Spring 2013

CONSERVATION CONVERSATION

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Prescribed Burn Workshops Enjoy Good Attendance

by Ken Brunson, The Nature Conservancy

The Barber County Conservation District in collaboration with The Nature Conservancy, NRCS and other partners, held two prescribed burn workshops in Medicine Lodge in the past two months. The Beginning Prescribed Burn Workshop was held on Feb. 14 and had an attendance of 31. Presenters were available from the Kansas (formerly Red Hills) Prescribed Burn Association, National Weather Service from Dodge City, the Kansas Prescribed Fire Council, NRCS, and The Nature Conservancy to convey the basics about prescribed fire. The Intermediate Prescribed Burn Workshop was held March 7th, also in Medicine Lodge, and also involved 30 participants and speakers. The Intermediate workshop covered a review of the beginners' session but explored more of the fuel load science, procedures of dealing with special land features, weather, safety, and cedar encroachment. We were very pleased to be able to host Barber County Commissioners and representatives from the rural fire department as well as a number of area ranchers.

Bill Waln, Regional Fire Coordinator for Fish & Wildlife Service out of Quivera National Wildlife Refuge, demonstrates the use of sandboxes in planning a safe and successful burn.

Example scenarios were presented by the use of "sand boxes" in which participants planned prescribed burns and determined factors for every possible consideration in order to conduct safe and effective burns. The advancing "Green Glacier" of Eastern Red Cedar is a menace to our area ranching and a threat to wildlife, streamflows, and cattle grazing as well as presenting a very serious wildfire hazard to communities and homes in the area. There are many partners assisting with promoting prescribed burns in the Red Hills landscape to help alleviate these threats. These workshops are designed to not only help area ranchers with improving their rangeland health but also relate to the total citizenry of the county.

In addition to the sponsors and organizations helping with the Beginners' workshop, representatives from the U.S. Fish and Wildlife Service, Pheasants Forever, and the Kansas Forest Service assisted with the more advanced workshop. Area ranchers, Ed Koger and Keith and Eva Yearout, gave presentations and demonstrated prescribed fire equipment at and after the sessions. Other assistance was provided by Cheryl Davis, Carl Jarboe, and Ken Brunson . Delicious meals for the workshops were provided by Cheryl, and the Gyp Hills Pilot Club under the sponsorship of the Conservation District.

More workshops will be planned in the future as well so keep this in mind for future calendars next winter and spring. You should be thinking a year in advance if you are planning burns so get in touch with the staff at the NRCS office for direction on planning burns. Google Kansas Grazing Lands Coalition and the Kansas Prescribed Fire Council for more information. Also consult ksfire.org.

Ponds or Water Wells: Which is Better

by Carl Jarboe, NRCS Technician

I think we all like having a pond. It serves as a source for livestock water as well as a little recreation area for swimming, fishing and hunting. Are ponds the best answer for livestock water? What about water quality? Which supply is most adequate for livestock? Which protects land and water resources better?

These are all good questions; let's try to cover some positives and negatives for both.

Ponds

Positives +	Constant water supply, doesn't need checking daily
	Recreation opportunities
	Catches run off and releases water at a controlled rate.
Negatives -	Can go dry
	Ponds in Baber County tend to seep
	Cattle get into water and defecate, diminishing water quality for all purposes
	Cattle can get stuck in mud
	Chopping ice may be required in the winter; livestock can fall through the ice searching for water.

Wells or spring developments

Positives +	Reliable sources of known quality
	Watering Facilities can be placed in good locations for better grazing distribution.
	Cattle stay out of riparian areas
	Works in winter with minimal effort
Negatives -	Well or spring can go dry
	Water needs checked on a regular basis to make sure its pumping.

When we look at the positives and negatives we see a balanced list for both. Normally we would not expect a well to go dry or a spring to dry up until after the pond is already reduced to a mud pit. This one fact alone is enough for me to look at wells or spring developments as the best choice. Some say that pumps have to be checked all of the time to be sure they are pumping

APRIL—STATE COST-SHARE SIGN-UP MONTH

Applications are being accepted now through April 30 for State Cost-Share Programs. Aside from erosion control practices and livestock water developments, cost share is also available to assist with replacing failed septic systems and plugging abandoned water wells. Call or stop by the conservation office to find out what ractices are included in our cost share programs and to make application for these funds.

