

**Contribution  
of  
Federal Lands  
to  
Wyoming  
Range  
Livestock  
Production,  
1992**



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# Contribution of Federal Lands to Wyoming Range Livestock Production, 1992

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## SUMMARY

At the request of the range livestock industry, the Wyoming Department of Agriculture, and the Wyoming Governor's Office, ranchers utilizing federal grazing were surveyed during December, 1993. The purpose of this survey was to estimate the cost of production for ranchers utilizing Federal grazing during 1992. Data from 40 surveys were used to depict the range livestock industry in Wyoming. These data were used to depict three composite ranches: a 510 "cow" unit ranch based on all the surveys; a 400 mother cow cattle ranch based solely on cattle survey data; and a 5,000 ewe sheep ranch for Southwest Wyoming based solely on sheep data.

### COMPOSITE RANCH

The composite ranch based on all surveys reported 31.29 percent of the ranch's Animal Unit Month (AUM) requirements were met from Bureau of Land Management and U.S. Forest Service grazing. This average ranch had an estimated return to assets from ranch income of 1.92 percent as compared to 2.5 for all Wyoming farms and ranches and 4.2 for all U.S. farms and ranches. A 28.2 percent increase in the 1992 federal grazing fees from 1.92 to 2.46 would reduce net ranch income to zero for this ranch. The same ranch, through its cash production expenditures of \$242,262, generated \$504,188 of economic activity within Wyoming, including \$132,308 in wages and salaries. This ranch also supported 7.89 full-time equivalent jobs in the state economy.

Federal grazing fees are not the only cost increase ranchers possibly could incur. Should fuel prices return to 1980s price levels or interest rates increase back to mid-1980s levels, net ranch income could become negative.

### COMPOSITE CATTLE RANCH

The average range cattle ranch, based solely on cattle survey data, reported 27.41 percent of the ranch's AUM requirements were met from BLM and USFS grazing. The average ranch had an estimated return to assets of 2.00 percent as compared to 2.50 percent for all Wyoming farms and ranches and 4.2 for all U.S. farms and ranches. A 21.2 percent increase from the 1992 Federal grazing fees would reduce net ranch income to zero for this ranch.

The cash production expenses per AUM of range cattle, \$23.89, generated \$49.71 of economic activity in Wyoming, including \$13.05 of wages and salaries. Roughly 1,344 AUM would support one full-time equivalent job in the Wyoming economy. USFS and BLM range cattle AUM, 1.66 million state-wide in 1992, would generate \$82.75 million of economic output in Wyoming, including \$21.72 million of wages and salaries. USFS and BLM range cattle AUM would also support 1,239 full-time equivalent jobs in Wyoming.

### COMPOSITE SHEEP RANCH

The average range sheep ranch in Southwestern Wyoming, based solely on sheep survey data, reported 57.44 percent of the ranch's AUM requirements were met from BLM and USFS grazing. The average sheep ranch in Southwestern Wyoming had an estimated return to assets of 2.50 percent, the same as for all Wyoming farms and ranches but less than the 4.2 percent for all U.S. farms and ranches. A 22.3 percent increase from the 1992 Federal grazing fees would reduce net ranch income to zero for this ranch. A 25 percent decrease in wool incentive payments, 22.60 percent of the Southwestern sheep ranch's income in 1992, would reduce ranch income almost \$29,000.

The cash production expenses per AUM of range sheep, \$20.09, generated \$42.84 of economic activity in Wyoming, including \$11.69 of wages and salaries. Roughly 1,122 AUM would support one full-time equivalent job in the Wyoming economy. USFS and BLM range sheep AUM, 468,233 state-wide in 1992, would generate \$20.06 million of economic output in Wyoming, including \$5.47 million of wages and salaries. USFS and BLM range cattle AUM would also support 417 full-time equivalent jobs in Wyoming.

" from ranchers who produced both cattle and sheep were not used for the cattle, only ranch or the

Surveyed sheep only ranch. The survey design did not allow separation of sheep expense data from cattle expense data. This is why the return to assets for the cattle ranch and for the sheep ranch was slightly higher than for the composite ranch.

Depending on the availability of support funding, this project will be continuing on a yearly basis. The data that has been presented represents the 1992 production year and the surveyed ranches only. Care must be exercised should this data be used to represent previous or future production years.

## INTRODUCTION

Public lands grazing in general and the appropriate fee to charge for grazing on federal lands is a heavily debated topic in Wyoming and the West. Discussions held among the various interested parties over

The past year resulted in a request from the livestock industry, the Wyoming Department of Agriculture, and the Governor's office to develop up-to-date information on production costs of ranchers operating on public lands in Wyoming. This request was finalized in October of 1993 with an expressed urgency for the need of timely results. Production data for 1992 were collected statewide from Wyoming ranchers utilizing Federal lands during December of 1993.

A random sample of 200 ranchers with Federal grazing permits were mailed questionnaires on November 5 from Governor Sullivan with a reply card enclosed. Ranchers were interviewed by Cooperative Extension personnel and an agricultural industry representative at 13 locations throughout the state between November 30 and December 13. The short time frame and the time of year resulted in scheduling conflicts precluding many interested livestock producers from participating. Forty questionnaires were completed and provide the basis for the survey results. Data from the 40 ranches are used to depict the overall range livestock industry in Wyoming. These data were also used to depict three composite ranches. These include an average of the 40 surveyed ranchers which approximates a 510 "cow" unit ranch, a 400-mother-cow ranch based solely on cattle survey data, and a 5,000-ewe-sheep ranch for Southwest Wyoming based solely on sheep data.

## OVERALL SURVEY RESULTS

### RANCH TYPES

The survey data represents 2.5 percent of the cattle and 6.5 percent of the stock sheep in Wyoming. However, the data represents 6.0 percent of Federal AUM paid for by livestock producers in 1992. Table I shows the types of ranches that participated in the survey. Because some ranchers produce more than one type of livestock, the entries in *Table I* will sum to more than the number of surveys. Twenty-eight operators indicated calves were sold from their ranches and 15 ranches held their own calves to sell as yearlings. One stocker operation participated in this survey along with eight sheep producers and one ranch which sold two year-olds rather than calves and yearling marked the "Other" category.

Table 1. Types of Surveyed Ranches

OPERATION TYPE	NUMBER
Cow/Calf	28
Cow/Yearling	15
Stocker	1
Sheep	8
Other	1

## AUM Requirements

In 1992, these 40 ranches utilized 415,733 AILM of forage. One AUM is defined as the forage required by a 1,000 pound cow or five sheep for one month. One animal-unit (AU) is the forage requirements for a 1,000 pound cow or five sheep for one year, consisting of 12 AUM.

Table 2 shows the sources of AUM support on these 40 surveyed ranches. The AUM requirements were

divided into several sources: private pasture, government leases, supplemental winter feeding, and crop aftermath grazing. Private pasture and crop aftermath grazing were split into owned and leased AUM. Government leases were divided into State, USFS, BLM, and other federal government leases.

