THE SAMUEL ROBERTS NOBLE FOUNDATION

AG News and Views

A monthly publication of the Noble Foundation's Agricultural Division

Volume 30 / Number 4 / April 2012

ANNOUNCEMENT

Texoma Cattlemen's Conference

by Hugh Aljoe / hdaljoe@noble.org

The Noble Foundation presents a new regional event for cattlemen. The first annual Texoma Cattlemen's Conference will be held on Saturday, April 14, 2012 at the Ardmore Convention Center. As a result of last summer's drought and its impact on the cattle industry, the Noble Foundation seeks to provide an educational event specifically tailored for the greater Texas-Oklahoma area.

The inaugural conference will feature speakers from Texas AgriLife Extension (Overton and Vernon Experiment Stations), Oklahoma Beef Council and the Noble Foundation Agricultural Division. These industry experts will speak on topics of importance to regional cattlemen with an emphasis on management considerations for recovery from the devastating 2011 drought.

Historic high prices in the cattle markets and much improved moisture conditions over the winter provided a boost of optimism heading into spring 2012. However, ranchers will continue to feel effects from the 2011 drought for some time. Conference speakers will cover related topics including pasture recovery, preemptive forage planning, managing the breeding herd following drought, increasing pregnancy rates, the economics of operating with reduced stocking rates and the economics of replacement females. Speakers include Ron Gill, Ph.D.; Vanessa Corriher, Ph.D.; Jason Banta, Ph.D.; and Stan Bevers from Texas AgriLife Extension; and Chuck Coffey; James Rogers, Ph.D.; and Dan Childs from the Noble Foundation. Heather Buckmaster from the Oklahoma Beef Council will be the luncheon speaker.

The first annual Texoma Cattlemen's Conference will open with registration at 8:30 a.m. and programs beginning at 9 a.m. Lunch will be served at noon, and the conference will conclude at 3 p.m. Registration is $35 and includes lunch. For additional information or to register, please visit www.noble.org/AgEvents or call Tracy Cumbie at 580.224.6292. For interested Texas participants, 2.5 BQA CEUs and 3 general CEUs will be offered for the day. ■

The Advantages of Crossbreeding

by Deke Alkire / doalkire@noble.org

According to the January 2012 USDA Cattle Inventory report, retained heifer numbers were up 1.4 percent. This increase indicates an attempt at cattle herd expansion. However, the cost of replacement females for a cow-calf operation is significant. Selecting replacement females is challenging, especially when you consider that decisions made now will impact your operation for many years. As commercial cow-calf producers evaluate the opportunity to expand, it is important to review the value of crossbreeding.

The advantages of crossbreeding are well documented and can have a big impact on your net return. Heterosis (hybrid vigor) and breed complementarity are the primary benefits realized from a properly planned crossbreeding program. Heterosis is the increase in performance or function above what is expected based on the parents of the offspring. Breed complementarity allows a breeder to capitalize on the strengths of different breeds because no single breed excels at all of the traits that affect profitability.

Maternal Heterosis

Maternal heterosis is the advantage realized by using a crossbred cow versus a straight-bred cow. Research has shown that crossbred cows can have many advantages, including a 6 percent higher calving rate, a 4 percent higher calf survival rate, an 8 percent increase in efficiency, a 38 percent increase in longevity and a 23 percent increase in lifetime productivity. These advantages will be optimized when the breeds and individuals you select to create the crossbred cow fit your resources and goals.

Breed Complementarity

Another advantage of crossbreeding is the opportunity to capitalize on breed complementarity. This involves evaluating the strengths and weaknesses of potential breeds and selecting those that complement each other. The result should be an animal that has the best traits of those breeds. Common examples include the Black Baldie (Angus x Hereford), Brangus (Angus x Brahman) and SimAngus (Simmental x Angus), as well as many other combinations. The traits that are most important to you should be based on the goals of your operation.

