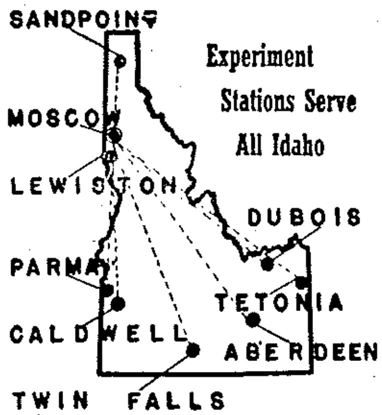

Idaho Agricultural Research

Progress Report

NO. 62
March 1962

COSTS AND RETURNS TO MOUNTAIN TYPE CATTLE RANCHES IN CENTRAL IDAHO IN 1960

A Beginning Phase of Idaho Experiment Station

Research Project No. S-426

by

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COSTS AND RETURNS TO MOUNTAIN TYPE CATTLE RANCHES IN CENTRAL IDAHO, 1960

A new University research project seeks to obtain information on the costs and returns of cattle ranches in central Idaho. A business analysis of these ranches will help all cattlemen in Idaho to plan and organize their businesses for maximum profit. It will also help them to decide more wisely what course to follow in meeting continually changing price, weather, and feed supply situations. The increasing size and complexity of cattle ranching operations make it essential that business-management decisions be carefully made. Information provided by this study will assist the rancher in making his decisions.

This progress report of the first year's results is prepared primarily for the 24 ranchers who cooperated on this study. It is exploratory in form and may be considerably altered in future years of the project.

All of these ranches are located in the mountain valleys in Lemhi and Custer counties in east central Idaho. Typically, they have spring range from about May 1 to June 1 on Bureau of Land Management permits in the foothills. Summer range from about June 1 to October 1 is at the higher elevations under Forest Service grazing privileges. Pasture and hay aftermath on the home ranch will typically provide grazing in the fall until January first or later. From January through April, hay is fed. Even in the winter period, a part of the ranches have winter pasture that provides up to one-half their feed requirements. The light snow cover usually makes it possible to obtain some winter pasture on many

ranches. Most ranchers estimate the winter hay requirement at from one ton to one and one-half tons per head.

Of the 24 ranches that furnished information on their business, 13 are of the cow-calf classification, 4 are cow-yearling, and 7 sell both calves and yearlings. They range in size from 98 to 975 animal units. The average size is 335 animal units. Stated in number of cows, the average size is 241 cows, and the range is from 82 to 709 cows. Classified as to size, 4 of the ranches are small, with less than 150 animal units, 11 are of medium size with 150 to 300 animal units, and 9 are large with 300 or more animal units. Throughout the report, these shall be referred to as small, medium, and large ranches. In the future, we hope to include more small ranches and more cow-yearling ranches in this study.

Since small numbers of both types of ranches are included, the averages for these classifications are somewhat questionable. The averages for the 24 ranches do not represent the returns to the average cattle ranch in the area. More large ranches are included in the group than are found typically, and superior management skills are used by the individual operators. The returns are, therefore, those for somewhat larger ranches than average with superior management ability.

In this report, the averages for the 24 ranches are shown together with those for the 5 ranches with the highest and the 5 ranches with the lowest returns. The terms "five-high" and "five-low" shall be used to designate these high and low groups of ranches. They include the same ranches throughout the report. The first column in the tables consists of blank lines, and figures

written on these lines are those for the individual farmer to whom this report is returned.

Throughout the report, two measures of return are given. These are;

1. Net Cash Income, the cash income less cash expenses except interest. This is available to the operator to cover living expenses, income tax payments, interest payments, savings and investment, and depreciation and other inventory change. This is income available to the operator but is not the true earnings of the ranch.

2. Return to Capital in Real Estate and to the Operator's Labor, the residual after charges have been made for all other items of cost except operator's labor and interest on the real estate investment. Assuming a charge for either operator's labor or for interest on capital in real estate is difficult since the return to these two resources varies with the profitableness of the business. Operator's labor and interest on real estate capital are really residual claimants. They get what is left. This measure of return therefore omits any charge for either item.

The standard of comparison for the individual ranches is this second measure of return. The "five-high" and the "five-low" are those that are highest and lowest in the return to capital in real estate and to operator's labor. Cooperating ranches received an average of $4,942 as a return for capital in real estate and for the operator's labor in 1960. The range in return is shown by the difference between the "five-high", who average $12,679 and the "five-low" who lacked $1141 of having any

return for their labor and for the capital in real estate. The total difference in return between these two groups amounts to almost $14,000.

At present prices of cattle ranches, the average operator is receiving low return for his labor and for his capital in land and grazing rights. Ranches of adequate size with a high degree of management skill do receive a moderate return for these resources, as is shown by the returns to the "five-high". A separation of the returns to operator's labor and to capital in real estate is made on an arbitrary basis on page 21.

In calculating the return to capital in real estate and to operator's labor, costs or charges include (1) all cash farm expenses, (2) depreciation on machinery, buildings, and improvements, (3) decrease in inventory values of livestock, crops, and supplies, (4) interest at five percent on the value of livestock, machinery, crops, and supplies, and (5) the value of family labor other than operator at hired man's wages. Where several brothers operate a ranch together, wages for all but one brother are included in family labor other than operator. In this way, all of the ranches are shown with the returns to a single operator. As stated previously, interest paid is not included in cash farm expenses. Instead, interest on the average value of livestock, machinery, crops and supplies is included as an assumed charge, but no charge is made for interest on the value of real estate. This puts all the farms on the same basis for interest charge.

Income items include cash farm income and any increase in inventory value of livestock, crops, and supplies. Increases in inventory value mostly represent animals or crops that were

carried over rather than sold. In contrast, decreases in inventory value represent sales in excess of the production of the year. If an increase in inventory value of livestock is shown under income, there will of course not be any decrease under expenses. Likewise, if a decrease in inventory value of crops and supplies appears under expenses, no entry will be found for increase in inventory value under income.

Further detail on methods used in preparing this report and definitions of terms used are given in the appendix on pages 24, 25, and 26.

Data presented in this progress report include the following material for the 24 ranches:

1. Size and capital investment.
2. Incomes and costs per ranch.
3. Incomes and costs per animal unit.
4. Incomes and costs per cow.
5. Factors affecting returns.
6. Incomes and costs by size of ranch.
7. Incomes and costs by type of ranch.

Figures are shown both per animal unit and per cow, since there is some question as to which is the best measure. Cattlemen usually find figures on a per cow basis to be more meaningful. On the other hand, the animal unit is a better measure of size where cow-calf and cow-yearling operations are contrasted.

SIZE OF RANCHES

	Your Ranch	Average of 24 Ranches	Average of 5 High	Average of 5 Low
Number of cows	_____	241	461	186
Number of animal units	_____	331	636	243

SUMMARY OF CAPITAL INVESTMENT

Livestock	____	$56,745	109,455	43,514
Machinery and power	____	14,397	24,478	14,238
Crops and supplies	____	8,781	15,736	6,965
Total Capital Investment Other than Real Estate	____	79,923	149,669	64,717
Land and Grazing Rights at $250 per A.U. of carrying capacity	____	82,734	159,025	60,750
Total Capital Investment	____	162,657	308,694	125,467

The value used for land and grazing rights is $250 per animal unit of carrying capacity. This is a conservative figure that ranchers say can be used as a long-run value. Sales of cattle ranches are currently being made at higher values than this. Prices ranging from $300 to $600 per animal unit and even higher are quoted.

The average total investment of these ranches is over $160,000 so the capital required for an operation of this type is considerable. Note that the "five-high" had almost twice the capital investment of the average ranch, while the "five-low" had an investment of less than the average of the group.

TOTAL INCOMES AND TOTAL COSTS PER RANCH, 1960

Income	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
		$	$	$
Calves sold		14,800	28,843	11,049
Yearlings sold		7,193	13,661	3,769
Cows sold		3,728	8,252	3,111
Bulls sold		604	1,281	428
Other livestock or livestock products		718	227	991
Crops		137	378	0
Work off the farm		48	0	0
Miscellaneous income		183	281	111
TOTAL CASH INCOME (1)		27,411	52,923	19,459
Increase in inv. value of livestock		--	1,551	--
Increase in inv. value of crops and supplies		607	1,655	690
GROSS INCOME (2)		28,018	56,129	20,149
Cash Operating Expenses				
Hired labor		3,055	6,528	2,832
Feed		2,421	6,580	649
Grazing fees and pasture rent		847	1,250	635
Crop expense (bales ties, seed, fertilizer, crop chemicals)		710	898	451
Repairs for machinery		1,218	2,277	1,429
Repairs for buildings and improvements		486	1,176	206
Fuel for farm use		1,261	2,252	804
Custom work hired		332	759	105
Farm share of auto expense		403	519	314
Livestock bought		1,890	3,078	2,848
Livestock expense		440	609	209
Taxes on real estate and personal property		1,456	2,581	1,161
Insurance		324	434	353
Telephone and electricity (farm share)		254	397	221
Water assessment		31	48	83
Other expense		236	500	27
TOTAL CASH OPERATING EXPENSES (3)		15,364	29,886	12,327

TOTAL INCOMES AND TOTAL COSTS PER RANCH, 1960 (cont.)

	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
		$	$	$
Depreciation on machinery.....	_____	1,727	2,671	1,646
Depreciation on bldgs. and improvements.....	_____	766	1,160	527
Decrease in inv. value of livestock.....	_____	491	--	3,324
Decrease in inv. value of crops and supplies.....	_____	--	--	--
Interest on value of livestock, machinery, crops and supplies @ 5%.....	_____	3,996	7,483	3,236
Value of family labor other than operator..	_____	732	2,250	230
TOTAL EXPENSES (4)...	_____	23,076	43,450	21,290
Measures of Return				
NET CASH INCOME (1) - (3).....	_____	12,047	23,037	7,132
RETURN TO CAPITAL IN REAL ESTATE AND TO OPERATOR'S LABOR (2) - (4).....	_____	4,942	12,679	-1,141
CAPITAL INVESTMENT IN REAL ESTATE ($250 value per A.U. of carrying capacity...	_____	82,734	159,025	60,750

INCOMES AND COSTS PER ANIMAL UNIT, 1960

Incomes	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
Cattle sold.....	_____	79.55	81.81	75.54
Other livestock and livestock products..	_____	2.17	0.36	4.08
Crops.....	_____	0.41	0.59	0
Work off the farm.....	_____	0.15	0	0
Miscellaneous income..	_____	0.55	0.44	0.46
TOTAL CASH INCOME (1)	_____	82.83	83.20	80.08
Increase in inv. value of livestock.....	_____	--	2.44	--
Increase in inv. value of crops and supplies.....	_____	1.83	2.60	2.84
GROSS INCOME (2)....	_____	84.66	88.24	82.92
Cash Operating Expenses				
Hired labor.....	_____	9.23	10.26	11.65
Feed.....	_____	7.32	10.34	2.67
Grazing fees and pasture rent.....	_____	2.56	1.97	2.61
Crop expense.....	_____	2.14	1.41	1.86
Repairs for machinery.	_____	3.68	3.58	5.88
Repairs for buildings and improvements....	_____	1.47	1.85	0.85
Fuel for farm use.....	_____	3.81	3.54	3.31
Custom work hired.....	_____	1.00	1.19	0.43
Farm share of auto expense.....	_____	1.22	0.81	1.29
Livestock bought.....	_____	5.71	4.84	11.72
Livestock expense.....	_____	1.33	0.96	0.86
Taxes on real estate and personal property	_____	4.40	4.06	4.78
Insurance.....	_____	0.98	0.68	1.45
Telephone and electricity (farm share)....	_____	0.77	0.62	0.91
Water assessment.....	_____	0.09	0.08	0.34
Other expenses.....	_____	0.71	0.79	0.11
TOTAL CASH OPERATING EXPENSES (3).....	_____	46.42	46.98	50.72

INCOMES AND COSTS PER ANIMAL UNIT, 1960 (cont.)

