

Beef Production

Columbia Basin Wheat-fallow Area

Randolph Barker and C. V. Plath*

To find a possible alternative to wheat growing in the wheat-fallow area of the Columbia Basin, an investigation was made of costs and returns from beef production. Results indicate that selection of the proper beef enterprise depends principally on the extent of usable rangeland and available capital.

For farms with 1,500 acres or more of rangeland, a cow-calf operation was estimated to return \$170 for each \$100 invested in operating capital. Total net returns could be increased further by fattening the calves to light slaughter weights; however, lower returns from each dollar would be expected from any operating capital used for this type of feeding operation.

On many wheat-fallow farms in the Columbia Basin there is so little rangeland that only a small number of calves can be raised. These farmers would need to combine purchased feeders with home-raised animals to spread overhead costs over enough cattle to be profitable.

Farms with limited capital may have to start slowly with a small cow-calf or cow-yearling enterprise. However, when sufficient funds are available to adequately stock the range, a cow herd-feedlot combination is estimated to bring highest returns. But emphasis is placed on the specialized ability required for feeding. Cow-calf and cow-yearling operations require less marketing and feeding skills than do operations involving the buying and fattening of feeder cattle. While low average returns in past years and frequent large losses stand as a warning signal to many farmers, purchased feeders can be recommended for some of the wheat-fallowing farms.

During the past five years acreage controls have forced Columbia Basin farmers to select an alternative crop to wheat for approximately 35% of their cropland. Although barley has been widely accepted, farmers continue to need information on other potential crop or livestock possibilities.

Rapid population growth along the West Coast offers good prospects for the demand for livestock products. The wheat-fallow area is particularly well located with reference to Portland, Seattle, and Spokane markets. Feed grain, chiefly barley, is grown on nearly all farms. Thus, economic and geographic conditions point towards increased livestock production for this region. Several kinds of livestock may be adapted, but this study deals only with the economic feasibility of beef cattle.

*Former Graduate Research Assistant and Associate Agricultural Economist respectively. Revision for publication by W. G. Brown, Assistant Agricultural Economist.

At present, most beef cattle raised on Oregon wheat-fallow farms are sold as weaners or yearlings to be fed by someone else. Few beef cattle are fed to slaughter weight. Therefore this study tried to find answers to the questions:

What type of cattle operations will bring highest returns for different amounts of rangeland and capital?

and

What returns can farmers reasonably expect from a beef enterprise?

Beef Enterprises for Farms With 1,500 Acres of Rangeland

Wheat farmers with two or more sections of rangeland can maintain a sizeable herd of cows, perhaps 50 or more. Although the farmer and his hired man may have their hands full with the grain operation during summer months, there is often sufficient labor for winter cattle feeding. Diverted acres of cropland can provide the required hay and grain. An abundant supply of straw and chaff, when available, makes a good winter maintenance feed for the cow herd.

With these resources the decision as to what type of cattle operation will be most profitable rests principally upon capital. How much money can be put into the cattle enterprise? The primary concern is with "operating capital" to cover cash costs. These include the cost of feeds, both raised and purchased, which makes up 50% or more of total cash costs. This charge for feed should be included because as home-grown hay and grain is converted into beef, cash income from grain decreases. However, expected average net returns on the cattle enterprise represent a value over and above what would be received for the cash sale of grain.

After determining how much "operating capital" can be spared for cattle operations, table 1 can be studied to see what returns can be realized from the capital. Expenses do not include some "fixed costs" or costs to be paid regardless of the number of cattle raised. These fixed costs include interest and depreciation on such items as fences, hammer mills, and other cattle equipment. Returns in table 1 can be thought of as "operating" or "working" capital returns.

Highest returns per \$100 of operating capital invested come from the cow herd, with sale of weaner calves in the fall. An outlay of about \$2,300 per year would result in an average return over cash expenses of around \$1,600 (table 1).

Since the cow herd uses the entire 1,500 acres of range, the best way to increase income is by placing home-raised calves in the feedlot in the fall rather than by selling them as weaners. This enterprise is represented by the cow-yearling operation in table 1. (The calves are fed until spring and sold at light slaughter weights.) Average net returns over operating expenses are increased to \$2,000; however, operating capital is also increased to \$5,000. Some farmers might not want to go to the extra expense and labor of holding calves over the winter and fattening them since the average return per \$100 operating capital is reduced to \$140. To increase net returns \$400 requires an additional investment of \$2,700 in operating capital, but this is nearly a 15% return on the added \$2,700 of operating capital.

