MAY 2019 | VOLUME 37 | ISSUE 5 A MONTHLY PUBLICATION FROM THE NOBLE RESEARCH INSTITUTE


Grazing Management Misconceptions 6


Basics of Forage Quality 10


Have Your Bass Stopped Growing? 13

NOBLE NEWS & VIEWS

# Great Challenge 1: Economic Uncertainty

## WHAT IS A GREAT CHALLENGE?

We define "great challenges" as significant threats to the viability of agriculture. We see these challenges as opportunities for us to advance agriculture and land stewardship through research and education. We identified three great challenges: economic uncertainty, ecosystem health and education. Read more online at bit.ly/great-challenges.

by Michael Udvardi, Ph.D., chief scientific officer | mudvardi@noble.org; Hugh Aljoe, director of producer relations | hdaljoe@noble.org

One of the greatest challenges facing agriculture is economic uncertainty. We understand that if you, as a producer, can't be profitable, your operation will not remain viable in the future. That's a truth we cannot avoid when we're working to help you along your journey as a land steward.

Many factors contribute to economic risk in agriculture, including:

- Variable weather and climate change.
- Other environmental threats like pests and pathogens.
- Volatile markets.
- Changing consumer demand.
- Changes in government policy.

You don't have a lot of control over these factors, however you can mitigate some of the risk to increase your chances of financial success. To help you, we are constantly looking for ways to make forage-based beef cattle systems more resilient and efficient.

*Story continues on next page*


Our research approach to helping you build resiliency in your operation begins by understanding how plants and their microbial helpers work to provide stress tolerance, and this process continues through to developing improved forages. We also test different management practices and new technologies on our research and demonstration farms and ranches. Below are a few of the projects we have in progress.

*Story continues on next page*

## Our No. 1 Recommendation: Be Intentional

We highly encourage all producers to be intentional with their management. Producers who are intentional are more likely to successfully manage risk and achieve favorable financial outcomes. Being intentional means you have a management plan and use best management practices that are complementary to your operational goals and resources. Intentional producers have a plan but know they must retain a level of flexibility. They are also open to adopting new science and technologies that make sense for their operations and provide production, ecological and long-term financial value.

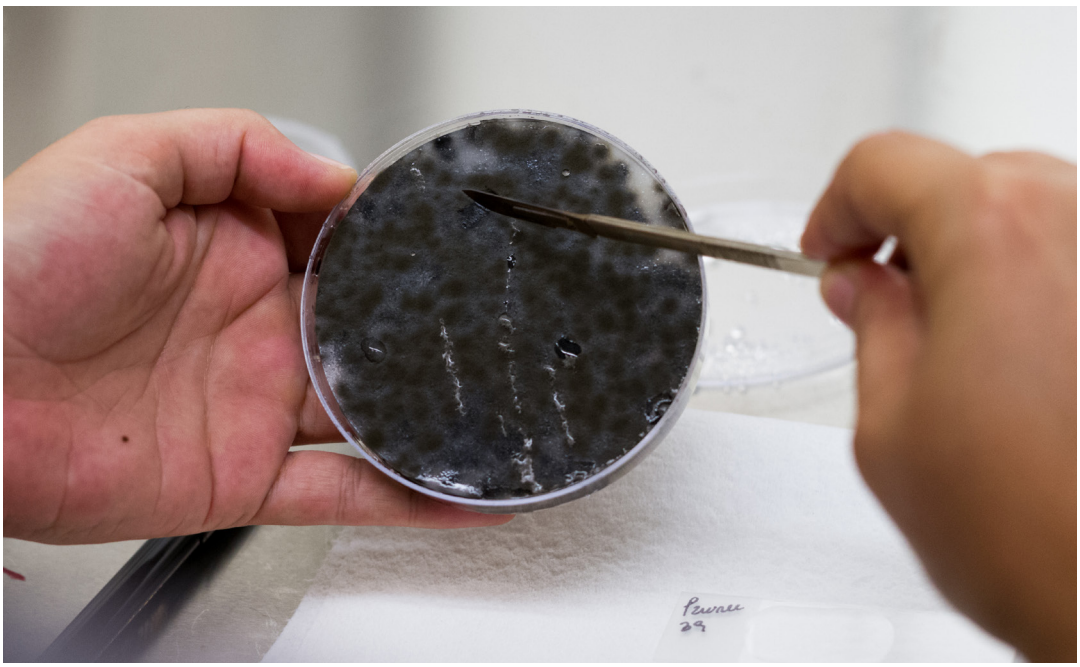
## IN THE LABORATORY AND FIELD:

### UNDERSTANDING HOW PLANTS WORK

Plant biologists are uncovering the molecular, genetic and physiological secrets that underlie plant traits such as drought-, heat- and cold-tolerance; nutrient- and water-use efficiency; disease resistance; and forage quality and yield. They are also developing genetic markers (essentially tagging specific beneficial genes) to more efficiently integrate new characteristics into improved plant varieties, confirm the genetic identity of specific plants with desirable traits, or verify that a new plant is truly a hybrid cross that combines beneficial traits from the plants used as parents. Researchers are working to:

