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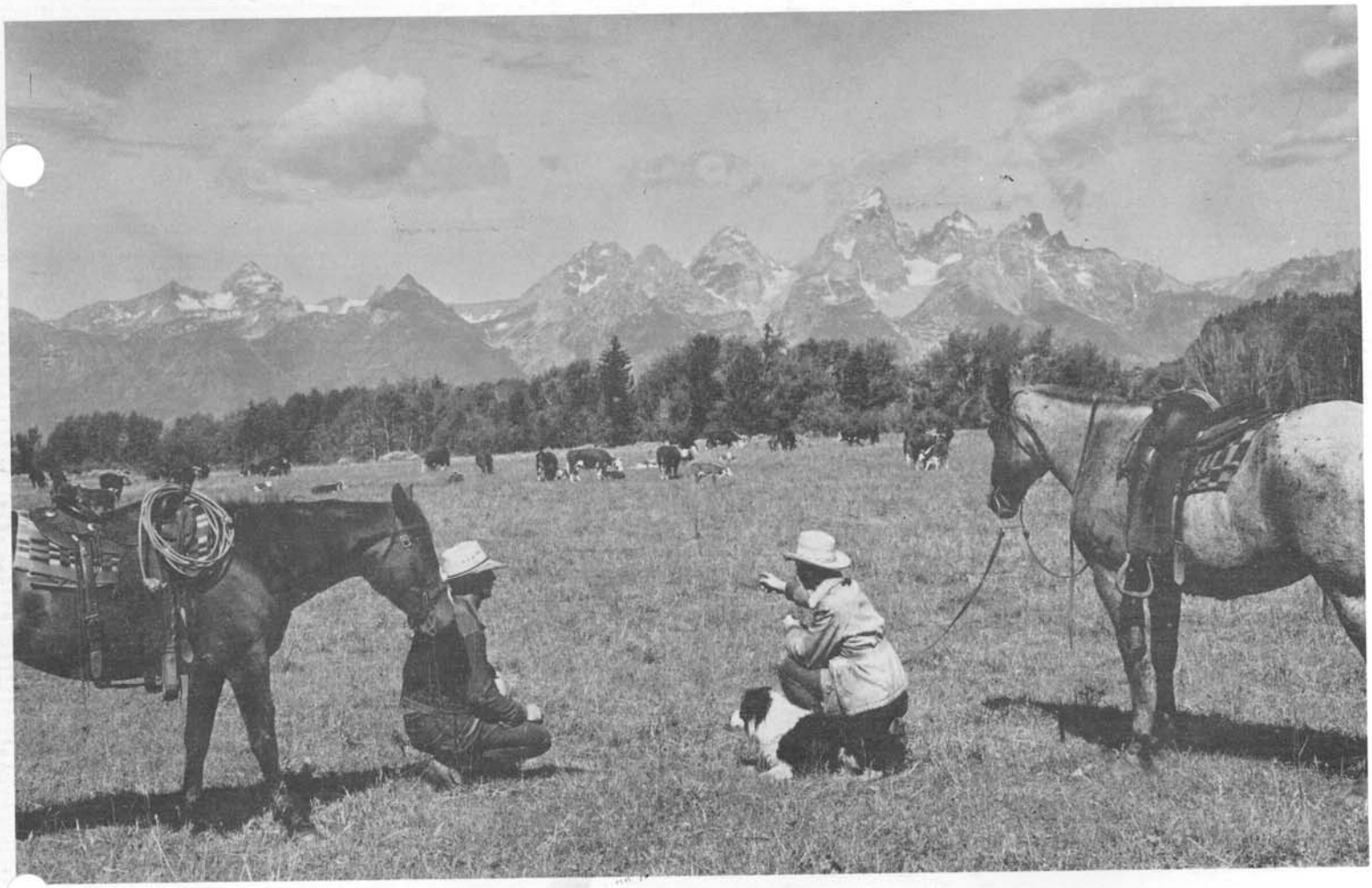
Wyoming Mountain Valley Cattle Ranching in 1973 and 1974 - An Economic Analysis



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An Economic Analysis

Delwin M. Stevens
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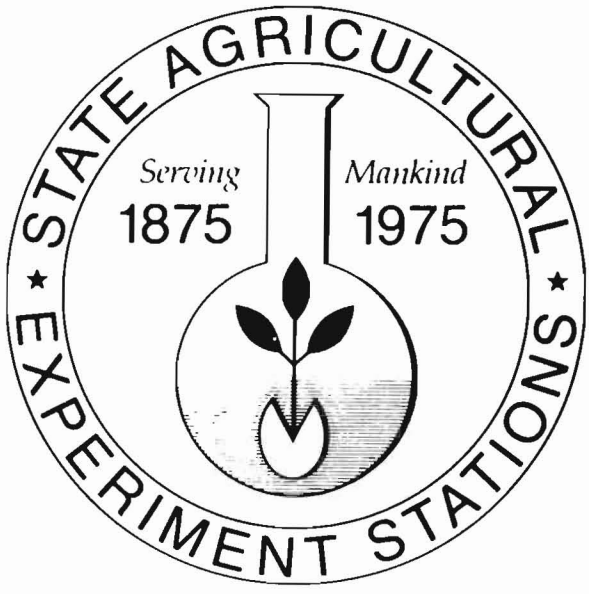

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Summary and Conclusions

This economic investigation of cattle ranching in Wyoming is designed to supply information to help ranchers with decision making. It brings out the influence of size of business, rate of production, efficiency of resource use, prices received and managerial practices on the earnings of mountain valley cattle ranches. Investment requirements, components of costs, returns and earnings are determined and reasons for their variation are examined. Also, the organizational methods and management practices of two successful ranches are analyzed and compared with the management practices followed by two less successful ranches.

The 60 schedules representing three ranch sizes were drawn from five different areas located throughout the mountain valley areas of the state. This study covered the year 1973, a peak year in cattle prices in the United States and Wyoming. The ranches studied were considerably larger and somewhat better managed than typical Wyoming ranches. They were strictly cattle outfits with no income from other sources. This greatly simplified the accounting procedure, as it was not necessary to allocate production costs between cattle and sheep. The 20 large ranches ranged in size from 1,100 to 3,788 cattle units (cu) with an average of 1,719; the 20 medium ranches ranged from 500 to 1,099 cu and averaged 725; and the 20 small ranches ranged in size from 202 to 499 cu with an average of 382.

Two definitions will help the reader understand the findings of this research: ranch operating costs include a depreciation allowance or charge for capital maintenance and all cash costs of running the business except interest paid. Cost of production (sometimes referred to herein as carrying cost) includes ranch operating costs, plus an imputed labor wage of $7,200 for the operator, plus a management fee of 5% of the gross income, plus imputed interest at 6% on total ranch capital. Thus, in determining cost of production, or carrying costs per cu, all cash and noncash items are included—all costs both direct and indirect.

The tabulation on the following page shows costs, returns and earnings for three size groups as well as statistical measurements in terms of business size, rate of production, efficiency of production, prices received and production cost calculations. These costs and returns are discussed in detail throughout the body of the report. Each ranch size made a similar rate of return on total capital after allowing the operator a reasonable wage for the labor and management. For example, the percent return to capital was 4.48% for the small ranches, 4.03% for the medium and 4.37% for the large ranches.

Developing stock water reservoirs and spraying for sagebrush control on foothill grazing lands are two range improvement practices which usually pay good dividends.

Per ranch data	Averages per ranch for 20 Small ranches	20 medium ranches	20 large ranches	60 ranches
Business size				
Total cu	382	725	1,719	942
Total capital	$455,700	$970,900	$1,965,400	$1,130,700
Total receipts	$63,610	$111,090	$264,300	$146,340
Acres of deeded land	2,232	6,165	11,820	6,743
Man equivalent	1.8	2.6	4.6	3.0
Rate of production				
Percent calf crop at market time	89	85	83	86
Efficiency of production				
Percent death loss-cattle	4.4	4.8	4.2	4.5
Percent death loss-calves	1.7	1.7	1.7	1.7
Hours per ton of hay	3.2	2.8	2.1	2.8
Cu per man equivalent	214	293	387	298
Prices received (per cwt.)				
All livestock (av.)	$50.91	$47.26	$47.33	$49.20
Percent of sales from calves	44.5	29.2	20.5	31.4
Production cost calculations				
Total cost (cash and non cash)	$32,790	$59,250	$158.020	$83,350
Imputed operator's wage	10,380	12,760	20,370	14,500
Imputed interest on capital (6%)	27,240	58,320	117,920	67,842
Total production cost	$70,410	$130,330	$296,310	$165,692
Net beef produced (lb.)	126,859	237,261	560,364	298,000
Production cost per cwt.	$55.50	$54.93	$52.87	$55.60
Per cu data				
Total ranch investment	$1,193	$1,339	$1,143	$1,200
Pounds of beef produced	333	324	329	329
Total hours of labor	14.6	10.6	7.7	9.4
Ranch receipts	$166.52	$153.22	$153.75	$155.35
Operating costs	85.84	81.72	91.92	88.48
Ranch income	80.68	71.50	61.83	66.87
Operator's imputed wage	27.17	17.60	11.85	15.39
Return to capital	$53.51	53.90	$49.98	$51.48
Percent return to capital	4.48	4.03	4.37	4.29

To study the factors which influence profits on cattle ranches, the 60 ranches were arrayed from high to low based on the percent return to capital (see following tabulation). The 12 ranches, or the 20% showing the highest earnings had a return to capital of 6.84% and a ranch income per cu of $93.28. In comparison, the low return group earned only 1.61% return to capital, with a ranch income per cu of $34.33.

Coefficient	12 ranches with the Highest return	Lowest return
Earnings		
Percent return	6.84	1.61
Ranch income per cu	$93.28	$34.33
Ranch business size		
Total cu	765	936
Total capital per ranch	$838,400	$1,122,200
Total receipts	$135,390	$ 137,680
Rate of production		
Percent calf crop at market	90	84
Efficiency of production		
Hours per ton of hay	3.5	3.1
Investment per cu	$1,096	$1,199
Price received per cwt.	$52.50	$46.30
Production cost per cwt. beef	$48.18	$61.76

The highest return ranches, when compared with lowest return ranches, had the following characteristics: a higher rate of production, more cu handled per man and a lower investment cost per cu. They received higher prices: $52.50 per cwt. for all beef sold compared to $46.30 for the low return group.

The high return group had lower production costs: $128,314 for the production of 266,300 lb. of beef, or $48.18 per cwt. In comparison, the other group had a total production cost of $186,942 for 302,700 lb. of beef or a cost per cwt. of $61.76.

In obtaining field data for this economic investigation, ranchers gave excellent cooperation. They supplied information on quantities of beef sold by classes, labor inputs by months and jobs, feed requirements, as well as much detail on all monetary costs and income. By using federal cost indices and based on input and output data obtained in 1973, a synthesized budget was prepared for 1974 for each ranch size. The sale prices received for the various classes of livestock in 1974 were applied to the quantities of beef sold in 1973. In this manner, the 1973 study was updated to represent 1974 conditions.

With the 1974 costs increasing by about 17% over 1973 and with price of livestock sold in 1974 less than 50% of the 1973 level, the budgets indicate that the cattle ranchers faced a difficult cost-price squeeze in 1974. The ranch income was $-5,933 for the small, $-7,043 for the medium and $-43,269 for the large size ranch. Essentially, this means that each rancher worked for nothing, receiving no return for his capital and lacked this amount of having enough income to cover expenses. A section in the latter part of this report is devoted to this analysis.

Wyoming Mountain Valley Cattle Ranching In 1973 and 1974

An Economic Analysis

Delwin M. Stevens
Division of Agricultural Economics

Introduction

During the past 10 years the number of cattle and calves in Wyoming has increased by one-fourth—from 1.3 million to 1.6 million head, and the number of sheep and lambs has decreased nearly 25%—2.2 million to 1.7 million (Table 1). During this 10-year period, the realized gross farm income for Wyoming has increased from about $183 million to about $433 million. During this time the percent of gross farm income has increased for cattle from 49% to 63% and for sheep it has decreased from 15% to 8%. This shows the relative importance of cattle and sheep production in Wyoming.