Table 1. Capital Requirements and Estimated Net Returns for Varying Sizes of Beef Operations with 1,500 Acres of Rangeland

Beef enterprise(s)	Beef sold^{a/}	Operating capital needed for cash expenses^{b/}	Average net returns^{c/}	Average return per \$100 operating capital invested
Cow-calf (45 cows)	32 weaner calves (425 pounds)	\$ 2,300	\$1,600	\$170
Cow-yearling	32 fattened calves (800 pounds)	5,000	2,000	140
Cow-yearling and purchased yearlings	32 fattened calves (800 pounds) 29 fattened yearlings (1,075 pounds)	12,000	2,600	122

a/ Six cull cows per year would also be sold in each case and the value is included in the net return figures.

b/ Includes cost of feed (both purchased and home grown); initial cost of feeders if purchased; salt and veterinary expenses; yardage, trucking, and commission fees; death loss; taxes and interest on cattle; and interest, depreciation, and repairs on part of the cattle equipment.

c/ Not included were fixed costs such as taxes and interest on the rangeland, interest and depreciation on fences, etc. Also, no charge for labor is included.

Further income increases are possible by purchasing additional yearlings in the fall and feeding them to heavier weights. This operation is combined with home-raised cow-yearling enterprise in table 1. Income is increased to \$2,600, but operating expense is also raised to \$12,000. Whether the extra boost in net income (nearly 9% return on the extra \$7,000) is worth the extra investment, risk, and work depends on the farmer's skill and experience in buying, selling, and feeding cattle, and his desire to feed cattle. Average cost of this extra investment and risk has been used in calculating the net returns in table 1.

The cattle enterprise can be expanded beyond that shown in table 1 by purchasing more feeder cattle if sufficient labor and capital is available. Although feeding out purchased cattle gives a lower rate of return than cow-calf or cow-yearling operations, many farmers could increase their average net incomes by feeding cattle.

Beef Enterprises for Farms With 750 Acres or Less Rangeland

Many wheat-fallow area farmers have approximately one section of rangeland in addition to their cropland. This type of farm is very limited in size of cow herd that can be maintained. For farms with 750 acres of rangeland, average net returns have been estimated for varying amounts of operating capital.

If calves are sold as weaners in the fall, only about 16 calves plus 3 or 4 cull cows could be marketed each year. Average expected returns over cash operating expenses would be about \$800 per year.

Income over operating expenses can be increased approximately \$200 by holding over the 16 weaner calves and fattening them to 800 pounds. Additional operating capital required for the extra \$200 is \$1,350, which means a return of about 15%. For some farmers, the extra work and risk involved in the feedlot operation may not make the added return worthwhile. However, average feedlot experience with cattle going off feed and death losses have been included as operating costs.

Table 2. Capital Requirements and Estimated Net Returns for Varying Sizes of Beef Operation With 750 Acres of Rangeland

Beef enterprise(s)	Beef sold	Operating capital needed for cash expenses	Average net returns	Average return per \$100 operating capital invested
Cow-calf (22 cows)	16 weaner calves (425 pounds)	\$ 1,150	\$ 800	\$170
Cow-yearling	16 fattened calves (800 pounds)	2,500	1,000	140
Cow-yearling and purchased yearlings	16 fattened calves (800 pounds) 60 fattened yearlings (1,075 pounds)	17,000	2,300	114

To make a higher return, feeders must be purchased to supplement home-raised calves. If 60 yearlings are purchased and fed out to 1,075 pounds along with the 16 home-raised, fattened calves, average net returns would increase to an estimated \$2,300 per year. Additional capital of \$14,500 would be needed to finance the purchased yearling operation. Therefore, an increase in net returns of \$1,300 would amount to a 9% return on this extra capital. Farmers with skill and interest in cattle buying, selling, and feeding could increase their net farm incomes significantly on the average over a number of years.

Farmers with little or no rangeland have no choice with respect to cattle enterprise selection. If cattle are to be handled, it must be in a feedlot operation. Cattle feeding requires considerable ability in cattle buying and selling, as well as in feeding. Some farmers may wish to start on a fairly small scale and then expand their feedlot operation as they acquire more skill and experience.

