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Inside this issue:

Interseeding perennial grass pasture with legumes 2

Benchmarking-another Farm Finance Tool 4

OQBN Dates 5

A Look at the Oklahoma Quality Beef Network in 2020 6

Beef Quality Assurance: What is it? 8

Bull Breeding Soundness Evaluations

Barry Whitworth, SE Area Extension Specialist Animal Health & Rosslyn Biggs, DVM, Beef Cattle Extension Specialist

The recent artic blast affected many livestock producers. Unfortunately, not all losses will be obvious immediately. Frostbite is typically not a common problem with bulls in the state; however, Oklahoma cattle are not accustomed to the extreme temperatures. Bulls may have suffered damage to their scrotums or testes resulting in poor semen quality. Cattle operations that fail to have breeding soundness evaluations (BSE) performed by a veterinarian before bull turnout may likely find open cows this fall.

Although many may use the term “semen testing,” a breeding soundness evaluation goes well beyond just looking at semen under a microscope. This is because semen itself may be of acceptable quality, but the bull may not be physically able to breed. A complete breeding soundness evaluation involves a physical examination, reproductive tract examination, and semen evaluation.

The physical examination of the bull begins with a primary focus on structural soundness and checking for injuries to the feet and legs. The eyes and oral cavity are evaluated. As-

sessing body condition is another component. Thin bulls may not be able to maintain themselves. Bulls that are fat may have difficulty adjusting to living in range conditions and are predisposed to joint injuries. Ideal body condition is generally 5-6/9.

The second component of the BSE is focused on the reproductive tract anatomy and health. Scrotal circumference measurements must meet minimum requirements. Palpation of the testes and spermatic cords along with palpation of internal organs is required. Electroejaculation is the most common method used to obtain a sample for semen evaluation. It also allows examination of the penis, prepuce and scrotum for physical defects such as congenital abnormalities, warts or cold weather injury.

Semen evaluation is a microscopic examination of motility (movement) and morphology (structure) of sperm cells. These indicate the quality of the semen. Cells should move rapidly and in a linear fashion, and individual progressive motility must be at least 30%. Once motility is assessed, a special stain is added to evaluate the structure



Bull Breeding Soundness Evaluations (cont.)

of sperm cells on the microscope slide. Greater than 70% normal sperm must be present. The semen sample is also evaluated for other cells that may indicate infection.

Under the Society for Theriogenology classification bulls are considered:

1. Satisfactory potential breeder
2. Unsatisfactory potential breeder
3. Classification deferred

If deferred, then a producer should work with their veterinarian to set up a time to reevaluate the bull. It is very important to understand that a BSE is an evaluation on only the day the test was performed. The testicle started producing the sperm at the time of evaluation 60 days prior. Bulls with signs of frostbite damage and poor semen quality will most likely be classified as deferred. One study indicated that most problems improve after 6 weeks of rest; however, the fertility of some bulls

may never improve.

Producers may also discuss other diagnostic testing for infectious diseases with their veterinarian. Continued evaluation of a bull to evaluate libido and maintenance of body condition through visual observation should also occur during the breeding season. There is no lifelong guarantee of bull fertility. Producers should work with their veterinarian to test bulls at least annually. For new purchases, buyers should request documentation of the BSE.

Even though February's cold weather is long gone, some animal losses may still be present. Bull fertility is one issue that may take some time to improve. Producers should ensure that their bulls are ready for the upcoming spring breeding season by having a veterinarian perform BSE on all bulls. Hopefully, this will prevent any unwanted surprises during pregnancy testing this fall.

Interseeding perennial grass pasture with legumes

Dr. Mariano Menghini, Teaching Assistant, Agronomy Dept, Universidad National Del Sur, Bahia Blanca, Argentina, Visiting Scientist, Ryan Reuter, PhD Associate Professor, Oklahoma State University, Dept of Animal and Food Sciences

Central Argentina and Oklahoma have quite similar environments, even though they are on opposite sides of the equator. Mariano Menghini is visiting from Argentina to collaborate with OSU scientists.

