



A majority of Texas had a really good summer with most of the state going into the winter with adequate hay supplies. This is a big contrast to this time last year when many ranchers were already feeding hay and scrambling to find enough for winter. Cattle prices have been near historic levels the past few months and with the shrinking cow herd optimism is high for the prices to move even higher over the next couple of years. This issue of Beef Cattle Penning will discuss Weaning Techniques for Beef Calves, Carcass Merit and \$Value EPDs, and Testing Hay. Finally, I will provide an overview of the 2011 Texas A&M Beef Cattle Short Course.

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Carcass Merit and \$Value EPD

In this issue:

Carcass Merit and \$Value EPD	p. 1
BQA Tip #5	p. 2
Weaning Techniques for Beef Calves	p. 3
2010 Hay Testing	p. 4
57th TAM Beef Cattle Short Course	p. 6

Upcoming Events:

TBQP: October 9, 2010
57th TAM Beef Cattle Short Course: August 1-3, 2011

There are now 19 breed associations with EPDs for traits affecting carcass merit. Some have EPDs for what is known as \$Value Index.

Carcass Merit EPDs – Compared to weighing cattle, collection of carcass data is more difficult, time-consuming, and expensive. Carcass traits for breeding stock can be evaluated only by feeding and slaughtering progeny. However, ultrasound, on both potential breeding stock and progeny, speeds up the process and extends data collection to more animals. What carcass merit EPDs exist (and for what breeds)?

Carcass Weight – (most breeds) is the hot weight of the carcass without hide, offal, head, etc.

Marbling and Percent Intramuscular Fat (IMF%) – (most breeds) evaluated where the carcass is separated at the 12th-13th rib, is the primary factor influencing USDA Quality Grade.

Ribeye Area – (most breeds) measured where marbling is estimated, is the best and most easily obtained estimate of overall muscling.

Fat Thickness – (most breeds) measured outside the ribeye, is the best and most easily obtained estimate of total carcass fat, other than that in marbling.

Yield Grade – (Limousin, Simmental/Simbrah) an estimate of percent of boneless, closely-trimmed retail cuts from the chuck, rib, loin, and round, is influenced primarily by external fat thickness followed in importance by ribeye area.

Retail Product % - (Brahman, Chianina, Maine-Anjou, Salers, Shorthorn, South Devon) an estimate of percent of semi-boneless, closely-trimmed retail cuts from the total carcass, is closely related to and influenced by the same factors as Yield Grade.

Warner-Bratzler Shear Force (WBSF) – (Brahman, Simmental/Simbrah) is a mechanical estimate of tenderness.

[continued on p.2]

The goal of **BEEF TIPS** is to provide producers with the most current BQA information that can be applied to any operation.



- 5.** Birdshot or buckshot in a carcass is a quality issue and can affect consumer confidence in beef. Shot is not common in beef carcasses, but those with shot are often condemned if it cannot be removed. Cattle producers tend to point their fingers at hunters. However, there are producers who sometimes use shotguns to gather unruly cattle. Regardless of who is at fault, this defect must be prevented.

Best Management Practices to prevent shot in carcasses:

1. Never use a shotgun to gather cattle. Develop alternative methods to control and capture animals.

2. Work with hunters to prevent shooting cattle with any weapon. Educate hunters to the potential safety concerns associated with shot in carcasses.

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[Carcass Merit, continued from p.1]

How should these EPDs be used in selection of breeding stock? Carcass Weight is highly related to Yearling Weight, so it provides little additional information. Marbling or IMF% should certainly be the primary part of any selection program to improve carcass quality. Ribeye Area is highly related to Carcass Weight, so it is not a good measure alone of relative muscularity unless considered in relation to weight. In addition, it is a part of Yield Grade. Fat Thickness is also part of Yield Grade. (Fat Thickness could perhaps be used as a guide to inherent fleshing ability of brood cows and, therefore, their ability to function under variable nutritional conditions.) Yield Grade, or Retail Product %, is the industry standard for evaluating carcass leanness. Tenderness is certainly important to consumers, but is almost impossible to merchandise for most producers. Therefore, in most cases the most important EPDs that should be considered in genetic selection for improving carcass merit are Marbling or IMF and Yield Grade or Retail Product %.

\$Value Index EPDs – \$Value Indexes combine EPDs for traits affecting some overall measure of production, value of that production, and cost to obtain it to estimate differences in net dollar return. Mathematical weightings are applied to the input traits and value and costs of production are assigned. What indexes are available (and for what breeds)?

Cowherd and Weaning - \$Cow Energy Value (Angus) estimates nutrition cost of maintaining a cow for a year. \$Weaned Calf Value (Angus) estimates net return when selling calves at weaning.