**1. Understand the structure and function of plant roots.**
Roots are often overlooked in plant breeding, but they are essential because they support the whole plant and facilitate access to water and nutrients from the soil. Plant roots can develop different root system architecture and functional features in response to soil type, water and nutrient availability, microbial populations, and the plant's genes. Researchers are uncovering how different root structures and functionalities affect whole plant performance in different agronomic systems. At the same time, they seek to determine which genes control these differences in root systems. Researchers are looking for ways to maximize the conversion of each drop of water to grow more biomass while increasing drought tolerance through deeper root systems capable of accessing water deeper in the soil.

**2. Understand how plants use nitrogen and phosphorus.**
Nitrogen and phosphorus fertilizers increase plant growth and quality, but they come with economic and environmental costs, such as pollution. Together with plant breeders, plant biologists are working toward new plant varieties that more efficiently use nitrogen and phosphorus. These varieties will yield more forage and produce more beef per unit of fertilizer input while reducing fertilizer losses to the environment. They are also investigating soil bacteria and fungi that help plants acquire and use nitrogen and phosphorus.



**3. Understand plant-microbe interactions, both good and bad.**
Researchers are looking at the relationships between plants and microbes. Some of these are beneficial, including microbes that help with plant nutrition or confer environmental stress tolerance, for example a fungal endophyte that improves drought tolerance in tall fescue. Other microbes/pathogens cause problems for plants. Researchers are investigating plant disease resistance mechanisms and genes that could be used to protect plants (such as wheat, legumes and pecans) from pathogens that reduce productivity and profitability. For example, researchers are working to mitigate the impact of pecan scab disease on pecan nut production. They're seeking a better understanding of how the fungal pathogen works, identifying genes for scab resistance, and experimenting with different ways of managing pecan orchards.

*Story continues on next page*

*Triticale (NF201)*

## PLANT BREEDING:

### ENHANCING FORAGE TRAITS

Plant breeders are developing new forage varieties that are more resilient under challenging growing conditions. They are working to:

**1. Improve tall fescue, a perennial cool-season grass.**
Plant breeders are developing hybrids between Continental and Mediterranean varieties to produce more persistent, higher-yielding and drought-tolerant varieties.

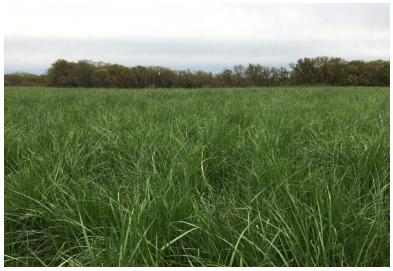
**2. Improve bermudagrass, a perennial warm-season grass.**
Plant breeders are improving nitrogen-use efficiency and cold-tolerance of bermudagrass, which would allow it to be used in colder climates.

**3. Improve small grains for forage production.**
The small grains breeding program encompasses four cool-season annuals: wheat, rye, triticale and oats. Plant breeders are developing vigorous seedling growth, grazing-tolerant, high-yielding, high-quality grasses for beef cattle production. These small grains are also popular across the U.S. as cover crops. For example, Elbon rye is one of the most widely used cover crops in the corn and soybean belt.

**4. Explore various annual legumes as potential cover crops.**
Legumes are valuable as cover crops because, in addition to mitigating erosion, they contribute nitrogen to the soil for subsequent crops, a win-win for producer profitability and the environment. Researchers are working with other teams across the U.S. to identify the best legume(s) for each environment, and to optimize their beneficial characteristics through breeding and management to increase profitability and sustainability. Noble plant breeders are currently focused on hairy vetch, pea, clovers, cowpea and Tepary bean.

## FORAGE RELEASES

- Rye (Maton II and Bates RS4), oat (Heavy Grazer II and NF402), wheat (NF101) and triticale (NF201) varieties that provide fall forage.
- Rye varieties (Maton, Oklon, and Elbon) that provide spring forage.
- Continental tall fescue variety (Texoma MaxQII) for high-rainfall areas, east of I-35.



***Chisholm Tall Fescue***

- Mediterranean tall fescue variety (Chisholm) for dry areas, west of I-35.

***Renovation White Clover***

- White clover variety (Renovation) with a greater number of stolons that increase persistence.

***Impact Crabgrass***

- Crabgrass variety (Impact) that is late-maturing with improved nutritive quality.
- Wheatgrass variety (Plainsmen) with greater fall forage.


***Plainsmen Tall Wheatgrass***

## ON-RANCH RESEARCH:

### OPTIMIZING MANAGEMENT

Researchers on our ranches are focused on optimizing management of both introduced forages and native range with a focus on land stewardship for beef cattle production and complementary enterprises such as wildlife and pecans.