Government leases were the largest source of grazing, accounting for 153,741 AUM or 36.98 percent of all AUM required. BLM grazing supplied 23.01 percent, USFS 8.28 percent, State 3.16 percent, and other government, 2.53 percent of the total AUM required on the 40 ranches surveyed.

Private pasture supplied 147,197 AUM of grazing in 1992 on the ranches surveyed. Owned private pasture accounted for 27.54 percent of the total AUM required and leased private pasture accounted for 7.86 percent. Supplemental winter feeding supplied 92,954 (22.36 percent) and crop aftermath accounted for 21,881 (5.26 percent). Owned crop aftermath was 19,489 AUM and leased crop aftermath was 2,392 AUM.

Table 2. Surveyed Ranches AUM Sources, 1992.

	PERCENT OF TOTAL	AUM
Private Pasture:		
Owned	27.54%	114,499
Leased	7.86%	32,698
Total	35.40%	147,197
Government Leases:		
State Leases	3.16%	13,147
Forest Service Leases	8.28%	34,423
BLM Leases	23.01%	95,663
Other Gov't. Leases	2.53%	10,508
Total Government	36.98%	153,741
Supplemental Winter Feeding	22.36%	92,954
Crop Aftermath		
Owned	4.69%	19,489
Leased	0.58%	2,392
Total	5.26%	21,881
Total AUM Requirements, 1992	100.00%	415,773

## Crop Production

The surveyed ranches also produced 40,670 tons of crops in 1992 (see Table 3). Hay for supplemental winter feeding was the largest crop, 32,526 tons. Oats was the second largest crop, 4,577 tons, followed by feed barley (1,748 tons), other crops (1,444 tons), wheat (255 tons), and corn (120 tons). Other crops would include sorghum, sugar beets, dry beans, malt barley, etc.

Most of the crop production (hay, oats, barley, and corn production was used for livestock feed. Only wheat and other crops were sold for cash.)

Table 3. Surveyed Ranches Crop Production, 1992.

	TONS OF PRODUCTION	PERCENT
HAY	32,526	79.97%
WHEAT	255	0.63%
OATS	4,577	11.25%
BARLEY	1,748	4.30%
CORN	120	0.30%
OTHER CROPS	1,444	3.55%
<b>TOTAL</b>	<b>40,670</b>	<b>100.00%</b>

## Labor Requirements

Labor on the surveyed ranches was broken into several components (*see Table 4*). The three main components were total labor requirements, livestock labor requirements, and crop labor requirements. Each of these components were allocated into full-time unpaid family labor, full-time hired labor, part-time unpaid family labor, and part-time hired labor.

The surveyed ranches provided 158 full-time jobs with 43 unpaid and 115 paid. These ranches also provided 168 part-time jobs, 46 unpaid and 122 hired, with the 168 persons working 587.5 months. The 168 part-time jobs were the equivalent of 48.96 full-time jobs (587.5 months worked/ 12 months). The total number of full-time job equivalents provided by these 40 ranches equaled 206.96 with 55.83 unpaid and 151.13 hired.

Livestock production on these ranches required 45.75 full-time equivalent unpaid jobs and 128.46 full-time equivalent wage-receiving jobs. The actual job numbers were 18 full-time and 52 part-time unpaid jobs and 83 full time and 94 part-time wage-receiving jobs.

Crop production required 32.75 full-time equivalent jobs on the surveyed ranches during 1992. The actual number of jobs were four full-time and 124 part-time.

Table 4. Surveyed Ranches Labor Requirements, 1992.

### Total Labor Requirements

	<u>Full-Time</u> <u>Number</u>	<u>Part-time</u> <u>Number</u>	<u>Months</u>	<u>FTE</u>
Unpaid Family Labor	43	46	154.00	12.83
Hired Labor	115	122	433.50	36.13
Total	158	168	587.50	48.96

### Livestock Labor Requirements

	<u>Full-Time</u> <u>Number</u>	<u>Part-time</u> <u>Number</u>	<u>Months</u>	<u>FTE</u>
Unpaid Family Labor	18	52	333.00	27.75
Hired Labor	83	94	545.50	45.46
Total	101	146	878.50	73.21

### Crops Labor Requirements

	<u>Full-Time</u> <u>Number</u>	<u>Part-time</u> <u>Number</u>	<u>Months</u>	<u>FTE</u>
Unpaid Family Labor	1	46	109.00	9.08
Hired Labor	3	78	236.00	19.67
Total	4	124	345.00	28.75

## Ranch Income

The total income for the 40 ranches surveyed was \$12.31 million in 1992, an average of \$307,904 per ranch. This includes all income sources such as livestock sales, other ranch-related income, off-ranch income, and other types of income.

Direct ranch-related income for these 40 ranches totaled \$11.1 million during 1992. The majority of this income was from cattle sales, \$8.2 million. Sheep sales, including wool, accounted for an additional \$1.9 million. Horse sales amounted to \$19,851. These livestock products totaled \$10.2 million. Other ranch income totaled \$954,150 and included wool incentive payments of \$667,081; pasture leases, \$88,060; hunting, \$11,049; home consumption of meat products, \$25,752; crop sales, \$152,529; mineral income, \$9,591; and timber, \$88. These figures are shown in *Table 5* on Page 6. Family living expenses were used as an estimate for a portion of unpaid family labor.

*Table 5. Surveyed Ranches Income, 1992.*

DESCRIPTION	AMOUNT	DESCRIPTION	\$\$ AMOUNT
Cattle:		Other Farm/Ranch Related Income	
Cows	1,355,766	Pasture Leases	88,060
Bulls	381,364	Hunting	11,049
Yearlings	2,945,325	Timber	88
2-year olds 556,028	Mineral	9,591	
Calves	2,976,815	Home Consumption	25,752
Total Cattle	8,215,298	Crops	152,529
		Other	667,081
Sheep:		Total Other Farm/Ranch Related Income	954,150
Ewes	183,505		
Rams	5,475	Total Ranch Income	11,082,253
Yearlings	29,220		
Lambs	1,349,690	Off-Ranch Income	
Wool	325,064	Wages/Salaries	262,765
Total Sheep	1,892,954	Investment, Interest	549,844
		Transfer Payments	88,907
Horses	19,851	Other Sources of Income	332,381
		Total Off-Farm/Ranch Income	1,233,897
Total Livestock Income	10,128,103	TOTAL INCOME 1992	12,316,150

## Ranch Expenses

Cash expenses during 1992 totaled \$9.69 million for the 40 ranches surveyed. Some of the larger expense items included purchased feed, \$1.30 million; grazing leases, \$669,059; livestock purchases, \$597,662; hired labor, \$1.65 million; taxes, \$667,799; fuel, \$408,773; interest, \$1.15 million; and repairs, \$505,159.

Non-cash expenses included unpaid family labor, owner management, and depreciation. Non-paid labor is the labor supplied by the owner/operator or family members who did not receive compensation in the form of wages, salaries, or family living allowance. Owner management is the dollar amount the operators' management skill is worth. The estimates for owner management and depreciation were made by the ranchers surveyed. Depreciation is often defined as the annual replacement cost of capital items such as equipment and livestock. Unpaid family labor was estimated at \$474,445, owner management, \$756,127, and depreciation, \$1.32 million.

