THE SAMUEL ROBERTS NOBLE FOUNDATION

AG News and Views

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WILDLIFE

Drought must be considered when applying prescribed fire

by Russell Stevens / rlstevens@noble.org

Fire is a natural

process to which plant communities in the Southern Great Plains have adapted. Drought, which in recent years has been a major issue in the Southern Great Plains, is also a natural process to which these plant communities have adapted. During consultation with landowners interested in applying prescribed fire, a common and drought-related comment is often repeated: "I can't burn because I have no grass for fuel."

Applying prescribed fire under the proper conditions, but in the absence of an adequate fuel load, such as grass, is a wasted effort. Prescribed fire should be applied only when it will help accomplish goals. In the case of inadequate fuel loads due to drought, overgrazing or both, stocking rate and duration of grazing should be addressed to build fuel loads before considering the use of fire. When adequate fuel loads consisting of grass are present, careful consideration should be given to make sure that the goal accomplished by applying prescribed fire exceeds the need to graze the grass or that there is enough forage available for both burning and grazing. This is especially true during drought, and there is a high probability that drought in the Southern Great Plains will be a regular occurrence for several more years (See *The "New Normal" – or was it?* www.noble.org/ag/pasture/new-normal by Chuck Coffey.)

If drought persists, landowners who have appropriately adjusted stocking rates can still apply prescribed fire to a portion of their property annually or periodically to accomplish goals. However, for cow/calf producers, it is usually not recommended to burn more than 25 percent of the available forage base in a growing season during drought or normal years. In addition, the burn should be planned at least one year in advance to ensure an adequate grass fuel load. If drought prohibits burning that year, the plan is still good for the same location in the following year(s) when conditions are more favorable. Landowners who do not have livestock to graze have more flexibility with applying fire.

Other opportunities for applying prescribed fire may exist during drought that do not require consideration of livestock forage or grass fuel loads. Many wooded areas can

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be burned if adequate leaf litter is present. Oak leaf litter is the fuel source for prescribed fire in many wooded areas. Burning wooded areas is often an excellent way to improve habitat for many wildlife species and, over time, may also increase forage availability for livestock. Burning wooded areas using leaf litter as the fuel source is usually most effective from immediately after leaf drop until early spring. Burning before snow, ice or rain has moistened and compacted leaf litter is most efficient.

To provide landowners and professionals with recent fire science information and developments, The Samuel Roberts Noble Foundation and Oklahoma State University Department of Natural Resource Ecology and Management will cohost a Summer Burn Workshop in conjunction with the Oklahoma Prescribed Fire Council annual meeting from 9 a.m. to 5:30 p.m., Wednesday, June 26, at the Marietta High School Auditorium located at 800 SW 4th Ave. in Marietta, Okla. Staff and faculty from the Noble Foundation and Oklahoma State University will give presentations on the benefits of prescribed fire, impacts of patch burning on parasites, use of fire to kill Eastern red-cedar, extreme summer fire and stocker cattle grazing behavior to patch burning. Following lunch, attendees will travel to the Noble Foundation D. Joyce Coffey Ranch for a tour of previous burn sites and witness a demonstration burn, weather permitting.

This workshop is aligned with the educational outreach objectives of the Oklahoma Prescribed Burn Association (OPBA), a newly formed statewide organization to educate the public and policymakers about the need to use prescribed fire and the safety of this management practice. ■

LIVESTOCK

Forage allowance determines stocking

by Ryan Reuter / rreuter@noble.org

In grazing enterprises, forage allowance is a key management variable. Forage allowance is defined as the amount of forage dry matter available to an animal. It can be expressed on a per animal basis, but we have found it useful to express it as a ratio to an animal's body weight. For example, we talk about targeting a forage allowance of 2.5 pounds dry matter per pound of animal body weight.