Tall wheatgrass (*Thinopyrum ponticum*) is a temperate perennial grass that is often used in cow-calf grazing systems in Argentina. Ranchers in Oklahoma may also find it useful. It is commonly used in soils that are high in salinity, but forage production is significantly better in soils without salt problems. It maintains good quality during

winter and much of spring, however, forage production is reduced in the coldest part of winter. In addition, forage quality decreases markedly as the grass transitions to the reproductive state in late spring.

Therefore, we are studying a strategy to improve the biomass yield and nutritional value of tall wheatgrass pastures by interseeding in Argentina. Interseeding is sowing an established pasture with an additional species. Typically, no-till or vertical tillage machinery can be used, generating minimal soil disturbance, so as not to kill existing

Interseeding perennial grass pasture with legumes (cont.)

plants. In general, we recommend to interseed with species that have good seedling vigor and a different growth cycle from the already established pasture, to minimize competition.

Hairy vetch (*Vicia villosa*) is an annual legume that showed good performance when interseeding in pure tall wheatgrass pastures. The most promising time of year for successful interseeding is fall (around September, similar to when to plant winter cereals for grazing). The advisable thing would be to interseed immediately after a mechanical cut or intense grazing of tall wheatgrass. Hairy vetch has a large seed and rapid establishment in relation to other legumes. Rapid establishment is important to withstand the first grazing after interseeding and ensure that animal trampling does not kill the seedlings.

In a study carried out in three representative localities of the Argentinean Pampean semiarid region, we observed that interseeding 17.8 lb / ac of hairy vetch improved biomass yield 44 to 193% over the tall wheatgrass monoculture (Table 1). In general, biomass increased more in poor stands of tall wheatgrass pasture. Hairy vetch has a high

growth rate in *early* spring, while tall wheatgrass has a long vegetative period relative to other C₃ grasses and has a high growth rate in *late* spring. They complement each other quite well, as the highest demands for water and nutrients occur at different times of the year. An adequate stand of the legume was achieved in all three sites, with either no-till and with a chisel plow plus a land roller.

Legumes in general have a higher CP content and less fiber. In this study, we observed CP values 62 to 123% better in the vetch/tall wheatgrass mixture. Additionally, NDF decreased 11 to 30%. These results suggest that cattle grazing the mixture would consume more forage and exhibit better gains. Additionally, the legume captures nitrogen from the environment as a product of the biological fixation of nitrogen in its roots, leaving a residual fertility that can be used by the tall wheatgrass next year.

We plan to graze cattle on these mixtures in the future and measure the animal response. Legume interseeding looks promising in Argentina, and it should be considered in Oklahoma as well.

Table 1. Annual forage yield(lb/ac), Crude Protein and Neutral Detergent Fiber (%) and rainfall (inch) two years average in three locations of Argentinean Pampean semiarid region

Item	Bahía Blanca		Tornquist		Cabildo	
	TW	TW+HV	TW	TW+HV	TW	TW+HV
Forage yield, lb/ac	2448	4165	800	2345	1227	1775
CP, %	9.1	14.8	9.5	21.2	7.8	13.7
NDF, %	68.0	60.7	69.1	48.4	69.6	60.3
Rainfall, in	34.3		38.8		32.4	

TW: Pasture of Tall wheatgrass pure; TW+HV: Tall wheatgrass + 17.8 lb/ac of hairy vetch interseeding in fall.

Benchmarking-another Farm Finance Tool

*Courtney Bir, Farm Management Extension Specialist, Agricultural Economics and
David Lalman, Professor, Animal & Food Science*

Many agricultural economists believe the key to commercial cow/calf enterprise profitability is in controlling production cost. Of course, at the end of the day, a profitable enterprise must optimize efficient production with cost control. Financial and performance benchmarking data for beef cattle operations provide valuable perspective relative to the weighting of enterprise components as they contribute to profitability.

