

Livestock Update

Beef - Horse - Poultry - Sheep - Swine

December 2009

This LIVESTOCK UPDATE contains timely subject matter on beef cattle, horses, poultry, sheep, swine, and related junior work. Use this material as you see fit for local newspapers, radio programs, newsletters, and for the formulation of recommendations.

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Dates to Remember

BEEF

DECEMBER

- 10 Beef Webinar. **Contact:** Mark McCann, (540) 231-9153, email: mmccnn@vt.edu
12 VA BCIA Culpeper Sr. Bull Sale. Culpeper Ag. Enterprises. Culpeper. **Contact:** Scott Greiner, (540) 231-9159, email: sgreiner@vt.edu

JANUARY

- 14 Beef Webinar. **Contact:** Mark McCann, (540) 231-9153, email: mmccnn@vt.edu

FEBRUARY

- 11-12 VA Beef Industry Convention. Roanoke. **Contact:** Bill McKinnon, (540) 992-1009
email: bmckinnon@vacattlemen.org
18 Beef Webinar. **Contact:** Mark McCann, (540) 231-9153, email: mmccnn@vt.edu

MARCH

- 18 Beef Webinar. **Contact:** Mark McCann, (540) 231-9153, email: mmccnn@vt.edu
21 VA BCIA Southwest Bull Test Open House. Dublin. **Contact:** Scott Greiner, (540) 231-9159,
email: sgreiner@vt.edu
27 VA BCIA Southwest Bull Test Sale. Wytheville. **Contact:** Scott Greiner, (540) 231-9159, email:
sgreiner@vt.edu

APRIL

- 16-18 VA Beef Expo. Harrisonburg. **Contact:** Bill McKinnon, (540) 992-1009, email:
bmckinnon@vacattlemen.org

HORSE

FEBRUARY

- 19-20 B&B Hippology Contest and Horse Judging Contest. Alphin-Stuart Arena. Blacksburg.
Contact: Julia McCann, (540) 231-7384, email: jsmccann@vt.edu

APRIL

- 9-11 State 4H/FFA Horse Judging and 4H Hippology, Horse Bowl and Presentations. Location to be
determined. **Contact:** Celeste Crisman, (540) 231-9162, email: ccrisman@vt.edu

SHEEP

DECEMBER

- 5 VA Fall Bred Ewe Sale. Rockingham County Fairgrounds. Harrisonburg. **Contact:** Scott Greiner,
(540) 231-9159, email: sgreiner@vt.edu

JANUARY

- 8-9 VA Sheep Symposium and Sheep Management 101 Workshop. VA Tech. Blacksburg.
Contact: Scott Greiner, (540) 231-9159, email: sgreiner@vt.edu
20-23 American Sheep Industry Convention. Nashville, TN. **Contact:** Scott Greiner, (540) 231-9159,
email: sgreiner@vt.edu

December Beef Management Calendar

Dr. Scott Greiner

Extension Animal Scientist, VA Tech

Spring Calving Herds

- Market backgrounded calves
- Feed replacement heifers to gain 1.5 – 1.75 lbs per day, adjust nutrition based on target
- Monitor body condition of cows
- Test hay for nutrient content and supplement accordingly
- Increase energy during cold periods
- Attend bull and replacement heifer sales
- Evaluate cull cow marketing plan
- Winterize waterers
- Send in soil samples if not done earlier this year

Fall Calving Herds

- Begin breeding season on cows; complete AI on heifers
- Monitor body condition on cows and especially first calf heifers
- Manage 2 and 3 year-old cows separate from main herd
- Feed cows extra energy after calving; some protein may be needed also if good stockpiled forage is not available. Cows calving at BCS < 5 should receive special nutritional attention.
- Keep high quality, high magnesium, high selenium minerals available
- Monitor breeding activity, condition and health of all bulls; remove and replace injured or thin bulls
- Winterize waterers
- Send in soil samples if not done earlier this year.