Why is forage allowance important? Forage allowance is related to the more familiar variable – stocking rate. Stocking rate is the number of animals grazed on a given area of land for a period of time. Stocking rate is the main variable that determines key production and economic responses of grazing systems, such as average daily gain (ADG), gain per acre, stand persistence and net return. Typically, conservative stocking rates produce greater ADG and stand persistence, while aggressive stocking rates produce more gain per acre along with greater risk.

Forage allowance is the underlying variable to stocking rate. For example, we might graze cows at the stocking rate of 10 acres per cow. However, we arrive at that stocking rate by considering a target forage allowance. We estimate what we think forage production will be, determine the amount of residual forage that we desire, consider the size of our cows (and therefore their forage demand), then put enough acres to each cow to achieve the forage allowance we want. Therefore, forage allowance determines a lot of those important economic responses to grazing systems. In a research setting, it is often more valuable to measure forage allowance directly rather than crudely measuring just stocking rates. For example, it is more precise to say that we stocked pastures at a forage allowance ratio of 2.5 rather than saying we stocked two steers per acre. Using forage allowance also makes our research results more applicable to other situations.

In many of our grazing experiments, we seek to measure and control forage allowance directly. Sometimes we want all of our paddocks in an experiment to maintain the same forage allowance. This would allow us to compare other treatments without the confusing influence of different forage allowances. In other experimental designs, we seek to maintain different forage allowances so that we can understand the effects of forage allowance on animal and plant responses.

At the Noble Foundation, we are developing tools to help measure forage allowance more accurately. When we are able to measure forage allowance, we will then be able to manage it. In the end, we want to understand these relationships so that ranchers can make more informed grazing management decisions, which will lead to increased sustainability. ■

Studies examine nontraditional bermudagrass fertilizers

by James Rogers / jkrogers@noble.org

"Just the facts" was a popular saying by Detective Joe Friday when doing witness investigations on the television crime series *Dragnet*. He did not want witness interpretation of the facts; he wanted to interpret them on his own. Increased fertilizer prices have many producers looking for nontraditional fertilizer sources that could produce the same amount of forage with less expense. Numerous nontraditional fertilizers are being marketed with little replicated research demonstrating their effectiveness compared to traditional commercial sources of nitrogen (N), phosphorus (P) and potassium (K). Here are just the facts from the results of two studies, one conducted by the Noble Foundation and the other by the University of Arkansas, evaluating nontraditional fertilizer effectiveness of several products – either alone or in combination with traditional fertilizer sources – on bermudagrass yield.

Noble Foundation Study

Vitazyme (V), a bio-stimulant, was evaluated alone or in combination with varying rates of N (urea) in a replicated, three-year (2010 to 2012) small plot study at three locations on bermudagrass. At each location, phosphorus and potassium were applied based on soil test reports to 100 percent sufficiency levels. Vitazyme was applied according to the label recommended rate of 13 ounces per acre. Treatments were applied prior to the first harvest and following each harvest during the growing season. Treatments were: 100 pounds per acre N; 50 pounds per acre N alone or in combination with Vitazyme; 13 ounces per acre Vitazyme; and a control receiving no N or Vitazyme. Due to below normal rainfall during the trial period, harvests averaged 1.3 per year. Results are presented in Figure 1.

Summary: Results show that Vitazyme did not statistically improve bermudagrass yield either alone or in combination with urea.