Fire Council Places Regional Coordinator to Assist Ranchers

"The Kansas Prescribed Fire Council (KPFC) has contracted for services as southwest Kansas regional fire coordinator to help support and encourage local prescribed burn associations and improve lesser prairie chicken habitat," said Barth Crouch, KPFC chairman, Salina.

KPFC and our partners such as the Comanche Pool Prairie Resource Foundation, and the Natural Rresources Conservation Service in Kansas are pleased to be able to bring the experience and skills of Jess Crockford, Hutchinson, to further both entities missions in southwest Kansas, said Crouch. Using grant dollars from the National Fish and Wildlife Foundation, and other partners, KPFC has contracted with Crockford to fulfill a goal of establishing new and further supporting existing prescribed burning associations in the the southern portion

of the Lesser Prairie Chicken Initiative area of Kansas. KPFC is helping NRCS meet their goals under the national LPCI by putting technical help out where ranchers can get them onto their ranches.

"Since the 2008 formation of the KPFC, there has been a call for more local boots-on-the-ground assistance with prescribed fire issues, especially in western Kansas; I look forward to helping fill that need," said Crockford. "My job is to work one-on-one with ranchers and pand managers to help them use prescribed fire to manage their native grasslands. A very successful way to get ranchers into using prescribed fire is to get them organized with other ranchers to form a local prescribed burning association. These associations can share equipment, arrange for needed training, get planning assistance, and provide a team to conduct burns."

Crockford grew up on a ranch in western South Dakota. He graduated from the University of Montana with a Bachelor of Science degree in forestry/range management in 1973. In 1972, Jess started working for the U.S. Forest Service in the Black Hills National Forest. He moved to Phillipsburg, Kansas, in 1974 as a range conservationist with the Soil Conservation Service. In 1976 he moved to Kinsley as district conservationist, then to Council Grove in 1979 as the District Conservationist.

In 1987, he moved to Salina, Kansas, to serve as the SCS state range conservationist; a position he hled for three years. In 1990, Crockford moved to Hutchinson as the area conservationist; later to be renamed as assistant state conservationist for field operations. He

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Wildflower Tour—May 11

Be sure to make reservations to attend the Spring Wildflower Tour on May 11, sponsored by the Barber County Conservation District. Good folks, good food, good times, not to mention the most fascinating display of wildflowers to inspire and delight. $15 covers the cost of a continental breakfast, lunch, snacks, and transportation—kids 10 and under, free!

Soil's Role in Effective Rainfall *(March 2012)*

by Jarred Kneisel, Supervisory District Conser-

So much of the business of agriculture in this part of the world is driven by precipitation. This last summer brought that point painfully into focus, and then, thankfully, some relief was realized late this fall/early winter. When we look back and summarize the year, we see that Barber County (as a whole) received 13.8 inches of precipitation from the period of January 1 thru December 31. That's a low number, make no mistake about it, but it may even be worse than that when you stop and think about how much of that rainfall was actually "effective." I hope you make it through this article in its entirety – a person can't jump straight into this subject without also laying some foundation in soil physics, so hang in there and you'll hopefully have some thoughts stimulated in the process!

In my view, effective rainfall is water that infiltrates into the soil profile and percolates down into the plant-root zone, and that is the definition that I'll be using for this discussion. Now, certainly some of you may have a different definition of "effective rainfall" (especially those of you with ponds – you may be more interested in water that runs off, not necessarily infiltration). A number of factors play into how much of any rainfall event is effective. Much of what determines what is effective rain is the rate and intensity of the rainfall. This isn't earth-shattering news – an inch of rain that falls over the course of 24 hours is going to stand a much better chance of getting absorbed than if that same inch of rain fell in 10 minutes. This ties in directly to the very composition of the soils where the rain falls. The 3 different soil particles (sand, silt, and clay), have different-sized pore openings, and therefore, handle the absorption of precipitation at different rates. Sandy-soils, having the largest pore openings, will absorb rainfall much more rapidly than a tight clay soil (as much as 4 inches per hour as opposed to 0.6 inches per hour). So, on February 3rd, when we received that 4.5" rain event that fell nicely over a 24-hour period, probably both soil types were able to fill up to field capacity (at least in the upper portion of the soil). However, at times during that event when the rainfall was more intense, the heavier soils, with lower infiltration rates, were unable to keep up. There is a trade-off to the high infiltration rate of sandy soils, though, and that is that they can't store very much water in the soil's profile. In other words, even though a sandier soil may take in more of the rainfall initially, its low tension means that the soil can't hang on to that water very tightly, and it will percolate down through the soil profile and out of the plants' reach. A clay soil, which can hold on to water much more tightly, has the ability to store twice as much water as a sandy soil, although it is held so tightly that sometimes the plants have trouble retrieving it. In general, this means that our medium-textured (loamy) soils are the happy medium between rate of infiltration, water holding capacity, and the water that is available to plants.