Crossbreeding- Its Cool Again! Part 1

Dr. Scott P. Greiner
Extension Animal Scientist, VA Tech

Note: This article is Part 1 in a three part series dealing with crossbreeding.

The economic climate of today's beef business is challenging. Commercial cow-calf producers are faced with optimizing a number of economically important traits, while simultaneously reducing costs of production in order to remain competitive. Traits such as reproduction, growth, maternal ability, and end product merit all influence productivity and profitability of the beef enterprise. Implementation of technologies and systems that both reduce costs and enhance productivity are key. One of the oldest and most fundamental principles that has a positive influence on accomplishing these goals is crossbreeding. This article, in a three part series, will more closely examine crossbreeding and its implications for commercial cow-calf producers.

Why Crossbreed?

Crossbreeding beef cattle offers two primary advantages relative to the use of only one breed: 1) crossbred animals exhibit *heterosis* (hybrid vigor), and 2) crossbred animals combine the strengths of the various breeds used to form the cross. The goal of a well-designed, systematic crossbreeding program is to optimize these advantages of heterosis and breed complementarity simultaneously.

Heterosis or hybrid vigor refers to the superiority in performance of the crossbred animal compared to the average of the straightbred parents. Heterosis may be calculated using the formula:

$$\% \text{ Heterosis} = [(\text{crossbred average} - \text{straightbred average}) \div \text{straightbred average}] \times 100$$

For example, if the average weaning weight of the straightbred calves was 470 pounds for Breed A and 530 pounds for Breed B, the average of the straightbred parents would be 500 pounds. If Breed A and Breed B were crossed and the resulting calves had an average weaning weight of 520 pounds, heterosis would be calculated as:

$$[(520 - 500) \div 500] \times 100 = 4 \%$$

This 4% increase, or 20 pounds in this example, is defined as heterosis or hybrid vigor.

The amount of heterosis expressed for a given trait is inversely related to the *heritability* of the trait. Heritability is the proportion of the measurable difference observed between animals for a given trait that is due to genetics (and can be passed to the next generation). Reproductive traits are generally low in heritability (less than 10%), and therefore respond very slowly to selection pressure since a very small percentage of the difference observed between animals is due to genetic differences (a large proportion is due to environmental factors). The amount of heterosis is largest for these traits that have low heritabilities. This has significance for commercial breeding systems, as crossbreeding can be used to enhance reproductive efficiency. To date, the

ability to select for reproduction is limited (ie. there are no EPDs for reproduction). Traits that are moderate in their heritabilities (20 to 30%) such as growth rate are also moderate in the degree of heterosis expressed (around 5%). Highly heritable traits (30 to 50%) such as carcass traits exhibit the lowest levels of heterosis.

Improvements in production from heterosis may be attributed to advantages in having both a crossbred calf and a crossbred cow. The following two tables summarize the effects of individual heterosis (crossbred calf) and maternal heterosis (crossbred cow). These tables include results from numerous crossbreeding studies conducted in the Southeast and Midwest involving several breeds. The advantage to the crossbred calf is two-fold: an increase in calf livability coupled with an increase in growth rate. Perhaps the most important advantage for crossbreeding is realized in the crossbred cow. Maternal heterosis results in improvements in cow fertility, calf livability, calf weaning weight, and cow longevity. Collectively, these improvements result in a significant advantage in pounds of calf weaned per cow exposed, and superior lifetime production for crossbred females.

Individual Heterosis:

Advantage of the Crossbred Calf

Trait	Units	%
Calving rate, %	3.2	4.4
Survival to weaning, %	1.4	1.9
Birth weight, lb.	1.7	2.4
Weaning weight, lb.	16.3	3.9
ADG, lb./d	.08	2.6
Yearling weight, lb.	29.1	3.8

adapted from Cundiff and Gregory, 1999.