Cattle ranching represents the largest segment of Wyoming's agricultural income. High level management of the cattle ranch is important to security, production efficiency and financial success in the increasingly difficult and highly competitive range livestock business. Though there has been a slow but continuous improvement in beef cattle management over the years, the cost-price squeeze of 1974 as well as science and technology are combining to hasten the trend in recent years. Every segment of the industry—feeders, breeders, producers and packers are searching for and are examining different methods for producing and processing more and better beef at less cost.

A large herd of well-bred cattle, adequate deeded grazing and hay land, sufficient grazing rights from federal, state and private sources, and an adequate supply of dependable labor—these excellent resources do not insure profitable ranching operations per se. A cattle rancher must also

Table 1. Components of cash receipts from Wyoming agriculture.

Year	Millions of head		Realized gross farm income (in millions)	Percent gross farm income from		
	Cattle and calves	Sheep and lambs		Cattle and calves	Sheep and wool	Crops, other livestock and government payments
1964	1.3	2.2	$182.7	49	15	36
1967	1.4	2.0	227.7	55	11	34
1970	1.5	1.9	269.0	59	9	32
1973	1.6	1.7	432.7	63	8	29

Source: Wyoming Agricultural Statistics, compiled by Wyoming Crop and Livestock Reporting Service, November, 1973.

pay the bills, meet the payroll, borrow money and execute a carefully prepared management plan. To do this successfully, like any other businessman, he must have experience and training; he must be informed on new developments and be alert to what is happening around him. The ranch will not run itself—vast amounts of capital are required, many important decisions must be made and the cost-price battle must be fought. It is hard work and it requires good organization. Careful attention to feeding, breeding, disease control and tight, keen management and planning are required to produce and market beef and to hold together vast ranch resources and make them earn even modest dividends.

Objectives

An important purpose of this economic investigation is to supply information which will help ranchers in decision making. Investment requirements and components of cost, returns and earnings are determined; reasons for their variation are examined. Specific objectives are to investigate the influence of size of business, rate of production, efficiency of resource use, prices received and management practices upon the earnings of mountain valley cattle ranches.

The organizational methods and management practices of successful ranches will be analyzed and compared with the management practices followed by less successful operators. Most ranch managers can benefit from studying and applying management techniques used by successful people. The annual carrying costs and rates of production as determined here are useful as norms or standards of preformance. Each rancher can compare his own operation with individual factors presented and thereby determine the strong and weak points of his own business.

These cross-bred Hereford-Angus calves have hybrid vigor which results in lower death loss at birth and perhaps heavier weights at weaning time with little or no discrimination by feeders who claim fast feedlot gains.

Description of Area Studied

Range cattle production in Wyoming can be divided into two types—mountain valley ranches and prairie ranches. These types differ in geographic location, climate, crops produced, topography and methods of livestock management. The prairie ranches are located in Wyoming's plains counties east and south of the Rocky Mountains where annual rainfall ranges from 12-18 inches, falling mostly in the spring and summer. The winters are open, snowfall is light and winds remove part of the snow permitting much winter grazing. About one-half ton of hay is normally fed per cu, the greater part of which is fed to cows and young stock.

On mountain valley ranches, cattle are run on the high mountain ranges during the summer season and on deeded and public foothill ranges in the fall and spring. During the winter the cattle are fed for several months on hay produced by irrigation. Cattle consume from 1.0 to 2.0 tons of hay per cu each winter. The summer range is cheaper but due to the additionol feed and labor required the wintering costs are higher than on prairie ranches. On mountain valley ranches, the useful life of cows may be one year longer and the percentage of calf crop is normally a little higher than on prairie ranches. When measured in terms of cost per pound of beef production, there is little difference in the two areas.

Cattle ranching utilizes lands that are largely unsuited to the production of cultivated crops. Native and alfalfa hay are produced in the irrigated valleys for winter feeding which enables livestock to make the most efficient use of forage on the rolling foothills and the mountainous grazing lands. The success of the rancher largely depends on the quantity of forage produced on the meadows and range areas. The rancher must plan the operation in a manner that makes the most efficient use of forage. Drought, short feed and erratic prices are difficult problems encountered by most ranch operators. Mountain valley cattle ranches are subject to precipitation extremes varying from 10 inches on the lower ranges to as much as 40 inches on the high mountain valley ranges. The average precipitation in mountain valley areas is approximately 14 inches, but wide variations from the mean are common. Such wide ranges in moisture means also wide ranges in the available feed for grazing and water for hay production.

Location of the Sample Ranches

This study deals with cattle production in the mountain valley areas of Wyoming for 1973. The 60 ranches representing three ranch sizes were drawn from five separate areas located throughout Wyoming (Figure 1). A sample of four large, four medium and four small ranches was taken from each of the five mountain valley areas. The Platte-Snake River area, located mainly in Carbon County in south-central Wyoming, includes ranches on the Platte and Snake Rivers or on tributaries which flow into these rivers. The Bear River area, mainly in Uinta County in southwestern Wyoming, includes ranches on the Bear River and its tributaries. The Green River area, located mainly in Sublette County, in the west-central part of the state is in the upper reaches of the Green River and its tributaries. This valley is bounded by the Wind River Mountains on the east, the Gros Ventre range on the north, and the Salt River Range on the west. The snowfall in the mountains here is abundant and irrigation water is available for the large and numerous hay meadows.

In the Big Horn Basin area, ranches are located on the periphery of the Basin—in the foothills of the Big Horn Mountains to the east or in the foothills of the Absaroka and Owl Creek Mountains to the west and south. The Sheridan-Buffalo area includes the eastern slopes of the Big Horn Mountains and survey ranches are located in the western part of Sheridan and Johnson counties.

Figure 1. Location of the sample ranches.

Method of Analysis

This section discusses briefly the source of data for this economic study, how the resources were evaluated and how the ranches were classified as to size. Also, it will define several terms used throughout the report and will explain how the results are mainly presented in tabular form.

Source of Data

The basic data for this research were obtained from a sample of 60 ranches located throughout five mountain valley areas of Wyoming. The operators cooperated by requesting their accountants to furnish the field enumerator with financial data. Information on livestock inventory numbers, land values, the extent of other resource holdings and information on management practices was obtained from the operator.

Evaluation of Assets

Land value was based on productivity or carrying capacity and was treated consistently on each ranch and between ranch areas. Grazing land values ranged mostly from $50 to $100 per acre. Irrigated meadow land producing one ton of hay per acre was valued at $250 per acre and land producing 1.5-2 tons per acre was valued at $350 per acre. Irrigated pasture lands ranged mostly from $200-$300 per acre with $250 being the most common value.

Values were placed on public grazing permits held by the rancher. For example, the value of one animal unit month (AUM) on the National Forests or on BLM land or on state-owned land was placed at $25.

The value of ranch improvements was generally taken from the rancher's records and his income tax returns. For example, the income tax return shows the new cost of the improvements and machinery, annual depreciation and the depreciation taken to date. From these data, one can determine current inventory values of buildings and improvements and also for power, machinery and equipment.

Livestock values per head, constant for both inventories, were uniform for all ranches and were as follows: cows, $300; two-year-old heifers, $250; coming yearling heifers, $200; coming yearling steers, $225; coming two-year-old steers, $275. Bulls ranged in value from $400 to $600 depending on age, purchase price and the number of serviceable years remaining.

Size Classification of Ranches

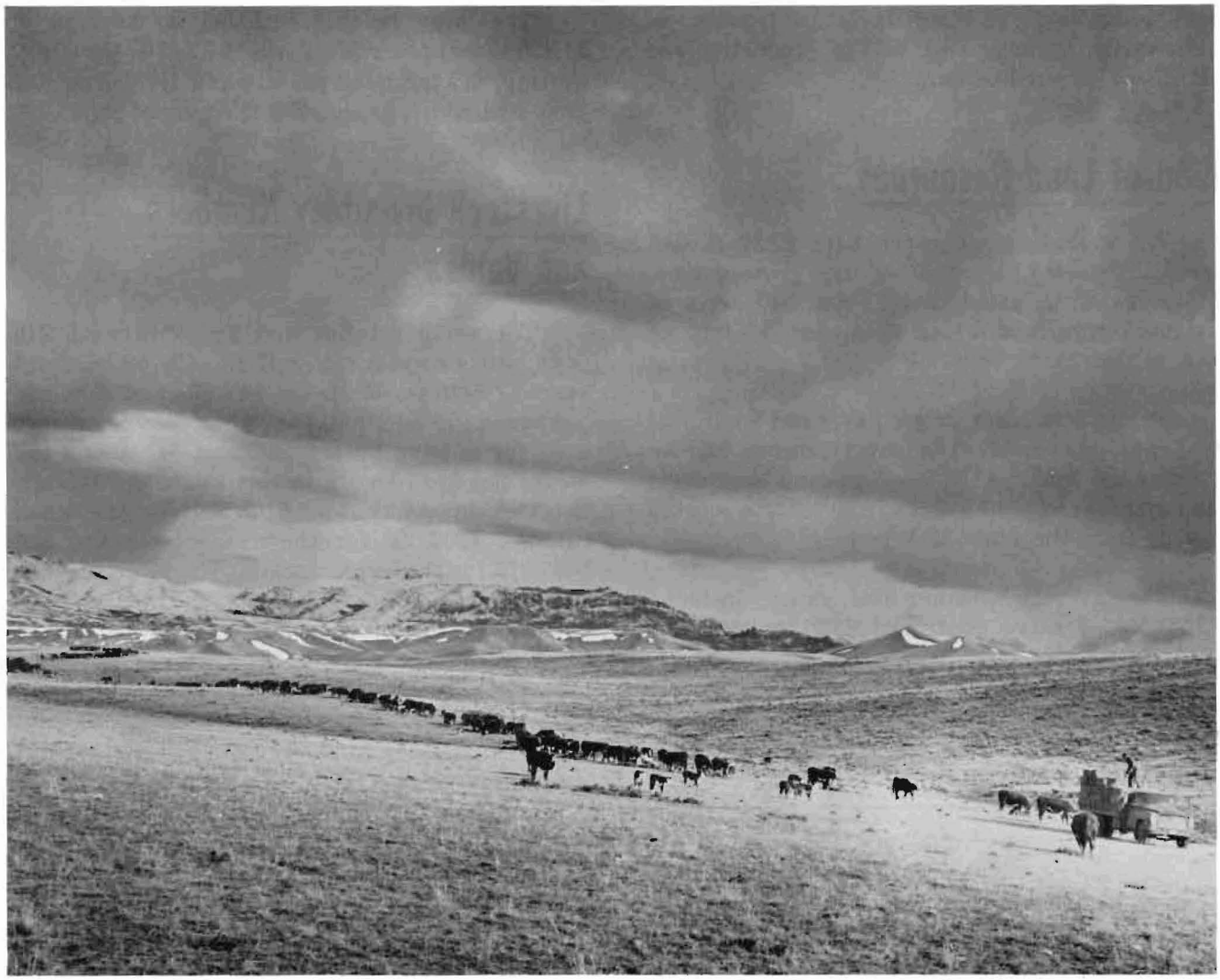
The ranches studied ranged in size from 202 to 3.788 cu and were larger and better managed than the typical Wyoming ranch. They were strictly cattle outfits with no income from other sources. This greatly simplified the accounting procedures as it was not necessary to allocate production costs between cattle and sheep. The 60 cattle ranches were divided into three size groups based on the number of cu. The 20 large ranches ranged in size from 1,100 to 3,788 cu with an average of 1,719; the 20 medium ranches ranged from 500 to 1,099 cu and averaged 725; and the 20 small ranches ranged in size from 202 to 499 cu with an average of 382. A cu is the equivalent of one range cow weighing a thousand pounds. The proportion of one cu represented by all the classes of cattle is as follows: two-year-old heifer, 1.0 cu; coming yearlings, heifers and steers, .67; coming two-year-old steers, .85; old bull, 1.40; beef cow with calf by her side, 1.15 cu. For example, 100 cows with their calves would represent 115 cu, 100 two-year-old heifers with calves would represent 100 cu and 100 yearlings would represent 67 cu, and 100 bulls would be 140 cu.

Analysis of Data

The data are analyzed largely through a series of tabular presentations. Organizational characteristics, size of business, components of investment requirements, management practices and components of production costs and income are presented for the ranches in each of the three size groups. Many of these data are presented on a cu basis obtained by dividing the total figures for the ranch by the number of cu in the average inventory.

