1. Winter fertilization of tall fescue pasture

January and February are good months to apply fertilizer to tall fescue pastures in Kansas. Producers could also fertilize tall fescue pastures in December if they ground is not saturated.

The goal is twofold – to apply the fertilizer:

* Late enough in the year that it will not stimulate plant growth in late fall or early winter when it won’t be utilized efficiently; and

* Early enough to make sure the nutrients have time to move down into the root zone when plant growth resumes early next spring.

Producers should apply about 80 lbs N per acre to tall fescue pastures that will be hayed. If the pasture will be grazed in a conventional system, cut the N rate back to about 60 lbs per acre. That’s because conventional, full-season grazing practices typically have low efficiency – using only about 35 percent of the forage produced. If a more efficient grazing system is utilized, such as cell grazing or paddock grazing, then 80 lbs N per acre would be recommended.

During cool or cold weather, the source of N used on tall fescue pasture is not important. In general, liquid N is not quite as efficient as dry N when broadcast onto permanent pasture because liquid N tends to get tied up a little more with the plant growth and residue on the surface. If liquid N is used on tall fescue pasture, it’s generally going to be somewhat more effective if it is dribbled on in a band. This reduces the potential for tie-up and immobilization. However, a broadcast application is useful where producers want to add a herbicide to the UAN for weed control.
P and K fertilizer rates should be based on soil test analysis. In the absence of a soil test, producers in southeast and east central Kansas should use about 30 lbs P\textsubscript{2}O\textsubscript{5} and 30 lbs K\textsubscript{2}O per acre on tall fescue pasture.

For tall fescue pasture that will be hayed, or where cell grazing or paddock grazing is used, then a 80-30-30 N-P-K fertilizer program is a good guideline to use in southeast and east central Kansas. For tall fescue pasture that will be conventionally grazed, a 60-30-30 fertilizer program is a good guideline to use in these areas.

-- Gary Kilgore, southeast area Extension crops and soils specialist

2. Fall/winter fertilization of smooth bromegrass pastures and hay meadows

Fertilizing smooth bromegrass in late November or December, as long as the ground is not frozen or saturated, is ideal for smooth bromegrass seed production fields. It will also increase spring pasture or hay production.

In the past, many producers have been able to pay their fertilizer bill with seed production and phosphorus (P\textsubscript{2}O\textsubscript{5}) plays a very important role in this process. If seed production is a goal, 30 lbs per acre of P\textsubscript{2}O\textsubscript{5} should be applied with 75 to 90 lbs of nitrogen (N) per acre, regardless of soil P test levels. The source of plant nutrients does not matter as long as the ground is not frozen. Late fall fertilizer applications will generally lead to earlier spring green-up and greater forage production, though forage quality of fall fertilized brome is usually lower than that of brome fertilized in the spring.

If spring pasture or hay is the goal rather than seed production, a different fertilizer program is recommended. In this case, wait until late winter/early spring to fertilize -- just prior to green-up. This will result in better quality forage.

Nitrogen is the most limiting nutrient for profitable smooth bromegrass production. For hay production, 60-90 lbs N should be applied to unfrozen ground, according to the field’s productive capability. If the bromegrass field is to be utilized for pasture, N rates could be reduced to 60-70 lbs per acre simply because grazing is less efficient than haying in utilizing forage.

In addition, use soil test results to determine whether P\textsubscript{2}O\textsubscript{5} or K\textsubscript{2}O is needed if spring pasture or hay is the goal rather than seed production. Smooth bromegrass will respond profitably to 30-40 lbs P\textsubscript{2}O\textsubscript{5} per acre in combination with N when soil test levels are below 20-25 parts per million. The need for K\textsubscript{2}O has increased in northeast and east central Kansas in recent years, especially in hay meadows where the forage is removed every year.
Liquid fertilizer may be a little less efficient than dry because of nutrient tie-up on the available forage. However, liquid fertilizer is also an efficient and very effective carrier for herbicides to control musk thistle and other pasture weeds.

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3. Purple seed stain on soybeans

There have been many reports of purple seed stain on soybeans in Kansas this year. This disease rarely occurs in Kansas (it is more common in the Corn Belt), so producers may wonder why it was so prevalent and what effect it has on yields and seed quality.

Purple seed stain and leaf blight causes a noticeable seed discoloration, ranging from dark purple to pink. Infected seeds may have anything from just a few discolored specks to blotches that cover the entire seed.

On foliage, the disease can cause cotyledons to turn dark purple, shrivel up, and fall early. On mature leaves, small, red-purple, angular lesions develop during seed set. Symptoms can extend over the entire leaf, causing a leathery appearance. When leaf infection is severe, the leaves may turn yellow prematurely.

The disease is caused by the fungus Cercospora kikuchii. A fungicide seed treatment may reduce early seed-borne infection. Planting untreated, purple-stained seed can serve as a source of inoculum to the developing crop. Plants developing from infected seed can be killed or stunted. Planting untreated, infected seed is not recommended.