Feeding - \$Feedlot (Angus) and Feedlot Merit\$ (Gelbvieh) estimate net return from feeding and selling live cattle.

Carcass - \$Quality Grade (Angus) and \$Yield Grade (Angus) estimate net return from those single traits. By combining and weighting quality and yield, \$Grid (Angus) estimates value per pound of carcass and Carcass Value\$ (Gelbvieh) estimates value for the total carcass.

Feeding plus carcass - \$Beef (Angus) estimates net return from feeding with selling on a carcass grid, but does not include effects of maternal factors or calf genetics for growth to weaning.

Terminal sire – Terminal Sire Profitability Index (Charolais), Certified Hereford Beef\$ (Hereford), Mainstream Terminal Index (Limousin), and Terminal Index (Simmental/Simbrah) estimate net return from cowherd through carcass-grid marketing of all progeny, with no replacement heifers retained.

Total production – Baldy Maternal Index, Brahman-influenced Index, and Calving EZ Index (Hereford) and All Purpose Index (Simmental/Simbrah) also estimate net return from cowherd through carcass grid, but with replacement heifers retained and returned to the herd.

If the weightings and costs involved in indexes are inaccurate, or not applicable to a particular production situation, indexes may be misleading. In addition, individuals with the same index value can vary tremendously in the component EPDs used to create the index. So, \$Value Indexes should not be used without considering the individual components.

Carcass EPD, and indexes incorporating carcass EPD, should be used by those who sell on carcass-value grids, or who can merchandise documented carcass merit of their calves or yearlings to those who will sell them on a grid. Other indexes should be used by producers where an index applies to their operation. Commercial producers should emphasize only traits and indexes important to their production system and marketing method.

Weaning Techniques for Beef Calves

Weaning is the most stressful time a calf will experience. It has been well documented that health problems such as bovine respiratory disease (pneumonia, "shipping fever" etc.) usually begins with stress at weaning. For this reason, all preconditioning programs begin with attempts to minimize stress at weaning. Regardless of whether or not you implement a complete preconditioning program (vaccinations, feed, 45 day weaning period, etc.) low-stress weaning techniques will pay off with healthier and likely even heavier calves. Montana and Canadian researchers reported that calves-weaned by low stress methods bawled 98% less, spent 78% less time walking, 23% more time eating and 24% more time resting. Post-weaning weight gain was not affected in this particular study. However, University of California researchers reported improved weight gain in fence-line weaned calves. At 2 weeks post-weaning calves in that study averaged 24 lbs. heavier and at 10 weeks were 26 lbs. heavier than any of the other three treatments which involved total separation from their mothers.

So what is low-stress weaning? It is probably anything that is an improvement over this: gathering cows and calves, sorting, and shipping calves that day (i.e. "weaned on the road"); or this: gathered, sorted, weaned and mothers driven off to a far pasture that day. Obviously either scenario is extremely stressful for both the calf and the cow. In contrast, the idea of low-stress weaning is to implement techniques where neither the cow nor calf really knows what is happening. This is done by allowing calves and their mothers to voluntarily remain in contact, but without suckling. The calf quickly gets used to eating on his own, and over a few days time, the calf will get used to not being with his mother. Usually within a few days to a week calves are completely weaned.

First, let's discuss some things that can cause stress and quite often leads to sickness in calves. These are: these are dust, bawling and dehydration. All three are all highly irritating to animals (and people too); and singly or in combination, all can injure delicate membranes in the calves' respiratory tract and may contribute to extra weight loss if calves are walking and bawling looking for their mothers.

Other circumstances that can cause undue stress at weaning occur when calves are worked or processed on the day they are weaned. Sometimes a full regimen of shots are given, horns may be tipped, branding may occur, and bull calves are sometimes castrated. These things are obviously necessary and a part of normal management, but they are best done at least 30 days prior to weaning, when calves are still with their mothers and nursing. Even if you routinely work calves at a younger age (which is the recommended practice), there may be some that get missed and need to be worked at a later date.

With low-stress weaning, a couple of methods can be employed to stop the suckling process while still allowing calves to have contact with their mothers. Probably the easiest and most common is fence-line weaning. Calves are simply placed in small pasture or trap adjacent to their mothers. If possible calves should have access to grazing. If grass is short, then plan on plenty of good quality hay. Calves as young as 3 months can be weaned this way, as their rumens are fully developed and are able to digest roughage. You may want to include some type of supplement (concentrate or creep feed). Of course, access to clean water is also important.

[continued on p.4]

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Figure1. Fence line weaning. Initially cows and calves remain close-by.