Farm financial benchmarking programs in the Southern Great Plains region is experiencing a slow re-awakening. Recently West Commerce/Texas A&M has joined with other universities including Oklahoma State, spearheaded by the University of Minnesota, in an effort to increase farm financial planning and benchmarking. Pilot programs expanding into Texas, Arkansas, and Oklahoma are in their infancy. Two publicly available data sets, while benchmarking herds farther north, include the Kansas Farm Management Association (<https://www.agmanager.info/kfma>) and Center for Farm Financial Management, FINBIN (<https://www.cffm.umn.edu/>). Both programs provide aggregated annual summaries of participating herds. Both programs provide reports divided into profitability groups showing characteristics of high- and low-profit operations. In 2019, the Kansas benchmarking summary included 76 commercial cow/calf operations. The Minnesota data set (FINBIN) includes operations from 12 states, as far south and east as South Carolina and as far west as Utah. In 2019, the FINBIN program summary included 241 cow/calf operations. Interestingly, the FINBIN dataset is weighted slightly towards smaller operations, although efforts are being made to rectify this imbalance. However, this may be helpful for

Oklahoma producers, as this data set may more closely reflect our smaller herd size, albeit they are not grazing on similar ground. OSU's agricultural economics department has partnered with Minnesota to begin doing farm financial plans, leading to benchmarking Oklahoma operations, for free. This is valuable information for our producers, who will have a better understanding of their own financial and production status, and be able to compare themselves to more "like" operations. If you are interested in doing a farm financial plan, and contributing to the FINBIN database for Oklahoma please contact Courtney Bir at courtney.bir@okstate.edu.

The data in the KFMA system is divided into high, middle and low classifications relative to net return to labor and management. In 2019, there was a whopping \$529 per cow difference in net return to labor and management between the high- and the low-profit groups. Gross income per cow was \$139 lower and total expenses were \$428 greater per cow in the low-profit operations compared to the high-profit operations.

The FINBIN data set is much larger, allowing division among five profitability classifications instead of three. This results in greater differences. For example, the difference in high- vs low-profit gross revenue per cow was \$325 while the difference in total expense per cow was \$516. We can conclude that managing costs are important to farm management, although the output or "production" is important and more pronounced in the FINBIN data. In fact, there was an eight-percentage unit advantage in weaning rate and a 75-pound advantage in average weaning weight in the most profitable operations compared to the

Benchmarking-another Farm Finance Tool (cont.)

least. In summary, well-managed commercial cow/calf enterprises have mastered both sides of the profitability equation.

In the 2019 KFMA data, annual pasture costs are not dramatically different with \$176 and \$189 for high- and low-profit operations, respectively. However, non-pasture feed costs are \$245 vs \$489 in high- and low-profit operations. In other words, the more profitable operators generate an additional \$139 of revenue while spending \$244 less per cow on purchased and harvested feed. The 2019 FINBIN summary reveals a similar conclusion: pasture costs per cow are similar for the profitability groups while the gap in purchased and harvested feed expenditures is wide.

With a longer growing season and warmer climate in the Southern Great Plains, year-round grazing (or perhaps an extended grazing season) with substantially reduced reliance on purchased and

harvested feed is achievable. In fact, many profitable cow/calf enterprises in this region feed little to no hay through the winter. Increased reliance on grazed instead of harvested forage requires a moderate stocking rate, excellent grazing management, a later calving date (in most cases) and a good match of cow type to the forage system.

We hope this summary of commercial cow/calf enterprise benchmarking data and profitability characteristics is useful. Today, we have the tools to select cattle that thrive in lower input environments (less reliance on purchased and harvested feed) and at the same time, excel in post-weaning performance and carcass characteristics. Finally, documenting your own pasture and non-pasture feed costs and comparing to these commercial operation benchmarking programs could prove to be a useful exercise, especially if performed annually.



Location	Sale Date	45-Day Wean Date	60-Day Wean Date
OKC West Livestock (El Reno)	April 13, 2021	February 27, 2021	February 12, 2021
McAlester Stockyards	April 20, 2021	March 6, 2021	February 19, 2021
	June 8, 2021	April 24, 2021	April 9, 2021

A Look at the Oklahoma Quality Beef Network in 2020

Kellie Curry Raper, Livestock Marketing Economist

For cattle producers, 2020 was an “interesting” ride. While you can’t control the cattle market, you can control the management choices that can impact how your calves perform relative to the rest of the market. For many producers, part of that management includes participation in the Oklahoma Quality Beef Network VAC45 calf certification program.

