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NOBLE NEWS & VIEWS

UNLOCK YOUR NEW NOBLE ACCOUNT

WHAT IT MEANS AND WHY YOU'LL NEED IT

by Brook Gaskamp, adult education associate | blgaskamp@noble.org

Meaningful relationships are at the core of what we do at Noble Research Institute, and therefore we place a tremendous value on our relationship with you.

A little over a year ago, we set out on a mission to find the way to serve you best. Through this process, we identified a need to have a one-stop shop for all of your information, education and event needs. So we created new Noble accounts.

This online system will be your go-to place for connecting with Noble. We are excited about this opportunity to get to know you and your interests better, but we need your help. We need you to kick off the process by signing up for your Noble account at www.noble.org/myaccount.

This is your first step in building your relationship with Noble, and we cannot wait to see where our relationship with you grows.

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HOW TO ACCESS YOUR ACCOUNT

1 LOG IN

Go to your computer or cellphone and pull up www.noble.org/myaccount. Fill in your email and create a password.

2 PROFILE

Complete your basic information, select your interest(s) and choose your publication (such as the monthly *Noble News and Views*) subscriptions.

3 BIO

Complete the "My Bio" tab on the right. (This will replace having to complete a bio sheet at every event.)

ANSWERS TO YOUR QUESTIONS

Below are some frequently asked questions about the Noble accounts. If you have any additional questions, you can find answers on the FAQ tab of your Noble account. You can also submit your question using the form on the Contact Us tab, or feel free to contact me at blkgaskamp@noble.org or 580-224-6510.

WHAT IS A NOBLE ACCOUNT?

Your Noble account is a new, free online tool you will use to connect with Noble Research Institute. It will allow you to customize your experience with Noble by enabling you to share your interests and communications preferences.

WHY DO I NEED A NOBLE ACCOUNT?

Your account will be your new go-to place to manage your relationship with Noble Research Institute. You'll also need this account to sign up for educational events.

WHAT CAN I DO WITH MY NOBLE ACCOUNT?

The account will allow you to:

- Create a profile that helps Noble better serve you.
- Quickly sign up for educational courses, and keep a record of your past event registrations.
- See your personal land stewardship information, including maps and recommendations, in one place (a feature in the works for those in the consultation program).
- Sign up for free subscriptions to *Noble News and Views*, *Legacy*, the annual report, and other email and mailing lists.

HOW DO I CREATE AN ACCOUNT?

1. Go to www.noble.org.
2. Click on "My account."
3. Click on "Create new account."
4. Enter email address and click "Send verification code."
5. Check email for a verification code and enter it in the box "Verification Code."
6. Create a password according to directions on screen. Confirm password.
7. Click "Create."
8. Fill in all the required fields.
9. Click "Continue."
10. Account is now created. Click "'Done."

WHAT IF I ALREADY REGISTERED FOR A FUTURE EVENT?

If you have already registered for a future event, you do not need to register for the event again. However, you must create a Noble account to register for events once the accounts become available in October. If you don't already have an account at that time, you will automatically be prompted to sign up for one.

WHY WON'T MY LOGIN INFORMATION WORK WHEN REGISTERING FOR AN EVENT?

Beginning in October, your old login may not work because you need to create your new Noble account. If this is the case, you will automatically be prompted to do so when you click to register for the event.

WHY DO YOU NEED MY BIO INFORMATION AND INTERESTS?

Providing your bio information will help us better understand you and your operations so that we can plan educational opportunities that meet your needs.

- By completing the "My Bio" section, you are giving us the information we need to plan quality educational events that meet your needs. Once you complete this section, you will no longer have to complete a bio sheet at every event you attend.
- When you complete the "My Interests" section, you are giving our communications team the information they need to send you content tailored to your interests.
- When you complete the "My Communication Preferences" section, you will be in control of telling us what information you want to receive.

