OKLAHOMA COOPERATIVE EXTENSION SERVICE AGEC-613

Cull Cow Grazing and Marketing Opportunities

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Introduction

Cull cow marketing typically receives little of a cow-calf producer's attention despite the fact that cull animals represent 10-20 percent of total revenue for most cow-calf operations. Many producers simply choose to dispose of cull cows as quickly and easily as possible with little thought about the potential to optimize the salvage value of these animals. However, it is possible to increase the value of cull cows by 25 to 45 percent or more by improving cull cow management and marketing. Opportunities to add value come through adding weight, improving the quality classification, and taking advantage of seasonal price patterns. In fact, improved cull cow marketing offers some of the most reliable returns for producers in the uncertain world of cow-calf production. However, both the cost and risk of holding cows a longer period must be weighed against the potential for improving value.

Increasing Cow Weight

At weaning, cow body weight is typically at a low for the production cycle. Figure 1 shows typical changes in weight for both young and mature fall-calving cows (Hudson, 2007). Rapid weight gains can occur on either grass or feed or some combination. Later in this article, we compare expected net returns from four alternative scenarios: maintaining spring calving cows on dry winter pasture through March after weaning in fall, maintaining spring calving cows on dry winter pasture through March then grazing through July, grazing spring calving cows on wheat pasture to March, and grazing fall calving cows to July, while weaning in April. Feeding may be an alternative when feed is cheap, but is not a viable alternative in a high price environment.

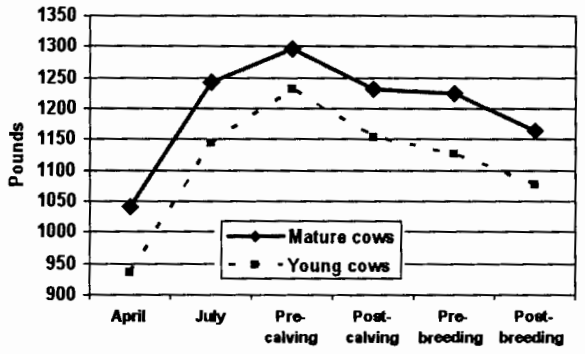

Figure 1. Seasonal Weight Changes for Fall-Calving Cows.

Quality Grades for Mature Cattle

Carcasses from cows or bulls over 42 months of age are eligible for quality grades of Commercial, Utility, Cutter, and Canner. These carcasses are also eligible for yield grades. The USDA-Agricultural Marketing Service (AMS) specifications for quality grades for mature slaughter cattle notes that there may be widely varying combinations of muscling and degree of fatness within these grades. In general, the older the animal, more fat covering is required to achieve a given level of quality. In practice, few slaughter cows are actually graded for either quality or yield grade so the grades are relatively unimportant and are often replaced with variable industry terms according to different marketing programs. It is common to hear the term "Premium" or "Premium White," which is applied to relatively young cows with high quality carcasses. The "White" refers to cows fed a concentrate diet long enough to change fat color of the carcass to white rather than the yellow fat color typical of cows slaughtered directly off of forage.

Valuing Cull Cows in the Marketplace

Because of the variability in muscling and fat cover noted above in the quality grades for mature cattle, cull cow buyers attempt to value muscling and fat cover separately in auctions. Thus cull cows are designated at auctions by estimated red meat yield and dressing percentage. The categories reported by AMS are:

- **Breakers** (or Breaking Utility) defined as cows, normally with a yield grade range of 2 to 4, (estimated red meat yield of 75 to 80 percent) which are processed into various cuts.
- **Boners** (or Boning Utility) defined as cows (estimated red meat yield of 80 to 85 percent) normally boned for processing beef after removal of merchandisable cuts.
- **Lean** are defined as cows with an estimated red meat yield of 85 to 90 percent which will yield at most a few

merchandisable cuts with the majority of the carcass used for boneless processing beef.

- **Light** is the term used for cows that may vary in estimated red meat yield from 75 to 90 percent but always produce fewer pounds of boneless beef because the animal is small in overall size and weight, very light muscled and/or extremely thin in fleshiness.

Cows in each of the four categories–Breaker, Boner, Lean, and Light–may be further differentiated in price by estimated dressing percentage as low, average, or high dressing (percentage) animals. This dressing percentage will be a function of biological type as well as fill or mud and other temporary conditions of the animal. Thus prices reported for cull cows may include all combinations of these yield and dressing categories. The following is an example of the market report for the Oklahoma National Stockyards in OKC in August of 2006:

Table 1. Cull Cow Price Reporting, OKC.