Figure 2. Calves enjoy shade and visual contact. Note the extra electric wire.



Obviously the key to fence-line weaning is a good fence. Calves shouldn't be able to crawl under or between wires or nurse through the fence. Net wire is preferable but even an offset hot wire can help a questionable barb-wire fence become functional. In this situation calves remain in visual and vocal contact with their mothers, and if they are on pasture, dust is minimized. Also they don't walk or bawl nearly as much. If you don't have pastures or traps available, fence line weaning can also be used with corral fences. It is probably preferable to pen and feed the cows and place the calves on the outside. This minimizes dust for calves and gives them an opportunity to graze and get used to ranging out and being away from their mothers.

Another key element in low-stress weaning and fenceline weaning is in the physical management of the cows and calves the day of weaning. There should not be any other management practices carried out on the day of separation. Any vaccinations should be done prior to separation day and any management needed for the cows should be done either prior to weaning or at least two to three weeks after weaning. The only thing that should be done the day of separation is the actual separation of dam from calf.

The best way to do that is to ease the herd into the pasture where the calves will be kept for the weaning period and allow the cows to leave or easily push the cows back out of the weaning area into an adjacent area. This entire process needs to be as quiet as possible.



Figure 3. After a few days to a week calves are out on their own and are fully weaned.

2010 Hay Testing

Should you test your hay? How many samples should you take? What should the hay be tested for? What will it cost? Where should the samples be sent for analysis? These are all questions that routinely come up this time of year. While the answers to some of these questions will vary slightly from one situation to another, there are several guidelines we can use for testing hay.

Let's start with the question of whether or not you should test hay for nutrient content. Regardless if you are buying hay or feeding the hay you raised it is a good idea to test the hay to determine what if any supplementation will be needed when the hay is fed. If you are buying hay, testing the hay before purchase will allow you to make an informed decision on whether to buy the hay and if you decide to purchase it the amount you are willing to pay. Some producers believe that sellers won't let them conduct a hay analysis before buying; it has been my experience that if you offer to share the hay analysis with the seller regardless if you buy the hay or not, most hay sellers will allow you to test the hay before purchase. If you are feeding your own hay, having it tested will enable you to do a better job of determining supplement needs and matching hay quality to cow nutrient requirements.

When collecting hay samples a good practice is to sample approximately 10% of the bales from a particular cutting or load using a hay probe. Samples should be taken from bales that would represent hay from the entire field or if the hay is already stacked from bales randomly throughout the stack; after taking samples from 10% of the bales combine the samples and remove a portion of the composite to send off for analysis. For example, if you made three cuttings of hay, you would want to develop a composite for each cutting and then send those three composites to the lab.

After collecting your samples the next question that needs to be addressed is what analysis should be conducted. Crude protein content is the most common thing people think about when testing hay. While the crude protein content is important, a good estimate of

[continued on p.5]



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[Hay, continued from p.4]

TDN (total digestible nutrients) is as important and in many cases more important than crude protein. This is where hay testing gets a little more complicated because TDN can't be measured directly.

Two common methods are used to estimate TDN, which include: 1.) the use of a regression equation that includes ADF (acid detergent fiber) or both ADF and crude protein, and 2.) the use of a summative equation like the Weiss equation. Simply speaking the summative equation calculates TDN by estimating the energy available from the crude protein fraction, NDF fraction (neutral detergent fiber), NFC fraction (non fiber carbohydrates), and crude fat fraction of the plant (TDN = digestible crude protein + digestible NDF + digestible NFC + digestible crude fat). I won't bore you with all the reasons why, but as a ruminant nutritionist I greatly prefer to have TDN estimated using a summative equation.

So now that we have established that we want to know both TDN and crude protein, what tests do we ask for? Depending on the forage lab you choose to send samples to, test options can range from only one or two tests to labs that offer 10+ packages and a host of custom package components. For example, the Dairy One Forage Lab offers wet chemistry packages ranging from a basic package for \$18 to the modile profile package for \$77. Additionally a few forage labs offer in vitro digestibilities (IVTD), which are excellent for comparing the digestibility of multiple forages orfor determining the NDF digestibility of forages with unique lignin-carbohydrate complexes like Tifton 85 and brown midrib sorghum-sudangrass. As an example, if I was sending a hay sample to the Dairy One Forage I would typically request the basic package plus minerals, a 48hr IVTD, and an analysis to determine ash content; this approach would provide the crude protein content, an excellent estimate of TDN, and the concentration of several important macro and micro minerals for a cost of approximately \$46 including shipping. If you were not interested in the minerals you could drop your cost to \$36 a sample; however, it is important to realize that a ton of hay could routinely contain anywhere from \$2.61 to \$10.43 of potassium based on current potash fertilizer prices, which in my opinion easily justifies the extra \$10 to analyze for minerals.

