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Livestock Update

Beef - Horse - Poultry - Sheep - Swine

October 2013

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.

IN THIS ISSUE:

Scott P. Greiner, Extension Project Leader
Department of Animal & Poultry Sciences

Dates to Remember

BEEF

OCTOBER

25 19th Annual Hokie Harvest Sale, VT Beef Cattle Center, Blacksburg. ***Contact:*** Dr. Dan Eversole, (540) 231-4738, email: deversol@vt.edu

SHEEP

DECEMBER

7 Virginia Sheep Producer's Association Fall Bred Ewe & Doe Sale, 1:00 p.m., Rockingham County Fairgrounds, Harrisonburg. ***Contact:*** Scott Greiner, (540) 231-9159 or email: sgreiner@vt.edu

JANUARY

10-11 Sheep Management 101 Workshop and Sherpherd's Symposium. Alphin-Stuart Livestock Arena. Blacksburg. ***Contact:*** Scott Greiner, (540) 231-9159 or email: sgreiner@vt.edu

October Herd Management Advisor

Scott P. Greiner & Mark A. McCann
Extension Beef Specialists, Virginia Tech

October is usually regarded as the harvest month, but it also marks the peak of the marketing season for spring calves. As such, it is the time when your investment in calf crop genetics, herd health and marketing can be rewarded with added value. Stay informed on the market. Compare the price you received for your calves versus calves sold through alternative methods. If you are not participating in a value-added program, evaluate your sale receipts versus program calves. Now is the time to begin planning for marketing of next year's calves. Many state and local groups have branded calf programs with a variety of prescribed management protocols which range from basic wean and vaccinate programs to those with genetic/sire requirements and post-weaning management specifications.

Spring Calving Herds (January-March)

General

- Finalize plans for marketing of calf crop. Coordinate and time weaning, vaccination program, and weaning-time management in concert with marketing plans. Calculate break-evens on various marketing options and consider risk management strategies.
- Schedule and conduct pregnancy diagnosis with veterinarian. Plan a marketing strategy for open cows.
- Evaluate winter feed and forage supplies and options, including forage tests to determine nutritional content of hay on hand.

Nutrition and Forages

- Body Condition Score cows at weaning and separate thin cows
- Use palatable feeds and high quality hay to background calves.
- Continue stockpiling tall fescue
- Continue to manage first-calf heifers separately; give them the best forage. Thin mature cows could be added to this group.
- Continue to feed high Se trace mineral salt. A forage analysis can reveal what other minerals should be supplemented.
- As warm season pastures approach dormancy continue to use grazing management to manage residue.
- Store your high quality hay in the dry.

Herd Health

- In consultation with your veterinarian, finalize vaccination and preconditioning protocol for calf crop.

Reproduction

- Schedule pregnancy check of cow herd with veterinarian.
- Cull open, old and thin cows and cows with problem udders, eyes and soundness issues.

Genetics

- Collect 205-day weights on calf crop at appropriate time (AHIR age range 120-280 days), along with cow weights, hip heights and body condition scores (cow mature size data taken within 45 days of calf weaning measure).

- Identify replacement heifers. Utilize available tools including genetics, dam performance, individual performance, and phenotype. Restrict replacement heifer pool to those born in defined calving season.

Fall Calving Herds (September-November)

General

- Calving season is in full swing. Check cows frequently during calving season- optimal interval is to observe calving females every four hours (heifers more frequently if possible). Address calving difficulties early.
- Tag, tattoo, record birth weight, calving ease score, teat/udder score and mothering ability of dam. Keep accurate records at birth.
- Monitor young calves for scours. Prevent scours by keeping calving area clean and well drained. Moving 2-3 day old pairs out of calving area to separate pasture (reduce commingling of newborn calves with older calves) help reduce exposure to scours.
- Evaluate winter feed and forage supplies and options, including forage tests to determine nutritional content of hay on hand.
- Initiate plans and schedule for breeding season.