	Average Dress ($/cwt.) Price Range (Ave.)	*High Dress ($/cwt.) Price Range (Ave.)*	*Low Dress ($/cwt.) Price Range (Ave.)*
Breakers	45.00-48.00 (46.50)	48.00-51.00 (49.50)	41.50-44.00 (42.75)
Boners	44.00-47.50 (45.75)	48.00-52.50 (50.25)	41.00-43.50 (42.25)
Lean	43.00-46.00 (44.50)	47.00-53.50 (50.25)	36.00-43.00 (39.50)
Light	42.00-44.00 (43.00)	46.00-48.00 (47.00)	34.00-41.50 (37.75)
			Very low 28.75-35.00

Source: KO_LS795, USDA-AMS, Ag Market News, August 23, 2006.

The distribution of cows marketed by marketing category varies by time of year and other factors. In a sample of 61 weeks between September 2003 and April 2006 at OKC, cull cow marketings included 26 percent Breakers, 34 percent Boners, 28 percent Lean, and 12 percent Light cows. In the fall of the year, the percentage of Lean and Light cows will increase relative to the percentage of Breakers and Boners due to the higher percentage of spring calving cows that tend to be thinner at the time calves are weaned. Other factors, such as drought, may have a significant influence on the composition of cull cow marketings. In the summer of 2006, for example, cull cow marketings between April and September included 16 percent Breakers, 33 percent Boners, 34 percent Lean and 17 percent Light cows.

There is only a rough correlation between the Carcass Quality grades and the marketing categories described above. The quality grades specifically define meat quality while the marketing categories roughly describe the use or functionality of cull animals. It is certainly not necessarily true that Breakers correspond perfectly to Commercial grade, Boners to Utility, and so on. It is more likely, for example, that high yielding Breakers might grade as Commercial, while low yielding breakers might grade as Utility. The Light category, especially low dressing cows, probably often corresponds to Canners but high dressing/high yielding Light animals could be graded as a Cutter while low dressing Lean cows might be Canners.

Cull Cows and Body Condition Score

For many producers, it is helpful to relate the cull cow marketing categories to body condition scores (BCS). Once again there is not a perfect correlation but some relationship can be made between body condition score, marketing classification, and estimated dressing percentage. Body condition score is primarily a measure of the fatness of the cow and will be more highly correlated to dressing percentage than marketing classification per se. However, it depends on the situation. A young cow fed long enough and intensively enough to reach a BCS of 7 to 9 has a greater chance to be classified as a breaker and have a high dressing percentage simultaneously. Such a cow would likely yield a carcass that would grade Commercial. A moderate to heavy muscled cow in thin condition with a BCS of 3 to 4 would be classed as Lean but could be fed to move to a classification of Boner if BCS improves to the 5.5 to 7 range.

Table 2 shows the approximate comparison of cull cow marketing classification, carcass quality grade and cow body condition score. Of these, the most important are the market classification/dressing percentage and cow body condition. From these, a producer can relate cull cow values to the condition of cull cows and project the potential to upgrade cows by improving body condition.

In general, cull cow prices increase as marketing classification improves with less premium for Breakers relative to Boners (Table 3). Note that there is greater variability within a class across dressing percentages (generally 8 to 15 percent between low to average and another 8 to 15 percent between average and high) than there is across market classifications. Table 2 illustrates this point. Thus, producers should carefully weigh attempts to increase fill and otherwise impact weight temporarily relative to the price discounts imposed for lower dressing percentages. Although the overall size and muscling of a cow may largely determine which marketing classification she may achieve, there is clearly value to be added by improving a cow's body condition score up from Lean. Probably the most feasible and most likely instance is that of a cow with moderate to heavy muscling who is culled in thin condition,

Table 2. Approximate Associations between Cull Cow Marketing Classification, Carcass Quality Grade and Cow Body Condition Score for Young Cows.