I say all of this to establish the background for what I believe is an aspect that may not be fully understood – that is the water holding capacity of a given soil. The ability of a soil to hold water is driven largely by the texture of the soil, and how much organic matter is present. In order to figure how much water your particular soils have available to plants under optimum conditions, you'll need to have an idea of the type of soil and how deep that soil is for roots to grow in. Take for example, a silt-loam may hold 2.5 inches of water per foot of soil depth, whereas a sandy-loam soil may not even be able to store 1 inch of water per foot of soil. If in both cases, you have 5 feet of these soils for the plants to grow in, then the silt-loam could potentially have 12.5 inches of water available, whereas the sandy-loam may not even be able to hold 5 inches. Note that this would be the case if there were no root-restrictive layer. Now let's say that a couple of years ago you worked the field or had harvest when it was a little too muddy, or you've been doing conventional tillage for years; we are now dealing with a compacted zone (plow-pan) that is 20" deep, as an example. So now with this restrictive layer, that same profile of soil is only holding 3.8" in the silt-loam soil, while that sandy-loam now only has 1.5". In a wheat or sorghum field, that means that even starting with a full soil-profile of moisture, you are less than two rain-free weeks away from stressing your crops in the silty-soil, and only *6 days* away from crop stress on a sandy soil.

Whether you are a farmer or a rancher, the management decisions that you make can and do influence how much water is "effective." My point is that while we can't control when the rains come, we can use best management practices in order to extend the effectiveness of the moisture in our soil profile. By parking the tillage equipment, you are averting the formation of a plow-pan, and in doing so, allowing the plant roots to grow further down into the soil profile and gaining access to more soil moisture. The same can be said for eliminating cattle trails and loafing areas, both of which will create compaction zones, and ultimately change or eliminate the plant community. By increasing the amount of ground cover, you are essentially reducing the intensity of a rain-storm – both by reducing the impact of the raindrops, and by slowing the water down, which will give your soil more opportunity to absorb and store the water. Again, this goes for both farmers and ranchers. Ranchers: by not overgrazing a pasture, not only are you leaving more top-growth to slow down and capture rainfall, but your plants will have a much healthier root system; one that is able to grow down and get the deeper water and minerals. Farmers: by leaving crop residues on the surface, or using a rotation with high-residue crops, you'll also receive the same water-conserving benefits, as well as protecting your soil from eroding, and potentially building organic matter in the long-run under the right system. Obviously, more top growth or cover on the soil's surface means that there is less bare ground. Think about a windy mid-July day here, 3 days after a nice 1.5" rain. On your wheat fields that have already been worked, what is keeping that moisture in the soil when the sun is beating down on your bare soil and the surface temperature is 125 degrees with a drying wind to boot? On your pasture that has been overgrazed in the past and has bare ground, what would it be worth to minimize the 0.4" per day lost through evaporation? Having more cover will help to minimize these harsh conditions, and allow you to hang on to that valuable soil moisture for longer, and put it to work for you. (By the way, cedar trees don't count as desirable cover on rangeland – some data shows that as much as 40% of precipitation is caught by a cedar tree and never even reaches the ground – but that's a separate conversation.) *continued*

Even if we go into a year with an abnormally wet winter or wet spring, the amount of moisture in your soil will ultimately be fixed, based upon the factors that I mentioned – the water holding capacity of the soil, and how deep your soil is. You can't store water for any length of time in excess of field capacity – anything over this point is drained on down through the soil profile and not available to plants. So, even if we received our average 24-26 inches of precipitation last year, but 13 inches of it came in February and March, we still would have experienced drought last year due to: poor timing of the rains, high evaporation due to the extreme heat, and the very fact that our soils can't store that much water, meaning most of it would have been lost as "free water" down through the soil's profile.

