k-state extension AGRONOMY e-Updates

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1. Grazing and haying CRP ground after contract expiration

As CRP contracts expire, some landowners are considering what needs to be done to transition the acres into a productive grazing or haying enterprise. Maintaining these acres with a perennial grass cover will reduce erosion, improve water quality, enhance wildlife, and reduce sedimentation.

Grazing

Getting CRP ready to graze will probably require fencing and water development. Fence off CRP that is adjacent to native rangeland. Experience has shown that animals will not utilize seeded grass as well as native sod when given a choice. One can partially overcome this problem by using grazing distribution tools such as water development, placement of salt and mineral, and burning. Care should be taken in determining where to place water developments. If feasible, water developments should be positioned in a way that will encourage uniform grazing of the land.

Most CRP stands coming off contract are initially not in condition for full grazing pressure. A management strategy covering 2 to 4 years may be necessary to condition the plants to use. After years of non-use the plants are in a state of low vigor and may have a limited root system. Loss of topsoil from previous cropping and large spacing between grass plants is common, often resulting in low total forage production.

Increasing plant density and vigor is the first step to improving the stand for use as pasture. If the land has not been burned for a few years, it would be a good idea to conduct a prescribed burn. Spring burning is an effective method of removing the standing dead material and mulch to allow sunlight to reach the crown of the plant. If allowed to remain, previous years forage growth will dilute the diet of grazing animals and suppress growth of young plants. Burning will also help control undesirable plants such as eastern red cedar.

Burning will not only get rid of old dead material, but should increase tillering and help the grass stand continue to develop. Frequent burning is not recommended in western Kansas. In eastern Kansas, do not burn unless heavy growth remains. Avoid annual burning until the stand is completely developed (2 to 4 years).

Mowing or haying in March or April is another method to remove litter, although hay removed at this point would be relatively low in protein and energy. A 2009 study by B. Andersen from the University of Nebraska indicated that burning was the most effective in improving subsequent production with grazing and haying providing intermediate improvement compared to shredding or no treatment.

Year-end yields following one year of treatment on CRP: Nebraska, 2009	
Treatment	Yield (lbs/acre)
Burn	4420
Graze	3200
Hay	3080
Shred	2160
Control	2130

A three-year study by K-State from 1994-96, with sites in Edwards, Greeley, Kearny and Reno counties, compared spring burning or spring mowing in year one to non- treated CRP. At the Edwards County site, calves from cow-calf pairs showed similar gains with all treatments.

Effect of CRP Mowing and Burning on Calf Gains: Edwards County			
	Average Daily Gain (lbs/day)		
	1994	1995	1996
No treatment	2.36	2.20	2.36
Mowed, spring 1994	2.44	2.22	2.48
Burned, spring 1994	2.48	2.12	2.32

Stocking rate (cow/calf pair): 212-267 lbs/acre; Days grazed: 144 (1994); 168 (1995); 130 (1996)
Source: Langmeier, et al. K-State Cattlemen's Day 1997 Cattlemen's Day 1997
http://www.ksre.ksu.edu/library/lvstk2/srp783.pdf

Season-long stocker grazing was done at the Kearny and Reno county sites. Stocker gains were generally highest where the CRP was burned. Stocker performance increased 6 to 38 percent after spring burning compared to no treatment.

Effect of CRP Mowing and Burning on Stocker Gains from Season-Long Grazing: Kearny County			
	Average Daily Gain (lbs/day)		
	1994	1995	1996
No treatment	1.16	1.61	1.57
Mowed, spring 1994	1.27	1.60	1.57
Burned, spring 1994	1.93	2.10	1.96

Stocking rate: 112-156 lbs/acre; Days grazed: 130 (1994); 103 (1995); 94 (1996)

Effect of CRP Mowing and Burning on Stocker Gains from Season-Long Grazing: Reno County			
	Average Daily Gain (lbs/day)		
	1994	1995	1996
No treatment	2.01	1.15	1.79
Mowed, spring 1994	2.55	1.24	1.44
Burned, spring 1994	2.65	1.39	1.68

Stocking rate: 162-169 lbs/acre; Days grazed: 103 (1994); 141 (1995); 112 (1996)

The Greeley County site tested early intensive heifer grazing. Prescribed burning increased grazing performance at that location, largely due to the magnitude of the difference the first year.

Effect of CRP Mowing and Burning on Heifer Gains from Early Intensive Grazing: Reno County			
	Average Daily Gain (lbs/day)		
	1994	1995	1996
No treatment	2.73	2.49	1.31
Mowed, spring 1994	3.07	2.21	1.39
Burned, spring 1994	3.47	2.27	1.22

Stocking rate: 175-196 lbs/acre; Days grazed: 58 (1994); 74 (1995); 79 (1996)

When grazing any CRP ground for the first time, it's best to use a light stocking rate to allow good plant growth the first year. Adjust stocking rates in subsequent years based on stand development.