WILDLIFE

FEEDING DEER:

How Does Your Supplement Compare to Common Native Deer Foods?

by Josh Gaskamp, technical consultation manager and wildlife and range consultant | jagaskamp@noble.org

Many hunters feed deer. The perceived benefits of feeding include the hope of larger antlers, better body condition and survivability. The practice of supplementation in feeders is based on the assumption that food is a limiting factor to deer. In actuality, food is less limiting in Texas and Oklahoma than some people imagine. The actual benefits of feeding deer are less numerous than believed, but the most popular may be that it can facilitate the viewing of deer and aid with population management through harvest.

White-tailed deer have varying nutritional requirements throughout the year. The highest demands for protein are generally those of fawns, pregnant and lactating does, and bucks during antler growth. Higher demand for carbohydrates (energy) occurs during months when herbaceous and woody vegetation are dormant. Trophy buck hunters commonly feed high protein, pelleted feed year-round with the goal to increase antler size, and then feed corn in the fall and winter to attract deer searching for a source of energy. But shiny bags of deer feed aren't made of rare or superior forages that Mother Nature can't provide.

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LEARN MORE ABOUT MANAGING DEER HABITAT:

- White-tailed Deer: Their Foods and Management in the Cross Timbers: **bit.ly/envirothon-white-tailed-deer**
- Improve Nutrition for White-Tailed Deer with Growing-Season Prescribed Burns: **www.noble.org/prescribed-burns-white-tail-deer**
- Quality of Native Plant Forage Species Important to White-tailed Deer and Goats in South Central Oklahoma: **bit.ly/white-tail-deer-forage**

THE NATIVE FOODS DEER EAT, AND WHEN

Native deer foods primarily consist of forbs (herbaceous broadleaf plants sometimes called weeds) and browse (parts of woody plants). Some preferred and abundant forb and browse species in the Cross Timbers and Prairies region of Texas and Oklahoma include ragweed, tick clover, snail-seed, greenbrier, Osage orange and oaks. Foliage from these plants is available in spring and summer when a deer manager may be feeding a high-protein, pelleted feed. Analysis of these common native plants during April reveal protein levels of 27, 25, 21, 26, 21 and 16% crude protein (CP) respectively. Commercial feeds can reach 24% CP and cost $30 per 50 pounds.

During fall, deer often shift a portion of their diet to hard mast (tree fruit) such as acorns. In many deer habitats in Texas and Oklahoma, red oak and white oak groups are present, and because of the differing life cycles of the two tree groups (red oak acorns take two years to mature while white oaks take one), deer normally have access to a mast crop, even in years of drought. Many hunters observe less deer around feeders when acorn loads are high. Acorns are an excellent source of energy for deer, and the layer of fat on a harvested deer when acorns are abundant is proof that they love to eat them.

FEEDING DEER IS NOT THE SILVER BULLET TO GROWING TROPHY BUCKS OR MAINTAINING A HEALTHY DEER HERD.

PRESCRIBED FIRE CAN BOOST BROWSE SPECIES

Supplemental feed is not a substitute for good quality deer habitat. Additionally, managing habitat is often cheaper than investing in an intensive feed program. For example, Noble wildlife and fisheries consultant Will Moseley demonstrated how growing-season prescribed fire could extend nutritional quality and increase the use of selected browse species into the hunting season. Moseley sampled five important deer browse species before and after a growing-season prescribed burn. In four of the plant species sampled, growing-season fire had a positive impact on crude protein. Dogwood was the only exception.

Feeding deer is not the silver bullet to growing trophy bucks or maintaining a healthy deer herd. In fact, feeding deer often comes with unintended consequences. Feral hogs, raccoons and other unwanted species may benefit from the feeding more than deer. Feeding also concentrates deer, increases the likelihood of disease transmission, and causes overutilization of habitat near the feeder. All of these responses can make a feeding program costly, not only for the hunter, but for the deer herd as well. If you plan to continue or begin using feeders on your property, understand their utility and their limitations.