Marketing Class	*Red Meat Yield*	*Dressing Percentage*	*Approximate Carcass Quality Grade**	*Body Condition Score*
Breaker	75-80	High	Commercial	8-9
		Average	Commercial	8
		Low	Com/Utility	7-8
Boner	80-85	High	Utility	6-7
		Average	Utility	6
		Low	Utility	5.5-6
Lean	85-90	High	Utility/Cutter	4.5-5.5
		Average	Cutter	4-4.5
		Low	Cutter	3-4
Light	75-90	High	Cutter	2-3
		Average	Cutter/Canner	2
		Low	Canner	1-2

* Quality grade depends on maturity. Grades presented in the Table are approximately correct for young cows and would likely be lower for old cows.

Table 3. Average Prices for Cull Cows.

Marketing Class	*Price ($/lb.)**	*% Change in Price Relative to Lean Class*
Breaker	51.3	3.76
Boner	52.07	5.32
Lean	49.44	-
Light	41.58	-15.90

Source: Livestock Market Information Center, January 2004-July 2007.

say a body condition score of 4. With feeding, this cow has considerable potential to improve to the Boner category. In increasing the BSC by 1.5 or 2, from 4 to 5.5 or 6, the cow will gain 100 to 200 pounds. This results in selling a heavier cow at a higher price as a result of improved body condition.

Seasonal Prices for Cull Cows

Because the majority of calves are weaned in the fall, most cow culling takes place immediately after weaning in the fall as well. This causes very pronounced seasonality of cull cow prices with lows in the fall and prices gradually improving to a peak in the summer.

Figure 2 shows the seasonal tendency of cull cow prices in the southern plains for the years 1997-2006. Cull cow prices have the widest extremes between seasonal lows and highs of any class of cattle. Figure 3 shows the average percent change in cull cow prices from the November lows

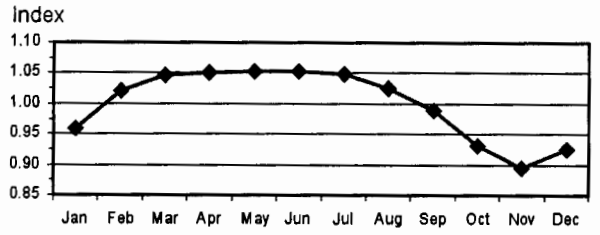

Figure 2. Seasonal Price Index, Utility Cows, Southern Plains, 1997-2006.

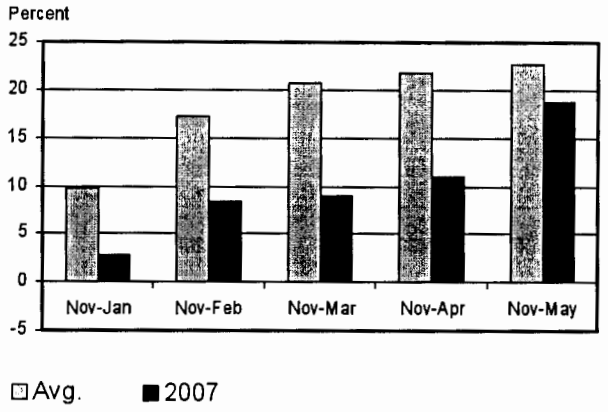

Figure 3. Percent Change in Cow Prices from November of Previous Year, Southern Plains, 1997-2006.

to following months of February to May. These are based on average body condition and show only the tendency for price to change for a given level of cow body condition. Figures 2 and 3 are adapted from charts prepared by the Livestock Marketing Information Center.

Impact of Quality and Seasonality on Cull Cow Value

The combined impact of the quality and price seasonality described above suggest that feeding cull cows generally offers multiple means to increase the value of cull cows. Improving the marketing classification increases the price received and the time that passes may add even more. In the case of spring calving cows culled in the fall, price seasonality will add another 10 to nearly 25 percent to the price for cull cows from the November low to the following spring.

In the spring period of 2005, 2006, and 2007 at Oklahoma City, the per head value of a cull cow from early November to early February increased an average 36 to 46 percent depending on the amount of quality change. These estimates assume a thin cow in November (BCS of 3 to 4) gaining 1 pound per day for about 90 days. It is assumed that the cows could be sold in November as low dressing Lean cows or sold in February as low dressing Lean or as average to high dressing Boners. This increase in value is the result of higher prices due to improvements in marketing category, higher seasonal prices, and a roughly 90 pound increase in cow body weight. In total, the increase in value over these years ranged from $126 to $232/head with an average increase of $183/head. The value of gain ranged from $1.27 to $2.40/ pound of gain with an average of $1.64/pound of gain.