Since burning and mowing won't fit all situations other options should be considered. CRP acres could be used as a calving pasture and would provide plenty of bedding and clean ground. Lactating cows would need supplementation to meet both protein and energy needs.

"Extreme grazing" has a goal of leaving little residual forage. It is achieved by using a very heavy stocking for a short period of time (80 - 100 cows per acre for one to seven days). This results in trampling the dead litter into the soil and opening up new areas for seedlings and tillers. Temporary electric fencing is often needed to concentrate animals in a smaller area and then allow movement to the next section. If grazed as early as allowed in the fall, nutrient content will be relatively higher, reducing supplement needs.

Haying

Management decisions related to hay production include fertilization, burning, and time of cutting. Most CRP in Kansas was seeded to warm-season native grasses. Although fertilization with nitrogen and/or phosphorus might increase production, it is not recommended because of potential changes in plant composition. Cool-season grasses and broadleaf plants will be stimulated by fertilization.

If you want to fertilize, it would be best to start by treating a small area. Observe and measure what happens. Warm-season grasses will respond to early May applications of 30 pounds per acre nitrogen, 10 pounds per acre phosphorus, and 0 to 30 pounds per acre potassium. Fertilization of cool-season grasses such as smooth brome and tall fescue should be based on a soil test. Follow recommendations found in the Kansas State University Research and Extension publications:

Smooth Brome Production and Utilization C-402
http://www.oznet.ksu.edu/library/crpsl2/samplers/c402.asp

Tall Fescue Production and Utilization C-729.
http://www.oznet.ksu.edu/library/crpsl2/samplers/c729.asp

If the land has not been burned for a few years, it would be a good idea to conduct a prescribed burn. Burning will remove mulch and standing dead litter. Although this material will add yield when baled, forage quality will be reduced.

The proper time to hay native warm-season grasses in Kansas is during July. Crude protein will drop a half percentage point every week during July, but will usually be 6 to 8% during this time. Peak yield on warm-season grasses will probably not occur until August, but by that time crude protein content will be less than 5%. A mid-July haying date on native grass is a good compromise between yield and quality. Cool-season grasses should be hayed during the heading to full bloom stage to optimize yield and quality.

Other considerations

Other limiting factors in CRP productivity are undesirable weeds and brush. These problems may be best addressed while still under contract since herbicide options are broader for CRP than for use for hay or grazing. Mechanical control may be needed for larger trees and brush. Goats may be an option for biological control of some weed species. In the long run, increasing the vigor of the stand through good grazing management is the best weed control.

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2. Starter fertilizer rates and placement for corn

Many producers in Kansas could benefit by using starter fertilizer when planting corn. Starter fertilizer is simply the placement of some fertilizer, usually nitrogen (N) and phosphorus (P), near the seed -- which "jump starts" growth in the spring. It is very unusual for a farmer not to see an early season growth response to starter fertilizer application. But whether that increase in early growth translates to an economic yield response is not a sure thing in Kansas. How the crop responds to starter fertilizer depends on soil fertility levels, tillage system, and N placement method.

* Soil fertility levels. The lower the fertility level, the greater the chance of economic responses to starter fertilizers. A routine soil test will reveal available P and potassium (K) levels. If soils test low or very low in P, below 20 ppm, there is a very good chance that producers will get an economic yield response to applying a starter fertilizer containing P, even in some low-yield environments. If the soil test shows a medium level of P, 20-30 ppm, it’s still possible to get a yield response to P fertilizer. But the yield response will not occur as frequently, and may not be large enough to cover the full cost of the practice. The chances of an economic return at higher soil test levels are greatest when planting corn early in cold, wet soils. If the soil test is high, above 30 ppm, economic responses to starter P fertilizers are rare. In general, the same principles apply with K. If soil tests are low, below 130 ppm, the chances of a response to K in starter are good, and the lower the soil test level, the greater the odds of a response.

All of the recommended P and/or K does not need to be applied as starter. If the soil test recommendation calls for high rates of P and K in order to build up soil test levels, producers will often get better results by splitting the application between a starter and a pre plant broadcast application. If the soil test P levels are medium to high, applying all the recommended P as a starter will be adequate.

* Tillage system. No-till corn will almost always respond to a starter fertilizer that includes N – along with other needed nutrients – regardless of soil fertility levels or yield environment. This is especially so when preplant N is applied as deep-banded anhydrous ammonia or where most of the N is sidedressed in-season. That's because no-till soils are almost always colder and wetter at corn planting time than soils that have been tilled, and N mineralization from organic matter tends to be slower at the start of the season in no-till environments.

In general, no-till corn is less likely to respond to an N starter if more than 50 pounds of N was broadcast prior to or shortly after planting.

