Virginia Cooperative Extension
A partnership of Virginia Tech and Virginia State University

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Livestock Update

Beef - Horse - Poultry - Sheep - Swine

November 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.

IN THIS ISSUE:

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

Dates to Remember

BEEF

DECEMBER

12 VA BCIA Culpeper Sr. Bull Sale. Culpeper Ag. Enterprises. Culpeper. ***Contact:*** Scott Greiner, (540) 231-9159, email: sgreiner@vt.edu

FEBRUARY

11-12 VA Beef Industry Convention. Roanoke. ***Contact:*** Bill McKinnon, (540) 992-1009 email: bmckinnon@vacattlemen.org

MARCH

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

NOVEMBER

14 B&B Horse Judging Clinic. Alphin-Stuart Arena. Blacksburg. ***Contact:*** Julia McCann, (540) 231-7384, email: jsmccann@vt.edu or Tracey Maier tmaier07@vt.edu

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

November Beef Management Calendar

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

Spring Calving Herds

- Secure winter feed supply!
- Body condition score cows, separate thin cows and provide nutritional management to improve BCS prior to calving
- Market calves to your best advantage
- Background calves for sale in December, if possible
- Feed replacement heifers to gain 1.5 - 1.75 lbs per day
- Cull open, old and very thin cows; check feet and legs, udders and eyes
- Consider alternative marketing strategies for cull cows to take advantage of seasonality in cull cow price
- Test hay for nutrient quality
- Get list of bull sales coming up early winter and spring

Fall Calving Herds

- Secure winter feed supply!
- Finish calving
- Check cows 2 to 4 times per day, heifers more often - assist early if needed
- Keep calving area clean and move healthy pairs out to large pastures 3 days after calving
- Ear tag and dehorn all calves at birth; castrate male calves in commercial herds
- Keep good calving records so that calves may be marketed as age/source verified
- Give selenium and vitamin A & D injections to newborn calves
- Feed cows extra energy after calving; stockpiled fescue will take care of needs. Cows calving at BCS < 5 should receive special nutritional attention.
- Test hay for nutrient quality
- Look for opportunities to secure low-cost feed supplies of bulk feeds or commodity feeds
- Keep high quality, high magnesium, high selenium minerals available
- Begin breeding replacement heifers late this month; try AI on heifers
- Get breeding soundness exams done on all bulls
- Purchase new herdsires at upcoming bull sales

"Time to Judge the Book by its Cover" or Time to Body Condition Score Your Cows

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

Many times we suggest that you look past the surface of many factors affecting beef production, but one example of when you need to study the surface is the condition score of your cows. Cow body condition score (BCS) serves as an important barometer of success or failure as you evaluate the success of your forage and nutrition programs. Research has also highlighted the predictive value of condition scores as it impacts a cow's post-partum return to estrus. Cow BCS at calving is one of the tools that has been shown to be a better measurement of cow condition and reproductive performance than weight. Cows and heifers in thin body condition at calving time are slower to rebreed, produce less colostrum, may not have sufficient nutrient reserves for maximum milk production. Tables 1-3 contain the results of three research trials from Kansas, Missouri and Oklahoma which illustrate the importance of calving cows at a condition score of 5 to insure a high percentage cycling at the initiation of breeding. This quick return to estrus is even more important in programs using synchronization and AI.

Table 1. Effect of Body Condition at Calving on Postpartum Interval and Conception Rate

Body Condition Score*	Postpartum Interval (days)	Conception Rate (%)
3.5-4.0	88.5	70
4.5	69.7	80
5.0	59.4	94
5.5-6.0	51.7	100
6.5	30.6	100

* Condition scores converted to 1-9 system. Houghton,P.L. et.al. 1990

Table 2. Effect of body condition score on number of cows in heat at beginning of breeding season

	Days after Calving	
BCS at Calving	60	90
	Cows in Heat (%)	
Thin (3-4)	46	66
Optimum (5-6)	61	92

Table adapted from Whittier and Stevens, 1993. Missouri Cooperative Extension Service G2230

Table 3. Effect of Body Condition on Return to Estrus*

Cow group	Body Condition Score		
	< 4	5	> 6
Hereford X Angus	10.1 %	61.3 %	77.0%
Simmental Cross	36.4%	65.1%	82.8%

* Percent of cows with luteal activity 85 d postpartum Tinker, E.D., 1989

At a time of year when fall calving herds are finishing up and spring calving cows are in mid-gestation, it is an excellent time to condition score cows. Fall calving cows should be at a BCS of 5 or better. Cows with a condition score below that will require extra care and nutrition if they are to cycle and breed during the upcoming breeding season. The spring calving cows with 90 -120 days before calving is a group which has the opportunity to easily gain back some condition if the winter nutrition program is adequate. Continued monitoring of body condition during the winter can provide the clues that your program is on track or if additional supplemental nutrition could be required to achieve a condition score of 5 or better before calving.

Spring calving cows which receive inadequate nutrition and lose body condition during the winter months tend to produce less colostrum which results in weaker calves that are more susceptible to disease. Additionally, cows calving in thin body condition are likely to produce lighter weight, weaker calves. Table 4 indicates the amount of daily gain and total gain necessary to change condition score from weaning to calving.

Table 4. Body weight gains (lbs) required in pregnant cows in varying body condition scores from 100 to 200 days prior to calving to achieve optimum calving body condition.

BCS Weaning	BCS Needed at Calving	Calf and Placenta Weight	Body Weight Gain*	Total Gain	Days to Calving	ADG
3	5	100	160	260	120	2.2
4	5	100	80	180	120	1.5
5	5	100	0	100	120	0.8
3	5	100	160	260	200	1.3
3	5	100	160	260	100	2.6

*pounds to change BCS in moderate frame cows
Table adapted from Corah et al., 1991. Kansas Cooperative Extension Service C-817

As research indicates, monitoring cow condition directly impacts the reproductive performance of the herd. Failure to conceive is the most important factor in reducing net calf crop. Keeping cows in adequate condition throughout the production cycle can improve reproductive performance and positively impact the economics of the operation. The BCS system is relatively easy to learn and can be implemented in any farm situation. The Virginia Cooperative Extension publication *Body Condition Scoring Beef Cows* can be picked up at your local Extension office or on the web http://pubs.ext.vt.edu/400/400-795/400-795.html#L4

Planning the Feeding of Your Beef Herd This Winter

Dr. John F. Currin
Extension Veterinary Specialist, VA Tech and
Dr. Mark A. McCann
Extension Beef Cattle Specialist, VA Tech

Many producers have been asking questions about supplementing their beef cattle herd. There are three things people need to know when deciding how they are going to feed the beef herd this year. These questions are:

1. What are the requirements of my cows?
2. What do I have on hand to feed my cows?
3. Where are my cows lacking and how can I supplement what is lacking for my cows?