Cattle researchers are working to develop more profitable stocker and cow-calf grazing systems using existing plant varieties as well as managing existing forage resources more effectively.

Researchers are also working to improve pecan production yield, disease resistance and genetics, and to develop land stewardship practices based on sound ecological principles for managing wildlife and their habitats to increase profitability and ecosystem health. The research outcomes will translate into best management practices that will increase productivity, reduce uncertainty, and add long-term value to the land and enterprise operations. Researchers are working to:

**1. Improve beef cattle production and profitability** by investigating technologies for the beef industry, developing estrous synchronization and artificial insemination protocols, measuring lifetime cattle performance and health relative to genetics, and seeking cost-effective forage production solutions to carry growing cattle through finishing.

**2. Research and develop improved management practices** for irrigated and native pecan production systems; enhance livestock grazing in orchards; and advance knowledge of pecan genetics, physiology, germplasm and diseases.

**3. Develop planning and decision-support tools** by incorporating technology, sensors and remotely sensed data into domestic and wild animal research to determine behavior, feed efficiency, habitat use, animal health and population dynamics.

**4. Research, control and mitigate the effects of invasive species** and pests such as wild pigs, eastern red cedar, ashe juniper and pecan weevils.

**5. Research and monitor rangeland health** by conducting vegetation and soil sampling and through using remotely sensed data.

PASTURE

# Top 10 Misconceptions in Grazing Management

by Jeff Goodwin, conservation stewardship leader and pasture and range consultant | djgoodwin@noble.org

Often in the course of our work as consultants, we help producers with land management issues that have relatively straightforward answers. For the most part, we address their concerns based on a particular land management goal.

For instance, if a producer wants to increase forage production on his/her operation, there are several ways to overcome challenges and meet that goal. Many times ecological barriers of production are the easiest to address. Other times, it is perceptual misconceptions that affect an operation the most, and resolving them may require a rather steep and abrupt learning curve to achieve success.

*Story continues on next page*

**MANY TIMES ECOLOGICAL BARRIERS OF PRODUCTION ARE THE EASIEST TO ADDRESS.**

# HERE ARE 10 COMMON GRAZING MANAGEMENT MISCONCEPTIONS

## ONE

### "IN THIS COUNTY, I CAN RUN A COW FOR EVERY 10 ACRES."

Stocking rate is the single most important decision a producer makes. Stocking rates are calculated by balancing animal demand with forage supply. Often, we hear of instances where producers are managing using a county-based stocking rate. However, rates are ranch-specific and are influenced by grazing history, forage type, climate, land capability, livestock type and class, etc. County-based stocking rates will tend to overstock some ranches and understock others. In my experience, the majority of the time they tend to overstock ranches. It is also a frequent misconception that implementing a grazing system will alleviate stocking rate problems. Over the long term, no grazing system will work if the stocking rate is not balanced with the annual forage produced.

## TWO

### "MY COWS GRAZE ALL OF MY RANCH."

The actual grazable acreage of a ranch is often overlooked. It is rare that every acre of the pasture is usable by livestock. Often, even if the producer went through the process to develop a balanced stocking rate, they will be overstocked on day one if they did not compensate for the grazable acres of the management unit. There are many factors that lead to actual grazable acres being limited. Slope is a common limiter; most cattle do not want to graze on slopes steeper than 30%. Acres of heavy brush is also a common limiter since those acres, even if accessible by cattle, do not produce the same amount of forage as open areas. Many producers also overlook acres of surface water as well as land taken up by ranch roads. For instance, 1 mile of a 20-foot-wide ranch road equals 2.4 acres. If we add up the area of all the access and ranch roads, the total is sometimes surprising. An accurate stocking rate is one that has compensated for the acres on an operating unit that cannot be grazed.

## THREE

### "GRAZING HARD IN THE WINTER WON'T HURT MY GRASS."

The forage base of the Southern Great Plains is primarily warm-season, meaning the majority of forage production occurs in the summer growing season. It is common to stockpile native rangeland for winter grazing. It is also a common misconception that native plants can be grazed heavily in the winter as long as they are not growing. Most of our native warm-season perennial grasses begin to develop the next year's young shoots in the fall of the previous year. These young shoots are called phytomers, and they need protection through the winter. This is one reason for leaving an appropriate stubble height on native grasses. This stubble provides some thermal protection, but mostly ensures that young perennial shoots are not grazed. Excessive grazing pressure in the fall and/or winter on native perennial grasses can reduce the number of shoots/plants present the next spring, thereby reducing overall annual production.

## FOUR

### "I RESTED THIS PASTURE ALL WINTER."

Many times our good intentions can work against us. Resting pastures, or providing a specified time without grazing, does allow plants to recover from the grazing event. Typically, we plan to allow our primary forage species time to recover fully before we return for a second grazing period. The trouble with relying on "all winter" rest is that this is not "active growing season" rest. Perennial plants need periodic rest periods during the active growing season in order to rebuild carbohydrates reserves. Rest solely during the dormant season does not achieve this function.

