

LIVESTOCK

Late-gestation heifer nutrition does not affect dystocia

by Deke Alkire / doalkire@noble.org and Bryan Nichols / bmnichols@noble.org



According to the U.S. Department of Agriculture Animal and Plant Health Inspection Service, 28 percent of all calf deaths before weaning are due to birth-related problems. Therefore, managing females to calve with minimal difficulty is extremely important. A topic that is often discussed in cattle production is whether

or not the level of nutrition given to a pregnant female late in gestation affects birth weight and calving difficulty (dystocia). Many producers worry that providing good nutrition to a pregnant female – especially heifers – increases birth weight of the calf and, subsequently, dystocia. However, providing inadequate nutrition can have long-term effects on pregnancy rates and profitability. This is a topic that has been very well researched over the past several decades.

Protein and Energy Supplements

Houghton and Corah (1989) assembled an extensive review of studies examining the effect of pre-partum energy supplementation, protein



supplementation and cow condition at calving on birth weight and dystocia.

Ten studies were summarized in which differing levels of energy were offered (high energy, more than 100 percent of National Research Council

requirements; moderate energy, approximately 100 percent of NRC requirements; low energy, less than 100 percent of NRC requirements). In nine of the 10 studies, moderate or high energy increased birth weights; ►

however, only two of those 10 studies reported an increase in dystocia when feeding higher energy levels. One study actually reported an increase in dystocia when feeding lower energy levels.

Five studies were summarized in which differing levels of protein were offered (high protein, more than 100 percent of NRC requirements; moderate protein, approximately 100 percent of NRC requirements; low protein, less than 100 percent of NRC requirements). Two of the five studies showed increased birth weights when feeding high protein versus low protein diets. One of the five studies showed increased dystocia with increased protein, and one study showed decreased dystocia when feeding increased protein. In general, calf vigor was also decreased when feeding lower levels of protein.

Body Condition Score and Pregnancy Rate

Body condition at calving was also examined in five studies. These studies demonstrated two important messages. First, dystocia is increased in obese (BCS > 7) compared to moderately conditioned females. Second, dystocia is not decreased in thin females compared to those of adequate body condition; however, calf vigor is decreased.

In addition, most research agrees that body condition score at calving is the most important factor affecting subsequent estrus and ovulation, and, therefore, pregnancy rates. Table 1 shows the relationship of BCS to pregnancy rate and calving interval. Several studies agree that pregnancy rates increase from about 60 percent

Table 1. The relationship of body condition score to pregnancy rate and calving interval.

Body Condition Score, 1-9 scale	Pregnancy Rate, Percent	Calving Interval, days
3	43	414
4	61	381
5	86	364
6	93	364

Adapted from Kunkle et al., 1994

at a BCS of 4, to 79 to 86 percent at a BCS of 5 and to 90 to 92 percent at a BCS of 6. However, these differences can be much greater in first- and second-calf heifers. In a Florida study, pregnancy rate was only 50 to 53 percent for first- and second-calf heifers with a BCS of 4 compared to 84 to 90 percent of those with a BCS of 5 or greater. Therefore, it is imperative that heifers are in adequate body condition at calving and provided an adequate plane of nutrition through the breeding season to maintain future production.

Fetal Programming

Research has shown that inadequate nutrition in the last two-thirds of gestation can decrease muscling and marbling potential. Other complications reported from inadequate nutrition during gestation include increased abortion, decreased birth weight, reduced ability of the calf to produce body heat after birth, increased sickness and death, poor growth performance, and reduced meat quality.

While there is an argument that calves whose dams were nutrient restricted during gestation may be more efficient later in life, one study showed no difference in intake, average daily gain or feed efficiency. This topic is not completely understood and needs more research.

Maternal nutrition may also affect the fertility of the calves born. In a Nebraska study, Martin et al. (2007) showed that heifers born to supplemented cows had a pregnancy rate of 93 percent compared to 80 percent for heifers from unsupplemented cows. In addition, 77 percent of these heifers calved in the first 21 days, whereas only 49 percent of the heifers from unsupplemented cows calved in the first 21 days. This could have long-term implications because, typically, heifers that calve early tend to calve early the rest of their lives, and calves that are born early should weigh more at weaning.

Given specific goals, resources and abilities, some producers may be able to capitalize on reduced feed costs and potential increases in efficiency when developing heifers to lighter weights. However, there can be risks to this approach, and due diligence should be given to the risk and reward of such situations, especially in times of record-high prices.