We've discussed that intense showers aren't very effective in wetting a soil, as most of the water is lost via run-off; and so just relying on a given storm's total precipitation is a very misleading number. On the other side of the spectrum, how much good are we receiving from a 0.25" rain or less? These small rain events usually aren't very intense, so that solves the problem of losing water thru run-off, but that small of an event does very little to wet a soil profile. Assuming we're starting with a dry, sandy-loam soil, that quarter-inch rain would only wet the soil about a half-inch deep, just enough to get picked up by your boots, but not much more, and would quickly be gone. Again, evapotranspiration losses can easily exceed 0.3" per day, meaning that the 0.25" rain that you got will buy you about 24 hours. In order to wet that particular soil profile for a 3' depth, you'd need a 6" rain (where none of it was lost to run-off). On a heavier soil, you're talking more about a 7.5" rain, with no run-off. Now, I wouldn't recommend holding your breath for the next nice-and-easy 7.5" rain to occur; but rather, use your management decisions to not only preserve what moisture you do have, and increase the effectiveness of the next rain.

In summary, I'd like to be able to pick-and-choose when and how the rains come, but since that's out of the equation, I hope that you take steps to prepare your farm or ranch to utilize whatever rainfall we get. Reducing/eliminating compaction enables more root growth, healthier plants, and opportunity to harvest deeper water (no-till or controlling livestock traffic); having plenty of vegetative cover on the soil's surface to lessen raindrop impact and increase infiltration time (cover crops or prescribed grazing); and if necessary, have erosion structures in place, which would again slow down run-off and give more opportunity for infiltration. Having these items addressed will make those large rain events more effective, extend the benefits from the small rains, and will lead to many other benefits that go hand-in-hand with these practices. There's more information than what could fit onto one article, so please feel free to call or stop by if you want to discuss any of these thoughts further or cover any areas this article missed.

Soil's Role in Effective Rainfall—Update *(April 2013)*

Another year has come, and 2013 is shaping up to be eerily similar to what 2012 was. Winter and spring has brought us some much-needed moisture, but according to many experts, we are headed straight towards another hot and dry summer, with continuing drought. On the bright side, the heavy snows and rain in late February/early March have pushed our total precipitation 50% above normal. However, that only means that we are 1.5" ahead this time of year, and that isn't going to make much of a dent in the moisture deficit from the last two years of drought. Which means that proper management will continue to be a critical factor in how quickly your operation, whether it is cropland or rangeland, recovers when the weather cycles back around. Because of this, I wanted to re-run the article on effective rainfall from last year (please see preceding article), and add some more emphasis to a few key items with this update.