To study factors influencing earnings, data are presented for the high and low 20% of the

60 ranches based on several criteria: size of ranch business (number of cu); rate of production (pounds of beef produced per cu); efficiency of production (cost per cwt. of beef produced or carrying cost per cu); and prices received. A case study is presented comparing data for two large ranches—one successful financially and the other less successful. A parallel comparison is made for two small ranches.



Breakfast time on the range. Most of Wyoming's hay is baled which makes it possible to haul to the range to supplement winter grazing.

Organizational Characteristics of the Ranches

The organizational characteristics of small, medium and large ranches will be described in terms of land resources, livestock inventory numbers, components of ranch investment, labor requirements, business size, rate of production and efficiency of production.

Kind of Land Resources

The average small ranch with 2,232 deeded acres included 1,544 acres of dry grazing land, 348 acres of irrigated pasture and 340 acres of irrigated crop land which produced 598 tons of hay (Table 2).

To augment home-grown hay, some additional feed was purchased. The small ranches had an average of 1,281 AUM's of grazing on public land and also leased 58 acres from private sources and/or from the State of Wyoming.

The average medium-size ranch included 6,165 deeded acres, controlled 3,001 animal unit months of grazing on public land and leased 448 acres for grazing.

The large ranches included an average of 11,820 deeded acres of which 9,670 were dry grazing, 675 irrigated pasture and 1,475 irrigated crop land which produced 2,193 tons of hay.

Livestock Inventory Numbers and Values

The small ranches had an average of 213 cows, 40 two-year-old heifers, 69 replacement yearling heifers, 42 steers, 14 bulls and 6 horses per ranch. In addition, two other beef cows were used for milking purposes (Table 3). Using the values per head shown in this table, the average livestock inventory was $105,950 for the small ranches, $202,000 for the medium ranches and $481,975 for the large ranches. The large ranches were mainly selling yearlings and the smaller outfits were operating mostly on a cow-calf basis.

Table 2. Land resources for small, medium and large ranches. (60 Wyo. M.V. Cattle Ranches, 1973)*

Kind of land resource	Averages for 20 small ranches	20 medium ranches	20 large ranches	60 ranches
Per ranch				
Deeded land (acres)				
Irrigated crop land	340	603	1,475	807
Irrigated pasture	348	352	675	458
Dry grazing	1,544	5,210	9,670	5,478
Total deeded acres	2,232	6,165	11,820	6,743
Leased land				
AUM's on public land	1,281	3,001	3,353	2,545
Acres of leased dry land	58	448	1,046	518
Per cu				
Deeded irrigated land	1.80	1.32	1.25	1.47
Deeded dry land grazing	4.04	7.19	5.63	5.76
Total deeded land (acres)	5.84	8.51	6.88	7.23
AUM's on public land	3.35	4.14	1.95	3.17
Acres of leased grazing land	.16	.62	.61	.48

*M.V. is an abbreviation for Mountain Valley.

Table 3. Components of livestock investment for small, medium and large ranches.
(60 Wyo. M.V. Cattle Ranches, 1973)

Class of live-stock	Inventory value per head	Averages per ranch for: 20 sm. ranches Av. no.	Invest-ment	20 med. ranches Av. no.	Invest-ment	20 lg. ranches Av. no.	Invest-ment	60 ranches Av. no.	Invest-ment
Cows	$300	213	$ 63,900	383	$114,900	868	$260,400	488	$146,534
H.2's	250	40	10,000	83	20,750	187	46,750	104	25,853
H.1's	200	69	13,800	137	27,400	348	69,600	184	36,954
St.1's	225	42	9,450	106	23,900	309	69,525	152	34,274
Bulls	550	14	7,700	25	13,750	61	33,550	35	18,178
Horses	100	6	600	8	800	14	1,400	10	962
Dairy cows	250	2	500	2	500	3	750	2	598
Total	xxx	xxx	$105,950	xxx	$202,000	xxx	$481,975	xxx	$263,353

Components of Capital Investments

The average small ranch had a total capital investment of $455,700 with debts representing $46,100 or 10.1% (Table 4).

The medium-sized ranches had an average investment of $970,900—72% of which was in real estate and grazing rights, 21% in livestock, 4% in power and machinery and 3% in feed. The investment per cu was $1,339 with a debt of $143 or 10.7% of the total. The owner's equity was $1,196 per cu.

The average large ranch had a total capital investment of $1,965,400—70% of which was invested in real estate including deeded land, grazing rights and buildings and improvements. Livestock at 25% was the next largest part of the investment and the remaining 5% was in power, machinery and feeds. This is an average investment per cu of $1,143 with a debt of 12.4% of the total.

Table 4. Components of capital investment for small, medium and large ranches.
(60 Wyo. M.V. Cattle Ranches, 1973)

	Averages per ranch: 20 small (382 cu)	20 medium (725 cu)	20 large (1,719 cu)	60 ranches (942 cu)
Deeded land	$ 264,764	$ 603,532	$1,247,780	$ 703,681
Grazing rights*	32,036	74,968	83,820	63,608
Buildings and improvements	18,100	26,500	41,600	28,787
Power and machinery	18,650	35,100	49,825	36,247
Livestock	105,950	202,000	481,975	263,353
Feeds	16,200	28,800	60,400	35,142
Total	$ 455,700	$ 970,900	$1,965,400	$1,130,818
Total real estate debt	46,100	103,500	243,500	131,008
Owner's equity	$ 409,600	$ 867,400	$1,721,900	$ 999,810
Percent of debt	10.1	10.7	12.4	11.6
Average per cu				
Total investment	$ 1,193	$ 1,339	$ 1,143	$ 1,200
Total real estate debts	121	143	142	139
Owner's equity	$ 1,072	$ 1,196	$ 1,001	$ 1,061

*Includes forest permits, BLM rights and state land rights.

Labor Requirements for Cattle Ranches

Work caring for and managing livestock is the largest user of labor on mountain valley ranches and represents about 48% of the total (Table 5). Main jobs associated with cattle were: winter feeding and chores, calving, branding, dehorning, vaccinating, castrating, moving and care of cattle while on summer pasture, roundup, culling and shipping, and general inspection and management. Since each of these ranches had little or no livestock besides cattle, all labor costs must be borne by the cattle.

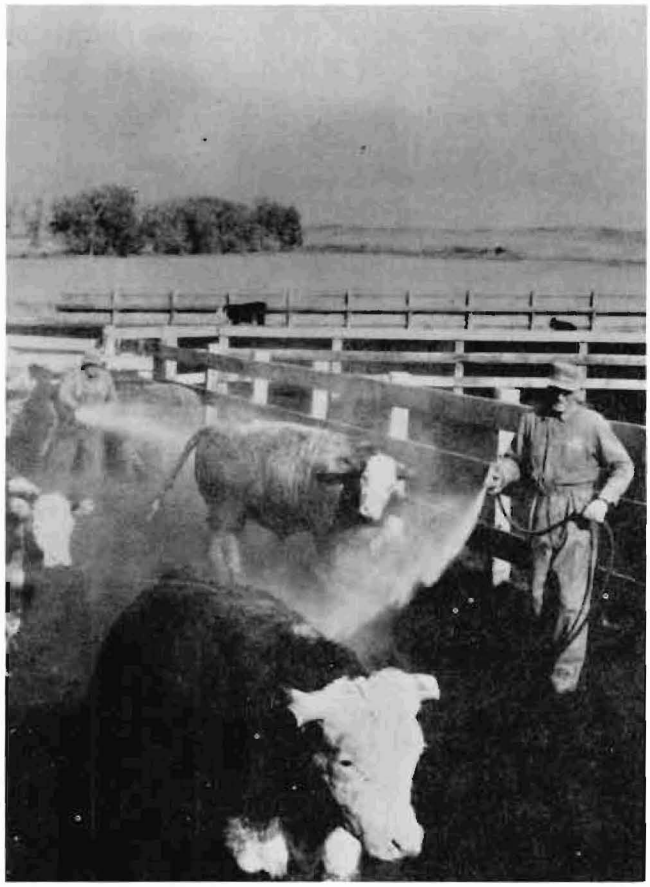
Crop production requires about 39% of the total and is the second largest labor input. The biggest job is putting up the hay. This means swathing, baling or loose-stacking one crop of native or two cuttings of alfalfa hay. Most of the hay was cut with swathers and baled and stacked in the field. The average yield was about 1.6 tons per acre. Miscellaneous or overhead labor required about 13% of the total.

The small ranches with an average of 1.8 men and 382 cu required 5,563 hours annually. This is about 3,090 hours per man or 14.6 hours per cu. The crop work includes putting up 598 tons of hay from 330 acres of meadow land and producing and harvesting about 10 acres of small grains (Table 5).

The medium cattle ranches with 2.6 men and 725 cu required an average of 7,694 hours. This is 2,959 hours per man or 10.6 hours per cu. About 995 tons of hay were harvested from 583 acres of meadow and about 20 acres of small grains were grown.

The large ranches were more efficient in the use of labor, requiring only about 73% as much per cu as the medium ranches.

The distribution of labor throughout the year on small, medium and large ranches is shown in Table 6. During the period of November, December, January, February and March, about 25% of the total yearly requirement of labor was used. During this period, the main work was feeding and caring for livestock and a little overhead labor on building and fence maintenance and machinery repair. During April, May and June, 30% of the labor was used. These were the heavy months for spring calving and spring irrigation of hay meadows. About 29% of the work was used during the heavy haying months of July and August and during September and October about 16% of the annual labor was used (Figure 2). This work consisted of finish up haying, cattle roundup and shipping. During the winter months, the period of daylight is relatively short—rancher's workday probably was about 6 or 7 hr. During the period of April, May and June, the work sometimes amounted to 12 or 14 hr per day. During the summer when haying was the chief labor requirement and when seasonal hired labor was used, the workday returned to about 8 or 10 hr. During the fall about 7 or 8 hr were put in per man per day.



This inexpensive spraying outfit or dipping vat for the control of lice and grubs should be part of the management program for all cattle ranches.

Table 5. Labor distribution by jobs for small, medium and large ranches.
(60 Wyo. M.V. Cattle Ranches, 1973)

Ranch job	Average hours per ranch		
	Small	Medium	Large
Crop production labor inputs			
Maintain irrigation dams and ditches	184	329	405
Irrigate meadows and pastures	722	833	1,142
Fertilize and spray meadows	36	55	129
Cut, rake, bale and stack hay	797	1,296	2,112
Labor on small grain production	113	209	708
Drag meadows and pastures	66	91	142
Fence haystacks	125	197	744
Sub total labor on crops	2,043	3,010	5,382
Livestock labor inputs			
Feeding and chores	792	947	1,732
Calving labor	338	382	712
Moving cattle to summer pastures	88	128	189
Branding, dehorning, etc.	48	98	164
Care while on summer pasture	202	235	527
Roundup and return to ranch	86	109	258
Culling and shipping	39	59	142
Weaning calves	28	43	56
Veterinary work and spraying	254	304	383
General management and inspection	775	1,168	1,697
Other	100	229	427
Sub total on livestock	2,750	3,702	6,287
Miscellaneous and overhead			
Repair haying machinery	202	271	421
Fence building and repairing	432	450	786
Land and resource development	51	102	156
Building repair and construction	39	115	170
General miscellaneous	46	44	48
Sub total miscellaneous	770	982	1,581
Total labor (crops, livestock, misc.)	5,563	7,694	13,250
Cu per ranch	382	725	1,719
Hours per cu	14.6	10.6	7.7
Months of labor per ranch	22.2	30.8	53.0
Man equivalent per ranch	1.8	2.6	4.6
Cu per man equivalent	212	278	374
Acres of hay per ranch	330	583	1,425
Tons of hay harrvested per ranch	598	995	2,193
Hours per ton of hay	3.2	2.8	2.1

Table 6. Labor requirements by months for small, medium and large ranches.
(60 Wyo. M.V. Cattle Ranches, 1973)

Month	Average number of hours worked on: Small ranches	Medium ranches	Large ranches
January	202	344	612
February	202	344	612
March	374	479	757
April	488	723	1,182
May	576	783	1,277
June	651	940	1,377
July	792	1,084	1,732
August	900	1,093	1,984
September	491	649	1,469
October	371	477	882
November	254	412	749
December	262	366	617
Total per ranch	5,563	7,694	13,250
Use of labor on:			
Livestock	2,750	3,702	6,287
Crops	2,043	3,010	5,382
Overhead	770	982	1,581
Total per ranch	5,563	7,694	13,250

The most common method of haying in Wyoming is to swath the hay and bale it with string or wire ties and pick up the bales with front end loaders or with bale wagons.