	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
Depreciation on machinery.....	_____	5.22	4.20	6.77
Depreciation on bldgs. and improvements....	_____	2.32	1.82	2.17
Decrease in inv. value of livestock.....	_____	1.48	--	13.68
Decrease in inv. value of crops and supplies	_____	--	--	--
Interest on value of livestock, machinery, crops, and supplies @ 5%.....	_____	12.08	11.76	13.32
Value of family labor other than operator.	_____	2.21	3.54	0.95
TOTAL EXPENSES (4)..	_____	69.73	68.30	87.61
Measures of Return				
NET CASH INCOME (1) - (3).....	_____	36.41	36.22	29.36
RETURN TO CAPITAL IN REAL ESTATE AND TO OPERATOR'S LABOR (2) - (4).....	_____	14.93	19.94	-4.69
CAPITAL INVESTMENT IN REAL ESTATE ($250 value per A.U. of carrying capacity..	_____	250	250	250

INCOMES AND COSTS PER COW, 1960

Income	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
Cattle sold.....	_____	109.40	112.81	98.43
Other livestock and livestock products..	_____	2.98	0.49	5.31
Crops.....	_____	0.57	0.82	0
Work off the farm.....	_____	0.20	0	0
Miscellaneous income..	_____	0.76	0.61	0.60
TOTAL CASH INCOME (1)	_____	113.91	114.73	104.34
Increase in inv. value of livestock.....	_____	--	3.36	--
Increase in inv. value of crops and supplies.....	_____	2.52	3.59	3.70
GROSS INCOME (2)....	_____	116.43	121.68	108.04
Cash Operating Expenses				
Hired labor.....	_____	12.69	14.15	15.18
Feed.....	_____	10.06	14.26	3.48
Grazing fees and pasture rent.....	_____	3.52	2.71	3.40
Crop expense.....	_____	2.95	1.95	2.42
Repairs for machinery.	_____	5.06	4.94	7.66
Repairs for bldgs. and improvements.....	_____	2.02	2.55	1.11
Fuel for farm use.....	_____	5.24	4.88	4.31
Custom work hired.....	_____	1.38	1.64	0.56
Farm share of auto expense.....	_____	1.67	1.12	1.68
Livestock bought.....	_____	7.86	6.67	15.27
Livestock expense.....	_____	1.83	1.32	1.12
Taxes on real estate and personal property.....	_____	6.05	5.60	6.23
Insurance.....	_____	1.35	0.94	1.89
Telephone and electricity (farm share)....	_____	1.06	0.86	1.19
Water assessment.....	_____	0.13	0.10	0.44
Other expenses.....	_____	0.98	1.08	0.15
TOTAL CASH OPERATING EXPENSES (3).....	_____	63.85	64.77	66.09

INCOMES AND COSTS PER COW, 1960 (cont.)

	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
Depreciation on machinery.....	_____	7.17	5.79	8.83
Depreciation on bldgs. and improvements....	_____	3.18	2.52	2.83
Decrease in inv. value of livestock.....	_____	2.04	--	17.82
Decrease in inv. value of crops and supplies.....	_____	--	--	--
Interest on value of livestock, machinery, crops and supplies @ 5%.....	_____	16.61	16.22	17.35
Value of family labor other than operator.	_____	3.04	4.88	1.23
TOTAL EXPENSES (4)..	_____	95.89	94.18	114.15
Measure of Return				
NET CASH INCOME (1) - (3).....	_____	50.06	49.96	38.25
RETURN TO CAPITAL IN REAL ESTATE AND TO OPERATOR'S LABOR (2) - (4).....	_____	20.54	27.50	-6.11
CAPITAL INVESTMENT IN REAL ESTATE ($250 value per A.U. of carrying capacity.	_____	344	345	326

Factors Affecting Returns

Factors affecting return are listed as size factors, organization factors, rate of production factors, efficiency factors and marketing efficiency factors. Again these are shown the average of the group, for the "five high" and for the "five low".

Size Factors	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
No. of animal units.....	_____	331	636	243
No. of cows.....	_____	241	461	186
Total capital investment ($250.00 value per A.U.)($).....	_____	162,657	308,694	125,467
No. of men.....	_____	2.2	3.4	1.9
Organization Factors				
Animal unit months of outside feed (BLM & FS) + rented pasture.	_____	1045	1851	706
Animal unit months of outside feed per cow..	_____	4.3	4.1	3.8
Per cent of year on outside feed.....	_____	37	37	42
Per cent of gross income from cattle.....	_____	96	98	94
Per cent of cow herd sold during the year..	_____	11	12	13
Rate of Production Factors				
Per cent calf crop.....	_____	89	89	87
Pounds of beef produced per cow.....	_____	479	508	331
Average weight per calf sold.....	_____	442	455	409
Average weight per yearling sold.....	_____	654	589	613
Average weight per cow sold.....	_____	1,098	1,108	1,092
Average Weight per bull sold.....	_____	1,456	1,465	1,376

Factors Affecting Returns (cont.)

Efficiency Factors	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
Total capital investment per cow				
Real estate.....	_____	344	345	326
Personal property.....	_____	332	324	347
Total.....	_____	676	669	673
No. of cows per man.....	_____	108	146	106
Gross income per cow....	_____	116.43	121.68	108.64
Total expenses per cow..	_____	95.89	94.18	114.15
Return to capital in real estate and to operator's labor per cow.....	_____	20.54	27.50	-5.11
Marketing Efficiency				
Average selling price per cwt. calves.....	_____	24.78	25.63	24.14
Average selling price per cwt. yearlings....	_____	22.18	23.53	22.94
Average selling price per cwt. cows.....	_____	12.77	13.59	12.17
Average selling price per cwt. bulls.....	_____	16.88	17.49	17.29

The Effect of Size of Ranch on Returns

In the following table, incomes, costs, and returns are shown for the small, medium and large sized ranches. The small ranches had a residual of only $971 for the operator's labor and for his capital in real estate. This contrasts with $3,322 for the medium sized ranches and $8,685 for the large ranches. The larger ranches have more capital in real estate, but the increase in return to them is appreciably more than the percentage increase in the amount of capital. On a per cow basis, the returns to operator's labor and real estate investment is greatest for the medium-sized ranches. This is less significant, however, than the returns in total. Also, more pounds of beef are produced per cow for the medium-sized and the larger ranches than for the small ranches.

TOTAL INCOMES AND TOTAL COSTS BY SIZE OF RANCH, 1960

	Average of Small Ranches (Under 150 A.U.)	Average of Medium Ranches (150-300 A.U.)	Average of Large Ranches (Over 300 A.U.)
Number of ranches	4	11	9
Average number of cows	94	163	401
Average number of animal units	113	215	570
Incomes			
Cattle	9,547	17,132	45,017
Other livestock	637	1,016	390
Other income	345	425	310
TOTAL CASH INCOME (1)	10,529	18,573	45,717
Increase in inv. value of livestock	--	--	--
Increase in inv. value of crops and supplies	182	329	1,135
GROSS INCOME (2)	10,711	18,902	46,852

	Average of Small Ranches (Under 150 A.U.)	Average of Medium Ranches (150-300 A.U.	Average of Large Ranches (Over 300 A.U.)
Cash Operating Expenses			
Hired labor	266	2,089	5,476
Feed	209	879	5,289
Grazing fees and pasture rent	318	478	1,533
Crop expense	466	525	1,043
Repairs for machinery	626	1,058	1,675
Repairs for bldgs. and improvements	44	164	1,075
Fuel for farm use	697	975	1,862
Custom work hired	55	260	543
Farm share of auto expense	255	434	431
Livestock bought	2,595	947	2,731
Livestock expense	318	302	663
Taxes on real estate and personal property	636	1,094	2,264
Insurance	151	289	445
Telephone and electricity (farm share)	195	176	376
Water assessment	35	11	53
Other expenses	16	135	457
TOTAL CASH OPERATING EXPENSE (3)	6,882	9,816	25,916
Depreciation on machinery	650	1,523	2,454
Depreciation on bldgs, and improvements	322	571	1,203
Decrease in inv. value of livestock	70	761	348
Decrease in inv. value of crops and supplies	--	--	--
Interest on value of livestock, machinery, crops and supplies @ 5%	1,366	2,764	6,671
Value of family labor other than operator	450	145	1,575
TOTAL EXPENSES (4)	9,740	15,580	38,167

(cont.)	Average of Small Ranches (Under 150 A.U.)	Average of Medium Ranches (150-300 A.U.)	Average of Large Ranches (Over 300 A.U.)
Measures of Return			
NET CASH INCOME (1) - (3)...	3,647	8,757	19,801
RETURN TO CAPITAL IN REAL ESTATE AND TO OPERATOR's LABOR (2) - (4).....	971	3,322	8,685
CAPITAL INVESTMENT IN REAL ESTATE ($250 per A.U. of carrying capacity).....	28,188	53,670	142,500
Gross income per cow.....	114.56	115.93	116.87
Total expenses per cow.....	104.18	95.55	103.01
Return to capital in real estate and to operator's labor per cow.....	10.38	20.38	13.86
Capital investment in real estate per cow.....	301.00	329.00	355.00
Pounds of beef produced per cow.....	369	459	500

The Effect of the Type of Ranch on Returns

Another possible reason for variation in return is the type of operation. Part of the ranchers sell only feeder calves, part sell yearling feeders, and part sell some of each. All, of course, sell cull cows and bulls in addition. In the following table, incomes, costs, and returns are compared for these three types of operation. The cow-yearling ranches have an appreciably higher capital investment in real estate than the other two types. When this is considered, the returns to operator's labor and real estate capital is not greatly different from the returns for cow-calf ranches. Those ranches selling both calves and yearlings appear to have lower returns in 1960 than those specializing in either calves or yearlings. As stated previously, the number of cow-yearling ranches is small, so the average of this group is somewhat questionable.

TOTAL INCOMES AND TOTAL COSTS BY TYPE OF RANCH, 1960

	Average of Cow-Calf Ranches	Average of Cow-Yearling Ranches	Average of Ranches Selling Both Calves & Yrlgs.
Number of ranches.....	13	4	7
Average number of cows.....	209	250	294
Average number of animal units.	258	456	394
Incomes			
Cattle.....	23,974	29,612	28,812
Other livestock.....	981	843	158
Other income.....	425	370	262
TOTAL CASH INCOME (1).....	25,380	30,825	29,232
Increase in inv. value of livestock.....	--	--	--
Increase in inv. value of crops and supplies.....	893	635	60
GROSS INCOME (2).....	26,273	31,460	29,292

	Average of Cow-Calf Ranches	Average of Cow-Yearling Ranches	Average of Ranches Selling Both Calves & Yrlgs.
Cash Operating Expenses			
Hired labor	3,415	2,934	2,455
Feed	2,480	2,055	2,521
Grazing fees and pasture rent.	529	2,240	640
Crop expense	785	533	672
Repairs for machinery	1,228	541	1,585
Repairs for buildings and improvements	491	467	487
Fuel for farm use	1,304	906	1,386
Custom work hired	306	225	442
Farm share of auto expense	340	332	560
Livestock bought	1,707	2,198	2,055
Livestock expense	477	401	392
Taxes on real estate and personal property	1,267	1,536	1,762
Insurance	327	474	235
Telephone and electricity (farm share)	273	200	250
Water assessment	29	44	27
Other expenses	187	248	320
TOTAL CASH OPERATING EXPENSE (3)	15,145	15,334	15,789
Depreciation on machinery	1,826	1,594	1,619
Depreciation on bldgs. and improvements	822	1,031	512
Decrease in inv. value of livestock	436	365	664
Decrease in inv. value of crops and supplies	--	--	--
Interest on value of livestock, machinery, crops and supplies	3,342	4,849	4,723
Value of family labor other than operator	190	1,350	1,386
TOTAL EXPENSES (4)	21,761	24,523	24,693

cont.

	Average of Cow-Calf Ranches	Average of Cow-Yearling Ranches	Average of Ranches Selling Both Calves & Yrlgs.
Measures of Return			
NET CASH INCOME (1) - (3).....	10,235	15,491	13,443
RETURN TO CAPITAL IN REAL ESTATE AND TO OPERATOR'S LABOR (2) - (4).....	4,512	6,937	4,599
CAPITAL INVESTMENT IN REAL ESTATE ($250 value per A.U. of carrying capacity).....	64,587	113,906	98,625
Gross income per cow.....	125.64	125.58	99.78
Total expenses per cow.....	104.06	97.90	84.15
Return to capital in real estate and to operator's labor per cow.....	21.58	27.68	15.63
Capital investment in real estate Per cow.....	309	455	336
Pounds of beef produced per cow.....	468	564	453

Division of Returns to Operator's Labor and to Real Estate Capital

In the report as presented, returns are shown as a residual to operator's labor and to capital in real estate. Any separation between the returns to labor and real estate capital can only be made by assuming a charge for one or the other. Several methods of doing this are used.

