



Beef Cull Cow Management and Marketing Alternatives

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Introduction

Cow-calf producers with spring calving herds typically wean calves from their mothers in late summer or early fall and subsequently make decisions about culling cows from the herd. Reasons for culling may include difficulty rebreeding, old age, genetic improvement from replacement breeding stock, poor health or physical defects, disposition and producing inferior calves. Cull cows can represent a significant component of a cow-calf operation's annual income. Past research suggests that cull cow revenue as a percentage of annual income ranges from 15 to 30 percent. Alongside the culling decision is a marketing decision – the decision to market cull cows at culling time or retain them on the farm for marketing at a later date.

Seasonality and Resources

Cull cow prices are typically lowest in the fall, as many producers sell cull cows immediately after weaning. The cull cow market exhibits consistent seasonality across years, as evident in Figure 1, where prices in March and April are approximately 15 index points higher than prices in October and November. Though the market price levels have seen unusual increases in more recent years, the seasonal pattern has persisted. This seasonality offers opportunities to deviate from traditional fall marketing of cull cows and potentially increasing salvage value by retaining cows into the spring months to market during seasonal high prices (Feuz 2010; Peel and Meyer 2002; Yager, Greer and Burt 1980). Many factors influence this decision, including individual cow health, potential weight gain, cash flow needs, on-farm resources for retention and feeding, current market conditions versus market expectations and time. In addition to feed costs, the decision to retain cull cows requires more labor and management time, including feeding cows, separating culls for possible rebreeding and pregnancy checking. Facilities and pasture availability are important considerations as well, since cull cows on feed are likely managed as a group separately from the breeding herd. Not considered here is the fact that feeding culls utilize forage resources that might be used for another cattle enterprise, either more brood cows or stocker cattle. On the other hand, feeding culled cows may be a good way to capture the value of excess or leftover pasture or hay that

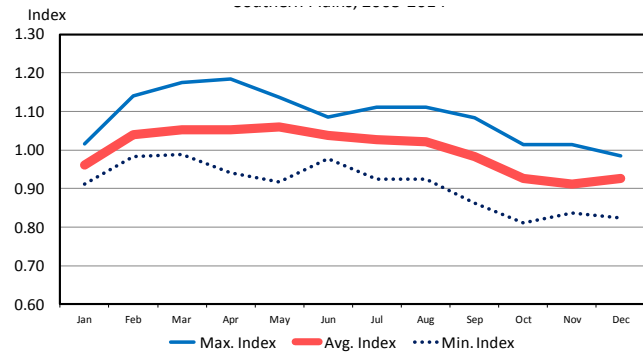


Figure 1. Seasonal Price Index for Utility (Slaughter) Cows, Southern Plains, 2004-2013. Data Source: USDA-AMS, Compiled & Analysis by LMIC Livestock Marketing Information Center.

may not otherwise get utilized or have a better use. Ultimately, the marketing decision has implications for the individual cow's salvage value and the producer's bottom line.

Decisions about culling and marketing cull cows in a cow-calf operation have both long-run and short-run components. The bulk of research by economists has focused on when and how many cows to cull annually from the herd to optimize profitability over time, especially over a typical cattle cycle (e.g. Frasier and Pfeiffer, 1994). There has been more limited research focused on the short-run question of when during the year should cull cows be marketed for highest net returns (Yager, Greer, and Burt, 1980). Individual cow-calf operators must consider whether an alternative management and marketing strategy adds more value than cost to the cow and how much risk and uncertainty is associated with adding value while incurring the additional cost.

The Retention Decision

The retention decision is a cow by cow decision. The process begins with determining which cull cows, if any, are suitable for retention and delayed marketing and which should be marketed at culling. Identifying cull cows for possible retention should be based primarily on (1) cow health and (2) body condition score.

Cow Health

Cow health is a key decision variable when considering retaining cows beyond culling them from the production herd. Cows must be healthy enough to continue eating sufficiently to gain weight and to live through the retention period until harvest. Culling a cow from the herd because of poor health or physical defects is recommended because the risk of retaining her likely outweighs any benefit. Such cows should be marketed at culling as part of the overall risk management strategy of the cow-calf operation. For cows outside of this category, how does a producer determine which cows to consider for retention?