Nutrition and Forages

- Evaluate growth of yearling heifers with goal of reaching 60-65% of mature weight by breeding. Depending on forage quality, supplementation maybe needed to meet weight gain target.
- Offer high magnesium mineral. Generally, fall calving cows are not as predisposed to grass tetany. This year's cool, wet conditions increases the risk.
- Reserve high quality hay and stockpiled pasture areas for cows post-calving. Use strip grazing as a tool to increase the efficiency of utilization of cool season pastures by cows post-calving.
- Use grazing management to control the residue of warm season pastures as they approach dormancy.
- Store your high quality hay in the dry.

Herd Health

- Ensure colostrum intake first few hours of life in newborn calves. Supplement if necessary. Newborn calves need 10% of body weight in colostrum first 24 hours of life.
- Provide selenium and vitamin A & D injections to newborn calves
- Castrate commercial calves at birth
- Monitor calves closely for scours and pneumonia, have treatment supplies on hand.
- Consult with your veterinarian concerning pre-breeding vaccination schedule for cow herd and yearling heifers. Plan early to allow 30-day vaccination window prior to breeding season.

Reproduction

- Reproductive tract score and measure pelvic area on yearling replacement heifers.
- Plan AI and synchronization program to be used during breeding season. Schedule AI technician, order supplies and semen.
- Schedule and conduct breeding soundness exams on herd sires, including annual vaccinations. Do so prior to fall/early winter bull sales to allow time to secure replacements as necessary.

Genetics

- Collect yearling performance data (weight, height, scrotal, ultrasound) in seedstock herds.
- Evaluate bull battery and begin planning for the breeding season by evaluating herd genetic goals and selection criteria for both AI and natural service sires. Establish herd strengths and weaknesses from genetic standpoint, and benchmark EPD criteria accordingly. Make plans for bull-buying season.

Don't Guess, Forage Test

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

Virginia's plentiful summer rains provided us with far more forage than we have been accustomed to. However, the rains also provided a challenge in harvesting quality forage. As a result, cattlemen are faced with a plentiful quantity of hay with a limited amount of high quality forage for the upcoming winter. More hay than normal was rained on during the drying period. This always gives rise to the question of how much the rain decreased the nutritional value. There is no standard change in quality that you can bank on other than it will be reduced. How much depends on quantity of rain, 1st or 2nd cutting, how soon after mowing the rain occurred, etc.

The goal each winter should be to feed no more than what is necessary and do it as cheaply as possible. Cost savings can be accomplished by feeding the best quality hay at a time when a cow's nutrient needs are at their greatest. To be able to accomplish this, the first and most important step is to forage test your hay cuttings. This will provide the needed information regarding your hay quality. This year a forage test is more important due the impact of weather on forage maturity at harvest and rain damage prior to baling.

Table 1 contains the crude protein (CP) and total digestible nutrient (TDN) content of three different hay samples.

Table 1. Forage Test Results (DM basis)

	Samples		
	1	2	3
% Crude Protein (CP)	6.0	8.5	11.0
% Total Digestible Nutrients (TDN)	47.5	52.0	56.5

... Sample 1 is representative of poor quality hay
... Sample 2 is average quality
... Sample 3 is representative of good quality hay

Table 2 contains a comparison of how the three hay samples meet the requirements of a 1200 lb. lactating cow. Another item to note in the table is the difference in estimated hay intake between samples. Cows will generally have a higher intake of higher TDN content hay because it more digestible and has a shorter retention time in the rumen. Therefore, the impact of low quality hay on cow nutrition is compounded by the lower consumption and the lower nutrient content. The table also contains the amount of CP and TDN that example hays are deficient in meeting lactating cow's requirements.

Table 2. Estimated Hay Intake versus 1200 lb Cow Requirements[a]

			Provided by hay (lbs)		Deficiency (lbs)[a]	
	Daily hay intake	Daily DM intake	CP	TDN	CP	TDN
Hay 1	25	22.0	1.3	10.5	1.7	5.9
Hay 2	28	24.6	2.2	12.8	.8	3.0
Hay 3	31	27.3	3.0	15.4	-	1.0

[a]1200 lb lactating brood cow requirements TDN = 16.4 lbs, CP = 3.0 lbs.
Deficiency = Nutrient requirement – nutrient provided by hay.

