



NOBLE NEWS & VIEWS

RANGE

Growing-Season Burns Improve Winter Forage Quality

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As the transition from fall to winter occurs, many livestock producers begin providing a protein supplement to their herd. It is estimated that 60-70% of a cow's annual maintenance cost is due to feed cost, especially during the winter. The added cost of a winter supplement is an expense that is deducted from those producers' profits. Input costs are things that producers can control in their operations. For producers with access to native rangeland, this supplement cost may be reduced by providing high quality supplemental native forage in the fall and winter months. This high quality native forage can be produced by conducting timely growing-season (summertime) prescribed burns.

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**GROWING-SEASON
 PRESCRIBED BURNS
 OFFER LAND MANAGERS
 THE OPPORTUNITY TO
 EXTEND THEIR BURNING
 SEASON TO MANAGE BRUSH
 ENCROACHMENT AND
 IMPROVE FORAGE QUALITY.**

GROWING-SEASON BURNS

Growing-season prescribed burns offer land managers the opportunity to extend their burning season to manage brush encroachment and improve forage quality. Many land managers consider growing-season burns to be more dangerous than winter burns; however, this is usually not the case. Typically during a growing-season burn, wind speeds and wind direction are more predictable, relative humidity is higher, and fuel moisture is higher (more green grass is present), which slows the fire down.

THE CHALLENGE

Every year in late summer after native grasses and forbs have completely matured (completed seed production), forage quality typically meets the maintenance requirements for a dry pregnant cow but does not meet the requirements of a lactating spring-calving cow during late summer. As summer transitions to fall, these native grasses (depending on reproductive stage) may or may not meet a cow's nutrient requirements going into winter. For example, a dry pregnant cow (that just weaned a calf) going into winter needs a forage source with a crude protein (CP) level of 7% and a total digestible nutrient (TDN) level of 50% to maintain her body condition. Native grasses at that time, such as little bluestem, typically test 4%-6% CP and 35%-45% TDN.

SUMMER BURN DEMONSTRATION

During the summer of 2019, Noble Research Institute staff conducted a demonstration series of burns every two weeks starting on June 18 with the final burn conducted on Aug. 26. The goal was to determine the forage quality response of little bluestem over the fall and winter months. Forage quality and quantity of a composite sample (everything inside a small sampling square) were also collected.

RESULTS

Table 1 shows forage quality (CP and TDN) from an unburned plot and burned plots beginning June 18 and ending Aug. 26. Burning in July and August resulted in greater CP (Figure 1) and TDN (Figure 2) levels post-burn in little bluestem than the unburned plot that lasted through Dec. 10 (Figure 1). The biggest tradeoff was forage quantity. The later the burn, the lower the forage yield was going into dormancy. Although the August burns had the highest CP and TDN levels, they had the lowest forage quantity levels. The mid-July burn was able to produce 1 1/2 tons of dry matter forage per acre going into the dormant season and testing 7-9% CP between December and January.

SUMMARY

Growing-season burns can improve forage quality of native grasses during the dormant season with the greatest improvement in CP. However, intentional use of a proper stocking rate for the amount of forage available for dormant-season grazing must be planned. Because yield of a late-season burn pasture will be lower than what is typical when

SUMMARY OF LITTLE BLUESTEM ON JAN. 30

Table 1. Crude protein (CP) and total digestible nutrient (TDN) levels sampled on Jan. 30, 2020, from each burn plot on different burn dates beginning June 18.