The Oklahoma Quality Beef Network (OQBN), a collaboration of the Oklahoma Cooperative Extension Service and Oklahoma Cattleman’s Association, provides a third-party verified calf health management program with sponsored special sales at various livestock markets across the state. OQBN’s VAC45 program is a brand-neutral preconditioning protocol that included basic practices such as castration and dehorning, as well as requirements for vaccinations, pre-marketing weaning time and other calf management practices.

From a buyer’s perspective, these practices done on the ranch prior to marketing add value because the calf’s immune system is boosted during that time period, better equipping that calf to handle the stress of moving through the beef supply chain. These calves need less medical treatment and gain more efficiently as they move through the beef

supply chain. From a seller’s perspective, managing calves in a preconditioning protocol adds value through premiums, but also through weight gained during the extended weaning period. An OSU study found that the probability of positive net returns from a VAC45 protocol was nearly 80%. Ultimately, implementing these basic practices results in healthier calves, improved animal welfare, and higher quality beef for consumers. Since 2008, nearly 83,000 Oklahoma beef calves have been marketed as OQBN certified VAC-45 calves.

Most OQBN VAC45 sales are held in the fall, though there are some livestock markets that hold sales in alternate seasons. In 2020, 4,670 calves were enrolled, with approximately half of those

calves selling through OQBN sales and half selling through private treaty or other marketing venues not associated with OQBN special sales. This year data was collected on 11,700 head of cattle at 9 different sales. Preliminary analysis estimates that approximately \$230,000 in total

premiums were received by 2020 OQBN VAC45 calves relative to non-preconditioned calves at OQBN sponsored feeder cattle auctions. The average overall OQBN premium for 2020 was \$8.38 per hundredweight. As shown in Figure 1, this year’s premiums were lower than what has been

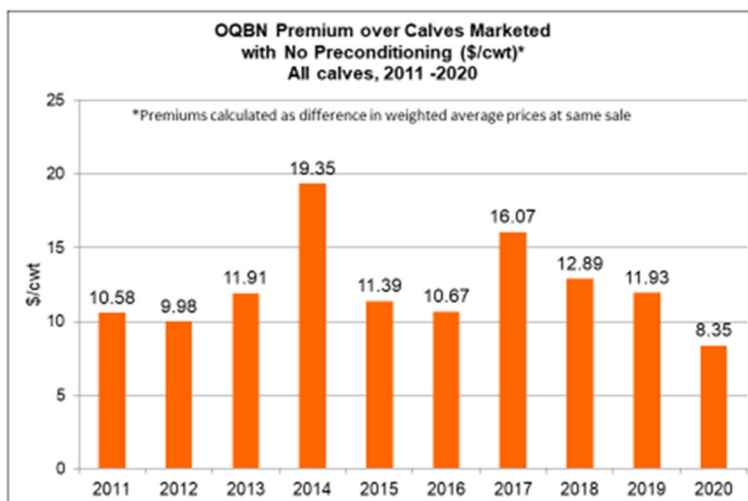


Figure 1



A Look at the Oklahoma Quality Beef Network in 2020 (cont.)

typical in the past few years. OQBN premiums averaged \$8.68/cwt for steers and \$7.88/cwt for heifers in 2020 sales. Keep in mind that premiums can vary within and across weight classes, as well as across sale venues and dates. Figure 2 illustrates premiums for both steers and heifers across all weight classes. Premiums here are weighted average premiums that compare OQBN calves to non-preconditioned calves in the same weight class at the same sale. Note that the premium here is not adjusted for differences in quality, lot size or breed. In 2020, 64% of OQBN steers were marketed in the 500-599 and 600-699 weight ranges. That number is slightly higher for heifers at 67% marketed in those same weight ranges.