Direct Heterosis

Direct heterosis is the benefit observed in a crossbred calf. On average, these advantages include a 4 percent increase in calf survival, a 5 percent increase in weaning weight and a 6 percent increase in post-weaning gain. However, these effects are greatly influenced by breed.

Breed Effects

The effect of breed on the results of a crossbreeding program can be significant. Both direct and maternal effects were estimated in a 2010 study by Williams et al., based on published crossbreeding studies. Their results showed the direct effect of breed can influence weaning weight by more than 70 pounds and post-weaning

gain by more than 86 pounds. In addition, the maternal effect of breed can influence weaning weight more than 88 pounds (Table 1).

Table 1. Direct and maternal heterosis effects of selected breeds on weaning weight and post-weaning gain relative to Angus

	Weaning weight (pounds)		Post-weaning gain (pounds)
Breed	Direct breed effect	Maternal breed effect	Direct breed effect
Angus	0	0	0
Hereford	9.4	-25.2	15.0
Shorthorn	-8.8	2.6	5.7
Charolais	53.5	21.0	47.5
Limousin	25.1	1.1	6.7
Gelbvieh	59.7	63.4	21.1
Simmental	61.6	30.8	34.8
Brahman	-6.9	14.6	-39.3

This table was adapted from Williams et al., 2010.

Capturing Maternal Heterosis

Perhaps the easiest way to capture maternal heterosis is to identify the type of female you desire and buy her from a reliable, off-farm source. Depending on what you are looking for, this can be difficult. In addition, replacement heifers that are known for their quality and performance will command a high price. Alternatively, many producers retain their own heifers as replacements. According to the USDA, 83 percent of replacement heifers are raised on the ranch where they will calve. Be sure that raising your own heifers makes economic sense and then develop a breeding plan that will allow you to capture heterosis.

Identify the cow type and breeds that best fit your forage resources and feed inputs. Select breeds that complement each other and are consistent with your production goals. Choose the breed or breed crosses that will produce a calf acceptable to your marketing endpoint. This process can get complicated, but doesn't need to be. It will be much easier to maintain a crossbreeding program if it is simple. Keep in mind that considerable variability exists within breeds, and there is a big difference between maximum and optimum. Also consider associated costs like increased cow size and milk production. The optimum system to produce replacement heifers will usually result in less than optimal steer mates, and this should be considered when evaluating the economics of developing your own females.

Capturing Direct Heterosis

If you are purchasing females of unknown breeding or decide to use straight-bred females, you can still capture some of the benefits of heterosis. Identify what animal will produce the greatest profit at your marketing endpoint. For many producers, the primary variable to consider is calf weight. In the Southern Great Plains, black- and smoke-colored feeder calves will receive the highest price at auction barns. Conversely, calves with significant Brahman influence, horns or red-colored hides are often discounted. Identify the breed or breeds of bulls that will produce a desirable calf when mated to your females. Again, remember that variation exists within breeds. Select bulls that excel in the traits of economic importance to you.

The goal of most commercial cow-calf producers is to increase profitability. Determine your market endpoint and work backward to determine the type of animals that will produce the most profit within the constraints of your resources. Using crossbreeding correctly can have a significant impact on your net return. ■

What Will Cows Cost in the Future?