LIVESTOCK

Grazing Native Grass Pastures Is More Economical Than Feeding Hay to Cows in Winter

by Robert Wells, Ph.D., PAS, ag consultant, planned consultation | rswells@noble.org

It is typically reported that cow winter supplementation accounts for 40 to 60% of the total annual cost of maintaining a cow, but that cost depends greatly on whether hay is being supplemented in lieu of dormant standing forage for the cow. When you can supply standing forage in the form of native grass pasture instead of a bale of hay, the total winter feed cost will be dramatically reduced.

WINTER HAY SUBSTITUTION COMES AT A COST

For many producers, it is not uncommon to incur four or five months of hay feeding during the winter. When fed average-quality forage, a 1,200-pound cow will consume about 2.5% of her body weight daily. That equates to 900 pounds of forage monthly, roughly equivalent to the weight of the average bale of hay. This does not include hay wasted in storage or

Story continues on next page

TABLE 1. TOTAL COST AND TOTAL AMOUNTS OF FEED REQUIRED TO MEET COW NUTRITIONAL REQUIREMENT BY MONTH

SCENARIO 1
Native Grass and 14% Byproduct ($210/ton)

Month	lbs/day	$/day	$/month
Nov.	1.3	.14	4.10
Dec.	1.9	.20	6.18
Jan.	6.2	.65	20.18
Feb.	7.7	.81	22.64
March	10	1.05	32.55
Total feed cost, $/head			$85.65
Total cost, $/head			$85.65
Total feed, lbs/head			817

SCENARIO 2
Native Grass and 20% Cubes ($250/ton)

Month	lbs/day	$/day	$/month
Nov.	.9	.11	3.38
Dec.	1.3	.16	5.04
Jan.	4.5	.56	17.44
Feb.	5.5	.69	19.25
March	7.2	.90	27.90
Total feed cost, $/head			$73.00
Total cost, $/head			$73.00
Total feed, lbs/head			585

SCENARIO 3
Native Grass and 38% Cubes ($350/ton)

Month	lbs/day	$/day	$/month
Nov.	.5	.09	2.63
Dec.	.7	.12	3.80
Jan.	2.4	.42	13.02
Feb.	3.6	.63	17.64
March	5.7	1.00	30.92
Total feed cost, $/head			$68.01
Total cost, $/head			$68.01
Total feed, lbs/head			389

SCENARIO 4
Hay and 20% Cubes ($250/ton)

Month	lbs/day	$/day	$/month
Nov.	.9	.11	3.38
Dec.	1.1	.14	4.26
Jan.	1.7	.21	6.59
Feb.	3	.38	10.50
March	5	.63	19.38
Total feed cost, $/head			$44.10
Total cost, $/head			$224-269
Total feed, lbs/head			354

during feeding. Thus, four to five bales of hay could be required per cow for the winter feeding period.

At a typical cost of $45 per bale, the cost of winter hay substitution alone accounts for $180 (for four months) to $225 (for five months) per cow. Add to this the cost of additional feed supplementation, if the hay is not high enough quality to meet the cow's nutritional requirements. If using average quality hay [8% crude protein (CP) and 50% total digestible nutrients (TDN)], feeding 20% protein range cubes ($250 per ton) as a supplement would add $46 to the per-cow feed costs. The total winter feeding cost if using hay, therefore, would likely range between $224 and $269 per cow (Table 1).

However, there are other options of maintaining a cow through the winter that are more cost-effective. Using native grass (NG) as a stockpiled, standing hay crop is one of the most cost-effective methods of overwintering the cow herd.

COMPARING WINTER SUPPLEMENTATION PROGRAMS FOR SPRING-CALVING COWS

Using a few basic assumptions for the quality of the native grass pasture, we can start to build a winter supplementation program for spring-calving cows. The first assumption is that mid-March will be the average calving date for the herd. The second assumption is the forage quantity is not limited, but quality will diminish from 5 to 4% CP and 55 to 49% TDN during the winter.