Arkansas Study

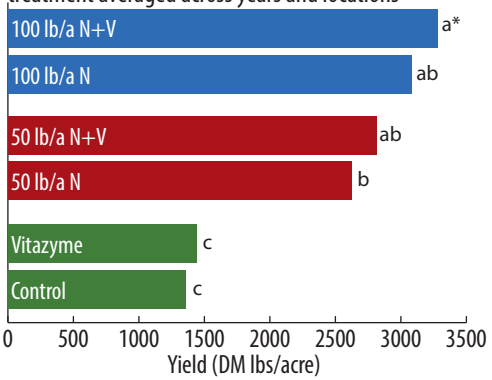
In 2008, fertilizer treatments of ammonium nitrate, urea, liquid urea (23 percent N), Monty's Plant Food, Sea 90 Mineral and Fish Emulsion were applied to bermudagrass small plots and replicated four times. Ammonium nitrate, urea and liquid urea were applied at 75 pounds per acre N. Monty's Plant Food, Sea 90 Mineral and Fish Emulsion were applied at label recommended rates and in combination with urea at 75 pounds per acre N. Treatments were applied in June and plots harvested in July. A second treatment application was made in August and plots harvested in October. All plots received commercial P and K fertilizer according to soil test recommendations for bermudagrass hay at a 4-ton-per-acre yield goal. Results are presented in Figure 2.

Summary: Results show that Monty's Plant Food, Sea 90 Mineral and Fish Emulsion did not improve bermudagrass dry matter yield when used in combination with urea. Monty's Plant Food, Sea 90 Mineral and Fish Emulsion did not improve bermudagrass dry matter yield compared to the control.

Just the facts. ■

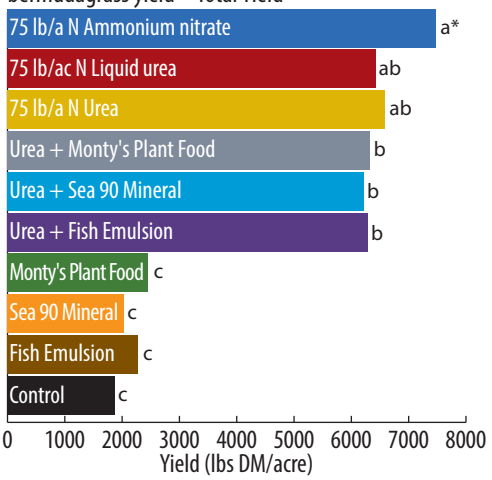
Reference:
Jennings, J.A., K.J. Simon, J.W. Boyd, L. Espinoza, and M.S. Gadberry. 2009. Comparison of traditional and nontraditional fertilizers for bermudagrass yield. Arkansas Agriculture Newsletters. Animal Science E-News. www.aragriculture.org/News/animal_science_enews

Fig. 1. Total bermudagrass dry matter yield by fertilizer treatment averaged across years and locations



*Bars with the same letter are not statistically different (P = 0.05).

Fig. 2. Evaluation of nontraditional fertilizers for bermudagrass yield – Total Yield



*Bars with the same letter are not statistically different (P = 0.05).

Source: Jennings, J.A., et al., University of Arkansas Division of Agriculture, Cooperative Extension

THE SAMUEL ROBERTS
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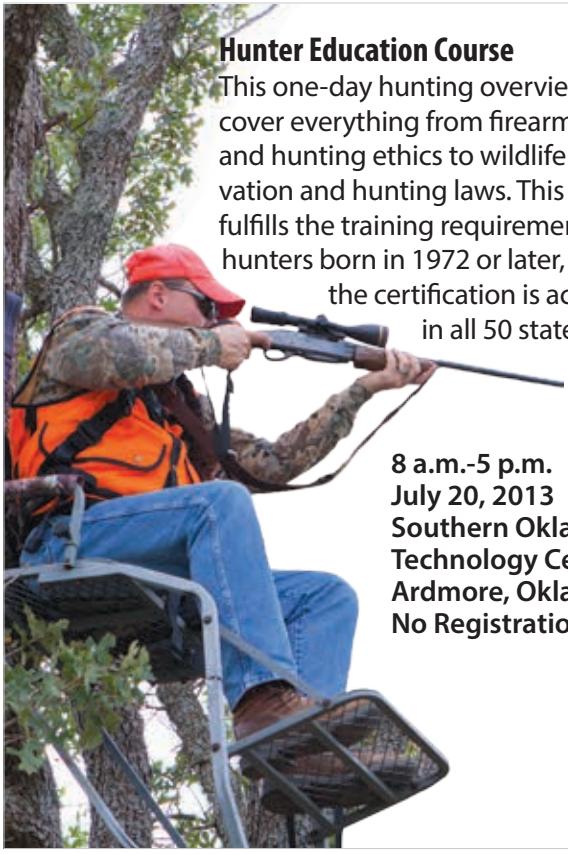
2013: Third Quarter Events