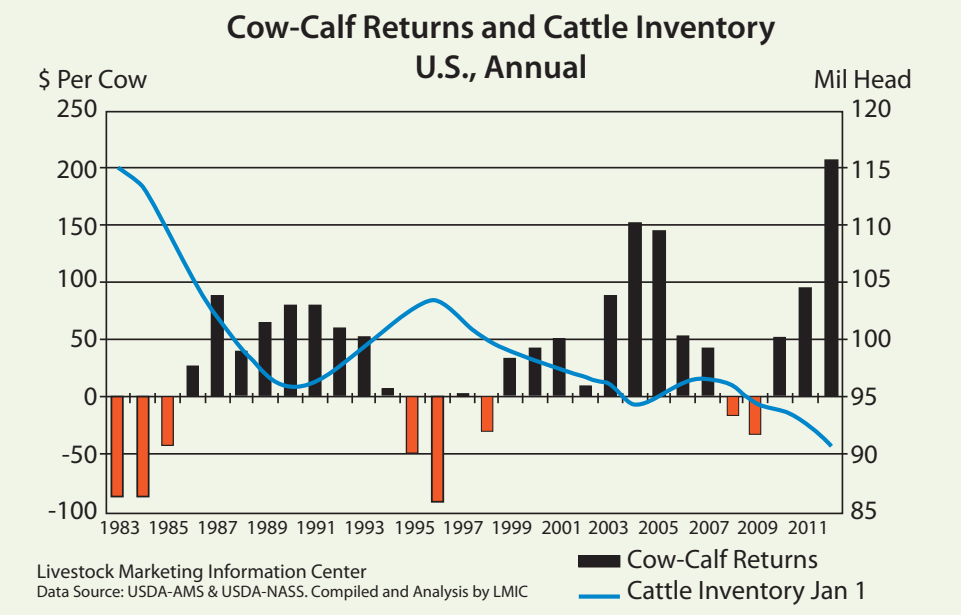
by Steve Swigert / jsswigert@noble.org

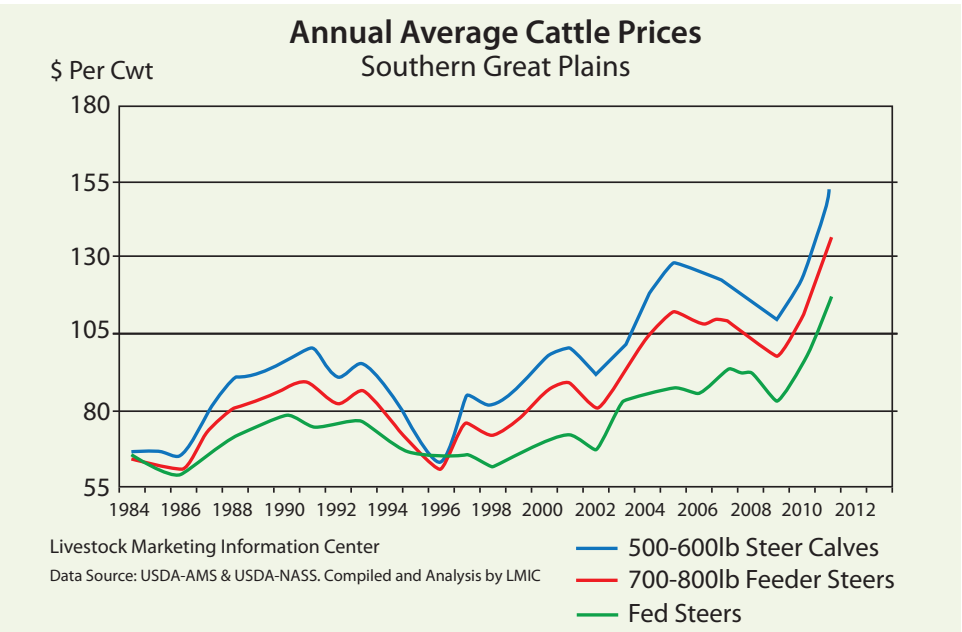
With the challenges of the 2011 drought, the beef cow inventory declined 3.1 percent for an annual inventory of 2011 and prospects for further decline are evident unless changes occur in cow slaughter and heifer retention. With this decline, the 2012 U.S. calf crop stands at 35 million head, the lowest in 60 years.

With low cow numbers, historical high prices for weaned calves and the cost of cows at all-time highs for the foreseeable future, what does this mean for the cow/calf producer wanting to rebuild the herd? It means good producing cows are going to be hard to find and will be higher priced than in previous years – possibly exceeding $2,000 per cow. In addition, it will be more critical to cull unproductive cows because input costs are increasing as well.

