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Backgrounding Calves Part 1: Assessing the Opportunity

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Backgrounding is the growing of steers and heifers from weaning until they enter the feedlot for finishing. It is suited to farmers who do not want to maintain a cow herd, do not want to finish cattle, but do want to put added weight on calves after weaning. Backgrounding seems to fit the farmer who:

- Has extra time during the year to work cattle.
- Has good quality roughage available.
- Wants to have a flexible cattle business.

There are many backgrounding systems. Popular systems are where calves are bought either in the fall or spring and sold from four to six months later. You may want a system that involves buying calves in the fall, wintering them, followed by grazing the next summer and selling at 750 to 900 pounds.

A backgrounding system can be built into a cow/calf operation or be part of a finishing program. Some backgrounders buy and sell throughout the year.

You can handle about 1.4 calves, grown from 425 to 750 pounds, on the feed needed for one beef cow. The total feed energy (TDN) required to grow a 425-pound steer calf to 750 pounds in one year is around 2,950 pounds. However, shortening the growth period with faster daily gain reduces total feed required since less feed is needed for body maintenance.

Total TDN for a beef cow herd with an 85 percent crop of 450-pound calves (383 pounds per cow) is about 4,100 pounds per cow unit. So the cow unit requires 1.4 times the feed as a backgrounded steer. (4,100 pounds ÷ 2,950 pounds)

With the feed required for the 383-pound calves produced by the typical beef cow, about 446 pounds of backgrounding gain can be produced if 2 percent death loss is figured for the backgrounded calves (325 pound gain x 1.4 head x 0.98). A look at average price relationships between yearling feeder steers and steer calves for the past 50 years indicates returns on use of the same forage resources are very similar for cow herd and backgrounding enterprises. While average returns may be similar, one or the other may be superior for particular situations and managements.

Buying and selling skills are very important for backgrounding since 50 to 65 percent of the weight sold must first be purchased. Skill in diagnosing and treating sick animals is also essential.

Because all the added weight on feeders is directly salable, while extra flesh on a brood cow isn't, backgrounding tends to have a competitive advantage when high quality forages are available. It can be at an economic disadvantage to cow herds where most feed is low quality.

Changes in cattle numbers

Much of the cattle numbers cycle results from the marginal shifting back and forth between backgrounding and cow herds. When the cost of gains in the feedlot become high relative to slaughter cattle prices, calf prices are lowered relative to both yearling and fed cattle prices. Cheap calf prices (relative to yearlings) favor backgrounding, and some producers gradually shift from cows to backgrounding.

Over time this decreases the calf crop and ultimately increases beef prices after first depressing prices during the cow herd reduction. When beef slaughter prices become high relative to cost of gains in feedlots, calf prices rise faster and farther than yearling prices, which is unfavorable to backgrounding. Cow herds expand and feedlots place younger, lighter animals on feed and more feed grain is used. Ultimately, larger calf crops, larger beef supplies and larger feed grain usage results in lower beef prices, higher grain prices and lower calf prices. Again, the pendulum swings back to favor backgrounding.

Beef steer/corn price ratios and yearling/calf price ratios

The beef steer/corn price ratio is the price per hundredweight (cwt) of choice slaughter steers divided by per-bushel corn prices (Example: $\$70 \div \$2 = 35$). Since this ratio is a simple but accurate indicator of shifts in cost of feedlot gain in relation to beef cattle prices, it leads and causes shifts in the relative profitability of backgrounding and cow/calf production. Increases in the ratio favor cow/calf production and decreases favor backgrounding.

Throughout the past 50 years there has been an inverse relationship between the beef steer-corn price ratio and the ratio of yearling to calf prices. When the steer-corn price ratio goes up the yearling to calf price ratio goes down. The 750-pound yearling to 425-pound calf price ratio has averaged 89.5 percent through the past 55 years. A decline to 80 percent clearly favors cow/calf production, whereas an increase to 100 percent clearly favors backgrounding.

