Chute-Side Beef Quality Assurance

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There are a variety of production practices that beef cow-calf producers perform on beef calves either prior to weaning, at weaning, or post-weaning. Common practices include castration, identification, health management, dehorning, growth implant administration and preconditioning. Implementation of one or several of the these management practices not only impact the supply of calves available for beef production, but the quality and subsequent performance of calves in the stocker, feedlot, and harvesting segments. Consequently, cow-calf producers can significantly impact the value of their calves through on-farm management.

Vaccination Management

1. Use products from a reputable dealer. If vaccine has ever been unrefrigerated since manufacturing it will be less than 100% effective.
2. Transfer vaccines in coolers from the dealer until placed in the refrigerator at home, and/or until it is mixed and administered into the calf. Utilize cool packs in transport of vaccines whenever they are moved.
3. Do not disinfect syringes with liquid sterilants. Only use boiling water to disinfect syringe components. No alcohol, chlorox, soap, betadine, nolvasan, etc. All of these will inactivate modified live virus (MLV) vaccines upon contact and cause damage to killed (K) products.
4. Do not lubricate syringes with petroleum based lubricants. Use only the first draw of vaccine as the lubricant. Other products will inactivate MLV products.
5. Protect vaccine and syringes from sunlight; it will inactivate vaccines.
6. Protect vaccines and syringes from heat; it will inactivate the vaccine.
7. Mix only enough vaccine to last 1 hour or less at a time. MLV products must be used when mixed; they cannot be stored in refrigeration for later use. Killed products should not be kept after they have been drawn from either, unless a sterile needle was used each time vaccine was removed from the bottle.
8. Use only sterile needles in the vaccine bottle.
9. Keep the “working bottle” in a cooler with the syringes along with cool packs. Keep syringes protected from the sunlight and heat. Keep unused products in another cooler away from the working area.
10. When using more than one product, label the syringes so mistakes are not bade in drawing vaccines during processing.
11. Inspect syringe working parts and calibration before, during, and after using. Some syringes can easily be changed so that under- or over-dosing of products occurs.

12. Make sure proper dosage is administered. Many products are now administered in 2cc doses instead of the old standard 5cc. Calibration of syringes is critical to properly administer these low-dose products.
13. Use proper injection site selection. When possible, vaccinate in front of the shoulder. Intramuscular (IM) injections should be given 2-3 inches below the top of the neck and 4-6 inches in front of the shoulder blade. Subcutaneous (SubQ) injections should be ginven in the neck region or behind the foreleg in the elbow pocket.
14. Give all products labeled for SubQ or IM by the SubQ method outlined above.
15. Booster all vaccines and bacterins as outlined on label directions. Normally, boosters are required 2 to 4 weeks post-vaccination.

Castration Management

Although the practice of castration is widely utilized within the industry, the timing and method utilized for castration can vary considerably between operations. Factors that may impact timing of castration include producer philosophy, product marketing claims, weather, and availability of resources such as facilities or labor. Some cattlemen believe that delayed castration improves growth in nursing calves. This belief is also endorsed by some castration tool manufacturers who claim that delayed castration creates significant weight gain advantages at weaning compared to calves that were castrated shortly after birth. Below are the results of two research projects conducted to examine the effect of age at castration and method of castration on calf performance.

Age of Castration

Effect of age at castration on beef calf performance http://edis.ifas.ufl.edu/an289

Early castrates (n = 23 Angus; n = 28 Brangus) were a mean age of 36 days (range 3 to 73 days) at castration. Late castrates (n = 15 Angus; n = 26 Brangus) had a mean age of 131 days (range 84 to 180 days of age) at castration. No differences were observed in body weight change and average daily gain (Table 1) during the trial period. When comparing calf body weights for the month of May no differences were observed between the early and late castration treatments. This implies that calves castrated at or near birth had overcome any potential growth delays related to castration by the time body weight measurements were initiated. Additionally, early castrates did not seem to experience any significant disadvantage in growth due to treatment throughout the trial period.

Since both early and late castration treatments were performed prior to weaning and the onset of puberty, these results would seem reasonable. The concept underlying delayed castration is to leave male calves intact long enough to capture the benefits of endogenously secreted androgens that are known to stimulate growth in animals. However, to capture the full benefit, castration would most likely need to be delayed until calves approach puberty. It is only at this point that calves would have the ability to secrete enough endogenous testosterone to create significant differences in weight and growth performance. The comparable pubertal status of the treatment groups in this study likely contributed to the similar weaning weights and growth measures between the early and late castrates. Producers should recognize that castration at or shortly after birth will not have a detrimental effect on calf performance or ultimate weaning weight. Equally important, producers should also realize that delaying castration until calves are approximately 131 days old will not bring added pounds at weaning despite some producer philosophies and marketing claims that endorse such management practices.