Winter Pasture Stocker Seminar

This seminar will provide producers with a variety of information, from winter pasture selection and management to the market outlook. There will also be updates on the latest research at the Noble Foundation and a producer panel of successful stocker operators.

1 p.m.-5 p.m.
July 16, 2013
Southern Oklahoma Technology Center
Ardmore, Okla.
No Registration Fee



Hunter Education Course

This one-day hunting overview will cover everything from firearm safety and hunting ethics to wildlife conservation and hunting laws. This course fulfills the training requirement for hunters born in 1972 or later, and the certification is accepted in all 50 states.

8 a.m.-5 p.m.
July 20, 2013
Southern Oklahoma Technology Center
Ardmore, Okla.
No Registration Fee

Water Source Development Seminar

Interest in developing a water resource for irrigation, livestock, wildlife and domestic use is at an all-time high due to the lasting drought conditions in the Southern Great Plains. This seminar will provide information on how to identify potential water sources available to the agricultural producer and landowner.

Aug. 6, 2013
For more information, please visit www.noble.org/agevents

Pecan 101 School

There are many aspects of pecan production, from planning to planting to marketing. This course will cover all aspects of annual production, including fertilization and pest management.

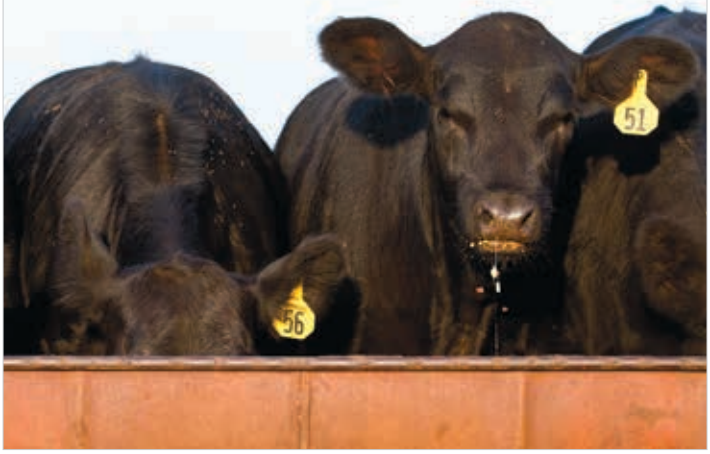
9 a.m.-4 p.m.
Aug. 20, 2013
Southern Oklahoma Technology Center
Ardmore, Okla.
Registration Fee: $5, includes copy of *Pecan 101* book. Lunch will be on your own.

For more information or to register, visit www.noble.org/agevents or call Jackie Kelley at 580.224.6360. Preregistration is requested.

Fall Cattle Seminar

This workshop will provide cow-calf producers timely information on pre- and post-weaning management and preparing cows for the winter.

1 p.m.-5 p.m.
Sept. 5, 2013
Noble Foundation Kruse Auditorium
No Registration Fee



White-tailed Deer Management Workshop

White-tailed deer are Oklahoma's most popular wildlife resource. This workshop will provide key insights into deer behavior and biology to help producers better understand and manage this resource.

10 a.m.-5 p.m.
Sept. 19, 2013
Sutton Wilderness Park
1920 12th Ave. NE, Norman, Okla.
Registration Fee options: (both include lunch)
$15 (registration only)
$35 (registration plus the book *White-tailed Deer: Their Foods and Management in the Cross Timbers*)

Fall Grazing Workshop

Join us at Middle Creek Ranch, a large cow/calf operation in northern Hughes County, Okla., to see a large, diverse land area managed with a large cattle herd and rotational grazing.