One method would determine the value of the real estate by capitalizing the net return to real estate. Since basically land is worth only what it will produce, this method is a guide to true land values. For these ranches, the average return to operator's labor and to capital in real estate was $4942 in 1960. If the same return is expected for future years, one can estimate the value of the land by subtracting the value of the operator's labor and capitalizing the remainder. Suppose the individual assumes his labor to be worth $4,000, this leaves $942 as the annual return to capital in real estate. If the operator believes he should have a return of five per cent on such capital, the value of the real estate is $942 divided by .05 or $18,840. Since the average operator had an average of 331 animal units, this is a value of $57 per animal unit of carrying capacity--quite a little below present selling prices.

The value of land could be quite different for the "five high". Again assuming $4,000 value for operator's labor, they have $8679 as the return to land. Capitalized at 5 per cent, this return has a value of $173,580. Since these ranches show 636 animal units, this is a value of $273 per animal unit of carrying capacity. This emphasizes the fact that land has a different value for different people. The more efficient operators can pay a higher price for land than the average operator. It would, of course, be better to base values on the returns from a

period of years, rather than those for a single year. In this case, we only have the results of a single year available.

One can obtain different real estate values by changing any of the following assumed values on which these calculations are based:

1. The value of operator's labor - assumed to be $4,000.
2. The rate of capitalization of the earnings of real estate - assumed at 5 per cent.
3. The return to capital in real estate in future years could be assumed to be more or less than that in 1960.
4. The interest on capital in livestock, machinery, crops and supplies - assumed a 5 per cent.
5. The value of family labor other than operator, assumed at hired man's wages - $225 per month.

The value of real estate is based on expected future earnings, so one must forecast the future in order to estimate land values. Expected increases in land value could alter the rate of return on capital in real estate. For example, if one expects land values to increase by 4 per cent per year, he may be willing to accept no return on capital in real estate, except for this increase in value.

Another method of dividing the returns to operator's labor and capital in real estate is to assume a value for the capital in real estate and to determine the return to that value. Likewise the value of operator's labor can be obtained by subtracting a charge for interest on capital in real estate. A number of ranchers have estimated the present value of ranches at $250 per animal unit of carrying capacity on a long time basis. If this

value is assumed, one can estimate the returns to operator's labor and to capital in real estate as follows:

	Average of 24 Ranches	Average of 5 high	Average of 5 low
Assumed Values			
Capital in real estate (1)	$82,734	$159,025	60,750
Operator's labor (2)	4,000	4,000	4,000
Interest at 5 per cent on capital in real estate (3)	4,137	7,951	3,038
Measures of return			
Return to operator's labor and to capital in real estate (4) (as calculated on preceding pages)	4,942	12,679	-1,141
Return to capital in Real Estate (4) - (2)	942	8,679	-5,141
Rate earned on capital in real estate (above figure divided by (1)	1.1%	5.5%	-8.5%
Operator's labor income (4) - (3)	805	4,728	-4,179

With the assumptions made, the return to operator's labor for the average of the 24 ranches is $805, while the rate earned on capital in real estate is 1.1 per cent. A rancher is of course like any business man. The returns to his labor and his capital vary with the profitableness of his business.

APPENDIX

Definition of Terms Used and Description of Methods of Calculation

An animal unit in this study is assumed to be one head of any kind of cattle but omitting unweaned calves. Both the Forest Service and the Bureau of Land Management use this definition for animal units on public range land. Quite commonly the term is abbreviated A.U. The number of animal units for each ranch is the average of the number at the beginning of the year and the number at the end of the year.

The number of cows includes those few that are milked as well as those kept for beef. Most calves of these milk cows sell as feeder calves or feeder yearlings. The number of cows for each ranch is the average of the number at the beginning of the year and the number at the end of the year. The number at the beginning of the year will include heifers freshening for the first time in the current year.

Classification of ranches as cow-calf or cow-yearling is made on the basis of age at which offspring are sold. If 90 per cent or more of the number of feeder cattle sold are calves, the ranch is classified as cow-calf. If 90 per cent or more of the number of feeder cattle sold are yearlings, the ranch is classified as cow-yearling. When less than 90 per cent of the number sold are calves or yearlings, the ranch is classified as selling both calves and yearlings.

The number of men on a ranch is the number of months of labor including hired, operator, and other family labor divided by 12.

The number of cows per man is the average number of cows divided by the number of men.

Inventory values on page 6 are the average of these values for the beginning and the end of the year. The value of breeding animals is kept at the same price on both the beginning and the ending inventory. Any change in value for these animals therefore represents a change in numbers rather than in the value per animal.

Increase and decrease in inventory is shown separately for (1) livestock and (2) crops and supplies. An increase in inventory results when the ending inventory shows a larger value than the beginning inventory. Likewise, a decrease in inventory is found when the ending inventory is less than the beginning inventory.

The capital in real estate includes land and grazing rights owned by the operator.

The pounds of beef produced are the pounds of all cattle sold plus those on the ending inventory, minus deductions for those purchased and those on the beginning inventory. Home used beef was ignored in this first year. On the inventories and in other cases where weights were not given, cows were assumed to weigh 1000 pounds, bulls - 1400 pounds, yearlings - 700 pounds, and calves 450 pounds. The pounds of beef produced per cow is the total pounds of beef produced divided by the average number of cows.

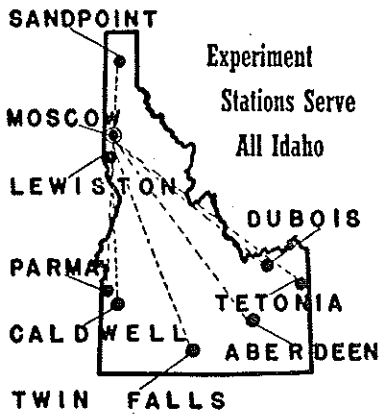
Percent of ranch carrying capacity used is average number of total animal units divided by the operator's estimate of the total animal units the ranch will carry.

Family labor other than operator is charged at the assumed rate of $225.00 per month. This charge includes the value of board furnished to such labor. This labor is performed by children in the family and in a few cases by brothers of the operator. Where two or more brothers operate a ranch together, the wages of all except one of the brothers are included in family labor other than operator. This reduces the returns to a one man basis so they are comparable with the others.

The author and the University wish to express their appreciation

For the helpful assistance of the cattle ranchers in Lemhi and Custer Counties who cooperated on this study. These men furnished freely much private information about their business and made many helpful suggestions regarding procedure.

For the help in planning and organizing this study by County Agents Russell Hillman and Lynn Stevenson of Lemhi and Custer Counties.



Idaho Agricultural Research

Progress Report

To: Wilson Gray

From: Bob Loucks

NO. 73

March 1963

COSTS AND RETURNS TO MOUNTAIN TYPE CATTLE RANCHES IN CENTRAL IDAHO IN 1961

A Beginning Phase of Idaho Experiment Station

Research Project No. S-426

by

Roland Bevan

Agricultural Experiment Station

UNIVERSITY OF IDAHO

College of Agriculture

COSTS AND RETURNS TO MOUNTAIN TYPE CATTLE RANCHES IN CENTRAL IDAHO IN 1961

A current University of Idaho research project is designed to obtain costs and returns on selected central Idaho cattle ranches. The findings are helpful to ranchers and researchers who wish to compare the costs and returns from various sizes and types of ranches and to consider changes in management practices. Individual ranchers find a business analysis of their operation vital in management decisions.

This report includes costs and return figures for 29 ranches who cooperated in 1961, the second year of study. A summary of the data for 1960 is found in Idaho Agricultural Research Progress Report No. 62 issued in March 1962.

These ranches are all located in Custer and Lemhi counties in east central Idaho. The home ranches are in narrow mountain valleys, with the summer range on the foothills and mountains that rise up from the valleys. Typically, the spring range is at lower levels on public domain, the summer range is higher up on national forest land and the fall feed comes from pasture and hay aftermath on the home ranch.

Of the 29 ranches included in 1961, 18 are of the cow-calf classification, 4 are cow-yearling and 7 sell both calves and yearlings. They range in size from 89 to 974 animal units, with an average of 299. An animal unit, as used in this report, is one head of any kind of cattle, omitting only unweaned calves. This is the definition used by both the Forest Service and the Bureau of Land Management for grazing on range land.

Stated in number of cows, the average size is 221 cows, with a range from 74 to 714 cows. As to size, 6 ranches are small, with less than 150 animal units, 11 are medium size, with 150 to 300 animal units and 12 are large, with over 300 animal units. We were unable to enlarge to any extent our number or either cow-yearling ranches or small ranches in 1961, as we had hoped to do. Since the number of ranches in these two classifications are small, the averages for both of them are questionable.

The averages for the 29 ranches do not represent the returns to an average ranch in the area. More large ranches are included than are found typically, and superior management skills are used by the individual operators. So the returns are those for somewhat larger ranches than average using superior management ability.

In this report, the averages of the 29 ranches are given in comparison with those for the six ranches that are highest and the six ranches that are lowest in returns per cow. The terms "six high" and "six low" are used to designate these latter two groups of ranches. They include the same ranches throughout the report. The first column in the tables consist of blank lines, and any rancher may include his own figures in these spaces and compare with the ranches in the study.

Two measures of return are shown. These are:

1. Net Cash Income, the cash farm income less cash farm expenses except interest. This amount is used by the farmer to pay living expenses, income taxes, interest on debts,

for saving and investment and to cover depreciation and other inventory change. It is income available to him, but it does not represent the true earnings of the ranch.

2. Return to Capital and to Operator's Labor, the amount remaining after charges have been made for all other items of cost except operators labor and interest on capital investment. This is the return to both owned and borrowed capital as well as to operators labor. Neither a farmer's labor nor his capital is guaranteed a fixed return. Instead, they get what is left after all expenses are paid. Their return will vary with the profitableness of the business. A farmer is like any other business man in this respect. This measure of return therefore omits any charge for either interest or for the labor and management of the operator.

The standard of comparison for the individual ranches is this second measure of return - return to capital and to operators labor. The cooperating ranches received an average of $8559 as the return to capital and operators labor in 1961. The range in return is shown by the difference between the six high who average $12,327 and the six low who average only $775 for their capital and labor. These amounts will allow only a low rate of return to capital and to operators labor for the average of the group. However, larger ranches with outstanding management ability were able to secure a modest return to both their capital and labor. This is discussed in more detail on pages 22-24. The average return of $8559

to operators labor and capital is slightly less than the $8938 received in 1960.

In calculating the return to capital and to operators labor, costs or charges include:

1. All cash farm expenses.
2. Depreciation on machinery, building and improvements.
3. Decrease in inventory values of livestock.
4. Decrease in inventory values of crops and supplies.
5. The value of family labor other than operator at hired man's wages.

The income items are:

1. All cash farm income.
2. Increase in inventory value of livestock.
3. Increase in inventory value of crops and supplies.

Increase in inventory value usually represent livestock or crop value that was produced in the year but not sold. In contrast, decreases in inventory value are usually due to sales in excess of the production of crops or livestock in the current year. If an increase in inventory value of livestock is shown under income, there will of course not be any decrease under expenses. Only one or the other will appear.

Additional detail on methods used in preparing this report and definitions of terms used are given in the appendix on pages 30-1. Special attention is called to the change from the first years report in (1) the selection of the "6 high" and the "6 low" ranches and (2) in the calculation of the return to capital and operators labor.

DIVISION OF RETURNS TO OPERATOR'S LABOR AND TO HIS CAPITAL

As presented in this report, returns are shown as a residual to operators labor and capital. The returns to labor and capital can be separated only by making an assumed charge for either the farmers labor or for his capital. These assumed charges may not necessarily represent the true earnings of the labor or the capital. Usually they are estimated for the cost of hiring the labor or the interest paid on similar types of loans. In a sense, this is incorrect, since the farmers labor and capital get what they earn, not what is customarily paid for them. Still, many like to know the earnings of the farmer's labor or the return he gets on his capital and this is the only way it can be determined.

Three separations of the return to the farmers labor and capital follow. These are for:

1. Operator's labor income
2. Rate earned on total investment
3. Value of land based on income

The operators labor income is derived by subtracting interest on the total investment from the return to the operator's labor and capital. An assumed interest charge of 5 per cent is used. The calculations are made for the average, the 6 high and the 6 low.

	Your Farm	Average of 29 Ranches	Average of 6 High	Average of 6 Low
Total capital investment. .(1)	_____	$148,697	$124,272	$120,819
Return to operators labor and capital . . .(2)	_____	8,559	12,327	775
Interest on total investment @ 5 per cent (3).	_____	7,435	6,213	6,041
Operators labor income (2)-(3)	_____	1,124	6,114	-5,266

If interest on investment at 5 per cent is deducted from the returns to operators labor and capital, only $1,124 remains for the average of the group as the return for their labor. The range in return is shown by the difference between the 6 high and the 6 low, with the 6 high having over $11,000 more return for their labor than the 6 low.