Body Condition Score

A three-year joint study by Oklahoma State University and The Samuel Roberts Noble Foundation, Inc. suggests that initial body condition score (BCS) of the cow at culling should play an important role in the retention decision (Amadou, et al., 2014). The study examined net returns from beef cull cow retention across five potential marketing periods relative to revenue that would have been received if cows were marketed at fall culling. Heavy cows (initial BCS > 6) generally yielded zero or negative net returns from delayed marketing, relative to revenue at culling. Cows with lower BCS scores at culling (thin (initial BCS < 5) or medium ($5 \leq \text{initial BCS} \leq 6$)) yielded higher net returns from retention than did heavy cows. Average daily gain (ADG) decreased over time for each BCS category, but thin and medium cows tended to have higher ADGs than heavy cows. The implication for producers is that cull cows with relatively high body condition scores should be marketed at culling, while retention and delayed marketing of cows with lower body condition scores may increase salvage value. For more information on how to assign body condition scores to beef cows, see Selk (2004).

The Feeding Strategy

After identifying cows suitable for retention, the producer's next decision is feeding strategy. The combination of weight gain and seasonal price increase provides the opportunity for increased returns from retaining and later marketing of cull cows. Additional opportunity for increased revenue exists if the carcass grade of cows harvested can be increased (Yager, Greer and Burt, 1980). Limiting factors are physical growth limits of cows, the relatively poor feed conversion of cows, and the related costs associated with retaining and feeding cows, with the largest expected cost being feed.

Cows might be kept and grazed on stockpiled forages, grazed on wheat pasture, fed harvested forages and supplement, or placed in a drylot feeding program on a high concentrate ration. The amount of gain and cost of gain will vary widely for these alternative programs. Pasture and feed costs will vary by type and quality of stockpiled forage, any purchased feed and supplement, and by cow condition since leaner cows are typically more efficient converters of feed to pounds compared to fatter cows.

Ultimately, producers face two choices regarding feeding strategies: (1) feeding to maintain body condition, relying primarily on the seasonal price upswing for added value or (2) feeding to increase carcass grade and dressing percentage at marketing.

Feeding to Maintain Body Condition

Feeding retained cull cows a maintenance diet is the lower cost option and relies on the seasonality of prices through the retention period to generate positive net returns. There is typically a price increase for slaughter cows from the seasonal low in November through the seasonal high in July, though there is no guarantee prices will increase or by how much. Figure 2 illustrates average weight gain and average feed cost per cow over three years and across a five month retention period for two relatively low cost systems: a dry-lot system and a stockpiled native pasture system (Raper, Biermacher and Amadou 2014). Note that the differences in cost and gain between systems can be substantial.

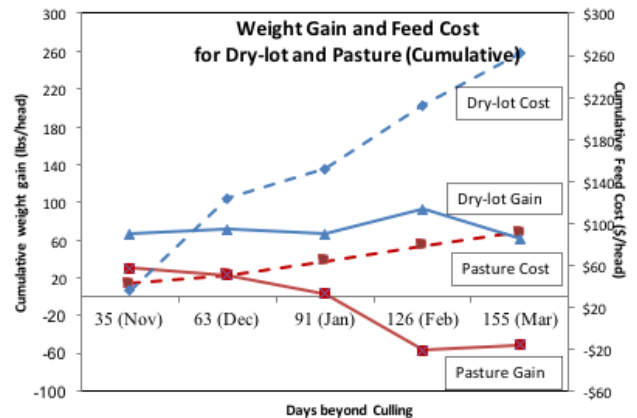


Figure 2. Weight Gain and Feed Cost for Low-Cost Dry Lot System and Native Pasture System.

