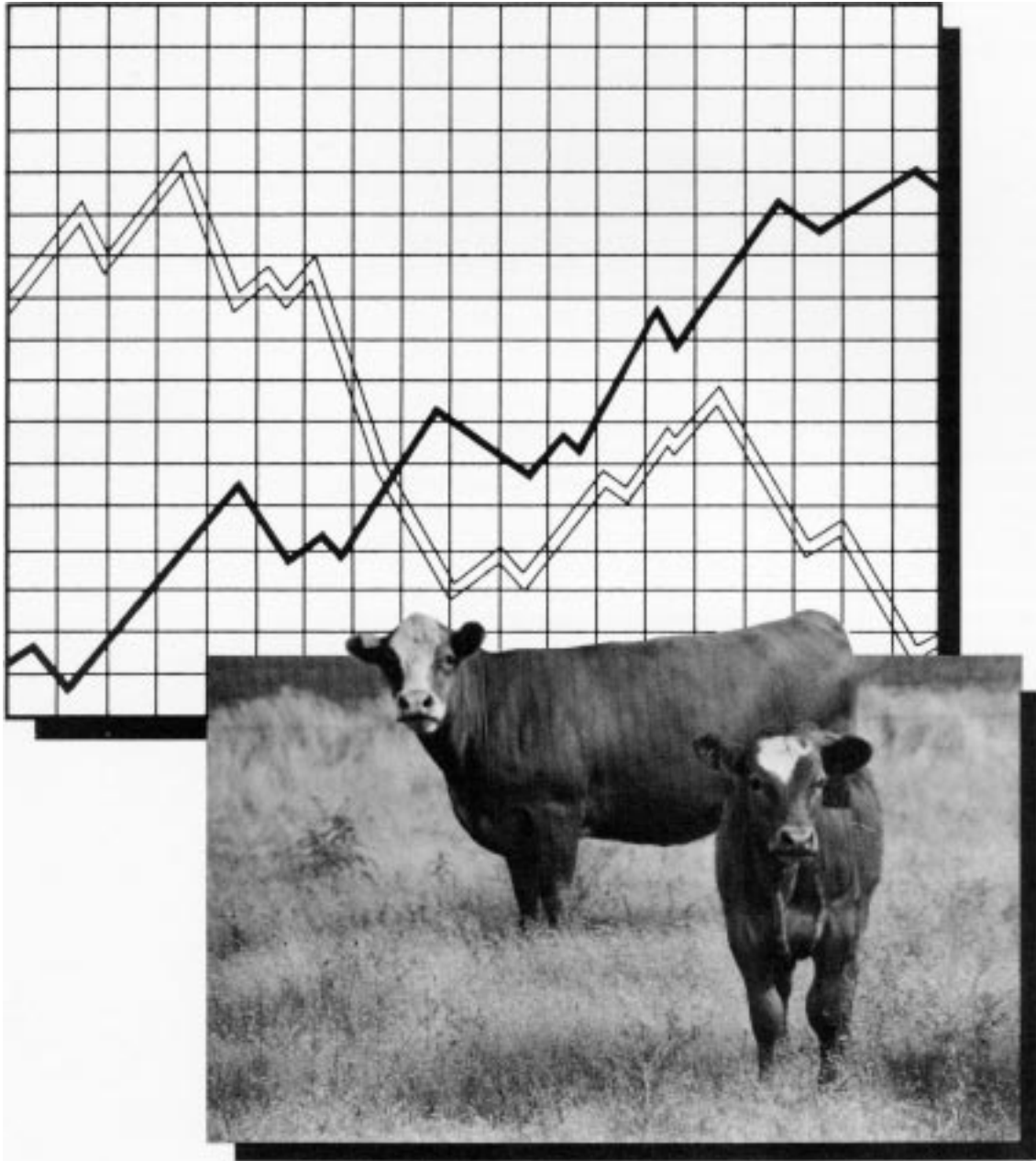


Calving Season STRATEGIES



An estimated 15 to 30 percent of Kansas cowherds calve in the fall with the balance calving primarily in the spring months of February through May. The question of whether to calve in spring, fall, or a combination of the two has never been adequately answered. Producer decisions on calving season are often based on subjective factors and not on costs of production and revenue generated. Factors such as the timing of labor use depend on what other enterprises are employed. For example, while it is an advantage to breed cattle on grass where the natural flushing effect of lush spring grass improves conception rates, it also makes artificial insemination (AI) more difficult and time-consuming. On the other hand, it is often easier to use AI in fall calving herds when the cattle are closer at hand for feeding, but the winter cold decreases conception rates. Today, with many cow-calf operators financially squeezed, it is more important than ever to analyze calving season based on costs incurred and income received.

This publication is based on a KSU study of calving season strategies for the years 1975 through 1984. The analysis focused on 1) feed costs, the largest single production cost, and 2) calf prices, the major source of revenue.

The study analyzed eight different calving season management options using the enterprise budgeting technique. A sample beef cowherd cost-return budget (Appendix) shows the budget variables used.

The simulated performance and

nutritional requirements of a black baldy cow and her calf sired by a growth breed were combined with the appropriate yearly input costs and calf prices to construct budgets for the years 1975 through 1984. Generally, all production factors that were not directly affected by calving season were held constant throughout the analysis. But for some of the calving season alternatives, weaning dates and forage resources were considered (Table 1). This allowed the study to focus on cow feed costs and calf prices as the major variables and to illustrate the effects different calving seasons would have on the same cow-calf pair.