9 a.m.-3 p.m.
Sept. 26, 2013
Middle Creek Ranch
2798 N 394, Dustin, Okla. 74839
Registration Fee: $20, includes lunch

Small farm project demonstrates basic land management

by Steven Smith / sgsmith@noble.org and Will Moseley / wamoseley@noble.org

One challenge

facing the agriculture industry is the ever changing educational needs of producers. A growing segment of landowners are new producers who want to pursue a rural lifestyle or fulfill a dream of participating in agriculture. These individuals who are new to agriculture often face challenges when pursuing their goals due to the lack of basic agricultural education.

Seeing the increase in the number of new producers in Oklahoma and Texas, the Noble Foundation began a focused program called Basic AG in 2008 to provide fundamental agricultural education. The purpose is to provide new producers with foundational knowledge of agricultural principles and practices through education, consultation and demonstration. Subject matter includes economics, soils and crops, forage and range, livestock, horticulture, and wildlife and fisheries.

One offshoot of the program has been the development of a small property to demonstrate best management practices used for wildlife habitat and fisheries as well as livestock production. This Noble Foundation demonstration property, called the McMillan East Farm, is 150 acres located in Marshall County, Okla., in the south-central region of the state. Its purpose is to provide the hands-on learning experience needed by producers new to agriculture.

The property is approximately 60 percent timber, dominated by post oak, and the open areas are a mixture of bermudagrass, native grasses and forbs. There are several brush species such as winged elm and Eastern red-cedar encroaching on the open areas. There is a 3.4 acre pond and several areas of active erosion on the property.

Current goals of the property are:

- Demonstrating best management techniques and practices to benefit wildlife and livestock on small properties.
- Improving the overall health of wildlife and fisheries habitat, pastures, and timbered areas.
- Developing a quality fishery and hunting opportunities for dove, turkey, waterfowl and white-tailed deer.

To date, completed management activities include:

- Collection of soil samples from potential hay fields, bermudagrass pastures and wildlife food plots to determine soil nutrient requirements.
- Conducting pond surveys to learn about fish populations.
- Undertaking camera surveys to learn about deer populations.
- Preparing and conducting a prescribed burn to reduce thatch, control brush and encourage desirable plant species for wildlife.
- Using mechanical methods and herbicide to control brush species.
- Installing a parallel bar barrier on the pond overflow pipe to reduce fish escape and beaver damage.
- Removal of trees from the pond dam to maintain its structural integrity.
- Repair of actively eroding areas.
- Installation of eastern bluebird nesting boxes and predator guards.

Future management activities include:

- Continuing to conduct prescribed burns and hook and line, seine, and camera surveys.
- Fencing the pond and installing a livestock water access point at the pond to promote good water quality and aquatic vegetation beneficial to fish and waterfowl.
- Installing interior fences and corrals to allow for rotational grazing of livestock.
- Hosting field days and workshops on the property.

From 9 a.m. to 11:30 a.m., June 21, the Noble Foundation, Marshall County NRCS and Marshall County OSU Extension will cohost a field tour at the McMillan East Farm. Best management techniques and practices to benefit wildlife on small properties for small-property landowners who have an interest in pond and wildlife habitat management will be discussed. Topics will include brush, pond, fisheries and wildlife habitat management, as well as prescribed burning and NRCS cost share programs. This field day is open to the public at no charge, but preregistration is required. For more information on the field day or to register, please visit www.regonline.com/managingwltour2013 or contact Jackie Kelley at 580.224.6360. ■

Basic AG Field Tour: Managing Wildlife on Small Property

9 a.m.-11:30 a.m.
June 21, 2013
Noble Foundation
McMillan Farm-East
14797 McMillan Road, Madill, Okla. 73446
No Registration Fee

Healthy soil aids drought and flood management

by Jim Johnson / jpjohnson@noble.org

You may think the common thread between drought and flood is water or living in the Southern Great Plains. While these may be true, the shared factor to both is soil.