The rate earned on total investment is derived by subtracting an allowance of $4,000 for the operators labor from the return to operators labor and capital and dividing the remainder by the average total investment. The calculations follow:

	Your Farm	Average of 29 Ranches	Average of 6 High	Average of 6 Low
Return to operators labor and capital (1).	_____	$ 8,559	$12,327	$ 775
Less allowance for operators labor (2) . . .	_____	4,000	4,000	4,000
Return to capital (3) . . .	_____	4,559	8,327	-3,225

	Your Farm	Average of 29 Ranches	Average of 6 High	Average of 6 Low
Total Capital investment (4).	_____	$148,697	$124,272	$120,819
Rate earned on total investment (3)÷(4)	_____	3.1%	6.7%	-2.7%

If an allowance of $4,000 for the operators labor is assumed, there remains a return of 3.1 per cent of the capital investment for the average of the ranches. This is the return on all forms of capital, including real estate, and personal property. The real estate investment is at a conservative value - $250 per head of carrying capacity. Again, the range in return is shown by a comparison of the 6 high and the 6 low.

The value of land based on income is determined by deducting all charges except interest on the real estate investment to obtain the earnings of the land resource. These earnings are then capitalized at an appropriate rate of interest to determine the capital value of the land based on income. For example, an annual net income of $5 capitalized at 5 per cent rate becomes $100 ($5 ÷ .05 = $100). Another way of saying this is that $5 represents a return on a $100 investment assuming 5 per cent interest. The calculations are again made for the average of the group and for the 6 high and the 6 low. A rate of 5 per cent is assumed to capitalize the income from land to the capital value in land.

	Your Farm	Average of 29 Ranches	Average of 6 High	Average of 6 Low
Return to operators labor and capital (1).	_____	$ 8,559	$12,327	$ 775
Allowance for operator labor (2).	_____	4,000	4,000	4,000
Interest on inv. value of livestock, machinery, crops, and supplies @ 5% (3)	_____	3,694	2,968	3,045
Return to capital in real estate (1)-(2)-(3).	_____	865	5,369	-6,270
Capitalized value of return to real estate (using 5% rate) (4)	_____	17,300	107,180	No residual to real estate
Animal units of carrying capacity (5).	_____	299	260	
Value of real estate per animal unit of carrying capacity (4 ÷ 5).	_____	58	412	

These figures show a value of $58 per animal unit for the land and grazing rights for the average of the ranches. This compares with present selling prices of $300 to $600 per animal unit of carrying capacity. Since land has a different value for different people, the value for the 6 high is much above that for the average of the 29 ranches. For the 6 low, the returns do not equal the assumed charges for the operators

labor and for interest on personal property. No value, therefore remains for real estate. One must realize that the value of these ranches as calculated would be different if any of the following assumptions were varied:

1. An assumed value of $4,000 for operator's labor
2. A capitalization rate of 5 per cent for the return to capital in real estate
3. An assumption that 1961 returns represent those for the future accurately (Since the value of land is stated to be the present value of future incomes to land)
4. Interest on the value of livestock, machinery, crops and supplies assumed at a rate of 5 per cent
5. Assumed value of $225 per month for unpaid family labor other than operator

The value for real estate obtained is correct only if these five assumptions are correct.

All calculations made ignore any increase in the value of real estate as a possible income, since this is not assured. In some years in the past land values have increased 5 to 10 per cent or even more annually. In other years in the past land values have decreased. This is one of the uncertainties that plagues the life of the farmer businessman.

A summary of the results obtained in 1961 are compared with those for 1960 in Table 8. Where changes were made in methods of calculation in 1961, the results for 1960 were

recalculated on the same basis. All except one of the 24 ranches cooperating in 1960 are included in the summary for 1961. Six ranches were added to the group to make the total of 29 ranches in 1961.

Figures given in Table 8 can serve as a standard of comparison for cattle ranches in central Idaho, as well as for other areas of the state where conditions are similar to those in this area. Individual ranchers will, of course, be mostly interested in the costs and returns for their own ranch. In addition, however, they need to know what their competitors are doing. If more detail for costs or returns are needed, they can be obtained in Tables 1 through 7.

This study will be continued to include about two more years of costs and returns for this area, so that a variation in weather and price conditions are included. As well as serving as a standard of comparison for similar cattle ranches, this data will be useful for research in cattle ranch management. Changes in size and type of ranch as well as possible new practices can be compared for specific situations. Such research will aid ranchers who must decide what course of action is best for them.

Table 8. COMPARISON OF 1961 RESULTS WITH THOSE FOR 1960

	1960	1961
Number of ranches	24	29
Number of cows per ranch	241	221
Number of animal units per ranch	331	299

APPENDIX

Definition of Terms Used and Description of Methods of Calculation

The methods of calculation differ in two respects in 1961 from those used in 1960. (1) The "6 high" and the "6 low" ranches are those highest and lowest in returns per cow in 1961, while in 1960 they were those that were highest and lowest in total returns to the ranch. (2) The return to capital and labor used in 1960 included only capital in real estate, while in 1961 it included all capital, both real estate and personal property. The comparison of 1961 and 1960 results on pages 27 - 29 shows both years with the figures calculated the same as in 1961.

An animal unit in this study is assumed to be one head of any kind of cattle but omitting unweaned calves. Both the Forest Service and the Bureau of Land Management use this definition for animal units on public range land. Quite commonly the term is abbreviated A.U. A month's grazing for an animal unit is abbreviated A.U.M. The number of animal units for each ranch is the average of the number at the beginning of the year and the number at the end of the year.

The number of cows includes those few that are milked as well as those kept for beef. Most calves of these milk cows sell as feeder calves or feeder yearlings. The number of cows for each ranch is the average of the number at the beginning of the year and the number at the end of the year. The number at the beginning of the year will include heifers freshening

for the first time in the current year.

Classification of ranches as cow-calf or cow-yearling is made on the basis of age at which offspring are sold. If 90 per cent or more of the number of feeder cattle sold are calves, the ranch is classified as cow-calf. If 90 per cent or more of the number of feeder cattle sold are yearlings, the ranch is classified as cow-yearling. When less than 90 per cent of the number sold are calves or yearlings, the ranch is classified as selling both calves and yearlings.

The number of men on a ranch is the number of months of labor including hired, operator, and other family labor, divided by 12. The number of cows per man is the average number of cows divided by the number of men.

Inventory values on page 4 are the average of these values for the beginning and the end of the year. The value of breeding animals is kept at the same price on both the beginning and the ending inventory. Any change in value for these animals therefore represents a change in numbers rather than in the value per animal.

Increase and decrease in inventory is shown separately for (1) livestock and (2) crops and supplies. An increase in inventory results when the ending inventory shows a larger value than the beginning inventory. Likewise, a decrease in inventory is found when the ending inventory is less than the beginning inventory.

The capital in real estate includes land and grazing rights owned by the operator.

Interest paid is not included in cash farm expenses. This puts all the ranches on the same basis since the part of the investment on which interest is paid varies widely. The return to operators labor and capital therefore includes the return to both borrowed and owned capital as well as to operators labor.

The pounds of beef produced are the pounds of cattle sold plus those on the ending inventory plus those butchered for use in the home or for hired help, minus deductions for those purchased and those on the beginning inventory. Note that home used beef, ignored in the first years report, is included in this second year. Where weights were not given, cows were assumed to weigh 1000 pounds, bulls 1400 pounds, yearlings 700 pounds, and calves 450 pounds. The pounds of beef produced per cow is the total pounds of beef produced divided by the average number of cows.

Per cent of ranch carrying capacity used is average number of total animal units divided by the operator's estimate of the total animal units the ranch will carry.

Family labor other than operator is charged at the assumed rate of $225 per month. This charge includes the value of board furnished to such labor. This labor is performed by children in the family and in a few cases by brothers of the operator. Where two or more brothers operate a ranch together, the wages of all except one of the brothers are included in family labor other than operator. This reduces the returns to a one man basis so they are comparable with the others.

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Bob Loucks

Idaho Agricultural Research

Progress Report

To: Wilson Gray

NO. 85

January 1964

COSTS AND RETURNS TO MOUNTAIN TYPE CATTLE RANCHES IN CENTRAL IDAHO IN 1962

A Phase of Idaho Experiment Station

Research Project No. S-426

by

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Agricultural Experiment Station

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College of Agriculture

HIGHLIGHTS OF THE 1962 CATTLE YEAR
24 RANCHES, CENTRAL IDAHO

Returns to the rancher for his labor and total capital averaged $9,894 in 1962, about $1,000 more than for 1961. This is the residual that remained for the rancher's labor and as a return on his total capital after all other expenses had been met. The average number of cows kept was 222 head.

Placing a conservative value on land and grazing rights of $250 per head of carrying capacity, the total capital investment of these ranches was $150,629. On a per cow basis, the investment amounts to $683. This includes real estate, livestock, machinery, crops and supplies. It is a sizable investment.

If we assume that the rancher's labor is worth $4,000 per year and that his capital investment in livestock, crops and supplies earns 5%, the amount remaining that could be credited to real estate would average $2,074 per ranch. If this return to real estate is capitalized at 5%, the value of these ranches would be placed at $140 per head of carrying capacity. Present selling prices are three or more times this value.

On a per cow basis, total income during 1962 was $130 and total expenses $79, leaving a residual to the rancher for his labor and capital of approximately $51. These earnings were shown with production at the following levels: Calf crop averaging 89% of the breeding herd, a sales weight per calf of 444 pounds, a yearling sales weight of 662 pounds and beef production per cow of 472 pounds. On the average, each ranch carried 107 cows per man.

COSTS AND RETURNS TO MOUNTAIN TYPE CATTLE RANCHES IN CENTRAL IDAHO IN 1962

Presented here are the costs and returns to 24 mountain type cattle ranches in central Idaho in 1962. Similar progress reports have been prepared for this same group of ranches for 1960 and 1961. The first phase of this research project will be completed when four years of costs and returns have been obtained. The second phase will use the data obtained in phase one to study changes in size and in type of operation as well as changes in management practices for representative ranches. Such comparisons will aid ranchers who seek to adjust to their continually changing situation. Although individual operators primarily need the figures for their own place to compare alternatives, the framework for their decisions can be obtained from the same comparisons applied to representative farms in their area.

RANCHES STUDIED

All of the ranches studied are located in Custer and Lemhi counties in the mountainous area of east central Idaho. A few of these have all of their hay and pasture within their own fences. Most of them, however, obtain "outside" feed by grazing public domain lands in the spring and national forest lands in the summer. Where this is done, it will comprise an average of four months of grazing for the livestock kept.

Of the 24 ranches included in 1962, 15 are classed as cow-calf operations, 2 are cow-yearling and 7 sell both calves and

yearlings. In size, they range from 73 to 723 cows, with an average of 222 cows. Size can also be measured in animal units. In this study all animals except unweaned calves are counted as an animal unit. This definition is typical for livestock on Forest and Bureau of Land Management grazing permits. For these ranches, animal units average 297 and range from 88 to 974 head. As in previous years, the ranches are separated into 3 size groups. Five ranches are classified as small, with less than 150 animal units. Ten are in the medium sized group, with 150 to 300 animal units. Seven are large ranches, keeping 300 animal units or more.

All of these ranches are larger than typical and they are operated with superior management. The average returns of the group will therefore be higher than those for an average ranch in the area. Even though this is true, the average of the group can be a good standard of comparison for other ranchers operating under similar conditions.

The tables presented give the averages for the group and also those for the "five high" and the "five low." These last two groups include the five ranches highest and the five ranches lowest in returns to capital and operator's labor per cow. These are the same ranches throughout the report. The first column in the tables consist of blank lines where any rancher may enter the figures for his own ranch for comparison with the average of other cattlemen.

HOW RETURNS WERE MEASURED

Two measures of return are shown. These are:

1. Net Cash Income, the cash farm income less cash farm expenses except interest. This amount is used by the rancher to pay living expenses, income taxes, interest on debts, for new capital investments, savings, and to cover depreciation and other inventory change. It is income available to him, but it does not represent the true earnings of the ranch. It does not consider all income or credits, nor does it consider all expenses or charges.