This publication is a summary of the major points and conclusions drawn from this study. The first section examines the relative profitability of the various calving season management strategies, then certain key budget variables are evaluated to measure their impacts on cowherd profitability. Next, some of the management strategies are compared and finally, retained ownership is brought into the analysis to measure its effects on overall cowherd profitability.

The results, while not illustrating which calving season is best for a *particular operation*, provide data on profitability and on the relative costs and price relationships that are involved. Producers should also consider other factors, such as resources available, competing enterprises and overall management ability, when making the decision of calving season for their particular cattle operation.

Table 1. Calving management systems analyzed.

Calving period	Date weaned	Forage resource
1) February-March	November 1	Native range
2) April-May	November 1	Native range
3) September-October	July 1	Native range
4) November-December	September 1	Native range
5) September-October	May 1	Native range
6) November-December	July 15	Native range
7) September-October	July 1	Native range & fescue pasture
8) November-December	September 1	Native range & fescue pasture

Profitability

Just as profits are the key to survival in any agricultural operation, revenue minus variable and total costs are the determining factors in comparing calving season management options. Because fixed costs were held constant in this study, revenue minus variable costs is the more relevant measure of profitability.

Table 2 shows that, given a resource base of year-round native range, early spring calving (February-March) was the most profitable calving period. Early spring was the only calving period to average positive returns over variable costs for the 10 years of this analysis.

Other results pertaining to cowherd profitability were:

Very low profitability of beef cowherd ownership over the 10-year period, with only one management option averaging positive returns over variable costs and no management option even coming close to covering its total costs of production.

High variability of returns to cowherd ownership for all calving season management strategies, as evidenced by the wide range of returns minus variable costs plus or minus one standard deviation around the mean. In any normal

Table 2. Average calving season cowherd profits (1975-1984).

Calving season	Age at weaning	Average returns minus variable costs	Standard deviations (STDEV) around mean	
			+ 1 STDEV	-1 STDEV
1) Feb-Mar	8 mos.	\$6.80	\$77.21	(\$63.62)
2) Sep-Oct	9 mos.	(\$6.15)	\$64.81	(\$77.10)
3) Nov-Dec	9 mos.	(\$9.56)	\$66.18	(\$85.29)
4) Apr-May	6 mos.	(\$32.64)	\$27.27	(\$92.54)
5) Sep-Oct	7 mos.	(\$34.66)	\$39.52	(\$108.85)
6) Nov-Dec	7.5 mos.	(\$37.13)	\$31.49	(\$105.75)

curve, over two-thirds of the measurements lie in the interval (+/-) one standard deviation (STDEV) around the average. Given the cowherd and the years analyzed, one could expect that just over two-thirds of the time, the returns minus variable costs of the February-March calving period would lie within a range of \$140, from as high as a \$77.21 profit/cow unit to as low as a loss of \$63.62.

Major Variables

Cow feed costs

The greatest influence of calving season on production costs results from the differing amounts and qualities of feed that a beef cow needs depending on her specific stage of production.

Figure 1 shows the average monthly total digestible nutrient

(TDN) requirements of a 1,100 lb beef cow, calving both during the fall and spring, and the pounds of TDN provided by native bluestem range. A producer could lower the yearly feed bill by matching the production stages when the beef cow's needs are highest with the times when range quality is at its highest.

Beef cow rations used in the analysis were based on the feed necessary to sustain a cow calving during each of the calving periods and were held constant from year to year. Feed costs were derived by multiplying average Kansas feed prices by the fixed beef cow rations. As a result, the differences in costs among calving seasons were consistent, with standard deviations of less than 1 percent.

Table 3 shows that, given a forage resource base of native range, fall calving has relatively higher cow feed costs than spring calving.

Overall cowherd profits are a result of both costs and revenue. The KSU study developed a measure that combined cow feed costs, the major cowherd cost component, with total revenue, the product of beef prices and the pounds of beef sold. For example, using the February-March calving period in the 1984 sample budget (see Appendix), one would find that cow feed costs were \$181.72. Dividing this figure by the total revenue of \$313.81 results in a ratio of .58, or 58 percent. By aggregating this ratio for all eight calving seasons, guidelines were formed that estimated the ratio needed for a cowherd to attain particular levels of profitability.

The data show that long-term cowherd profitability was difficult to

Figure 1. Total digestible nutrient (TDN) requirements of fall- and spring-calving cows compared to amounts provided by range.