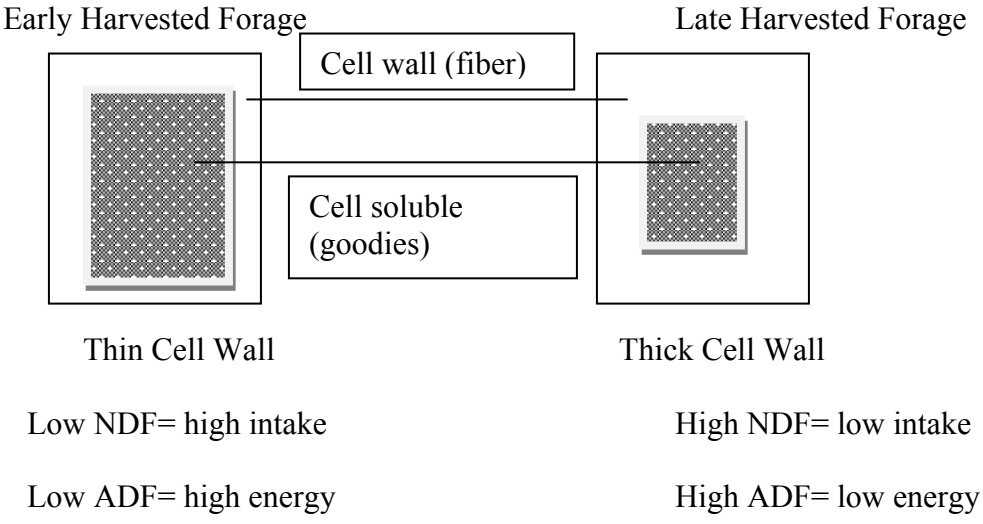
Table 1 shows the nutrient requirements for a 1,200 pound beef cow of moderate milking ability. This should represent the average beef cow in Virginia. Spring calving herds have the lowest nutrient requirements during early winter while fall calving herds are at or near peak nutritional needs. The nutrient requirements of beef cattle presented have been well established through research but do not account for any environmental factors. There are many environmental factors that affect the nutrient requirements of a beef cow being wintered in Virginia. Mud, wet hair coats, and very low temperatures can add significantly to the energy requirements of the beef cow. Total Digestible Nutrients (TDN) is a common measure of the energy density of various feedstuffs.

Table 1. Requirements of a 1200 pound beef cow of average milking ability

Type of Cow	DMI Pounds	Percent TDN	TDN Pounds	Protein %	Protein Pounds
Mid-gestation dry cows	23.3	49%	11.4	6.9%	1.6
Late gestation dry cows	24.1	53%	12.8	7.9%	1.9
Early/peak lactation	27.8	61%	16.9	10.6%	3.0

The next thing you have to look at is what you have on hand to feed your cows. This includes both the quantity and quality of what is available. The level of fiber in the hay can decrease the amount of hay that a cow will eat. Neutral Detergent Fiber (NDF) is a measure of the "bulkiness" of the hay. Research indicates that beef cows will intake a maximum of 1.2% of their bodyweight in forage NDF. Acid Detergent Fiber (ADF) is a measure of the digestibility of the hay. If the ADF of the hay is high, less of the hay will be utilized by the cow and more will pass through the cow undigested. Figure 1 shows the relationship between harvest stage and fiber content.

Figure 1. Relationship between harvest stage and fiber content.



In the samples in Table 2, the forage quality can be best described as less than ideal. The timing of the rainfall made producing quality hay in Virginia a challenge this year. Many producers have commented that the hay was "actually much greener and better than they thought it would be due to all the undergrowth". The hay samples below demonstrate that on a whole that statement is probably not true and we need to take care when feeding this year's hay crop. When feeding very poor quality hay high fiber levels serve as a double whammy. Not only are cows consuming hay with less energy and protein content, but because they will fill up their rumen faster they will eat less total pounds and take in even less total pounds of nutrients. Hay that is stored outside unprotected or baled when it is too green may have significant areas of mold. Moldy hay may limit intake as well. These issues explain why we commonly have problems maintaining weight on beef cows even when we are providing them with all the hay they want (can) eat. Table 2 contains the Total Digestible Nutrients (TDN), Crude protein, and NDF analysis from 61 hay samples from farms across the state of Virginia