There is a wealth of data on the subject of bred heifer nutrition. The data supports that, for most producers, the ideal BCS of a bred heifer at calving is 6. If a producer's goal is to decrease calving difficulty, selecting bulls for calving ease and providing proper nutrition to heifers will yield much better results.

References available upon request. ■

Economics, residual nitrogen drive topdressing decisions

by James Locke / jmlocke@noble.org@noble.org



Adequate nitrogen is necessary for optimizing winter pasture production. One consideration for providing adequate nitrogen is to maximize nitrogen use

efficiency (NUE). One way to improve NUE is to apply nitrogen during the late winter as a topdress application.

The reasons for improved NUE from late winter applications are that our primary winter pasture species (wheat, rye, triticale and ryegrass) make the majority of their growth during the spring phase, growing conditions are usually favorable and plant root systems are well established and able to take up the nitrogen. In addition, the time is less between nitrogen application and uptake for leaching or denitrification to occur or for it to be captured by weeds.

Following are a couple of considerations to help decide whether to topdress and, if so, how much nitrogen to apply.

First, what are the potential economic returns from topdressing nitrogen? Remember that nitrogen is only one cost contributor, but it is the only one we will discuss here.

For graze-out systems with stocker calves, compare the value of the potential additional gain with the cost of the nitrogen fertilizer. A couple of very general rules of thumb are one pound of nitrogen will produce about 16 additional pounds of usable, high quality dry matter forage, and it requires about eight pounds of that forage to produce a pound of gain. Using these general rules, for each pound of nitrogen, we expect to produce enough usable forage to



produce approximately two pounds of gain. At the time of writing, nitrogen cost is approximately 60 cents per pound (\$550 per ton urea) and estimated value of gain for the spring turn is approximately \$1.50 per pound (BeefBasis.com). If nitrogen costs 60 cents per pound, and the anticipated value of two pounds of gain is \$3, the marginal return would be \$2.40 per pound of nitrogen fertilizer applied.

Second, how much nitrogen was applied in the fall and how much residual nitrogen is present? This will help in estimating how much nitrogen is potentially still there and available for the current winter pasture crop. In situations where substantial rainfall occurred or irrigation was applied, nitrogen may have been leached from the root zone or lost to denitrification. Grazing during the fall phase also removes nitrogen from the system. Another general rule of thumb is approximately 30 pounds of nitrogen are removed per acre for every 100 pounds of beef produced. Remember though, as previously indicated, it requires approximately 50 pounds of nitrogen per acre to produce the required forage to make 100 pounds of beef. This can give a rough idea of how much nitrogen was removed during the fall grazing

phase. For example, if total gain was 150 pounds per acre during the fall phase, we can estimate approximately 45 pounds per acre of our fall nitrogen was removed from the system. However, the most accurate way to get a good estimate of available nitrogen is to collect soil samples in late January or early February. To account for all available nitrogen, collect samples as deep as the winter pasture roots will likely penetrate. When collecting subsoil samples, make sure to collect in the depth increments recommended by the laboratory.

It is important to note that, as nitrogen rates go up, the response to each additional pound of nitrogen is less. In the Southern Great Plains, 120 to 150 pounds of available actual nitrogen per acre is usually all most winter pasture crops can economically utilize.

Many other factors, such as weather, winter pasture species, variety, soil type, weed and disease pressure, etc., contribute to the decision about topdressing nitrogen. While all these factors must be considered, evaluating potential economic return and taking credit for residual nitrogen are two of the most important considerations in making wise topdressing decisions. ■

Information systems aid better management decisions

by Steve Swigert / jsswigert@noble.org



It's often said

that you can't manage what you don't measure. With many agricultural operations, decisions are made on a daily basis without adequate

supporting information. Every enterprise should have some type of information management system for the records it generates. The type of information generated and how well it is used will help determine success. However, the quality and quantity of the information gathered only has value if it is used to make wise management decisions.

The basic areas of any information management system should include a cash accounting system with a depreciation schedule, financial statements, inventories (cattle, equipment, feed, etc.) and production records to measure performance. These types of records should be kept to answer questions about different areas within the operation.

In most cases, a cash accounting system can be handled adequately by computer programs such as Quicken. QuickBooks may be useful for more complicated operations. These and similar programs can provide the information to meet tax obligations and to provide basic data for financial statements.