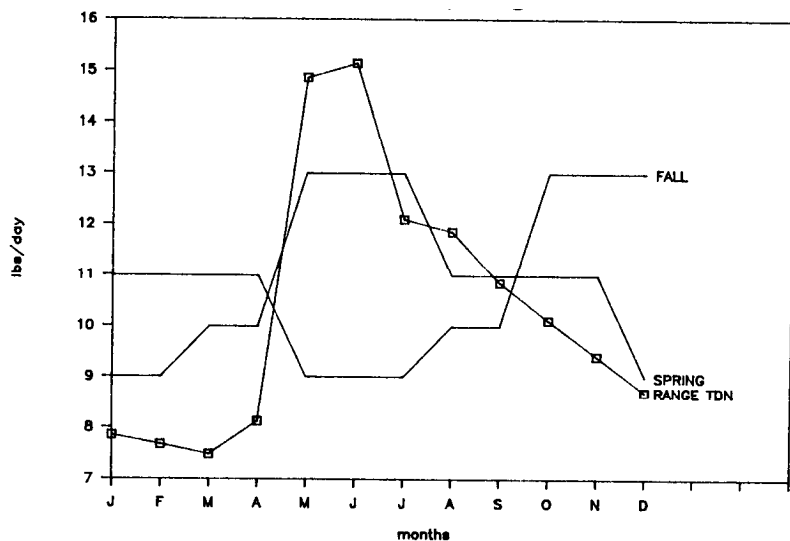


Table 3. Average cow feed costs.

Calving system:	Spring		Fall		Fall	
Date born:	Feb-Mar	Apr-May	Sep-Oct	Nov-Dec	Sep-Oct	Nov-Dec
Date weaned:	Nov 1	Nov 1	Jul 1	Sep 1	May 1	Jul 15
Weaning age (months):	8	6	9	9	7	7.5
10-year average feed costs:	\$158	\$142	\$183	\$177	\$183	\$177
% feed cost greater (less) than Feb-Mar:	-	(10%)	16%	12%	16%	12%

achieve with any calving season management strategy unless cow feed costs were 40 percent or less of total cow unit revenue.

Calf Prices

Due to the high degree of seasonality in cattle prices, calving season can also impact profitability by influencing when cattle are ready for sale. Many Kansas producers calve their herds in spring, in order to lower their winter feed bill.

Figure 2 shows that if a typical spring-calving producer wishes to wean and sell calves at 7 months of age he will sell in the fall, generally encountering the lowest average seasonal prices of the year.

When evaluating calf prices of different calving seasons it is not

Table 4. Cow feed cost/total revenue and profitability (1975-1984).

Cow feed cost divided by total revenue	Returns less variable costs	Returns less total costs
40% & Less	\$165-\$135	\$20-(\$9)
50% -41%	\$134-\$25	(\$10)-(\$140)
51% & More	\$24-(\$120)	(\$141)-(\$255)

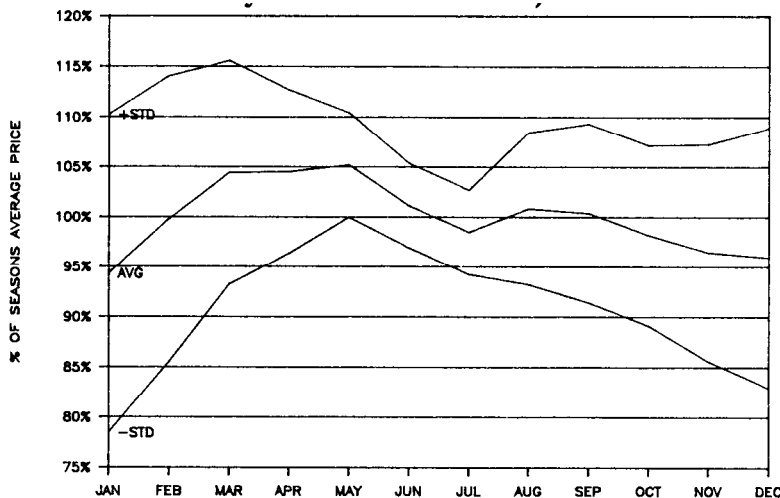
only important to look at the historical price relationships (actual prices received), but *to also measure the price relationships that would have been necessary for all to have had equal returns over their costs (prices needed)*. The February-March calving period was again used as the basis of comparison. Figures 3, 4, and 5 contrast the prices received for three of the more profitable calving periods on native

range with the prices that would have been necessary for each calving period to have equaled the returns over variable costs of the February-March period.

Figure 3 illustrates that although the lighter, late-spring-born calves typically receive a premium over early-spring-born calves (February-March), the premium received is not nearly enough to make up for the differences in weight.

The 352 lbs of calf produced in the April-May calving period has historically received an average 2.26 percent higher price per cwt than the 482 lbs of February-March-born calf when both were sold on November 1, but in order to break even with the heavier February-March calf it would have needed an average premium of 25.52 percent. For example, if on November 1 the price/cwt of a 482 lb calf was \$72, the 352 lb April-May calf would, on average, bring \$73.63 (\$72/cwt plus 2.26 percent more). But, for the returns less variable costs of the April-May calf to equal that of the February-March calf, the later-spring-born calf would have needed on average a price of \$90.27/cwt (\$72 plus 25.52 percent more).

Figure 2. Seasonal index for 400 lb to 500 lb feeder steers. (Monthly average, 1972-84, Kansas City Choice M.F. 1# steers.)



The 505 lbs of calf born in the September-October period and sold on July 1 (Figure 4) has historically needed an average 7.33 percent price premium over the 482 lbs of February-March calf sold November 1, but has actually averaged only a 1.46 percent price premium. (It should be noted that the September-October calf did receive the needed price premium 4 out of the 10 years).

The 477 lbs of calf born in the November-December period and sold on September 1 (Figure 5) has historically needed an average 11.63 percent price premium over the 482 lbs of February-March calf sold November 1, but has actually averaged only a 3.58 percent premium.