The total of cash and non-cash expenses was \$12.2 million for the 40 ranches surveyed.

*Table 6. Surveyed Ranches Expenses, 1992.*

CASH EXPENSES	TOTAL	Interest	
Feed Purchased	\$1,303,449	Operating	\$348,065
Grazing leases		Other Non-Real Estate	\$48,723
Private Range	\$390,055	Real Estate	\$758,478
Private Crop Aftermath	\$9,816	Insurance	\$293,358
State	\$35,803	Custom Costs	\$328,845
Forest Service	\$66,095	(feeding, management services, etc.)	
Bureau of Land Management	\$183,673	Repairs	\$505,159
Other	\$27,039	Family Living Expenses (Withdrawals)	\$469,078
Total Leases	\$669,059	Marketing Expenses	\$68,005
Livestock Purchased	\$597,662	Fertilizer, Seed, Herbicides	\$205,110
Hired Labor	\$1,646,392	Other Expenses	\$412,070
Taxes		TOTAL CASH EXPENSES	\$9,690,486
Property	\$204,702		
Social Security	\$199,718	NON-CASH EXPENSES	
Income	\$214,574	Owner/Family Labor	\$474,445
Other	\$48,805	Owner Management	\$756,127
Vet & Medicine	\$236,473	Depreciation (including livestock)	\$1,321,412
Material & Supplies	\$314,983		
Electricity	\$189,724	TOTAL NON-CASH EXPENSES	\$2,551,984
Fuel	\$408,773		
Trucking	\$178,859	TOTAL EXPENSES	\$12,242,470

## Assets

The majority of these 40 ranchers' \$68.47 million in assets was land, \$33.45 million, and livestock, \$18.03 million, shown in *Table 7*. These two types of assets account for 75.17 percent of all assets. Also included in the asset total were buildings and improvements, \$5.61 million; tractors, \$4.09 million; vehicles, \$1.40 million; equipment for feeding and handling livestock, \$1.45 million; haying, tillage, and irrigating equipment, \$1.56 million; and Federal permit, \$1.26 million. The average total asset value per ranch was equal to \$1.71 million. All asset values except livestock were reported by those surveyed. Livestock values were calculated from inventory and sales information reported within the surveys.

*Table 7. Surveyed Ranches Asset Valuation, 12/31/92.*

## Net Returns

ASSET VALUATION, 12/31/92	TOTAL VALUE
Livestock	\$18,026,606
Building and Improvements	\$5,606,730
Tractors (loaders and/or crawlers)	\$4,092,737
Vehicles	\$1,403,943
Livestock/Feeding Equipment	\$1,454,074
Haying Equipment	\$855,138
Tillage/Planting Equipment	\$436,482
Irrigation Equipment	\$271,203
Land	\$33,445,103
Federal Permit	\$1,621,438
Other Assets	\$1,258,662
Total Assets	\$68,472,116

The rate of return on farm/ranch assets from current income was 4.2 percent for all farms and ranches in the U.S. and 2.5 percent for Wyoming's farms and ranches in 1991 (Erickson, et al). This is calculated by adding the net ranch cash income and the interest paid, then subtracting a value for operators's labor and management. This number is then divided by the asset valuation. Using this methodology, the surveyed ranchers' return to assets is 1.92 percent. This indicates, based on these 40 surveys, Wyoming ranchers utilizing federal grazing had returns to assets that are 23.2 percent lower than the average agricultural producer in Wyoming and 54.3 percent lower than the average agricultural producer in the nation.

## Production Cost Changes

Based on the 40 surveys, net ranch income (cash income less cash expenses less depreciation) amounted to \$70,355 with no allowance for unpaid family labor or owner/operator management. The charge for grazing livestock on Federal land is currently an issue. One contention is those utilizing Federal grazing should and could pay more for grazing their livestock on the Federal land. As shown previously, the rate of return for Wyoming producers grazing on Federal land is substantially lower than the average agricultural firm in Wyoming and the U.S. If federal grazing fees should increase 28.2 percent, from the 1992 level of \$1.92 to \$2.46 per AUM, net ranch income would be zero with no allowance for unpaid family labor or owner/operator management.

Other costs of production will also affect net ranch income. Interest rates are at their lowest point in several years and averaged 9.55 percent in 1992 on all outstanding debt (ERS, 1993). An increase in the interest rate on operating capital from 9.55 percent to 11.48 percent will reduce net ranch income to zero. This is assuming the relationship among intermediate and long term loans and all other costs and income remain constant. If the interest rates on all loans increased to 10.13 percent and all other costs remain constant, net ranch income would be reduced to zero. It is plausible for interest rates to increase to the indicated levels. In 1989, the average interest rate was 10.95 percent and in 1988, the average interest rate was 11.74 percent. This helps point out ranchers face possible production cost increases other than federal grazing fees.

## COMPOSITE RANCH

The following information approximates a 510 "cow" ranch and is based on the averages of all information contained in the 40 surveys. A "cow" unit includes replacement and breeding stock, stock held for sale such as yearlings and calves, and horses. This composite ranch is typical of Wyoming range livestock operations utilizing BLM and USFS grazing.

### AUM Sources

Table 8 shows the forage sources for the AUM required by this composite ranch. The ranch requires 10,394 total AUM which are supplied by various sources: private pasture, 35.40 percent; all government leases, 36.98 percent; winter feeding, 22.36 percent; and crop aftermath grazing, 5.26 percent. BLM and USFS grazing supply 31.29 percent of this composite ranch's grazing AUM.

Table 8. Composite Ranch AUM sources, 1992.

Per Ranch		Percent
Private Pasture: Owned	2,862	27.54%
Leased	817	7.86%
Total Private	3,680	35.40%
Government: State Leases	329	3.16%
USFS Leases	861	8.28%
BLM Leases	2,392	23.01%
Other Gov't Leases	263	2.53%
Total Government	3,844	36.98%
Supplemental Winter Feeding	2,324	22.36%
Crop Aftermath Owned	487	4.69%
Leased	60	0.58%
Total Aftermath	547	5.26%
Total AUM Requirements, 1992	10,394	100.00%

### Labor Requirements

The labor needed on this ranch has been split between unpaid family labor and hired labor, both for crops and livestock. Table 9 shows the labor requirements for this average ranch. The figures in Table 9 were calculated on a full-time job equivalent (FTE) basis. One FTE is 12 months of labor and can consist of one person working 12 months, two persons each working six months, etc.

This composite ranch required 5.17 FTE of labor, split between unpaid family labor (1.40) FTE and hired labor (3.77) FTE. Approximately 84.18 percent of this composite ranch's labor was utilized by livestock and 15.82 percent by crops.