However, information prepared for tax purposes does not measure the profitability of a business or its financial position. The Farm Financial

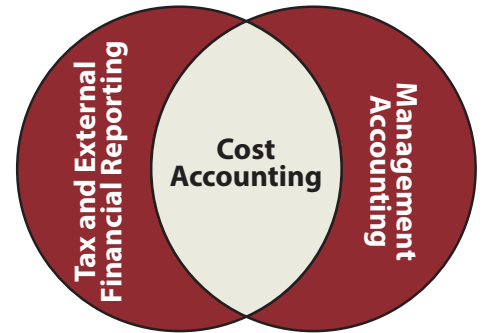
Standards Guidelines identifies the following statements as the minimum needed to document financial position and performance:

- 1) Balance sheet with both cost and market valuation.
- 2) Accrual adjusted income statement.
- 3) Statement of cash flow.
- 4) Statements of owner equity.

Another part of an information management system should track inventories. Equipment inventories are necessary for completing depreciation schedules and can aid in planning for future capital expenditures. An accurate cattle and feed inventory is essential for measuring production performance and completing financial statements. A complete inventory by category of cattle (cows, bulls, heifers, stockers, etc.) should be done at least twice a year. If only done twice, the inventory should be taken at the beginning of the fiscal year and at the beginning of the breeding season. This inventory should include a record of all deaths, purchases and sales.

After completing data collection, it is important to analyze the information. Financial accounting deals with historical records of financial activities, position and performance, particularly as it relates to tax and external financial reports. Management accounting focuses on providing data and reports with information useful for making decisions. Management accounting reports for different segments of an operation

Figure 1



provide an understanding of each of the business components so that desired changes can be made with better understanding and less risk. A management accounting system should be designed, operated and staffed to provide management information to support the following internal business management functions such as:

- Planning activities.
- Decision making (marketing, investment and resource use).
- Measuring commodity cost and production performance.
- Controlling and monitoring the business.

All of these areas of information management should be addressed in each operation. Too many producers have only had tax-based information from which to make decisions. Management strategies should not be made on tax information because it only tells part of the story. It is critical that financial and management information be collected and analyzed to make good decisions. ■

New initiative supports land stewardship

by Chad Ellis / crellis@noble.org@noble.org



Landowners care deeply about the lands they steward as well as their rural communities, which depend upon the condition of the land. Landowners are

concluding that conserving their land and sustaining their communities requires collaboration that goes beyond the fence line and past the neighbor's place. Resulting coordinated efforts service a broad range of public and private interests within these working landscapes. In this spirit, the Noble Foundation has developed the Center for Land Stewardship.

The Center for Land Stewardship brings stakeholders together to work on common priorities for advancing land stewardship and sustainability by promoting responsibility and ethics and by developing an understanding of healthy ecosystems. The Center informs, engages and enables individuals and organizations to become better stewards and to improve healthy ecosystem processes socially, environmentally and economically.

Land stewardship is the process of bringing proper land management principles together in a balanced approach for the enhancement and health of the land over a long period of time. Land stewardship requires a deep relationship between the landowner or land manager and the land.

The essence of stewardship is the acknowledgement that, even though a landowner may legally own property and have the right to do with it as they please, their role is

that of a caretaker or steward. They understand that the well-being of the land is entrusted to them for a time, and will do their utmost to be responsible custodians during their tenure. In addition to personal benefits, good land stewardship also enriches future generations and society.

Aldo Leopold, the father of modern conservation theory and practice, is often identified as the person who best described land stewardship. Leopold himself was a private landowner and an advocate for stewardship within a private lands context. Leopold believed that land stewardship was not only rooted in conservation but also in ethics and the search for a higher meaning. Leopold said, "A land ethic reflects the existence of an ecological conscience ... which, in turn, produces a conviction of individual responsibility ... and a limitation of freedom of action." Land stewards have keen and sensitive consciences toward the land, and they think as much about their responsibilities for the land as they do their rights as landowners. Land stewards have special working relationships with the land, which is demonstrated by several qualities:

Knowledge

Stewards have a working knowledge of the land, including the soil, water, plant and animals and are always searching to better understand how the land works.

Big Picture

Stewards look to solve land problems – not merely treat symp-

toms – and see how their decisions affect other lands and other people.

Realistic

Stewards realize they are working with nature and, therefore, do not call all of the shots. They do not use quick fixes or simple solutions to artificially "improve" the land beyond its natural capabilities.

Dedication

They are strongly committed to the health of the land. It is a lifestyle and full-time work – not a pastime.