Table 1 demonstrates that all supplemental feed costs while grazing winter-dormant native grass pastures are well below the $224 to $269 total cost of feeding hay plus supplementation. Additionally, feeding scenarios 1 through 3 demonstrate that the most economical feed on a cost-per-ton basis is not always the right feed to purchase. In this case, scenario 3 has the highest cost per ton of feed but will deliver the most economical annual winter feeding cost on a per-head basis.

Knowing when the average of the cow herd will calve can help you determine the supplementation strategy that best fits your operation. Thus a well-defined, concise calving season helps to improve profitability by reducing winter feeding costs.

Remember, cows don't necessarily care about quality (percentage of CP or TDN) of the feed as much as they do the total physical amount of feed that they receive. Nutritional requirements can be met with lower amounts of more nutrient-dense feeds. Many times, the cow is most limited by energy, so it is also important to know the TDN content of the feed. This is a question that will have to be asked since the feed tag does not give enough information to effectively determine energy content.

WE WILL COMPARE FOUR DIFFERENT FEEDING SCENARIOS:

1. Native grass and by-product feed ($210 per ton, 14.4% CP, 74.4% TDN)
2. Native grass and 20% range cubes ($250 per ton, 20% CP, 74% TDN)
3. Native grass and 38% range cubes ($350 per ton, 38% CP, 70% TDN)
4. Hay feeding plus supplementation (hay quality 8% CP, 50% TDN, supplement with 20% range cubes).

FALL 2019

PRESCRIBED FIRE WORKSHOPS

OK-FIRE is pleased to announce its fall schedule of training workshops. They will be led by J. D. Carlson Ph.D., OSU fire meteorologist and OK-FIRE program manager, and will consist of a combination of presentations and lab exercises in which attendees will get hands-on experience with the OK-FIRE website at mesonet.org/index.php/okfire.

WHAT YOU WILL LEARN

Attendees will learn about fire weather, fire danger, and smoke dispersion products available on OK-FIRE as well as how to use them, They will also learn how to access past, current, and forecast values via maps, charts, and tables. Wildfire, prescribed fire and smoke applications will be covered.

HOW TO REGISTER

Registration is required. Please register at http://bit.ly/ok-fire-2019 or by contacting Andrea Melvin (andrea@mesonet.org or 405-325-2652) at the Oklahoma Climatological Survey.

LOCATION AND DATES

Woodward, 9:30 a.m.-4:30 p.m., Oct. 24 | Durant, 9:30 a.m.-4:30 p.m., Nov. 14 | Stillwater, 9:30 a.m.-4:30 p.m., Dec. 12

NETWORKING

Small Working Groups Help Producers With Similar Operations Learn From Each Other

by Russell Stevens, strategic consultation manager and wildlife and range consultant | rlstevens@noble.org

People involved in agriculture are proud and independent. Most prefer to work alone or with their spouse and other family members and are perfectly happy with that arrangement. Any successes or failures on the operation are celebrated or addressed among family members. They learn lessons from successes and failures alike. Reducing or eliminating failures improves resources and profitability. Learning about new or different ways of operating and new technologies can greatly reduce failures.

Some common methods producers use to learn are subscribing to magazines, online newsletters and various forms of social media. Also, many producers are members of local, state and national organizations that specialize in areas such as beef cattle, forage and wildlife management. These organizations usually host one or two meetings annually that producers can attend to learn more about the resources they are managing. There are also local educational events that producers can attend to learn new management tips and techniques.