Asset Turnover and Net Return to Investment

Gross asset turnover, the ratio of total revenue over investment, averaged between 7.3 percent and 9.1 percent for all calving management systems. In this analysis, investment equaled the maximum at one time; assuming half the operating costs (less interest), current values of the cow and her share of the bull, and the current values of buildings, equipment and grass. Inverted, this measure can be used to indicate the total assets necessary to gross a dollar of total revenue. This measure averaged from \$13.70:1 to \$10.99:1, which suggests that large amounts of capital are necessary to operate a cow-calf program.

Net return to investment is the measure of returns minus total cost plus interest divided by investment and can be a proxy value for the opportunity cost of cowherd ownership. Over the 10 years of this analysis, all of the calving season strategies averaged negative returns to investment, ranging from -1.64 to -2.56 percent.

Figure 3. April-May prices as a percentage of February-March prices.

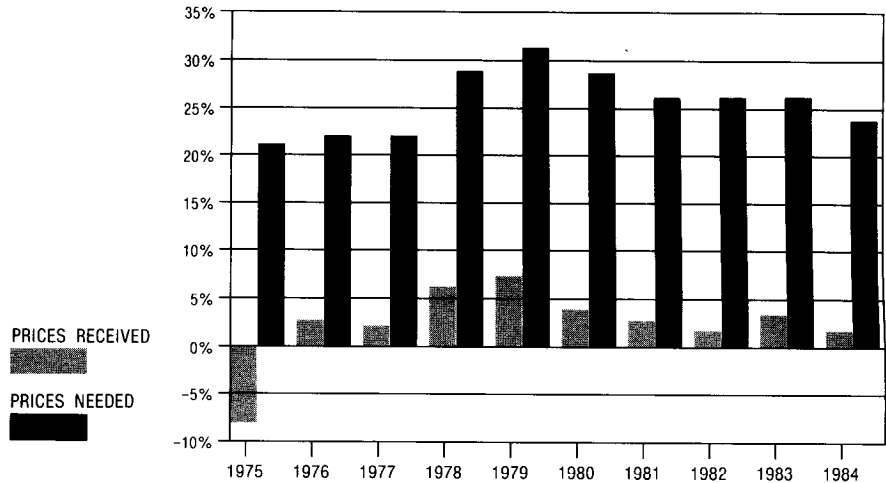


Figure 4. September-October calf prices, when weaned at 9 months, as a percentage of February-March prices.

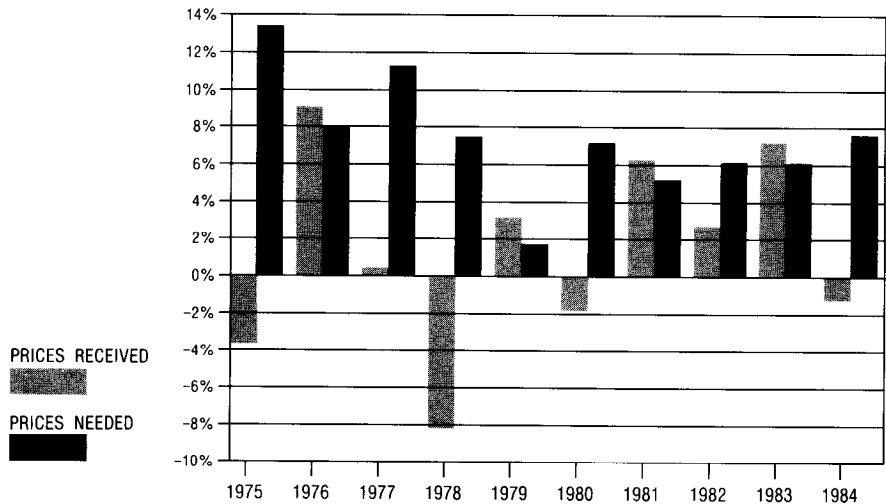
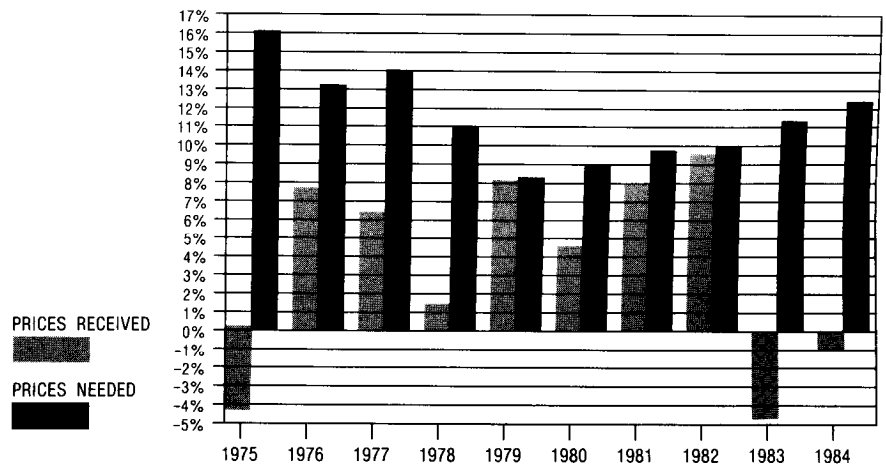


Figure 5. November-December calf prices, when weaned at 9 months, as a percentage of February-March prices.