2. Return to Capital and to Operator's Labor, the amount remaining after charges have been made for all other items of cost except operator's labor and interest on capital investment. This is the return to both owned and borrowed capital as well as to operator's labor. Neither a rancher's labor nor his capital is guaranteed a fixed return. Instead, he has what is left after all expenses are paid. Return will vary with the profitableness of the business. A rancher is like any other business man in this respect. This measure of return therefore omits any charge for interest on the capital and for the labor and management of the operator and most nearly represents the true returns to the rancher's resources.

The cooperating ranches received an average of $9,894 as the return to capital and operator's labor in 1962. This compares with $8,779 in 1961 and $8,938 in 1960. The higher return is due primarily to the more favorable price for feeder cattle in 1962 than in the preceding years. The returns to the "five high" is very little different in 1962 from that for the "five low." This means that the "five low" offset by increased

numbers, their lower returns per cow. In a relatively favorable year such as 1962, this is a possibility. It is evident then that total returns are high or low depending on both returns per cow and the number of cows. A separation of this return between that for operator's labor, total capital and land is discussed on pages 8 to 12.

In calculating the return to capital and to operator's labor, costs or charges include:

1. All cash farm expenses
2. Depreciation on machinery, buildings and improvements
3. Decrease in inventory value of livestock
4. Decrease in inventory value of crops and supplies
5. The value of family labor other than operator at man's wages

The income items are:

1. All cash farm income
2. Increase in inventory value of livestock
3. Increase in inventory value of crops and supplies

Increase in inventory value usually represents livestock or crop value that was produced in the year but not sold. In contrast, decrease in inventory value is usually due to sales in excess of crops or livestock produced in the current year. If an increase in inventory value is shown under income, there will not be any decrease under expenses. Only one or the other will appear.

The methods used in preparing this report are identical to

those used for the year 1961 for this same group of ranches. For more detail on methods used and a definition of terms, see Idaho Agricultural Research Progress Report No. 73, Costs and Returns to Mountain Type Cattle Ranches in Central Idaho in 1961.

Data presented in the present report include the following material for the 24 ranches:

1. Size and capital investment
2. Incomes and costs per ranch
3. Incomes and costs per animal unit
4. Incomes and costs per cow
5. Factors affecting returns
6. Incomes and costs by size of ranch
7. Calculation of residual to operator's labor, total capital and land
8. Comparison of 1962 results with those for 1961 and 1960

Figures are given both per cow and per animal unit, since for some purposes one is preferable to the other. Since only two ranches are of the cow-yearling classification in 1962, no comparison is made between cow-calf and cow-yearling ranches this year.

The value used for land and grazing rights is $250 per animal unit as defined earlier in the study of carrying capacity. Present selling prices are considerably higher than this, ranging from $300 to $600 per animal unit and even higher than this in some cases. Ranchers consider that these values are inflated

and difficult to support on the basis of earnings. The more conservative value of $250 per animal unit is therefore used.

The average investment of these ranches as shown in Table 1 is $150,629. Some of the larger ranches represent an investment of $500,000 or more. This is a sizable investment, exceeding that of most small town businesses. The management of a business of this magnitude requires considerable management ability.

Table 1. SIZE OF RANCHES AND CAPITAL INVESTMENT, 1962

	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
Number of cows.....	_____	222	121	355
Number of animal units.....	_____	297	166	476
Summary of Capital Investment:				
Livestock.....	_____	$54,348	$24,412	$91,205
Machinery and power....	_____	12,659	6,902	23,532
Crops and supplies.....	_____	9,393	6,904	13,722
Total capital investment other than real estate.....	_____	76,400	43,218	128,459
Land and grazing rights at $250 per A.U. of carrying capacity.....	_____	74,229	42,500	118,750
TOTAL CAPITAL INVESTMENT.....	_____	150,629	85,718	247,209

Table 2. TOTAL INCOMES AND TOTAL COSTS PER RANCH, 1962

Cash Income	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
		$	$	$
Calves sold	____	15,787	10,082	22,171
Yearlings sold	____	5,870	2,437	9,060
Cows sold	____	3,121	1,910	3,860
Bulls sold	____	370	415	117
Other livestock or livestock products	____	697	723	822
Crops	____	325	583	88
Work off the farm	____	168	179	---
Miscellaneous income	____	353	185	407
TOTAL CASH INCOME (1)	____	26,691	16,514	36,525
Increase in inv. value of livestock	____	1,096	1,696	---
Increase in inv. value of crops and supplies	____	---	735	---
GROSS INCOME (2)	____	27,787	18,945	36,525
Cash Operating Expenses Per Ranch 1962				
Hired labor	____	2,483	910	4,138
Feed	____	1,393	810	1,411
Grazing fees and pasture rent	____	684	360	862
Crop expense (bale ties, seed, fertilizer, crop chemicals)	____	682	410	1,202
Repairs for machinery	____	1,044	471	1,825
Repairs for buildings and improvements	____	267	192	346
Fuel for farm use	____	1,320	660	2,186
Custom work hired	____	258	209	252
Farm share of auto expense	____	314	379	243
Livestock bought	____	633	349	834
Taxes on real estate & personal property	____	1,556	803	2,456
Insurance	____	365	180	704
Telephone and electricity (farm share)	____	349	200	502
Water assessment	____	65	41	42
Other expense	____	289	152	683
TOTAL CASH OPERATING EXPENSES (3)	____	13,935	7,556	19,537

Table 2. (continued)

	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
		$	$	$
Depreciation on machinery.....	_____	2,061	963	3,479
Depreciation on bldgs. and improvements.....	_____	939	427	1,770
Decrease in inv. value of livestock.....	_____	---	---	206
Decrease in inv. value of crops and supplies.....	_____	312	---	1,213
Value of family labor other than operator..	_____	647	90	270
TOTAL EXPENSES (4)...	_____	17,894	9,036	26,475
Measures of Return				
NET CASH INCOME (1) - (3).....	_____	12,756	8,958	16,988
RETURN TO CAPITAL AND TO OPERATOR'S LABOR (2) - (4).....	_____	9,893	9,909	10,051
TOTAL CAPITAL INVESTMENT.....	_____	150,629	85,718	247,209

Table 3. INCOMES AND COSTS PER ANIMAL UNIT, 1962

Cash Income	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
		$	$	$
Cattle sold.....	_____	87.32	93.97	75.45
Other livestock and livestock products...	_____	3.05	4.82	3.32
Crops.....	_____	1.75	4.51	.09
Work off the farm.....	_____	.68	1.26	----
Miscellaneous income...	_____	1.30	1.28	.88
TOTAL CASH INCOME (1)	_____	94.10	105.84	79.74
Increase in inv. value of livestock.....	_____	4.91	9.26	----
Increase in inv. value of crops and supplies.....	_____	.10	4.97	----
GROSS INCOME (2).....	_____	99.11	120.07	79.74
Cash Operating Expenses				
Hired labor.....	_____	7.26	5.40	9.15
Feed.....	_____	4.54	4.51	3.72
Grazing fees and pasture rent.....	_____	2.24	2.37	2.02
Crop expense.....	_____	2.79	2.56	3.01
Repairs for machinery..	_____	3.48	2.95	3.87
Repairs for buildings and improvements.....	_____	.89	1.06	.88
Fuel for farm use.....	_____	4.66	4.31	4.60
Custom work hired.....	_____	1.05	1.04	1.05
Farm share of auto expense.....	_____	1.29	2.39	.40
Livestock bought.....	_____	8.55	9.68	4.20
Livestock expense.....	_____	2.19	2.09	2.05
Taxes on real estate and personal property.....	_____	5.44	5.11	5.06
Insurance.....	_____	1.23	1.23	1.60
Telephone and electricity (farm share).	_____	1.26	1.36	0.90
Water assessment.....	_____	0.31	0.29	0.10
Other expenses.....	_____	0.79	0.81	1.31
TOTAL CASH OPERATING EXPENSES (3).....	_____	47.97	47.16	43.92

Table 3. (continued)

	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
		$	$	$
Depreciation on machinery.....	_____	6.91	5.96	8.12
Depreciation on bldgs. and improvements.....	_____	3.24	2.99	4.05
Decrease in inv. value of livestock.....	_____	---	---	2.83
Decrease in inv. value of crops and supplies.....	_____	---	---	1.90
Value of family labor other than operator..	_____	2.06	1.02	1.84
TOTAL EXPENSES (4)...	_____	60.18	57.13	62.66
Measures of Return				
NET CASH INCOME (1)-(3).....	_____	46.13	58.68	35.82
RETURN TO CAPITAL AND TO OPERATOR'S LABOR (2) - (4).....	_____	38.93	62.94	17.08
TOTAL CAPITAL INVESTMENT PER A.U...	_____	514	517	519

Table 4. INCOMES AND COSTS PER COW, 1962

Cash Income	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
		$	$	$
Cattle sold.....	_____	115.09	126.65	103.99
Other livestock and livestock products...	_____	4.15	6.44	4.33
Crops.....	_____	2.10	5.42	0.12
Work off the farm.....	_____	0.92	1.94	-----
Miscellaneous income...	_____	1.67	1.62	1.25
TOTAL CASH INCOME (1)	_____	123.93	142.07	109.69
Increase in inv. value of livestock.....	_____	6.10	11.74	-----
Increase in inv. value of crops and supplies.....	_____	-----	7.21	-----
GROSS INCOME (2).....	_____	130.03	161.02	109.69
Cash Operating Expenses				
Hired labor.....	_____	9.80	7.23	12.89
Feed.....	_____	6.14	6.32	5.21
Grazing fees and pasture rent.....	_____	3.00	3.27	2.49
Crop expense.....	_____	3.54	3.34	4.06
Repairs for machinery.....	_____	4.68	3.99	5.52
Repairs for bldgs. and improvements.....	_____	1.24	1.46	1.30
Fuel for farm use.....	_____	6.09	5.66	6.50
Custom work hired.....	_____	1.39	1.48	1.40
Farm share of auto expense.....	_____	1.65	3.07	0.56
Livestock bought.....	_____	10.98	12.65	5.14
Livestock expense.....	_____	2.86	2.66	3.10
Taxes on real estate and personal property.....	_____	7.11	6.67	6.93
Insurance.....	_____	1.61	1.61	2.20
Telephone and electricity (farm share).	_____	1.64	1.74	1.27
Water assessment.....	_____	0.40	0.37	0.14
Other expenses.....	_____	1.06	1.10	1.92
TOTAL CASH OPERATING EXPENSES (3).....	_____	63.19	62.62	60.63

Table 4. (continued)

	Your Ranch	Average of 24 Ranches	Average of 5 high	Average of 5 low
		$	$	$
Depreciation on machinery.....	_____	9.05	7.61	10.89
Depreciation on bldgs. and improvements.....	_____	4.27	3.81	5.73
Decrease in inventory value of livestock...	_____	-----	-----	4.30
Decrease in inventory value of crops and supplies.....	_____	-----	-----	3.90
Value of family labor other than operator..	_____	2.66	1.23	2.26
TOTAL EXPENSES (4)...	_____	79.17	75.27	87.71
Measure of Return				
NET CASH INCOME (1) - (3).....	_____	60.74	79.45	49.06
RETURN TO CAPITAL AND TO OPERATOR'S LABOR (2) - (4).....	_____	50.86	85.75	21.98
TOTAL CAPITAL INVESTMENT PER COW...	_____	683.00	708.00	702.00

Factors affecting returns are grouped in Table 5 under the headings of size, organization, rate of production, efficiency and selling price.

Table 5. FACTORS AFFECTING RETURNS

Size Factors	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
No. of animal units....	_____	297	166	476
No. of cows.....	_____	222	121	355
Total capital investment.....	_____	$150,629	$85,718	$247,209
No. of men.....	_____	2.0	1.3	2.8
Organization Factors				
Animal unit months of outside feed (BLM & FS) + rented pasture	_____	879	354	1,322
Animal unit months of outside feed per cow.	_____	3.7	3.1	3.8
Percent of year on outside feed.....	_____	24	18	25
Percent of gross income from cattle.....	_____	92	87	94
Percent of cow herd sold during the year.	_____	10	11	8
Rate of Production Factors				
Percent calf crop.....	_____	89	94	83
Pounds of beef produced per cow.....	_____	472	538	392
Average weight per calf sold.....	_____	444	490	421
Average weight per yearling sold.....	_____	662	683	656
Average weight per cow sold.....	_____	1,046	1,010	1,058
Average weight per bull sold.....	_____	1,428	1,503	1,270
Efficiency Factors				
Capital investment per cow				
Real estate.....	_____	$ 340	$ 359	$ 329
Personal property.....	_____	343	349	373
Total.....	_____	$ 683	$ 708	$ 702

Table 5. (continued)

	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
No. of cows per man....	_____	107	92	119
Gross income per cow...	_____	$130.03	$161.02	$109.69
Total expense per cow..	_____	79.17	75.27	87.71
Return to capital and to operator's labor per cow.....	_____	50.86	85.75	21.98
Marketing Efficiency				
Average selling price per cwt. calves.....	_____	29.14	29.72	28.86
Average selling price per cwt. yearlings...	_____	24.24	22.46	26.85
Average selling price per cwt. cows.....	_____	13.45	13.65	14.35
Average selling price per cwt. bulls.....	_____	16.70	19.21	12.43

THE EFFECT OF SIZE OF RANCH ON RETURNS

Incomes and costs for small, medium and large-sized ranches are given in Table 6. The residual to capital and operator's labor increases from $6,451 for the small ranches to $8,970 for the medium sized ranches and $12,831 for the large ranches.