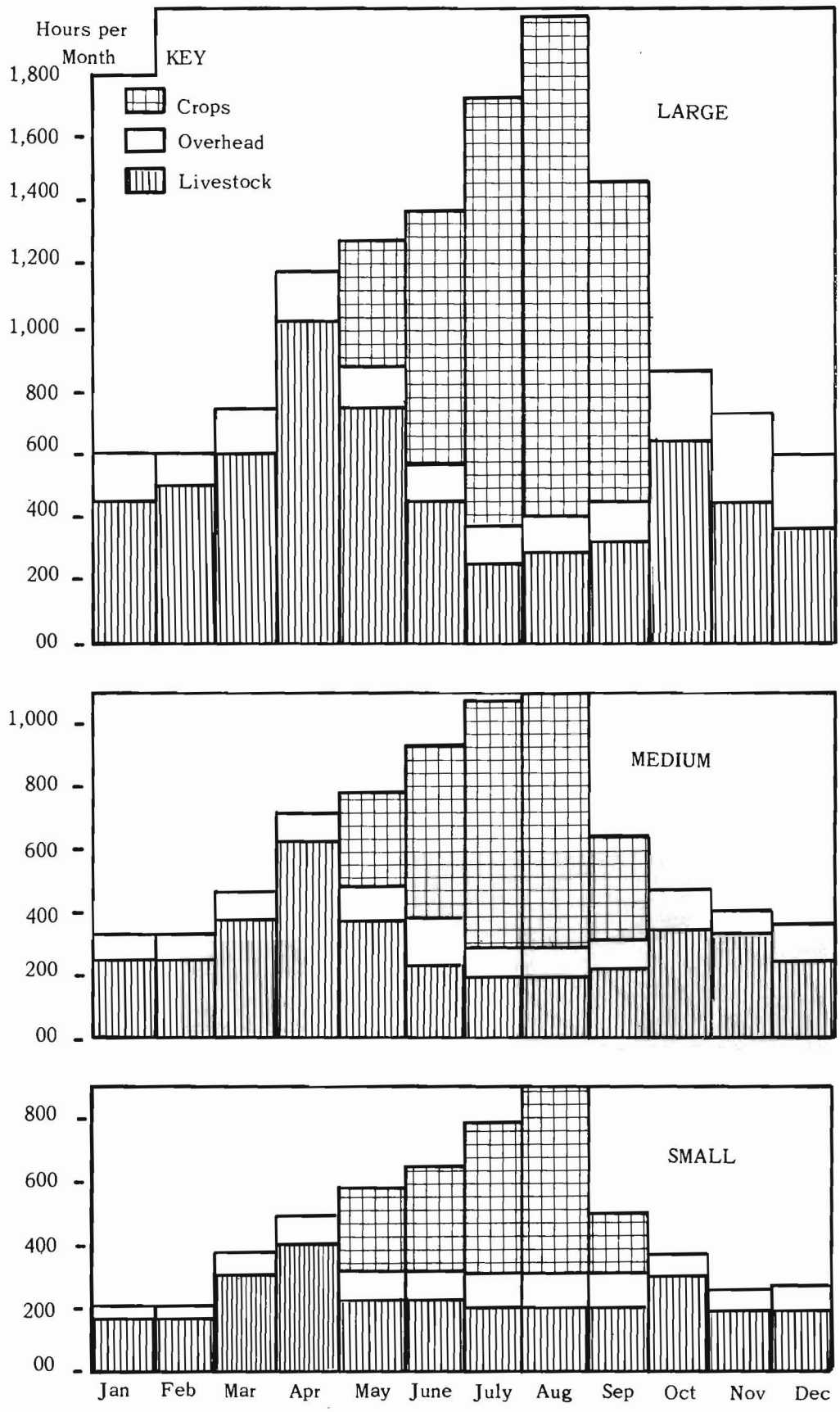
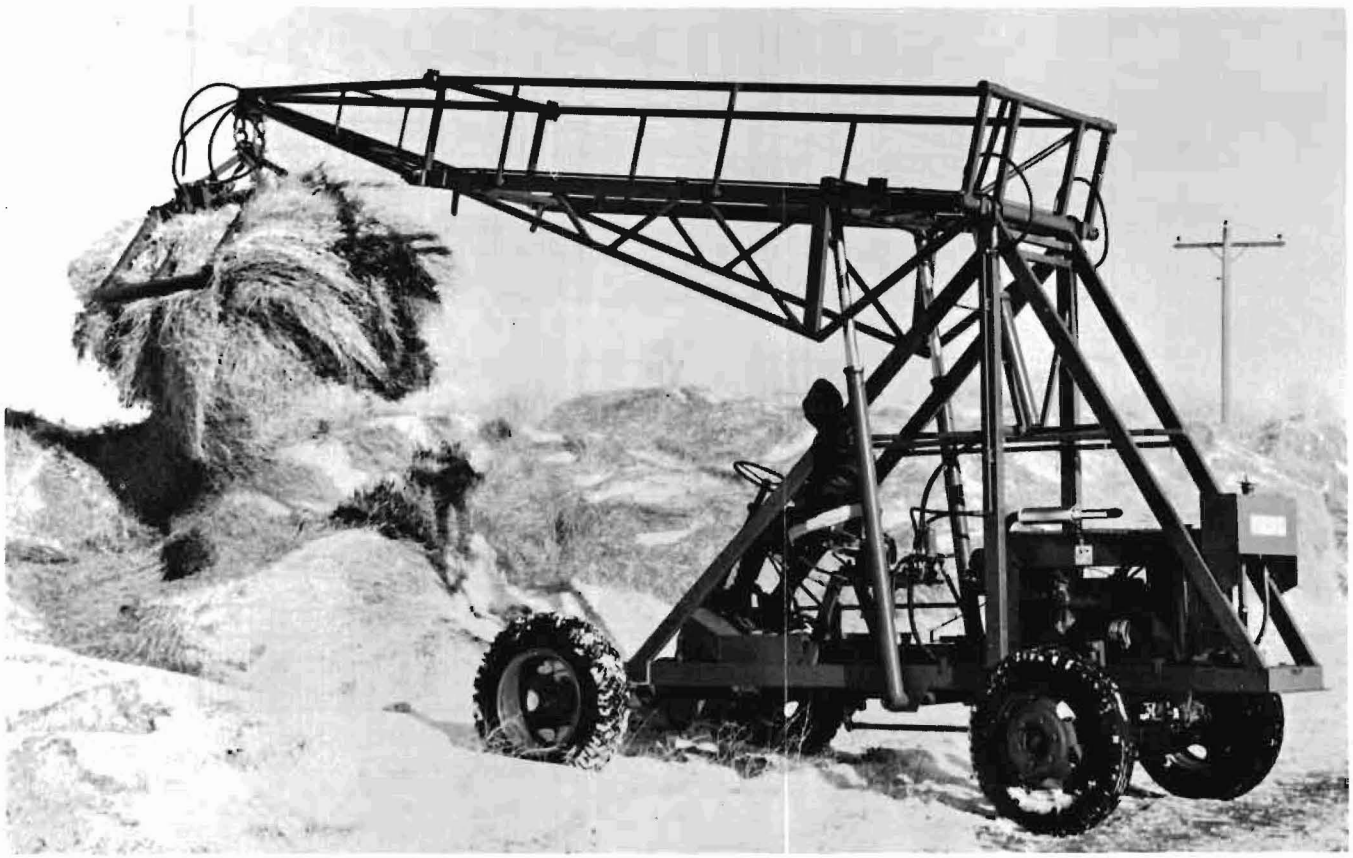


Figure 2. Distribution of ranch labor throughout the year 1972.

Most Wyoming hay is harvested with a swather which cuts and windrows. An attached conditioner flattens alfalfa and clover stems which permit faster drying.



This excellent outfit takes most of the labor out of feeding loose hay on a cold winter day.

Earnings and Production Costs -- A Comparison by Size Groups

The preceding section discussed organizational characteristics of small, medium and large ranches in terms of land resources, livestock inventory numbers, components of investment and labor requirements. This section will discuss the components of expenses and income on a per ranch basis and on a per cu basis for small, medium and large ranches.

Cash operating costs consist of such items as hired labor, feed purchased, repairs, fuel, etc. Non-cash costs include an annual charge for depreciation on improvements, machinery and bulls. Cash and non-cash costs together constitute the total operating costs as defined herein. However, a more accurate measurement of total operating costs must include a wage for the operator, interest paid on debt and imputed interest on the owner's equity.

The operating expenses of the average small, medium and large ranches are shown in Table 7. The small ranches with an average of 382 cu had a total operating cost of $32,790 compared to $59,250 for the medium-size ranches and $158,020 for the large ranches.

The average income per ranch from sales of livestock and from livestock inventory adjustment is shown in Table 8. The small ranches sold 119,887 lb. of beef at an average price of $50.91 per cwt. or a total value of $61,040. The increase in livestock inventory amounting to 6,972 lb. was valued at $2,570, giving a total livestock sales and inventory increase of $63,610. For medium-size ranches the average selling price per cwt. was $47.26 and the average income from sales and inventory increase was $111,090. For the average large ranch the income from sales and inventory increase was $264,300 (Table 8).

Table 7. Operating expenses per ranch for small, medium and large ranches. (60 Wyo. M.V. Cattle Ranches, 1973)

Cost Component	Averages for 20 small ranches (382 cu)	20 medium ranches (725 cu)	20 large ranches (1,719 cu)
Cash costs			
Hired labor	$ 4,859	$ 9,998	$ 23,212
Feed purchased	3,820	5,896	44,303
Grazing fees	2,487	4,103	10,675
Repairs and transportation	2,055	3,525	6,962
Utilities	867	1,762	3,043
Veterinary service and supplies	1,171	2,784	5,071
Insurance	798	1,341	2,114
Taxes	2,594	4,843	10,383
Crop expense	2,445	3,466	7,701
Fuel, oil and grease	1,799	3,574	5,690
Supplies	1,448	2,632	6,498
Interest at 4% on cash costs	986	1,791	5,105
All other cash costs	611	1,486	2,939
Total cash costs	$ 25,940	$ 47,201	$133,696
Non-cash costs			
Depreciation on improvements	$ 1,444	$ 2,378	$ 3,988
Depreciation on machinery	3,847	6,735	13,202
Depreciation on bulls	1,559	2,936	7,134
Total non-cash costs	$ 6,850	$ 12,049	$ 24,324
TOTAL OPERATING COSTS*	$ 32,790	$ 59,250	$158,020

*Except interest paid on debt, wage for operator and imputed interest on owner's capital.