Other than the lack or abundance of precipitation, the reason for droughts and floods is the soil's inability to effectively absorb and release water. This is true in both grassland and farmland. In the process of absorbing and releasing water, healthy soils naturally ameliorate both drought and flood.

Why are soils ineffective at absorbing and releasing water? There are many reasons, such as limited soil depth, low porosity, soil crusts and low organic matter. Notice I did not mention soil texture. This is because healthy soils, whether they are sand or clay or anything in between, absorb and release water for plant growth. The key word being "healthy."

We cannot always control soil depth. Many areas in the Southern Great Plains are limited by shallow soils over impermeable layers. However, many soils are made artificially shallow by a plow pan or compacted layer created by tillage. If a soil is 40 inches deep, but a plow pan exists at 8 inches, then only 20 percent of the soil's ability to hold and release water is being used. Think how important the other 32 inches of water-holding and -releasing capacity could be.

Soil porosity is a measure of voids in a given volume of soil. These voids provide spaces in the soil for holding water. When the voids are connected to each other in healthy soil, they create pores for water to move deep into the soil and be stored during precipitation. Healthy soils with good porosity absorb and store water that would otherwise run off and create flooding. Later, these same pores allow roots to grow deep into the soil and recover the water during drought.

Crusts can form on bare soil surfaces. These crusts can be biological or physical. The biological crusts are created by soil microorganisms. Physical crusts are created when loose individual soil particles fill in and seal off the soil pores at the soil surface. Precipitation that is unable to effectively penetrate a crusted soil runs off and can create flooding. Since the water from the precipitation did not penetrate the soil to be absorbed, drought ensues.

Organic matter can be thought of like a giant sponge. Soils on the Great Plains typically had around 5 percent organic matter prior to European settlement. Since then, soil organic matter on farmed soils has decreased to around 1 percent. A great deal of this loss in organic matter can be attributed to tillage. Every 1 percent of organic matter in the top 8 inches of soil can hold 18,000 gallons of water per acre. That is the equivalent of 0.67 inches of rainfall held in the soil for later use by plants. It is often said it doesn't matter how much it rains, but how much of it you can use. Organic matter makes rainfall more useable.

So what can we do to reduce droughts and floods? Manage for healthy soil. Use no-till or reduced-till farming methods, rotate deep-rooted crops, use cover crops, manage crop residues so there is no bare soil, don't overgraze, manage for healthy grass and crops, and, most importantly, manage for healthy soil. While these management practices will not eliminate droughts or floods, they can reduce their impact. ■

CONTENTS

EVENTS

Basic AG Hay Production Field Day
Time: 9 a.m.-noon
Date: June 6, 2013
Location: Carpenter's Bluff Hay Ranch, 4336 Carpenter's Bluff Rd., Denison, Texas
No Registration Fee

13th Annual Hunting Heritage Banquet Red River Chapter of National Wild Turkey Federation
Time: 6 p.m.-10 p.m.
Date: June 8, 2013
Location: Ardmore Convention Center
Ticket Prices: Individuals- $50; Couples- $65; 17 and younger- $15

Summer Burn Workshop
Time: 9 a.m.-5 p.m.
Date: June 26, 2013
Location: Marietta High School Auditorium, 800 SW 4th Ave., Marietta, Okla.
Registration Fee: $25, includes lunch

For more information or to register, please visit www.noble.org/agevents/ or call Jackie Kelley at 580.224.6360. Preregistration is requested.

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THE SAMUEL ROBERTS NOBLE FOUNDATION
The Samuel Roberts Noble Foundation
2510 Sam Noble Parkway
Ardmore, Oklahoma 73401
Phone: 580.223.5810

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