Calving Season Strategy Comparisons

Fall Calving and Weaning at 7 months vs. 9 months

Calves born in the early fall period reach 7 months of age in May, when seasonal prices are generally quite high. Calves born in late fall reach 7 months of age in July, when grass quality begins to decline and the resulting late summer calf gains are quite low. Fall calf producers are faced with the question of whether to wean the fall-born calf at 7 or 9 months of age. In the analysis, it was assumed that this question was answered on a year-to-year basis by the individual producer, thus, all costs were seen as sunk in the short-run (no additional grass cost for producers who chose to wean at 9 months).

Early fall: In the September-October calving period, weaning at 9 months was the more profitable strategy each of the 10 years analyzed, with average returns over variable costs \$28.51 higher per head than weaning at 7 months of age. Although the 406 lbs of calf weaned on May averaged an 8 percent higher price than the 505 lbs of calf weaned 2 months later, it was far short of the 19 percent price premium needed in order for both calves to have broken even with their variable costs.

Late fall: In the November-December calving period, weaning at 9 months of age was again the more profitable strategy in 9 of the 10 years analyzed, with average returns less variable costs \$27.57 higher per head than the 7-month weaning program. This was primarily because the price for the 420 lb calf sold on July 15 was, on average, equal to the price of the 477 lb calf sold on September 1, resulting in lower overall returns.

Fall Calving, Early vs. Late (Weaning at 9 months)

Little difference in profitability was found between early and late fall calving strategies, with calves born in the September-October

period averaging only \$3.41 higher returns over variable costs than the November-December calves. This relative closeness was largely because some variables tended to offset each other. The early fall calf, being older, was better equipped to both withstand the winter cold and utilize the grass in spring. As a result, the September-October calving strategy produced 28 more lbs per cow unit. This advantage in gain was nearly offset, though, by an average selling price 2 percent lower (July 1 price lower than September 1) and an average cow feed cost 4.1 percent higher.

Spring Calving, Early vs. Late

The comparison indicated that early spring was far more profitable, with average returns less variable costs \$39.43 higher than the April-May calving period. Although cow feed costs averaged 10.5 percent less in the late spring, the calves born in the February-March period (2 months older), produced nearly 130 more pounds of beef. The lighter, late spring calves would have required a price premium of 25.52 percent over the heavier early spring calves, but on average received only a 2.26 percent higher price.

The analysis assumed a 90 percent calf crop for each of the calving seasons, meaning that for every 100 cows bred, 90 calves were weaned. Many producers would argue that because of inclement weather, February-March calving would wean a lower percent calf crop than April-May. To study this point the late spring calving percent was held constant at 90 percent, while the early spring percent was lowered until the returns less variable costs for both calving periods were equal. The results indicated that the February-March calving percent would, on average, have to drop to 77 percent (13 percent lower than late spring calving) before both calving periods would have equal returns over variable costs.

Early Spring vs. Early Fall

The February-March and September-October calving periods were the two most profitable calving seasons in the analysis. Early spring calving achieved the highest profits (smallest losses) 6 years out of the 10 in this study. Early fall calving was the most profitable 4 of the 10 years. Early spring was the only strategy to average positive returns over variable costs. A closer look at some variable relationships show that the September-October period, although producing more pounds (505 to 482) also encountered 16 percent higher cow feed costs. The analysis of break-even (over variable costs) prices revealed that the September-October calf sold on July 1 would need a 7.33 percent higher average price than the lighter February-March calf sold on November 1. The actual price premium, however, averaged only 1.46 percent throughout the length of this analysis.

As in the case of early vs. later spring calving, many producers would argue that because of inclement weather, February-March calving would wean a lower percent calf crop than September-October. Again to study this point, the September-October calving percent was held constant at 90 percent while the early spring calving percent was lowered until the returns less variable costs for both calving periods were equal. The results indicated that the February-March calving percent would on average have to drop to 85 percent before both calving periods would have equal returns over variable costs.

Thus, if a producer felt that the combination of poor early spring weather (or poor facilities for calving in inclement weather) and labor needs would cause him to have a 6 percent or better calving percent in September-October than in February-March, this study would indicate that he should consider early fall calving.

Fall Calving, Year-Round Native Range vs. Supplemental Fescue

Improved fall calving cowherd returns were found with supplemental fescue pasture. In the case of September-October calving, fescue pasture lowered cow feed costs an average of \$20.26 and increased average returns over variable costs \$21.60, from (\$6.15) to \$15.45. This does not imply that fall calving operations on fescue pasture are the best overall, but does point out how changes in forage resources can make significant differences in cowherd profitability. Budgets for spring calving cowherds on fescue pasture were not included in the analysis, but it is believed that spring-calving cattle would have had similar if somewhat smaller increases in returns to their variable costs. It should be noted that the study assumed that land in fescue had few alternative uses and thus low opportunity costs. In actual practice, the per acre returns to land in fescue must outweigh the per acre returns of the most profitable alternative use before it is economically feasible to utilize fescue pasture.

Retained Ownership Analysis

Applicable retained ownership enterprises from drylot backgrounding to grazing were analyzed for each calving period at a point when the calf weighed 750 lbs.