Maternal Heterosis:

Advantage of the Crossbred Cow

Trait	Units	%
Calving rate, %	3.5	3.7
Survival to weaning, %	.8	1.5
Birth weight, lb.	1.6	1.8
Weaning weight, lb.	18.0	3.9
Longevity, yr.	1.36	16.2
<u>Cow Lifetime Production:</u>		
No. Calves	.97	17.0
Cumulative Wean. Wt., lb.	600	25.3

adapted from Cundiff and Gregory, 1999.

The other important advantage to crossbreeding is the ability to take advantage of the strengths of two or more breeds to produce offspring that have optimum levels of performance in several traits. As an example, British breeds generally excel in marbling potential whereas Continental breeds typically are superior for red meat yield (cutability). Combining the breed types results in offspring that have desirable levels of both quality grade (marbling) and retail yield (yield

grade). Similarly, milk production and growth rate may be most effectively optimized by crossing two or more breeds. The following table has been created using across-breed EPD adjustments. The table is indicative of the genetic merit of the average bull in each breed listed for the primary growth and maternal traits. The breeds may be directly compared, as the EPDs have been adjusted to a common base. Certainly, considerable differences between breeds exist that may effectively be utilized by crossbreeding.

Breed Average EPDs Adjusted to a Common Base (Fall 2009)

Breed	Breed Average EPD			
	BW	WW	YW	Milk
Angus	2.1	42	78	21
Charolais	10.4	63	95	12
Gelbvieh	5.8	43	61	27
Hereford	6.4	40	54	0
Simmental	8.4	55	78	15

It is important to realize that the crossbred offspring will not excel both of the parent breeds for all traits. In the example given previously, straightbred calves of Breed B would have had heavier weaning weights (530 pounds) than the Breed A x Breed B crossbreds (520 pounds). However, Breed B females may be larger in mature size and have higher milk production potential resulting in increased nutritional requirements. Limited feed resources in this situation may result in lower reproductive performance. Therefore, the cumulative effect crossbreeding has when several traits are considered is more important than any one particular trait. Effective crossbreeding programs must be designed to optimize performance, not necessarily maximize it.

In short, a well-designed crossbreeding program can improve the productivity of the commercial cow-calf operation. Through the benefits of heterosis, crossbreeding may effectively improve the most economically important traits to the beef enterprise- reproduction and growth. Additionally, by combining the attributes of the various breeds available, crossbreeding programs allow for the matching of genetics with the environment, feed resources, and end product specifications. For this to be accomplished, the crossbreeding system must be manageable and applicable- *stay tuned for Part 2.*

First Beef Webinar Will focus on Winter Nutrition

Dr. Mark A. McCann
Extension Animal Scientist, VA Tech

The first of a four-part Beef Webinar sponsored by Virginia Cooperative Extension is scheduled for 6:30 pm; December 10th and will feature a panel to discuss winter nutrition topics. Drs. Currin, McCann and Wahlberg of Virginia Tech will serve as the panel who will address important considerations for the upcoming winter feeding season. Questions from the audience can be submitted via an on-line chat box or over the telephone using a number provided during the program. The initial meeting will also include a discussion of future webinar topics with a poll of the audience to determine priority.

Dates for the webinars are: December 10th
 January 14th
 February 18th
 March 18th

Check with your Extension Agent about accessing the program at your local office. If you have high speed internet service you can connect at home. The web address to join the meeting: <http://connect.extension.iastate.edu/beefcattlewebinar/> . Webinar information and meeting links are also available on the VT Beef webpage <http://www.vtbeef.apsc.vt.edu/> . You can click on the meeting link and go directly to the meeting. If you have questions, please contact Mark McCann at 540/231-9153.