For the fall calving cows, the situation is somewhat different, although the general considerations are the same. Fall calving cows will typically be culled in the April to June period which means that they have already picked up much of the seasonal price improvement at culling time compared to the fall lows. However, the seasonal price index continues to increase slowly from April to a peak in July, so there is still some opportunity for seasonal price increases during this period. More importantly, there is considerable potential to feed culled fall calving cows for increased value due to improved quality. In fact, if cows culled in late spring have access to high quality forage, they may increase weight and quality very rapidly and economically in as little as a month of grazing. The increase in value will depend on how much and how fast body condition changes but increases of 15 to 25 percent are likely.

Cost of Grazing Cows Following Weaning

Four scenarios are evaluated as to potential costs and returns associated with maintaining cull cows beyond weaning to increase weight, improve BCS and price plus capitalize on seasonal price increases. In all scenarios, the cow is presumed to start at a BCS of 5 as a Lean cow. A gain of 80 pounds or more increase is assumed to move the cow up one market class to Boner; a gain of more than 160 pounds is assumed to move her up two market classes to Breaker. In all cases, yardage is figured at $0.10 per day and death losses are 1 percent. Interest is based on the opportunity cost associated with not selling the cull cow at weaning. The spreadsheet used

can be accessed at http://agecon.okstate.edu/faculty/publications/3078.xls should you want to evaluate other scenarios.

Table 4 summarizes results for maintaining spring calving cows on dry winter pasture through March after weaning in fall. Here, pasture costs are based on 4 acres of native pasture at $12 per acre with 2 pounds of ration per day for 120 days at $0.15 per pound and 240 pounds of hay at $0.03 per pound ($60 per bale). Gains are estimated to be 0.5 pound per day. The expected net returns to operator labor and management for wintering the cow and selling in March is $7 per head.

Table 5 extends this scenario to include grazing through July. Here, 8 acres of pasture at $12 per acre along with the same amount of winter feed and hay is used. Cows are expected to gain 2 pounds per day during the extended period on grass plus sell at the peak seasonal price in July. Thus, expected net returns to operator labor and management are $71 per head.

As wheat pasture is common in Oklahoma (in some years), Table 6 shows increased costs and returns associated with grazing spring calving cows on wheat pasture to March. In this scenario, 4 acres of wheat pasture at $40 per acre is used for pasture costs with 180 pounds of hay for feed and cows are expected to gain 2.25 pounds per day. The relatively high cost of wheat pasture leads to lower returns than the previous scenario but still offers an expected return of $15 per head for the operator's labor and management. Seasonal price gains contribute greatly to the potential profitability of these alternative scenarios for spring calving cows weaning in fall. At the bottom of each table, the sensitivity of results

Table 4. Spring Calving - Dry Winter to March.

Initial weight of cow	1100	lbs		
Days on feed	20			
Ration fed per day	2	lbs		
Hay fed per day	2	lbs		
Gain per day	0.5	lbs		
Lbs fed per lb of gain	8.0		Total gain (lbs)	60
Seasonal price premium	20.8	percent		
Quality grade premium	2.66	percent		

	Number of units	Units	Price per unit	$/head
Revenue				
Fed cow	1160	lbs	49.38	573
Cull cow	1100	lbs.	40	440
Change in Revenue	**60**		**9.384**	**133**
Expenses				
Feed				
Mixed ration	240	lbs	0.15	36
Pasture	4	acres	12	48
Hay	240	lbs	0.03	7
Yardage	120	days	0.1	12
Vet Med	1		5	5
Death loss	1	percent	506	6
Change in marketing charges, freight				
Interest	8	percent		12
Change in Expenses				**126**
Change in return to operator labor & management				**7**
Break even selling price			48.77	$/cwt

Sensitivity of change in returns to cattle prices and feed costs

	Fed cow price ($/cwt)		
Feed Expenses	44.45	49.38	54.32
113	-38	20	77
126	-50	7	64
138	-63	-5	52

Table 5. Spring Calving - Dry Winter, Graze to July.