Returns to retention as compared to revenue at culling by retention system and body condition score are illustrated in Figures 3 and 4 (taken from Amadou, et al., 2014). Results favored the lower cost, stockpiled pasture-based feeding program with spring marketing over fall marketing. Gains from the seasonal price upswing compensate for the minimal (average) weight loss in the pasture system cull cows, given the low retention cost, while the seasonal upswing in price coupled with modest weight gain was not enough to compensate for the higher cost of retaining cows in the dry-lot system with hay and supplement.

Feeding to Increase Carcass Grade

Multiple studies (e.g. Sawyer, Mathis and Davis, 2004; Schnell et al, 1997) examine whether feeding cull cows to increase carcass grade can improve palatability or increase revenue. While most find that it does, few studies examine whether the cost of increasing carcass grade negates the increase in revenue. Feeding cows to increase carcass grade in hopes of higher prices, and thus higher revenues, will require more intensive – and more costly - feeding than the maintenance diets illustrated above. Further studies with data that reflect both revenues and costs for on-farm alternative cull cow management and marketing practices would facilitate improved research and outreach to producers on this topic.

Price per hundredweight for an individual cow is based on expected USDA carcass grade (lite, lean, boning and breaker) and dressing percentage (low, average, high) at

Net Returns for Delayed Marketing of Cull Cows, Pasture System, Estimated Prices (2003-2010)

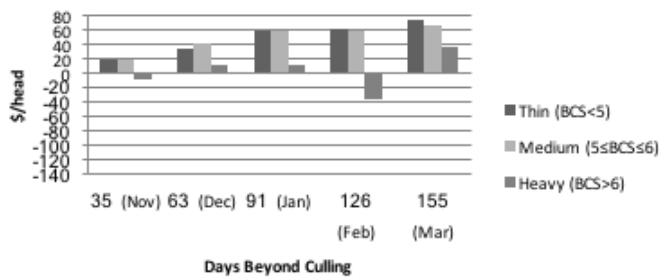


Figure 3. Net Returns (\$/head) By Body Condition Score Across Marketing Periods for Cull Cows Retained in Pasture System, Estimated Prices (2003-2010).

Net Returns for Delayed Marketing of Cull Cows, Dry Lot System, Estimated Prices (2003-2010)

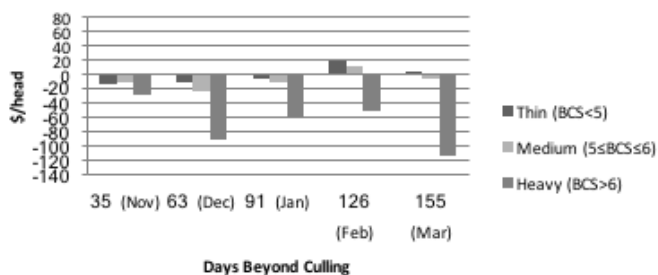


Figure 4. Net Returns (\$/head) By Body Condition Score Across Marketing Periods for Cull Cows Retained in Pasture System, Estimated Prices (2003-2010).

marketing. Most cows are in the latter three categories for carcass grade, with breaker being the highest conditioned cows with high dressing percentages and thus the highest price category. Generally speaking, the price differential between lean and boning grades will be higher than the price differential between boning and breaker grades. In the context of the Amadou et al. (2014) study, cows classified as heavy at culling would typically be graded as breakers. Cows classified as medium in the study would generally grade as bonings while thin cows would likely grade as low bonings or lean. Peel and Doye (2008) discuss the relationship between BCS and USDA slaughter cow grades. There is not a one-to-one correlation but a BCS in the 3 to 5 range is approximately equivalent to a Lean marketing category and a USDA grade of Cutter. Cows in a feeding program that gain about 100 lbs can probably increase their BCS about two steps, say from BCS 4 to 6 or BCS 5 to 7. This also translates into upgrading from a lean to a boning category and from USDA Cutter to USDA Utility grade. Most cull cow marketing studies focus on BCS at marketing without fully accounting for costs (and potential benefits) of holding and feeding cull cows to obtain a higher BCS. Cows with relatively low BCS (i.e. leaner) at culling should be more feed efficient in a retention setting, since a greater percentage of feed should go to weight

gain rather than to weight maintenance relative to cows with higher BCS at culling. Cost of gain will likely be less for cows with lower initial BCS, enhancing the opportunity for positive net returns from retaining cull cows for a period rather than marketing them immediately at culling.