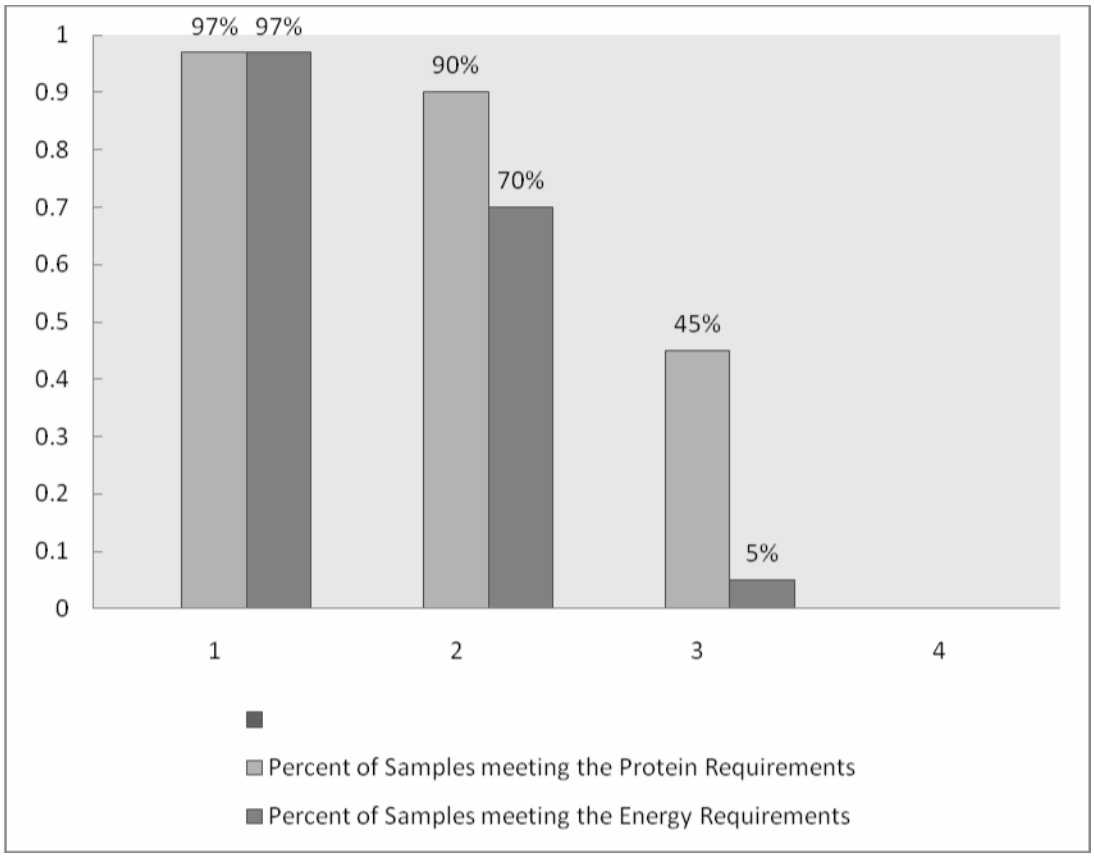
Table 2. Nutrient analysis of 61 hay samples from Virginia beef cattle farms

Farm	Geographic Location	Type	Cutting	Dry Matter	Crude Protein	TDN	NDF
1	Northern Piedmont	Grass Hay		88.4	8.1	55	69.3
		Grass Hay		86.8	9.8	49.1	71.2
		Grass Hay		88.2	9.6	57.8	63.5
2	Northern Piedmont	Grass Hay	2nd	86.9	10.7	55.9	68.1
		Grass Hay	1st	85.8	12.6	50	75.7
		Grass Hay		83.7	9.7	50.9	73.9
		Grass Hay	3rd	88.3	8.8	54.8	67.4
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
4	Coastal Plain	Clover/Fescue	1st	87.7	12.1	54.4	63.7
		Coastal Bermuda	1st	87.1	7.5	64.8	66.2
		Bermuda Coastal	1st	87.6	6	61.2	71.2
		Fescue/Clover	2nd	87.6	8	53	74.8
5	Southern Piedmont	Grass Hay	1st	86.4	7.8	45.9	71
		Alfalfa	1st	84.5	17.4	58.5	53.2
		Grass Hay	2nd	87.4	9.6	53	74
		Grass Hay Wrapped	2nd	69.5	8.5	50.8	70.9
		Alfalfa	1st	87.7	19.7	55.4	51.7
6	Coastal Plain	Bermuda Mix	1st	88.2	10.5	55.8	67.8
		Grass Hay	1st	88.8	8.3	54.9	70.7
		Bermuda (3)	2nd	85.8	10.3	52.5	75.3
7	Southside	Orchardgrass/Clover	2nd	74.4	13.2	49.2	74.8
		Orchardgrass	1st	87.2	11.5	54.2	70
		Orchardgrass	1st	87	14.1	60.7	63.6
8	Coastal Plain	Bermuda Wrapped	2nd	49.3	11	57.6	72.9
		Grass Hay	1st	86.1	9.7	52.3	78.9
		Grass Hay	1st	87.9	9.6	53.9	74.8
		Grass Hay		86.3	5.9	43.8	83.9

9	Southern Piedmont	Orchardgrass/Clover	1st	86	8.9	50.4	72.1
		Oats		84.7	7.5	56.5	67.1
		Orchardgrass/Clover	2nd	83.5	9.5	51.7	72.3
		Halifax Hay	1st	86.8	11.6	58.1	66.5
10	Southside	Fescue/Orchardgrass	1st	87.8	10.7	54.2	72.5
		Grass Hay	2nd	84.7	10.3	53.9	72
		Grass Hay	1st	87.2	10.8	53.8	72.8
11	Southern Piedmont	Bermudagrass	2nd	84.9	7	60.4	70.8
		Bermudagrass	1st	85.9	11.5	58	66.1
		Orchardggrass	1st	87.5	13.1	56	64.2
		Grass Hay	2nd	86.2	9.7	59.2	67.6
		Grass Hay	1st	86	11.4	55.6	67.5
		Alfalfa	2nd	88	17.9	58.3	51.6
12	Southwest Virginia	Alfalfa/Orchardgrass	2nd	84.6	16.8	61.4	53.2
		Alfalfa/Orchardgrass	1st	88.7	13.4	55.7	56.8
		Alfalfa/Orchardgrass	2nd	88.1	16	57.3	56.4
		Clover/Grass Wrapped	1st	70.9	18.1	56.2	61.9
		Grass Hay Wrapped	1st	60.8	12.1	51.9	68.8
		Clover/Orchardgrass Wrapped	1st	24.5	17.8	49.7	60.9
		Grass Hay	1st	89	11.8	55	61
		Grass Hay	1st	88	9.8	51.7	69
		Grass Hay	1st	85.8	8.3	51.5	71.4
		Clover/Orchardgrass	2nd	82.9	17.7	52.4	66.2
		Orchardgrass	1st	87.5	9	52.1	72.3
		Clover/Orchardgrass Wrapped	1st	54.3	12.9	54.6	67.6
		Grass Hay	1st	87.3	8.1	49.9	78
		Grass Hay	1st	87.9	10	54.5	70.5
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

Graph 1 shows what how many of the hay samples will meet the nutrient requirements of beef cows at three different stages of production. The samples show that energy is the primary nutrient deficiency in cows in late gestation and early/peak lactation. Energy demands are very high for beef cows during these 2 stages of production any supplement strategy needs to be designed around meeting the energy demand of these cows.

