BEEF CATTLE RESEARCH UPDATE

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Vaccination of Newly Received Beef Calves: Arrival vs. Delayed

Most feedlot receiving protocols include vaccination against bovine respiratory disease (BRD) viruses for high-risk cattle within 48 hours of arrival. However, the stress commonly associated with weaning, marketing, and shipment of feeder cattle can temporarily compromise immune function, thereby reducing the effective response to vaccination. Recent Arkansas research evaluated the effect of delayed modified live virus (MLV) vaccination versus on-arrival MLV vaccination on health, performance, and serum infectious bovine rhinotracheitis (IBR) titer levels of newly received high-risk stocker calves.[1] This study used 528 crossbred bull and steer calves (initial weight of 434 lb) purchased from an Arkansas auction barn. The calves were either vaccinated at arrival or 14 days after arrival with a 5-way MLV vaccine (Express 5®, Boehringer-Ingelheim Vetmedica Inc.). All calves were revaccinated 14 days after the initial vaccination. Calves were weighed on days 14, 28 and 42 of the study (42 day receiving period). Blood samples were collected on days 0, 14, 28, and 42 to determine serum IBR titers providing an indication of vaccine efficacy. Blood samples were also collected from the delayed vaccinated calves after the receiving period had ended (day 56).

These researchers reported that daily gains were greater for delayed vaccinated calves compared with arrival vaccinated calves from day 0 to 14 (2.56 vs. 1.94 lb/day) and from day 0 to 42 (1.65 vs. 1.43 lb/day). Days to first treatment, total treatment cost, percentage death loss, and pasture gain after the 42 day receiving period did not differ between vaccination treatments. Morbidity rates for BRD were high for both arrival and delayed vaccinations (71.5 and 63.5%, respectively) and did not differ. They found that overall, 93% of BRD pulls occurred within the first 14 days of receiving which suggest there was little or no advantage to vaccinating these high-risk stocker calves at arrival. Positive IBR titer seroconversion was greater for delayed vaccinated calves on day 42 of the study, and for 28 and 42 days after the initial vaccination (Figure 1).

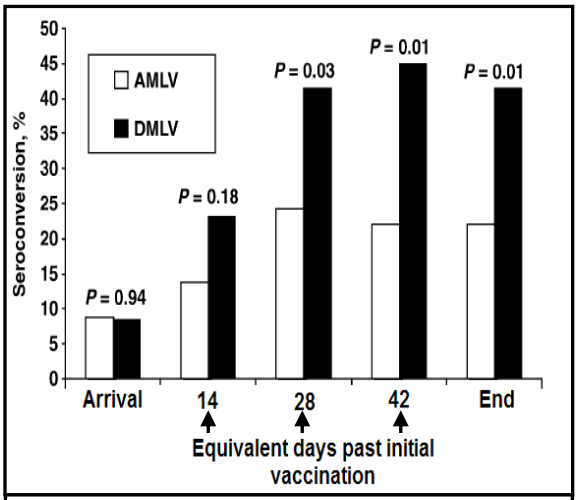

Figure 1. Percentage of IBR seroconversion for calves receiving arrival MLV vaccination (AMLV) or delayed MLV vaccination (DMLV) on arrival (day 0), equivalent days past initial vaccination, and at the end of the receiving period (day 42). *Adapted from Richeson et al., 2008*

In conclusion, these data suggest that delaying vaccination by 14 days may increase daily gains during the receiving period. In addition, the higher seroconversion to IBR in the delayed calves indicates a possible improvement in acquired immune response to IBR. Since no differences in morbidity or mortality were detected for the two treatments, and performance for delayed cattle was slightly improved, results of this study suggest an economic advantage to delaying initial MLV vaccination until 14 days after arrival.

Vaccination of Newly Received Beef Calves: Single vaccination vs. Revaccination

Recent Oklahoma research evaluated the effect of a MLV vaccine (Vista 5®, Intervet) with or without revaccination on day 11 of a preconditioning period.[2] A total of 612 crossbred male calves (initial weight of 483 lb) were used in this study. After completion of the preconditioning phase, eight pens (4 pens/treatment) were shipped to a feedlot for finishing. On arrival at the feedlot, steers from each

vaccination treatment were either vaccinated with Vista 5® or not vaccinated. No differences in performance (gain, intake, and feed efficiency) were observed during the preconditioning phase. Morbidity due to BRD was greater for revaccinated calves compared with single vaccinated calves. However, days on feed at first BRD treatment, treatment success rate, and mortality rate did not differ between treatments. No differences in gain or intake were observed during the finishing period. Revaccinated calves were more efficient regardless of the vaccination protocol in the finishing period. In summary, these results suggested that a single vaccination was as efficacious as a revaccination program in high-risk calves, although feed efficiency was improved in the revaccinated group during finishing.

The Costs Associated with Reimplanting Feedlot Cattle

Research has shown that reimplanting feedlot cattle improves performance. A recently published review showed that the administration of two sequential combination TBA/E_2 (trenbolone acetate/estradiol) implants improves average daily gain and feed efficiency (feed/gain ratio) by 6% and 4%, respectively compared with using a single combination implant.[3] A recent study conducted by Kansas State University and Intervet, Inc. determined the costs incurred when cattle are reimplanted.[4] This study involved 20 commercial feedyards and farmer-feeder operations throughout Kansas, Nebraska, Iowa, and Texas. Reimplant events in these yards were monitored to measure the number of employees involved and the time taken to reimplant pens of cattle. These data were then used to calculate labor costs associated with reimplanting. This study also compared dry matter (DM) intake for pens of cattle for 10 days prior to and 10 days following reimplanting.

This study reported that cattle were away from their pen an average of 102 minutes when reimplanted (range of 42 to 153 minutes). It was noted that cattle consumed an average of 0.44 lb/hd/day less DM for the 10 days following reimplanting compared to the 10 days prior to reimplanting. The feedlot managers involved in this study estimated that one animal was seriously injured for every 8,136 cattle reimplanted (average of manager estimates). In summary, these researchers concluded that the total cost of reimplanting for a cattle owner was $1.78 per head, which included chute charges, cost of reduced performance, and physical injuries to cattle. The costs to a feedyard was approximately $1.75 per animal, which included labor, planning, and equipment costs, reduced feed intake, and the cost of serious animal injuries. It was concluded that low stress animal handling and proper management at reimplanting should help ensure that these costs do not overcome the net value of reimplanting.

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