Procedure for This Study

In 1956, information was gathered from cattle operations on 50 wheat-fallow farms in the Columbia Basin. This survey encompassed a wide variety of practices with respect to beef production. Most commonly, farmers sold weaner calves or carried calves through the winter and sold them in the spring or summer as yearling feeders. However, operators with little or no rangeland, and consequently no cow herd, purchased feeder cattle and fattened them on a daily ration of 20 pounds or more of barley. There were all kinds of combinations between the extremes. One or two bought old cows and fed them out; a few raised purebred stock.

Kinds of Enterprises Studied

No two farmers manage their beef cattle in exactly the same manner. However, for the purpose of this investigation representative cattle enterprises were studied. These were analyzed with respect to costs and returns under specified price and production conditions. A description of each enterprise follows:

- A. Calves sold as weaners in the fall.
- B. Calves held through the winter and sold in the early spring as feeders.
- C. Calves held through the winter and sold off pasture in mid-summer as feeders.
- D. Home-raised calves placed in the feedlot in the fall and sold at light slaughter weights in the spring.
- E. Purchased calves placed in the feedlot in the fall and sold at light slaughter weights in the spring.
- F. Home-raised yearlings carried through the winter and summer, placed in the feedlot in the fall, and fed to heavy slaughter weights.
- G. Purchased yearlings placed in the feedlot in the fall and fed to heavy slaughter weights.

Included in this list of enterprises are some common practices (A, B, and C) and some not so frequently found (D, E, F, and G). A detailed analysis, with estimated costs and returns, was undertaken in order to make comparisons. However, to focus attention on major considerations, results were presented for only enterprises A, D, and G. Little difference was found in returns between selling calves as weaners or carrying them through the winter to be sold as yearling feeders (enterprises A, B, and C). Likewise, there was little difference in returns between feeding out calves (D and E) and feeding out yearlings (F and G). Therefore the enterprises presented in table 1 (A, D, and G) give a fairly complete picture of expected returns from beef cattle. For example, farmers interested in enterprises B and C could expect about the same financial results as for enterprise A (cow-calf) in table 1. Likewise, similar results could be expected for enterprise E as for D (cow-yearling) and enterprise F as compared to G (purchased yearlings) in table 1.

Price and Production Assumptions

After cattle enterprises were chosen for study, certain standards had to be established with respect to prices paid and received, to gains, and to cattle feed requirements in order to estimate costs and returns. These standards were set in keeping with existing conditions. While variations naturally exist from farm to farm and from year to year for such items as yield per acre or price per pound, it is believed that comparisons among the enterprises will change only slightly under different conditions.

Prices: A 10-year post-war average of prices (1945-46 to 1955-56) was used. Feeds were charged at about market price. Consequently, returns on cattle principally reflect returns above what would have been realized had feed been sold for cash.

Labor: No charge was made for winter labor as it was assumed that the farmer had no opportunity for off-farm employment during winter months. The full-time labor of one man was considered to be available for cattle feeding. Of course, farmers who normally obtain winter jobs (or who would hire a man to care for the cattle) would need to subtract the cost of this labor from average net returns in table 1.

Land: It was assumed that the farm had sufficient diverted acres for producing hay and grain. Rangeland, like winter labor, was considered to have no alternative use. Therefore, no charge was made for use of range since it would lie idle if not grazed. However, fencing charges were taken into account. Rangeland was assumed to have a carrying capacity of approximately 27 acres per animal unit.

Livestock: The following standards were used on livestock production:

1. A 14% replacement of cows
2. A weaning rate of 86%
 - a. Calving rate of 90%
 - b. Death loss from calving to weaning of 4%
3. Weaning weight - 425 pounds
4. Daily gain on wintering ration for calves - 1 pound
5. Daily gain on spring pasture for yearling - 1.4 pounds
6. Daily gain on feedlot for calves - 2.0 pounds
7. Daily gain on feedlot for yearlings - 2.5 pounds

Farmers who can do better than these production and feeding standards can expect higher net returns than shown in table 1 at the 10-year post-war average price level.

Farmers with unfavorable conditions or with lower-than-average prices should expect lower average net returns.