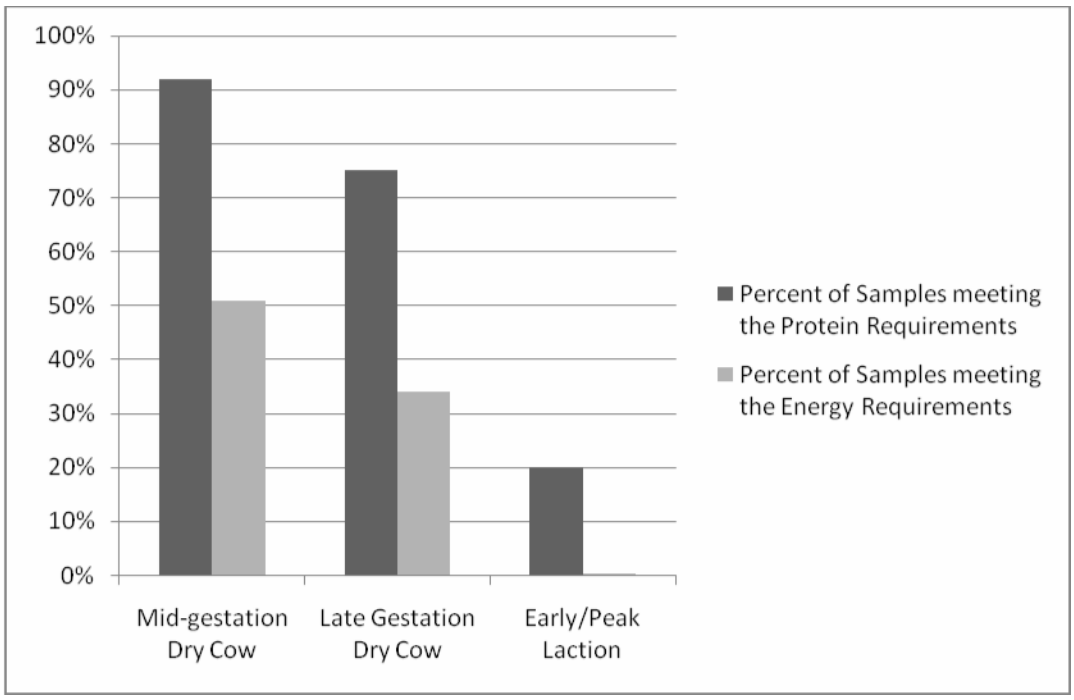
Graph 1. Percent of samples meeting protein and energy requirements for different stages of production



The effect of fiber on actual protein and energy intake in beef cows

In 51 out of 61 (83.5%) hay samples, the beef cows will run out of room in her rumen before she eats as much as she wants to eat. High fiber levels in the hay cause the cows to eat less than normal. While we talk about percentages of protein and TDN, it is important to remember that what is really vital is how many pounds of each nutrient each cow actually consumes. Graph 2 shows the percent of samples meeting the protein and energy requirements of beef cows when the hay intake level is adjusted for the fiber content of the hay.

Graph 2. Percentage of samples meeting protein and energy requirements for different stages of production when adjusting intake for hay fiber levels.



There is a common saying in business school that if you can't measure it you can't manage it. Farmers must run their farms like business if they want to maximize animal well being and profit. Feeding of beef cows generally makes up more than 60% of the costs of keeping a beef cow. Hay samples can be analyzed for $15.50 per sample and you can body condition score cows while you are running them through the chute this fall. The chart above shows that it is near impossible to meet the energy needs of cows after they calve on hay alone. In order to ensure that cows are in adequate body condition so they will breed back in a timely manner producers have 3 choices.

1. Producers can have cows in a body condition score of 6+ so they can afford to lose 1 BCS
2. Cows can have access to grazing during this time frame
3. Producers can supplement cows to meet their needs

Coming next month:
Evaluating the hay feeding on individual farms and planning a supplementation program

Age and Source Verification - Capturing the Advantage

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

Age and Source Verification has been a topic of increasing interest in the beef industry and provides an opportunity for cow-calf producers to potentially add value to their calf crops. Beef export agreements between the U.S. and trading partners require that the exported beef originate from animals meeting age requirements (less than 20 months for Japan, less than 30 months for several other countries). Therefore, beef processors are in need of a supply of cattle with age verification records. Depending on supply, the value of age verification is typically $25 to $45 per head at harvest. This value is received by the entity supplying the cattle to the packer which is typically the cattle feeder (or producer in case of retained ownership). Consequently, cattle feeders are often willing to pay premiums for feeder cattle which are age verified since they have the opportunity to capture this value upon selling the cattle at harvest.

Verification Programs and Their Role in Beef Exports

USDA has established two processes by which cattle birth records may be tracked through the production chain. In general, PVP programs are designed to verify cattle prior to marketing (applicable to feeder cattle sales); whereas, QSA programs define mechanism by which records are maintained and transferred within a production system (retained ownership with a known feedyard and packer).

There are several PVP programs which have been approved through USDA. Examples include those administered by beef processors (Smithfield Beef Group, PM Beef Group, Creekstone Farms), information management companies (ITS, AgInfoLink, IMI Global, etc), and breed associations (AngusSource, Red Angus Association).

Quality System Assessment Programs are similar to PVP programs in many ways, although a QSA generally involves certification of a system that may involve several entities. These companies or groups have certified through USDA a system of records and procedures that can verify their claims to specific attributes of their product. For source and age verification, most beef processors have an approved QSA for exporting beef. This QSA describes how age/source will be documented by the packer with cooperation from source feedlots and their producer suppliers (cow-calf producers).

USDA has established Beef Export Verification (EV) Program requirements for selling beef internationally. These requirements outline the specific requirements for each country, including what products may be exported, processing regulations, and stipulations for the cattle producing the beef. In the case of Japan, a specific requirement is that the beef be from cattle of 20 months of age or less. For most other countries (Hong Kong, Mexico, Canada), the age requirement is 30 months or less. These EV age regulations must be met either through carcass maturity specifications (ie. A40 rule for Japan), or through product from PVP or QSA age-verified cattle.