Table 8. Average income per ranch from livestock sales and inventory change. (Small, Medium and Large M.V. Ranches, 1973)

	Livestock sales — av. per ranch					Inventory change av. per ranch	
	No.	Weight (lb.)	Wt. per head	Price per cwt.	Value	Number	Value
20 small ranches							
Cows	31	31,526	1,017	$29.96	$ 9,445	4	$1,074
H.1's	28	18,414	658	52.20	9,613	3	540
H.calves	37	14,090	381	62.85	8,855	0	0
St.calves	67	27,488	410	66.61	18,310	0	0
St.1's	39	28,369	727	52.23	14,817	4	956
Total	xxx	119,887	xxx	$50.91	$ 61,040	xxx	$2,570
Inventory change		6,972	xxx	xxx	$ 2,570		
Total	xxx	126,859	xxx	xxx	$ 63,610		
20 medium-size ranches							
Cows	63	63,555	1,009	$31.87	$ 20,258	2	$ 690
H.2's	6	4,837	806	41.08	1,987	9	1,313
H.1's	47	30,117	641	49.69	14,964	6	1,130
H.calves	54	20,981	389	58.77	12,330	0	0
St.calves	72	29,613	411	63.55	18,818	0	0
St.1's	90	64,739	719	50.59	32,750	31	6,621
St.2's	2	1,760	880	45.06	793	-2	-564
Total	xxx	215,602	xxx	$47.26	$101,900	xxx	$9,190
Inventory change		21,659	xxx	xxx	9,190		
Total	xxx	237,261	xxx	xxx	$111,090		
20 large ranches							
Cows	146	148,126	1,015	$30.79	$ 45,607	17	$5,148
H.2's	15	10,791	719	41.98	4,530	-28	-7,025
H.1's	180	114,382	635	49.62	56,752	-17	-3,380
H.calves	80	31,085	389	61.70	19,178	0	0
St.calves	103	43,755	425	66.63	29,152	0	0
St.1's	284	200,074	704	52.10	104,231	45	10,107
Total	xxx	548,213	xxx	$47.33	$259,450	xxx	$4,850
Inventory change		12,151	xxx	xxx	$ 4,850		
Total	xxx	560,364	xxx	xxx	$264,300		

The income and earnings per ranch for the three size groups is presented in Table 9. Ranch income is computed by subtracting total operating costs from total income and represents the return for the operator's labor and management and for all ranch capital. For the average small ranch this was $30,820. Subtracting an arbitrary imputed wage of $10,380 from ranch income gives $20,440 as the return to the average ranch capital of $455,700 or 4.48% ($20,440/$455,700=4.48%). The range in earnings for the 20 small ranches was .85% to 8.45%. The medium-size ranches earned 4.03% and the large ranches 4.37%.

The per ranch data from the three preceding tables is next summarized and presented on a cu basis (Table 10). Earnings are influenced by costs as well as income. As computed in Table 10 costs include all expenses the rancher must meet in the production process except interest he has paid on real estate debt, an imputed wage for the operator's labor and management and an imputed interest charge for the ranch capital. For the three size groups and omitting these three items, the cost per cu was $85.84 for the small ranches, $81.72 for the medium-size group and $91.92 for the large ranches.

Table 9. Income and earnings per ranch for small, medium and large ranches. (60 Wyo. M.V. Cattle Ranches, 1973)

	Averages for		
	20 small ranches	20 medium ranches	20 large ranches
Livestock sales	$ 61,040	$101,900	$ 259,450
Livestock inventory adjustment	2,570	9,190	4,850
Total income	63,610	111,090	264,300
Total operating costs*	32,790	59,250	158,020
Ranch income**	30,820	51,840	106,280
Imputed operator's wage***	10,380	12,760	20,370
Return to capital	20,440	39,080	85,910
Total capital invested	$455,700	$970,900	$1,965,400
Percent return to capital	4.48	4.03	4.37
Range in percent return to capital	.85-8.45	.67-7.36	.81-7.88

*Except interest paid on debt, operator's wage and interest on owner's equity.
**Return for operator's labor and management and all rach capital.
***Wage for labor $7,200 plus 5% of total income for management fee.

Table 10. Income and earnings per cattle unit for small, medium and large ranches. (60 Wyo. M.V. Cattle Ranches, 1973)

	Averages for		
	20 small ranches	20 medium ranches	20 large ranches
Livestock sales	$ 159.79	$ 140.54	$ 150.93
Livestock inventory adjustment	6.73	12.68	2.82
Total income	$ 166.52	$ 153.22	$ 153.75
Total operating costs*	85.84	81.72	91.92
Ranch income**	80.68	71.50	61.83
Imputed operator's wage***	27.17	17.60	11.85
Return to capital	53.51	53.90	49.98
Total capital invested	$1,193.00	$1,339.00	$1,143.00
Percent return to capital	4.48	4.03	4.37
Range in percent return to capital	.85-8.45	.67-7.36	.81-7.88

*Except interest paid on debt, operator's wage and interest on owner's equity.
**Return for operator's labor and management and all rach capital.
***Wage for labor $7,200 plus 5% of total income for management fee.

The ranch income per cu was $80.68 for the small ranches, $71.50 for the medium-size group and $61.83 for the large ranches (Table 10).

The cost of producing beef can be computed by adding to the operating costs per ranch the imputed wage for the operator and an imputed interest charge on the ranch capital at the rate of 3 or 6%. Using 6% imputed interest, the total cost of producing beef was $70,410 for the small; $130,330 for the medium; and $296,310 for the large ranch (Table 11). On a cwt. basis, this is $55.50 for the small, $54.93 for the medium and $52.87 for the large ranches. If 3% imputed interest is used instead of 6% on ranch capital, the production cost per cwt. is $44.79 for the small, $42.64 for the medium and $42.36 for the large ranches.

Table 11. Cost of producing beef cattle on small, medium and large ranches. (60 Wyo. M.V. Cattle Ranches, 1973)

Kind of production expenses	Small	Medium	Large
Operating cost per ranch	$ 32,790	$ 59,250	$158,020
Wage imputed to operator for labor and management	10,380	12,760	20,370
Interest on total ranch capital @ 6%	27,240	58,320	117,920
Total production cost per ranch	$ 70,410	$130,330	$296,310
Per cwt. of beef	$ 55.50	$ 54.93	$ 52.87
Pounds of beef produced	126,859	237,261	560,364

Where AI programs are in use cattle are frequenlty branded with water soluble black paint which permits the operator to observe the cow 21 days later to see if she has "settled".

Factors Infuencing Earnings on Mountain Valley Cattle Ranches -1973

This section examines several factors partly under the control of the operator which are believed to influence ranch earnings—size of ranch business, rate of production, efficiency of production, prices received for beef sold and management practices followed. Each of these measurements is examined in terms of income, costs, earnings and other related criteria. Some ranchers were doing very well financially and others doing poorly while operating under similar conditions. To analyze this situation, the data for the 60 cattle ranches were arrayed from high to low based on the percentage return to total capital.

Table 12. Income, costs and earnings—based on percent return to capital. (60 Wyo. M.V. Cattle Ranches, 1973)

Income, costs and earnings	Averages per cattle unit for		
	12 highest	12 lowest	60 ranches
Livestock sales	$174.08	$136.98	$149.47
Livestock inventory adjustment	2.90	10.12	5.88
Total income	176.98	147.10	155.35
Total operating costs*	83.70	112.77	88.48
Ranch income**	93.28	34.33	66.87
Imputed operator's wage***	18.28	15.02	15.39
Return to capital	75.00	19.31	51.48
Total capital invested	1,096	1,199	1,200
Percent return to capital	6.84	1.61	4.29

*Except interest paid on debt, operator's wage and interest on owner's equity.
**Return for operator's labor and management and all ranch capital.
***Wage for labor $7,200 plus 5% of total income for management fee.

Percentage Return to Total Capital

The 12 ranches or the 20% with the highest percentage return are compared to the 20% of the ranches with the lowest percentage return (Table 12). The highest earning group had an average return to capital of 6.84% compared to 1.61% for the group showing the poorest earnings and 4.29% for the average of all 60 ranches.

What are the reasons that one group was doing so well financially and the other doing so poorly? The high return group had a 90% calf crop which resulted in 350 pounds of beef produced per cu and sales of $176.98 per cu. The low return group had only an 84% calf crop with 314 pounds of beef per cu and sales of $147.10 per cu.

For the high return group, the cost of producing 266,300 lb. of beef was $128,314 or $48.18/cwt., compared to $61.76 for the low return group and $55.60 for the average of 60 ranches (Table 13). This low cost of production for the group showing the very good return was a result of several factors: the ability to hold cash and noncash costs to a very low level, the high percentage calf crop and a low investment cost per cu.

This sort based on percent return to total capitol seems to indicate that success in the cattle business is a result of a rancher's ability in holding down cash costs and at the same time, receiving a high rate of production and high prices for beef sold.

Table 13. Statistical measurements—based on percent return to capital.
(60 Wyo. M.V. Cattle Ranches, 1973)

Measure of	Averages per ranch for 12 highest	12 lowest	60 ranches
Business size			
Total cu	765	936	942
Total capital	$838,400	$1,122,200	$1,130,700
Total receipts	$135,390	$ 137,680	$ 146,340
Rate of production			
Pounds of beef produced per cu	350	314	329
Efficiency of production			
Percent death loss—cattle	4.4	4.3	4.5
Percent death loss—calves	1.7	1.9	1.7
Prices received (per cwt.)			
All livestock (av.)	$52.50	$46.30	$49.20
Percent of sales from calves	39.6	32.7	31.4
Production cost calculations			
Total cost (cash and non-cash)	$64,030	$105,550	$83,350
Imputed operator's wage	13,980	14,060	14,500
Imputed interest on capital (6%)	50,304	67,332	67,842
Total production cost	128,314	186,942	165,692
Net beef produced (lb.)	266,300	302,700	298,000
Production cost per cwt.	$48.18	$61.76	$55.60

Size of Ranch Business

In this sort we will examine the influence of size of ranch business on the earnings of cattle ranches (Table 14). The 12 largest ranches with an average of 2,046 cu per ranch earned 4.08% return on ranch capital. The 12 smallest ranches with an average of 329 cu per ranch, earned a 4.70% return on ranch capital.

The large group had 6.2 times more cu than the smallest group; however, it had only 5.5 times more capital invested and therefore the investment per cu for the large group was more efficient—$1,085 per cu., compared to $1,224 for the small size group (Table 14).

It is difficult to study the influence of size of business on ranch earnings in this particular grouping because factors other than size are not equal. However, we can point out a few facts. The small ranches had a higher rate of production—the 91% calf crop at market time resulted in 344 lb. of beef per cu, compared to only 314 lb. for the large size outfits (Table 15). This high percent calf crop may be part of the reason for a higher rate of earnings for the small ranches. The large ranches requirel only 2.1 hr to produce a ton of hay and handled 452 cu per man. In contrast, the small outfits neded 3.9 hr per ton of hay and handled only 196 cu per man. The average price received by the small ranches was $52.20/cwt. and about 46% of the income was from the sale of calves. In contrast, the average price received by the large outfits was $47.40/cwt. and only about 20% of the sales was from calves. The cost of production per cwt. of beef was similar for both groups.

This sort (Tables 14-15) indicates that a well-managed small ranch with 329 cu, and an investment of $402,800 was able to make a satisfactory return on investment during 1973, a year of very high cattle prices.

Table 14. Income, costs and earnings—based on size of ranch business. (60 Wyo. M.V. Cattle Ranches, 1973)

Income, costs and earnings	Averagse per cattle unit for 12 largest	12 smallest	60 ranches
Livestock sales	$150.85	$168.57	$149.47
Livestock inventory adjustment	-2.61	6.44	5.88
Total income	148.24	175.01	155.35
Total operating costs*	93.03	86.84	88.48
Ranch income**	55.21	88.17	66.87
Imputed operator's wage***	10.90	30.64	15.39
Return to capital	44.31	57.53	51.48
Total capiatl invested	1,085	1,224	1,200
Percent return to capital	4.08	4.70	4.29

*Except interest paid on debt, operator's wage and interest on owner's equity.
**Return for operator's labor and management and all ranch capital.
***Wage for labor $7,200 plus 5% of total income for management fee.

Table 15. Statistical measurements—based on size of ranch business. (60 Wyo. M.V. Cattle Ranches, 1973)

Measure of	Averages per ranch for 12 largest	12 smallest	60 ranches
Business size			
Total cu	2,046	329	942
Total capital	$2,219,700	$402,800	$1,130,700
Total receipts	303,280	57,580	146,340
Rate of production			
Pounds of beef produced per cu	314	344	329
Efficiency of production			
Percent death loss—cattle	4.2	4.5	4.5
Percent death loss—calves	1.7	1.6	1.7
Prices received (per cwt.)			
All livestock (av.)	$47.40	$52.20	$49.20
Percent of sales from calves	19.7	45.5	31.4
Production cost calculations			
Total cost (cash and non-cash)	$190,330	$28,570	$83,350
Imputed operator's wages	22,300	10,080	14,500
Imputed interest on capital (6%)	133,182	24,168	67,842
Total production cost	345,812	62,818	165,692
Net beef produced (lb.)	645,100	113,600	298,000
Production cost per cwt.	$53.61	$55.29	$55.60

Pounds of Beef per Cattle Unit

Twelve ranches produced an average of 386 lb. of beef per cu compared to 276 lb. for the group with the lowest rate of production. This was 40% more beef per cu (386/276 = 140). However, they earned only 3.95% return on capital, compared to 3.00% for the low producing group, and 4.29% for the average of 60 ranchers. The high producers had attained this high rate of production at a high operating cost per cu—$112.80 compared to $87.49 for the low producers and $88.48 for the average (Table 16).

