BEEF CATTLE RESEARCH UPDATE

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Effect of Weaning Method on Beef Calf Performance during Receiving and Finishing

Kansas State University researchers evaluated the welfare and performance of beef calves during a 28 day ranch-of-origin preconditioning phase and during a 60 day feedlot receiving phase using beef calves that had previously been subjected to 1 of 3 weaning methods.[1] The three weaning methods were: drylot weaning + dam separation, pasture weaning + fence-line contact with dams, and pasture weaning + fence-line contact with dams + supplemental feed delivered in a bunk. This study used 460 Angus x Hereford calves (496 lb) weaned at approximately 180 days of age. Drylot weaned calves were transported about 30 miles immediately after separation from their dams and fed a diet formulated to promote 2.2 lb/day gain at a dry matter intake (DMI) of 2. 5% of body weight during the 28 day preconditioning phase of the study. Pasture weaned calves were maintained for 28 days in a single native pasture and were allowed fence-line contact with their dams for 7 days. Supplemented pasture weaned calves were fed the same ration as drylot weaned calves at a rate of 1% of body weight three times weekly. After the 28-day preconditioning period, all calves were transported 4 hours to the Western Kansas Agricultural Research Center in Hays, KS and fed a feedlot receiving diet for 60 days. Beginning on the morning after feedlot arrival, animal behavior was assessed 3 times daily for 7 days.

The effects of weaning method on calf performance during the preconditioning and receiving phases are shown in Table 1. Calf average daily gain (ADG) during the 28-day preconditioning phase tended to be greater (P = 0.08) for drylot-weaned calves than for pasture-weaned calves receiving no supplement (gain of 0.68 lb/day vs. loss of 0.75 lb/day). The incidence of respiratory disease did not differ between weaning methods. During the 60-day receiving period, drylot calves had greater daily gains and final weights (P < 0.01) than either pasture-weaned treatment which was driven by greater DMI (P < 0.01) by the drylot calves. As a result of these changes, feed efficiency was better for drylot weaned calves than non-supplemented pasture weaned calves (P = 0.01) with feed efficiency being intermediate for supplemented pasture-weaned calves. Supplementing pasture-weaned calves did not increase daily gains or DMI compared with no supplementation.

Table 1. Effect of weaning method on calf performance and health.

	Drylot	Pasture	Pasture + Supp.
Preconditioning:			
Initial weight, lb	498	503	503
End weight, lb	518	481	485
ADG, lb	0.68[a]	-0.75[b]	-0.62[ab]
Incidence of respiratory disease, %	5.01	1.91	0.63
Feedlot Receiving:			
Arrival weight, lb	518	481	485
60-day weight, lb	697[c]	644[d]	655[d]
ADG, lb	3.13[c]	2.82[d]	2.93[d]
DMI, lb	17.20[c]	16.98[d]	17.02[d]
Feed/Gain	5.49[c]	6.04[d]	5.80[cd]

[a,b] Means within rows without common superscripts differ (P = 0.08).
[c,d] Means within rows without common superscripts differ (P ≤ 0.01).
Adapted from Bailey et al., 2012.

These researchers reported that a greater proportion of drylot weaned calves came to the bunk at the time of feeding during the first 5 days of receiving compared with non-supplemented pasture weaned calves. Similarly, a greater proportion of drylot weaned calves were observed at the bunk

during the first 4 days of receiving compared with pasture + supplement weaned calves. However, the number of calves observed at the bunk were similar across treatments by day 6.

These researchers concluded that these data suggest that animal performance and welfare during the receiving period were not improved by pasture preconditioning compared with drylot preconditioning. The behavior and performance data suggested that previous experience consuming a concentrate-based diet from a bunk paid greater dividends during receiving than reducing stress associated with maternal separation through fence-line contact with dams.

Following the receiving phase of this study, finishing performance and carcass characteristics of the steers from this study (234 head) were evaluated.[2] Following the receiving period, the steers were adapted to a finishing ration over a period of 21 days. After 120 days on feed, the steers were scanned by ultrasound to determine fat thickness over the 12th rib and assigned to 1 of 3 harvest dates based on this scan to meet an average carcass endpoint of 0.45 inches of backfat over the 12th rib.

The effect of weaning method on finishing performance is shown in Table 2. At the beginning of the finishing period, drylot weaned steers were 53 and 42 lb heavier than pasture weaned or pasture + supplement weaned steers, respectively. However, during finishing the non-supplemented pasture weaned steers compensated fully for the previous nutritional restriction and gained faster ($P = 0.01$) and more efficiently ($P < 0.01$) than the other treatments. As a result, final live weights did not differ between weaning treatments. Similarly, the number of days on feed did not differ between treatments. Hot carcass weight and carcass characteristics also were unaffected by treatment (data not shown).

Table 2. Effect of weaning method on finishing performance.

	Drylot	Pasture	Pasture + Supp.	P-value
Initial weight, lb	697^{a}	644^{b}	655^{b}	< 0.01
End weight, lb	1237	1257	1233	0.56
ADG, lb	3.53^{a}	3.95^{b}	3.64^{a}	< 0.01
DMI, lb/day	23.64	23.64	23.66	0.40
Feed/Gain	6.67^{a}	5.99^{b}	6.54^{a}	< 0.01
Days on Feed	163	169	167	0.14

^{a,b} Means within rows without common superscripts differ ($P < 0.05$).
Adapted from Bailey et al., 2013.

These researchers concluded that low-input preconditioning programs that involve pasture weaning may not have negative impacts on finishing performance or carcass characteristics of beef cattle and may be a means of reducing costs associated with preconditioning.

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[1] Bailey, E. A., J. R. Jaeger, J. W. Waggoner, G. W. Preedy, L. A. Pacheco, and K. C. Olson. 2012. Effect of weaning method on welfare and performance of beef calves during receiving. Proc. West. Sec. Am. Soc. Anim. Soc. 63:25-29.

[2] Bailey, E. A., J. R. Jaeger, J. W. Waggoner, L. A. Pacheco, G. W. Preedy, T. B. Schmidt, and K. C. Olson. 2013. Weaning method influences finishing performance without impacting carcass characteristics. Proc. West. Sec. Am. Soc. Anim. Soc. 64:214-217.