly with the seed in the hopper? Will the N in these products hurt the seed?

The N in these fertilizer products is in the ammonium-N form (NH_4^+), not the urea-N form, and is much less likely to injure the wheat seed, even though it is in direct seed contact. As for rates, the guidelines provided in the table above should be used. If DAP or MAP is mixed with the seed, the mixture can safely be left in the seed hopper overnight without injuring the seed or gumming up the works. However, it is important to keep the wheat mixed with MAP or DAP in a lower relative humidity. Humidity greater than 70% will result in the fertilizer taking up moisture and will cause gumming or caking within the mixture.

How long can you allow this mixture of seed and fertilizer to set together without seeing any negative effects on crop establishment and yield?

The effects of leaving DAP fertilizer left mixed with wheat seed for various amounts of time are shown in Figure 2. Little to no negative effect was observed (up to 12 days in the K-State study).

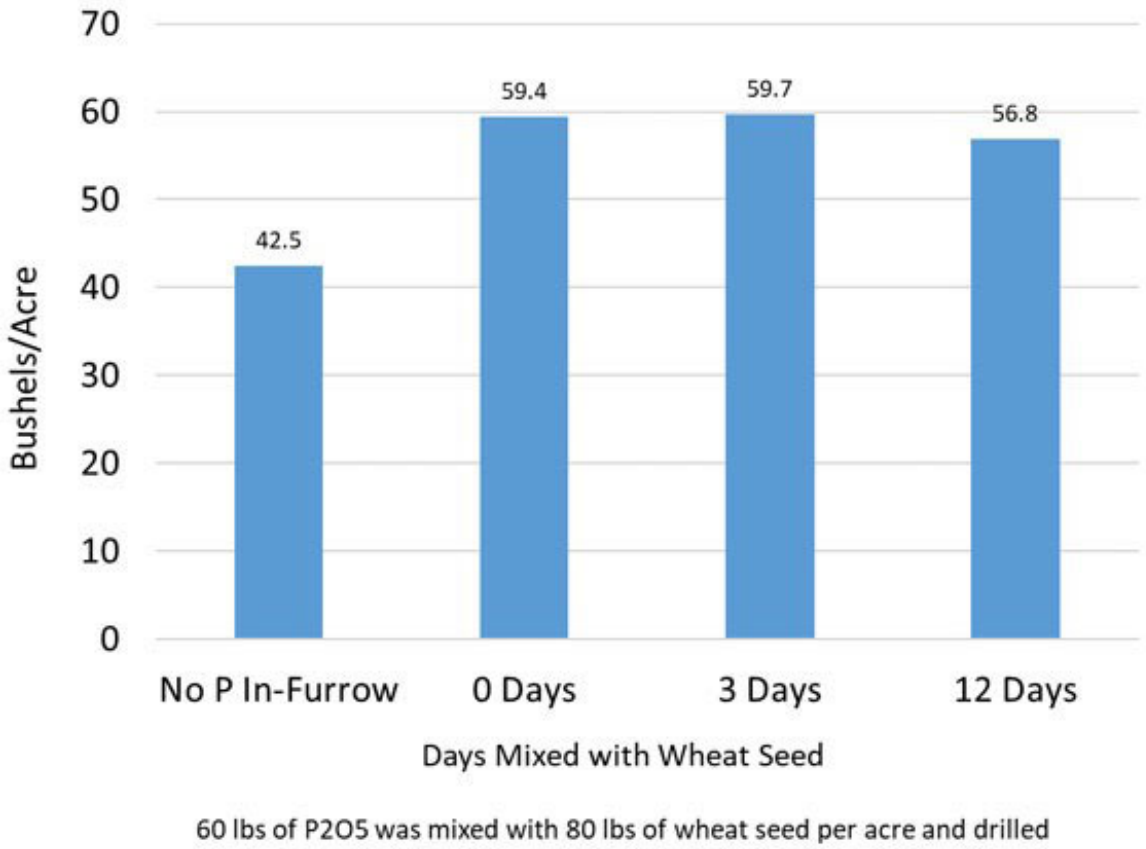

Figure 2. Effects on wheat yield from mixing P fertilizer with the seed. Study conducted in 2019 and 2020 at four sites. Graph by Chris Weber, K-State Research and Extension.

Although the wheat response to these in-furrow fertilizer products is primarily from the P, the small amount of N that is present in DAP, MAP, or 10-34-0 may also be important in some cases. If no pre-plant N was applied, and the soil has little or no carryover N from the previous crop, the N from these fertilizer products could benefit the wheat.