High rates of production in cattle ranching, while desirable and usually associated with higher rates of earnings, if attained at a high cost, do not pay as well as lower rates of production attained at more modest costs (Table 16 and 17).

Table 16. Income, costs and earnings—based on pounds of beef per cattle unit. (60 Wyo. M.V. Cattle Ranches, 1973)

Income, costs and earnings	Averages per cattle unit for 12 highest	12 lowest	60 ranches
Livestock sales	$175.47	$145.72	$149.47
Livestock inventory adjustment	-.59	-10.73	5.88
Total income	174.88	134.99	155.35
Total operating costs*	112.80	87.49	88.48
Ranch income**	62.08	47.50	66.87
Imputed operator's wages***	16.81	13.23	15.39
Return to capital	45.27	34.27	51.48
Total capital invested	1,147	1,143	1,200
Percent return to capital	3.95	3.00	4.29

*Except interest paid on debt, operator's wage and interest on owner's equity.
**Return for operator's labor and management and all ranch capital.
***Wage for labor $7,200 plus 5% of total income for management fee.

Table 17. Statistical measurements—based on pounds of beef per cattle unit. (60 Wyo. M.V. Cattle Ranches, 1973)

Measure of	Averages per ranch for 12 highest	12 lowest	60 ranches
Business size			
Total cu	894	1,109	942
Total capital	$1,025,800	$1,267,200	$1,130,700
Total receipts	$ 156,340	$ 149,700	$ 146,340
Rate of production			
Pounds of beef produced per cu	386	276	329
Efficiency of production			
Percent death loss—cattle	4.4	5.7	4.5
Percent death loss—calves	1.2	2.3	1.7
Prices received (per cwt.)			
All livestock (av.)	$47.40	$50.60	$49.20
Percent of sales from calves	17.3	43.1	31.4
Production cost calculations			
Total cost (cash and non-cash)	$100,840	$97,020	$83,350
Imputed operator's wage	15,030	14,670	14,500
Imputed interest on capital (6%)	61,548	76,032	67,842
Total production cost	177,418	187,722	165,692
Net beef produced (lb.)	342,700	305,200	298,000
Production cost per cwt.	$51.77	$61.51	$55.60

Production Costs per Cwt. of Beef Produced

The 12 ranches with the lowest production cost per cwt. earned 6.41% return to total capital compared with 2.53% return for the group having the highest cost of production (Table 18).

The low-cost group had two advantages—more income per cu and lower operating costs per cu resulting in a ranch income per cu of $88.98 compared to $49.77 for the high cost group.

The low cost group was about 25% larger than the high cost group as measured in terms of cu, yet the total capital investment per ranch was similar for the two groups (Table 19).

The high cost group received 56.3% of its income from the sale of calves and as a result, the average price per cwt. for livestock was $52.50 compared to $48.50 per cwt. for the low cost group which received only 15.3% of its income from the sale of calves.

In summary, the strong points of the low cost group include: excellent management as indicated in their cost control with a total cost per ranch of $70,600 compared to $75,250 for the ranch which had considerably fewer cu; and, the total beef produced was considerably greater for the low cost group—336,300 lb. as compared to 221,200 lb. for the high cost group. The result of holding costs to a minimum and yet obtaining a high rate of production resulted in a production cost per cwt. of $44.95 for the low cost group compared to $67.66 for the high cost group.

Price Received per Cwt. of Beef Sold

Twelve ranches received an average selling price of $58.50 per cwt. of beef, obtained 66% of its income from the sale of calves and earned 4.23% return on capital. In comparison, 12 other ranches received $41.00 per cwt. for beef sold, got only 12% of its income from the sale of calves, and earned 3.04% return to capital (Tables 20 and 21).

The return earned on capntal was 39% higher for the group receiving the highest prices (4.23/3.04 = 139).

The operating costs per cu were similar for both groups, but the group receiving the highest prices received about $20 more income per cu. One point of strength in the group receiving low prices was its higher rate of production—343 lb. of beef per cu. compared to 304 lb. for the group receiving high prices. This high rate of production partially offset the influence of low prices.

Table 18. Income, costs and earnings—based on production cost per cwt. beef. (60 Wyo. M.V. Cattle Ranches, 1973)

Income, costs and earnings	Averages per cu for 12 lowest	12 highest	60 ranches
Livestock sales	$153.11	$150.96	$149.47
Livestock inventory adjustment	9.72	-4.72	5.88
Total income	162.83	146.24	155.35
Total operating costs*	73.85	96.47	88.48
Ranch income**	88.98	49.77	66.87
Imputed operator's wage***	15.63	16.51	15.39
Return to capital	73.35	33.26	51.48
Total capital invested	1,144	1,315	1,200
Percent return to capital	6.41	2.53	4.29

*Except interest paid on debt, operator's wage and interest on owner's equity.
**Return for operator's labor and management and all ranch capital.
***Wage for labor $7,200 plus 5% of total income for management fee.

Table 19. Statistical measurements—based on production cost per cwt. beef.
(60 Wyo. M.V. Cattle Ranches, 1973)

Measure of	Averages per ranch for		
	12 lowest	12 highest	60 ranches
Business size			
Total cu	956	780	942
Total capital	$1,093,800	$1,025,400	$1,130,700
Total receipts	$ 155,660	$ 114,070	$ 146,340
Rate of production			
Pounds of beef produced per cu	361	289	329
Efficiency of production			
Percent death loss—cattle	4.3	5.2	4.5
Percent death loss—calves	1.3	2.2	1.7
Prices received (per cwt.)			
All livestock (av.)	$48.50	$52.20	$49.20
Percent of sales from calves	15.3	56.3	31.4
Production cost calculations			
Total cost (cash and non-cash)	$70,600	$75,250	$83,350
Imputed operator's wage	14,940	12,880	14,500
Imputed interest on capital (6%)	65,628	61,524	67,842
Total production cost	151,168	149,654	165,692
Net beef produced (lb.)	336,300	221,200	298,000
Production cost per cwt.	$44.95	$67.66	$55.60

Table 20. Income, costs and earnings—based on price received per cwt. beef sold.
(60 Wyo. M.V. Cattle Ranches, 1973)

Income, costs and earnings	Averages per cu for		
	12 highest	12 lowest	60 ranches
Livestock sales	$160.54	$140.08	$149.47
Livestock inventory adjustment	5.03	5.09	5.88
Total income	165.57	145.17	155.35
Total operating costs*	91.90	90.43	88.48
Ranch income**	73.67	54.74	66.87
Imputed operator's wages***	18.70	14.52	15.39
Return to capital	54.97	40.22	51.48
Total capital invested	1,299	1,322	1,200
Percent return to capital	4.23	3.04	4.29

*Except interest paid on debt, operator's wage and interest on owner's equity.
**Return for operator's labor and management and all ranch capital.
***Wage for labor $7,200 plus 5% of total income for management fee.

Table 21. Statistical measurements—based on price received per cwt. beef sold.
(60 Wyo. M.V. Cattle Ranches, 1973)

Measure of	Averages per ranch for 12 highest	12 lowest	60 ranches
Businses size			
Total cu	691	987	942
Total capital	$897,900	$1,304,600	$1,130,700
Total receipts	$114,410	$ 143,280	$ 146,340
Rate of production			
Pounds of beef produced per cu	304	343	329
Efficiency of production			
Percent death loss—cattle	4.1	4.3	4.5
Percent death loss—calves	1.9	1.4	1.7
Prices received (per cwt.)			
All livestock (av.)	$58.50	$41.00	$49.20
Percent of sales from calves	66.1	11.7	31.4
Production cost calculations			
Total cost (cash and non-cash)	$63,500	$89,250	$83,350
Imputed operator's wage	12,920	14,330	14,500
Imputed interest on capital (6%)	53,874	78,276	67,842
Total production cost	130,294	181,856	165,692
Net beef produced (lb.)	205,200	334,900	298,000
Productions cost per cwt.	$63.50	$54.30	$55.60

Percentage of Sales from Calves

In this sort 12 ranches which sold no calves are compared with 12 ranch which received 81.8% of their income from the sale of calves (Tables 22 and 23). The percent earned on capital was similar for both groups. The ranch income was similar for both groups as was the imputed operator's wage and the return to capital (Table 22). The group selling mainly calves was slightly larger—682 cu compared to 611 for the group selling cow-yearlings. The rate of production was similar for both groups and the death loss was also similar. The production cost per cwt. of beef was $61.96 for the cow-calf group and $52.14 for the cow-yearling group. The cow-calf group received a higher price per cwt. for beef sold than did the cow-yearling groups.

This sort seems to indicate that there is no definite advantage in running cow-calves over cow-yearlings or in running cow-yearlings rather than cow-calves. Rather, the level of management is more important than the class of livestock. With good management one can succeed in the cattle business in a year such as 1973 whether running cow-yearlings or cow-calves.

Table 22. Income, costs and earnings—based on percent of sales from calves.
(60 Wyo. M.V. Cattle Ranches, 1973)

Income, costs and earnings	Averages per cattle unit for		
	12 cow-calf	12 cow-yearling	60 ranches
Livestock sales	$175.81	$125.48	$149.47
Livestock inventory adjustment	-9.15	19.43	5.88
Total income	166.66	144.91	155.35
Total operating costs*	94.62	72.26	88.48
Ranch income**	72.04	72.65	66.87
Imputed operator's wage***	18.89	19.05	15.39
Return to capital	53.15	53.60	51.48
Total capital invested	1,203	1,261	1,200
Percent return to capital	4.42	4.25	4.20

*Except interest paid on debt, operator's wage and interest on owner's equity.
**Return for operator's labor and management and all ranch capital.
***Wage for labor $7,200 plus 5% of total income for management fee.

Table 23. Statistical measurements—based on percent of sales from calves.
(60 Wyo. M.V. Cattle Ranches, 1973)

Measure of	Averages per ranch for		
	12 cow-calf	12 cow-yearling	60 ranches
Business size			
Total cu	682	611	942
Total capital	$820,600	$770,700	$1,130,700
Total receipts	$113,660	$ 88,540	$ 146,340
Rate of production			
Pounds of beef produced per cu	308	325	329
Efficiency of production			
Percent death loss—cattle	4.8	5.1	4.5
Percent death loss—calves	2.0	1.6	1.7
Prices received (per cwt.)			
All livestock (av.)	$55.80	$45.30	$49.20
Percent of sales from calves	81.8	0	31.4
Production cost calculations			
Total cost (cash and non-cash)	$64,530	$44,150	$83,350
Imputed operator's wage	12,880	11,640	14,500
Imputed interest on capital (6%)	49,236	46,242	67,842
Total production cost	126,646	102,032	165,692
Net beef produced (lb.)	204,400	195,700	298,000
Production cost per cwt.	$61.96	$52.14	$55.60

Measurements Describing Mountain Valley Cattle Ranching by Areas

For each of the five areas, schedules were taken for four large ranches, four medium sized ranches and four small ranches. In this section we will present measurements which describe cattle ranch organization and operation for each of the five mountain valley areas. Measurements will be in terms of land investment, total capital requirements, income, expenses and earnings on a per ranch and on a per cu basis. Also cost of producing beef will be computed.

The average ranch size varied by areas. For example, the average rancher in the Green River area owned 4,640 acres of deeded land and had access to 2,122 AUM's on public land (Table 24). In the Platte-Snake area, the average rancher owned 8,790 acres and had access to 2,883 AUM's on public land.

The ranch size, as measured by cu, varied from 853 in the Big Horn Basin to 1,053 in the Platte-Snake. Only 10% of the livestock sales were from calves in the Green River area and the average price per cwt. was $45.64. In comparison, 53% of the sales were from calves in the Big Horn Basin and the average price per cwt. was $51.59 (Table 24).

The ranches in the Bear River, Big Horn Basin and Green River areas were all about the same size as measured by total ranch investment, all averaging just slightly over $1 million (Table 25).

