THE SAMUEL ROBERTS NOBLE FOUNDATION

AG News and Views

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FORAGE

Using a Plate Meter to Measure Forage Productivity

by Corey Moffet / camoffet@noble.org, Ryan Reuter / rrreuter@noble.org, James Rogers / jkrogers@noble.org and John Blanton / jrblanton@noble.org

The goal of many graziers is to increase forage production and utilization. A key component of increasing utilization is the ability to accurately determine forage mass. While some seasoned practitioners have a keen ability to visually estimate forage mass, the rest of us need some objective help.

The classical method of estimating forage mass is to hand-clip the forage from several locations of a known area, place the samples in a paper sack, then weigh the forage after it has dried (the samples are dried because dry matter is really the value of interest, not wet weight). This method is labor-intensive and requires significant processing time; therefore, results are not immediately available. In New Zealand, the rising plate meter is a commonly used tool for estimating forage mass. Because the device is easy to use and yields quick results, we decided to investigate the ability of a rising plate meter to estimate mass of cereal forages in the Southern Great Plains.

A rising plate meter is a device that consists of a weighted plate that slides over a shaft. As the meter is placed over a sward (grassy surface) of forage, the forage is compressed until it will support the plate's weight and the shaft passes through the sward to the ground. The distance from the point where the shaft contacts the ground and the plate is the plate height.

Noble Foundation testing in uniform fields showed that 30 readings with a properly calibrated electronic rising plate meter can accurately estimate forage mass 95 percent of the time to within 260 pounds per acre.

The plate meters we used measure heights between 0.3 inches and 10.3 inches to the nearest .02 of an inch and electronically record a running average. The theory is that forage mass (dry matter) is proportional to plate height. The plate meter essentially measures the "standard compressed height" of the forage sward. This measurement can be converted to forage mass through a calibration equation.

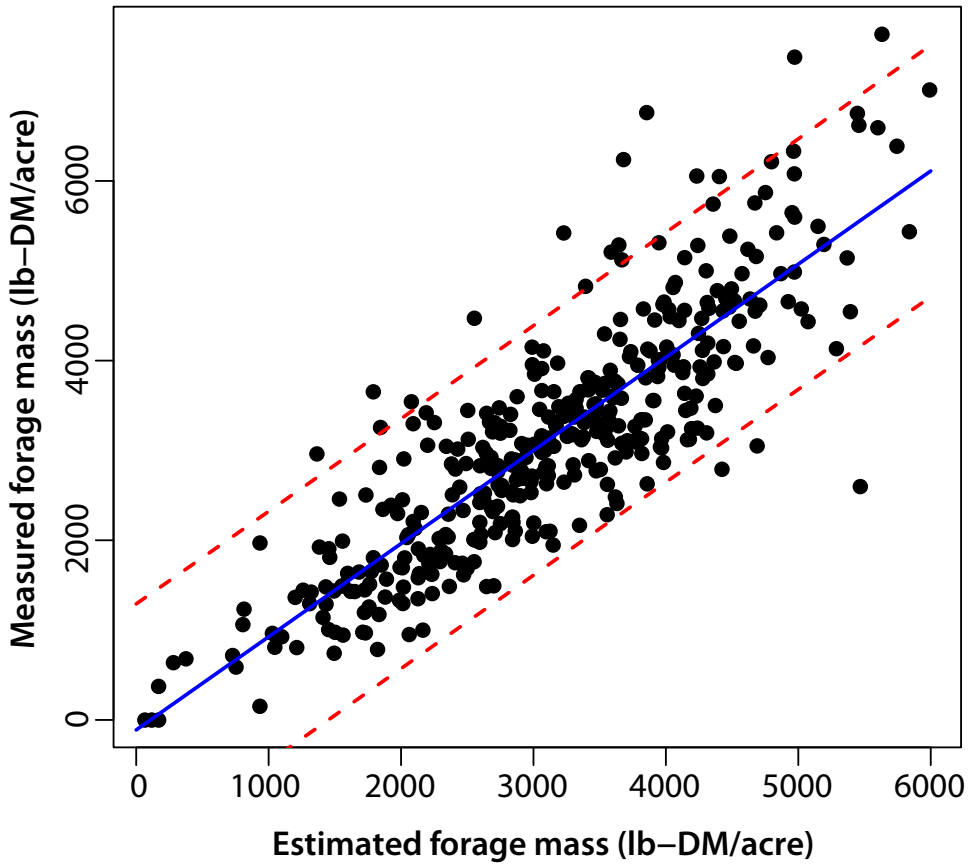
We used plate meters during the winter of 2011-2012 during experiments in which steers were grazing wheat or rye pasture. We calibrated