Implications for Cow/Calf Producers

Age and Source Verification requires producer enrollment in PVP or QSA. Simply stating "source and age verified" or "home-raised" does not provide the level of documentation or

verification necessary. To sell calves as Source and Age Verified, cow/calf producers will most likely be providing information to a PVP program. When participating in a PVP Program, producers will supply the necessary documentation for source and age and be able to sell their calves as "USDA Process Verified." Thereby, these calves would be recognized in the industry as being Source and Age Verified and this verification could be utilized by cattle feeders and processors to fulfill the requirements for Export Verification. Therefore, PVP certified cattle for age should meet the documentation requirements for any cattle feeder or packer (ie. PVP cattle will meet the requirements of multiple QSA programs).

Currently, many producers retaining ownership are working with their feeders to provide the necessary documentation and paperwork to fulfill the requirements of a packer QSA. These QSA's are specific for each packer, and each has different forms and procedures. In many cases, the producer needs to receive training from the feedlot as part of the requirement of the QSA.

What Records Do I Need to Keep?

The key items of source and age verification are records and documentation. Unfortunately, there are no standardized forms that fit all PVP or QSA programs (although the required information is essentially the same). Each program has their own forms and enrollment process, but by keeping certain basic types of information you can be ready for Source and Age Verification.

Here are basic recommendations for records to keep and procedures to perform:

1. Tag all cows and calves with a unique number in your herd. Tag calves at or near birth.
2. Keep detailed calving records such as the IRM Red Book. This includes calf ID, dam ID calving date, and sex of calf. At the very least, record the date the first calf was born and the day the last calf was born. Be able to differentiate calves born in different calving seasons (unique tag number, color, letter code, etc.). Keep records in a safe, readily accessible location.
3. Be able to differentiate any purchased cattle (stockers) from home-raised calves. This can be done through unique ear tags and different management locations. Documentation and management must be able to clearly show which calves are born on the farm vs. those purchased with no opportunity for mis-identification.
4. Keep records of all cattle inventory, movements, re-tagging, and sales.
5. Become a BQA certified producer. Keep BQA records up to date as required. Record all vaccinations, dewormings, implanting, or health treatments.
6. Keep all records in a safe, readily accessible location for minimum of three years.

Maintaining items 1 to 3 listed above will provide the minimum information needed for many programs. Adding items 4 & 5 may increase your options, realizing that some programs may have additional requirements.

Program Enrollment

Enrollment in a PVP program includes completing necessary forms and paperwork which describe the record-keeping process with focus on details of age documentation. A training session and initial audit of producer records accompanies enrollment (this may be done on-farm

or via phone). Once enrolled, producers are responsible for applying a program compliant tag to each individual calf and keeping corresponding records of this ID with the calf birth date information. Corresponding tag and birth date information is provided to the PVP data manager so that this information is accessible to the purchaser of the cattle and can be passed along the production chain. Only age verification records are associated with the PVP program (producer name, address, etc. are not included nor are vaccination records, breed information or other management records).

In almost all cases, cattle that are destined for a Source and Age Verification program will needed to be tagged with an RFID (electronic) ear tag. The electronic tag serves as the conduit for transfer of information for the PVP or QSA. The tag must be associated with an individual animal and its birth premise, and therefore must be applied by the cow-calf producer prior to commingling with cattle from other sources.

DNA Selection - The Basics

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

Advances in science can be rather mind-boggling when one stops and thinks about it. Scientific discovery in humans is providing us great opportunity in the livestock sector. Mapping of the human genome has led to the mapping of the bovine genome (and other species). This genetic map provides the pathway for things to come related to genetic selection in beef cattle. The use of DNA technology is rapidly expanding in the cattle arena, and as a result our toolbox is getting bigger. A specific example is our ability to manage genetic defects through DNA tests which provide the specific genotype of an animal in question. DNA genotyping tests have very rapidly been discovered and applied commercially for the industry to deal with arthrogryposis multiplex (AM) and neuropathic hydrocephaly (NH), two genetic defects controlled by a single gene. Our ability to manage coat color through DNA genotyping (identification of black and red alleles) has been available for several years.

Historically, genetic evaluations in beef cattle have been developed using pedigree information complimented by performance records. In simple terms, EPDs originate from the average of an animal's sire and dam EPDs, which are then adjusted for the animal's own performance and the performance of its progeny. As more performance data is accumulated on an animal's progeny, and its relatives, the accuracy of the EPD is enhanced. EPDs are reflective of the cumulative effect of the many genes influencing economically important traits (growth, maternal, carcass traits).

DNA selection offers the potential to identify individual genes or groups of genes which have an effect on a trait of interest. Research to date using DNA markers (markers have close association with region of genome affecting a trait) has shown that for most growth and carcass traits, each individual marker explains a relatively small proportion of the genetic variation in the trait. Consequently, it is possible for an animal to have a very strong EPD a given trait yet have a "poor" DNA test for the same trait. The reason for this is that EPDs reflect the cumulative genetic merit for all genes that affect a trait, whereas a single DNA marker only provides a snapshot of one (or a few) genes that affect that same trait. Such scenarios create challenges with incorporating DNA genotypes into selection decisions, particularly for traits which also have EPD information. Ideally, the two sources of information could be integrated - and DNA information could enhance EPDs. This is the precise direction the industry is headed with DNA.

Very recently, DNA technology has advanced to the point that it is now possible to determine the DNA profile of an animal utilizing many markers simultaneously (50+). These DNA tests are likely to be more informative since they scan a larger number of genes impacting a trait. This winter, the American Angus Association will release the first EPDs enhanced by DNA information. Angus breeders are currently submitting samples to be DNA tested, with results reported to AAA. DNA profiles will be recorded for several traits, some of which EPDs are currently available and some which do not exist in EPD form (example is feed efficiency). The DNA information for carcass traits will be incorporated into the fall EPD genetic evaluation, and the EPDs released subsequently will be influenced by the DNA information. The primary

impact of this new approach is likely to be enhanced accuracy of EPDs for young animals (those without progeny records).

