Early Weaning of Beef Calves

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Early weaning of beef calves is a management practice usually reserved for dire circumstances where the nutritional environment cannot adequately support a lactating cow. In these conditions, calves are weaned and fed directly; allowing dry cows to scavenge to meet their reduced nutrient needs with the intent of maintaining, if not increasing body condition. Extended droughts would likely be the number one cause of early weaning, and it would occur more frequently in a western range setting than in our temperate climate.

More recent research with early weaned beef calves have investigated the impact of accelerated growth following early weaning (100-150d) and its subsequent effect on carcass merit. These studies generally indicate that accelerated growth during 100-200d of age had a positive impact on carcass marbling score when compared to conventionally weaned calves. In fact, early weaned steers have higher quality carcasses, are harvested at a younger age, and have a greater gain to feed efficiency than traditionally weaned steers. Recent data suggest marbling development during this phase of a calf's life can be influenced by management and nutritional inputs. Given that fat cell development is largely influenced by level of nutrient intake, stimulating intramuscular fat formation may be possible during periods where nutrient intake is greater than maximal muscle growth. This is likely the case for increased marbling scores in those cattle subjected to early weaning and accelerated feeding protocols.

However, early weaning calves coupled with continuous accelerated feeding often results in lighter carcass weights, greater number of days on feed, and increased feed costs. Recently, the dramatic increase in feed costs has caused the beef industry to revert to increased utilization of forage and by-products during a post weaning growing or stockering phase before placing cattle on feed. In particular, cattle are placed in management scenarios that utilize slower growth rates and decreased inputs.

A beef cattle production scheme based on a forage diet with strategic supplementation of high energy diets at biologically opportunistic times that favor fat deposition, sexual maturation and product enhancement may hold the key to future beef cattle food production schemes. To investigate this production system in Virginia, we utilized 42 fall born (2009) and 53 spring born (2010) calves out of first-calf heifers. One half of the calves were early weaned (105d, fall; 101d, spring). Calves were offered 2lb/hd/d of commercial calf starter for the first 12-14d. After 2 days, additional feed was added to the base starter amount. This ration was formulated to be approximately 20% CP and 80% TDN. At the end of the two week transition period calves were consuming 8/lb/hd of feed and 1-2 lb of hay on a daily basis. Calves were transitioned through a series of 4 rations until their contemporaries were weaned (250d, fall group and 205d, spring group).

Post-weaning, calves were sorted and managed by gender with weaning treatment groups commingled and treated as contemporaries. In both seasons, calves were moved to pasture with no supplementation. Calf performance was monitored by weights and periodic ultrasound imaging of backfat, ribeye area and intramuscular fat. At 13 months of age the fall born steers were shipped to the Shenandoah Valley Agricultural Research and Extension Center and fed a high concentrate ration until harvest in January and February at the Virginia Tech Meat Science Center in January and February 2011. Spring born steer calves will be started on feed in February with expected harvest dates of May – June 2011. All heifers were retained and will be monitored through their development and herd life for any possible carryover effects due to weaning treatment.

Preliminary growth, feed and carcass data should be available by the conference date.