

Economic Decision Model to Optimize Culling Decisions for Beef Brood Cows at Weaning

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Producers in the southeastern United States operate under a different set of environmental and management conditions than those in other U.S. regions. Differences include pasture quality, type, length of season and availability of feed supplements. Seasonal breeding and calving pattern, age at weaning and market prices also help define a unique pattern for beef production.

Comparison of marginal net revenue (MNR) of the current animal to the average net revenue (ANR) of a replacement has been used to optimize replacement decisions in dairy cattle. The goal is to maximize net revenue at the level of the producer, over time. Assumptions are that investment capital investment is available to support the culling decision, and replacement animals are of equal production ability to those culled.

An economic model to support culling decisions, using data reflecting the unique characteristics of the beef cow-calf industry in the southeastern United States, was developed. Output from the model can be used to estimate the average age to cull and replace beef brood cows to maximize future income to the producer. User-defined inputs include average weight and market price for weaned calves and cull cows, cost of replacements and annual feed cost. Average annual probability and cost of disease, injury or cull, and changes in feed consumption, slaughter value, and calf weaning weight over time are incorporated into the model. Output from the model can be used to help make culling decisions at weaning in beef herds with a single annual breeding and calving period.