Moving forward, DNA technology and the utilization of genomic information in genetic evaluation provides great potential to offer selection tools for traits which are difficult and/or expensive to measure (and therefore there is limited performance data), such as feed efficiency. Will we cease to take performance measures? Likely not, since phenotypes are needed to associate differences in DNA with corresponding influence on the trait.

In summary, DNA technology is advancing rapidly and offers significant potential to enhance genetic evaluations in beef cattle. By incorporating DNA information into existing genetic evaluation systems to provide enhanced EPDs, the industry will be able to capitalize on this technology in a fashion which is already familiar to producers.

2009 – 2010 BCIA Southwest Bull Test Season Begins

Joi Saville
Beef Extension Associate, VA Tech

The 31st Annual Southwest Virginia Beef Cattle Improvement Association (BCIA) Performance Tests began on October 6, 2009 with the delivery of 209 junior and senior bulls to Hillwinds Farm in Dublin, VA.

Tim, along with his wife, Cathy, and their 4 children, Laura, Allison, Caroline, and Heath, own and operate Hillwinds Farm, in Dublin. Tim has been feeding bulls for 5 years for the BCIA test stations. "I decided to become involved in the process," stated Sutphin, and the rest is history. As a longtime bull buyer, Sutphin decided to become involved in the process of bull evaluation and became a feeder for the BCIA Southwest Bull Test Station as a result. "My interest in the program coincided with several other things that were happening at the time, and since then, it has been a great relationship," continued Sutphin.

Besides custom feeding the bulls for BCIA, Hillwinds Farm has 750 commercial cows. The cowherd consists of primarily Angus-based cows with a percentage of Simmental and Gelbvieh genetics to capture the established advantages of crossbreeding. Both fall and spring calving are practiced to make efficient use of resources and labor. In addition to the large commercial cow herd, stocker cattle, replacement heifer development, bull test feeding and a flock of 120 commercial ewes add diversification to the operation.

As a third party administrator of the Bull Test Program, BCIA works to serve its two purposes of: 1) to foster the improvement of beef cattle in Virginia through improved genetics and management with major emphasis placed on selection criteria for traits of economic importance, and: 2) to carry on educational and promotional work in connection with the production of improved beef cattle. The Association currently has approximately 175 active members consisting of both purebred and commercial producers from Virginia and surrounding states. The Board of Directors consists of 10 members representing state breed associations and commercial cattlemen. Virginia BCIA is a state organization which belongs to the Beef Improvement Federation -- the national organization which sets guidelines and standards for beef cattle genetics (EPDs, performance reporting, etc.).

With the above mission in mind, BCIA sets forth strict requirements for bulls to be tested in one of their programs. Some of the eligibility requirements include: bulls meeting minimum YW EPD requirements based on breed; minimum frame score of 5.0; soundness; disposition; and pre-weaning and vaccination programs. In addition to the above requirements, BCIA has adopted a new policy in which all bulls are required to be free of genetic abnormalities.

In addition to the minimum requirements for test, bulls are also required to average 2.5 pounds of gain per day of age at delivery, as well as a minimum weaning period of 45 days and started on feed.

The senior bulls will be on test for 112 days and the junior bulls will be on test for 133 days. During this testing period, weights will be taken as well as hip height measurements, ultrasound

data collection, and semen testing. At the end of the test, the top two-thirds of the bulls on test will be selected for the sale. This selection takes into account the bull's growth, average daily gain, frame score, scrotal circumference, and exceeding minimal EPD requirements.

Out of the 209 bulls that were delivered to the test station, the 103 senior bulls consist of 74 Angus, 3 Charolais, 7 Gelbvieh, 7 Simmental, and 12 Simmental Hybrids that were born between September 15 – December 31, 2008. The 106 junior bulls consist of 63 Angus, 4 Charolais, 5 Gelbvieh, 4 Gelbvieh Balancers, 2 Hereford, 16 Simmental and 12 Simmental Hybrid bulls that were born between January 1 – March 31, 2009. Please visit the website, www.bcia.apsc.vt.edu to see how the bulls perform over the course of the test. The senior bulls are scheduled to come off test on February 9, 2010 and the junior bulls are scheduled to come off test on March 2, 2009 with the sale scheduled for Saturday, March 27, 2010 at the former Umberger Sale Facility in Wytheville, VA. The annual Open House will be hosted at the station on Sunday afternoon, March 22.

Watch for updates in the BCIA Bull-e-tin on the Southwest and Culpeper Senior Bull Tests. The sale date for the Culpeper Senior Bull Test is set for Saturday, December 12th, 2009.

BCIA Culpeper Senior Bulls Sell December 12

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

The 52nd annual sale of the Virginia BCIA Culpeper senior bulls will be held Saturday, December 12, 2009 at 12:00 noon at the Culpeper Agricultural Enterprises located on Route 29 just south of Culpeper, Virginia.

The sale will include approximately 60 fall-born yearling bulls representing the top end of the 93 bulls developed. Currently, Angus, Gelbvieh, Gelbvieh Balancers, and SimmAngus bulls are on test. Only bulls which meet stringent BCIA criteria will sell. BCIA has made some significant changes to the program which has been brought about through feedback from commercial bull buyers. Highlights include complete breeding soundness exams (including semen evaluation), volume buyer discounts, and an enhanced soundness and fertility guarantee on all bulls selling.

The majority of the bulls selling are sired by trait-leading, highly proven AI bulls of each breed. All bulls selling meet minimum genetic requirements (EPDs) to sire calves for the VQA Purple Tag Feeder Calf Program. Bulls have been screened for reproductive and structural soundness, and offered as guaranteed breeders. Complete performance information will be available on all bulls, including growth, maternal, and carcass EPDs, detailed test performance information, and ultrasound data.

Beef producers and others who are interested are invited to visit Glenmary Farm to view the bulls. Glenmary Farm is located at Rapidan, VA and operated by Tom and Kim Nixon.

For catalogs and detailed information on the bulls visit the website http://bcia.apsc.vt.edu, or phone VA BCIA at 540-231-9163 or Glenmary Farm at 540-672-7396.