*Table 9. Composite Ranch Labor Requirements, 1992.*

Total Labor Requirements	Percent		Per Ranch
Unpaid Family Labor		1.40	26.98%
Hired Labor		3.78	73.02%
Total		5.17	100.00%
Labor Requirements for Livestock			
Unpaid Family Labor		1.14	22.11%
Hired Labor		3.21	62.07%
Total		4.36	84.18%
Labor Requirements for Crops			
Unpaid Family Labor		0.25	4.87%
Hired Labor		0.57	10.95%
Total		0.82	15.82%

## Income

*Table 10* shows the income amount and sources for the composite ranch. Ranch income is divided into two components: livestock sales and other ranch income. Livestock income was the largest source of ranch income, 91.39 percent. Cattle (74.13 percent) and sheep (17.08 percent) were the two largest sources of ranch income. Wool incentive payments were the third largest source of ranch income and the largest source of "other ranch income. Ranch income totaled \$277,056 and was 89-98 percent of total income, \$307,904. Off-ranch income was approximately 10.02 percent of total income.

Table 10. Composite Ranch Income, 1992

DESCRIPTION	PER RANCH	PERCENT OF RANCH INCOME	PERCENT OF TOTAL INCOME
Cows	\$33,894	12.23%	11.01%
Bulls	\$9,534	3.44%	3.10%
Yearlings	\$73,633	26.58%	23.91%
2-year olds	\$13,901	5.02%	4.51%
Calves	\$74,420	26.86%	24.17%
Total Cattle	\$205,382		
Ewes	\$4,588	1.66%	1.49%
Rams	\$137	0.05%	0.04%
Yearlings	\$731	0.26%	0.24%
Lambs	\$33,742	12.18%	10.96%
Wool	\$8,127	2.93%	2.64%
Total Sheep	\$47,324	17.08%	15.37%
Horses	\$496	0.18%	0.16%
Total L/S Income	\$253,203	91.39%	82.23%
Other Farm/Ranch Related Income			
Pasture Leases	\$2,202	0.79%	0.71%
Hunting	\$276	0.10%	0.09%
Timber	\$2	0.000/0	0.00%
Mineral	\$240	0.09%	0.08%
Home Consumption	\$644	0.23%	0.21%
Crops	\$3,813	1.38%	1.24%
Other	\$16,677	6.02%	5.42%
Total Other Ranch	\$23,854	8.61%	7.75%
Total Ranch Income	\$277,056	100.00%	89.98%
Off-Ranch Income			
Wages/Salaries	\$6,569		2.13%
Investment, Interest	\$13,746		4.46%
Transfer Payments	\$2,223		0.72%
Other Sources of Income	\$8,310		2.70%
Total Off-Ranch Income	\$30,847		10.02%
TOTAL INCOME 1992	\$307,904		100.00%

## Expenses

Expenses for this ranch were divided into cash and non-cash expenses. Cash expenses include purchased inputs necessary for production such as labor, grazing leases, fuel, repairs, supplies, etc. Non-cash expenses include non-paid family labor, owner/operator management, and depreciation.

During 1992, all expenses totaled \$306,062 for the composite ranch with cash expenses being 79.1 percent and non-cash expenses being 20.85 percent. Hired labor (16.99 percent), purchased feed (13.45 percent), real estate interest (7.83 percent), and pasture leases (7.35 percent) were the four largest cash expense items. Depreciation accounted for a majority of non-cash expenses and was second to labor in total expenses.

Net cash ranch income (ranch income less cash expenses) amounted to \$34,794 for the composite ranch in 1992. These are the funds used for debt payment, capital replacement, etc. Net ranch income (ranch income less total expenses) amounted to a negative \$29,006 for 1992.

Table 11. Composite Ranch

Expenses, 1992.

	Percent Per Ranch	Percent Of Cash	Of Total
<b>CASH EXPENSES</b>			
Feed Purchased	\$32,586	13.45%	10.65%
Grazing leases			
Private Range	\$9,751	4.03%	3.19%
Crop Aftermath	\$245	0.10%	0.08%
State	\$895	0.37%	0.29%
USFS	\$1,652	0.68%	0.54%
BLM	\$4,592	1.901%	1.50%
Other	\$676	0.28%	0.22%
Total Leases	\$17,812	7.35%	5.82%
Livestock Purchased	\$14,942	6.17%	4.88%
Hired Labor	\$41,160	16.99%	13.45%
Taxes			
Property	\$5,118	2.11%	1.67%
Social Security	\$4,993	2.06%	1.63%
Income	\$5,364	2.21%	1.75%
Other	\$1,220	0.50%	0.40%
Vet & Medicine	\$5,912	2.44%	1.93%
Material & Supplies	\$7,875	3.25%	2.57%
Electricity	\$4,743	1.96%	1.55%
Fuel	\$10,219	4.22%	3.34%
Trucking	\$4,47	11.85%	1.46%
Interest			
Operating	\$8,702	3.59%	2.84%
Other Non-Real Estate	\$1,143	0.47%	0.37%
Real Estate	\$18,962	7.83%	6.20%
Insurance	\$7,334	3.03%	2.40%
Custom Costs	\$8,221	3.39%	2.69%
Repairs	\$12,629	5.21%	4.13%
Family Living Expenses	\$11,727	4.84%	3.83%
Marketing Expenses	\$1,700	0.70%	0.56%
Fertilizer, Seed, Herbicides	\$5,128	2.12%	1.68%
Other Expenses	\$10,302	4.25%	3.37%
<b>TOTAL CASH EXPENSES</b>	<b>\$242,262</b>	<b>100.00%</b>	<b>79.15%</b>
		Percent of	Percent
<b>NON-CASH EXPENSES</b>		<b>Non-Cash</b>	<b>Of Total</b>
Owner/Family Labor	\$11,861	18.59%	3.88%
Owner Management	\$18,903	29.63%	6.18%
Depreciation	\$33,035	51.78%	10.79%
<b>TOTAL NON-CASH EXPENSES</b>	<b>\$63,800</b>	<b>100.00%</b>	<b>20.85%</b>
<b>TOTAL EXPENSES</b>	<b>\$306,062</b>		<b>100.00%</b>

## Assets

Table 12 shows the composite ranch's asset valuation at the end of 1992. The total valuation of the ranch amounted to \$1.71 million, predominantly livestock and land. These two asset categories accounted for 75.17 percent of all assets. All asset values except livestock were reported by those surveyed. Livestock values were calculated from inventory and sales information reported within the surveys.

Table 12. Composite Ranch Asset Valuation, 12/31/1992.

	<u>Per Ranch</u>	<u>Percent</u>
Livestock	\$450,665	26.33%
Building and Improvements	\$140,168	8.19%
Equipment	\$212,839	12.43%
Land	\$836,128	48.84%
Federal Permit	\$40,536	2.37%
Other Assets	\$31,467	1.84%
Total Assets	\$1,711,803	100.00%

## Return to Assets

The USDA Economic Research Service Statistical Bulletin #857, U.S. and State Farm Sector Financial Ratios, 1960-91, shows the rate of return on farm/ranch assets from current income is 4.2 percent for all farms and ranches in the U.S. and 2.5 percent for Wyoming's farms and ranches in 1991. This is calculated by adding the net ranch cash income and interest paid, then subtracting a value for operators's labor and management. This number is then divided by the asset valuation. As shown for all surveyed ranches, this methodology yields a return to assets of 1.92 percent for the composite ranch. This composite ranch's return to assets was 23.2 percent lower than the average agricultural producer in Wyoming and 54.3 percent lower than the average agricultural producer in the nation.