These information sources and venues provide excellent information

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NO MATTER WHAT THE SUBJECT OR DISCIPLINE, THERE IS NO BETTER WAY TO LEARN ABOUT A SPECIFIC ISSUE THAN FROM THOSE WITH EXPERIENCE, PEER-TO-PEER.

and offer opportunities for producers to learn and network, but they have their drawbacks. Magazines are monthly at best and are not a great way of providing timely information. Social media provides timely information but connectivity in rural areas, if it exists, can be frustratingly slow or hit and miss. Local events are usually focused on one or two topics that may or may not be applicable to every producer. And, the information presented at these events is commonly too basic or too technical. It is difficult for event organizers to avoid these issues.

State and national events are usually larger events with a more diverse array of subjects discussed. The biggest drawbacks for the producer with events of this scale are expense and time away from the operation. Once producers attend several events, gain an understanding of the subject matter presented and successfully implement it into their operations, they begin to weigh the benefits of attending educational events as opposed to staying to work on the ranch. At this point, they begin searching for other ways to learn. This is when networking while attending local, state and national events offers producers a very important service — contact and exposure to other like-minded producers.

No matter what the subject or discipline, there is no better way to learn about a specific issue than from those with experience, peer-to-peer. Many producers attend educational events because they have met other like-minded producers and have realized the worth of networking with them. Producers enjoy learning from other producers who have similar operations. Gaining first-hand knowledge from other producers regarding tips on everything from deals on feed and seed, working livestock, fencing and watering techniques, white-tailed deer management, grazing management, and dealing with timely weather and market events is priceless. Producers are often heard commenting on the success or failure of other producers, not the information presented at the last educational event they attended. This demonstrates the need for producer networking.

Working groups or associations comprised of like-minded producers can be beneficial to the success of a producer's operation. Cooperatives or alliances also offer similar benefits, but are often comprised of large numbers of members and/or cover a large geographical area. Regional or contiguous working groups or associations with eight to 15 members offer the most educational and operational benefits to producers. Several associations, cooperatives and alliances can be found across the U.S., but small, more-intimate, producer-based working groups are less common. This may largely be due to good old American independence and pride, as well as the tendency of many producers to keep to themselves. Producers with the mindset to share information regarding their management techniques and operational successes and failures, who are willing to listen to the same experiences from other producers, can derive huge benefits from being a part of a working group or association.

Noble Research Institute, state and national government entities, nongovernmental organizations (NGOs) and other natural-resource-based organizations largely focus on providing assistance to individual producers or large groups of producers, which is very much needed and should continue. These organizations do realize the value of working with producer groups, doing some work with them even though it often is not their main focus.

For the past several years, Noble has helped form and support several working groups and associations, mostly comprised of small groups of producers with similar operations. The feedback from the producers involved has been overwhelmingly positive, and networking is what they value the most. Noble Research Institute consultants and the producers involved in the working groups constantly brainstorm ways and ideas to continue to provide informative activities and events for each group. This helps us keep in touch with producer needs and keeps the groups from becoming stagnant. We also have learned that not all producers are of the mindset or have the personality type to fit into small producer groups. It's natural for some producers to be introverted and feel very uncomfortable speaking up in a group. It's also natural for some producers to be on the opposite extreme, very vocal and tending to talk a lot more than others in the group.

If you would like to know more about producer working groups or associations, feel free to contact us here at Noble Research Institute. We would be glad to share our thoughts and experiences on forming and supporting these groups and increasing opportunities for even more producers to realize the value of networking.

RESEARCH

Prussic Acid Poisoning in Grazing Livestock

by Kiran Mysore, Ph.D., professor, molecular plant microbe | ksmysore@noble.org

Plants in the sorghum family can grow in dry climatic conditions, where summer temperatures are above 68 degrees Fahrenheit (20 degrees Celsious), and on somewhat marginal lands. Sorghums are C4 crops in the grass family and are characterized by their high photosynthetic efficiency.

Sorghum-sudan grass hybrids are well suited as forage crops since they can produce more biomass than forage or grain sorghums. With these characteristics, sorghum-sudan grasses could be an ideal forage crop for low-input agriculture in the Great Plains. However, sorghum or sorghum-sudan grasses can potentially cause prussic acid poisoning in livestock animals.