Sheep Update

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

Sheep Management 101 Workshop and Shepherd's Symposium scheduled for January 8-9, 2010

The annual Virginia-North Carolina Shepherd's Symposium will be held Saturday, January 9, 2010 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 8, 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 in mid-November. For more information, contact Scott Greiner at 540-231-9163 or sgreiner@vt.edu.

Sheep Management Tips - Late Fall

Breeding to 6 Weeks Before Lambing

1. Mature ewes in average to good body condition should be fed to maintain or slightly increase their bodyweight during the first 3 ½ months of gestation. This is the time to take advantage of lower quality pasture. If this period occurs during the winter, hay will normally supply the necessary nutrients, with no supplemental grain required.
2. Thin ewes should be fed separately and supplemented with 1 to 1.5 lbs of grain per day to gain 10 to 15 lbs by 6 weeks before lambing.
3. Pregnant ewe lambs should be fed separately from mature ewes. They should gain approximately 25 lbs from breeding to 6 weeks before lambing. Attempts to cause large weight gains in ewe lambs during late gestation may lead to lambing problems. Conversely, underweight ewe lambs and/or poor body condition have low birth weight lambs and poor survivability and lower milk production.
4. If pregnant ewes are to be brought into the flock, keep these ewes separate from the main flock through lambing when feasible. This will diminish the risk of introducing abortion and other diseases into the main flock. Consult with your veterinarian regarding health management protocols for these newly received ewes.
5. Shear ewes if facilities are available to shelter ewes appropriately during winter months.

6 Weeks Before Lambing

1. Start feeding 0.5 lb of grain per head daily as a preventative for pregnancy disease. Grain may be in the form of whole shelled corn or barley. Even if ewes are on good quality pasture, they still require the extra grain. During the winter or when on poor quality pasture, feed approximately 4 lbs of hay in addition to grain.
2. Supplementation of tetracycline pre-lambing has been shown to reduce the incidence of abortions. Consult with your veterinarian on a flock health management protocol.
3. Make sure there is plenty of feed trough space so that ewes do not crowd each other at feeding time.

4 Weeks Before Lambing

1. Shear the wool from around the head, udder and dock of pregnant ewes. If covered facilities are available, shear the ewes completely. Sheared ewes are more apt to lamb inside, facilities stay drier because less moisture is carried in by the ewes, sheared ewes require less space, and environment Is cleaner for newborn lambs and the shepherd. Sheared ewes must have access to a barn during cold, freezing rains, and they must receive additional feed during periods of extremely cold temperatures.
2. Vaccinate ewes for overeating disease and tetanus. These vaccines provide passive immunity to baby lambs through the ewes' colostrum until the lambs can be vaccinated at 4 to 6 weeks of age.
3. Check and separate all ewes that are developing udders or are showing signs of lambing. Check and remove heavy ewes once a week during the lambing season. Increase the grain on all ewes showing signs of lambing to 1 lb daily, and feed all the good quality grass/legume hay they will clean up.
4. Observe ewes closely. Ewes that are sluggish or hang back at feeding may be showing early signs of pregnancy disease. If so, these ewes should be drenched with 2 ounces of propylene glycol 3 to 4 times daily.
5. Shelter ewes from bad weather.
6. Get lambing pens and lambing equipment ready. There should be one lambing pen for every ten ewes expected to lamb.
7. Stock lambing supplies such as iodine, antibiotics, frozen colostrum, stomach tube, injectable selenium and Vitamin E, OB lube, lamb puller, ear tags, etc.

2009 State Fair of Virginia Lamb Carcass Evaluation Summary

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

Since 1999, more than 2020 lambs have been evaluated through the Lamb Carcass Contest held in conjunction with the youth market lamb show at the State Fair of Virginia. The program serves as an educational tool for exhibitors and breeders regarding factors that influence the production of lean lamb that fits industry and consumer targets.

Five premium categories (Gold, Purple, Blue, Red, and Pink) have been established to rank lambs based on their combination of carcass merit and growth performance. The following standards were utilized, with carcasses failing to meet one or more of these qualifications placed in the Pink group:

Minimum fat thickness of 0.10 in.
Maximum fat thickness of 0.35 in. (maximum Yield Grade of 3.9)
Minimum LMA for carcass weight using formula: 1.4 + (0.02 x HCW)
Minimum Quality Grade of Choice-
Minimum carcass weight of 45.0 pounds

Carcasses meeting all of the above standards were ranked using carcass merit (determined by percentage boneless, closely trimmed retail cuts- %BCTRC) and live average daily gain (ADG). The formula to estimate %BCTRC utilizes carcass weight, fat thickness, body wall thickness, and loin muscle area and represents the predicted proportion of the carcass that is saleable retail product. Average daily gain is calculated for each lamb from the time of nomination in late June to the State Fair in early October (approximately 100 days). The average ADG of all lambs exhibited in the live show serves as the benchmark ADG value within year. Carcass premium categories were established as follows:

Premium Category	***Carcass and ADG Parameters***
Gold	$\geq$ 50.0 %BCTRC & $\geq$ 0.45 ADG
Purple	$\geq$ 50.0 %BCTRC & ADG < 0.45 or $\geq$ 49.0 %BCTRC & $\geq$ average ADG
Blue	$\geq$ 49.0 %BCTRC & ADG < average or $\geq$ 47.5 %BCTRC & $\geq$ average ADG
Red	$\geq$ 47.5 %BCTRC & ADG < average or %BCTRC < 47.5
Pink	Carcasses failing to meet one or more of the standards

The following table summarizes the carcass information since beginning the program. Compared to the first five years of the program (1999-2003), live weights and corresponding carcass weights of lambs have gotten heavier. Associated with this weight increase has been an increase in ADG, loin muscle area (LMA), and fatness. While a portion of the increase in LMA is directly related to weight, the lambs have also improved in overall muscling, as indicated by a higher percentage of the lambs meeting the minimum LMA standard for their carcass weight. Despite the increases in weight over time, fat thickness and overall cutability (%BCTRC) have remained relatively constant. A very high percentage of the carcasses are YG 1 and 2, and the low percentage of undesirable YG 4 carcasses is much more favorable than industry average.

The 2009 lambs were very similar to those from the previous five years (2004-2008). However, the 2009 lambs tended to be slightly fatter and there were more lambs which were overfed as indicated by the increased percentage of Yield Grade 4 lambs as well as more lambs failing to meet the minimum LMA standard.