The most evident take home items from table 2 are:

- Feeding low quality hay to a lactating cow will result in a large shortage of CP and TDN which requires a great deal of supplementation or sacrificed cow performance.

- Feeding high quality hay to a lactating cow results in little if any supplement needed.

Most cattlemen can distinguish between their top and bottom hays when the hay is harvested. However, the question then becomes “How good is the better hay and how bad the poor hay is?” This year we have the additional question of ‘How much did the rain damage my hay”. The only way to answer these questions is to sample the hay and submit the samples to a testing laboratory. VCE Publication Number 404-300 *The Basics of Forage Testing* discusses in more detail sampling procedures and comparison of results.

- Testing results provide quick feedback as to how successful your efforts in making quality hay were. Many times the weather and other uncontrollable factors (equipment breakdowns, etc) spoil the best intentions. Forage testing indicates how far from the goal the hay quality is and provides some perspective on how much rain or maturity impacted forage quality. Many times the results exceed expectations.

- Second, the early identification of high quality hay can allow decisions to be made regarding storage of the hay if options are available. If limited shelter is available, clearly the best hay needs to be in the dry.

- Lastly, correctly matching hay and cow needs is the most efficient and least costly method of feeding cows through the winter. Without forage analysis, many times additional feed is provided needlessly or inadequate supplementation is provided.

In today’s environment of high input costs and slim margins, having the facts on hay quality can improve the accuracy and cost effectiveness of management and supplementation decisions.

Value of EPD Accuracy for AI Sires

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

From a genetic standpoint, sire selection is the most important decision a cattle producer makes. The vast majority of genetic improvement in beef herds is the direct result of sire selection. Genetic changes (unlike management changes) are permanent, and the impact of individual sires can be measured for a decade or longer through the performance of daughters and granddaughters. For herds with small numbers of cows and in single-sire herds, the importance of an individual sire is even further exaggerated- as one sire alone accounts for a large proportion of the genetics represented in each calf crop. Relative to other production and management decisions, sire selection is an infrequent occurrence for many producers. However, these decisions have long-term impact relative to the productivity and profitability of the beef enterprise.

The embrace of artificial insemination (AI) and Expected Progeny Differences (EPDs) by beef producers has allowed for rapid, predictable genetic improvement through sire selection in the beef industry. The use of AI vs. natural service sires impacts genetic change primarily through accuracy of selection.

Proper use and application of EPDs requires an understanding of what the EPD values represent and what they do not. Accuracy values become very relevant in this context, as they are a measure of possible change or "risk" associated with an EPD. Put another way, accuracy values are measures of the reliability of the published genetic estimates for an animal. Accuracy is defined as the relationship between an animal's unknown actual breeding value and an estimated breeding value for a trait. This relationship is expressed numerically from zero to one. As the accuracy value approaches 1.0, the EPD reported is more likely to represent the true genetic merit of the animal. Conversely, low accuracy values (closer to zero) indicate that the reported EPD is less reliable. Accuracy is primarily a function of the amount of information available to calculate an EPD for any given trait. Information, primarily in the form of performance records, is derived from several sources to estimate EPDs on a given animal. These sources include records on the animal itself, its sire and dam, collateral relatives, and progeny records. As the volume and quality of records used in the estimation of an EPD increases, so does the confidence we have that the EPD has been estimated correctly (accuracy).