## FIVE

### "BUT I ONLY GRAZED HALF OF IT."

Most perennial forage species have a specific percentage grazing utilization rate that they can tolerate before they are forced to draw on their carbohydrate reserves to replenish. For native warm-season grasses, that utilization rate is typically 50%; some introduced species can tolerate much higher rates. Another way to look at it is that grasses are quite efficient; they produce close to twice what they need to sustain themselves. Thus, if we graze half of that production, the plant still has the capability to fully recover and thrive. However, of that half we utilize, 25% is lost to trampling, environmental losses, other grazing, etc. In essence, on rangeland, it is best to use only the remaining 25% of the total annual production of the pasture to determine the stocking rate. Consequently, the "take half, leave half" concept is commonly misunderstood, and pastures end up overgrazed.

## SIX

### "IF I LEAVE IT, I'M WASTING GRASS."

Residual stubble is often considered wasted if it is not consumed by livestock. However, grasses need residual stubble for multiple reasons. Residual stubble serves as armor for the soil. Keeping the soil covered and limiting bare ground should be a primary goal of grazing management plans. Residual cover keeps the soil temperature regulated, primarily cooler in the summer. High soil temperatures can limit soil biological function and organic matter cycling. Another benefit of residual cover is slowing down runoff, thus reducing erosion. Residual forage also aids with weed control by limiting the weeds' competitive advantage. Normally, the less bare ground, the less weed pressure.

## SEVEN

### "STOCK DENSITY DOESN'T MATTER."

Stock density is the number of animals on a specific area for a specific amount of time. This is typically expressed as pounds of live weight per acre. Stocking rate for the whole ranch is very important; however, stock density is a management tool that, if properly applied, can allow you to make vast ecological improvements on your property. The higher the stock density, the more concentrated the livestock on a smaller area. This allows for more even manure and urine distribution, more effective grazing distribution, and more efficient forage utilization. The converse is also true: very light stock density can lead to spot grazing, underutilized forage and slower recovery. Stock density very much matters.

**EIGHT**

"GRASS IS GRASS; WHAT'S THE DIFFERENCE?"

Not all grasses are created equal. Native or introduced, annual or perennial — no two species of grass are the same. Grasses differ physiologically in the way that they grow just as much as the amount they can grow. Production capability is a function of the plant's intrinsic traits, but it also depends on climate, fertility and soil capabilities. Almost equally as diverse are their forage quality capabilities and limitations.

**NINE**

"IF I CAN RUN ONE MORE COW, THAT'S MORE PROFIT."

One more cow does not always equal one more dollar of profit, but it does ensure more input costs. Adding a cow can be profitable if a property is underutilized, but the reality is that most properties are grazed at a moderately heavy or higher rate already. One more cow may be that tipping point at which costs exceed revenue. Again, proper stocking rate is often the determinant of economic success.

**TEN**

"I'LL JUST FEED MY WAY THROUGH THIS DROUGHT."

The most successful grazing managers are flexible and adaptive. Adaptive management calls for flexible stocking rates. Many times, the decision to reduce stocking rate is the hardest change to discuss and accept. To ease that problem, a drought contingency plan with active management triggers can alleviate some of that anxiety. You will at least know what to watch for, how to mitigate its effects, and how to react in a timely manner. The decision to feed through the drought is highly dependent upon the cost of forage resources and the value of weaned beef, but you should also consider the cost incurred by the forage resource and its ability to repay the bill. Feeding your way through a drought rather than adjusting livestock numbers can have costly economic and ecological ramifications.

In conclusion, grazing management is a complex part of managing a ranch. Not only are producers trying to manage an ecological system and an animal production cycle that are constantly changing, they are trying to grow their products in fluctuating markets while making a living. Understanding misconceptions about grazing management can increase your odds for ecological and economic success.

*Lotus is a pretty plant but can dominate a pond.*

## AQUATIC PLANT SPOTLIGHT:

# AMERICAN LOTUS

by Will Moseley, wildlife and fisheries consultant | wamoseley@noble.org

American lotus *Nelumbo lutea* is a native perennial aquatic plant that grows along the shores of our water bodies. It is often incorrectly called "lily pad." Lotus has a large round leaf that can be more than 2 feet in width and has no natural slit, a feature which is present in water lily leaves. The lotus bloom is a showy, yellow-white flower that grows above the water. Lotus is used as an ornamental plant in aquatic situations because it is very pretty, but it can become invasive and problematic. It has the ability to dominate in water less than about 7 feet deep, which allows it to outcompete more beneficial vegetation.

Lotus tubers are eaten by beavers and muskrats and were once a popular food of Native Americans. The seeds have been known to be eaten by waterfowl but are not considered an important waterfowl food. Lotus can provide some habitat for invertebrates that are food for waterfowl and fish. If lotus becomes too abundant, it can be controlled with herbicides such as 2,4-D, glyphosate and triclopyr. It can be difficult to eliminate because the seeds can survive in the mud for many years, and cutting the plant is only temporarily effective.