Table 1: The Effect of Age at Castration on Calf Growth Performance

	Treatment[1]			
Item	Early	Late	SE[2]	P-Value
Birth weight, lb.	80	81	2.4	0.83
Weaning weight, lb.	456	452	11.5	0.76
Weight per day of age, lb.	2.44	2.35	0.06	0.24
Adjusted 205-d weaning weight, lb.	512	504	8.9	0.51
Body weight change, lb.				
May to June	77	75	4.7	0.79
June to July	86	82	3.6	0.40
July to August	100	96	4.3	0.55
May to August	176	171	5.9	0.49
Birth to Weaning	376	371	10.8	0.71
Average daily gain, lb/day				
May to June	2.32	2.27	0.14	0.79
June to July	2.06	1.96	0.09	0.39
July to August	1.65	1.59	0.07	0.54
May to August	1.88	1.82	0.06	0.49
Birth to Weaning	2.00	1.92	0.05	0.19

[1] Early Castrated (mean age at castration = 36 days) Late Castrated (mean age at castration = 131 days)

[2] Standard error (n=92)

Method of Castration

Does the method of castration affect calf performance http://edis.ifas.ufl.edu/an291

There are many accepted methods of castration for beef cattle. Some methods are more suitable for certain situations than others. The methods available for castration can be broadly classified as either surgical or bloodless. Surgical methods are more invasive and possibly more painful than bloodless methods. Surgical methods include practices such as knife cutting, the emasculator method, and the Henderson Castrating Tool™. Bloodless methods include banding techniques, Burdizzo emasculatomes, and chemical castration.

Castration of calves reduced calf average daily gain by an average of 76% during the post-castration period (day 0 to14), regardless of method used (Table 2). Average daily gain over the entire experiment (day 0 to 84) was similar (mean = 1.94 lb/day) for all treatment groups, indicating that castrated calves were able to compensate and recover from castration regardless of castration method. Daily feed intake from day 0 to 14 (post-castration period) was similar (mean = 12.98 lb/day) for treatment groups. Daily water intake was similar (mean = 9.6 gal/day) among treatment groups from day 0 to 14 and from day 0 to 84 (mean = 8.2 gal/d). These results indicate that the short-term stress of castration did not suppress water intake. Gain-to-feed ratio was similar among treatments from day 0 to 14 (mean = 0.03) and from day 0 to 84 (mean = 0.09). These results indicate that all methods of castration reduce average daily gain compared to control steers during the first 14 days after castration. However, by day 84, average daily gain was similar regardless of castration technique. These results imply that the method of castration may not impact average daily gain long term when castrating single source weaned calves weighing approximately 500 lb.

Table 2. Effect of castration technique on measures of performance and intake in beef calves

	Treatments[1]						
Item	CON	BULL	BAN	HEN	SUR	S. E.[2]	*P*-value
Average daily gain, lb/day							
d 0 to 14	1.60[a]	1.10[ab]	0.33[b]	0.53[b]	0.57[b]	0.33	0.06
d 0 to 84	1.98	2.21	1.76	1.98	1.98	0.13	0.42
Daily feed intake, lb/day							
d 0 to 14	13.6	12.5	12.8	12.1	13.9	1.2	0.80
d 0 to 84[3]	20.9	20.9	20.0	20.9	21.1	0.95	0.92
Daily water intake, gal/day							
d 0 to 14	10.67	8.74	9.61	9.16	9.66	0.87	0.61
d 0 to 84[3]	8.63	8.37	7.74	8.37	8.13	0.48	0.71
Gain:Feed							
d 0 to 14	0.10	0.06	-0.06	0.03	0.02	0.05	0.29
d 0 to 84	0.10	0.10	0.09	0.09	0.09	0.005	0.39

[1]CON = calves castrated pre-trial; BULL = intact male calves; BAN = calves banded on day 0; HEN = calves surgically castrated with Henderson castration tool on day 0; SUR = calves surgically castrated with emasculators on day 0.

[2]Standard Error

[3]Data reported as average daily intake by week

[a, b] Means within same row with different superscripts differ $P<0.05$.