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3. Update on fall armyworms in Kansas

Fall armyworm, *Spodoptera frugiperda* (Figure 1), is known to feed on over 80 host plants. In Kansas, it can damage several important crops, pasture, turf, and home landscaping. This insect does not overwinter in Kansas. Rather, it is native to the tropical regions of the western hemisphere and is active year-round along the Gulf Coast and southern Florida, migrating in from these locations each year. Two full generations are possible in Kansas, with defoliation and grain damage being the biggest concerns.

Figure 1. Full-grown Fall Armyworm caterpillar. Photo from Department of Entomology, Kansas State University.

Start scouting now

Fall armyworm trap counts from pheromone traps steadily increased through August, particularly in central and eastern Kansas. Reports of egg masses in residential and agricultural settings have recently been reported (Figure 2). At-risk crops should be scouted regularly for the remainder of the growing season. Caterpillars increase in size exponentially, and most of the feeding occurs during the later stages of development. It is critical to scout thoroughly and treat if needed before the caterpillars are over ½ inch long. Larger caterpillars are harder to control and do the most damage. Recommended thresholds and products labeled for control of fall armyworm caterpillars (Table 1) can be found below.

Figure 2. Fall armyworm egg mass. Photo courtesy of K-State Department of Entomology.

Fall armyworm thresholds

Alfalfa: 1-2 caterpillars per square foot can destroy seedling alfalfa. 10-15 per square foot can destroy 12" tall plants.

Corn: damage to whorl stage in early summer; treatment may be needed if 75% of plants are damaged. Bt corn may prevent ear damage.

Sorghum: damage to whorl stage in early summer; treatment may be needed if 75% of plants are damaged. During flowering to soft dough, 1-2 larvae/head reduces yield 5-10%.

Wheat: Larval "window-paning" (Figure 3) in early planted wheat can be a concern. If 25-30% of plants show damage, examine the field frequently. Treat at 2-3 active larvae/ft.

Table 1. Registered products for the control of fall armyworm in Kansas crops. Always refer to the actual label on the product for more specific information relative to any insecticide.

Chemical Name	Trade Name	Mode of Action	Alfalfa	Corn	Sorghum	Wheat

		Class				
alpha-cypermethrin	Fastac CS	3A	yes	yes	yes	yes
beta-cyfluthrin	Baythroid XL	3A	yes	yes	yes	yes
bifenthrin	numerous products	3A		yes		
biological insecticide	Fawligen	-			yes	
carbaryl	Sevin	1A	yes			
chlorantraniliprole	Vantacore	28		yes	yes	yes
cyfluthrin	Tombstone	3A	yes	yes		
deltamethrin	Delta Gold	3A		yes	yes	
gamma-cyhalothrin	Proaxis	3A	yes	yes	yes	yes
indoxacarb	Steward EC	22A		yes		
lambda-cyhalothrin+chlorantraniliprole	Besiege	3A+28	yes	yes		
lambda-cyhalothrin	numerous products	3A	yes	yes	yes	yes
methomyl	Lannate	1A	yes	yes	yes	
methoxyfenozide	Intrepid 2F	18			yes	
permethrin	numerous products	3A	yes			
spinosad	Blackhawk	5		yes	yes	yes
zeta-cypermethrin	Mustang MAXX	3A	yes	yes	yes	yes
zeta-cypermethrin+bifenthrin	Hero	3A		yes		

Figure 3. Window-paning from young caterpillar feeding. Photo from Department of Entomology, Kansas State University.

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4. Alfalfa management: Deciding on the last cutting this fall

Alfalfa will quit growing after the first hard freeze (when temperatures reach below 26°F), which in Kansas occurs on average around October 15 but can be as early as October 1 or as late as November 1. The decision should be weather-based at this time of the year because the timing of the last two cuttings impacts the winter survival and productivity of the stand in the following year.

Before fall dormancy, the last cutting should be made based on expected crown regrowth rather than one-tenth bloom because of the decreasing photoperiod. The last cutting should be made so there will be 8 to 12 inches of foliage, or 4 to 6 weeks of growth time, before the first killing frost. This should allow adequate time for replenishment of root reserves. This means the second to final cutting should occur around early September. As the days get cooler and shorter, drying hay in a timely manner can become risky for the last cutting. Though tempting to bale before it's properly dry, heat damage, mold, or spontaneous combustion fires occur commonly in fine-stemmed, high-quality, tightly packed bales. The additional factor of moisture makes the ideal environment for heat-producing microbes.