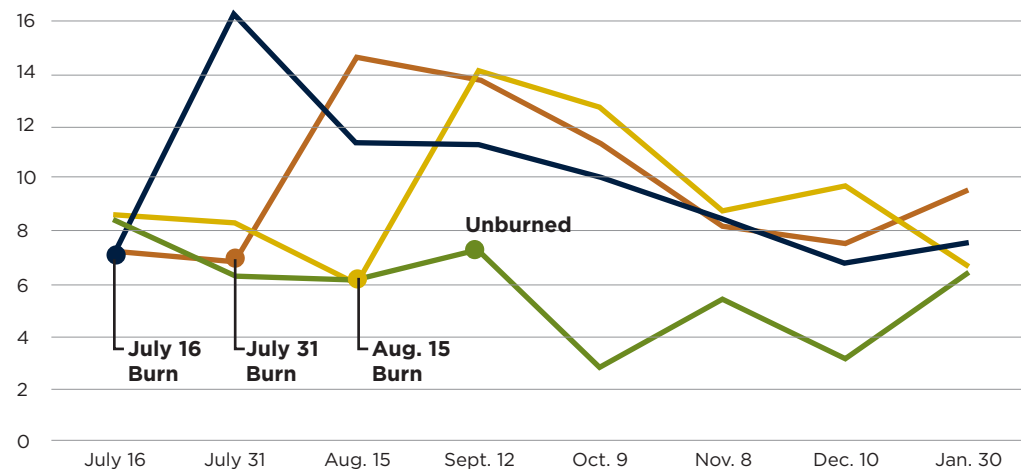


Burn Date	CP	TDN	¹ Composite pounds per acre collected Nov. 8
Unburned	6.5	41.1	9,086
June 18	6.6	39.0	5,340
July 3	7.6	40.3	5,135
July 16	7.5	38.8	3,016
July 31	9.4	49.3	1,797
Aug. 15	6.6	39.5	1,489
Aug. 26	9.9	41.9	981

Composite samples were collected on Nov. 8 from the same plots as little bluestem forage quality samples were collected on Jan. 30 representing estimated pounds acre of forage. Composite samples consisted of all grasses and forbs collected in a small sampling square.

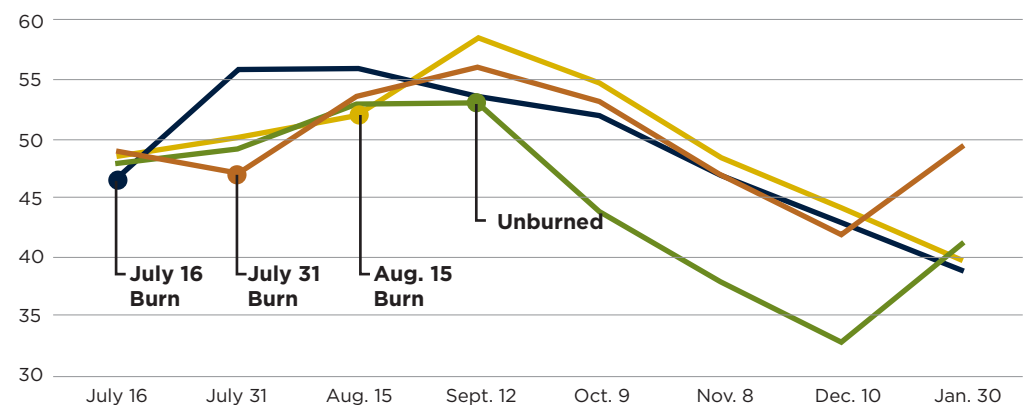
CRUDE PROTEIN (CP%) LITTLE BLUESTEM

FIGURE 1. The level of CP over time collected from an unburned and three burn plots during the summer of 2019.



TOTAL DIGESTIBLE NUTRIENTS (TDN%) LITTLE BLUESTEM

FIGURE 2. The level of TDN over time collected from an unburned and three burn plots during the summer of 2019.



stockpiling native pastures for winter grazing, producers should consider a lower stocking rate when using this higher quality forage for animals with higher nutrient requirements, such as lactating cows, heifers, bred heifers or stocker calves. Land managers and livestock producers who graze native rangeland during the winter can use mid- to late-summer

growing-season burns to decrease CP supplement cost. If you have found prescribed burns to be useful in your operation, here is one more reason to use them. If you have been hesitant to use prescribed burns in the past, hopefully the chance of reducing your input costs will encourage you to look into burning and give it a try. 🐮



RANGE

What You Should Be Monitoring on Native Rangelands in May



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May is a very important month for native pastures in the southern Great Plains. By the end of this month, approximately 50% of this year's forage production will be produced. Monitoring your native pastures that are being grazed is critical to making sure they are not being overutilized. As you evaluate your native pastures, you should see some of last year's dead/residual growth still standing in the green new growth. If you do, you are likely stocked properly and are doing a good job with your grazing management. If you do not, now is a good time to re-evaluate your stocking rate and/or make changes to your grazing plan.

MONITORING RAINFALL

May is generally a wet month in Oklahoma and Texas, so monitoring rainfall this month and throughout the year is critical. We recommend using a water year rainfall table. The water year rainfall table allows you to determine the percentage above or below the long-term average that the actual rainfall is at the end of each month. Having this information allows you to make stocking rate adjustments.