## Production Cost Changes

Discussion has taken place indicating ranchers grazing livestock on BLM and USFS land can afford to pay more for this grazing. Net cash ranch income less depreciation for this composite ranch amounted to \$1,759 during 1992. In the same year, this composite ranch paid \$6,244 for grazing on BLM and USFS land. If the BLM and USFS grazing fee per AUM increased from its 1992 level of \$1.92 to \$2.46, 28.2 percent, net ranch income would become zero with no allowance for unpaid family labor or owner management.

Federal grazing fees are not the only cost increase ranchers possibly could incur. Should fuel prices return to 1980s price levels or interest rates increase back to 1980s levels, net ranch income could become negative.

## Economic Impact

Agriculture has a stabilizing effect on the Wyoming economy. Although prices received by producers fluctuate, total expenditures by producers remain surprisingly constant. For example, production expenditures by Wyoming farmers and ranchers varied less than six percent during an eight year period, 1980-87 (Moline et al). The consistency of production expenditures by farmers and ranchers helps provide stability to local Wyoming communities.

Production expenditures also stimulate the Wyoming economy. When purchases are made with a local business, that business must in turn make purchases from other business to provide goods for sale. The total economic effects of this re-spending can be estimated using input-output models developed for Wyoming (Moline).

The cash expenditures made by this composite ranch in 1992, \$242,262, generated an additional \$261,926 of additional output in the Wyoming economy for a total impact of \$504,188, including \$132,308 of wages and salaries. These expenditures also supported 7.89 full-time jobs in the local economy.

## 400 COW RANCH

This section of the report is based on surveys from ranchers that produced cattle only. The information is on a mature mother cow basis for a ranch that has a 400-cow-herd. Ranchers must have other types of cattle on the ranch to produce animals to be sold. Based on the surveys collected, a ranch that has a herd of 400 cows would also have 23 bulls, 193 yearling heifers and steers, 74 two-year-old heifers, 91 calves, and 17 horses at the beginning of the year.

## AUM Sources

Table 13 shows the sources of AUM forage for this case ranch. Private pasture, owned and leased, accounted for the largest amount of forage, 34.14 percent. Forage on government leases, including state, USFS, BLM and other government, supplied 33.57 percent of the total required by this ranch. Supplemental winter feeding accounted for 27.34 percent of the AUM with crop aftermath supplying less than five percent.

Table 13. Cattle Ranch AUM Sources, 1992.

	Per Cow	Total	Percent
Private Pasture:			
Owned	6.44	2,576	29.58%
Leased	0.99	398	4.56%
Total Private	7.43	2,974	34.14%
Government Leases:			
State	0.84	335	3.85%
USFS	1.46	584	6.71%
BLM	4.51	1,803	20.70%
Other Gov't. Leases	0.50	202	2.31%
Total Government	7.31	2,924	33.57%
Supplmtl. Winter Feeding	5.95	2,381	27.34%
Crop Aftermath	1.08	432	4.96%
Total AUM Requirements, 1992	21.77	8,710	100.00%

## Labor Requirements

Table 14 shows the labor requirements for this case ranch both on a per cow basis and for the entire ranch. The numbers in this table were calculated on a full-time job equivalent basis (one person working full-time for one full year). The labor has been split between livestock and crops for both unpaid family labor and hired labor.

Each cow requires labor from approximately 0.0095 full-time employees, split between family labor, 0.0036, and hired, 0.0059, for both livestock and crop production on the ranch. This translates into one full-time job for each 105 cows on the ranch. Livestock production requires the majority of the labor, 0.0074 full-time employees.

This 400-cow ranch requires 3.809 full-time employees, 1.4476 unpaid and 2.3613 hired. Approximately 2.978 of these employees are for livestock production and 0.8292 employees are for crop production.

Table 14. Cattle Ranch Labor Requirements, 1992.

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	Per Cow	Total
Total Labor Requirements		
Unpaid Family Labor	0.003619	1.447587
Hired Labor	0.005903	2.361342
Total	0.009522	3.808930
Labor Requirements for Livestock		
Unpaid Family Labor	0.003016	1.206323
Hired Labor	0.004434	1.773433
Total	0.007449	2.979756
Labor Requirements for Crops		
Unpaid Family Labor	0.000603	0.241265
Hired Labor	0.001470	0.587909
Total	0.002073	0.829174

## Income

The income shown in *Table 15* was calculated on a per cow and total ranch basis. Each cow supported \$580.39 of cattle sales, mostly yearlings and calves. Horse sales amounted to \$1.24 per cow making the livestock sales equal to \$581.63 per cow. Livestock sales for the ranch totaled \$232,651.

Most ranches have other sources of income other than livestock such as pasture leases, hunting, crop sales, etc. This case ranch had other ranch income totaling \$24.25 per cow and \$9,700 for the ranch. Total ranch income, the total of livestock sales and other ranch income, averaged \$605.88 per cow and totaled \$242,352 for the ranch.

Off-ranch income averaged \$68.84 per cow and amounted to \$27,534 for this 400-cow ranch. Total income, ranch income plus off-ranch income, averaged \$674.71 per cow.

*Table 15. Cattle Ranch Income, 1992.*

Description	Per Cow	Total
Cows	\$79.77	\$31,908
Bulls	\$24.88	\$9,942
Yearlings	\$239.11	\$95,644
2-year olds	\$30.67	\$12,270
Calves	\$205.98	\$82,392
Total Cattle	\$580.39	\$232,155
Horses	\$1.24	\$496
Total Livestock	\$581.63	\$232,651
Other Ranch Related Income		
Pasture Leases	\$4.43	\$1,771
Hunting	\$0.88	\$351
Timber	\$0.01	\$3
Mineral	\$0.79	\$317
Home Consumption	\$1.24	\$496
Crops	\$9.99	\$3,997
Other	\$6.91	\$2,765
Total Other Ranch	\$24.25	\$9,700
Total Ranch Income	\$605.88	\$242,352
Off-Ranch Income		
Wages/Salaries	\$18.90	\$7,560
Investment, Interest	\$42.87	\$17,148
Transfer Payments	\$7.07	\$2,827
Total Off-Ranch	\$68.84	\$27,534
TOTAL INCOME 1992	\$674.71	\$269,886

## Expenses

Cash and non-cash expenses for this 400-cow ranch are shown in *Table 16*. Cash expenses for purchased inputs such as labor, livestock, pasture leases, feed, etc. amounted to \$520.08 per cow and \$208,033 for the ranch during 1992. Net cash ranch income (cash ranch income less cash expenses) was \$85.80 per cow and \$34,319 for the ranch. However, net cash ranch income does not allow for unpaid family labor, owner/operator management, or capital replacement (depreciation), commonly referred to as non-cash expenses.

Total non-cash expenses was estimated at \$151.83 per cow. Non-cash expenses consist of unpaid **family labor, \$24.91**; owner management, \$43.55; and depreciation, \$83.36 per cow. Subtracting non-cash expenses from net-cash ranch income shows a loss of \$66.03 per cow.

