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1. Using starter P fertilizer for wheat

Wheat can be as responsive as corn to starter fertilizers, especially when soil P levels are low or very low. The probability of wheat response to starter fertilizer P decreases as P soil test levels increase above 20 ppm – but responses are still often noted.

Soil test values should be used as guideline for predicting how much response, if any, can be expected to applied P fertilizer. Other factors may also influence the response of wheat to fertilizer P, including root system development, soil moisture status, soil temperature, and compaction. When wheat is planted later than the optimum planting date for the region, starter fertilizer can be particularly important and the likelihood of responses are usually higher, particularly in low-testing soils.

One big difference between the use of starters for wheat and corn is that options for placement of the starter fertilizer are often more limited with wheat due to the narrow row spacing. With corn, starter fertilizers are often knifed in to the side of the seed, with some soil separating the seed from the fertilizer.

It’s hard to place starter fertilizer below and to the side of the seed with narrow row spacings. As a result, starter fertilizer for wheat is most commonly put down directly with the seed.

When placing starter fertilizer in direct contact with wheat seed, producers should use the following guidelines:

<b>Suggested Maximum Rates of Fertilizer to be Applied Directly With Wheat Seed</b>		
Row Spacing (inches)	Pounds N + K <sub>2</sub> O (No urea or UAN)	
	Medium to Fine Textured Soils	Sandy or Dry Soils
15	16	11
10	24	17
6-8	30	21

No urea-N (which includes dry urea or liquid UAN fertilizer) should be added to the starter if the fertilizer is applied with the seed. No-till producers may want to “spike” their starter fertilizer with extra N from urea or UAN in order to apply as much N as possible below the soil surface at planting time. This is not recommended since germination damage and reduced stand establishment may result.

The problem is urea is initially converted to ammonia which is toxic to plant roots if the wheat seed is placed in direct contact with the fertilizer. The risk of injury is greater in drier soils and at higher N rates. There is significant risk associated with placing urea-containing fertilizers in direct seed contact.

Air seeders that place the starter fertilizer and seed in a band an inch or two wide, 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 urea-containing N fertilizers to the starter is less likely to injure the seed -- but it is still a risk.

Phosphorus fertilizers commonly used for starter application to wheat are liquid 10-34-0, 18-46-0 (DAP) or 11-52-0 (MAP). All of these products perform similarly at equal rates of P application and if applied in a similar manner. In a conventional starter setup on drills, these fertilizers are applied directly in the seed slot.

In addition to conventional liquid and dry starter setups for wheat drills, another good way of applying starter fertilizers for wheat is to blend dry DAP or MAP directly with the seed. The N in these fertilizer products is in the ammonium-N form, not the urea-N form, and is much less likely to injure the wheat seed, even though it is in direct seed contact. 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.

Dual-placement of N and P (anhydrous ammonia or UAN plus 10-34-0 applied in the same band below the soil surface) is a fertilizer application method usually used in preplant applications. Ammonium-N has long been known to increase P uptake by crops, and dual-placement can be very effective. Sometimes, producers will use this method at planting time, trying to position the band to the side of each row of wheat seed. Use caution, however.

If adequate separation of fertilizer and seed is accomplished, this is a good method of application that fits into many farmers’ overall no-till system. If adequate separation of the ammonia/UAN and seed is not accomplished, wheat germination/stand establishment can be severely affected.

Although the response of wheat to starter fertilizer is primarily from the P, the small amount of N that is present in 10-34-0, DAP, or MAP may also be important in some cases, particularly in late-planted wheat that requires rapid initial growth before the winter months. If no preplant N was applied, and the soil has little or no carryover N from the previous crop, then the N from these fertilizer products could also benefit the wheat, in addition to the P.

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## 2. Wheat blends: Advantages and disadvantages

Blends of two to three wheat varieties have some advantages in many situations. Blends can offer producers some yield stability in most cases. While any one variety may do much better or worse than other varieties in the same vicinity, having a blend of two or three varieties can usually even out those ups and downs. This reduces the chances of having a landlord upset because the variety planted on his or her land yielded considerably less than other fields in the area.

The last time a large number of customized blends was tested in the K-State Wheat Performance Tests was 2007/08. In that year, the yields of the blends were close to the average yields of the components in the blends in most cases. The interesting factor to look at is the range of yields among the components.

A good example is Brown County. The blend consisting of Overley, Post Rock, and Santa Fe yielded 49. The average of each of those three varieties grown separately was 50. But the range of yields was 43 (Overley) to 53 (Post Rock and Santa Fe). There's no way to know for sure ahead of time which varieties in a blend will do best in any given season. In this example, if a producer had grown just Overley, the yield would have been 6 bushels less than the yield of the blend.