WHAT IS PRUSSIC ACID POISONING?

Prussic acid poisoning is a result of the release of hydrocyanic acid (HCN) from sorghum-type forages under certain conditions during livestock grazing. Stress factors (drought, frost, herbicide drift, insect damage and mechanical injury) and rapid plant growth rate can increase the production of the cyanogenic glycoside, dhurrin. In addition, high nitrogen fertilization in older plants will also increase the production of dhurrin.

After the plants are stressed and then begin to regrow, dhurrin comes in contact with certain plant enzymes and liberates toxic prussic acid or HCN compound. The young, leafy regrowth has a higher concentration of HCN compared to older leaves or stems. The young, leafy regrowth is also preferentially grazed by animals and hence results in a higher level of exposure.

HCN once consumed by animals prevents oxygen from being released from the hemoglobin to the body cells, resulting in possible death due to suffocation at the cellular level. This process happens very rapidly, as early as 10 to 15 minutes, after grazing toxic pastures.

SYMPTOMS

Symptoms of animals that ingest prussic acid include rapid breathing, excessive salivation and muscle spasms that eventually lead to collapse and death. Upon observing such symptoms, animals must be immediately removed from toxic pastures.

HOW TO AVOID POISONING

To prevent prussic acid poisoning, livestock should not graze sorghum or sorghum-sudan grass hybrids immediately after frost, drought or other stress. Once there is approximately 24 inches of new growth after the stress is over, they should be safe to graze.

Also, sorghums or sorghum-sudan grass hybrid plants that have been wilted due to drought or a hard freeze should not be grazed until they are thoroughly dried down. HCN evaporates during the curing process, making dry standing plants or cured hay safe from prussic acid poisoning.

PLANT BREEDERS SEEK TO REDUCE THE PROBLEM

Interestingly, highly cyanogenic plants are preferred by some fungi and insects compared to plants with lower cyanogenic potential. Therefore, to increase food/feed safety and possible plant health (in some instances), it is desirable to reduce cyanogenic compounds in sorghum-sudan grass hybrids through either classical breeding or biotechnology. Since most of the prussic acid in sorghum-sudan grass hybrids is coming from sorghum, it is desirable to reduce prussic acid in the sorghum parent that will be used for the crosses.

PASTURES

NOT ALL RAINFALL IS EFFECTIVE

HOW TO BOOST YOUR SOIL'S ABILITY TO HOLD WATER

by Hugh Aljoe, director of producer relations | hdaljoe@noble.org

The old adage, "We are never more than three weeks away from a drought," is commonly used by producers here in the southern Great Plains. However, depending on the management of the property, drought may be closer than some think and considerably further out for others. A 3-inch rain may result in different outcomes for different producers even if the pastures and soils are similar. The observable variance is often the results in differences of "effective" rainfall.

EFFECTIVE VS. TOTAL RAINFALL

Effective rainfall is the moisture that infiltrates into the soil following a rainfall event. Total rainfall is what fell on a property; effective rainfall is what went into the soil.

Too often, much of the rain from a good rainfall event ends up running off the area it fell upon and traveling off the property and downstream. The more total rainfall becomes effective rainfall, the greater the potential for forage and subsequently livestock production and the greater the resiliency of the pastures to withstand short- and longer-term drought conditions.

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BUILD ORGANIC MATTER TO CAPTURE MORE WATER

So what are the factors that influence how droughty our soils and pastures may be? Much of the variance observed in effective rainfall and the lack of drought resiliency of pastures can be attributed to a lack of water-holding capacity. Water holding capacity is influenced by soil type, previous management and organic matter in the soil.

There is little you can do about the soil types of your property. Inherently, some soil types hold more water than others. For example, good loam and clay loam soils hold more water than a sandy soil. However, you do have influence on other variables that directly affect the amount of organic matter that accumulates in and on the soil.