Table 5 shows that retained ownership can improve the overall profitability of most calving season management strategies. For every calving season in the study, at least one retained ownership option earned positive returns over variable costs (column 4) and thus improved the overall returns of the total operation (column 5). However, for retained ownership to be successful, the calves must achieve high average daily gains (ADG). For example, backgrounding at 1.25 lbs/day often led to low or negative returns over variable costs. Comparisons of the strategies suggested that, although there was increased profitability with nearly every retained ownership option, only the spring calving seasons were improved enough to cover their total variable costs through both the cow/calf and retained ownership phases (column 5).

Retained ownership earned an average of \$20.88 per year for the February-March calving period, increasing the total returns over variable costs for the complete cattle operation to \$27.68. The April-May calf performed even better, averaging \$69.01 per year and increasing the total returns over variable costs from (\$32.64) to \$36.27, \$8.69 more than the February-March period. The superior performance of the late-spring-born calf can largely be attributed to two factors. First, a lighter calf going on feed in the fall took less feed to gain at the same rate as the larger early spring calf, resulting in lower feed costs. Second, when fed to 750 lbs the late spring calf is sold in April when feeder calf prices are seasonally quite high. On the other hand, the February-March calf reached 750 lbs during January when prices are lower on a seasonal basis.

Further analysis of the spring calving seasons indicated that by feeding both calves until April 25, a time when many backgrounding programs are completed, the early spring calves were then more profitable. The February-March calf averaged \$55.27 compared to returns minus variable costs for the

Table 5. Returns minus variable costs: retained ownership at 750 lbs.

(1) Management option	(2) Wean date	(3) Cow/calf phase	(4) Retained ownership	(5) Total	(6) Date 750 lbs
1) Feb-Mar					
Background at 2.25 ADG	Nov 1	\$6.80	\$20.88	\$27.68	Jan 28
Background at 1.25 ADG	Nov 1	\$6.80	(\$21.72)	(\$14.92)	Apr 10
2) Apr-May					
Background at 2.25 ADG	Nov 1	(\$32.64)	\$69.01	\$36.37	Apr 3
Bkdg at 1.25 ADG/full season graze	Nov 1	(\$32.64)	\$3.94	(\$36.58)	Jul 3
Bkdg at 1.25 ADG/intensive graze	Nov 1	(\$32.64)	\$15.47	(\$17.16)	Jul 3
3) Sep-Oct/9 months					
Background at 2.25 ADG	Jul 1	(\$6.15)	\$3.98	(\$2.17)	Sep 15
4) Sep-Oct/7 months					
Int. graze/bkdg at 2.25	May 1	(\$34.66)	\$9.46	(\$25.21)	Sep 23
Full graze until 655 lb	May 1	(\$34.66)	\$4.46	(\$30.21)	Oct 1
5) Nov-Dec/9 months					
Background at 2.25 ADG	Sep 1	(\$9.56)	\$4.64	(\$4.92)	Dec 1
6) Nov-Dec/7.5 months					
Background at 2.25 ADG	Jul 15	(\$37.13)	\$18.72	(\$18.41)	Nov 13

April-May calves of \$51.67, even though the late spring calves earned \$35.84 more in the background phase.

The fall calving seasons, while often earning positive returns over variable costs to retained ownership, still did not earn enough to make up for the losses of the cow-calf phase. The finding tends to refute the argument that the older fall-born calf will make up for the increased feed costs and return more than the spring-born calf when both are sold in the fall. The results of this study indicated that even after retaining ownership until the calf weighed 750 lbs, no fall calving strategy was able to cover the average variable costs, while the February-March calf was able to average a \$6.80 return over its variable costs during the cow-calf phase.

In summary, the results indicate that retaining ownership of calves after weaning is a viable alternative for producers trying to improve their overall returns. Also, there is a definite place in the cattle industry

for backgrounding operations. April-May calves, in particular, proved to be a profitable cattle enterprise on their own, with average returns over variable costs of \$69.01 per head. They covered their total costs of production 6 years out of 10. Because of the higher returns and the lower capital required (lower gross investment and no cow investment), backgrounding operations may represent one of the few ways that young and highly leveraged operators can survive in the cattle industry. As the cattle feeding industry becomes more concentrated, with fewer and larger feedlots, cattle producers who can 1) do a good job of assembling lot-sized groups of cattle, 2) handle the greater health risks of these younger animals, and 3) manage the increased price risk associated with backgrounding, will provide a vital service and in turn, be one of the more profitable segments of the beef industry.

For more information about the study, write to: Mark E. Nelson,
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APPENDIX