To be effective in stabilizing yield potential, careful consideration should be given to which wheat varieties to use in making a blend. Here are some basic principles:

- \* Use varieties with different types of disease resistance. This is probably the single most important factor to consider when choosing a blend.
- \* Use varieties with a difference in maturity of 3-5 days. If producers can spread out the maturity a bit, there is a better chance that at least one of the varieties can benefit from a given weather pattern. For example, later-maturing variety might be able to take better advantage of a late rain than an early-maturing variety. Spreading maturities may require some compromises, however. If the earlier-maturing variety in the blend has a tendency to shatter (such as Overley), the producer should be willing to harvest the field as soon as the early variety component in the blend is ready – which means the producer will have to be willing to take a moisture discount at times. If the earlier variety component in the blend has good shattering tolerance, then the producer can wait until the later variety component is fully dried down before harvesting.
- \* Use varieties with different levels of winterhardiness and spring greenup tendencies. If there are high-yielding varieties available, but which have poor winterhardiness or a tendency to break dormancy early in the spring, blend them with varieties that have better winterhardiness or a stronger spring dormancy.
- \* Use varieties that yield well. Do not include a low-yielding variety just for the sake of genetic diversity.
- \* Do not be afraid to use the very newest varieties. Generally, I like to see new varieties on their own at first to find their strengths and weaknesses. But there's no reason that the newest releases cannot be used in a blend, either.

It should be mentioned that blends do have some disadvantages. Blends are unlikely to result in the highest yields possible in any given year. And blends do not provide the same level of management flexibility as a pure variety.

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### 3. Fall can be a good time to plant alfalfa

Late summer and early fall are often the best times to plant alfalfa in Kansas -- if we've had enough rainfall. This year, many areas of Kansas have good moisture for alfalfa planting, although it's getting dry now in places. A fall-seeded crop is more productive during the first growing season than a spring-seeded crop. After the first season, however, yield potential is about the same.

Growers in northwest Kansas can plant as early as Aug. 10-15. Those in southeast Kansas can plant in mid- to late September. In other parts of Kansas, planting time is late August or early September.

Producers just need to plant early enough to have three to five trifoliate leaves before the first frost. Alfalfa is a three- to five-year or longer investment. Some producers shy away from alfalfa because of its high establishment cost and risk of stand failure. In the long run, however, it's relatively inexpensive, if amortized over the life of the crop.

If managed properly and if we have a good year in terms of weather, dryland alfalfa can produce four to six tons of forage per acre per year. Irrigated fields can produce eight to 12 tons per acre per year.

When planting alfalfa, producers should keep the following in mind:

- \* Test the soil. Alfalfa grows best in well-drained soils with a pH of 6.5 to 7.5. If the land needs lime, add it before planting. Apply the needed phosphorus and potassium, too. Since each cutting removes 10 pounds of phosphorus per acre for each ton of forage harvested, it's an annual input.
- \* Plant certified, inoculated seed. Inoculation helps alfalfa seedlings fix available soil nitrogen for optimum production.
- \* Plant in firm, moist soil. If possible, prepare the seedbed and plant after a rain. Tilling after a rain will reduce soil moisture. A firm seedbed ensures good seed-soil contact; therefore, use a press wheel with the drill to firm the soil over the planted seed. Or, consider no-till planting in small-grains stubble – which is a successful alternative and in some areas is the primary mode of planting.
- \* Don't plant too deeply. Plant one-fourth to one-half-inch deep on medium- and fine-textured soils and three-fourths-inch deep on sandy soils. Don't plant deeper than 10 times the seed diameter.

\* Use the right seeding rate. Plant 8 to 12 pounds of seed per acre of dryland in western Kansas, 12 to 15 pounds per acre in irrigated medium- to fine-textured soils, 15 to 20 pounds per acre on irrigated sandy soils, and 12 to 15 pounds per acre of dryland in central and eastern Kansas.

\* Check for herbicide carryover that could damage the new alfalfa crop – especially when planting alfalfa no-till into corn or grain sorghum stubble. In areas where row crops were drought-stressed and removed for silage, that set up a great seedbed for alfalfa, but may still bring a risk of herbicide damage.

\* Choose pest-resistant varieties. Resistance to phytophthora root rot, bacterial wilt, fusarium wilt, verticillium wilt, anthracnose, the pea aphid, and the spotted alfalfa aphid is essential. Some varieties are resistant to even more diseases and insects.

More information about growing alfalfa in Kansas can be found in the annual performance bulletins and the “Alfalfa Production Handbook.” That information also is available on the web at: <http://www.oznet.ksu.edu/agronomy/extension/crops/alfalfa.htm>.