If you have never attended a Connect Pro meeting before:

Test your connection:

http://connect.extension.iastate.edu/common/help/en/support/meeting_test.htm

Get a quick overview: http://www.adobe.com/go/connectpro_overview

Planning the Feeding of Your Beef Herd This Winter - Part II

Dr. John F. Currin, VA-MD Regional College of Veterinary Medicine and
Dr. Mark McCann, Animal & Poultry Sciences, VA Tech

Last month's article focused on the feed availability and nutrient requirements of beef cows. This month we will look at a couple of the farms and implementation of a planned feeding program. A planned feeding program involves quantifying what feedstuffs are on hand combined with the nutrient requirements of the cow herd and feeding the feedstuffs at the appropriate time and providing any needed supplementation. Two important and often overlooked components of a planned feeding program are the body condition score (BCS) of the beef cows going into winter and the amount of available grazing before feeding starts and potentially after feeding commences. It is important that cows go into winter with an average BCS of 6 to insure they have energy reserves to cope with any hay that might not quite meet their requirements. If cows go into winter with only adequate BCS then there is no allowance for hay that does not meet energy requirements. If cows go into winter under-conditioned then it is almost impossible to exceed energy needs enough to increase body condition score. Time spent grazing is also a very important and underappreciated aspect to wintering cattle. The longer cattle can graze the better in most situations. In addition to cost savings, stockpiled grass usually exceeds the nutrient value of most hay. The proper stocking density that minimizes hay feeding days is a decision that varies from farm to farm. Some producers purposely stock higher knowing that they will have to feed cattle longer. Good economic records will provide some guidance as to what is best for each situation. The important thing is that the more days you have to feed hay the more important having high quality hay becomes.

Farm 3 is a fall calving herd that exhausted grass around December 1st. On average, this herd will have grass available to fully support the cow herd by April 15th. The average BCS of this herd is 6. This farm is lucky to have access to some very high quality 2nd cutting grass hay to feed these cows (Table 1). The highest nutrient requirements for this herd occur just as grass runs out. The highest quality hay should be fed from December 1st till after the breeding season ends. This high quality hay will meet or exceed the nutrient requirements for these cows. Once the breeding season ends and cows are later into their lactation; then the 1st cutting hays that have lower energy and crude protein values should be utilized. The 1st cutting hay will not meet the energy requirements of these cows. These cows will average losing 0.5 BCS if they receive no other supplementation. If this weight loss occurs after the breeding season ends, it should not have a serious negative impact on cow reproductive performance but milk production may be reduced. Since fall calving cows are typically grazing for 2-4 months after weaning calves, putting any lost body condition back on is usually not a difficult or expensive task. If quantities allow then saving some of the 2nd cutting grass till near grass time will serve two purposes. Fall born calves will be consuming quite a bit of hay by then and the higher quality the hay is the better they will grow; also, the more highly palatable the hay is the easier it will be to get the cows to eat the hay as spring approaches. If 2nd cutting hay quantities do not allow enough hay to have extra to feed the entire herd for a period of time near grass time then you may want to consider saving a few bales to use as creep feed for the calves.

This herd highlights the value of having a high quality hay to feed your cows when their needs are at their highest. One management practice producers have done to lower the days feeding

cows hay and lower overall feed costs is to only make 1st cutting hay and allow the cows to “harvest” 2nd cutting hay. While this can certainly lower costs, it removes what has traditionally been the highest quality hay from being available to feed these cows. Feed costs for feeding this herd are \$1.82 per head per day based on hay costs of \$100/ton and 10% feeding losses.

Table 1. Hay quality for farm 3

				DM	CP	TDN %	NDF%
3	Southern Piedmont	Grass Hay	1st	87.7	10.2	57.1	64.7
		Grass Hay	2nd	87.3	14.7	60.9	51.7
		Grass Hay		87.7	10.5	58.4	63.9