In reduced-till systems, the situation becomes less clear. The planting/germination zone in strip-till or ridge-till corn is typically not as cold and wet as no-till, despite the high levels of crop residue in the row middles. Still, N and P starter fertilizer is often beneficial for corn planted in reduced-till conditions, especially where soil test levels are very low, or low, and where the yield environment is high. As with no-till, reduced-till corn is also less likely to respond to an N starter if more than 50 pounds of N was broadcast prior to or shortly after planting.

Conventional- or clean-tilled corn is unlikely to give an economic response to an N and P starter unless the P soil test is low.

* Starter fertilizer placement method. Producers should be very cautious about applying starter fertilizer that includes N and/or K, or some micronutrients such as boron, in direct seed contact. It is best to have some soil separation between the starter fertilizer and the seed. The safest placement methods for starter fertilizer are either:

> -- A deep-band application 2 to 3 inches to the side and 2 to 3 inches below the seed, or
> -- A surface-band application to the side of the seed row at planting time, especially in conventional tillage or where farmers are using row cleaners or trash movers in no-till.

If producers apply starter fertilizer with the corn seed, they run an increased risk of seed injury when applying more than 6 to 8 pounds per acre of N and K combined in direct seed contact on a 30-inch row spacing. Nitrogen and K fertilizer can result in salt injury at high application rates if seed is in contact with the fertilizer. Furthermore, if the N source is urea or UAN, in-furrow application is not recommended. Urea converts to ammonia, which is very toxic to seedlings and can significantly reduce final stands.

Work by Barney Gordon at the North Central Kansas Irrigation Experiment Field near Scandia illustrates some of these points. Gordon compared in-furrow, 2x2, and surface band placement of different starter fertilizer rates in a multi-year study on irrigated corn. Excellent responses from up to 30 pounds of N combined with 15 pounds of P were obtained with the both the 2x2 and surface-band placement (see chart below). In-furrow placement was not nearly as effective. This was due to stand reduction from salt injury to the germinating seedlings. Where no starter, or the 2x2 and surface band placement, was used, final stands were approximately 30-31,000 plants per

acre. However, with the 5-15-5 in furrow treatment, the final stand was approximately 25,000. The final stand was just over 20,000 with the in-furrow 60-15-5 treatment.

Effect of Starter Fertilizer Placement on Corn Yield at North Central Irrigation Experiment Field			
Yield (bu/acre)			
Fertilizer Applied	In-Furrow Placement	2x2 Band Placement	Surface Band Placement
Check: 159 bu	--	--	--
5-15-5	172	194	190
15-15-5	177	197	198
30-15-5	174	216	212
45-15-5	171	215	213
60-15-15	163	214	213
Average	171	207	205

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3. Marestail control in Roundup Ready soybeans

Marestail has probably become the most widespread glyphosate resistant weed in Kansas. It has been especially troublesome in no-till soybeans. Marestail can act as either a winter annual or summer annual weed, so it can germinate throughout much of the year. Consequently, marestail that emerges in the fall or very early spring can be bolting and fairly large by soybean planting time. It is a major mistake to not control marestail prior to planting soybeans because it can be very difficult, if not impossible, to control from that point on. Thus, two burndown treatments may be required before planting soybeans in some fields.

Spring burndown treatments that are applied when the marestail are still in the rosette stage of growth will provide the best control. 2,4-D is often included as part of the burndown treatment for enhanced marestail control, but you must wait at least 7 days after applying 1 pt of LV4 formulation of 2,4-D before planting soybeans. The inclusion of residual herbicides such as Valor XLT, Sonic, or Authority First will help provide residual control of marestail and other important broadleaf weeds such as waterhemp and Palmer amaranth. Always be cautious of the potential for 2,4-D drift if spraying in the vicinity of sensitive crops, such as cotton or grapes.

Another good option for burndown control of marestail is the new suite of Kixor-containing products, Sharpen and OpTill. One advantage of these products compared to 2,4-D is that they can be applied anytime prior to soybean emergence, except on coarse-textured soils, where there is a 30-day preplant interval. The Kixor products will still be most effective if applied before marestail starts to bolt. These products will provide some residual control, as well.

Although it is best to control marestail before it starts to bolt, one option for marestail that is bolting at the time of soybean planting would be Ignite herbicide. Ignite at 29 oz/A plus ammonium sulfate provided good control of 6 to 12 inch marestail in an experiment at Clearwater last spring. Do not apply Ignite to emerged soybeans unless Liberty Link soybeans are planted.

If marestail is present after soybean emergence, the best option for postemergence control of marestail in Roundup Ready soybeans is probably a tank-mix of FirstRate or Synchrony herbicides with a full rate of glyphosate.