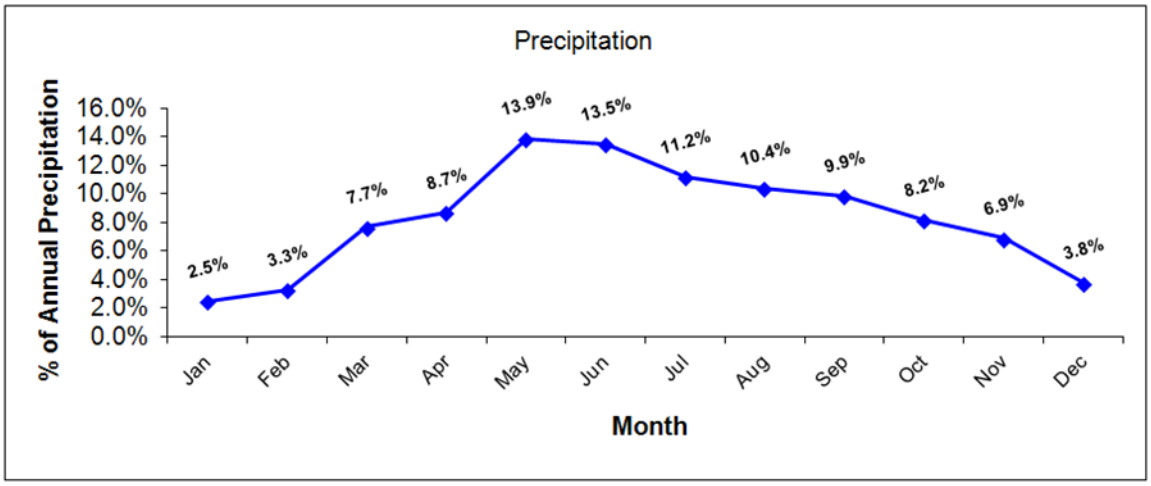
First, I wanted to address the issue of timeliness of rains. Again, let me state my gratefulness for the moisture that we have received to date, but in multiple conversations with producers this spring, I need to caution all that these rains will not necessarily benefit our (warm-season) pastures, and I think we all realize that this winter/spring was not a "drought buster." Moisture this time of year is great for cool-season plants (our wheat), and will certainly help the pastures look green early on with cheatgrass, but due to our soils' limited water holding capacities, it is doubtful that much of this moisture will still be available when our desirable warm-season grasses are ready to utilize it (please see Graph, which depicts the typical growth curve of our mixed-grass prairie, as well as when precipitation typically occurs). As you can see from the graph, the bulk of the growth on our warm-season grasses doesn't kick in until mid-to-late April, and if your pasture is dominated by cool-season species, they are now using up the available moisture, and depleting the soil profile before the more desirable warm-seasons have a chance to get started. Managing your pastures in such a way as to maximize the presence of warm-season species is very important for the sustainability of your rangeland, since these species line up better with the overall average precipitation curve (which factors in to what has shaped our historical plant community). The take-home message here is that the timeliness of precipitation is especially important when dealing with a moisture-depleted soil profile, and I'm encouraging you to take another look at those stocking rates – there is still a long ways to go on the path to recovery, and we're not nearly at the point where we should be thinking about increasing numbers (or even maintaining current numbers). *continued*

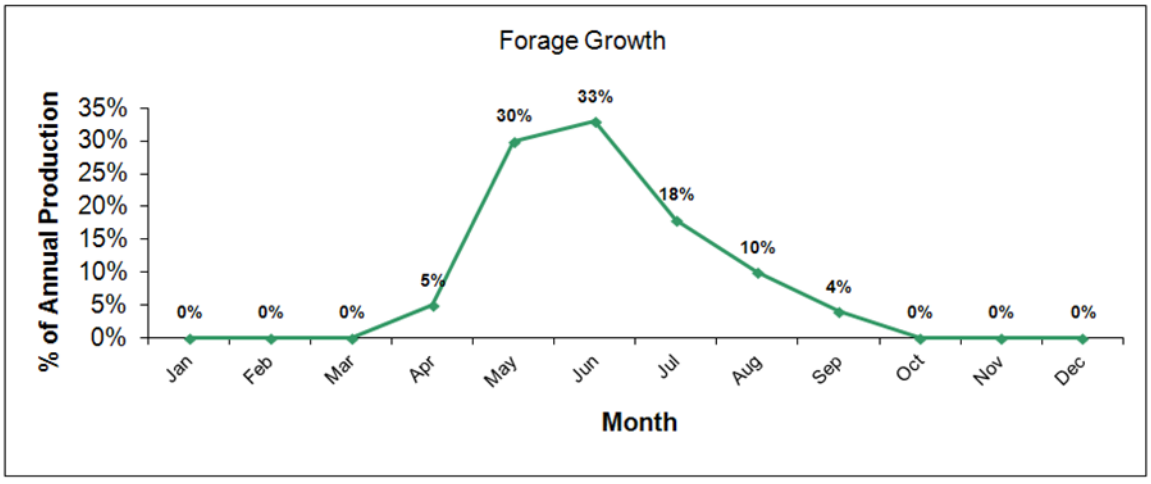
For a good source of reference on the drought, current trends in precipitation, and long term weather forecasting, take a look at