the plate meter for these forage species by taking a reading on a 15-inch by 15-inch area and subsequently hand-clipping the forage in that area. We obtained 20 such samples for each dataset and collected datasets throughout the growing season (Nov. 15 to April 20).

Overall, calibrated plate meters were able to explain about 73 percent of the variation in clipped forage mass (see chart). In a uniform field, sampling with 30 plate meter readings, the mean forage mass can be estimated to within 260 pounds per acre 95 percent of the time – a very encouraging result.

Keys to getting precise, reliable estimates with a plate meter:

1. Set up and maintain the device properly.
2. Sample consistently (consistent angles, pressure, etc.).
3. Sample the entire paddock, not just the area near the gate or adjacent to the road.
4. Take an adequate number of samples in each paddock.
5. Develop a robust calibration equation to convert plate height to forage mass for your forage conditions.



Relationship between rising plate meter estimated forage mass and measured forage mass. Solid blue line is the average relationship and the red dashed line is the 95 percent prediction interval (95 percent of future paired samples will fall between these two lines).

In application, fields are not uniform and we recommend taking at least 30 measurements across the pasture to capture the spatial variation in forage mass. As forage mass and/or spatial variability increases, more plate height measurements are needed to maintain the same level of precision in the estimate. One of the nice features of the rising plate meter is that you can collect samples about as fast as you can walk. If you are taking samples every 30 paces and decide you need more samples, simply take a sample every 10 paces. Regardless of sampling frequency, samples must be distributed randomly across the entire paddock.

We are continuing to investigate use of this device as a potential method to decrease the labor and time needed to conduct our grazing experiments. We think there may also be application for this technology with some producers who are interested in fine-tuning their grazing management. Look for future research reports that will more fully document the ability of these tools to estimate forage mass. ■

Supplemental Feeding of Northern Bobwhites

by Will Moseley / wamoseley@noble.org

Supplemental feeding of northern bobwhites has been an intensive management practice for many years. It seems to make sense that survival and abundance of bobwhites would increase by increasing food abundance and improving nutrition through supplemental feed. However, when dealing with nature, things are rarely that simple. Unfortunately, supplemental feeding programs are often implemented without full understanding of bobwhite ecology. This article discusses potential negatives and positives of different feeding techniques.

Generally, the intent of supplemental feeding is to increase survival and, ultimately, abundance. Supplemental feeding is also used to concentrate bobwhites for better hunting or viewing. Within the Cross Timbers region in central Oklahoma and north-central Texas (an area characterized by woody vegetation consisting of various oaks, elms, osage orange and ashes with naturally occurring openings comprised of herbaceous vegetation found in the Tallgrass Prairie region), the most common methods of delivering feed are stationary feeders, broadcasting along roads and pastures, and planting food plots.

There are several concerns associated with supplemental feeding of bobwhites. Stationary feeders concentrate bobwhites, increasing the risk of predation and disease transmission. Mycotoxins, which are toxins produced by fungi on grain, can cause reproductive problems or death of bobwhites and other animals. Non-target animals also consume supplemental feed intended for bobwhites. One study in the Texas Panhandle estimated that for every $250 spent on supplemental feed, only $1 went to bobwhites. And some of these non-target species are predators of bobwhites such as raccoons and feral hogs. A manager has to determine whether the potential negatives of supplemental feeding outweigh the potential positives.

Broadcasting supplemental feed across an entire landscape is intended to reduce concentration of bobwhites. This technique has been studied extensively by Tall Timbers Research Station and Land Conservancy near Tallahassee, Fla., in longleaf pine forests. Tall Timbers broadcast sorghum along trails once every two weeks at a rate of at least 1 bushel per 25 acres per application. This equates to at least 40 bushels every two weeks for every 1,000 acres. This expensive method has yielded greater survival rates, longer nesting seasons, greater chick production and greater fall populations for bobwhites that received supplemental feed via this method.