Table 16. Cattle Ranch Expenses, 1992.

		Total	percent of ranch
Feed Purchased	\$73.86	\$29,543	10.99%
Grazing leases			
Private Range	\$16.33	\$6,534	2.43%
Private Crop Aftermath	\$0.57	\$228	0.08%
State	\$2.13	\$850	0.32%
Forest Service	\$3.04	\$1,216	0.45%
BLM	\$8.45	\$3,380	1.26%
Other	\$1.32	\$527	0.20%
Livestock Purchased	\$34.15	\$13,658	5.08%
Hired Labor	\$71.52	\$28,609	10.64%
Taxes			
Property	\$11.49	\$4,594	1.71%
Social Security	\$11.73	\$4,694	1.75%
Income	\$15.79	\$6,317	2.35%
Other	\$2.87	\$1,148	0.43%
Vet & Medicine	\$13.84	\$5,537	2.06%
Material & Supplies	\$16.51	\$6,604	2.46%
Electricity	\$11.40	\$4,562	1.70%
Fuel	\$22.74	\$9,095	3.38%
Trucking	\$7.44	\$2,977	1.11%
Interest			
Operating	\$15.88	\$6,352	2.36%
Other Non-Real Estate	\$2.54	\$1,016	0.381%
Real Estate	\$54.87	\$21,949	8.17%
Insurance	\$18.18	\$7,271	2.71%
Custom Costs	\$6.69	\$2,675	1.00%
(feeding, management services, etc.)			
Repairs	\$26.41	\$10,564	3.93%
Family Living Expenses	\$33.83	\$13,533	5.04%
Marketing Expenses	\$4.34	\$1,737	0.65%
Fertilizer, Seed, Herbicides	\$11.31	\$4,525	1.68%
Other Expenses	\$20.84	\$8,338	3.10%
TOTAL CASH EXPENSES	\$520.08	\$208,033	77.40%
NON-CASH EXPENSES			
Owner/Family Labor	\$24.91	\$9,966	3.71%
Owner Management	\$43.55	\$17,422	6.48%
Depreciation	\$83.36	\$33,343	12.41%
TOTAL NON-CASH EXPENSES	\$151.83	\$60,731	22.60%
TOTAL EXPENSES	\$671.91	\$268,764	100.00%

## Assets

Table 17 shows the asset value associated with this 400-cow ranch. Each cow required assets worth \$4,522.57 at December 31, 1992. The largest asset categories are land and livestock, which accounted for 50.2 percent and 27.7 percent, respectively. To run 400 cows, this ranch required assets worth \$1.81 million. All asset values except livestock were reported by those surveyed. Livestock values were calculated from inventory and sales information reported within the surveys.

Table 17. Cattle Ranch Asset Valuation, 12131192.

	PER COW	TOTAL	PERCENT
Livestock	\$1,252.15	\$500,858	27.69%
Building and Improvements	\$398.59	\$159,435	8.81%
Equipment	\$455.71	\$182,286	10.08%
Land	\$2,268.07	\$907,228	50.15%
Federal Permit	\$93.43	\$37,374	2.07%
Other Assets	\$54.62	\$21,849	1.21%
Total	\$4,522.57	\$1,809,029	100.00%

## Return to Assets

The USDA Economic Research Service Statistical Bulletin #857, U.S. and State Farm Sector Financial Ratios, 1960-91 shows the rate of return on farm/ranch assets from current income is 4.2-percent for all farms and ranches in the U.S. and 2.5 percent for Wyoming's farms and ranches in 1991. This is calculated by adding net ranch income and the interest paid, then subtracting a value for operator's labor and management. Adding interest paid back to net ranch income puts all producers on the same debt-free basis. Using the above methodology, the return to assets for this 400-cow ranch is 2.00 percent. This is 20 percent less than the rate for all agricultural producers in Wyoming and less than one-half that of the nation's average farmer/rancher.

## Production Cost Changes

Recently, discussion has taken place concerning the profitability of ranching and an appropriate fee to charge for grazing livestock on federal land. The following represents an attempt to estimate range cattle's profitability and ability to pay higher federal grazing fees for the 400-cow ranch.

Net cash ranch income less depreciation amounted to \$2.44 per cow in 1992. This amount represents the amount per cow available for debt service, unpaid family labor, and owner management. During 1992, USFS and BLM grazing fees paid totaled \$11.49 per cow. If grazing fees increased by 21.2 percent, from \$1.92 per AUM to \$2.33, net cash income less depreciation would be reduced to zero. This would leave nothing for debt payment, unpaid family labor, or management costs.

Increases in Federal grazing fees are not the only cost increases ranchers possibly face. Fuel prices are currently at much lower levels than a decade ago. In 1992, each cow required \$22.74 of fuel. Should fuel prices increase 10.7 percent, net ranch income less depreciation would be reduced to zero.

Interest rates are currently at their lowest point since the 1970s. Should interest rates increase to levels seen in the 1980s, net ranch income would be reduced to zero.

## Economic Impact

The range cattle sector helps stimulate and stabilize the Wyoming economy. This sector stimulates the economy because ranchers typically sell their livestock outside Wyoming and, their expenditures represent an injection of "new" money into the area. Stabilization occurs because ranchers must make purchase inputs, regardless of output prices. An economic model developed by the University of Wyoming Agricultural Economics Department allows estimations to be made regarding the effect one sector's expenditures have on the total economy's output, personal income, and employment.

The cash expenses required per cow, \$520.08 in 1992, generated an additional \$562.29 of output in the Wyoming economy for a total effect of \$1,082.37 in 1992. The total effect includes \$284.03 of wages and salaries paid to Wyoming residents. The cash expenses of approximately 62 cows would support one full-time job in the Wyoming economy.

USFS and BLM grazing accounted for roughly 27.41 (5.97 AUM) percent of the forage per cow. Assuming USFS and BLM grazing accounts for the same percentage of the economic impact associated with each cow, each BLM and USFS range cattle AUM would generate \$49.71 of output in the Wyoming economy, including \$13.05 of personal income. Roughly 1,344 AUM of forage used would support one full-time Wyoming job.

In 1992, 1.66 million AUM of cattle grazing were used on Wyoming's BLM and USFS land. Using the above figures, BLM and USFS AUM would generate \$82.75 million of output in the Wyoming economy, including \$21.72 million of personal income. These AUM would also support 1,239 full-time jobs within the state's economy.

## 5,000 EWE RANCH

The following information is based on a 5,000 ewe ranch located in Southwest Wyoming. The information will be presented on a Per Ewe and Total Ranch basis. The information is designed to be representative of Southwest Wyoming only, unlike the entire state as the "cow" unit and the cattle ranch.

### AUM Sources

Each ewe in southwest Wyoming required 4.75 AUM, 2.4 AUM for the ewe and 2.35 AUM for the other stock on the ranch, including rams, lambs, replacement ewes, and horses. This 5,000 ewe ranch required 23,729 AUM of forage during 1992. *Table 18* shows the different forage sources used to support the AUM requirements per ewe and for the entire 5,000-ewe ranch.