*Difference between a lotus and water lily leaf. Lotus is below and water lily is on the left.*

**UPCOMING EVENT**

### MANAGING YOUR POND FOR RECREATION

This event will focus on managing sport fish in small impoundments. You will learn how to develop a quality sport fishing impoundment from the ground up, from site selection to managing existing fish and everything in between. Come learn fish management fundamentals that will aid you in developing and managing an enjoyable fishery.

THURSDAY, MAY 23 1-6:15 P.M.
No registration fee

**FIELD GUIDE**

To learn more about aquatic plant management, visit the Noble Research Institute's Plant Image Gallery (www.noble.org/plantimagegallery) or purchase our field guide at www.noble.org/store.

FORAGE

# The Basics of Forage Quality

by Michael Trammell, senior plant breeder | matrammell@noble.org
Dennis Walker, forage analysis core manager | dwwalker@noble.org

Good quality forages are the main asset of any livestock operation and are crucial for the livestock industry.

In general, performance of grazing animals reflects forage quality. Forages contain nutrients that affect individual animal production (gain per animal) while the amount of forage produced affects production per acre.

You should make the decision whether to use conserved forage, such as hay, or to allow livestock to graze standing forages, as well as decisions around the selection and purchasing of hay, based on forage quality.

Forage analyses are important because they describe the forage quality. Forage testing is also a relatively inexpensive tool in your toolbox when estimating the nutritive value of forage to be grazed, hayed, purchased or marketed. Knowing what affects forage quality will also help in making appropriate selections of forages and supplements, resulting in economically optimum livestock performance.

If you have any questions concerning forage sampling or analysis, please contact the Noble Research Institute Ag Helpline at 580-224-6500.

## WHEN AND WHAT TO SAMPLE

Always try to sample the forage in question as near to the time of feeding or sale as possible.

Allow for enough time for the sample to be processed by the laboratory. This could range from one day to several weeks, depending on the tests requested, methods used and number of samples tested.

Extreme variation can occur in forage quality when harvested from the same field or lot of hay, etc.

There is a wealth of instructional information avail-

*Story continues on next page*

able on forage sampling techniques. Information is available on the sampling of hay bales from small to large, square to round, and do not forget the variety of sampling probes available (see options at bit.ly/hay-probe).

There is information on sampling cubes, pellets or ensiled forages, but what about sampling standing forage?

In a haying situation, standing forage should be cut at a height equal to the height setting on the swather from several areas throughout the pasture unit for a good representative sample.

In a grazing situation, take a "hand-plucked" sample by trying to select parts of the plants the grazing animal is or will be consuming. Remember, your forage analysis test will only be as good as the sample submitted. Here is a video on how to take a forage sample: www.noble.org/videos/sample-forage

## SUBMITTING A SAMPLE FOR TESTING

Fill out the form available at www.noble.org/forage-sampling. Identify the sample so that it is clear which forage it represents. Indicate what plant (bermudagrass, native grasses, alfalfa, etc.) and type (hay, standing forage, silage) of forage it is. This information allows for a more precise analysis and more accurate supplementation recommendations.

It is important to select a forage laboratory that is a member of and certified by the National Forage Testing Association (NFTA). Many labs use near-infrared spectroscopy (NIRS) technology for analysis of forage samples. NIRS is a rapid, repeatable, nondestructive method of forage analysis. It measures the reflectance of near-infrared light to predict the quality parameters instead of chemicals used in a conventional "wet chemistry" method. The Noble Research Institute Forage Analysis Laboratory uses a NIRS Forage Analyzer and is an active member of the national NIRS Consortium.

**Table 1.** Moisture and dry matter concentration of different forms of forage (University of Florida-IFAS Extension Bulletin SS-AGR-322).

| Type | Moisture* | Dry Matter* |
|---|---|---|
| Hay | 8-15 | 85-92 |
| Silage | 65-75 | 25-45 |
| Fresh forage | 70-85 | 15-30 |

*percentage

## COMPONENTS OF FORAGE QUALITY

Normally, four measurements are taken for forage quality analyses:

- Moisture.
- Crude protein (CP).
- Neutral detergent fiber (NDF).
- Acid detergent fiber (ADF).

Other forage quality components are calculated from these measured attributes, as shown in Figure 1.