*** CALVING SEASON STRATEGIES ***
BEEF COWHERD COST-RETURN BUDGET 1984

### COSTS ###	BORN : WEANED: AGE IN DAYS:	SPRING		FALL		FALL		FALL FESCUE	
		FEB-MAR	APR-MAY	SEP-OCT	NOV-DEC	SEP-OCT	NOV-DEC	SEP-OCT	NOV-DEC
I. TOTAL VARIABLE COSTS		NOV 1	NOV 1	JUL 1	SEP 1	MAY 1	JUL 15	JUL 1	SEP 1
A. Total Feed Costs		245	184	273	274	212	227	273	274
1. Cow Unit Feed Costs									
a. Native Range		\$108.80	\$108.80	\$121.60	\$121.60	\$121.60	\$121.60	\$83.20	\$83.20
b. Fescue Pasture (rent & fert./AC)		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$71.67	\$71.67
c. Alfalfa Hay		\$59.87	\$37.69	\$75.39	\$57.48	\$75.39	\$57.48	\$13.75	\$16.66
d. SBM 44%		\$0.00	\$0.00	\$0.00	\$8.85	\$0.00	\$8.85	\$0.00	\$0.00
e. Mineral & Salt		\$3.32	\$3.32	\$3.32	\$3.32	\$3.32	\$3.32	\$3.32	\$3.32
f. Grain		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
g. Grass Hay		\$9.72	\$9.72	\$10.96	\$10.96	\$10.96	\$10.96	\$7.21	\$7.90
Total Cow Unit Feed Costs		\$181.72	\$159.53	\$211.27	\$202.21	\$211.27	\$202.21	\$179.16	\$182.76
2. Bull & Replace. Feed Costs/C-C unit		\$52.58	\$52.58	\$52.58	\$52.58	\$52.58	\$52.58	\$52.58	\$52.58
Total Feed Costs		\$234.30	\$212.11	\$263.86	\$254.79	\$263.86	\$254.79	\$231.74	\$235.34
B. Labor		\$25.20	\$25.20	\$33.60	\$33.60	\$33.60	\$33.60	\$33.60	\$33.60
C. Other Variable Costs (Held Constant)		\$55.85	\$55.85	\$55.85	\$55.85	\$55.85	\$55.85	\$55.85	\$55.85
D. Interest (= Half of VC x int. rate)		\$22.86	\$21.25	\$25.61	\$24.96	\$25.61	\$24.96	\$23.29	\$23.55
TOTAL VARIABLE COSTS		\$338.21	\$314.41	\$378.92	\$369.20	\$378.92	\$369.20	\$344.48	\$348.34
II. TOTAL FIXED COSTS (Held Constant)		\$167.02	\$167.02	\$167.02	\$167.02	\$167.02	\$167.02	\$167.02	\$167.02
III. TOTAL COSTS (TVC+TFC)		\$505.23	\$481.44	\$545.94	\$536.22	\$545.94	\$536.22	\$511.50	\$515.36
### RETURNS ###	BORN :	FEB-MAR	APR-MAY	SEP-OCT	NOV-DEC	SEP-OCT	NOV-DEC	SEP-OCT	NOV-DEC
	WEANED:	NOV 1	NOV 1	JUL 1	SEP 1	MAY 1	JUL 15	JUL 1	SEP 1
A. Steer Wean Weight		550	403	578	546	464	481	578	546
B. Heifer Wean Weight		521	380	545	515	438	453	545	515
C. Calf Lbs Produced/Cow		482	352	505	477	406	420	505	477
II. PRICES									
A. Steer Price/Cwt at Weaning		\$66.31	\$68.18	\$66.03	\$64.99	\$71.11	\$66.21	\$66.03	\$64.99
B. Heifer Price/Cwt at Weaning		\$57.00	\$56.52	\$55.50	\$57.17	\$59.31	\$55.60	\$55.50	\$57.17
C. Cull Cow Price/Cwt		\$36.73	\$36.73	\$41.78	\$38.51	\$44.64	\$39.65	\$41.78	\$38.51
III. REVENUE									
A. Steer Revenue (\$)		\$164.12	\$123.64	\$171.74	\$159.68	\$148.48	\$143.31	\$171.74	\$159.68
B. Heifer Revenue (\$)		\$89.09	\$64.43	\$90.74	\$88.33	\$77.93	\$75.56	\$90.74	\$88.33
C. Cull Cow Revenue (\$)		\$60.60	\$60.60	\$68.94	\$63.54	\$73.66	\$65.42	\$68.94	\$63.54
TOTAL REVENUE		\$313.81	\$248.68	\$331.42	\$311.55	\$300.07	\$284.29	\$331.42	\$311.55
### ANALYSIS ###									
I. REVENUE-VARIABLE COSTS		(\$24.40)	(\$65.73)	(\$47.50)	(\$57.65)	(\$78.85)	(\$84.91)	(\$13.05)	(\$36.79)
II. REVENUE-TOTAL COST		(\$191.42)	(\$232.76)	(\$214.52)	(\$224.67)	(\$245.88)	(\$251.93)	(\$180.08)	(\$203.81)
III. CALF BREAK-EVEN PRICE (Variable Costs)		\$57.60	\$72.03	\$61.34	\$64.02	\$75.21	\$72.28	\$54.52	\$59.65
IV. CALF BREAK-EVEN PRICE (Total Costs)		\$92.26	\$119.44	\$94.39	\$99.00	\$116.36	\$112.02	\$87.58	\$94.63
V. INVESTMENT*		\$4,247	\$4,236	\$4,639	\$4,634	\$4,639	\$4,634	\$4,357	\$4,359
ASSET TURNOVER :									
VI. NET (Ln. II.)/INVESTMENT (Ln. V.)		-2.29%	-3.27%	-2.60%	-2.82%	-3.27%	-3.41%	-1.97%	-2.52%
VII. GROSS (Tot. Rev.)/INVESTMENT (Ln. V.)		9.60%	8.09%	9.17%	8.75%	8.50%	8.17%	9.77%	9.31%

* Investment is the maximum at one time assuming 1/2 the operating costs (less interest), value of the cow, share of bull, value of buildings and equipment, and value of grass.