For instance, according to Oklahoma Mesonet data, south-central Oklahoma has received 24.3 inches of

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WATER TABLE TEMPLATE

You can download an Excel water year rainfall table template at: bit.ly/water-year-table.

For more information on the water year rainfall table see: www.noble.org/rainfall-stocking-decisions.

precipitation for the water year beginning Oct. 1, 2019, through April 1, 2020. This is a +6.2 inch departure from normal, or, said another way, 138% of what we typically receive during this period. This is currently the 10th wettest record for this time period since 1921. The point is, things are shaping up for a very wet spring and, all things considered, should be realized in increased forage production. Understanding and monitoring rolling annual and water year tables can assist you in forecasting conditions in order to take advantage of opportunities.

MONITORING UTILIZATION

Native pastures that are going to be grazed need to be monitored as well. There are several methods to do this. One is to use a grazing stick to measure forage height before livestock are turned in to graze the pasture. Select a key grazing plant. The goal is to manage for the plants you want. Your key grazing plant should be one that is well represented across the pasture and one that is selected readily. At several locations throughout the pasture, measure plant height prior to grazing. Take measurements at locations that are representative of the entire pasture. Don't pick all the best or worst locations. As livestock graze the pasture, continue to measure plant height. When height approaches the target stubble height, it is time to rotate to the next pasture and allow that pasture to rest and recover before grazing again. Rest and recovery after a grazing event is essential to maintaining a native plant community. Another method is to use grazing exclusion cages.

PREPARING TO STOCKPILE

Many producers use stockpiling to extend the grazing season. Stockpiling forages simply means allowing growth to accumulate during the growing season to be grazed during the winter months. Native pastures that are going



EXCLUSION CAGES

These cages are an effective tool for observing grazing utilization within a monitoring program. For more information on how to make and use this tool see: www.noble.org/exclusion-cages.

to be stockpiled should be lightly grazed in May and June and then rested throughout the remainder of the growing season to achieve the maximum forage production for stockpile. For additional information on stockpiling see: www.noble.org/stockpiled-forages.

MONITORING INVASIVES

Spring brings an abundance of life. This abundance also includes species that we may or may not want in our pastures. May is a good time to scout for invasive brush species. Species like honey mesquite, a native plant that has the propensity to

invade and dominate area rangelands, begins to green up in April to May. This “green up,” or bud break, is a critical time frame for this plant. This is a critical date to know as treatment options and timing can be considered based on the bud break date. If considering a foliar chemical application this summer, it is important to know when the plant is transporting carbohydrates from actively growing leaves to the roots. This period generally occurs for honey mesquite approximately 45 days after bud break. Chemical foliar applications made prior to this switch in the plant’s physiology when the plant is focused on transporting energy from the roots to develop new leaves will likely not meet control expectations.

Recognizing these considerations early in the growing season can pay positive dividends to the producer who is focused on intentional management. Ultimately, the ability to read the land by knowing what to look for can aid producers in making decisions and capitalize on opportunities. 🐮

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Sign up for no-cost newsletters and publications filled with information you can apply to your operation.

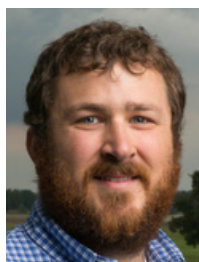


Cooperators will be able to see all their personal land stewardship information, including maps, all in one place.

Old world bluestem invades a native ecosystem and displaces beneficial plants.

INVASIVE PLANTS

Invasive Plants Are a Threat to Agriculture



by Will Moseley, wildlife and fisheries consultant | wamoseley@noble.org
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Properties managed for livestock and wildlife have plant communities that are manipulated to accomplish specific goals. When an accidental, or intentional, introduction of an invasive plant species happens, those goals can become difficult or impossible to accomplish.

Some invasive plants were introduced with the best of intentions for improving soil health, stopping erosion, or providing improved forage production or wildlife habitat. However, we have learned that many of these plants do not provide the expected benefits and actually displace more desirable plants. Some of the most serious invasive plants in the Great

Plains are the old world bluestems (i.e. yellow, Caucasian, plains, King Ranch, B. Dahl), sericea lespedeza, eastern redcedar, musk thistle, Bradford or callery pear, and salt cedar.