Tall Timbers does not use supplemental feeding in lieu of habitat management. They state that "without a solid habitat management program, supplemental feeding is a waste of time and money." Although they have found positive results from broadcasting supplemental feed, habitat management is still key. Tall Timbers conducts research in the longleaf pine forests of Georgia and Florida – a very different environment from the Cross Timbers ecosystem in Oklahoma and Texas where this method has not been researched.

Research in Oklahoma, Texas and Kansas has shown mixed results using other types of supplemental feeding programs on bobwhites. Some studies have shown no improvement in survival rates of bobwhites while others have shown an increase, suggesting that supplemental feeding has a neutral effect on survival. Research also indicates supplemental feeding decreases home range, but does not increase fall covey size or density of bobwhites. However, there is evidence that bobwhite body condition can improve during winter stress when supplemental feed is available, but it may also increase predation rates.

We tend to look for the silver bullet when trying to manage wildlife, and supplemental feeding is not the answer for bobwhites. In response to numerous research projects that studied the effects of supplemental feeding of bobwhites, it seems the best use of money and time is to focus on extensive management practices that provide quality, year-round habitat and usable space for bobwhites. Management practices such as grazing, burning, brush management, haying and mowing are all practices we can use to manipulate plant communities to meet the habitat requirements of bobwhites. Identify and address the limiting factors of bobwhite habitat to determine the best investment of resources. ■

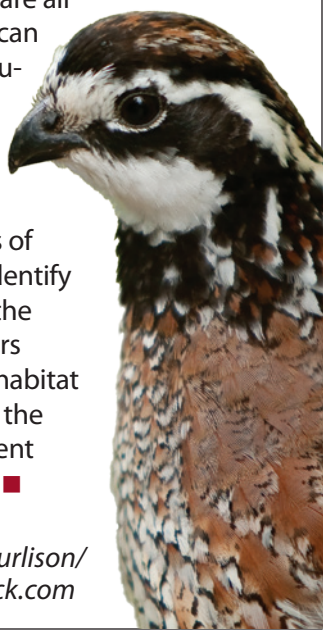


photo: Tom Burlison/ shutterstock.com

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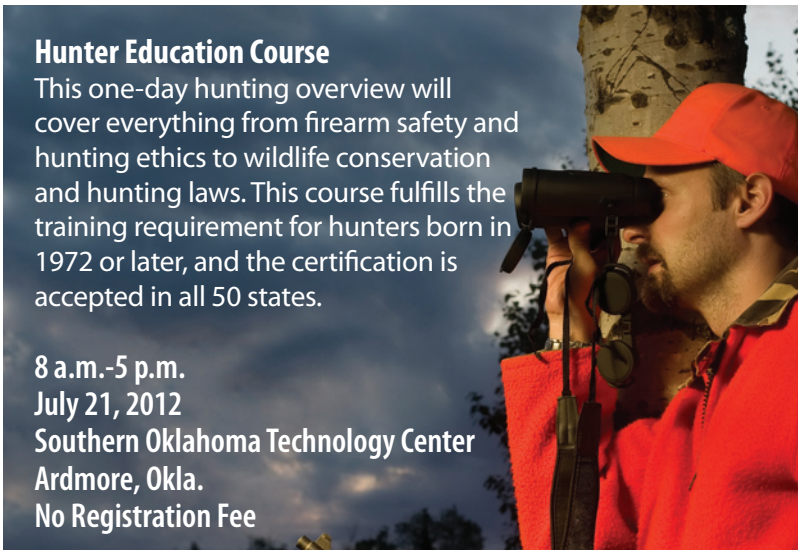
2012: Third Quarter Events



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

8 a.m.-5 p.m.
July 21, 2012
Southern Oklahoma Technology Center
Ardmore, Okla.
No Registration Fee