Table 6. TOTAL INCOMES AND TOTAL COSTS BY SIZE OF RANCH, 1962

	Average of Small Ranches (Under 150 A.U.)	Average of Medium Ranches (150-300 A.U.)	Average of Large Ranches (Over 300 A.U.)
Number of ranches.....	5	10	9
Average number of cows.....	102	161	356
Average number of animal units.....	118	218	482
Incomes			
Cattle.....	$12,432	$17,395	$40,826
Other livestock.....	207	1,120	499
Other income.....	702	855	917
TOTAL CASH INCOME (1).....	$13,341	$19,370	$42,242

Table 6. (continued)

	Average of Small Ranches (Under 150 A.U)	Average of Medium Ranches (150-300 A.U.)	Average of Large Ranches (Over 300 A.U.)
	$	$	$
Increase in inv. value of livestock	947	821	1,485
Increase in inv. value of crops and supplies	---	552	---
GROSS INCOME (2)	14,288	20,743	43,727
Cash Operating Expenses			
Hired labor	284	1,397	4,912
Feed	253	1,134	2,314
Grazing fees and pasture rent	223	526	1,115
Crop expense	504	586	887
Repairs for machinery	338	793	1,716
Repairs for bldgs. and improvements	102	169	467
Fuel for farm use	664	992	2,048
Custom work hired	22	398	234
Farm share of auto expense	239	283	390
Livestock bought	1,861	825	4,003
Livestock expense	313	408	1,062
Taxes on real estate and personal property	785	1,128	2,459
Insurance	143	245	622
Telephone and electricity (farm share)	170	307	496
Water assessment	33	103	41
Other expenses	62	89	637
TOTAL CASH OPERATING EXPENSE (3)	5,996	9,383	23,403
Depreciation on machinery	879	1,420	3,429
Depreciation on bldgs. and improvements	483	543	1,634
Decrease in inv. value of livestock	---	---	---
Decrease in inv. value of crops and supplies	74	---	1,405
Value of family labor other than operator	405	427	1,025
TOTAL EXPENSE (4)	7,838	11,773	30,896

Table 6. (continued)

	Average of Small Ranches (Under 150 A.U.)	Average of Medium Ranches (150-300 A.U.)	Average of Large Ranches (Over 300 A.U.)
	$	$	$
Measures of Return			
NET CASH INCOME (1) - (3)...	7,345	9,987	18,839
RETURN TO CAPITAL AND TO OPERATOR'S LABOR (2) - (4).....	6,451	8,970	12,831
TOTAL CAPITAL INVESTMENT....	62,600	113,754	240,506
Gross income per cow.....	152.36	136.49	130.09
Total expense per cow.....	86.99	79.10	94.53
Return to capital and to operator's labor per cow..	65.37	57.39	35.56
Capital investment per cow..	612.19	717.12	685.34
Pounds of beef produced per cow.....	481	482	456

Calculation of Residual to Operator's Labor, Total Capital and Land

As presented in this report, returns are shown as a residual to operator's labor and capital. The returns to labor and capital can be separated only by making an assumed charge for either the farmer's labor or for his capital. These assumed charges may not represent the true earnings of the labor or the capital. Usually they are estimated at the cost of hiring the labor, or at the interest paid on loans on farm property. In a sense this is incorrect, since a farmer's labor and capital get what they earn, not what is customarily paid for them. Still, many like to know the earnings of the farmer's labor or the returns he gets on his capital, and this is the only way it can be estimated.

Three separations of the return to the rancher's labor and capital follow. These are for:

1. Operator's labor income
2. Rate earned on total investment
3. Value of land based on income

The operator's labor income is calculated by subtracting interest on the total investment from the return to the operator's labor and capital. An assumed interest charge of 5% is used. The calculations are made for the average, the "five high" and the "five low."

	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
Total capital investment (1).....	_____	$150,629	$85,718	$247,209
Return to operator's labor and capital (2)	_____	9,894	9,909	10,051
Interest on total investment @ 5% (3).	_____	7,531	4,286	12,360
Operator's labor income (2) - (3)....	_____	2,363	5,623	-2,309

If interest at 5% is deducted from the returns to operator's labor and capital, $2,363 remains for the average of the group as the return for their labor. The "five high" receive almost $8,000 more for their labor than the "five low," with the assumptions made.

The rate earned on total investment is calculated by subtracting an allowance of $4,000 for the operator's labor from the return to operator's labor and capital and dividing the remainder by the average total investment. The calculations follow.

	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
Return to operator's labor and capital (1)	_____	$9,894	$9,909	$10,051
Less allowance for operator's labor (2).	_____	4,000	4,000	4,000
Return to capital (3)..	_____	5,894	5,909	6,051
TOTAL CAPITAL INVESTMENT (4).....	_____	150,629	85,718	247,209
Rate earned on total investment (3) - (4).	_____	3.9%	6.9%	2.4%

If an allowance of $4,000 for the operator's labor is assumed, the remainder represents a return of 3.9% on the capital investment for the average of the ranches. This is the return on all forms of capital, including both real estate and personal property. A conservative value is used on real estate, ($250 per head of carrying capacity) so the return would be less if present selling prices were used.

The value of land based on income is determined by deducting charges except interest on the real estate investment to obtain the earnings of the land resource. These earnings are then capitalized at an assumed rate of 5% to determine the capital value of the land based on income. The calculations are again made for the average of the group and for the "five high" and the "five low."

	Your Ranch	Average of 24 ranches	Average of 5 high	Average of 5 low
Return to operator's labor and capital (1)	_____	$9,894	$9,909	$10,051
Allowance for operator labor (2).....	_____	4,000	4,000	4,000
Interest on inv. value of livestock, machinery, crops, and supplies @ 5% (3).	_____	3,820	2,161	6,423
Return to capital in real estate (1) - (2) - (3).....	_____	2,074	3,749	-372
Capitalized value of return to real estate (using 5% rate) (4).....	_____	41,480	74,980	No residual
Animal units of carrying capacity (5)....	_____	297	170	to real
Value of real estate per animal unit of carrying capacity (4-5)	_____	140	441	estate

The higher prices for cattle in 1962 are reflected in a higher value of land if the residual to land is capitalized. The value increases from $58 per animal unit of carrying capacity in 1961 to $140 in 1962 for the average of the group. Present selling prices are still from $300 to $600 per animal unit of carrying capacity -- considerably higher than the value of the land based on income with the assumptions made. Note however that the "five high" have a residual to land that would enable them to pay $441 per animal unit of carrying capacity for their land. In contrast, the "five low" have no residual to land and could not pay anything for it. It is apparent then that real estate is worth more to some operators than to others. The ranchers with the higher returns can pay more for land than those with lower returns. One must realize that the value of these ranches as calculated

would be different if any of the following assumptions were varied:

1. An assumed value of $4,000 for the operator's labor.
2. A capitalization rate of 5% for the return to capital in real estate.
3. An assumption that 1962 returns represent those for the future accurately (since the value of land is stated to be the present value of all of the future incomes to land).
4. An assumed interest rate of 5% on the value of livestock, machinery, crops, and supplies.
5. An assumed value of $225 per month for unpaid family labor other than operator.

The value obtained for real estate is correct only if these five assumptions are correct.

All calculations made ignore any increase in the value of real estate as a possible income, since such increases are not assured. Land values have risen in some periods and fallen in others. This is just one of the elements of uncertainty that are part of the farming business.

The averages for the ranches cooperating in 1962 are compared with the results for 1961 and 1960 in Table 7. The final figures for 1961 are revised slightly here from those appearing in the report for that year.

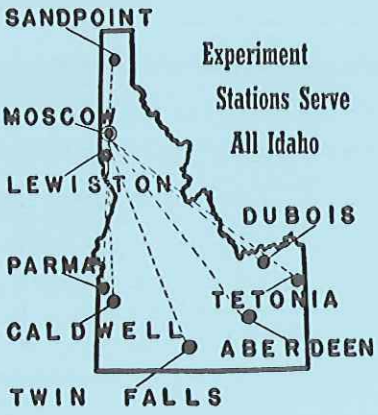
Table 7. COMPARISON OF 1962 RESULTS WITH THOSE FOR 1960 & 1961

	1960	1961	1962
Number of ranches	24	29	24
Number of cows per ranch	241	221	222
Number of animal units per ranch	331	299	297
Capital investment other than real estate per ranch	$79,923	$73,891	$76,400
Capital investment in real estate per ranch	82,734	74,810	74,229
The capital investment per ranch	162,657	148,701	150,629
Gross income per ranch	28,018	27,333	27,787
Total expenses per ranch	19,080	18,554	17,893
Return to operator's labor and capital per ranch	8,938	8,779	9,894
Net cash income per ranch	12,047	10,495	12,757
Gross income per A.U.	84.66	94.48	99.11
Total expenses per A.U.	57.65	63.49	60.18
Return to operator's labor and capital per A.U.	27.01	30.99	38.93
Net cash income per A.U.	36.41	36.67	46.13
Capital investment per A.U.	491.00	501.00	514.27
Gross income per cow	116.43	125.36	130.03
Total expenses per cow	79.28	83.88	79.17
Return to operator's labor and capital per ccw	37.15	41.48	50.86
Net cash income per cow	50.06	48.04	60.74
Capital investment per cow	676.00	671.00	683.35
AUM outside feed per cow	4.3	4.4	3.7
Percent gross income from cattle	96	93	92
Percent cow herd sold during year	11	10	10
Percent calf crop	89	92	89
Pounds of beef produced per ranch	115,439	97,420	101,364
Pounds of beef produced per cow	479	457	472
Number of cows per man	108	111	107
Weight per calf sold	442	445	444
Weight per yearling sold	654	661	662
Weight per cow sold	1,098	1,056	1,046
Weight per bull sold	1.456	1,461	1,428
Selling price per cwt. calves	$24.78	$25.75	$29.14
Selling price per cwt. yearlings	22.18	21.90	24.24
Selling price per cwt. cows	12.77	13.03	13.45
Selling price per cwt. bulls	16.88	18.01	16.70
Returns to operator's labor and capital by size of ranch			
Small ranches (less than 150 A.U.)	$ 2,337	$ 4,460	$ 6,452
Medium sized ranches (150-300 A.U.)	6,086	6,915	8,970
Large ranches (more than 300 A.U.)	15,356	12,646	12,832

THANK YOU!

This study could not have been made without the cooperation of the participating ranchers of Lemhi and Custer Counties and the assistance of County Agents Russell Hillman and Philip Edwards. The very excellent assistance received from all persons concerned has been invaluable in the conduct of the study.

Econ



Idaho Agricultural Research

Progress Report

To: Wilson Gray
From: Bob Lovell

NO. 106
July 1965

COSTS AND RETURNS TO MOUNTAIN-TYPE CATTLE RANCHES IN CENTRAL IDAHO IN 1963

A Phase of Idaho Experiment Station
Research Project No. S-426

by
ROLAND BEVAN

Agricultural Experiment Station

UNIVERSITY OF IDAHO

College of Agriculture

average for 1961. The average return to capital and operator's labor was $8,938 in 1960, $8,779 in 1961 and $9,894 in 1962. It appears that returns in years immediately following 1963 will continue low. These variations in return are due primarily to changes in the price of feeder cattle.

In 1963, the 5 most profitable ranches show a return to capital and labor of $9,390 which is over twice the return of $4,227 shown for the 5 least profitable ranches. Since the most profitable and the least profitable ranches are selected on the basis of returns to capital and labor per cow, the number of cows could be a further influence on returns. In this year, the 5 most profitable ranches kept an average of 149 cows, while the 5 least profitable kept 214 cows. So, the 5 most profitable ranches had twice the total return in spite of the fact they kept 30 percent fewer cows.