STATE FAIR OF VIRGINIA LAMB CARCASS CONTEST SUMMARY

	2009	5 year avg. (2004-2008)	2008	2007	2006	2005	2004	11 year avg. (1999-2009)
Carcass Measurements:								
No. Carcasses	**138**	**862 total**	128	157	185	193	199	2023 total
Live Wt., lb.	**128.7**	**125.0**	126.6	127.2	124.2	124.1	123.7	121.7
ADG, lb./day	**0.42**	**0.36**	0.38	0.37	0.36	0.37	0.35	0.36
Carcass Wt., lb.	**72.7**	**70.6**	69.7	73.0	70.9	70.5	69.1	68.0
Dressing %	**56.4**	**56.4**	54.9	57.4	57.0	56.7	55.8	55.8
Adj. Fat Thickness, in.	**0.24**	**0.22**	0.22	0.23	0.22	0.23	0.21	0.21
Yield Grade	**2.8**	**2.6**	2.6	2.7	2.6	2.7	2.5	2.5
Loin muscle area, sq. in.	**3.24**	**3.22**	3.25	3.26	3.22	3.23	3.14	3.10
Leg Score (12 = Ch , 13 = Ch+)	**12.4**	**12.5**	12.3	12.5	12.6	12.5	12.7	12.5
% BCTRC	**47.8**	**48.2**	48.4	47.7	48.2	48.3	48.3	48.3
Quality Grade (11 = Ch-, 12 = Ch)	**11.6**	**11.4**	11.4	11.4	11.4	11.3	11.3	11.4
Carcass Price, $/cwt.	**$200.00**	**$174.21**	$200.00	$200.00	$160.00	$185.00	$140.00	$153.49
Live Value, $/cwt.	**$112.80**	**$98.28**	$109.71	$114.71	$91.23	$104.91	$78.07	$85.80
Carcass Contest Specifications:								
ADG standard for premium placings	**0.41**	**0.35**	0.37	0.35	0.34	0.34	0.34	0.34
< 0.10 in. Fat Thickness	**0 (0.0%)**	**0.0%**	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1.7%
Yield Grade ≥ 4 (> 0.35 in. fat)	**16 (11.6%)**	**5.0%**	7 (5.5%)	12 (7.6%)	9 (4.9%)	6 (3.1%)	9 (4.5%)	4.5%
< minimum Loin Muscle Area	**18 (13.0%)**	**7.4%**	7 (5.5%)	9 (5.7%)	10 (5.4%)	16 (8.4%)	22 (11.1%)	13.7%
< Ch- Quality Grade (No Roll)	**0 (0.0%)**	**0.0%**	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0.0%
Carcass weight < 45.0 lb.	**0 (0.0%)**	**0.2%**	2 (1.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0.2%
Gold Premium Category	**3 (2.2%)**	**1.3%**	5 (3.9%)	0 (0.0%)	2 (1.1%)	2 (1.0%)	2 (1.0%)	1.8%
Purple Premium Category	**14 (10.1%)**	**19.1%**	26 (20.3%)	16 (10.2%)	39 (21.1%)	46 (24.1%)	38 (19.2%)	17.8%
Blue Premium Category	**42 (30.4%)**	**32.4%**	40 (31.3%)	51 (32.5%)	61 (33.0%)	59 (30.9%)	68 (34.3%)	31.4%
Red Premium Category	**46 (33.3%)**	**35.0%**	41 (32.0%)	71 (45.2%)	64 (34.6%)	64 (33.5%)	62 (31.3%)	29.8%
Pink Premium Category	**33 (23.9%)**	**11.8%**	16 (12.5%)	19 (12.1%)	19 (10.3%)	20 (10.5%)	28 (14.1%)	19.1%
Carcass Distributions:								
Yield Grade 1	**29 (21.0%)**	**20.2%**	30 (23.4%)	31 (19.7%)	40 (21.6%)	35 (18.3%)	38 (19.2%)	27.9%
Yield Grade 2	**57 (41.3%)**	**50.6%**	56 (43.8%)	84 (53.5%)	85 (45.9%)	95 (49.7%)	116 (58.6%)	47.2%
Yield Grade 3	**36 (26.1%)**	**23.9%**	35 (27.3%)	30 (19.1%)	51 (27.6%)	55 (28.8%)	35 (17.7%)	20.1%
Yield Grade ≥ 4	**16 (11.6%)**	**5.0%**	7 (5.5%)	12 (7.6%)	9 (4.9%)	6 (3.1%)	9 (4.5%)	4.5%
Prime Quality Grade	**0 (0.0%)**	**0.6%**	1 (0.8%)	2 (1.3%)	1 (0.5%)	0 (0.5%)	1 (0.5%)	1.2%
Choice Quality Grade	**138 (100%)**	**99.1%**	127 (99.2%)	155 (98.7%)	184 (99.5%)	191 (100%)	197 (99.5%)	98.5%
No Roll Quality Grade	**0 (0.0%)**	**0.0%**	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0.0%
HCW < 45 lb.	**0 (0.0%)**	**0.2%**	2 (1.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0.2%
HCW 45-55 lb.	**7 (5.1%)**	**7.1%**	17 (13.3%)	6 (3.8%)	10 (5.4%)	13 (6.8%)	15 (7.6%)	11.0%
HCW 55-65 lb.	**29 (21.0%)**	**20.6%**	21 (16.4%)	24 (15.3%)	36 (19.5%)	42 (22.0%)	55 (27.8%)	26.7%
HCW 65-75 lb.	**36 (26.1%)**	**34.8%**	45 (35.2%)	53 (33.8%)	67 (36.2%)	69 (36.1%)	66 (33.3%)	34.6%
HCW 75-85 lb.	**48 (34.8%)**	**29.5%**	34 (26.6%)	59 (37.8%)	57 (30.8%)	50 (26.2%)	54 (27.3%)	22.3%
HCW > 85 lb.	**18 (13.0%)**	**7.2%**	9 (7.0%)	15 (9.6%)	15 (8.1%)	15 (7.9%)	8 (4.0%)	4.8%