Initial weight of cow	1100	lbs		
Days on feed	240			
Ration fed per day	1	lbs		
Hay fed per day	1	lbs		
Gain per day	1.25	lbs		
Lbs fed per lb of gain	1.6	lbs	Total gain (lbs)	300
Seasonal price premium	22.8	percent		
Quality grade premium	3.76	percent		

	Number of units	Units	Price per unit	$/head
Revenue				
Fed cow	1400	lbs	50.62	709
Cull cow	1100	lbs.	40	440
Change in Revenue				**269**
Expenses				
Feed				
Mixed ration	240	lbs	0.15	36
Pasture	8	acres	12	96
Hay	240	lbs	0.03	7
Yardage	240	days	0.1	24
Vet Med	1		5	5
Death loss	1	percent	574	6
Change in marketing charges, freight				
Interest	8	percent		23
Change in Expenses				**197**
Change in return to operator labor & management				**71**
Break even selling price			45.22	$/cwt

Sensitivity of change in returns to cattle prices and feed costs

	Fed cow price ($/cwt)		
Feed Expenses	45.56	50.62	55.69
178	20	91	162
197	1	71	142
217	-19	52	123

Table 6. Spring Calving – Graze on Wheat Pasture to March.

Initial weight of cow	1100	lbs		
Days on feed	90			
Ration fed per day	0	lbs		
Hay fed per day	2	lbs		
Gain per day	2.25	lbs		
Lbs fed per lb of gain	0.9	lbs	Total gain (lbs)	203
Seasonal price premium	20.8	percent		
Quality grade premium	3.76	percent		

	Number of units	Units	Price per unit	$/head
Revenue				
Fed cow	1302.5	lbs	49.82	649
Cull cow	1100	lbs.	40	440
Change in Revenue				**209**
Expenses				
Feed				
Mixed ration	0	lbs	0.15	0
Pasture	4	acres	40	160
Hay	180	lbs	0.03	5
Yardage	90	days	0.1	9
Vet Med	1		5	5
Death loss	1	percent	544	6
Change in marketing charges, freight				
Interest	8	percent		9
Change in Expenses				**194**
Change in return to operator labor & management				**15**
Break even selling price			48.68	$/cwt

Sensitivity of change in returns to cattle prices and feed costs

	Fed cow price ($/cwt)		
Feed Expenses	44.84	49.82	54.81
175	-31	34	99
194	-50	15	80
213	-69	-5	60

to changes of 10 percent in price and feed expenses and cow prices is shown.

Table 7 summarizes the expected outcome of grazing fall calving cows to July with weaning in April. Though the seasonal change in price from April to July is not large, the expected weight gains are significant, yielding expected returns to operator labor and management of $61.

A comparison summary for the four scenarios is presented in Table 8. Though weight gains for spring calving cows are greatest on wheat pasture, it does not yield the highest return. Grazing through July for either spring or fall calving cows appears profitable, though it should be reiterated that this may not be the highest and best use of the pasture. When returns

Table 7. Fall Calving - Wean in April, Graze to July.

Initial weight of cow	1100	lbs		
Days on feed	90			
Ration fed per day	0	lbs		
Hay fed per day	0	lbs		
Gain per day	2.5	lbs		
Lbs fed per lb of gain	0	lbs	Total gain (lbs)	225
Seasonal price premium	2	percent		
Quality grade premium	3.76	percent		

	Number of units	Units	Price per unit	$/head
Revenue				
Fed cow	1325	lbs	51.57	683
Cull cow	1100	lbs	48.76	536
Change in Revenue				**147**
Expenses				
Feed				
Mixed ration	0	lbs	0.11	0
Pasture	5	acres	12	60
Hay	0	lbs	0.03	0
Yardage	90	days	0.1	9
Vet Med				
Death loss	1	percent	610	6
Change in marketing charges, freight				
Interest	8	percent		11
Change in Expenses				**86**
Change in return to operator labor & management				**61**
Break even selling price			46.94	$/cwt

Sensitivity of change in returns to cattle prices and feed costs

	Fed cow price ($/cwt)		
Feed Expenses	46.41	51.57	56.73
77	2	70	138
86	-7	61	130
94	-16	53	121

to labor and management are converted to a per cow per day basis, holding over fall calving cows appears most appealing. However, managers must weigh the value of their time, labor and management in addition to the production, financial and marketing risks of each alternative in deciding what is right for them individually.

Feeding Cull Cows

The previous sections describe a number of potential advantages to feeding cull cows to improve their value. Additionally, cull cows may provide a way to enhance the value of underutilized or poorly utilized forage. Cull cows are flexible

Table 8. Comparison of Key Assumptions and Results for the Four Scenarios.