How much could cows cost? Based on a $550 annual cow cost, 88 percent calf crop, $180 per hundredweight average price for a 525-pound calf over five production years and $2,000 cost per pair, a cow/calf pair purchased in spring of 2012 would yield a 10 percent return on investment.

There are a number of questions that should be asked when determining what to pay for a cow. Are more cows needed? Is there enough grass for more cows? Is there a better alternative use for the grass than grazing cows (e.g., retained ownership of calves or purchased stockers)? Are the existing or proposed annual cow production costs low enough to make a profit? Can financing be secured for cows at the higher price?





If cows are the best option, you have to decide when to buy them. Because of the cow cost and the value of the calves, the timing of the purchase can make a significant difference in the value of the cow. For example, a cow is typically more valuable the closer it is to the sale of a calf.

All of these factors should be considered when making the decision to buy cows because it can be the difference between making and losing money. Doing so is especially important when cow and calf prices are at all-time highs. ■

Soil Fertility Management After Drought

by Jagadeesh Mosali / jmosali@noble.org

Due to extreme drought conditions experienced in the Southern Great Plains in 2011, several crop failures occurred. As we prepare for fertilizer application this spring, two important questions come to mind: what happened to fertilizer I applied last year and do we need to fertilize or not? If no winter crops were grown, most of the fertilizer you applied last spring may still be available for the 2012 growing season. There are no shortcuts to estimate residual fertilizer except to test the soil, which is an easy task that may save fertilizer dollars.

Collecting a proper soil sample is very important. The best way to get a sample is to use a soil probe and use proper methods for sample collection. Collect composite soil samples representing different areas of your field to get a representative sample from each area. To do this, collect a minimum of 15 random cores for each sample, mix them together and take a subsample. If residual nitrogen is expected, it is better to collect samples from 6 to 12 inches in addition to the routine 0- to 6-inch soil sample. Separate 0- to 6-inch and 6- to 12-inch samples during collection and get them analyzed separately using a soil testing lab.

A routine soil test from most labs will evaluate pH, nitrogen, phosphorus, potassium, calcium, manganese and sodium. You can also get additional tests run to know the amount of sulfur and micronutrients like zinc, boron, iron, manganese and copper. For this article, let's focus on nitrogen, phosphorus and potassium fertilizers since these are the most commonly deficient essential nutrients for plants.

To evaluate residual fertilizer, a soil test must be performed. The best collection method is to use a soil probe and obtain at least 15 random cores.

Nitrogen (N) is a mobile nutrient; the amount of residual N depends on the source of fertilizer, soil pH, temperature, wind speed, soil moisture and timing of rainfall related to fertilizer application. Urea is a popular N source, but prone to volatilization (vaporization of the chemical) losses if broadcast on the soil surface. Ammonium nitrate has less volatilization loss, but getting ammonium nitrate is more difficult due to safety and hazard restrictions.

Phosphorus (P) and potassium (K) are immobile nutrients, meaning movement in the soil is minimal. Due to crop failure, much of P and K applied in 2011 will still be available for the 2012 growing season. Deficiencies of immobile nutrients, like P and K, reduce the potential yield of a field by a percent sufficiency factor. For example, if one nutrient is sufficient at 80 percent, then 80 percent of potential yield may be reached if all other factors are sufficient. If both P and K are deficient, the percent of maximum yield will be a product of their sufficiency levels. If the soil test shows 80 percent sufficient P and 70 percent sufficient K, then the combined effect on the expected yield will be 56 percent (0.80 X 0.70 X 100).

Practical considerations

Depending on soil test results:

- If P and K levels are low, correct them before applying N fertilizer.
- If P and K levels are moderate and you are seeking moderate yields, apply a medium amount of N fertilizer.
- If P and K levels are moderate and you are seeking higher yields, correct P and K deficiencies before you apply higher levels of N.