## MOISTURE (%)

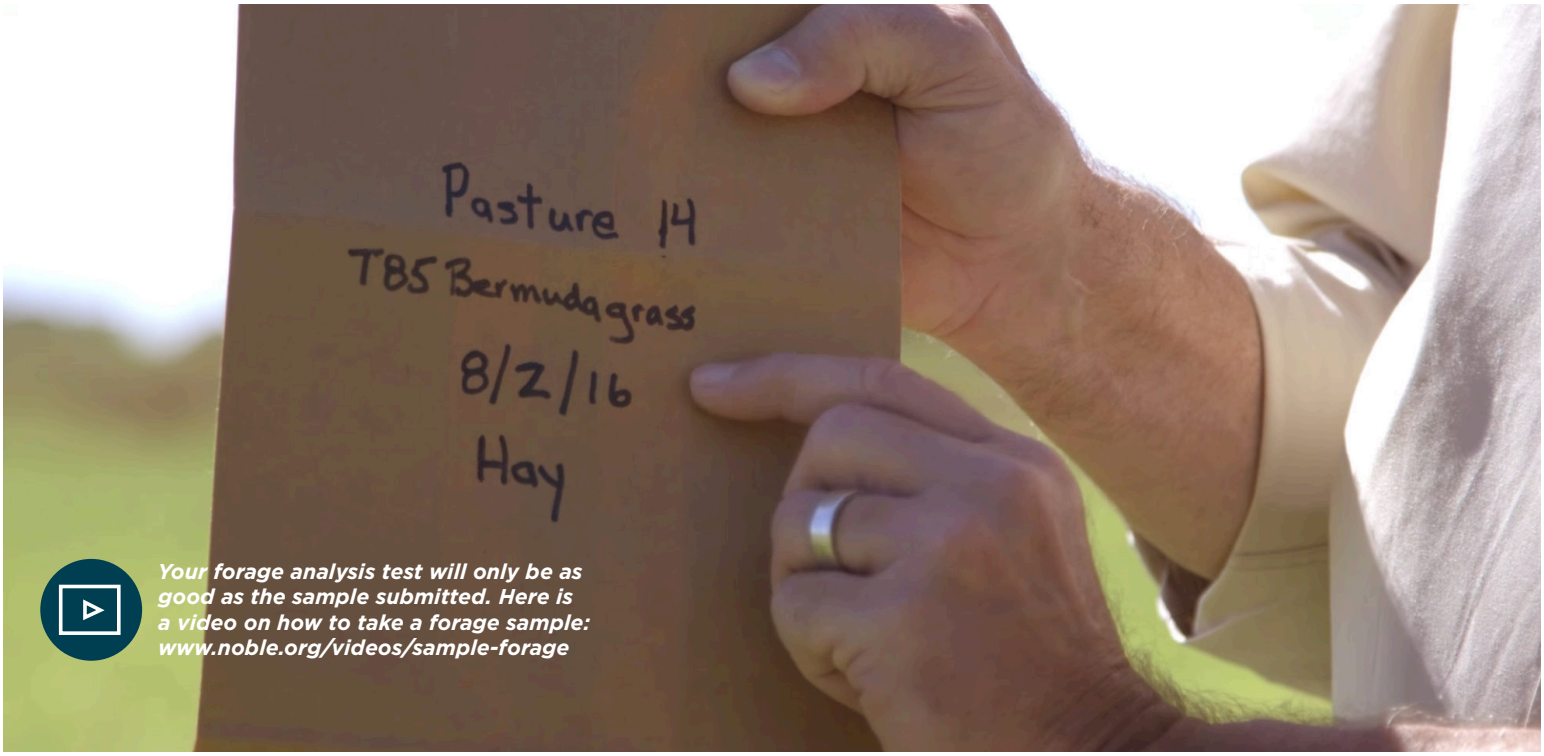
Moisture content of the forage sample is usually reported in a wet and a dry matter (DM) basis. Wet basis indicates how much fresh forge would be required to meet the DM requirements of the livestock. Dry matter is calculated as if the forage had no water content. This calculation allows for the most accurate comparison among different forages. It will also vary depending on forage type and how the forage is fed (Table 1).

## CRUDE PROTEIN (CP, %)

Proteins are the most important nutrients for livestock. These nutrients support microbe activity in breaking down forage in the rumen. Proteins make up 60-80% of the total plant nitrogen. Proteins also contribute essential amino acids for the animal itself. Crude protein is an indirect measure of the nitrogen (N) concentration of the forage multiplied by 6.25. This calculation assumes that N constitutes about 16% of protein in the leaf and stem of the forage plant (100 ÷ 16 = 6.25).

## NEUTRAL DETERGENT FIBER (NDF, %)

NDF represents the total fiber fraction of the forage. Three fiber fractions make up the structural cell wall in a plant. These fractions are cellulose, hemicellulose and lignin. Values can range from 10% in grain to 80% in grass straw. NDF values for grasses are higher when compared to legumes. A high NDF content indicates a high fiber content in the forage. Therefore, the lower the NDF value of the forage sample, the better.




***Your forage analysis test will only be as good as the sample submitted. Here is a video on how to take a forage sample: www.noble.org/videos/sample-forage***

### ACID DETERGENT FIBER (ADF, %)

The ADF value represents cellulose and lignin. These two structural cell wall components are partially digestible in the rumen over time. Forages can range from 3% in grain to 50% in grass straw. A high ADF value is associated with decreased digestibility. Therefore, a low ADF value is better.