At this stage of the growing season, alfalfa plants need to store enough carbohydrates to survive the winter. If root reserves are not replenished adequately before the first killing freeze in the fall, the stand is more susceptible to winter damage than it would be normally. That could result in slower greenup and early growth next spring and, in some cases, stand loss due to winter kill. The potential of the alfalfa crop to grow new foliar tissue in the spring is greater with greater root reserves in the fall; thus, root reserves this fall are the main driver of next crop's yield and quality. Varieties are continually being selected for winter hardiness, so varieties today are less susceptible than varieties of yesterday to winter injury, but it is still important to manage varieties for best success. Otherwise, spring growth can be reduced, and stand loss can occur.

The final cutting should occur right after the first killing freeze before too many leaves have dropped. Producers should be prepared to enter the fields as soon as soil moisture conditions allow. After a killing freeze, the remaining forage (if any) can be hayed safely. However, the producer should act quickly because the leaves will soon drop off.

Figure 1. Alfalfa stand with approximately 12 inches of top growth prior to winter dormancy. The last cut in this stand was performed in early September, and this photo was taken in late October. This stand will be hayed immediately following the first killing frost. Photo by Romulo Lollato, K-State Research and Extension.

Consider soil sampling alfalfa fields now

Late fall is also a great time of the year to collect soil samples from alfalfa fields. This timing allows for an accurate assessment of available soil nutrients and provides enough time to make nutrient management decisions before the crop starts growing in the spring. Key soil tests include pH, phosphorus, and potassium, and to a lesser extent, sulfur and boron. In particular, potassium is highly related to winter survival, so it's important to make sure to have an optimum range of potassium in the soil before entering the winter. When sampling for immobile nutrients, the sampling depth should be six inches, while mobile nutrients (sulfur) should be sampled to 24 inches. Based on the soil test, a fertility program can be established to ensure nutrient replenishment and maintain hayfield productivity. To submit soil samples to the K-State Research and Extension Soil Testing Laboratory, see this website: https://www.agronomy.k-state.edu/outreach-and-services/soil-testing-lab/.

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5. Normal temperatures are falling in Kansas - It's all downhill from here

We have reached the end of meteorological summer; it concluded on August 31. But you wouldn't know it, given the recent temperatures. On August 24th, southwest Kansas was baking in triple-digit heat. Leading the way was Medicine Lodge, where the high temperature was a sizzling 115°. Not only was this the hottest temperature in the state this year, but it was also the hottest day in Medicine Lodge in 70 years! Other locations had their hottest day of the year last week, including Ashland (111° on Aug. 24), Dodge City (106°, Aug. 25), Manhattan (104°, Aug. 25) and Topeka (102°, Aug. 26). With temperatures this hot, it certainly doesn't feel like summer is about to come to an end. But there is an unmistakable sign that cooler weather is surely on its way. Average daily highs and lows have begun their retreat from their summertime maxima. You might be surprised to find out that the start of the decline was a few weeks ago. For example, Dodge City's average high for August 30 is 89°, down 5 degrees from its peak of 94° in late July. The descent into cooler readings is slow at first but increases more rapidly in autumn. In this report, we look at the timeline for the annual arrival of cooler days and nights and when, during the fall, average highs and lows reach various thresholds.

On September 1, the first day of meteorological fall, average high temperatures across the state range from 84° in northeast to 88° in southwest and south central Kansas. Highs in the 90s are occasionally common in early September and even triple-digit heat. Last year, Dodge City hit 101° on September 1, and Goodland reached 100°. But highs this warm become less likely as the month progresses. Manhattan, for example, has only reached 100° a dozen times on or after September 16th in their 131-year climate record. By the end of September, average highs are in the mid and upper 70s statewide. During October, daily averages fall more rapidly; the rate of decrease is nearly half a degree per day. By Halloween, highs are normally in the low to mid-60s. Come Thanksgiving, daytime highs average only in the low 50s. Table 1 lists the average dates each of Kansas' nine climate divisions reach thresholds starting at 85° and decreasing by five down to 50°.

Table 1. Dates when divisional average daily high temperatures fall to the thresholds listed at the top and bottom of each column.