Don't throw your money away without first testing your soil. This is especially critical when recovering from drought. ■

Stocking Rate Following Drought

by James Rogers / jkrogers@noble.org

Producers should exercise caution when restocking pasture and range damaged by the 2011 drought. Many perennial forage plants were forced into summer dormancy for survival due to the severity of the drought. During this period, dormant plants survived on energy reserves stored in plant crowns and roots when normally they would have generated energy through photosynthesis in green leaves. When favorable conditions returned in fall 2011, warm-season plants had little time to replenish stored energy reserves before winter dormancy.

To make matters worse, growing conditions throughout the winter were ideal for cool-season annual grass and early weed growth. Cool-season grasses have been a welcome source of forage production, but strong spring growth of grasses and weeds can delay warm-season grass growth and further weaken stands. Another possible complication is poor grazing management practices prior to the drought. If resources were pushed to the limit prior to the drought, then negative effects were magnified. Combined, these challenges have created a scenario in which warm-season perennial forage plants that account for the bulk of yearly production are entering the growing season in a weakened condition.

The bright side is that perennial forages are resilient if given the opportunity to recover through good grazing management. Grazing management is improved by rotational grazing, which allows control of stocking rate, where

livestock graze, length of the grazing activity, and frequency and intensity of grazing. Control of each of these elements is critical for pasture and range recovery following drought.

In native range, providing rest to the range is an extremely important management activity. In extreme cases, such as instances where the crowns of plants have been grazed off, complete rest from grazing for an entire year may be required. However, this may not be a practical option for many producers. In that case, the next best option is doubling the land area requirement for running a cow for a year and deferring grazing through the growing season. Where good grazing management has been previously practiced, recovery will be good, but caution should still be the rule. Providing as much rest as possible during the growing season and reducing the normal stocking rate by 25 percent would further aid recovery.

Bermudagrass pastures have been hurt by the drought as well, but the rate of their recovery will be faster than with native grasses. The speed of recovery can be further enhanced by weed control and applying proper fertilizer based on soil test reports. If moisture conditions improve throughout 2012 and with proper fertilization, stocking rates within 10 to 20 percent of normal can be achieved.

In 1956, Vernon A. Young published a paper in the *Journal of Range Management* summarizing recovery following the 1949-54 drought. His words from 1956 have application now: "The damage resulting on the ranges of Texas from the 5-year drought period, 1949-54, can be correlated with land management and the type of soil. In general, ranges that were properly managed before and during the drought came through in fair to good condition; overstocked ranges were severely damaged and subsequent recovery has been very limited. Thus, ranchmen have evidence of the need for carrying out proper management practices year after year, not only to meet drought periods, but to build for an economic unit by capitalizing on the years of favorable moisture. Thus, the old rule still prevails that close grazing does not pay." ■

Literature cited

Young, V.A., 1956. The effect of the 1949-1954 drought on the ranges of Texas. *J. Range Mgt*. Vol. 9, pp. 139-142.

Panel-Type Parallel-Bar Fish Barriers

by Mike Porter / mdporter@noble.org

A parallel-bar barrier is probably the best option to prevent adult fish passage through spillways. Parallel-bar barriers are especially important for ponds stocked with grass carp. When water flows only a few inches deep through spillways, grass carp tend to leave ponds unless appropriate barriers exist. Properly constructed parallel-bar barriers do not rust out quickly and do not clog regularly with leaves and aquatic vegetation, unlike fish barriers made of poultry wire, net wire, hardware cloth or netting. When constructed and installed properly, parallel-bar barriers restrain grass carp larger than 8 inches, restrain adult game fish, prevent undesirable adult fish from entering ponds, last many decades and require little maintenance.