In the tables, the measure of return is the one described above--the return to capital and to operator's labor. Since some wish to know the estimated returns to capital, land and labor separately, this is discussed on pages 17 to 21. One can estimate the return to one of these resources only by assuming a charge for the others. This estimate is only as good as the assumed value for resources which are not considered as a residual.

In calculating the return to capital and to operator's labor, costs or charges include:

1. All cash farm expenses
2. Depreciation on machinery, buildings and improvements
3. Decrease in inventory value of livestock
4. Decrease in inventory value of crops and supplies
5. The value of family labor other than the operator at hired man's wages

The income items are:

1. All cash farm income
2. Increase in inventory value of livestock
3. Increase in inventory value of crops and supplies

Increase in inventory value usually represents livestock or crop value that was produced in the year but not sold. On the other hand, decrease in inventory value is usually due to sales in excess of crops or livestock produced in the current year. If an increase is shown under income, there will not be a decrease under expenses. Only one or the other will occur.

The methods used in preparing this report are identical to those used for the year 1961 for this same group of ranches. For more detail on methods used and definition of terms used, see Idaho Agricultural Research Progress Report No. 73, Costs and Returns to Mountain Type Cattle Ranches in Central Idaho in 1961.

Data presented in this report includes the following material for the 24 ranches:

1. Size and capital investment
2. Incomes and costs per ranch
3. Incomes and costs per animal unit
4. Incomes and costs per cow
5. Factors affecting returns
6. Incomes and costs by size of ranch
7. Calculation of residual to operator's labor, to total capital, and to land
8. Comparison of 1963 results with those for previous years

Figures are given both per cow and per animal unit, since for some purposes one is preferable to the other. Because only two ranches are in the cow-yearling classification in 1963, no comparison is made between cow-calf and cow-yearling ranches this year.

The value used for land and grazing rights is $250 per head of carrying capacity. Present selling prices are considerably higher than this, ranging from $300 to $600 per head and even higher in some cases. Ranchers consider that these values are inflated and difficult to support on the basis of earnings. The more conservative value of $250 per head is therefore used. This means that the returns to capital as shown are higher than they would be if present selling prices were used.

The average investment of these ranches as shown in Table 1 is $154,837. Some of the larger ranches represent an investment of $500,000 or more. This is a sizeable investment, far exceeding that of most small town businesses. The supervision of a business of this size requires a high order of management ability.

Table 1. SIZE OF RANCHES AND CAPITAL INVESTMENT, 1963

	Your Ranch	Average of 24 ranches	Average of 5 most profitable ranches	Average of 5 least profitable ranches
Number of cows.....	_____	231	149	214
Number of animal units.....	_____	307	189	299
Summary of Capital Investment:				
Livestock.....	_____	$56,285	$34,315	$56,914
Machinery and power....	_____	12,243	6,644	11,553
Crops and supplies.....	_____	9,121	6,641	7,805
Total capital investment other than real estate.....	_____	77,649	47,600	76,272
Land and grazing rights at $250 per A.U. of carrying capacity.....	_____	77,188	52,500	74,500
TOTAL CAPITAL INVESTMENT.....	_____	154,837	100,100	150,772

Table 2. TOTAL INCOMES AND TOTAL COSTS PER RANCH, 1963

Cash Income	Your Ranch	Average of 24 ranches	Average of 5 most profitable ranches	Average of 5 least profitable ranches
Calves sold	_____	$13,850	$ 8,206	$ 8,677
Yearlings sold	_____	5,994	5,456	7,497
Cows sold	_____	2,478	992	1,416
Bulls sold	_____	913	420	2,258
Other livestock or livestock products	_____	415	269	737
Crops	_____	126	5	63
Work off the farm	_____	189	240	86
Miscellaneous income	_____	459	244	295
TOTAL CASH INCOME(1)	_____	24,424	15,832	21,029
Increase in inv. value of livestock	_____	1,750	1,896	3,861
Increase in inv. value of crops and supplies	_____	516	1,930	---
GROSS INCOME (2)	_____	26,690	19,658	24,890
Cash Operating Expenses				
Hired labor	_____	2,411	425	3,856
Feed	_____	1,030	561	1,683
Grazing fees and pasture rent	_____	527	483	755
Crop expense (bale ties, seed, fertilizer, crop chemicals)	_____	734	202	574
Repairs for machinery	_____	1,002	480	1,153
Repairs for buildings and improvements	_____	201	318	255
Fuel for farm use	_____	1,292	557	1,314
Custom work hired	_____	270	151	185
Farm share of auto expense	_____	255	184	404
Livestock bought	_____	3,099	2,997	2,768
Livestock expense	_____	851	586	549
Taxes on real estate & personal property	_____	1,640	1,028	1,510
Insurance	_____	389	300	294
Telephone & electricity (farm share)	_____	318	206	250
Water assessment	_____	84	59	247
Other expense	_____	235	81	289
TOTAL CASH OPERATING EXPENSES (3)	_____	14,338	8,618	16,086

Table 2. (continued)

	Your Ranch	Average of 24 ranches	Average of 5 most profitable ranches*	Average of 5 least profitable ranches*
Depreciation on machinery.....	_____	$ 2,264	$ 1,006	$ 2,610
Depreciation on bldgs. and improvements.....	_____	1,025	554	1,439
Decrease in inv. value of livestock.....	_____	---	---	---
Decrease in inv. value of crops and supplies	_____	---	---	348
Value of family labor other than operator..	_____	516	90	180
TOTAL EXPENSES (4)...	_____	18,143	10,268	20,663
Measures of Return				
NET CASH INCOME (1)-(3)	_____	10,086	7,214	4,943
RETURN TO CAPITAL AND TO OPERATOR'S LABOR (2) - (4).....	_____	8,547	9,390	4,227
TOTAL CAPITAL INVESTMENT.....	_____	154,837	100,100	150,772

* Most profitable and least profitable ranches are on the basis of return to capital and to operator's labor per cow. This ignores the number of cows kept.

Table 3. INCOMES AND COSTS PER ANIMAL UNIT, 1963

Cash Income	Your Ranch	Average of 24 ranches	Average of 5 most profitable ranches*	Average of 5 least profitable ranches*
Cattle sold.....	_____	$74.81	$79.95	$61.82
Other livestock and livestock products....	_____	1.98	3.20	2.09
Crops.....	_____	.51	.03	.30
Work off the farm.....	_____	.96	2.03	.75
Miscellaneous income....	_____	1.51	1.50	.91
TOTAL CASH INCOME (1).	_____	79.77	86.71	65.87
Increase in inv. value of livestock.....	_____	7.39	5.38	17.64
Increase in inv. value of crops and supplies.....	_____	.74	6.19	---
GROSS INCOME (2).....	_____	87.90	98.28	83.51
Cash Operating Expenses				
Hired labor.....	_____	6.52	1.81	9.71
Feed.....	_____	3.35	2.71	4.91
Grazing fees and pasture rent.....	_____	1.81	2.64	2.44
Crop expense.....	_____	2.54	1.19	2.08
Repairs for machinery...	_____	3.27	2.79	3.35
Repairs for buildings and improvements.....	_____	.89	1.98	1.01
Fuel for farm use.....	_____	4.24	3.44	4.42
Custom work hired.....	_____	.91	1.07	.80
Farm share of auto expense.....	_____	1.13	1.16	2.11
Livestock bought.....	_____	10.17	9.05	11.55
Livestock expense.....	_____	2.92	3.36	2.07
Taxes on real estate and personal property.....	_____	5.51	5.97	4.75
Insurance.....	_____	1.22	1.13	.95
Telephone and electricity (farm share)..	_____	1.02	1.34	.80
Water assessment.....	_____	.29	.18	.95
Other expenses.....	_____	.73	.44	.95
TOTAL CASH OPERATING EXPENSES (3).....	_____	46.52	40.26	52.85

* Most profitable and least profitable ranches are on the basis of return to capital and to operator's labor per cow. This ignores the number of cows kept.

Table 3. (continued)

	Your Ranch	Average of 24 ranches	Average of 5 most profitable ranches*	Average of 5 least profitable ranches*
Depreciation on machinery.....	_____	$7.24	$5.59	$7.74
Depreciation on bldgs. and improvements.....	_____	3.65	3.43	5.14
Decrease in inv. value of livestock.....	_____	---	---	---
Decrease in inv. value of crops and supplies	_____	---	---	1.44
Value of family labor other than operator..	_____	1.42	1.07	1.62
TOTAL EXPENSES (4)...	_____	58.83	50.35	68.79
Measures of Return				
NET CASH INCOME (1) - (3).....	_____	33.25	46.45	13.02
RETURN TO CAPITAL AND TO OPERATOR'S LABOR (2) - (4).....	_____	29.07	47.93	14.73
TOTAL CAPITAL INVESTMENT PER A.U...	_____	508	517	503

* Most profitable and least profitable ranches are on the basis of return to capital and to operator's labor per cow. This ignores the number of cows kept.

Table 4. INCOMES AND COSTS PER COW, 1963

Cash Income	Your Ranch	Average of 24 ranches	Average of 5 most profitable ranches*	Average of 5 least profitable ranches*
Cattle sold	_____	$97.45	$100.65	$84.00
Other livestock and livestock products	_____	2.67	3.69	3.46
Crops	_____	.62	.04	.35
Work off the farm	_____	1.22	2.69	.97
Miscellaneous income	_____	2.06	2.11	1.15
TOTAL CASH INCOME (1)	_____	104.02	109.18	89.93
Increase in inv. value of livestock	_____	9.85	7.62	23.77
Increase in inv. value of crops and supplies	_____	.60	8.05	----
GROSS INCOME (2)	_____	114.47	124.85	113.70
Cash Operating Expenses				
Hired labor	_____	8.87	2.29	13.86
Feed	_____	4.26	3.64	6.44
Grazing fees and pasture rent	_____	2.36	3.34	3.28
Crop expense	_____	3.28	1.51	2.88
Repairs for machinery	_____	4.37	3.56	4.83
Repairs for bldgs. and improvements	_____	1.15	2.38	1.43
Fuel for farm use	_____	5.59	4.39	6.00
Custom work hired	_____	1.22	1.45	1.12
Farm share of auto expense	_____	1.45	1.39	2.79
Livestock bought	_____	12.83	11.32	14.42
Livestock expense	_____	3.80	4.27	2.95
Taxes of real estate and personal property	_____	7.24	7.44	6.68
Insurance	_____	1.58	1.44	1.24
Telephone and electricity (farm share)	_____	1.35	1.62	1.16
Water assessment	_____	.36	.25	1.16
Other expenses	_____	1.00	.53	1.17
TOTAL CASH OPERATING EXPENSES (3)	_____	60.71	50.82	71.41

* Most profitable and least profitable ranches are on the basis of return to capital and to operator's labor per cow. This ignores the number of cows kept.

Table 4. (continued)

	Your Ranch	Average of 24 ranches	Average of 5 most profitable ranches*	Average of 5 least profitable ranches*
Depreciation on machinery	_____	$ 9.42	$ 6.79	$ 10.79
Depreciation on bldgs. and improvements	_____	4.73	4.16	6.84
Decrease in inventory value of livestock	_____	----	----	----
Decrease in inventory value of crops and supplies	_____	----	----	3.23
Value of family labor other than operator	_____	1.95	1.23	2.09
TOTAL EXPENSES (4)	_____	76.81	63.00	94.36
Measure of Return				
NET CASH INCOME (1) - (3)	_____	43.31	58.36	18.52
RETURN TO CAPITAL AND TO OPERATOR'S LABOR (2) - (4)	_____	37.66	61.85	19.34
TOTAL CAPITAL INVESTMENT PER COW	_____	670	662	697

* Most profitable and least profitable ranches are on the basis of return to capital and to operator's labor per cow. This ignores the number of cows kept.

Factors affecting returns are grouped in Table 5 under the heading of size, organization, rate of production, efficiency and selling price.