Table 24. Statistical measurements for different areas. (60 Wyo. M.V. Cattle Ranches, 1973)

	Averages per ranch for				
Measure of	Bear River	Big Horn Basin	Green River	Platte-Snake	Sheridan-Buffalo
Business size					
Total cu	871	853	926	1,053	1,007
Acres of deeded land	6,190	6,480	4,640	8,790	7,610
Man equivalent	2.8	2.6	2.9	3.1	3.5
AUM's on public land	2,432	2,843	2,122	2,883	2,445
Rate of production					
Percent calf crop at market time	86	90	88	76	88
Efficiency of production					
Percent death loss—cattle	4.4	4.7	4.4	4.5	4.4
Percent death loss—calves	1.8	1.7	1.5	2.0	1.4
Prices received (per cwt.)					
All livestock (av.)	$48.76	$51.59	$45.64	$46.94	$46.77
Percent sales from calves	25	53	10	24	16

The investment per cu was about $1,200 for each of the five areas (Table 25). The ranches in the Platte-Snake area and in the Sheridan-Buffalo area were larger, having over 1,000 cu and having an investment of about $1,300,000 and $1,200,000, respectively. The Bear River ranches had an average real estate debt of about $79,000 per ranch, representing about 7.5% of the total ranch value. In comparison, the Green River ranchers had an average debt of about $159,700, representing 15.1% of the total ranch value.

The average income from the cattle sales and livestock inventory adjustment is shown in Table 26. This table gives detail by areas on the number, average weight and average price per cwt. of the different classes of livestock sold. The lightest calves were in the Platte-Snake and Bear River areas and averaged about 378 lb. in each

Table 25. Components of capital investment for different ranching areas. (60 Wyo. M.V. Cattle Ranches, 1973)

	Averages for				
	Bear River	Big Horn Basin	Green River	Platte-Snake	Sheridan-Buffalo
Deeded land and grazing rights*	$724,500	$731,500	$685,900	$892,200	$810,700
Buildings and improvements	26,800	28,600	30,000	30,500	27,800
Power & machinery	31,800	28,100	40,100	35,100	37,800
Livestock	242,200	236,000	261,700	294,700	281,700
Feeds	27,400	30,300	39,200	45,600	33,200
Total	$1,052,700	$1,054,500	$1,056,900	$1,298,100	$1,191,200
Real estate debts	79,300	88,900	159,700	176,900	150,500
Owner's equity	$973,400	$965,600	$897,200	$1,121,200	$1,040,700
Percent of debt	7.5	8.4	15.1	13.6	12.6
Average per cu					
Total investment	$1,209	$1,236	$1,141	$1,233	$1,183
Total debts	91	104	172	168	149
Owner's equity	$1,118	$1,132	$969	$1,065	$1,034

*Includes AUM's on forest permits, BLM rights and state land rights at $25.00 per AUM.

area. The calvse averaged 424 lb. in the Big Horn Basin and 421 lb. in the Sheridan-Buffalo area.

There was considerable variation in the average earnings in the five different areas. For example, the Platte-Snake area, with a total investment of $1,298,100, had a return to capital of $40,630 or a return on investment of 3.13% (Table 27). In the Big Horn Basin, the total capital investment was $1,054,500 with a return to capital of $57,942 or an average of 5.49%.

The income, costs and earnings on a per cu basis is shown in Table 28. The cost per cwt. of beef produced was lowest in the Bear River area and highest in the Platte-Snake area (Table 27). To compute the cost of producing beef, one must add to the operating costs per ranch an imputed wage for the labor and management of the operator and imputed interest on the ranch capital. For example, for the Bear River area the operating cost per ranch was $64,780. Adding the imputed wage and imputed interest on capital, gives a total production cost per ranch of $141,738. The average Bear River ranch produced 277,800 lb. of beef. This is a weighted average cost per cwt. of $51.02. In a similar manner, cost of producing beef in the Platte-Snake area was $58.28 per cwt. (Table 28).

Table 26. Average income per ranch for five mountain valley ranch areas.

	Livestock sales — av. per ranch					Inventory change av. per ranch	
	No.	No.	Weight (lb.)	Wt. per head	per cwt. Value	Number	Value
Bear River							
Cows	55	53,769	975	$30.21	$ 16,243	12	$ 3,625
H.2's	5	3,999	857	35.01	1,400	1	354
H.1's	78	53,482	684	50.39	26,947	10	2,067
H.calves	48	17,290	360	62.48	10,803	0	0
St.calves	74	28,827	392	66.47	19,162	0	0
St.1's	116	90,670	780	51.16	46,388	26	5,362
Total	xxx	248,037	xxx	$48.76	$120,943	xxx	$11,408
Inventory change		29,745	xxx	xxx	$ 11,408		
Total	xxx	277,782	xxx	xxx	$132,351		
Big Horn Basin							
Cows	72	71,817	994	$31.01	$ 22,270	6	$ 1,925
H.2's	6	4,694	751	46.25	2,171	-16	-4,062
H.1's	39	24,255	617	53.92	13,078	8	1,650
H.calves	119	47,710	401	60.39	28,811	0	0
St.calves	161	71,042	441	64.38	45,736	0	0
St.1's	73	49,030	677	54.41	26,676	15	4,256
St.2's	3	2,933	980	45.03	1,321	-3	-940
Total	xxx	271,481	xxx	$51.59	$140,063	xxx	$ 2,829
Inventory change		5,562	xxx	xxx	$ 2,829		
Total	xxx	277,043	xxx	xxx	$142,892		
Green River							
Cows	86	87,030	1,012	$30.93	$ 26,920	-1	$ -125
H.2's	10	7,666	800	38.25	2,932	-8	-1,958
H.1's	118	81,698	691	49.67	40,580	-6	-1,233
H.calves	12	4,274	364	57.47	2,456	0	0
St.calves	42	16,962	400	67.42	11,435	0	0
St.1's	166	121,874	736	50.46	61,496	39	8,812
Total	xxx	319,504	xxx	$45.64	$145,819	xxx	$ 5,496
Inventory change		10,847	xxx	xxx	$ 5,496		
Total	xxx	330,351	xxx	xxx	$151,315		
Platte-Snake							
Cows	95	97,954	1,028	$30.54	$ 29,913	16	$ 4,650
H.2's	0	0	0	0	0	-11	-2,812
H.1's	92	54,793	595	47.11	25,812	-19	-3,900
H.calves	59	21,273	358	65.61	13,958	0	0
St.calves	84	32,678	391	69.02	22,555	0	0
St.1's	175	115,882	664	51.07	59,183	-1	-169
Total	xxx	332,580	xxx	$46.94	$151,421	xxx	$ -2,231
Inventory change		-1,720	xxx	xxx	$ -2,231		
Total	xxx	320,860	xxx	xxx	$149,190		
Sheridan-Buffalo							
Cows	91	94,248	1,040	$31.73	$ 29,907	5	$ 1,600
H.2's	14	9,687	692	45.00	4,358	-5	-1,188
H.1's	97	57,294	590	50.85	29,132	-7	-1,433
H.calves	48	19,715	415	57.03	11,243	0	0
St.calves	43	18,584	427	62.30	11,578	0	0
St.1's	159	111,180	697	53.30	59,254	51	11,381
St.2's	1	900	900	50.00	262	-1	-160
Total	xxx	311,608	xxx	$46.77	$145,735	xxx	$10,200
Inventory change		23,537	xxx	xxx	$ 10,200		
Total	xxx	335,145	xxx	xxx	$155,935		

Table 27. Income, cost of production and earnings per ranch for different areas.
(60 Wyo. M.V. Cattle Ranchse, 1973)

Item	Bear River	Big Horn Basin	Green River	Platte-Snake	Sheridan-Buffalo
Livestock sales	$ 120,943	$ 140,063	$ 145,819	$ 151,421	$ 145,735
Livestock inventory adjust.	11,408	2,829	5,496	-2,231	10,200
Total income	132,351	142,892	151,315	149,190	155,935
Total operating costs*	64,780	70,610	93,830	93,930	93,610
Ranch income**	67,571	72,282	57,485	55,260	62,325
Imputed operator's wage***	13,780	14,340	14,760	14,630	15,000
Return to capital	53,791	57,942	42,725	40,630	47,325
Total capital invested	$1,052,700	$1,054,500	$1,056,900	$1,298,100	$1,191,200
Percent return to capital	5.11	5.49	4.04	3.13	3.97
Imputed interest on capital at 6%	$ 63,162	$ 63,270	$ 63,414	$ 77,886	$ 71,472
Cost of production					
Per ranch	$ 141,738	$ 148,220	$ 172,004	$ 186,446	$ 180,087
Per cwt. of beef	$51.02	$53.51	$52.08	$58.28	$53.79
Pounds of beef produced	277,800	277,000	330,300	319,900	334,800

*Except interest paid on debt, operator's wage and interest on owner's equity.
**Return for operator's labor and management and all ranch capital.
***Wage for labor $7,200 plus 5% of total income for management fee.

Table 28. Income, costs and earnings per cattle unit for different areas.
(60 Wyo. M.V. Cattle Ranches, 1973)

	Averages per cu for				
Income, costs and earnings	Bear River	Big Horn Basin	Green River	Platte-Snake	Sheridan-Buffalo
Livestock sales	$ 138.85	$ 164.19	$ 157.47	$ 143.80	$ 144.75
Livestock inventory adjust.	13.10	3.31	5.93	-2.12	10.13
Total income	151.95	167.50	163.40	141.68	154.88
Total operating costs*	74.37	82.78	101.33	89.20	92.96
Ranch income**	77.58	84.72	62.07	52.48	61.92
Imputed operator's wage***	15.82	16.81	15.94	13.89	14.90
Return to capital	61.76	67.91	46.13	38.59	47.02
Total capital invested	1,209	1,236	1,141	1,233	1,183
Percent return to capital	5.11	5.49	4.04	3.13	3.97

*Except interest paid on debt, operator's wage and interest on owner's equity.
**Return for operator's labor and management and all ranch capital.
***Wage for labor $7,200 plus 5% of total income for management fee.

Case Study Analysis of Four Cattle Ranches

The purpose of this section is to present statistical maesurements which describe the organization and operation of two large cattle ranches and two small cattle ranches in Wyoming. One large ranch is well managed and is highly successful financially while the other, about 10% larger, is not so well managed and is less successful financially. A parallel but more pronounced situation exists in the analysis of two small ranches. One ranch is highly successful, due mainly to its high level of management. The other is unsuccessful financially due mainly to management.

Economic Analysis of Two Large Ranches

The number, weight and average price per cwt. of livestock sold and the inventory change is shown for the two large ranches (Table 29). The most successful ranch had ranch sales and inventory increase of $196,870. This was for the production and sale of 408,350 lb. of beef. The average price per cwt. of the beef sold was $50.75 and much of the beef sold were steer calves. The less successful ranch had about the same income but its main sales were from yearling steers and cows with few sales from calves. It had a lower price per cwt.

Perhaps the greatest point of strength in the management of the successful ranch was the rancher's ability to hold operating costs to a low level—$77,297 per ranch or $67.04 per cu. In comparison the less successful ranch had operating costs of $115,785 or $90.67 per cu (Table 30).

The earnings per ranch and per cu and the cost of producing beef for the two large ranches is shown in Table 31. The successful ranch had a ranch income of $119,573 or $103.71 per cu. The return to capital was $102,529 or 7.88% on an investment of $1,301,275. In comparison, the less successful ranch had a return to capital of $62,104 for a capital investment of $1,805,804 or a return of 3.44%.

The cost of producing beef is determined by adding to the total ranch operating costs an imputed wage for the operator and imputed interest at 6% on the ranch capital. The cost of producing beef was $42.22 per cwt. for the successful

Table 29. Components of ranch receipts—two large ranches.

Class of cattle	Number sold	Average weight	Total weight	Average price	Total value of sale
	(No.)	(lb.)	(lb.)	($/cwt.)	(dollars)
One successful ranch					
Cows	90	1,009	90,840	$34.68	$ 31,500
Heifers 1's	115	800	92,000	38.25	35,190
Heifer calves	87	348	30,310	56.68	17,180
Steer calves	363	400	145,200	67.49	98,000
Total sales	655	xx	358,350	$50.75	$181,870
Livestcok inventory adjustment					
Increase		xx	50,000	xx	15,000
Total production and income		xx	408,350	xx	$196,870
One less successful ranch					
Cows	174	1,125	195,820	$32.00	$ 62,664
Heifers 1's	110	668	73,470	50.08	36,798
Heifer calves	26	276	7,181	55.01	3,950
Steers 1's	240	752	180,600	49.00	88,494
Total sales	550	xx	457,071	$41.99	$191,906
Livestock inventory adjustment					
Increase		xx	700	xx	2,925
Total production and income		xx	457,771	xx	$194,831

ranch and $52.67 per cwt. for the less successful ranch (Table 31).