Persistence

They realize and anticipate that hardships and difficulties will arise, and they have the determination to keep working toward stewardship goals, no matter what.

Land stewardship is a journey that lasts as long as you own the property, regardless of whether you make a living off the property, live there or only visit it. As responsible stewards of our land resources, it is our duty to apply proper management and to maintain and improve ecosystem integrity, wildlife habitat, water resources as well as agricultural production, all while maintaining an individual landowner's freedom to operate and prosper. Land stewardship is not just proclaiming how much we love the land. Genuine stewardship manifests itself in developing concrete skills, abilities and workmanship. Let us all strive to embody the very best stewardship attributes within ourselves and encourage it within others. ■

New prescribed burn insurance protects landowners

by Russell Stevens / rlstevens@noble.org



Liability has always been a concern for landowners using or considering the use of prescribed fire. Surveyed landowners report liability as one of the major reasons they do not use prescribed fire in their property management. Knowing that prescribed fire is as important to most operations as grazing, rest, rain and sunshine, The Samuel Roberts Noble Foundation, the Oklahoma Prescribed Burn Association, and The Bramlett Agency worked together to address this issue for landowners.

The Bramlett Agency, through Midlands Management, is now offering Prescribed Burn Insurance – a property and casualty liability program with Essex Insurance Company, who holds a security rating of A XIV (14) (A = Excellent, XIV (14) = numeric rating of size of company with 15 being the largest). This policy protects landowners or lessees implementing prescribed fire against claims for any damage on someone else's property. A home or farm and ranch policy does not cover damage on other property. This policy provides up to \$1 million in general liability coverage.

The cost for the policy is \$500 per policy year and covers two prescribed burns. Coverage for additional burns during the policy year can be purchased for \$250 per burn. For the policy to be issued and take effect, landowners must:

- Follow all federal, state, and local statutes and ordinances.
- Adhere to requirements in “Notification Requirements and Considerations for Safe and Lawful Prescribed Burning in Oklahoma: Guidelines, State Law and the Burning Notification Plan,” available through the Oklahoma Department of Agriculture Forestry Services.
- Develop and adhere to a prescribed burn plan containing at least the following:
 - Directions to the burn unit and a map of the unit.
 - Plant communities and topography (if a concern) in burn unit.
 - Goals or objectives for burn.
 - Firebreak type(s).
 - Fire boss and fire crew.
 - Equipment needed.
 - Protection of fire sensitive locations within burn unit.
 - Smoke management plan.
 - Civil authority and neighbor notification procedures, and applicable permits.
 - Burn dates and times.
 - Fine fuel types and estimated fuel loads.
 - Relative humidity and air temperature thresholds.
 - Wind direction(s) and speed limitations.
 - Ignition procedures, contingency plans for escaped fires, changes in wind or humidity, equipment breakdown, and personnel injury.
 - Mop up and monitoring procedures.
 - Records of forecasts examined

prior to starting the burn, and records of actual conditions at the start and end of burn to be attached to the burn plan.

It is important to note that, for insurance purposes, a prescribed burn plan is required in addition to the “burning notification plan” requirements in Oklahoma’s prescribed burning law (plans are to modify this policy for other states soon). The prescribed burn plan will be required before insurance can be purchased and the insurance will cover only the burn detailed in the plan. In addition to the landowner or lessee, each crew member listed in the burn plan will also be covered.

For more information on prescribed burn insurance, contact Leslie Kutz, business risk advisor with The Bramlett Agency at (580) 223-7300 or lkutz@bramlettagency.com. For information on prescribed fire and developing a burn plan, contact the Noble Foundation, Oklahoma State University, the Natural Resources Conservation Service, the Oklahoma Prescribed Burn Association (www.ok-pba.org) or the Oklahoma Department of Wildlife Conservation. A prescribed burn plan template can be obtained from the Noble Foundation, OPBA or NRCS.

These procedures may sound daunting to some at first, but, given a little thought, they do not require an excessive amount of time and are necessary to the successful and safe application of prescribed fire. It’s not rocket science, it’s just a process. ■

Texoma Cattlemen's Conference explores industry issues

by Hugh Aljoe / hdaljoe@noble.org



All phases of the cattle industry are experiencing high and volatile markets. Many cow-calf producers are reaping unprecedented prosperity. Stocker operators rode the tide of the market last year to better-than-expected profits but are back to managing margins. The feeding sector continues to feel the pinch of low cattle numbers and high feeder prices. In addition, the industry is wondering how much more consumers will pay for beef before they seek alternative protein sources. And what about "beef sustainability"?