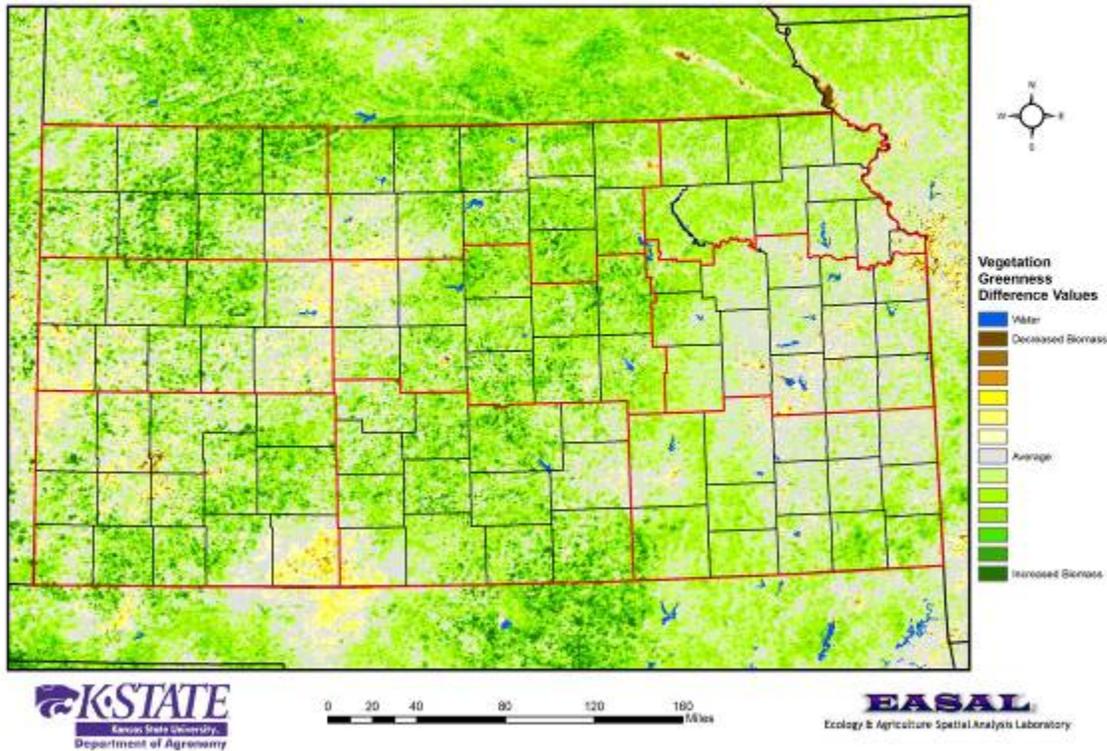
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#### 4. Comparative Vegetation Condition Report: July 13 – July 27

K-State’s Ecology and Agriculture Spatial Analysis Laboratory (EASAL) produces weekly Vegetation Condition Report maps. The most recent VCR maps from EASAL are below:

## Kansas Vegetation Condition Comparison

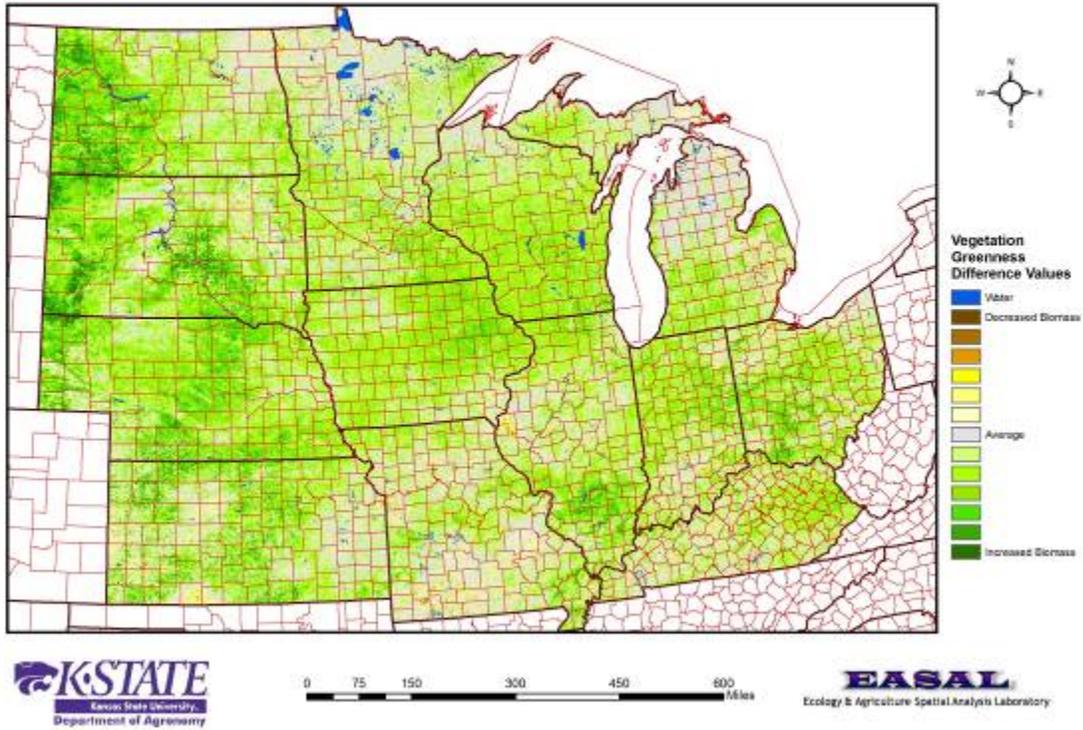
Mid-July 2010 compared to the 21-Year Average for Mid-July



Map 1.