To summarize: the strong point in the management of the successful ranch was its ability to hold operating costs to a bare minimum, receive an excellent price from the sale of high-priced calves and at the same time receive a good calf crop of 91%.

Economic Anaylsis of Two Small Ranches

The source of the ranch receipts is shown for both small ranches (Table 32). The amount of sales was very similar—about $63,000 for each ranch. The successful ranch sold 40 yearling heifers at $53.62 per cwt. and 80 yearling steers at $57.90 per cwt. The less succesful ranch sold 120 steer calves weighing 440 lb. each at 66.56 per cwt. This was an excellent sale price and if the cost for production were held in line, this rancher should be making a good return on his investment.

The greatest point of strength for the successful small ranch was the ability of the manager to hold operating costs to a bare minimum. For example, the costs per cu were $67.55 for the successful ranch, compared to $121.31 for the less successful ranch (Table 33). The successful ranch had lower costs per cu in every cost category. It is not uncommon for the field enumerator to see some ranches who are somewhat wasteful—who spend too much money for hired labor, transportation costs and such items. The trite expression "whenever you get a dollar, hang on to it," seemed to work well for certain efficient ranchers encountered in this economic survey.

The income per cu did not differ greatly for the two ranches, but the successful ranch was able to control costs and held them down to the lowest possible level (Table 34). This resulted in a ranch income per cu of $121.03 for the successful ranch and $52.59 for the less successful ranch. The return to capital was 7.15% for the successful ranch and 1.60% for the unsuccessful ranch.

Table 30. Operating expenses per ranch and per cattle unit for two large ranches. (One successful financially — the other less successful)

	Averages for			
	Successful ranch		Less successful ranch	
Cost component	Per ranch	Per cu	Per ranch	Per cu
Cash costs				
Hired labor	$16,412	$14.23	$21,879	$17.13
Feed purchased	10,288	8.92	18,402	14.41
Grazing fees	1,712	1.48	950	.74
Repairs & transportation	6,394	5.55	6,874	5.38
Utilities	1,512	1.31	2,437	1.91
Veterinary service & supplies	4,413	3.83	2,096	1.64
Insurance	332	.29	2,689	2.11
Taxes	7,595	6.59	9,934	7.78
Crop expense	2,302	2.00	10,102	7.91
Fuel, oil and grease	3,264	2.83	6,751	5.29
Supplies	1,343	1.16	10,659	8.35
Interest at 4% on cash costs	2,262	1.96	3,755	2.94
All other cash costs	988	.86	1,112	.87
Total cash costs	($58,817)	($51.01)	($97,640)	($76.46)
Non-cash costs				
Depreciation on improvements	$ 4,000	$ 3.47	$ 2,859	$ 2.24
Depreciation on machinery	10,000	8.67	9,786	7.66
Depreciation on bulls	4,480	3.89	5,500	4.31
Total non-cash costs	($18,480)	($16.03)	($18,145)	($14.21)
Total operating costs*	$77,297	$67.04	$115,785	$90.67

*Except interest paid on debt, wage for operator and imputed interest on owner's capital.

Table 31. Earnings per ranch and per cattle unit for two large ranches.
(One successful financially — the other less successful)

	Successful ranch		Less successful ranch	
	Per ranch	Per cu	Per ranch	Per cu
Livestock sales	$ 181,870	$157.74	$ 191,906	$150.28
Livestock inventory adjustment	15,000	13.01	2,925	2.29
Total income	196,870	170.75	194,831	152.57
Total operating costs*	77,297	67.04	115,785	90.67
Ranch income**	119,573	103.71	79,046	61.90
Imputed operators wage***	17,044	14.78	16,942	13.28
Return to capital	102,529	88.92	62,104	48.63
Total capital invested	$1,301,275	$1,129	$1,805,804	$1,414
Percent returned to capital	7.88		3.44	
Imputed interest @ 6% on ranch capital	$ 78,077	$ 67.72	$ 108,348	$ 84.85
Costs of producing beef				
Per ranch	$ 172,418	$149.54	$ 241,075	$188.78
Per cwt.	$42.22		$52.67	
Carrying cost per cu	$150		$189	

*Except interest paid on debt, operator's wage and interest on owner's equity.
**Return for operator's labor and management and all ranch capital.
***Wage for labor $7,200 plus 5% of total income for management.

Table 32. Components of ranch receipts—two small ranches.

Class of cattle	Number sold	Average weight	Total weight	Average price	Total value of sale
	(No.)	(lb.)	(lb.)	($/cwt.)	(dollars)
One successful ranch					
Cows	24	1,020	24,480	$30.62	$ 7,496
Heifers—yearlings	40	718	28,720	53.62	15,400
Steers—yearlings	80	779	62,310	57.90	36,080
Total sales	144		115,510	51.06	58,976
Livestock inventory adjustment					
Increase			14,000	xxx	4,200
Total production and income	xxx	xxx	129,510	xxx	63,176
One less successful ranch					
Cows	57	1,063	60,600	32.02	19,402
Steers—calves	120	440	52,810	66.56	35,149
Total sales	177		113,410	48.10	54,551
Livestock inventory adjustment					
Increase			13,320	xxx	8,750
Total production and income	xxx	xxx	126,730	xxx	63,301

Table 33. Operating expenses per ranch and per cattle unit for two small ranches. (One successful financially, the other less successful)

Cost component	Averages for			
	Successful ranch		Less successful ranch	
	Per ranch	Per cu	Per ranch	Per cu
Cash costs				
Hired labor	$ 4,340	$12.96	$ 6,950	$ 19.09
Feed purchased	600	1.79	4,934	13.55
Grazing fees	1,450	4.33	1,736	4.77
Repairs & transportation	1,280	3.82	4,543	12.48
Utilities	675	2.01	914	2.51
Veterinary service & supplies	600	1.79	1,185	3.26
Insurance	469	1.40	867	2.38
Taxes	2,750	8.21	3,940	10.82
Crop expense	1,680	5.01	5,536	15.21
Fuel, oil and grease	920	2.75	1,966	5.41
Supplies	272	.81	1,497	4.11
Interest at 4% on cash costs	625	1.87	1,363	3.74
All other cash costs	580	1.73	1,816	4.99
Total cash costs	($16,241)	($48.48)	($37,247)	($102.32)
Non-cash costs				
Depreciation on improvements	$ 2,674	$ 7.98	$ 1,287	$ 3.54
Depreciation on machinery	2,817	8.42	3,720	10.22
Depreciation on bulls	896	2.67	1,904	5.23
Total non-cash costs	($ 6,387)	($19.07)	($ 6,911)	($ 18.99)
Total operating costs*	$22,628	$67.55	$44,158	$121.31

*Except interest paid on debt, wage for operator and imputed interest on owner's capital.

A mobile chute for branding, earmarking, or giving medications is a necessary tool for even the smallest ranch.

Table 34. Earnings per ranch and per cattle unit for two small ranches. (One successful financially, the other less successful)

Income, costs and earnings	Successful ranch		Less successful ranch	
	Per ranch	Per cu	Per ranch	Per cu
Livestock sales	$ 58,976	$176.04	$ 54,551	$149.86
Livestock inventory adjustment	4,200	12.54	8,750	24.04
Total income	63,176	188.58	63,301	173.90
Total operating costs*	22,628	67.55	44,158	121.31
Ranch income**	40,548	121.03	19,143	52.59
Imputed operator's wage***	10,359	30.92	10,365	28.48
Return to capital	30,189	90.11	8,778	24.11
Total capital invested	$422,064	$ 1,260	$548,824	$ 1,508
Percent return to capital	7.15		1.60	
Imputed interest @ 6% on ranch capital	$ 25,324	$ 75.59	$ 32,929	$ 90.46
Cost of producing beef				
Per ranch	$ 58,311	$174.06	$ 87,452	$240.25
Per cwt.	$ 45.02		$ 69.01	
Carrying cost per cu	$174		$240	

*Except interest paid on debt, operator's wage and interest on owner's equity.
**Return for operator's labor and management and all ranch capital.
***Wage for labor $7,200 plus 5% of total income for management fee.

One hundred half-brothers and half-sisters. The best of these AI heifers will go into the replacement herd. The rest, along with the steers, will go into someone's feedlot. Established producers of AI calves frequently get a small premium per pound for feeder calves. Producers who do not get the premium should consider feeding out or warming up their own calves.

Livestock Management Practices

Both good and poor management practices are reflected in ranch earnings. Good range management, adequate water facilities which are strategically located, careful attention to the health of the herd, progressive breeding practices, upgrading of the beef herd, efficient and timely hay production methods, wise and intelligent supervision of labor and a watchful eye to control annual operating expenses are some of the management practices under the control of the operator. These and perhaps other practices determine success or failure of a cattle ranch business.

The managerial strategies and skills observed among the 60 ranchers, in the opinion of the writer, ranged from excellent to average. Likewise there was a wide range in the types and kinds of management practices followed. These facts will be borne out in the following discussion.

Cow Herd Management

About 14-18% of the cow herd is replaced each year. With an 86% calf crop, 18 of the 43 heifer calves available from each 100 cows must be kept as replacements for the cows which are culled, or which have died. Ranchers frequently keep from 18-22 of the top heifers, carry them until the next spring or fall and then cull down to 14-18 head, depending on whether they are trying to maintain, increase or decrease the size of the breeding herd. Culling replacement heifers in the spring and again in the fall helps upgrade the herd.

In the fall, the more progressive ranchers run the breeding herd through the chute to pregnancy test first calf heifers and the cows which seem questionable. A check is made of udder, teeth, eyes and feet and general physical conditions. Culling open cows and those which are otherwise defective can do much to increase the amount of beef produced and the amount of ranch earnings.

Feeding the breeding herd usually begins sometime in December or in early January and continces until May. It requires from 1-2 tons of hay per head, depending on the duration of winter, amount of aftermath pasture, protein supplement used and whether or not winter grazing is available.

The most common breeding season is from June 1 to September 1, although some ranchers who winter their cattle especially well and whose cows are in a high state of nutrition, begin breeding a month earlier. Ranchers who breed late in the season have little problems with cows being in poor physical condition. Excessively thin cows, or cows and bulls which are excessively fat are usually poor breeders.

The usual custom is to supply 4 or 5 bulls per 100 cows although some outfits who have no opportunity to pasture breed even a part of the cows, use as many as 6 bulls per 100 cows, particularly where first calf heifers are run separately. In this study, nearly one-half of the operators raise all or part of their bulls from small registered herds. These men buy new bulls periodically and pay from $500-$1,200 for such sires. Those who purchase range bulls pay from $400-$600 each and use them for four years although the range in use is from 3-7 years. About one-third of the ranchers feed from 1-2 lb. of protein supplement daily to their bulls for a period of 6 weeks before breeding season. This is in addition to hay fed free choice. One-half of the ranchers have their bulls fertility tested. Five outfits use artificial insemination on part of their cows. One ranch engages in production testing on part of the herd.

Management of Replacement Heifers

Nearly all the ranchers breed replacement heifers at about 15 months of age so they will calve at about 24 months. Some complain, however, if they calve as two's, part of them, due to poor physical condition, will not calve as three's. The more successful ranchers select replacement heifers from their top quality cows which are bred to top performing bulls. They breed only the yearling heifers which weigh around 600 lb. or more. The ranchers feed such heifers heavily during pregnancy and watch them carefully during calving. They provide sufficient feed so the heifer can supply adequate milk to raise a healthy, vigorous calf, and be able to breed again and calve as a three-year-old. Some ranchers, to give a heifer a break, wean these calves one month ahead of the calves from the regular herd and give them special care, feeding protein, minerals and vitamins in addition to hay. Some operators find it pays to run two-year-old heifers as well as three-year-old heifers separately from the reg-

Photographs taken by Jack Richard Studio, Cody, Wyoming, appear on pages 1, 5, 9, 37, 39, and 44. Above photograph by USDA.