Farm 13 is a spring calving herd. The herd starts calving about Feb 15th. This farm hauls about one third of its cows out to summer pasture. It is important to take this practice into account because the higher cow winter stocking rate will result in much less winter grazing. Farm 13 has a wide variety of forages available (Table 2). Unfortunately all these widely varied feedstuffs have almost identical nutrient values. All of these feedstuffs will meet the nutrient requirements of the mid-gestation dry beef cow. The issue with these cows will be when these cows are 1 month away from calving. If these cows are fed one of these hays without supplementation then they will lose 2 BCS scores from January 1st till grass time. Even if these cows average a BCS of 6 at the start of the year they will be down to a 4 by grazing time and both colostrum quality and breeding back will be negatively affected. Most of the deficiency is TDN (energy). The cows TDN requirements will average 15 pounds while the hay only supplies 13.6 pounds of TDN. There is also a slight protein deficiency. The cow protein requirements average 2.5 pounds per day while the hay will provide 2.4 pounds of protein. Due to the forage quality these cows will need additional supplementation to maximize herd productivity. Providing cost effective supplementation is an important decision to avoid performance losses while spending as little as possible. Commonly used supplements and their representative costs per unit of CP and TDN are summarized in Table 3. Each farm is different in their ability to purchase, store, and feed different feedstuffs. The supplementation program must be individualized to each farm.

Table 2. Hay quality for farm 13

				DM %	CP %	TDN %	NDF %
13	Blue Ridge Mountains	Alfalfa		87.5	9.3	55.4	66.6
		Millet Wrapped		52.2	10.1	55.4	61.5
		Grass Hay	1st	85.4	9.3	53.7	71.3
		Grass Hay	1st	86.9	8.9	55.4	66.2
		Wheat Wrapped		59.6	8.7	58.8	60.3

Table 3. Daily supplement and total ration

	% Protein (as-fed)	% TDN (as-fed)	Price	Cost Per Lb. C.P.	Cost Per Lb. TDN
Protein block	24 %	65 %	\$490/t	\$1.02	\$.38
Liquid protein	32 %	60 %	\$335/t	\$.52	\$.28
Soybean meal	48 %	78 %	\$400/t	\$.42	\$.26
Corn gluten feed	24 %	75 %	\$130/t	\$.27	\$.09
Cottonseed meal	41 %	72 %	\$320/t	\$.39	\$.22
Wheat midds	15 %	70 %	\$130/t	\$.43	\$.09
Distillers grain	28 %	80 %	\$180/t	\$.32	\$.11
Brewers grain (wet)	5 %	15 %	\$45/t	\$.45	\$.15
Soyhulls	11 %	70 %	\$125/t	\$.57	\$.09

The amount of each supplement required to balance the forages for the spring calving herd is presented in Table 4. Total ration costs include hay and supplement but do not include storage, labor or feeding differences between supplement options. The protein block and liquid protein options which do not meet the lactating cow's needs are limited by either form or intake limiters in the case of liquid feed. To determine if the feeds in your area follows the examples presented read the feed tag on the particular product.

Table 4. Feed supplement and cost balancing hay

Supplemental Feed	Lbs. Fed	Meets Energy Requirements¹	Meets Protein Requirements²	Supplement Cost Per Day³	Total Ration Cost Per Day⁴
Protein block	1	No	Yes	\$0.27	\$1.53
Liquid protein	2	No	Yes	\$0.37	\$1.63
Soybean meal	2	Yes	Yes	\$0.40	\$1.66
Corn distillers grain	2	Yes	Yes	\$0.18	\$1.44
Corn gluten feed	2	Yes	Yes	\$0.13	\$1.39
Soybean hulls	2	Yes	Yes	\$0.12	\$1.38
Wheat midds	2	Yes	Yes	\$0.13	\$1.39

¹Based on cows losing less than 1 BCS score during the feeding period

²Based on meeting at least 90% of the NRC for protein

³Total supplement cost per day based on 10% wastage and a small yardage fee per day to feed cows where appropriate

⁴Total ration cost per day based on \$100 per ton for hay and supplements prices found in Table 3 with 10% feed wastage.

One basic key common to both farms in making these important decisions is having a forage analysis available on their winter forage supply and a controlled calving season which allows targeting a winter feed program at cow herd's nutritional needs. The availability and costs of each winter feed option varies with location, your capacity to handle feed, location of the cattle and labor available. Each option has positives and considerations which must be weighed before making a final decision.