Government AUM accounted for 65.66 percent of all AUM with BLIVI AUM accounting for 39.41 percent and USFS AUM accounting for 18.03 percent of all AUM. Private pasture, owned and leased, accounted for 27.94 percent. The other two main categories of forage, supplemental winter feeding and crop aftermath grazed, accounted for 6.40 percent.

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*Table 18. Sheep Ranch AUM Sources, 1992.*

Animal-Unit-Month (AUM) Grazing Requirements, 1992

	Per Ewe	Total	Percent
Private Pasture:			
Owned	0.7771	3,885	16.37%
Leased	0.5488	2,744	11.56%
Total Private Pasture	1.3259	6,630	27.94%
Government Leases:			
State Leases	0.0868	434	1.83%
Forest Service Leases	0.8559	4,279	18.03%
Bureau of Land Management Leases	1.8701	9,351	39.41%
Other Government Leases	0.3032	1,516	6.39%
Total Government	3.1161	15,580	65.66%
Supplemental Winter Feeding	0.2629	1,315	5.54%
Crop Aftermath	0.0409	204	0.86%
Total AUM Requirements, 1992	4.7457	23,729	100.00%

### Labor Requirements

This 5,000-ewe ranch was much more labor intensive than the 500- "cow" unit ranch or the 400-cow ranch examined previously in this report. To operate on this scale and under Southwest Wyoming conditions, sheep ranchers utilize sheep herders, making this type of ranch's labor requirements higher. *Table 19* shows the labor requirements, in full-time job equivalents, required per ewe and for the entire ranch. One full-time job equivalent (FTE) is the equivalent of one person working full-time for one year, approximately 2,080 hours of labor. The actual number of jobs will be larger than shown in *Table 19* because many ranch jobs are seasonal in nature. For example, two persons working six months each would be considered one full-time job equivalent.

The labor on this ranch has also been divided between the labor required by crops and the labor required for livestock. Labor has also been split between unpaid family labor and hired labor.

Each ewe required 0.0033 FTE of labor for one year. This is divided between livestock labor, 0.0031 FTE, and crop labor, 0.0001 FTE. Livestock labor per ewe is split between unpaid family labor, 0.00006 FTE, and hired labor, 0.0031 FTE. Crop labor per ewe is split between unpaid family labor, 0.00001 FTE, and hired labor, 0.00013 FTE.

This 5,000-ewe ranch required 16.43 FTE of labor during 1992. This is split between unpaid family labor, 0.34 FTE, and hired labor, 16.43 FTE. The 15.69 FTE of livestock labor is split between unpaid family labor, 0.28 FTE, and hired labor, 15.41 FTE. The 0.74 FTE of crop labor is split between unpaid family labor, .057 FTE, and hired labor, 0.681 FTE.

*Table 19. Sheep Ranch Labor Requirements, 1992.*

	PER EWE	TOTAL
Unpaid Family Labor	0.000068	0.340553
Hired Labor	0.003218	16.091132
Total	0.003286	16.431685
Labor Requirements for Livestock		
Unpaid Family Labor	0.000057	0.283794
Hired Labor	0.003082	15.410026
Total	0.003139	15.693820
Labor Requirements for Crops		
Unpaid Family Labor	0.000011	0.056759
Hired Labor	0.000136	0.681106
Total	0.000148	0.737865

## Income

The majority of a ranch's income will usually be earned from the type of livestock and livestock products produced on that ranch, in this case sheep and wool. However, other ranch income sources should not be ignored. *Table 20* shows the 1992 income for this 5,000-ewe ranch. Livestock, including horses, and wool income totaled \$74.92 per ewe. Other ranch income, including pasture income, crop sales, and wool incentive payments, averaged \$2 7.48 per ewe. Total ranch income (livestock sales plus other ranch income) totaled \$102.40 per ewe. Off-ranch income averaged \$1.71 per ewe, making total income \$104.12 per ewe.

Total livestock income for this 5,000-ewe ranch amounted to \$374,621 with other ranch income adding an additional \$137,400. Adding these two amounts shows a total ranch income of \$512,020 for 1992. Off-ranch income adds an additional \$8,569, giving this ranch a total income of \$520,589.

*Table 20. Sheep Ranch Income, 1992.*

DESCRIPTION	PER EWE	TOTAL	% OF RANCH
Ewes	\$5.42	\$27,078	5.29%
Rams	\$0.20	\$987	0.19%
Yearlings	\$1.89	\$9,440	1.84%
Lambs	\$55.44	\$277,212	54.14%
Wool	\$11.93	\$59,650	11.65%
Horses	\$0.05	\$254	0.05%
Total	\$74.92	\$374,621	73.17%
OTHER RANCH RELATED INCOME			
Pasture Leases	\$2.37	\$11,865	2.32%
Crops	\$1.97	\$9,829	1.92%
Wool Incentive	\$23.14	\$115,705	22.60%
Total	\$27.48	\$137,400	26.83%
Total Ranch	\$102.40	\$512,020	100.00%
% OFF-RANCH INCOME			
OFF RANCH INCOME			
Investment	\$1.67	\$8,337	97.30%
Other Sources	\$0.05	\$232	2.70%
TOTAL	\$1.71	\$8,569	100.00%
TOTAL INCOME	\$104.12	\$520,589	

## Expenses

Expenses can be divided into two main categories: cash and non-cash. Cash expenses are the expenditures made for purchased production inputs such as feed, fuel, labor, supplies, repairs, etc. Non-cash expenses are those items that have a value but no money is actually spent on them. Non-cash expenses include unpaid family labor, owner management, and depreciation.

Cash expenses averaged \$95.36 per ewe and totaled \$476,818 for this ranch. Non-cash expenses averaged \$11.80 per ewe and totaled \$58,984 for the ranch. Net cash ranch income (cash ranch income less cash expenses) amounted to \$7.04 per ewe and \$35,202 for the ranch. Net ranch income (cash ranch income less total expenses) averaged negative \$4.76 per ewe and was negative \$23,782 for the ranch.

Table 2 1. Sheep Ranch Expenses, 1992.