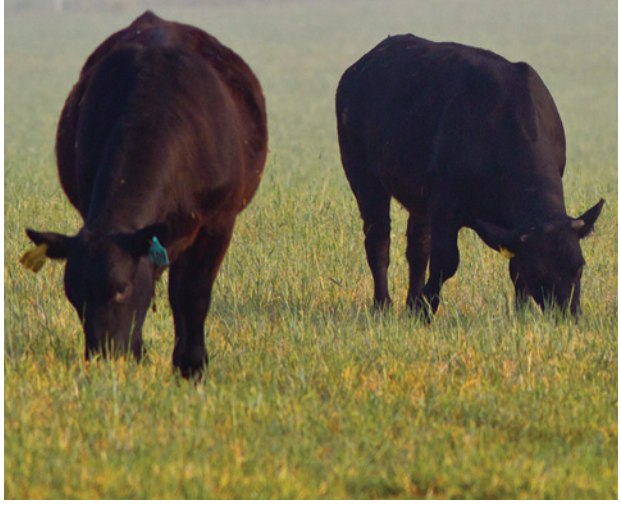
Pecan Workshop (two dates, two locations)
Participants will learn how and what it takes to start a new pecan enterprise, pecan fertilization and pest management, the 2012 market outlook, and what the future holds for the pecan industry.

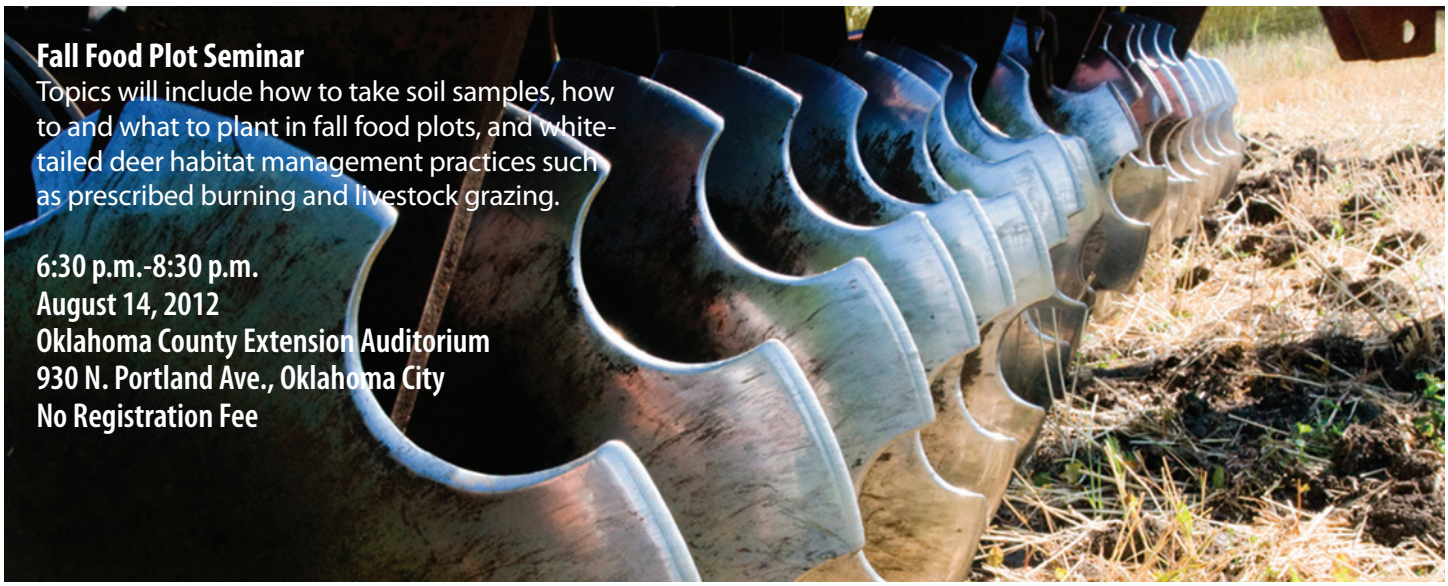
1 p.m.-4 p.m.
Aug. 9, 2012
Mid-America Technology Center, Seminar Center
27438 State Highway 59
Wayne, Okla.
No Registration Fee

1 p.m.-4 p.m.
Aug. 16, 2012
North Central Texas College, Little Theatre
1525 West California Street
Gainesville, Texas
No Registration Fee

Winter Pasture/Stocker Seminar
Now is the time to plan ahead for winter pasture production and a successful stocker operation. Learn about production of cool-season forages and many aspects of stocker cattle management, including health, nutrition and the market outlook.