Results of the 2009 Hokie Harvest Sale

Dr. Dan Eversole

Animal & Poultry Sciences, VA Tech

The 2009 Livestock Merchandising Class entertained an enormous crowd of over 800 friends and supporters on a beautiful, autumn evening at the 15th Annual Hokie Harvest Sale on Friday, October 30th. There were 7 breeding swine sold via silent auction prior to the 28 university horses and 35 head (22 lots) of beef cattle that were sold concurrently at public auction in the Alphin-Stuart Livestock Arena (horses) and the Livestock Judging Pavilion (beef cattle) to 191 registered buyers from Kansas, Texas, Ohio, South Carolina, West Virginia, North Carolina, Maryland, Pennsylvania, and Virginia. The beef cattle sale grossed \$56,050 with a sale average of \$2,548 with the following breed totals: Angus - \$31,125; Hereford - \$12,325; Simmental - \$11,300; and Charolais - \$1,300. The horse sale grossed \$60,900 with a sale average of \$2,175 while the seven breeding swine averaged \$360. This year's sale gross totaled \$119,470.

The beef cattle sale featured four different purebred breeds. In the cow/calf division, Lot 5 was the top selling lot at \$4,200. This Angus cow is a daughter of the highly acclaimed sire, Bon View New Design 1407, and she ranked in the elite 4% on \$B with a \$52.97 value. Her \$QG and MARB placed her in the top 5% and 10%, respectively. This highly-valued, four-year-old brood cow and her phenomenal February bull calf by GAR New Design 5050 sold to Mike and Tim Wells of Boones Mill, VA.

VPI Assertion U820 (Lot 16) topped the breeding-age bull division at \$3,600. This Hereford yearling bull is a DR World Class son which ranked among the elite 1% for Milk and Growth and the upper 5% for WW, YW, and Scrotal. He also charted in the top 5% for CHB\$. His new owner is Roger Smith, High Rock Hereford of Lexington, VA.

The high-selling horses were Lots 12 and 21, both of which commanded a \$5,000 bid. Remember VT (Lot 12) is an attractive ISR filly with a great character and above average gaits. She has the charisma and confidence to develop into an excellent event prospect and is versatile enough for any of the sporthorse disciplines. She was purchased by Peter Schwartz, Tupelo Stables, Delaplane, VA. Lot 21 is a 2008 bay Thoroughbred gelding sired by Kentucky Derby winner, Go For Gin, who was second in the Preakness and Belmont Stakes. This unnamed, athletic youngster sold to Donna Rogers, Hillside Farm, Hamilton, VA.

The 76 students did a marvelous job of preparing for the sale. They gained 'hands-on' experience in sale management, budgeting, cataloging, advertising, livestock photography, clerking, and health requirements. Special thanks is extended to Col. Jeff Marsh of Eurosport Auctions, Ltd., Boston, VA and Col. Ken Brubaker of Brubaker Sales and Marketing, Harrisonburg, VA for serving as auctioneers for the horses and beef cattle, respectively. Students Jones Baker, Galax, VA; Nick Proud, Smyrna, DE; and Chris Terembes, Charlottesville, VA served as ring people for the beef cattle sale while Tom Liskey, Harrisonburg, VA worked the ring. Bid-takers for the horse sale were Heather Bryan, Forest, VA; Alex Northcutt, Radiant, VA; Amaris Wilbanks, Farmville, VA; and Lindsey Williamson, Reva, VA. Students who were clerking 'in the block' were Ashley Swindell, Wakefield, VA and Meredith Park, Philomont, VA for the beef cattle and horses, respectively.

The Food and Beverage Committee, with assistance from the Block and Bridle Club in the Department of Animal and Poultry Sciences, served a complimentary BBQ dinner to over 750 guests. Their support and cooperation are greatly appreciated.

The response from the 191 registered horse, swine, and beef cattle buyers and feedback from the students in the class continue to be overwhelming in favor of hosting another student-run livestock sale. Plans are currently underway for the 16th Annual Hokie Harvest Sale on Friday, October 29, 2010. We hope that you are able to 'Experience the Harvest' with us next year!