[continued on p.6]

		Dairy One ¹ Forage Lab	Servi-Tech ² Laboratories	Soil, Water and ³ Forage Testing Laboratorie
Method for calculating TDN for beef cattle	Method for Calculating TDN for Beef Cattle	summative	regression	regression
	Report values on both DM and as-fed basis	yes	yes	no
	Report TDN value for horses	yes	no	no
	Forage Mailing Kit	yes	yes	no
Tests Available:	Crude Protein	yes	yes	yes
	ADICP - NDCP	yes	ADICP only	no
	ADF, NDF	yes	yes	ADF only
	IVTD	yes	no	no
	Ash	yes	yes	no
	Macrominerals	yes	yes except Cl	yes except Ca & Cl
	Microminerals	CO, Cu, Fe, Mn, Zn	Cu, Fe, Mn, Zn	Cu, Fe, Mn
	Nitrates	yes	yes	yes
	Aflatoxins	yes	yes	no

1 - Dairy One Forage Lab, Ithaca, NY; www.dairyone.com

2 - Servi-Tech Laboratories, locations in Amarillo, TX, Dodge City, KS, Hastings, NE; www.servitechlabs.com

3 - Soil, Water, and Forage Testing Laboratory, College Station, TX; soiltesting.tamu.edu

[Hay, continued from p.5]

You may also be wondering why spend money to determine the ash content of hay. The ash fraction represents a portion of hay that does not provide any energy to your livestock; the ash content of hay can easily range from 6 to 12% with reports as high as 18% depending on forage species and harvesting procedures. In addition to the basic tests discussed above, it would be wise to have the nitrate level checked on forages that have a reputation for accumulating nitrates to determine if the hay is safe to feed. This article does not allow for an in depth discussion of NIR (near-infrared spectroscopy) vs. wet chemistry techniques, so the important thing to remember is that wet chemistry techniques will work in all situations and wet chemistry is generally preferable to NIR when analyzing forages.

The last question we have left to answer in this article is where should the samples be sent for analysis. Analytical techniques can vary greatly between labs and unfortunately there are many labs (both commercial and university) around the country that do not have proper procedures in place for conducting forage analyses across the broad spectrum of forage species and production needs. It is important that you select a lab that has a good reputation for conducting analyses for the particular nutrient(s) or chemical fraction(s) relevant to your forage species and production needs. The table below illustrates some of the differences between three commonly used forage labs.

Another factor to consider when selecting a lab is the sample turn around time, which can vary from 2-3 days to 2-3 weeks depending on the lab. Both the methods available for reporting results (i.e. email, postal mail, phone, fax, or secure website) and reporting format should also be consider. The reporting format should clearly report all appropriate values on both a dry matter and as-fed basis and be easy to read and understand (see example below). Unfortunately the reporting formats used by many labs do not indicate how the results are reported which creates difficulties when comparing samples and determining supplementation needs (remember to always compare results on a dry matter basis).

For additional information on forage testing or available forage labs contact your local beef cattle or livestock specialist or a ruminant nutritionist.



Planning is under way for the 57th Texas A&M Beef Cattle Short Course which is scheduled for August 1-3, 2011. Each year more than 1,300 beef cattle producers from across the U.S. and other countries converge on the campus of Texas A&M University to attend the Texas A&M Beef Cattle Short Course. The Short Course, in its 56 year history, has become the largest beef producer educational event of its kind in the U.S. The 2 ½ day educational event is known for being one of the most comprehensive beef cattle adult educational programs available. More than 60 different university faculty and industry leaders from across Texas and the U.S. help form a very diverse and cutting edge educational program. The most popular part of the Short Course each year is the Cattleman's College, which is a group of workshops that are devoted to specific topics. Soil fertility, forage quality, nutrition, genetics, reproduction, cattle health and cattle handling are just a few of the topics covered in 20 different sessions. This format allows participants to choose the specific workshops that they are interested in. The Beef Cattle Short Course trade show is also a popular part of the conference with more than 110 different exhibitors on hand to discuss their products and services.



For more information visit: <http://beef.tamu.edu>



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Next Event: Robstown, Texas - October 9, 2010

Please RSVP by October 5th to:

TSCRA at 800-242-7820 or the Nueces Co. Extension Office at (361) 767-5223

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Program - 8:30 am

Program should conclude around 1:00 pm

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Just East of Hwy 77

Please RSVP by **October 5th** to:

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