Division	85 °F	80 °F	75 °F	70 °F	65 °F	60 °F	55 °F	50 °F
1 – Northwest	Sep 5	Sep 19	Sep 30	Oct 11	Oct 22	Nov 2	Nov 13	Nov 24
2 – North Central	Sep 4	Sep 19	Oct 1	Oct 12	Oct 23	Nov 2	Nov 13	Nov 23
3 – Northeast	Aug 29	Sep 15	Sep 29	Oct 11	Oct 22	Nov 2	Nov 12	Nov 23
4 – West Central	Sep 6	Sep 21	Oct 2	Oct 13	Oct 24	Nov 4	Nov 15	Nov 27
5 – Central	Sep 8	Sep 22	Oct 4	Oct 15	Oct 26	Nov 6	Nov 17	Nov 27
6 – East Central	Sep 1	Sep 16	Sep 30	Oct 12	Oct 24	Nov 4	Nov 15	Nov 26
7 – Southwest	Sep 13	Sep 26	Oct 8	Oct 19	Oct 30	Nov 10	Nov 21	Dec 3
8 – South Central	Sep 11	Sep 24	Oct 6	Oct 18	Oct 29	Nov 9	Nov 20	Dec 1
9 - Southeast	Sep 6	Sep 21	Oct 4	Oct 17	Oct 29	Nov 9	Nov 20	Dec 2

Table 2 lists average dates for low temperatures at thresholds ranging from 65° down to 30°. On September 1, averages range from 57° in northwest to 64° in southeast Kansas. These lows are 5 to 7 degrees lower than their mid-summer peak values. Cooler nights are the rule by month's end, as average lows on September 30 range from the mid-40s to the low 50s across the state. Like high

temperatures, low temperatures during October drop nearly half a degree daily.

Concerns over a killing freeze are on the minds of everyone with agricultural interests by mid-month. Last year, Wichita's first freeze was on October 30, and a low of 23° on the 31st marked the end of the growing season. The previous year, Wichita's first freeze was much earlier, on October 18. By Halloween, the poetic sight of "frost on the pumpkin" has often become a reality, as lows on October 31 average near freezing in the northwest and west central Kansas and are in the 30s everywhere but southeast Kansas, where the average low is still 40°. Nights grow ever longer in November, and low temperatures continue to cool. By November 22, average lows are at or below freezing in every division in the state, and normal lows range from 21 to 29 degrees by month's end.

Table 2. Dates when divisional average daily low temperatures fall to the thresholds listed at the top and bottom of each column. A * indicates a division in which the low temperature never averages above the threshold value during the year.

Division	65 °F	60 °F	55 °F	50 °F	45 °F	40 °F	35 °F	30 °F
1 – Northwest	*	Aug 22	Sep 7	Sep 19	Sep 30	Oct 10	Oct 22	Nov 3
2 – North Central	Aug 12	Sep 1	Sep 15	Sep 27	Oct 8	Oct 19	Oct 30	Nov 11
3 – Northeast	Aug 18	Sep 5	Sep 18	Sep 30	Oct 12	Oct 24	Nov 5	Nov 19
4 – West Central	*	Aug 24	Sep 9	Sep 21	Oct 2	Oct 12	Oct 23	Nov 5
5 – Central	Aug 18	Sep 6	Sep 19	Sep 30	Oct 11	Oct 22	Nov 3	Nov 16
6 – East Central	Aug 23	Sep 8	Sep 21	Oct 3	Oct 15	Oct 28	Nov 10	Nov 23
7 – Southwest	Aug 6	Aug 31	Sep 15	Sep 26	Oct 7	Oct 17	Oct 29	Nov 11
8 – South Central	Aug 24	Sep 10	Sep 22	Oct 4	Oct 15	Oct 26	Nov 8	Nov 21
9 - Southeast	Aug 27	Sep 12	Sep 24	Oct 6	Oct 18	Oct 31	Nov 13	Nov 28

Fall weather outlooks for Kansas

What will autumn 2024 hold for Kansas? It's too soon to say with any certainty. Still, the most recent seasonal outlook for the fall months, issued by NOAA's Climate Prediction Center in mid-August, favors above-normal temperatures for the state, particularly in western Kansas (Figure 1). But this doesn't mean that a delay in the occurrence of a first frost and freeze is a guarantee. It only takes one chilly airmass to bring a killing freeze. In the case of Wichita, after the October 18th first freeze in 2022, it was over three weeks until the second sub-freezing day was recorded on November 11. Seasonal forecasts don't contain any information regarding the probability of an early season, singular, short-lived cold air outbreak; these are impossible to predict well in advance accurately. Keep an eye on shorter-lead forecasts such as the 6 to 10 and 8 to 14-day outlooks in October. Watch for high probabilities of cooler-than-normal temperatures, often indicating a threat of frost and freezing conditions. The Kansas Mesonet website (https://mesonet.k-state.edu) is also a great resource for tracking temperature data. When you visit the site, you'll find a Freeze Monitor page with information regarding the hours each Mesonet site has spent below freezing and sub-freezing thresholds. No site has recorded a low in the 40s since July 1 yet, so there's nothing but zeroes at the moment, but now is a good time to familiarize yourself with the page so you can refer back to it this fall. Fortunately, we have a few more weeks to prepare for the arrival of freezing conditions. However, the autumnal journey has begun; we're already heading for colder weather as the daily normal highs and lows drop a little bit each day.