1 p.m.-5 p.m.
July 24, 2012
Noble Foundation Kruse Auditorium
No Registration Fee





Fall Food Plot Seminar
Topics will include how to take soil samples, how to and what to plant in fall food plots, and white-tailed deer habitat management practices such as prescribed burning and livestock grazing.

6:30 p.m.-8:30 p.m.
August 14, 2012
Oklahoma County Extension Auditorium
930 N. Portland Ave., Oklahoma City
No Registration Fee

For more information or to register, visit www.noble.org/agevents/ or call Tracy Cumbie at 580.224.6292. Preregistration is requested.

Fall Cattle Workshop
Preparing your herd during the fall for the upcoming cooler months? Learn about calf-weaning, backgrounding, winter nutrition, hay usage, whole-herd considerations and the market outlook.

1 p.m.-4:30 p.m.
Sept. 6, 2012
Noble Foundation Kruse Auditorium
No Registration Fee

Grazing Workshop
Participants will learn about planning fall stockpiling and dormant season grazing.

9 a.m.-3 p.m.
Sept. 18, 2012
Location TBD
Registration Fee: $20 (includes lunch)

White-tailed Deer Management Workshop
(two dates, two locations)
This workshop will cover deer biology, aging, habitat, food habits, population management, antler development and deer management associations.

10 a.m.-5 p.m.
Sept. 20, 2012
Don Ritter's Freedom Rock Ranch
Atoka, Okla.
Registration Fee: $20 (includes lunch)

10 a.m.-5 p.m.
Sept. 25, 2012
Oswalt Road Ranch
18414 Dixon Road
Marietta, Okla.
Registration Fee: $20 (includes lunch)

Summer Nitrogen Sources – Which Is Best?

by James Locke / jmlocke@noble.org

Now that ammonium nitrate (34-0-0) has become so expensive and all but impossible to get, anyone who needs to apply nitrogen (N) during hot weather should evaluate the alternatives. If you are in an area where ammonium nitrate is still available, it is still an excellent source of N, but it is prudent to compare its price against other sources.

For the comparison to be fair, evaluate each type of fertilizer on a cost per pound of actual N basis. Calculate the cost per pound of N with the following formula: fertilizer cost per ton ÷ pounds actual N per ton = cost per pound of N. Calculate pounds of N in a ton of material by multiplying the percentage of N in the product x 2,000. (For example, urea (46-0-0) is 46 percent N. The calculation is 0.46 X 2,000 = 920 pounds of N in a ton of urea). As an example, urea at $625 per ton ÷ 920 pounds actual N per ton costs 68 cents per pound actual N. Ammonium nitrate (34-0-0), in comparison, at $525 per ton ÷ 680 pounds actual N per ton costs 77 cents per pound actual nitrogen. In our example, the urea appears to cost 19 percent more when priced by the ton, but actually costs 12 percent less when priced by pound of actual N.

If ammonium nitrate is chosen because the agronomic advantages outweigh the higher price (for example, application during hot weather in midsummer), make sure the fertilizer is actually ammonium nitrate and not something blended to make a 34-0-0 fertilizer. Several reports have surfaced of producers purchasing 34-0-0 thinking it was ammonium nitrate, only to find out it was actually urea blended with ammonium sulfate or another material. There is nothing wrong with these blends as long as the producer understands that the urea in these blends is as equally prone to volatilization (evaporation to the atmosphere) in hot weather as straight urea. Make certain that you get what you pay for.

Ammonium nitrate has become difficult to obtain and expensive. Alternatives exist, but producers must understand how to evaluate and use them.

There are several available alternatives to ammonium nitrate, but this article only addresses the most common choices: urea (46-0-0), UAN liquid (32-0-0 or 28-0-0) and ammonium sulfate (21-0-0-24S).