(((FACTORS USED TO CALCULATE BUDGETS))) 1984

## FACTORS THAT VARY BY CALVING SEASON ##		SPRING		FALL		FALL		FALL FESCUE		
UNIT	PRICE	FEB-MAR	APR-MAY	SEP-OCT	NOV-DEC	SEP-OCT	NOV-DEC	SEP-OCT	NOV-DEC	
))))))))))))))))))))))))))==(Amounts are units per head per year)										
I. COW UNIT FEED COSTS										
A. Native Range	AC	\$12.80	8.5	8.5	9.5	9.5	9.5	9.5	6.5	6.5
B. Fescue Pasture*	AC	\$23.64	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5
C. Alfalfa Hay	TONS	\$71.00	0.84	0.53	1.06	0.81	1.06	0.81	0.19	0.23
D. SBM 44%	TONS	\$300.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.00
E. Mineral & Salt	CWT	\$5.83	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
F. Grain	BU	\$2.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G. Grass Hay	TONS	\$52.00	0.19	0.19	0.21	0.21	0.21	0.21	0.14	0.15
H. Fescue Fert.	AC	\$24.14	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$36.21	\$36.21
II. LABOR		\$4.20	6.0	6.0	8.0	8.0	8.0	8.0	8.0	8.0
III. REVENUE FACTORS										
	WEANED:		NOV 1	NOV 1	JUL 1	SEP 1	MAY 1	JUL 15	JUL 1	SEP 1
A. Steer Price/Cwt at Weaning		\$66.31	\$68.18	\$66.03	\$64.99	\$71.11	\$66.21	\$66.03	\$64.99	
B. Steer Weight		550	403	578	546	464	481	578	546	
C. Heifer Price/Cwt at Weaning		\$57.00	\$56.52	\$55.50	\$57.17	\$59.31	\$55.60	\$55.50	\$57.17	
D. Heifer Weight		521	380	545	515	438	453	545	515	
E. Days of Age at Sale		245	184	273	274	212	227	273	274	
F. Cull Cow Price/Cwt.		\$36.73	\$36.73	\$41.78	\$38.51	\$44.64	\$39.65	\$41.78	\$38.51	
## FACTORS HELD CONSTANT BY CALVING SEASON ##					VI. BREEDING HERD (PER HERD ENTRIES) (CONSTANT) **					
I. OTHER VARIABLE COSTS **					A. % Calf Crop 90%					
A. Utilities, Fuel & Oil		\$17.37								B. % Steers Weaned for Sale 45%
B. Vet. & Drugs		\$6.92								C. % Heifers Weaned for Sale 30%
C. Marketing & Breeding		\$7.90								D. % Heifers Weaned for Herd Replacement 15%
D. Repairs, Tools & Supplies		\$14.94								E. % Bull per Cow 4%
E. Auto Expense		\$1.89								F. Average Cow Value \$550
F. Misc.		\$5.83								G. Average Bull Value \$1,500
G. Implants		\$1.00								H. Cow Life 8
II. BUILDINGS & EQUIPMENT					I. Bull Life 3					
A. Investment		\$316								J. Salvage Value/Cow \$400
B. Life		10								K. Salvage Value/Bull \$500
C. % Tax & Insurance for Bldg/Equip, Livstk		1.0%								L. Cull Cow Weight 1100
III. INTEREST RATES					** The values in section VI. BREEDING HERD, are generally regarded as industry averages and are held constant throughout the analysis. Bull and cow values are estimates which are consistent with Kansas State University Farm Management Guide (MF-266)					
A. Operating Rate----- (%)		14.50%								
B. Fixed Funds Rate----- (%)		12.25%								
IV. NATIVE RANGE VALUE/ACRE										
		\$385								
V. FESCUE PASTURE VALUE/ACRE										
		\$591								

* Price for Fescue Pasture = Value/Acre x 4% Return/Acre
 A range of 3-5% Returns/Acre are considered typical by Kansas Farm Management Associations

** These variables are from KS Farm Management Assoc. Averages for the year analyzed.

NOTE: Some formulas used in the Beef Cowherd Cost-return Budget

- (1) Calf Lbs Produced/Cow: assuming a 90% calf crop = (45% x steer lbs) + (45% x heifer lbs)
- (2) Steer Revenue = steer weaning wt. x 45% x steer price
- (3) Heifer Revenue = heifer weaning wt. x 30% x heifer price
- (4) Cull Cow Revenue = cull cow wt. x 15% x cull cow price
- (5) Calf Breakeven Price (variable costs) = variable costs - cull cow revenue / calf lbs produced
- (6) Calf Breakeven Price (total costs) = total costs - cull cow revenue / calf lbs produced



Acknowledgements

Appreciation is expressed to Dr. Don D. Pretzer for the professional knowledge and guidance he provided throughout the research and development of this publication. In addition, the cooperation of the Kansas State University Animal Science Department is acknowledged, in particular, Drs. Larry Corah, Gerry Kuhl, Keith Zoellner, and Frank Brazle.

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C-695 Revised

October 1988

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10-88—2M; 7-89—5M

File Code: Marketing—1