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4. Topdressing wheat with N: Timing, application methods, source, and rates

Winter finally seems to be coming to an end, so it's time to start topdressing nitrogen (N) on the winter wheat crop. With good soil moisture in many areas of the state, and some fairly small wheat in many fields due to late planting, there are some key elements that need to be considered when deciding on the exact program you plan to use. These include: timing, N source, application method and N rate.

Ideally, the N in topdress applications will be moved into the root zone with precipitation well before jointing begins in order to be most efficiently utilized by wheat. With some of the small wheat out there this spring, having adequate N available to support spring tillering when it breaks dormancy will be important. Some combination of fall preplant or at-seeding N, and/or early topdressed N, is also normally needed to supply adequate N to support head differentiation. This is the stage when head size is being determined, and can begin about two weeks before jointing. The following will discuss some of the issues to considering when making topdressing decisions.

* Timing. The most important factor in getting a good return on topdress N is usually timing. It is critical to get the N on early enough to have the maximum potential impact on yield. While some producers often wait until spring just prior to jointing, this can be too late in some years, especially when little or no N was applied in the fall. For the well-drained medium- to fine-textured soils that dominate our wheat acres, the odds of losing much of the N that is topdress-applied in the winter is low since we typically don't get enough precipitation over the winter to cause significant denitrification or leaching. For these soils, topdressing can begin anytime now, and usually the earlier the better.

For wheat grown on sandier soils, earlier is not necessarily better for N applications. On these soils, there is a greater chance that N applied in the fall or early winter could leach completely out of the root zone if precipitation is unusually heavy during the winter. Waiting until closer to spring green-up to make topdress N applications on sandier soils will help manage this risk.

On poorly drained and/or shallow claypan soils, especially in SC or SE Kansas, N applied in the fall or early winter would have a significant risk of denitrification N loss. Waiting until closer to spring green-up to make topdress N applications on these soils will help minimize the potential for this N loss.

Also keep in mind that N should not be applied to the soil surface when the ground is deeply frozen and especially when snow covered. This will help prevent runoff losses with snow melt or heavy precipitation.

* Application method. Most topdressing is broadcast applied. In high-residue situations, this can result in some immobilization of N, especially where liquid UAN is used. If no herbicides are applied with the N, producers can get some benefit from applying the N in a dribble band on 15- to 18-inch centers. This can help avoid immobilization and may provide for a little more consistent crop response.
* Source. The typical sources of N used for topdressing wheat are UAN solution and dry urea. Numerous trials by K-State over the years have shown that both are equally effective. In no-till situations, there may be some slight advantage to applying dry urea since it falls to the soil surface and may be less affected by immobilization than broadcast liquid UAN, which tends to get hung up on surface residues. Dribble (surface band) UAN applications would avoid much of this tie-up on surface crop residues as well. But if producers plan to tank-mix with a herbicide, they'll have to use liquid UAN and broadcast it.

Some of the new controlled-release products such as polyurethane coated urea (ESN) might be considered on very sandy soils prone to leaching, or poorly drained soils prone to denitrification. Generally a 50:50 blend of standard urea and the coated urea -- which will provide some N immediately to support tillering and head development and also continue to release some N in later stages of development -- works best in settings with high loss potential.

* Rate. Producers should have started the season with a certain N recommendation in hand, ideally based on a profile N soil test done before the crop is planted and before any N has been applied. If some N has already been applied to the wheat crop, it is too late to use the profile N soil test since it is not reliable in measuring recently applied N. Topdressing should complement or supplement the N applied in the fall, with the total application amount equaling that targeted rate.

If the wheat was grazed this fall and winter, producers should add an additional 30-40 lbs N/acre for every 100 lbs of beef weight gain removed from the field. If conditions are favorable for heavy fall and/or spring grazing, additional N maybe necessary, especially for a grain crop.

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5. Additional information on Acceleron seed treatment

In a recent Agronomy e-Update article (e-Update No. 229, February 5, 2010), mention was made of a new Monsanto seed treatment product, Acceleron. Some clarification is necessary. Acceleron is actually a suite of products. The product referred to in the article is labeled as Acceleron HX-209 Fungicide Seed Treatment and contains 1% harpin (alpha beta) as previously mentioned. Other Acceleron products include Acceleron DX-109 Fungicide Seed Treatment (18.4% pyraclostrobin), Acceleron DX-309 Fungicide Seed Treatment (28.35% metalaxyl), and Acceleron IX-409 Insecticide Seed Treatment (48.7% imidacloprid). In 2010, Acceleron Soybean Seed Treatment products will only be for use on Genuity Roundup Ready 2 Yield soybeans. Asgrow will treat 100% of their Genuity Roundup Ready 2 Yield soybeans with Acceleron.

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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, or Jim Shroyer, Research and Extension Crop Production Specialist and State Extension Agronomy Leader 785-532-0397 jshroyer@ksu.edu