Scenario (days held)	*Gain per day (lbs)*	*Nutrition costs($)*	*Cow price gain (%)*	*Returns to labor & mgmt*	*Returns to labor & management ($ per cow per day)*
Spring Calving: Dry Winter to March (120)	0.5	91	23.5	$7/head	$0.06
Spring Calving: Dry Winter, Graze to July (240)	1.25	139	26.6	$71/head	$0.30
Spring Calving: Wheat Pasture (90)	2.25	165	24.6	$15/head	$0.17
Fall Calving: Graze to July (90)	2.5	60	5.8	$61/head	$0.67

and can utilize a wide variety of feeds over a wide range of feed qualities. Thus, cull cows may provide a good means to use up leftover or lower quality forage as part of an overall forage and production risk management plan.

The flip side of this discussion is that cull cows may be using feed resources that could be utilized by other animals such as brood cows or stockers. Thus, the real cost of feeding cull cows may well be the opportunity cost of using those feed resources for other, potentially more valuable, production enterprises. Successful stocker producers, for instance, may find they can achieve higher returns from grazing stockers than they can retaining cull cows. The considerations are several (labor constraints, management skills, and risk, in addition to potential costs and returns), they are probably unique to each operation, and will likely change from year to year. There is no single recipe or plan for marketing cull cows that will always be the most appropriate.

Finally, the overall economic viability depends on the cost of feeding the cows relative to the increased value. Mature cows are flexible in using feed, but are not very efficient at doing it. Cows will typically have a feed conversion of 10 or 12 pounds of dry matter of feed per pound of gain. The feeding program must be designed and evaluated carefully. Especially for cows fed in the winter, the combination of relatively high maintenance requirements and the potential for weather to increase maintenance requirements means that cows fed on a low quality diet may gain little or no weight. On the other hand, cows can gain anywhere from 1 to 3 pounds per day depending on the diet. The objectives of the feeding program, the timing and ration costs and alternatives must all be carefully weighed to maximize returns to cull cow feeding.

Other Considerations for Feeding Cull Cows

Several other factors may also affect the potential return to feeding cull cows, including cow health. Labor and facilities requirements should be considered. Feeding cull cows may increase the efficiency of underutilized labor resources or labor may represent a constraint that limits cull cow feeding as an alternative. Will feed bunks or drylot facilities be needed? Does feed storage permit bulk purchases of supplements?

Finally, there may be tax consequences when the timing of cull cow sales changes. Ideally, cull cow marketing should be opportunistic; culls cows should not necessarily be marketed the same way or at the same time every year. This level of flexibility increases the tax implications and must be considered when evaluating opportunities to feed cull cows.

Bred Cows and Cow-Calf Pairs

Under normal circumstances, most cows sold from a cow-calf operation would be open cull cows. However, there may be situations in which bred cows or cow-calf pairs are being sold. Limited analysis of data from OKC indicates that the average bred cow (pregnancy checked) will have a value about 8 percent higher per head than an average cull cow. This average value will be further adjusted by several factors, the most important of which are cow age (young, under 4 years of age, add 5 percent or old, greater than 7 years of age, subtract 5 percent) and quality, usually reported as "fancy" (add 12 percent) or low quality (subtract 12 percent). These factors are additive so a young, fancy bred cow would bring roughly 17 percent more than an average bred cow.

Cow-calf pairs will average about 40 percent higher than average cull cow value per head. The most important factors that affect cow-calf pair value are cow age (under 4 years, add 3 percent or more than 7 years of age, subtract 4 percent); cow weight (200 pounds above average, add 4 percent or 200 pounds below average, subtract 4 percent); calf age (5 to 8 months, add 4 percent or under 2 months, subtract 4 percent); and quality, reported as "fancy" (add 8 percent) or low quality (subtract 8 percent).

Summary

Cull cow marketing offers opportunities to increase profit per head in certain circumstances, certainly more so when feed is relatively cheap. Seasonal price patterns account for most of the potential for greater returns. Holding cows for longer periods of time increases costs as well as financial and production risk. Thus, cull cow grazing and feeding opportunities must be evaluated carefully. A spreadsheet tool is available to assist producers in evaluating alternatives at http://agecon.okstate.edu/faculty/publications/3078.xls

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