WHY INVASIVE PLANTS MATTER

The primary consequence of these invasive plants becoming established is that they displace native or more desirable plant communities with ones that are less productive or provide poorer wildlife habitat. Livestock production systems rely on forage production. When invasive plants

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FIND MORE HELPFUL RESOURCES AT:

- www.invasivespeciesinfo.gov/
- bit.ly/sericea-lespedeza
- bit.ly/bluestem-grasses
- bit.ly/k-state-sericea
- bit.ly/ok-invasive-thistles
- bit.ly/eastern-red-cedar





HOW TO PREVENT AND CONTROL INVASIVE PLANTS

The best control is preventing the introduction from ever occurring. Producers should ensure their sources of hay are not contaminated with invasive plants. If one must purchase questionable hay, feed it in a confined area that can be monitored and control any invasive plants that come up before they can reproduce or spread. Make sure that outside equipment is cleaned to prevent it from introducing seed from the last place it has been. Check seed before buying to ensure it doesn't contain something that could become a problem. This is particularly important for the cover crop and pasture mixes that include a variety of species. If invasive plants become established, quick response to the threat is needed to prevent the plant from spreading and becoming more difficult to contain or eradicate. Visit www.okinvasives.org for more information on invasive plant control and links to neighboring state's invasive plant sites.

displace the target species in native plant communities or introduced monocultures, the result is almost always lower forage quality and production than the intended plant community. If a property is managed for wildlife, invasive plants often reduce plant diversity and negatively affect habitat.

HOW DID THEY GET HERE?

There are several ways these plants are introduced. Many were introduced intentionally to reduce soil erosion. However, over time, we learned their invasive nature outweighed their soil erosion mitigation benefits. Others were introduced to provide forage for livestock, while others escaped from ornamental plantings. Some of these plants are still sold to producers and landowners who might not know they are introducing an invader. If allowed to produce seed, these plants can be naturally dispersed by wind, flowing water or by animals far beyond their original area of introduction. They often also spread by disturbances such as tillage, mowing and haying. It is common to see bands of old world bluestems along roads (public and

private) due to traffic bringing seed in on tires and the constant disturbance. It is also common to see invasive plants become established in areas where hay that was contaminated with them has been fed. Finally, some (such as eastern red cedar) are native plants that have become invasive due to the lack of naturally occurring fire (see www.noble.org/controlling-eastern-red-cedar). The lack of naturally occurring disturbances, like fire or very short durations of overgrazing by bison, have allowed some native species to become invasive.

KNOW YOUR PLANTS

Invasive plants are an ever-growing threat to agricultural and native landscapes that make it more difficult to properly manage the land. Producers and land managers must know what plants should be on their property, the invasiveness potential for anything new they might introduce, and how to contain or eradicate those invasive plants that do become established. It is our responsibility to ensure that invasive plants do not start or spread from our properties. 🐮

PONDS

Think Before Putting Fish, Plants, Water and More in a Pond



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People unintentionally harm pond environments by releasing inappropriate fish, dumping aquarium organisms, transferring water from a river or using contaminated equipment. Inappropriate organisms, or the microscopic hitchhikers on them, in associated water or on equipment can create havoc in a pond, such as harming desired fish populations, introducing diseases or establishing invasive species.

KNOW YOUR SOURCE

Sources of fish or aquatic plants should be carefully evaluated before stocking a pond. Unseen harmful organisms might be attached to fish or plants, or be present in the associated water. Examples include largemouth bass virus, golden algae, zebra mussels, undesirable bacteria, ich (white spot disease), tapeworms,

anchor parasites, fish lice and many others. Fish acquired from reputable hatcheries seldom have these unwelcome hitchhikers because such organisms interfere with fish production in a hatchery, so most hatcheries actively work to prevent them. Fish transferred from a private pond might represent acceptable risk when a pond manager is familiar with the history of the source pond. However, such hitchhikers are common in public water sources such as lakes and rivers. Thus, transferring fish, plants or water from public lakes or rivers into naïve pond environments is generally not recommended. When such unwanted problems become established in a pond, elimination of the problematic organisms can be very difficult, sometimes nearly impossible. Therefore, prevention of these problems is very important.

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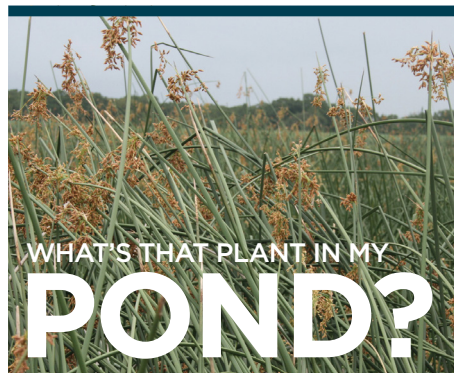
CONSIDER PREDATOR-PREY BALANCES

Fish stockings into a pond should be carefully planned and conducted only when approved by the pond's manager. Unplanned stockings can upset relatively delicate predator-prey balances.