Urea is a dry nitrogen source that has long been used for fall, winter and spring application, but is quickly becoming the primary choice for summer use. Summer applications of surface-applied urea are typically avoided due to the risk of loss to the atmosphere. Incorporation of urea by at least 0.25 inches of rainfall or sprinkler irrigation, or tillage within three to four days of application will keep volatilization losses to a minimum. If none of these occurs and temperatures are high, up to 40 percent loss can occur. See Eddie Funderburg's article *Nitrogen Losses From Urea*, *Ag News and Views*, May 2009 (www.noble.org/ag/soils/nitrogenlosses) for more information.

So, if urea is the only choice for pastures or no-till, what can be done to avoid these losses? The ideal choice is to apply the urea when rainfall is imminent, although we all know that can be very difficult. One can also apply a nitrogen additive to keep the urea from converting to ammonia. The only additive we conditionally recommend contains NBPT as the active ingredi-

ent. It is marketed under the trade name Agrotain®. This product dramatically reduces volatilization losses for up to three weeks. In considering this additive, be sure to include the cost of the product in addition to the cost of the fertilizer alone.

UAN, or liquid urea-ammonium nitrate, is a nitrogen source produced by combining urea and ammonium nitrate. The ammonium nitrate portion retains all the advantages of its granular form. Unfortunately, the urea portion has an equal, if not greater, risk of volatilization than its granular form. All of the procedures to limit volatilization losses from the granular form of urea also apply to the liquid form in UAN. Other disadvantages of liquid UAN include the potential for leaf burning and difficulty in blending with phosphorus and potassium.

Ammonium sulfate is a dry nitrogen source that has excellent agronomic properties, much like ammonium nitrate. It is non-volatile, the nitrogen is readily plant-available, and it is a good source of sulfur. The primary drawback of ammonium sulfate is the high cost per pound of actual N. Due to its high cost, ammonium sulfate is used primarily in high value horticultural crops or ornamental settings. Ammonium sulfate has a higher capacity to acidify soils, so if it is used, pay close attention to soil pH, and lime as needed.

Although ammonium nitrate is no longer generally available, summer fertilization is still necessary to maintain full productivity. Other fertilizer sources are available and each has advantages and disadvantages. By knowing what these are, the best source can be chosen and used appropriately. When applied correctly – and with some cooperation from Mother Nature – the loss of ammonium nitrate does not have to hurt potential summer yield. ■

Turkey Federation Banquet Scheduled

by Ag News and Views staff

The Red River Chapter of the National Wild Turkey Federation (NWTF) will host its 12th Annual Hunting Heritage Banquet from 6 p.m. to 10 p.m., Friday, June 29, at the Ardmore Convention Center.

A silent auction and various raffles will be held throughout the evening's festivities. A barbeque dinner will be served, and a live auction will conclude the night. Auction items include wildlife paintings, bronze sculptures, furniture, décor, hunting accessories and NWTF apparel.

Tickets are $50 for individuals, $65 for couples and $15 for children ages 17 and younger. Each person who purchases a dinner ticket will receive a one-year membership to the NWTF.

There are four levels of sponsorship: sponsor, corporate table, gold and platinum with prices starting at $290. Sponsorship benefits include NWTF membership, program recognition, extra meal tickets and entry into exclusive sponsor-only drawings. Additional benefits vary with each sponsorship level. Tickets and sponsorships can be purchased by calling Trevor Potts at 405.503.9817.

Proceeds from the banquet will be used for upland wildlife conservation activities in Oklahoma, as well as for the protection of hunting heritage nationwide. ■

NWTF
Conserve. Hunt. Share.

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EVENTS

Pond Management Workshop
Date: June 12, 2012
Location: Noble Foundation Pavilion, Ardmore, Okla.
Time: 1 p.m.-7:30 p.m.
Registration Fee: $20 (includes dinner and an informational CD)

Grazing and Fencing Workshop
Date: June 21, 2012
Location: Noble Foundation Pavilion, Ardmore, Okla.
Time: 9 a.m.-3 p.m.
Registration Fee: $20 (includes lunch)

Hunter Education Course
Date: July 21, 2012
Location: Southern Oklahoma Technology Center, Ardmore, Okla.
Time: 8 a.m.-5 p.m.
No Registration Fee

For more information or to register, please visit www.noble.org/agevents/ or call Tracy Cumbie at 580.224.6292. Preregistration is requested.

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