Panel-type parallel-bar barriers are appropriate for earthen, rock and concrete spillways (Figure 1). Box-type parallel-bar barriers are appropriate for hooded inlet, drop inlet and culvert-type overflow pipe spillways (box-type barriers were addressed in an October 1997 *Ag News and Views* article, *Box-Type Parallel-Bar Barrier* (www.noble.org/Ag/Wildlife/ParallelBarrier). A panel-type barrier is typically placed at the entrance of a flat concrete spillway or placed at the high point (crest) of an earthen or rock spillway.

I am not aware of a commercial source for parallel-bar barriers. Therefore, someone with welding skills is necessary to construct them. There are several options for installing parallel-bar barriers, e.g., dig a level trench across an earthen spillway, link panels together with rods and backfill the trench; set posts, pour a concrete foundation and attach bars; or use brackets to attach a panel to a pre-existing concrete spillway.

Figure 1.

Figure 2.

The top of a barrier should be higher than peak overflow level, but at least 1 foot lower than the top of a dam. All water flowing through a spillway should pass through the barrier, not over, under or around it. Horizontal bars in barriers should be level (Figure 2), smooth-surfaced, solid metal rods with 3/8- to 5/8-inch diameter, according to strength needed (e.g., people climbing on it, livestock rubbing against it, distance between vertical supports, etc.). Rebar (concrete reinforcing bar) is not a good choice because it does not have a smooth surface and typically is comprised of softer metal, which is not as durable as some other materials such as cold-rolled steel.

Horizontal bars should have a 1-inch space between rods, regardless of rod size. Upright supports should be spaced 3 to 6 feet apart. Vertical and diagonal portions of a fish barrier tend to collect leaves and aquatic vegetation. However, smooth-surfaced, horizontal bars with minimal vertical supports allow most leaves and aquatic vegetation to flush through. Parallel-bar barriers can collect limbs and logs, which may require physical removal. Parallel-bar barriers should be primed and painted, or galvanized, to maximize functional life.

A panel-type barrier on an earthen spillway with livestock access should be fenced from livestock or have a 6- to 12-inch layer of rocks pressed into the ground adjacent to the barrier on each side of it. The fence or rocks prevent cattle trailing along a barrier, which causes erosion under the barrier and could allow adult fish passage or gully formation.

Subpar fish barriers should be avoided because they increase maintenance requirements and might shorten the life-span of the fishery, aquatic vegetation control, spillway and or dam. ■

CONTENTS

EVENTS

Grazing Workshop
Date: April 17, 2012
Location: Craig Watson Ranch, 2957 Elliott Road, Sherman, Texas
Time: 9 a.m.-3 p.m.
Registration Fee: $20 (includes lunch)

Micro-irrigation Seminar
Date: April 19, 2012
Location: Noble Foundation Kruse Auditorium
Time: 6:30 p.m.-8:30 p.m.
No Registration Fee

Basic Cattle School, Part 1
Date: April 24, 2012
Location: Noble Foundation Oswalt Road Ranch, 18414 Dixon Road, Marietta, Okla.
Time: 8:30 a.m.-5 p.m.
Registration Fee: $20 (includes lunch)

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

Ag News and Views is published monthly by the Agricultural Division of The Samuel Roberts Noble Foundation. Current and past editions of *Ag News and Views* are available at www.noble.org/ag/news_views. Free subscriptions delivered by email are available at www.noble.org/ag/news_views/NVsignup.html. The Noble Foundation encourages the republication of *Ag News and Views* articles. For publication guidelines, please see the information at the bottom of the page at www.noble.org/ag/news_views, or contact Scott McNeill, Director of Publications and Visual Media at jsmcneill@noble.org. High quality electronic versions of photos and graphics are available.

THE SAMUEL ROBERTS NOBLE FOUNDATION
The Samuel Roberts Noble Foundation
2510 Sam Noble Parkway
Ardmore, Oklahoma 73401
Phone: 580.223.5810

Address Service Requested

Non-Profit Org
U.S. Postage
PAID
Permit No 2000
Okla. City, OK