Price of gain

The price received for gain put on 450-pound steer calves for the last 8 years (1980-87) is indicated by the Kansas City market prices listed in Tables 1 and 2.

Table 1

Average monthly prices per hundredweight for medium frame, number 1 muscled feeder steers at Kansas City (1980 to 1987)

Month	400 to 500 pounds	600 to 700 pounds	700 to 800 pounds
January	72.41	67.89	66.68
February	75.56	69.19	67.93
March	76.28	68.83	66.94
April	75.73	67.82	65.49
May	75.21	67.11	64.12
June	72.76	66.08	63.61
July	71.00	65.46	64.15
August	72.20	67.41	65.81
September	73.69	67.49	65.47
October	72.20	66.69	65.06
November	71.89	66.80	65.62
December	70.25	66.24	65.35
Average	73.6	67.25	65.52
Price margin		-6.01	-7.74
Value gain per cost per hundredweight		53.73	53.91
7 to 8 hundredweight/4 to 5 hundredweight price ratio			89.43 percent

Table 2

Eight-year (1980-87) average buy-sell prices and value received per hundredweight for 200-pound gain produced in 180 days on 450-pound steer calves

Months bought	Months sold	Buy ¹ price per hundredweight	Sell ^{1,3} price per hundredweight	Gain ² price per hundredweight
Jan-Mar	Jul-Sept	\$74.75	\$66.79	\$48.88
Apr-June	Oct-Dec	\$74.57	\$66.58	\$48.60

Jul-Sep	Jan-Mar	\$72.29	\$69.16 ³	\$62.12
Oct-Dec	Apr-Jun	\$71.45	\$68.48 ³	\$61.80

¹400- to 500-pound steer calf bought and 600- to 800-pound steer calf sold at Kansas City market average price.

²Calculated from value per head.

³Sell prices are 1980-87 prices for cattle sold in the same calendar year as purchased, but are 1981-88 prices for those bought in the second half and sold in the following calendar year.

The year-round price received for 200 and 300 pounds of gain put on a 450-pound steer has averaged \$53.73 and \$53.91 per hundredweight, respectively (Table 1). Notice that summer gains are worth less than winter gains (Table 2). A 450-pound steer bought in January through March and sold at 650 pounds in August through September had a value of \$48.88 per hundredweight of gain compared to \$62.12 for calves bought in July-September, sold in January to March. Pasture gains cost less to produce than winter gains, and the price relationships of light and heavy weight steers reflect this. It is difficult to compete with summer pasture gains by feeding harvested forages in these months. The importance of a good job of buying and selling and of putting efficient, low-cost gains on feeders is shown by the \$6.01 to \$7.74 average negative price margins (buying/selling prices) between 450-pound and 650- to 750-pound steer calves for the same months of the past eight years (Table 1).

Kind of cattle to buy

You will want to buy the weight, sex and type of cattle that best fits your production and marketing plan. Cattle weighing from 250 to 650 pounds or heavier can be backgrounded before they go to the feedlot. Purchase weights of 350 to 550 pounds are most popular for steer calves. Heifers will tend to weigh 30 to 50 pounds less at a similar age.

Light weight heifer calves are usually bought for \$9 to \$15 per hundredweight cheaper than steer calves but will sell for \$5 to \$10 less than steers as 600- to 700-pound feeders. Pregnancy is a problem with heifers from some herds. Heifers tend to gain 5 to 10 percent slower and about 5 percent less efficiently than steers.

Mismanaged cattle that can be upgraded in quality, or those from a poor environment that make compensatory gain, have advantages if healthy. Certain breeds or crosses are popular in some regions but not in others. Don't be overly influenced by breed to evaluate performance since there is more difference within than between breeds for performance traits.

A recent study at Purdue University indicated that the ideal steer is a Continental-British breed cross, containing at least 25 percent but not more than 75 percent Continental breeding. Hereford-Angus crosses continue to be popular in the Cornbelt.