http://droughtmonitor.unl.edu/DM_state.htm?KS,HP

Secondly, I wanted to stress the importance of keeping the ground covered at all times. As mentioned in the previous article, keeping the ground covered by either growing plants or litter, "armors" the soil, reduces erosion and run-off, and lowers evaporation losses. As can easily be observed by anyone with a simple probe thermometer, the surface temperature on bare ground on a typical sunny summer day can reach 110 degrees. If you measure the temperature that same day underneath the cover of growing plants, that temperature can be 30 degrees cooler, which is a significant difference when you consider how temperature affects moisture usage. According to one study, a growing plant in 70 degree soil can use 100% of moisture for growth. Increase the soil temperature to 100 degrees, and now only 15% of the moisture is used for growth, and the other 85% is used by the plant for "air conditioning." Now crank the temperature up above 100 degrees, and the desirable bacteria in the soil start dying off, and 100% of the water is used for cooling off the plant, and none of it is spared for growth (McEntire, 1956). Keeping the ground covered reduces evaporation losses, and maximizes your opportunity to capture and retain as much precipitation as possible. Because of these reasons, and numerous others, I wanted to again stress the importance of keeping the soil-surface covered.

I just wanted to bring a couple of these thoughts back to you again this year. Our perennial plants are stressed, the health of our soils has largely been in decline for quite some time, and the persistent droughty conditions will mean that your management decisions will have even more importance this year. As always, our office is open to any questions, comments, or concerns that you have. If you'd like a Conservation Plan developed, or would just like to bounce some of your ideas off of us as a sounding board, please feel free to call or stop by.





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LIKE US ON FACEBOOK FOR UP-TO-DATE INFORMATION INCLUDING SCHOLARSHIPS,

Continuing Education 2013 Summer Graduate Course

The Barber County Farm Bureau Association and Barber County Conservation District are partnering to provide a $700 scholarship to a Barber County educator interested in attending the Kansas Foundation for Agriculture in the Classroom's (KFAC) Summer Graduate Course, June 10-14 in Manhattan on the Kansas State University campus. The course offers teachers a chance to learn how to incorporate agriculture into their classrooms.

"The class is offered through Kansas State University's Division of Continuing Education, which provides graduate credit that teachers need for licensure renewal. KFAC's summer graduate course is designed to introduce agriculture as a useful teaching tool for many core subjects such as math, science, social studies and reading. "We have learned that teaching through agricultural examples captures the student's attention and increases retention of material taught," says Cathy Musick, KFAC Executive Director.

Application deadline is May 2, 2012. For more information please visit KFAC's website @ www.ksagclassroom.org . If you have questions you may contact Cheryl Davis at (620) 886-5311, ext.3

Soil and Water Stewardship Week

Soil and Water Stewardship Week is the result of an effort begun in 1955 by the National Association of Conservation Districts to encourage Americans to focus on stewardship. Stewardship Week 2013 is being observed April 28—May 5 with the theme of "Where Does Your Water Shed?"

In keeping with our goal to promote the wise stewardship or our natural resources, the Conservation District is participating in National Soil and Water Stewardship Week by offering free conservation outreach materials to churches and schools in Barber County.

The Stewardship concept involves personal and social responsibility, including a duty to learn about and improve natural resources as we use them wisely, leaving a rich legacy for future generations. One definition of Stewardship is "the individual's responsibility to manage his life and property with proper regard to the rights of others." E. William Anderson suggests stewardship "is essentially a synonym for conservation."

Ted Alexander Ranch Tour—May 11, 2013

19 miles west of Medicine Lodge on Highway 160 - North Side

- **Registration—9:30 AM**
- **Tour—10:00 AM—4:00 PM**

Morning presentations will focus on "Managing Drought on the Ranch" by Ted Alexander, David Kraft and Dwayne Rice; lunch catered by Buster's followed by Afternoon Ranch Tour. A Wrap-Up Social at Buster's will follow the tour.

Registration - $10.00 to cover lunch and handouts. RSVP's requested for lunch count.
Drought information - www.kglc.org Registration form - www.kansasfarmersunion.org Questions…Contact Mary Howell - kfu.mary@gmail.com or call 785-562-8726

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