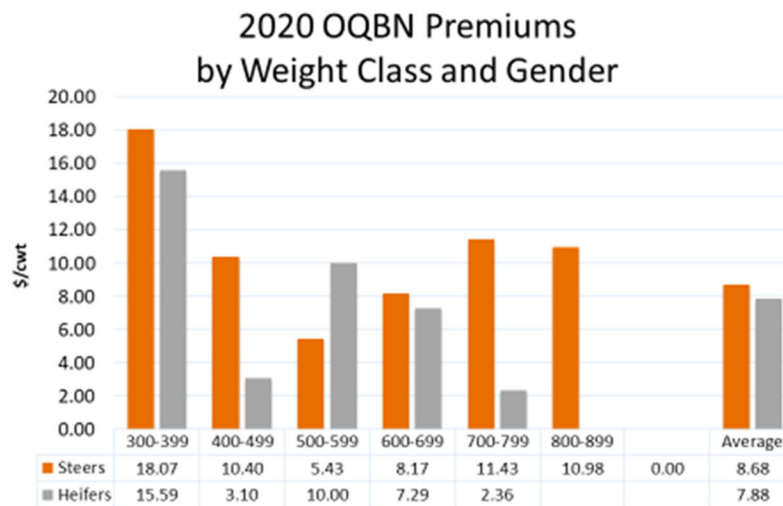


Figure 2



An important point to remember is that producers also capture the net value of selling additional pounds gained during the extended weaning period and are typically marketing into a seasonal upswing in prices. A quick glance at the average premiums might lead you to think that this year was only a break-even year for preconditioning. But consider this scenario. If you sold a 500-pound calf at weaning in early October, your revenue would have been approximately \$803.10 (500 lbs*160.62). Selling that same calf at 60 pounds heavier 45-50 days later in early December would

yield revenue of \$871.92 (560 lbs*155.70). That is a value of weight gained equal to \$68.82. Adding the OQBN preconditioning premium of \$30.41 (5.6 cwt*5.43) brings the total additional revenue over selling at weaning to \$99.23. A general rule of thumb for preconditioning cost per head is approximately \$50, depending on the variability of feed costs. If we assume \$50 per head for cost, you still realized a \$49.23 per head increase in net returns for preconditioning that calf.

Markets will always be less than perfectly predictable, but preconditioning your calves can add premiums and the value of additional weight gain come marketing time while reducing risk for the buyer as that calf moves through the system.

If you are interested in more information about the Oklahoma Quality Beef Network, you can find more program information as well as contact information for your area at oqbn.okstate.edu.

Beef Quality Assurance: What is it?

Bob LeValley, Oklahoma BQA Coordinator and Kellie Curry Raper, Livestock Marketing Economist

Beef Quality Assurance (BQA) is a certification program that helps cattlemen work toward a common goal to assure consumers that cattle from each segment of the industry (cow/calf, stocker, feedlot) are healthy, wholesome, quality products and are managed with the best production practice standards in the cattle industry. The cow/calf or stocker segments of the industry may seem distant from the retail meat counter, but early management decisions and tasks influence the quality of that final beef product.

BQA certification is voluntary. The BQA program focuses on the following management areas: (1) care and management practices, (2) feedstuffs, (3) feed additives and medications, (4) processing, treatment, and record-keeping, and (5) injectable animal health products. Certification is not required, but it may have economic value to cattle buyers to know that your calves were managed with BQA management principles. Some premium or branded

programs for calves may require BQA certification. Most packers require fed cattle to be sourced from BQA certified operations, so nearly all feedlots are BQA certified. BQA certified cow-calf and stocker producers reflect a positive public image of the beef industry.

Producers can complete BQA certification entirely online at <https://www.bqa.org/> or in-person programs led by authorized BQA trainers. The certification process consists of reviewing relevant material for each topic and successfully completing short quizzes. BQA certification is valid for three years and producers maintain their status by recertification every three years under the same process as the initial certification. Details are available at <http://www.beef.okstate.edu/> or <https://www.bqa.org>. For additional information regarding the BQA certification program, contact your county OSU Extension Office.

Kellie Curry Raper
Agricultural Economics
kellie.raper@okstate.edu



OSU EXTENSION
MASTER CATTLEMAN

David Lalman
Animal and Food Sciences
david.lalman@okstate.edu