Production system

There is much flexibility in backgrounding with respect to the weight of cattle bought and sold and the feed resources used. It is difficult to pick the

daily rate and amount of gain that is most economical in a backgrounding program. Faster rates of gain will reduce interest costs and the amount of feed it takes for a unit of gain. Some of the production costs for backgrounding such as buying, selling, and vaccination are on a per head basis and are decreased per pound of gain as more weight is put on the animal. It appears an economical goal for most backgrounding in Missouri would be about 1.5 pounds daily gain and 250 to 350 pounds total gain per animal.

In a typical backgrounding system, a 400- to 450-pound calf is bought in the fall to be wintered, grazed and sold in late summer or fall weighing 650 to 800 pounds Daily rates of gain will vary from 1.0 to 1.5 pounds

Another system is to buy calves or lightweight yearlings in the spring to be grazed and sold in the fall. Example budgets for these two systems are given in Table 3. Prices, of course, vary widely by year. Fixed costs and labor costs are not included in the budgets.

Table 3

Steer calf budgets, wintered and grazed and summer grazed only

	Buy fall, sell 10 months later		Buy Spring, sell fall		Your system
Production days owned	290		190		
Gain per head	350 pounds		225 pounds		
Average daily gain	1.20 pounds		1.18 pounds		
Gross receipts per head	800 pounds at \$65 per hundredweight \$520		750 pounds at \$66 per hundredweight \$495		
2. Purchase cost per head	450 pounds at \$72 per hundredweight \$324		525 pounds at \$74 per hundredweight \$389		
3. Feed:					
Corn equivalent, \$2 per bushel					
Protein, salt, minerals and additive, \$12 per hundredweight	100 pounds	\$12	20 pounds	\$2	
Corn silage, \$21 per ton					
Mixed hay, \$55 per ton	0.8 T	\$44			
Grass hay, \$50 per ton					
Pasture, \$7.50/AUM	5.5 AUM	\$41	5 AUM	\$37	
4. Total feed costs	\$97		\$39		
5. Machinery costs, feed preparation, etc.	\$5		\$2		

6. Veterinary and medicine	\$5	\$4	
7. Other livestock materials and services ¹	\$12	\$11	
8. Utilities, insurance, repair, miscellaneous	\$4	\$3	
9. Death loss ²	\$6	\$4	
10. Operating interest ³	\$32	\$23	
11. Total other var. costs (add lines 5 through 10)	\$64	\$47	
12. Total feed and other variable costs (lines 4 through 11):	\$161	\$86	
13. Total all variable costs (lines 2 + 4 +11)	\$485	\$475	
14. Income over variable costs ⁴	\$35	\$20	
15. Labor hours	3.5	1	

¹Includes hauling, yardage, commission, etc.

²2 percent and 1 percent purchase cost, respectively.

³Purchase cost (Line 2) plus 50 percent of sum of lines 4 through 8 times percent of year owned times 10.5 percent interest.

⁴Other cash costs such as real estate and property taxes, building insurance and repairs, hired labor, other overhead expenses could amount to \$10 to \$15 per head.

Cattle buying and selling prices in the budgets approximate averages for Kansas City market from 1980-87 (Table 1). Calves bought in the spring and sold in the fall have larger negative price margins compared to those bought in the fall and sold in mid- to late-summer (Table 2). Larger negative margins give less value for a pound of gain.

Notice the cost for 100 pounds of gain in these budgets is \$46 for the winter-graze program and \$38 for summer grazing only. The value received per hundredweight of gain on steers taken from 450 pounds to 750 pounds averaged \$53.91 for the prices given in Table 1. A feeder bought in the spring and sold in the fall would be bought during the higher priced months and sold in the lower priced months. This would make the value of his gain less than the year's average (Table 2). Of course, it costs less during the pasture season.

You should compare your costs with those given in the budgets. The coupling of high quality forages with superior performing feeder cattle can increase the performance and reduce costs of gain compared to those given with these budgets.

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Related MU Extension publications

- G2096, Backgrounding Calves Part 2: Herd Health and Feeding
<http://extension.missouri.edu/publications/DisplayPub.aspx?P=G2096>

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