There is a correlation between soil organic matter and water-holding capacity. The greater the amount of organic matter in and on the soil, the greater the water-holding capacity and the more drought-resilient soils and pastures will be regardless of the soil type.

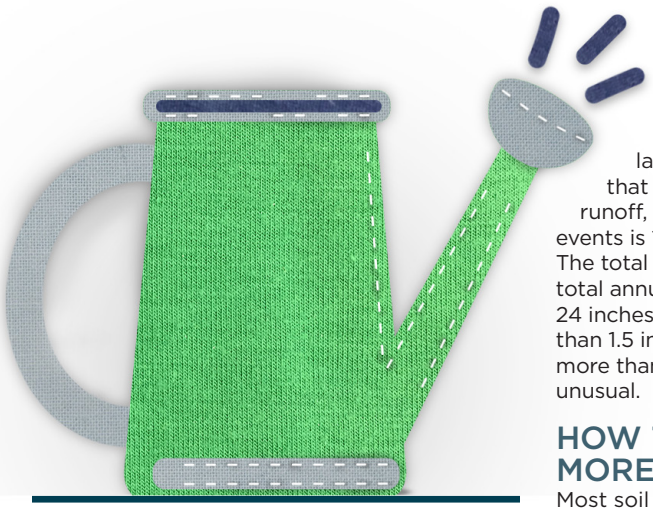
NO. 1 RECOMMENDATION: KEEP SOIL COVERED

Of these five principles, keeping the soil covered is usually the most important principle to begin increasing soil organic matter.

It is not only important to maintain cover, it is important to consider the type of cover. Both live plants and plant litter are important components of cover. In an ideal situation:

- There is never bare ground in the pastures and the plant material growing in and on the soils are healthy, productive and managed so that there is plenty of plant material remaining during the growing and dormant seasons.
- Adequate residues are maintained following grazing events and across all season allowing for some plant litter to mature, deteriorate with age and accumulate at the soil surface.
- With productive grasses, root systems are robust, with proper turnover and regrowth of roots occurring simultaneously with the forage production.
- Grazing livestock are managed so that plants are never/rarely grazed severely and receive adequate recovery before being re-grazed.

With this description of proper management to enhance organic matter in and on the soils, a producer incorporates other soil health principles too: soil disturbance is optimized, grazing livestock are incorporated and a growing root is in the soil at all times. In many instances, it means plant diversity contributes as well. To increase the amount of effective rainfall, a producer needs to manage their pastures in such a manner that is complementary to the soil health principles.



TO INCREASE THE AMOUNT OF EFFECTIVE RAINFALL, A PRODUCER NEEDS TO MANAGE THEIR PASTURES IN SUCH A MANNER THAT IS COMPLEMENTARY TO THE SOIL HEALTH PRINCIPLES.

RUNOFF IS COMMON WITH MULTI-INCH RAINS

Consider for a moment the total average rainfall for south-central Oklahoma is about 35-36 inches annually. The variation of rainfall events ranges from trace amounts to an occasional event in excess of 5 inches.

In a favorable year, it is not unusual for the region to experience multiple rain events greater than 3 inches in a growing season. In such years, significant runoff occurs. This fills ponds and lakes — a worthy benefit — but once the pond fills, the remaining moisture is lost.

So how much rain falls on our pastures before it begins to run off? How much of the total rainfall is effective? Unfortunately for many producers, most pastures incur runoff with multi-inch rainfall events.

Let's take a look at an anecdotal example:

A producer with an annual rainfall of 36 inches observes runoff routinely with rains of more than 1.5 inches. Looking at the Oklahoma Mesonet's monthly rainfall reports for past few years, we observe about two-thirds of the annual rainfall for the area comes in events of more than 1.5 inches.