Table 1. Possible change values and true EPD ranges for two Angus sires with identical Calving Ease Direct EPDs

	CED EPD	BIF Accuracy	Possible Change	"true" EPD Range
Sire A	+7	.25	±6.2	+1 to +13
Sire B	+7	.90	±0.8	+6 to +8

Table 1 demonstrates the implication of accuracy on possible change in sire EPD. Sire A and B have identical CED EPDs but differ considerably in their accuracy values. Sire A would be typical of a yearling bull, with his EPD derived from pedigree information and his own individual performance. Sire B would be typical of a sire with a large number of progeny, and likely used

AI across several herds. A practical way to evaluate accuracy is to put it in the context of associated possible change. Possible change defines how much we might expect the current EPD to change (plus or minus) as more information is collected and used in the estimation of the EPD. For Sire A, an accuracy value of .25 for CED EPD is associated with a possible change of ±6.2%. Therefore, we would expect his "true" CED EPD to be between +1 and +13 pounds 68% of the time. Sire B, with a higher accuracy value, has a much lower possible change (±0.8) and therefore smaller range that we expect his true EPD to fall within (+6 to +8). It is important to recognize that EPDs are our best estimates of an animal's genetic worth. Due to a variety of potential sources of error, we never know the "true" EPD for any trait on any animal. Accuracy values, therefore, indicate how much we know about the animal's true genetic worth and how confident we can be in the estimated EPD. Possible change tables are readily accessible from breed associations for all traits.

Accuracy differences between AI and natural service sires are a direct reflection of the amount of data in the form of progeny records included in the calculation of the EPD of interest. As more progeny records are included in the evaluation, accuracy increases. The number of progeny records required to achieve a given level of accuracy is impacted by the heritability of the trait. Traits with higher heritability require fewer progeny records to obtain a particular accuracy value compared to low heritability traits (or with the same number of progeny records, a highly heritable trait will have a higher accuracy than a low heritability trait). Table 2 provides examples of progeny records required to obtain various levels of accuracy for traits with different heritabilities.

Table 2. Number of progeny records required to obtain accuracy values for traits with differing heritabilities

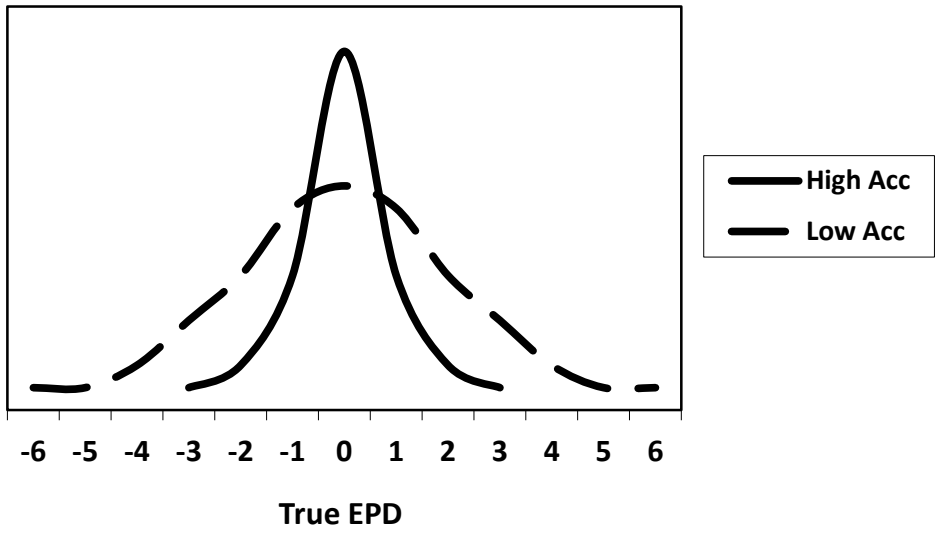
	Heritability		
BIF Accuracy	Low (0.1)	Moderate (0.3)	High (0.5)
0.05	4	2	1
0.20	22	7	4
0.40	70	22	13
0.56	167	53	30
0.99	3800	1225	700

The incorporation of molecular data obtained through genomics into genetic evaluation programs also impacts accuracy. As an example, an Angus calf with no ultrasound record and a parental average EPD with default accuracy 0.05, addition of genomic information increases accuracy to 0.28 – 0.38 depending on the carcass trait (Northcutt, 2010). Through the incorporation of DNA information, young sires can obtain higher accuracy values even without progeny information.