## OTHER FORAGE QUALITY COMPONENTS

### TOTAL DIGESTIBLE NUTRIENTS (TDN, %)

TDN is calculated from the ADF value and represents the overall digestibility or energy value of the forage.

### RELATIVE FEED VALUE (RFV)

RFV is calculated from the ADF and NDF value and represents the forage's digestibility and intake potential. RFV is only nutritionally applicable to alfalfa hay that is fed free-choice to dairy cows, and it is typically used in marketing all types of hay.

### RELATIVE FORAGE QUALITY (RFQ)

RFQ is a term that is similar to RFV in that it is used to rank forages according to their relative nutritive value. RFQ shares many of the properties of RFV. However, unlike RFV, RFQ takes into account digestible fiber and is more often used to describe the nutritive value of grass forages. It is a good index of how a forage will perform in an animal diet.

### FACTORS INFLUENCING FORAGE QUALITY

Forage quality can vary not only among different forage types but also within the same forage species or cultivars. Not every plant in a pasture will have the same nutritive value, leading to characteristics that can indirectly or directly affect forage quality.

Weather conditions and forage quality are the primary factors affecting the quality of standing forage. Maturity is the principal factor responsible for declining forage quality. As the age of plants within a stand advance beyond peak protein production (first several weeks of growth), stem growth increases along with the production of fibrous components, such as lignin, at the plant cell level. Lignin, a component of fiber, is essentially indigestible and acts as a barrier to rumen microbes working to break down the forage. If the forage is too mature and fiber is more prevalent, then the crude protein (CP) declines as well as forage digestibility (Table 2).

Additionally, conditions during harvest or poor storage practices can adversely affect forage quality by allowing the breakdown of soluble sugars. Other factors, such as harvest management practices, soil fertility levels, plant diseases and time of season can all affect forage quality.

Knowing what affects forage quality and how to interpret a forage quality test will aid in forage selection and supplements that will help match animal requirements and economically improve livestock performance.

**Figure 1.** Forage quality parameters determined by laboratories (adapted from Oklahoma Cooperative Extension Service Bulletin PSS-2117).

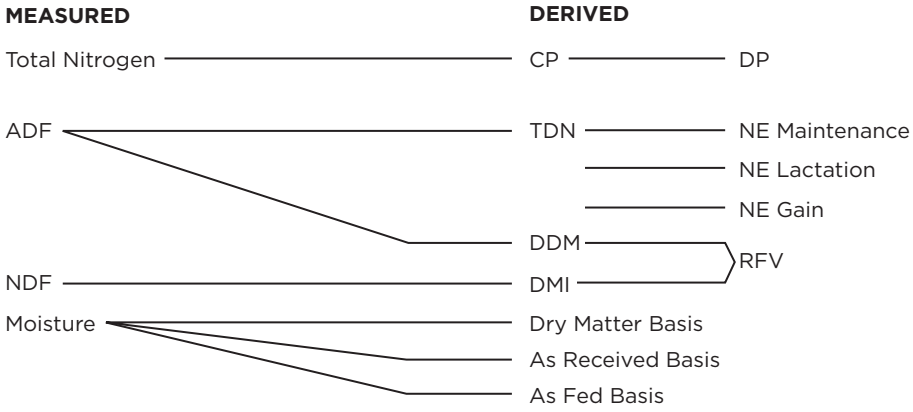



**Table 2.** Effect of maturity in alfalfa on CP, ADF, NDF and RFV (adapted from Oklahoma Cooperative Extension Service Bulletin PSS-2117).

| Stage of Maturity | CP% | ADF% | NDF% | RFV |
|---|---|---|---|---|
| Bud | 25 | 28 | 38 | 164 |
| Early bloom | 23 | 30 | 40 | 125 |
| Mid bloom | 19 | 35 | 46 | 125 |
| Full bloom | 16 | 41 | 53 | 100 |

WILDLIFE

# Have Your Bass Stopped Growing? What You Do Next Depends on Your Goal

by Steven Smith, wildlife and fisheries consultant | sgsmith@noble.org



When growing largemouth bass or other sport fish in your lake, pond or other impoundment, there are times when a "stunted fishery" may occur.

This is a situation when the majority of a species have stopped growing and remain similar in size, usually because there is not enough forage to feed an overabundance of fish in a given size class. Many impoundment managers and bass anglers view a stunted bass fishery as a negative. That's understandable, since fishing in a stunted population usually results in caught bass averaging approximately 7 to 12 inches and weighing less than a pound. So if fishing for quality largemouth bass is an important goal for an impoundment, managers need strategies in place to avoid or remedy a stunted fishery.

On the other hand, if growing trophy sport fish is not the primary goal, a stunted fishery is not a problem and even can be an advantage for some types of fishing. Each impoundment manager needs to determine whether a stunted bass fishery is right for his or her goals, and manage accordingly.