But the severity of purple-stained seed at harvest time is not often related to whether the disease was present on the planted seed. Environmental conditions at the time of flowering influence the incidence and severity of purple seed stain. Conditions that favor infection at this time include high temperatures (greater than 80 degrees) and high humidity. The fungus survives on crop residue as mycelium, or on the seed coat.

In any event, the purple seed discoloration does not reduce yields. If the disease infects leaves early in the season, there may be some yield loss. Purple seed stain does not usually affect seed quality for processing, but the seed discoloration may result in a special grade standard.

The most effective control measures include using disease-free or treated seed and crop rotation. Using treated seed will help reduce seedling loss, but will have little or no effect on later-season infections of foliage or seed. Fungicides applied during reproductive development can be used to improve seed quality, but this is rarely needed in Kansas. The disease is uncommon here, and does not reduce seed yield. Varieties show
differences in susceptibility to purple seed stain, but recent data on which varieties are more resistant than others is not available.

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4. Grain sorghum hybrid response to 2,4-D

Postemerge application of 2,4-D remains an option for broadleaf weed control in grain sorghum, despite the risk of crop injury. It’s of particular interest for sorghum fields where atrazine- or ALS-resistant pigweeds have not been controlled by preemerge or early postemerge treatments. Producers also may simply want to save money by using a low-cost treatment of atrazine plus 2,4-D, or Ally plus 2,4-D.

For best crop tolerance, grain sorghum should be 5 to 8 inches tall when 2,4-D is broadcast applied. Even when applied to sorghum at this height, it can disrupt growth of nearly all grain sorghum hybrids. Taller sorghum is even more susceptible to 2,4-D injury from broadcast applications, and drop nozzles should be used for application to sorghum more than 10 inches tall.

Producers should be careful about the potential for herbicide drift onto nearby crops and gardens when applying 2,4-D to grain sorghum. Cotton, tomatoes, and grapes are among the crops that are very sensitive to 2,4-D injury. Vapor drift can be reduced by using an amine formulation rather than a low-volatile ester, and spray drift can be reduced by selecting proper sprayer nozzles and pressures.

Symptoms of 2,4-D injury to grain sorghum include stunting; brittle, spreading stems and tillers; and deformed, fused, or absent brace roots. There is considerable variation among commercial grain sorghum hybrids in how well they tolerate 2,4-D.

Grain sorghum hybrid response to 2,4-D was tested at the Manhattan location in the 2005 K-State Grain Sorghum Performance test. At this location, 98 hybrids were rated for injury from an application of 1.5 pt/acre of 2,4-D amine, applied on June 25 to grain sorghum that was 8-10 inches tall. The hybrids were planted in 4-row plots, with two rows sprayed. The experimental area was kept weed-free with a preemerge application of Bicep plus hand weeding as needed.

The sorghum hybrids were rated for percent injury at 1 and 2 weeks after application. At 3 weeks after application, the hybrids were rated for stunting, root malformation, and tiller lodging and condition. Measurements for days to half bloom and plant height were taken later in the season. And finally, differences in yield were noted between the two sprayed and two unsprayed rows.

The complete results can be found on the K-State Performance Test web site http://www.k-state.edu/kscpt/ or in the 2005 Grain Sorghum Performance Test booklet, available later in December at local county Extension offices.
Some conclusions that can be drawn from the 2,4-D/sorghum hybrid test:

* All hybrids show symptoms in response to broadcast 2,4-D, even when applied near optimum height. Except for a few hybrids, you would easily notice the symptoms “from the road.”

* The July 16 ratings show that all hybrids have significant brace root malformation and stem or tiller lodging or goosenecking. The stunting column shows the greatest variation among hybrids, ranging from almost no stunting to severe stunting.

* Nearly all hybrids show significant delay in “days to half bloom” when treated with 2,4-D. Producers with double-cropped sorghum, or full-season sorghum that was planted on the late side, may want to avoid application of postemerge 2,4-D.

* One risk of 2,4-D on sorghum, that did not come into play in this test, is the tendency to lodge badly in a wind storm. In a 2,4-D test in 2004, there was extensive, late-season sorghum lodging of 2,4-D treated rows following an August wind and rain storm.

* On average, the 98 sorghum hybrids yielded 4 bu/acre less grain following application of 2,4-D. This was not statistically significant, but it shows a trend that’s believable. Of course, this was in a weed-free test environment. There could be considerable yield advantage to using a rescue treatment of 2,4-D where broadleaf weed infestations are high at the time of application.

Producers should bear in mind that this is a single test, and that sorghum response to 2,4-D varies with weather and application conditions. We don’t know how reproducible these results are. When selecting sorghum hybrids, producers who are considering use of 2,4-D should discuss hybrid tolerance with their seed dealers.

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These e-Updates are a regular weekly item from K-State Extension Agronomy. 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 Jim Shroyer, Research and Extension Crop Production Specialist and State Extension Agronomy Leader 785-532-0397 jshroyer@ksu.edu