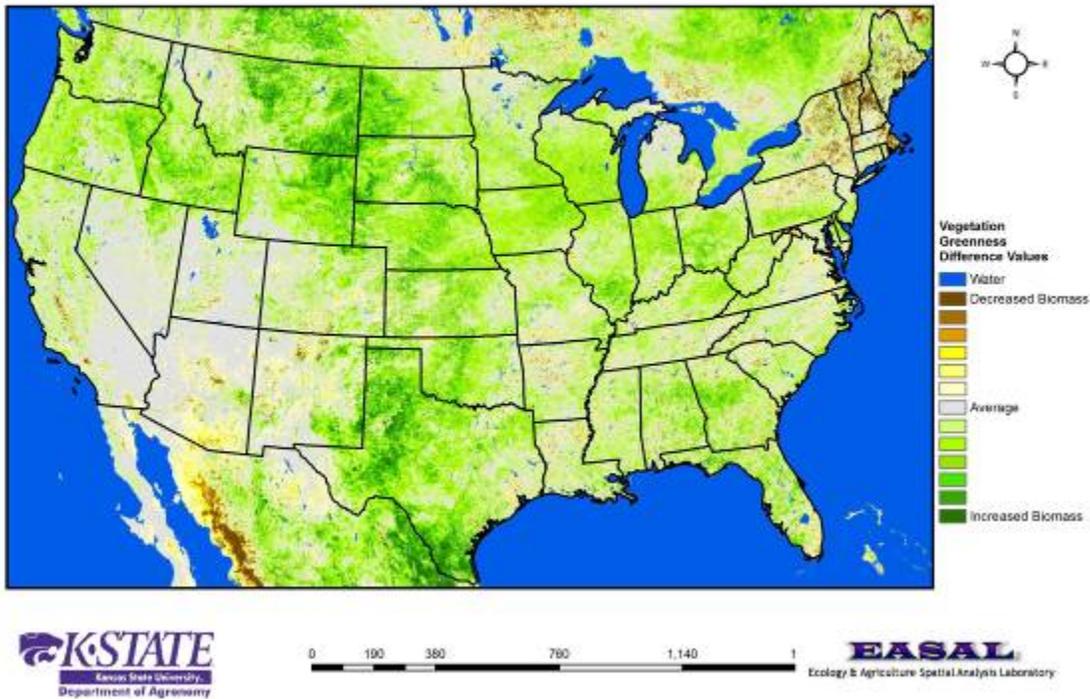
The Vegetation Condition Report for July 13 – 27, from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that the dry conditions in southwest Kansas have not expanded greatly, but drier-than-normal conditions are beginning to be visible in the western counties of central Kansas. This is particularly evident in Gove and Trego counties. Average precipitation in Gove County for the period was 0.65 inches; Trego County averaged 0.49 inches; Ellis County averaged 1.23 inches; and Logan County averaged 1.36 inches.

U.S. Corn Belt Vegetation Condition Comparison  
Mid-July 2010 Compared to the 21-Year Average for Mid-July



Map 2. The U.S. Corn Belt comparison to the 21-year average shows that greener-than-normal conditions still linger in the western High Plains, particularly western areas of North Dakota, South Dakota, and Nebraska. In the rest of the Corn Belt vegetative production is at or slightly above average.

Conterminous U.S. Vegetation Condition Comparison  
Mid-July 2010 Compared to 21-year Average for Mid-July



**Map 3.** During this period, below-normal vegetative production is most concentrated in the areas of northern Pennsylvania and New England. Areas of Minnesota, Michigan, and Wisconsin, which had been below normal, are benefiting from the recent rains in these regions.

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These e-Updates are a regular weekly item from K-State Extension Agronomy and Steve Watson, Agronomy e-Update Editor. All of the Research and Extension faculty in Agronomy will be involved as sources from time to time. If you have any questions or suggestions for topics you'd like to have us address in this weekly update, contact Steve Watson, 785-532-7105 [swatson@ksu.edu](mailto:swatson@ksu.edu), or Jim Shroyer, Research and Extension Crop Production Specialist and State Extension Agronomy Leader 785-532-0397 [jshroyer@ksu.edu](mailto:jshroyer@ksu.edu)