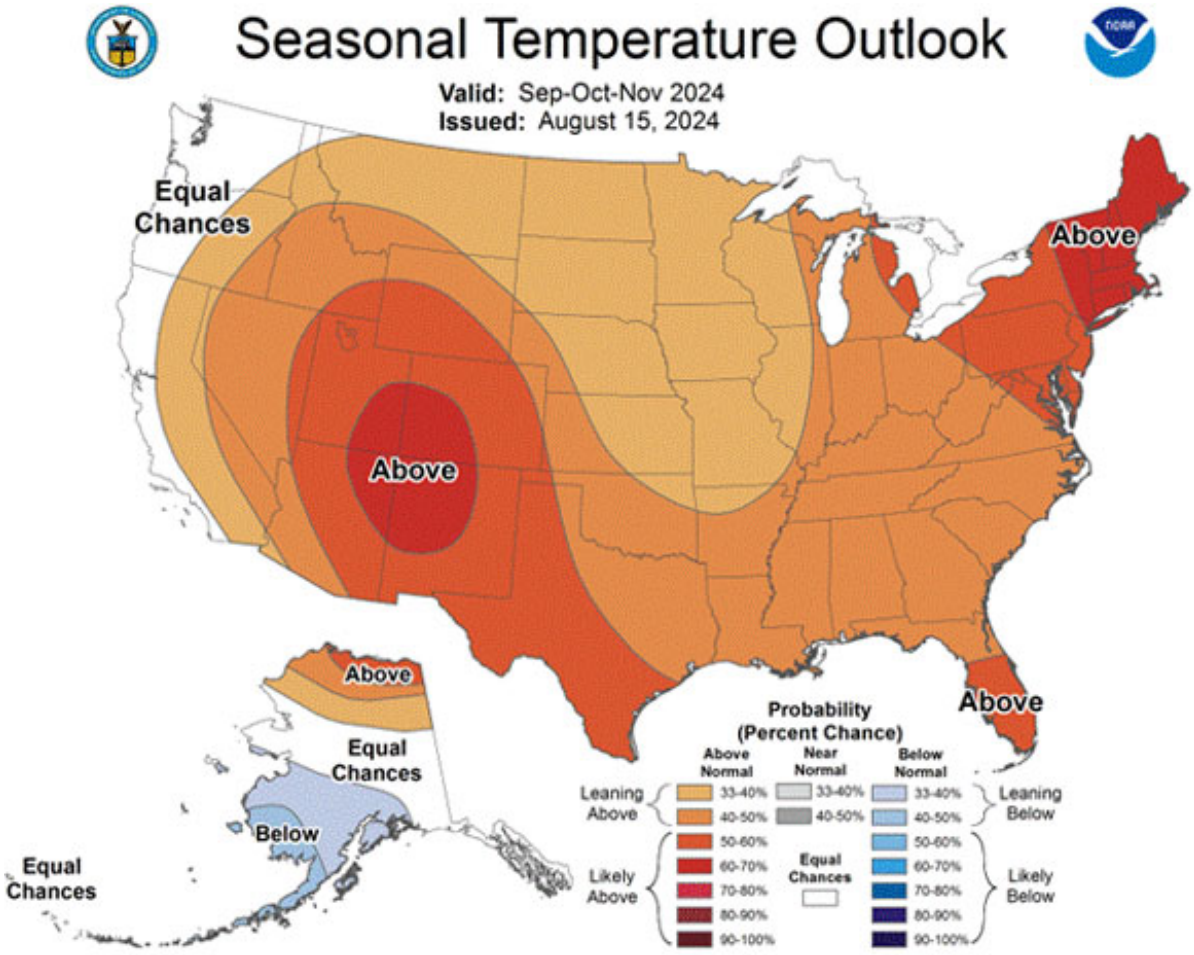

Figure 1. The Climate Prediction Center's seasonal temperature forecast for the month of September through November 2024, issued on August 15.

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