Table 5. FACTORS AFFECTING RETURNS

Size Factors	Your Ranch	Average of 24 ranches	Average of 5 most profitable ranches*	Average of 5 least profitable ranches*
No. of animal units.....	_____	307	189	299
No. of cows.....	_____	231	149	214
Total capital investment.....	_____	$154,837	$100,100	$150,772
No. of men.....	_____	1.8	1.2	1.9
Organization Factors				
Animal unit months of outside feed (BLM & FS) + rented pasture.....	_____	907	763	1,030
Animal unit months of outside feed per cow..	_____	3.6	4.2	4.8
Percent of year on outside feed.....	_____	24	27	31
Percent of gross income from cattle.....	_____	91	87	93
Percent of cow herd sold during the year..	_____	8	7	6
Rate of Production Factors				
Percent calf crop.....	_____	89	92	91
Pounds of beef produced per cow.....	_____	480	505	531
Average weight per calf sold.....	_____	444	454	433
Average weight per yearling sold.....	_____	631	679	626
Average weight per cow sold.....	_____	1,059	996	1064
Average weight per bull sold.....	_____	1,445	1369	1431
Efficiency Factors				
Capital investment per cow.....	_____			
Real estate.....	_____	$337	$345	$351
Personal property.....	_____	333	317	346
Total.....	_____	$670	$662	$697

* Most profitable and least profitable ranches are on the basis of return to capital and to operator's labor per cow. This ignores the number of cows kept.

Table 5. (continued)

	Your Ranch	Average of 24 ranches	Average of 5 most profitable ranches	Average of 5 least profitable ranches
No. of cows per man.....	_____	123	127	111
Gross income per cow....	_____	$114.47	$124.85	$113.69
Total expense per cow...	_____	76.81	63.00	94.36
Return to capital and to operator's labor per cow.....	_____	37.66	61.85	19.33
Marketing Efficiency				
Average selling price per cwt. calves.....	_____	24.97	24.30	24.27
Average selling price per cwt. yearlings....	_____	22.64	20.98	23.11
Average selling price per cwt. cows.....	_____	12.50	11.71	13.35
Average selling price per cwt. bulls.....	_____	17.15	15.59	14.86

THE EFFECT OF SIZE OF RANCH ON RETURNS

Incomes and costs for small, medium and large-sized ranches are given in Table 6. The residual to capital and operator's labor increases from $3,987 for the small ranches to $5,603 for the medium sized ranches and $12,764 for the large ranches.

Table 6. TOTAL INCOMES AND TOTAL COSTS BY SIZE OF RANCH, 1963

	Average of Small Ranches (Under 150 A.U.)	Average of Medium Ranches (150-300 A.U.)	Average of Large Ranches (Over 300 A.U.)
Number of ranches.....	5	8	11
Average number of cows.....	98	160	342
Average number of animal units.....	119	211	461
Incomes			
Cattle.....	$9,542	$13,940	$36,218
Other livestock.....	285	505	409
Other income.....	309	795	971
TOTAL CASH INCOME (1).....	$10,136	$15,240	$37,598

Table 6. (continued)

	Average of Small Ranches (Under 150 A.U.)	Average of Medium Ranches (150-300 A.U.)	Average of Large Ranches (Over 300 A.U.)
	$	$	$
Increase in inv. value of livestock	1,320	2,362	1,501
Increase in inv. value of crops and supplies	---	---	1,551
GROSS INCOME (2)	11,456	17,602	40,650
Cash Operating Expenses			
Hired labor	167	1,165	4,336
Feed	339	611	1,649
Grazing fees and pasture rent	260	376	758
Crop expense	426	495	1,047
Repairs for machinery	394	679	1,512
Repairs for bldgs. and improvements	106	224	228
Fuel for farm use	605	892	1,895
Custom work hired	98	214	389
Farm share of auto expense	278	171	304
Livestock bought	1,137	2,352	4,534
Livestock expense	438	587	1,231
Taxes on real estate and personal property	708	1,134	2,433
Insurance	106	283	596
Telephone and electricity (farm share)	129	185	501
Water assessment	5	110	102
Other expenses	69	73	427
TOTAL CASH OPERATING EXPENSE (3)	5,265	9,551	21,943
Depreciation on machinery	879	1,570	3,398
Depreciation on bldgs. and improvements	611	570	1,543
Decrease in inv. value of livestock	---	---	---
Decrease in inv. value of crops and supplies	444	308	---
Value of family labor other than operator	270	---	1,002
TOTAL EXPENSE (4)	7,469	11,999	27,886

Table 6. (continued)

	Average of Small Ranches (Under 150 A.U.)	Average of Medium Ranches (150-300 A.U.)	Average of Large Ranches (Over 300 A.U.)
Measures of Return			
NET CASH INCOME (1) - (3).....	$ 4,871	$ 5,689	$ 15,655
RETURN TO CAPITAL AND TO OPERATOR'S LABOR (2) - (4).	3,987	5,603	12,764
TOTAL CAPITAL INVESTMENT.....	60,589	107,879	231,828
Gross income per cow.....	122.44	113.87	123.77
Total expense per cow.....	81.36	76.58	87.91
Return to capital and to operator's labor per cow.....	41.08	37.27	35.86
Capital investment per cow.....	619	678	688
Pounds of beef produced per cow.....	485	468	487

Calculation of Residual to Operator's Labor, Total Capital and Land

As presented in this report, returns are shown as a residual to operator's labor and capital. The returns to labor and capital can be separated only by making an assumed charge for either the farmer's labor or for his capital. These assumed charges may not represent the true earnings of the labor or the capital. Usually they are estimated at the cost of hiring the labor, or at the interest paid on loans on farm property. In a sense this is incorrect, since a farmer's labor and capital get what they earn, not what is customarily paid for them. Still, many like to know the earnings of the farmer's labor or the returns he gets on his capital. These can only be calculated by estimating a charge for either one of these resources or the other.

Three separations of the return to the rancher's labor and capital follow. These are for:

1. Operator's labor income
2. Rate earned on total investment
3. Value of land based on income

The operator's labor income is calculated by subtracting interest on the total investment from the return to the operator's labor and capital. An assumed interest charge of 5% is used. The calculations are made for the average, the five most profitable and the five least profitable ranches.

	Your Ranch	Average of 24 ranches	Average of 5 most profitable ranches	Average of 5 least profitable ranches
Total capital investment (1).....	_____	$154,837	$100,100	$150,772
Return to operator's labor and capital (2)	_____	8,548	9,390	4,227
Interest on total investment @ 5% (3)..	_____	7,742	5,005	7,538
Operator's labor income (2) - (3).....	_____	806	4,385	-3,311

If interest at 5% is deducted from the returns to operator's labor and capital, $806 remains for the average of the group as the return for their labor. The five most profitable receive $7,696 more for their labor than the five least profitable with the assumptions made.

The rate earned on total investment is calculated by subtracting an allowance of $4,000 for the operator's labor from the return to operator's labor and capital and dividing the remainder by the average total investment. The calculations follow.

	Your Ranch	Average of 24 ranches	Average of 5 most profitable ranches	Average of 5 least profitable ranches
Return to operator's labor and capital (1)	_____	$8,548	$9,390	$4,227
Less allowance for operator's labor (2).	_____	4,000	4,000	4,000
Return to capital (3)..	_____	4,548	5,390	227
TOTAL CAPITAL INVESTMENT (4).....	_____	154,837	100,100	150,772
Rate earned on total investment (3) - (4).	_____	2.2%	4.0%	-.6%

If an allowance of $4,000 for the operator's labor is assumed, the remainder represents a return of 2.2% on the capital investment for the average of the ranches. This is the return on all forms of capital, including both real estate and personal property. A conservative value is used on real estate, ($250 per head of carrying capacity) so the return would be less if present selling prices were used.

The value of land based on income is determined by deducting charges except interest on the real estate investment to obtain the earnings of the land resource. These earnings are then capitalized at an assumed rate of 5% to determine the capital value of the land based on income. The calculations are again made for the average of the group and for the five most profitable and the five least profitable ranches.

	Your Ranch	Average of 24 ranches	Average of 5 most profitable ranches	Average of 5 least profitable ranches
Return to operator's labor and capital (1)	_____	$8,548	$9,390	$4,227
Allowance for operator's labor (2).....	_____	4,000	4,000	4,000
Interest on inv. value of livestock, machinery, crops, and supplies @ 5% (3)....	_____	3,882	2,380	3,814
Return to capital in real estate (1) - (2) - (3).....	_____	666	3,010	-3,587
Capitalized value of return to real estate (using 5% rate) (4).....	_____	13,340	60,200	No residual
Animal units of carrying capacity (5).....	_____	292	210	to real
Value of real estate per animal unit of carrying capacity (4-5).....	_____	46	287	estate

If the residual to land is capitalized, the average value of real estate per animal unit ranges from a low of $46 per animal unit to a high of $140 in the 1960-63 period. Present selling prices are still mostly from $300 to $600 per animal unit of carrying capacity--considerably higher than the value of the land based on income with the assumptions made. Note however that the five most profitable ranches have a residual to land that would enable them to pay $287 per animal unit of carrying capacity for their land. In contrast, the five least profitable have no residual to land and could not pay anything for it. It is apparent then that real estate is worth more to some operators than to others. The ranchers with the higher returns can pay more for land than those with lower returns. One must realize that the value of these ranches as calculated would be different if any of

the following assumptions were varied:

1. An assumed value of $4,000 for the operator's labor.
2. A capitalization rate of 5% for the return to capital in real estate.
3. An assumption that 1963 returns represent those for the future accurately (since the value of land is stated to be the present value of all of the future incomes to land).
4. An assumed interest rate of 5% on the value of livestock, machinery, crops, and supplies.
5. An assumed value of $225 per month for unpaid family labor other than operator.

The value obtained for real estate is correct only if these five assumptions are correct.

All calculations made ignore any increase in the value of real estate as a possible income, since such increases are not assured. Land values have risen in some periods and fallen in others. This is just one of the elements of uncertainty that are part of the farming business.

The averages for the ranches cooperating in 1963 are compared with the results for previous years in Table 7. The final figures for 1961 are revised slightly here from those appearing in the report for that year.

Table 7. COMPARISON OF 1963 RESULTS WITH THOSE FOR PREVIOUS YEARS

	1960	1961	1962	1963
Number of ranches	24	29	24	24
Number of cows per ranch	241	221	222	231
Number of animal units per ranch	331	299	297	307
Capital investment other than real estate per ranch	$79,923	$73,891	$76,400	$77,649
Capital investment in real estate per ranch	82,734	74,810	74,229	77,188
The capital investment per ranch	162,657	148,701	150,629	154,837
Gross income per ranch	28,018	27,333	27,787	26,690
Total expenses per ranch	19,080	18,554	17,893	18,142
Return to operator's labor and capital per ranch	8,938	8,779	9,894	8,548
Net cash income per ranch	12,047	10,495	12,757	10,087
Gross income per A.U.	84.66	94.48	99.11	87.90
Total expenses per A.U.	57.65	63.49	60.18	58.83
Return to operator's labor and capital per A.U.	27.01	30.99	38.93	29.07
Net cash income per A.U.	36.41	36.67	46.13	33.25
Capital investment per A.U.	491.00	501.00	514.27	507.57
Gross income per cow	116.43	125.36	130.03	114.47
Total expenses per cow	79.28	83.88	79.17	76.81
Return to operator's labor and capital per cow	37.15	41.48	50.86	37.66
Net cash income per cow	50.06	48.04	60.74	43.31
Capital investment per cow	676.00	671.00	683.35	670.14
AUM outside feed per cow	4.3	4.4	3.7	3.6
Percent gross income from cattle	96	93	92	91
Percent cow herd sold during year	11	10	10	8
Percent calf crop	89	92	89	89
Pounds of beef produced per ranch	115,439	97,420	101,364	110,583
Pounds of beef produced per cow	479	457	472	480
Number of cows per man	108	111	107	123
Weight per calf sold	442	445	444	444
Weight per yearling sold	654	661	662	631
Weight per cow sold	1,098	1,056	1,046	1,059
Weight per bull sold	1,456	1,461	1,428	1,445
Selling price per cwt. calves	$24.78	$25.75	$29.14	$24.97
Selling price per cwt. yearlings	22.18	21.90	24.24	22.64
Selling price per cwt. cows	12.77	13.03	13.45	12.50
Selling price per cwt. bulls	16.88	18.01	16.70	17.15
Returns to operator's labor and capital by size of ranch				
Small ranches (less than 150 A.U.)	$2,337	$ 4,460	$ 6,452	$ 3,986
Medium sized ranches (150-300 AU.)	6,086	6,915	8,970	5,602
Large ranches (more than 300 A.U.)	15,356	12,646	12,832	12,765

IN APPRECIATION

The author wishes to thank the cooperating ranchers in Custer and Lemhi counties for their friendly cooperation and their continuing interest in this project. They have furnished freely detailed information concerning their individual businesses and have cooperated in every way possible. This business analysis is of value because of that cooperation.

The advice and help of County Agents Russell Hillman and Philip Edwards, County Agents in Lemhi and Custer counties, has also been of much value in the operation of the project. They have given every support possible to the activities of the project.