On Saturday, March 21, 2015, the Noble Foundation will host the Texoma Cattlemen's Conference at the Ardmore Convention Center in Ardmore, Oklahoma. The theme is "Prosperity, Volatility and Sustainability." The conference will provide producers with insight on how some cattlemen are successfully navigating through the current era, and we will more closely examine some of the major interests and issues facing the industry: beef sustainability, ag credit, risk management and the cattle outlook. Ron Hays of the Oklahoma Farm Report will moderate the event starting at 9 a.m. Following is the agenda.

9 a.m.: Welcome – Bill Buckner, president and CEO of The Samuel Roberts Noble Foundation.

9:15 a.m.: Situation and Outlook for Ag Credit – Dan Childs, senior agricultural economist, Noble Foundation. The capital requirements to participate in the cattle industry are at all-time highs and lenders find them-

selves in unfamiliar territory. Childs will examine the role and perception of ag lenders and provide an outlook on future interest rates.

10 a.m.: Producer Perspectives and Panel Discussion. Three regional producers will share some management insights that have helped their operations be more successful. Jan Lee, southeast Oklahoma rancher, will discuss creative grazing arrangements. Glenn Rogers, DVM, and north Texas rancher, will present his keys to success in developing replacement heifers. Chuck Coffey, rancher in the Arbuckle Mountains of Oklahoma, will share his ideas and experiences on wise investments back into the operation.

10:45 a.m.: Trade Show break

11:15 a.m.: The Retailers' Perspective of Sustainability – Cameron Bruett, chief sustainability officer, JBS USA Holdings Inc. Bruett is the presiding president of the Global Roundtable for Sustainable Beef. He will provide an overview of the inertia behind the beef sustainability initiative, its current status and potential impacts to the U.S. beef industry; and debunk some of the myths and speculations on the subject.

12 p.m.: Lunch, Trade Show and Industry Updates from Oklahoma Cattlemen's Association, Texas and Southwestern Cattle Raisers Association and Oklahoma Beef Council.

1:30 p.m.: The Beef Industry Perspective of Sustainability – Kim Stackhouse-Lawson, director of Sustainability Research, National Cattlemen's Beef Association.

Stackhouse-Lawson serves on the governing committee for the Global Roundtable for Sustainable Beef. She led the largest sustainability project ever attempted in the beef community. Stackhouse-Lawson will explain what improvements in beef sustainability could mean to U.S. producers and the beef industry.

2:15 p.m.: Trade Show break

2:45 p.m.: Risk Management Options – Brandon Willis, administrator of the USDA Risk Management Agency. With the volatility potential in today's markets, producers should always consider risk management options to reduce exposure. Willis will provide an overview of instruments available to livestock producers to manage production and price risk.

3:30 p.m.: Cattle Market Outlook – Mike Sands, vice president and beef production analyst, Informa Economics. Cattle producers observed cattle prices reach unprecedented highs in 2014. What is ahead in 2015 for the cattle industry? Sands will take a closer look at industry trends, the current market, factors impacting the market and projections for the future.

Registration and trade show will begin at 8 a.m., and the conference will conclude at about 4:15 p.m. Registration after Jan. 30, including at the door, will be \$40. The registration fee includes a steak dinner. Hargrove Insurance is the event's platinum sponsor. There will be door prizes courtesy of our trade show sponsors. For more information or to register, visit www.noble.org/agevents or contact Maggie Scott at 580.224.6375. ■

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EVENTS

Pecan Pruning Workshop

Time: 9 a.m.-12 p.m.

Date: Feb. 3, 2015

Location: Mike Bynum's Orchard, 6681 Woodford Road, Springer, Oklahoma

No Registration Fee

Backyard Food Security: Small-scale Food Production and Preservation Options

Time: 7-9 p.m.

Date: Feb. 10 and 17, 2015

Location: SOTC, Seminar A, 2610 Sam Noble Parkway, Ardmore, Oklahoma

No Registration Fee

Integrity Beef Alliance Program Meeting

Time: 5-8 p.m.

Date: Feb. 17, 2015

Location: Noble Foundation Forage Atrium

No Registration Fee

For more information or to register, please visit www.noble.org/agevents or call Maggie Scott at 580.224.6375. Preregistration is requested.

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