Establishing another predator in a pond ecosystem (green sunfish, warmouth, crappie, blue catfish, flathead catfish, spotted gar, longnose gar, etc.) usually reduces biomass of largemouth bass and bluegill through competition by the additional predator and its predation on bass and bluegill. This may be an acceptable outcome when the additional predator fits the manager's goals for the pond. Otherwise, negative impacts on largemouth bass and bluegill usually are undesirable consequences of the additional predator.

DON'T RELEASE SEINED MINNOWS

When golden shiner or fathead minnow are healthy, sourced from a reputable hatchery and desired by the pond's manager, releasing them as leftover bait might be acceptable. However, a manager might not want golden shiner in a pond because it can grow to 9 inches long and compete with bluegill for food. Minnows seined from a river or another impoundment should not be released into a pond because they often include undesirable microscopic hitchhikers and fish species other than golden shiner or fathead minnow. Several undesirable



Proper identification is the first step in making proper management decisions about aquatic vegetation. You can find help in identifying plants in your pond by using two Noble Research Institute resources available at bit.ly/aquatic-plant-images.

- Noble's Aquatic Plants Image Gallery
- Common Aquatic Vegetation in the Southern Great Plains

fish species, such as common carp, resemble typical bait minnows and can be unintentionally established in a pond by releasing seined bait into a pond.

TAKE CAUTION WITH NON-NATIVES

Many fish and plant species sold in the aquarium and water garden trade are not native to the United States. Non-native organism introductions typically cause

problems. Many aquatic invasive species problems probably were established in the United States via release of live aquarium or water garden organisms. Examples include goldfish, northern snakehead, armored catfish, walking catfish, Mozambique tilapia, oscar, hydrilla, water hyacinth, Brazilian egeria, parrot's feather and several others.

EXAMINE SOURCE IMPOUNDMENTS

Sometimes pond managers collect desired plants from local impoundments to establish them in their ponds. Source impoundments should be carefully examined to make sure they do not contain undesirable plant species because transfers of target plants usually transfer other plant species with the plant materials, soil and water transferred from the source impoundment.

CLEAN EQUIPMENT

Nets, waders, boats, trailers and equipment used in other water bodies should be cleaned and thoroughly dried for several days before using them in a pond because they also can transfer undesirable organisms into a pond.

KNOW YOUR RISK

People should consider risks when placing or releasing something into a pond and minimize the risks of introducing undesirable organisms. A little forethought and prevention can prevent many problems. 🐸

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AUGUST 13



Improving Pecan Profitability With Marketing Strategies

8:30-11:30 a.m.
Kruse Auditorium
No Registration Fee

Pecan growers who have successfully managed their crops can take their operations to the next level by learning alternative ways of marketing their pecans to increase the potential profits. This workshop will explain how you can market your pecan crop outside of the wholesale market and how the sheller/accumulators determine the price they are paying for your pecans.

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CHECK NOBLE.ORG FOR EVENT CANCELLATIONS

Noble Research Institute continues to monitor the COVID-19 situation and to cancel or reschedule events accordingly. Please check www.noble.org/events for the most current information.

UPCOMING EVENTS

Preregistration is requested. Registration fees for paid events will increase by \$10 one week before the event. For more information or to register, visit www.noble.org/events. For other agricultural questions, please call our Ag Helpline at 580-224-6500.

Understanding the Essentials of Grazing Management



Understanding the basic principles of grazing management allows you to make management decisions based on your available resources. Join Noble Research Institute consultants in the field to learn about assessing forage inventory, determining stocking rate, developing a grazing plan and establishing a contingency plan.

9 a.m.-3 p.m.
Coffey Ranch
Registration Fee: \$25



Managing Eastern Bluebirds

5-8 p.m.
Protected Ag Demo Area
Registration Fee: \$25



Understanding Factors Affecting Calf Prices

9 a.m.-3:30 p.m.
Oswalt Ranch
Registration Fee: \$25



Understanding the Impacts of Fire on Your Property

9 a.m.-4 p.m.
Coffey Ranch
Registration Fee: \$25



Improving Your Pecan Pesticide Utilization

8:30 a.m.-noon
Kruse Auditorium
No Registration Fee