Subsequently, about 12 inches (one-third of 36 inches) of rain occurs from events less than 1.5 inches and 24 inches (two-thirds of 36 inches) comes from larger rain events (more than 1.5 inches).

On average, we see about eight large rainfall events annually. Assuming that any rainfall more than 1.5 inches will runoff, the effective rainfall from these eight events is 12 inches (8 rain events × 1.5 inches). The total effective rainfall from 36 inches of total annual rainfall for this producer is about 24 inches (12 inches from rain events of less than 1.5 inches and 12 inches from rains of more than 1.5 inches). This example is not that unusual.

HOW TO GAIN 20,000 MORE GALLONS OF WATER

Most soil samples that come through Noble Research Institute's soil testing facility are near or below 1% organic matter. Therefore, it is easy to conclude that only about 24 inches of our annual rainfall is effective for some if not many 1% organic matter soils in south-central Oklahoma.

Generally speaking, a 1% increase in organic matter corresponds to an increase in soil water-holding capacity by about 20,000 gallons of water per acre or about seven-tenths of an inch of rain. By increasing soil organic matter from 1% to 2%, more water infiltrates into the soil and less runoff occurs.

When applied to our previous example, the point of runoff increases from 1.5 inches of rain to 2.2 inches of rain. Only about 40% of rain events are in excess of 2.2 inches, and there are generally about five of those annually. Effective rainfall increases to 21.6 inches (36-inch annual rainfall × 60%) plus 11 inches (2.2 inches x 5 events) equals 33.6 inches.

A 1% increase in soil organic matter makes a significant difference in effective rainfall. In this example, it is a 40% increase. It is not difficult to interpolate a corresponding increase in forage production. In reality, it doesn't always work that way since some rain occurs during the dormant season. However, if a 40% increase in effective rainfall produced only a 20-30% increase in production and carrying capacity, it would still be beneficial. Perhaps more importantly in the long-term, it would produce much greater resiliency in the soils and pastures making both less susceptible to droughts.

Imagine what an additional percent increase or two would do!

FIVE PRINCIPLES OF SOIL HEALTH ARE KEY TO BUILDING ORGANIC MATTER:

1. Keep the soil covered.
2. Optimize soil disturbance.
3. Keep a growing root in the soil.
4. Increase plant diversity.
5. Incorporate grazing livestock.

NOBLE
NEWS&VIEWS

IN THIS ISSUE

OCT. 29

Using Grazing to Manage Wildlife Habitat

9 a.m.-4 p.m.
Cross Timbers Wildlife Management Area
7761 Stockton Road
Burneyville, OK 73430
No Registration Fee

Most people think cattle and wildlife are incompatible. This is not the case. When managed correctly, native rangelands can produce optimal wildlife habitat and forage production for cattle. When native rangelands are not utilized or are over-utilized, both cattle and wildlife suffer. Come find out how you can use cattle, fire and mechanical means to make productive rangelands that will benefit your cattle and wildlife.

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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.*

Introduction to Land Stewardship

OCT. | 15

Join us to learn about the principles, processes and tools you can use to effectively implement land-stewardship-focused management strategies on your operation. The emphasis will primarily be on the application of Aldo Leopold's five tools (cow, plow, axe, match and gun) to meet stewardship goals and objectives.

8:30 a.m.-noon
Coffey Ranch
16877 State Hwy. 32
Marietta, OK 73448
No Registration Fee

NOV. | 23

How to Build Raised Beds and Container Gardens

9 a.m.-3 p.m.
Small-Scale Ag Demo Area, Entry 2
Registration Fee: $25

DEC. | 10

Managing Taxes for Agricultural Producers

1-5 p.m.
Kruse Auditorium, Entry 5
No Registration Fee

DEC. | 12

How to Get Your Wild Game from Field to Table

1:30-6 p.m.
Pavilion
Registration Fee: $25

FEB. | 21

Selecting and Developing Bulls

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