*Story continues on next page*

## BEST PRACTICES FOR MANAGING BASS FISHERIES FOR TROPHY FISHING

**1. Survey the population.**
To ensure plenty of quality, trophy largemouth bass in an impoundment, the first step is to survey the population.

Refer to the Noble Research Institute publication How to Survey the Fish in Your Pond at www.noble.org/survey-pond and follow the protocol to determine the fish species present, their size distribution and relative abundance in the impoundment.

Keep records of how many of each size are caught by location to track and evaluate the status of your fish populations.

**2. Remedy a stunted bass fishery, if needed.**
If the survey reveals a stunted population, impoundment managers have several options to consider, depending on the conditions present.

You may need to stock bluegill to increase the food source for the bass, if bluegill are low in number or absent from the impoundment.

Another solution is to address low fertility in an impoundment by fertilizing the water to increase the microscopic plants (phytoplankton) that make up the base of the food chain.

In some cases, managers may need to remove adequate numbers of stunted fish to allow the desired trophy fish to grow. Note that increasing average size of bass by removal is easier in smaller impoundments than larger ones because of the labor involved in removing surplus fish. With that being said, be aware that it is easier to overfish smaller impoundments.

**KEEP RECORDS OF HOW MANY OF EACH SIZE ARE CAUGHT BY LOCATION TO TRACK AND EVALUATE THE STATUS OF YOUR FISH POPULATIONS.**

When bass removal is appropriate, follow these steps:

- The general rule of thumb is to start by removing 10 pounds of stunted fish per surface acre of the impoundment.
- The following year, survey the fishery to determine whether there was an increase in average length of caught fish. If there is no change, increase removal of bass to 15 pounds per surface acre.
- Continue increasing the harvest rate each year, until a change is noted.

In one 16-acre impoundment, the manager was able to increase the average length and weight of caught bass by three-fourth inch and one-quarter pound, respectively, after removing 17 pounds of stunted bass per acre for two consecutive years.

## KEEP A BASS FISHERY STUNTED FOR OTHER GOALS

Stunted bass fisheries can have several positives:

- They are excellent places to introduce someone to fishing or to take young anglers. Due to the high number of fish in the impoundment, catch rate is usually good, which helps maintain the attention of beginning or young anglers.
- They provide a place for anyone to have fun with light fishing tackle or fly fishing.
- They can help control the young of typically undesirable fish, such as bullheads.
- They are often desirable when managing for trophy-size bluegill, hybrid sunfish or redear sunfish.

If you have one of the above goals and your impoundment already has a stunted bass population, keep the status quo.

If you wish to create a stunted bass fishery in an impoundment where there currently are varying bass sizes, remove most bass that are 12 inches or longer when caught.

NOBLE
NEWS&VIEWS

IN THIS ISSUE



JUNE 4

## How Plants and Animals Respond to Grazing

**8:30 a.m.-noon.**
**Noble Research Institute**
**Kruse Auditorium, Entry 5**
**No Registration Fee**

Grazing is a management tool that uses livestock and their act of consuming plant material to impact an ecosystem or landscape. Grazing affects both the plant and the animal. Plant type and availability, stage of growth, animal preferences, livestock age and physiological condition, stock density, duration of grazing and recovery, and management all play roles in the responses of both plants and animals to grazing.


*Noble News and Views* is published monthly by the Noble Research Institute. Current and past editions of *Noble News and Views* are available at www.noble.org/news-and-views.

Free subscriptions delivered by email are available at www.noble.org/subscriptions. The Noble Research Institute encourages the republication of *Noble News and Views* articles. For publication guidelines, contact J. Adam Calaway, director of communications and public relations, at jacalaway@noble.org. High quality electronic versions of photos and graphics are available.

# UPCOMING EVENTS

***Preregistration is requested. Registration closes five business days before the event.***
*For more information or to register, visit www.noble.org/events or call 580-223-5810.*
*For other agricultural questions, please call our Ag Helpline at 580-224-6500.*

**MAY 7**

## Introduction to Integrity Beef

Connect with Noble Research Institute consultants and Integrity Beef Alliance members to learn more about the Integrity Beef Alliance terminal calf program and replacement heifer development program. You will learn about membership benefits and advantages of being associated with a regionally and nationally recognized marketing program.

**4-7:30 p.m.**
**Pavilion**
**No Registration Fee, Dinner Provided**

**MAY 9**

### Irrigating and Fertilizing Specialty Crops

**6:30-8:30 p.m.**
**Kruse Auditorium, Entry 5**
**No Registration Fee**

**MAY 14**

### Managing for a Healthy Herd

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

**MAY 20**

### Learning About the Snakes of Oklahoma

**6-7:15 p.m.**
**Southern Tech Auditorium**
**No Registration Fee**

**MAY 23**

### Managing Your Pond for Recreation

**1-6:15 p.m.**
**Pavilion**
**No Registration Fee**