Implications of EPD accuracy deal with associated risk, and accuracy of selection should be considered when choosing herd sires. Since EPDs are not precise predictors of true breeding values, they are subject to change after each evaluation, depending upon newly accumulated data. High accuracy sires are likely to produce progeny whose average merit closely corresponds to their EPDs, whereas low accuracy sires may produce progeny whose average merit may either be below or exceed expectation. If the two bulls previously discussed were being considered for use on heifers, there would be much lower risk associated with Sire B. Even with the inclusion of substantial amounts of additional data, it is unlikely that his CED EPD will go up (or down) significantly. Comparatively, Sire A has a larger possible change and there is more risk that his EPD could change with additional information (the primary risk would be that his CED EPD become substantially lower than estimated). This example illustrates a

primary advantage of using high accuracy sires through AI in comparison to natural service. For all practical purposes, high accuracy sires are available only through AI. Figure 1 illustrates graphically the potential distribution of true EPD values for a high vs. low accuracy sire. Similar examples can be given for all EPD traits.

Figure 1. Distribution of true EPD for sires with high vs. low accuracy values



Keep in mind when evaluating possible change that there is an equal chance that an EPD will go higher as opposed to go lower (or get "better" vs. "worse"). When evaluating young bulls, small differences in WW and YW EPD become less significant due to accuracy and possible change (large overlap in the range of their "true" EPDs). A common misconception is that accuracy is an indicator of expected variation in a resulting calf crop. Accuracy and possible change are not related in any way to progeny variation. High accuracy EPD animals (AI sires) would not be expected to have any more or any less variation in their calf crop compared to low accuracy EPD animals (natural service sires).

In summary, the primary advantage to AI vs. natural service sires from a genetic improvement perspective is realized through selection accuracy and associated management of risk. Due to increased accuracy, the average genetic merit of progeny resulting from the use of high accuracy, AI sires will be more predictable compared to the average genetic merit of lower accuracy, natural service sires. Consequently, genetic progress can be achieved more rapidly.

References

American Angus Association. 2013. Sire Evaluation Report. St. Joseph, MO.

Beef Improvement Federation. 2010. Guidelines for Uniform Beef Improvement Programs. (9th Ed.). Raleigh, NC.

Northcutt, S.L. 2010. Implementations and Deployment of Genomically Enhanced EPDs: Challenges and Opportunities. Proceedings 42nd Annual Beef Improvement Federation Research Symposium and Meeting. pp. 57-61.

19th Annual VirginiaTech

HOKIE HARVEST SALE

Friday Evening, OCTOBER 25, 2013

Animal Judging Pavilion • Virginia Tech

Sale Time 6:30 pm

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Sheep Update

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

Annual Virginia Fall Bred Ewe & Doe Sale to be Held December 7

The 2013 Virginia Sheep Producer's Association Fall Bred Ewe & Doe Sale will be held Saturday, December 7 at 1:00 PM at the Rockingham County Fairgrounds in Harrisonburg. Yearling ewes and does, ewe lambs and doe kids, along with mature ewes and does will be sold. All yearling and mature ewes and does will be sold as guaranteed pregnant. Breeds offered will include Suffolk, Hampshire, Dorset, and crossbreds (including wether dams). All does will be registered meat goats or meat goat crossbreds. For a sale catalog or more information visit the VSPA website http://www.vasheepproducers.com/ .

Sheep Management 101 Workshop and Shepherd's Symposium scheduled for January 10-11, 2014

The annual Shepherd's Symposium will be held Saturday, January 11, 2014 at the Alphin-Stuart Livestock Arena on the campus of Virginia Tech. The one-day program will include educational sessions with a variety of production, management, and marketing topics. A lamb lunch will be included. The day prior, Friday, January 10, an all-day Sheep Management 101 Workshop will be conducted. This program is designed for new and beginning shepherds, and provides hands-on education on basic sheep management. On Friday evening, open meetings of the Virginia Sheep Producers Association and the Virginia Sheep Industry Council will be hosted. Program details and registration materials will be available by mid-November. For more information, contact Scott Greiner at 540-231-9159 or sgreiner@vt.edu or visit Virginia Tech Sheep Extension http://www.apsc.vt.edu/extension/sheep/index.html.