CASH EXPENSES	Per Ewe	Total	Percent
Feed Purchased	\$7.09	\$35,44	6.61%
Grazing leases			
Private Range	\$2.30	\$11,48	22.14%
State	\$0.26	\$1,317	0.25%
Forest Service	\$1.66	\$8,282	1.55%
BLM	\$3.70	\$18,519	3.46%
Other	\$0.03	\$136	0.03%
Livestock Purchased	\$2.57	\$12,843	2.40%
Hired Labor	\$26.83	\$134,155	25.04%
Taxes			
Property	\$1.11	\$5,552	1.04%
Social Security	\$0.85	\$4,270	0.80%
Income	\$0.27	\$1,345	0.25%
Other	\$0.97	\$4,871	0.91%
Vet & Medicine	\$1.49	\$7,437	1.39%
Material & Supplies	\$4.65	\$23,272	4.34%
Electricity	\$1.86	\$9,315	1.74%
Fuel	\$3.62	\$18,105	3.38%
Trucking	\$2.25	\$11,250	2.10%
Interest			
Operating	\$7.03	\$35,137	6.56%
Other Non-Real Estate	\$1.04	\$5,177	0.97%
Real Estate	\$2.91	\$14,573	2.72%
Insurance	\$3.71	\$18,550	3.46%
Custom Costs	\$8.11	\$40,550	7.57%
(feeding, management services, etc.)			
Repairs	\$5.24	\$26,216	4.89%
Marketing Expenses	\$0.06	\$281	0.05%
Fertilizer, Seed, Herbicides	\$0.85	\$4,268	0.80%
Other Expenses	\$4.90	\$24,476	4.57%
<b>TOTAL CASH EXPENSES</b>	<b>\$95.36</b>	<b>\$476,818</b>	<b>8.99%</b>
<b>NON-CASH EXPENSES</b>			
Owner/Family Labor	\$0.82	\$4,087	0.76%
Owner Management	\$5.14	\$25,678	4.79%
Depreciation	\$5.84	\$29,219	5.45%
<b>TOTAL NON-CASH EXPENSES</b>	<b>\$11.80</b>	<b>\$58,984</b>	<b>11.01%</b>
<b>TOTAL EXPENSES</b>	<b>\$107.16</b>	<b>\$535,802</b>	<b>100.00%</b>

## Assets

Production agriculture tends to be a capital intensive industry, requiring a relatively high amount of assets per dollar of output. Table 22 shows the asset value for this 5,000-ewe Southwestern Wyoming ranch. Each ewe on this ranch required assets worth \$248.94. Most of this value is in livestock and equipment, \$77.80 and \$79.13, respectively. The asset value of the entire ranch totaled \$1.24 million. All asset values except livestock were reported by those surveyed. Livestock values were calculated from inventory and sales information reported within the surveys.

Table 22. Sheep Ranch Asset valuation, 72131192.

	Per Ewe	Total	Percent
Building and Improvements	\$11.60	\$57,990	4.66%
Livestock	\$77.80	\$388,986	31.25%

Equipment	\$79.13	\$395,660	31.79%
Land	\$63.79	\$318,944	25.62%
Federal Permit	\$11.09	\$55,435	4.45%
Other Assets	\$5.54	\$27,70	2.23%
Total Assets	\$248.94	\$1,244,716	100.00%

## Return to Assets

The USDA Economic Research Service Statistical Bulletin \*857, U.S. and State Farm Sector Financial Ratios, 1960-91, shows the rate of return on farm/ranch assets from current income is 4.2 percent for all farms and ranches in the U.S. and 2.5 percent for Wyoming's farms and ranches in 1991. This is calculated by adding net ranch cash income and the interest paid, then subtracting a value for operator's labor and management. This number is then divided by the asset valuation to obtain the rate of return to assets. Adding interest paid back to net ranch income puts all producers on the same debt-free basis. Using the above methodology, the return to assets for this 5,000-ewe ranch was 2.50 percent, the same as for the average farm and ranch in Wyoming. However, it must be remembered wool incentive payments will be reduced starting in 1994. Reduced wool incentive payments, 22.60 percent of total ranch income, will reduce net income and return to assets. A 25 percent reduction of wool incentive payments, at 1992 payment levels, will reduce this sheep ranch's ranch income \$28,926

## Production Cost Changes

Recently, discussion has taken place concerning the profitability of ranching and an appropriate fee to charge for grazing livestock on Federal land. The following represents an attempt to estimate range sheep's profitability and ability to pay higher Federal grazing fees.

Net cash ranch income less depreciation amounted to \$1.20 per ewe during 1992. This amount represents the amount per ewe available for debt service, unpaid family labor, and owner management. During 1992, USFS and BLM grazing fees paid per ewe amounted to \$5.36. Should grazing fees increase from the 1992 level of \$1.92 to 2.38, an increase of 22.3 percent, net ranch income would be reduced to zero, leaving this ranch no funds for debt payment, unpaid family Labor, or management costs.

Federal grazing fees are not the only expense that could increase and eliminate net income. Fuel prices are currently at lower levels than in 1980. During 1992, each ewe required \$3.62 of fuel. If fuel increased 33.1 percent, net income would be reduced to zero. If interest rates increase to those observed during the mid-1 980s, net income would be reduced to zero or become negative.

## Economic Impact

The range sheep sector helps stimulate and stabilize the Wyoming economy. This sector stimulates the economy because ranchers typically sell their livestock outside Wyoming and their expenditures represent an injection of "new" money into the area. Stabilization occurs because ranchers must make purchase inputs, regardless of output prices. An economic model developed by the University of Wyoming Agricultural Economics Department allows estimations to be made regarding the effect one sector's expenditures have on the total economy's output, personal income, and employment.

The cash expenses required per ewe, \$95.36 in 1992, generated an additional \$107.94 of output in the Wyoming economy for a total effect of \$203.30 in 1992. The total effect includes \$5 5.47 of wages and salaries paid to Wyoming residents. The cash expenses of approximately 236 ewes would support one full-time job in the Wyoming economy.

USFS and BLM grazing accounted for roughly 57.44 percent (2.73 AUM) of the forage per ewe. Assuming USIFS and BLIVI grazing accounts for the same percentage of the economic impact associated with each ewe, each sheep AUM of USFS and BLIVI grazing would generate \$42.84 of output in the Wyoming economy, including \$11.69 of personal income. Roughly 1,122 of forage used by sheep would support one full-time Wyoming job.

In 1992, 468,235 AUM of sheep grazing were used on Wyoming's BILM and USFS land. Using the above figures, BLM and USFSAUM would generate \$20.06 million of output in the Wyoming economy, including \$5.47 million of personal income. These AUM would also support 417 full-time jobs within the state's economy.

Depending on the availability of support funding, this project will be continuing on a yearly basis. The data that has been presented represents the 1992 production year and the surveyed ranches only. Care must be exercised should this data be used to represent previous or future production years.

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## APPENDIX

### Definitions

AUM is defined as forage requirement for a 1,000 pound animal for one month.

Animal Unit is equal to one 1,000 pound animal for 12 months. One animal unit equals five sheep.

"Cow" Unit includes all AUM utilized on the ranch based on the number of mature mother cows and ewes. A cow unit includes replacements, breeding stock, stock held for sale, and horses used in the ranching operation.

Depreciation is the annual replacement cost of capital items such as equipment and livestock.

Federal Lands in this report refers to Forest Service and Bureau of Land Management lands permitted for grazing.

Other federal lands includes Bureau of Reclamation and other federal lands where livestock grazing is authorized.

Home consumption is the consumption of ranch-raised livestock products such as beef or lamb.

Gross ranch income includes all income sources; livestock and livestock product sales including incentive payments, home consumption, crop income, mineral income, timber, hunting, and pasture lease.

Gross income is gross ranch income plus off ranch income.

Off-ranch income includes wages and salaries earned off the ranch, investment and interest income, and transfer payments.

Net ranch income is cash income less cash expenses less depreciation.

Net return is gross income less cash expenses less non-cash expenses.

Non-cash expenses include allocation for unpaid family labor, owner management, and depreciation.

Return to assets is net ranch income plus interest paid less unpaid family labor less allowance for owner management.