Timing in Marketing

The strongest driver of net returns from retaining cull cows appears to be the seasonal upswing in prices. As illustrated in Figure 1, the seasonal low typically occurs in November with prices climbing through the winter months and peaking in late spring (April, May). Amadou et al. (2013) above suggests marketing cull cows after 90 days is optimal, though the seasonal high typically occurs later. While net returns in the study above did increase beyond mid-January, producers must weigh the marginal increase in net returns with the risk of holding cull cows beyond that period. Both returns and risk may vary by production year as well as by feeding strategy.

Producer Alternatives and Economic Evaluation

Producers considering delayed marketing for cull cows can choose from a host of alternative management systems. Those systems vary by individual producer resources as well as on region of the country. Two such possibilities are highlighted above. Unfortunately, biological and cost data on alternative systems available to producers is lacking, limiting the extent of economic analysis on cull cow retention. That said, partial budgeting can provide an informal but useful assessment of the feasibility of alternative systems for individual operations. Feuz (2010) advocates that the partial budget is a proper way to evaluate the profitability of retaining cull cows for feeding versus selling cows at culling. Accordingly, a partial budget includes: (1) expected revenue at the end of the retention period, (2) any additional costs from feeding the cull cow, and (3) the revenue lost by not marketing the cull cow at the time of culling (opportunity cost).

The partial budget approach can help producers recognize both the potential advantages and known risks associated with each alternative. To that end, Feuz has developed a useful cull Cowculator tool available at <http://cattlemarketanalysis.org/cullCowculator.html>. The tool includes a price forecaster based on current prices, days on feed, and historical price movements. Current market prices for slaughter cows can be retrieved at <http://www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateS&navID=MarketNewsAndTransportationData&leftNav=MarketNewsAndTransportationData&page=LSMarketNewsPageSlaughterCattleAuctions> for the nearest market. Producers can input information specific to their resources and feeding plan to estimate the net return from retention and delayed marketing. The site also includes a partial budget template that would be useful in evaluating feeding opportunities.

Conclusions

The sale of cull cows account for between 15 and 30 percent of gross revenue of the cow-calf enterprise. Typically, producers who manage spring-calving herds market cull cows at the time of culling in the fall when salvage prices are at seasonal lows. Limited research on managing and marketing

cull cows suggests that producers can increase net returns to the enterprise for certain animal, farm resource and market conditions. Cull cows that have lower, poorer body conditions are ideal for retention compared to animals that are heavier and in better condition. Further, the availability of potentially underutilized, stockpiled forages and labor resources is central to the decision to retain culls cows beyond the time of culling. Also important to this decision are: (1) a good understanding of the business's monthly cash flow needs and (2) a good idea of expected input prices. Expectations about movements of cull cow prices throughout the year are also important.

For any particular farm, producers can utilize a partial budgeting approach to determine whether managing cull cows in a retention setting for delayed marketing is economically viable under various scenarios. Research suggests that alternative management and marketing strategies exist that may increase returns under the right conditions; however, the key will be to find the alternative that works best for any one particular operation. Producers should make a retention decision annually for cull cows in the lower BCS categories considering the operation's available and potentially underutilized forage resources, cash flow needs, input prices, and expectations of price movements. However, the decision should be one that is made year by year based on the producer's expectations of price movement, input prices and available resources. Cull cow retention is not a one-size-fits-all decision nor is the decision the same for a given producer every year. It requires thoughtful decision making, good management and timely marketing.

Resources

Some resources for those interested in feeding cows can be found at the following sites.

- http://www.uaex.edu/Other_Areas/publications/PDF/FSA-3058.pdf
- <http://beef.unl.edu/beefreports/symp-2005-20-XIX.pdf>
- <http://pods.dasn.okstate.edu/docushare/dsweb/View/Collection-236>

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