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Lease Survey**

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Private grazing lease rates are impacted by many factors. Factors affecting the supply (climate, alternative forage availability and others) and demand (livestock numbers and seasonal distribution) for forage interact to cause seasonal or annual changes in private grazing lease rates. In addition, past research has indicated that services provided by the private landlord (lessor) also impact lease rates. In an attempt to learn more about leasing arrangements for private forage, the Idaho Land Board authorized the Idaho Department of Lands to fund a study on private grazing lease arrangements in Idaho during the Fall and Winter of 1992. This paper summarizes research results from recent studies and the implications from this research to State Land grazing fees.

The objectives of the study were to:

1. Determine private grazing lease arrangements from lessor and lessee perspectives.
2. Determine private grazing lease rates by class of livestock, regions of the state, seasons of use and forage type.
3. Determine whether services provided by the lessor have an impact on grazing lease rates.
4. If lessor-provided services have an impact on lease rates, determine what services are significant and whether they can be valued to derive a base forage value that would be comparable with public lands.
5. Compare lease rates derived through this study with those from other surveys and published research.

### **Methods**

A sample of 1400 ranchers was randomly selected from lists provided by the Idaho Department of Agriculture, Idaho Cattle Association and the Idaho Wool Growers Association. A survey instrument was developed and tested in consultation with Idaho Department of Lands and livestock producers. A telephone survey was conducted in February/March of 1993 by the Social Survey Research Unit, College of Agriculture, University of Idaho. Data were collected through the use of computer-assisted telephone interviews. Ranchers were given the opportunity to schedule the interview and were allowed to skip any questions they preferred not to answer. Interviews were completed with 598 ranchers; 53 ranchers refused to participate, 640 did not hold leases for grazing land, and 109 could not be reached. The overall response rate was 88 percent.

Of the 598 completed interviews, 332 held leases containing private land. Since some ranchers held more than one lease containing private land, the total number of private land grazing leases was 552 (71 were lessor and 481 were lessee - 34 cases were both lessor and lessee).

### Private Grazing Lease Arrangements

#### Lease Rates

Landowners and lessees answered the same set of questions, however their answers varied. Only those cases that contained private land were selected for the cost per Animal Unit Month (AUM) calculation and further analysis. The costs per AUM from the lessor and lessee data were calculated using the total receipts or cost of the lease, number of days on the lease, and number and type of animals grazing the lease. The average cost per AUM for each data set is shown in Table 1.

Table 1. Average cost per AUM from landowner and lessee data sets

Data Source	Mean (\$)	Median (\$)	SD (\$)	Range (\$)	# Cases
<u>Landowner</u>	9.16	8.03	5.10	1.90-24.12	32
+/- 1sd	8.36	8.03	2.15	4.73-12.71	24
+/- 2sd	8.23	7.92	3.57	1.90-18.53	30
<u>Lessee</u>	9.33	9.18	6.65	.09-55.90	229
+/- 1sd	8.98	9.36	3.25	2.70-15.80	185
+/- 2sd	8.54	8.93	4.45	.09-22.54	222

In the case of the landowner data, there is a 75 percent chance of all leases falling within one standard deviation (+/- 1sd) from the mean, while there is a 94 percent chance of the leases falling within two standard deviations (+/- 2sd) of the mean. Thus, according to the landowner data, about 94 percent of the time lease rates will average \$8.23 per AUM.

The lessee data varies slightly because of an increased number of responses and the range of cost per AUM is much wider. There is an 81 percent chance that leases will fall within one standard deviation from the mean, and a 97 percent chance of the leases falling within two standard deviations of the mean. In this case, about 97 percent of the time lease rates will average \$8.54 per AUM. There is no significant difference between lessor and lessee responses on lease rates.

#### Livestock Use and Grazing Seasons

Landowners reported an average of 1,356 AUMs on a lease. Nearly 75 percent of the leases were less than 1000 AUMs and they ranged from 7 to 16,897 (n = 34). Average number of days on the lease was 135 and the average size was 2,302 acres with a median of 300 acres and a range of 4 to 100,000 acres (n = 88). Average stocking rate was 1.7 acres per AUM.

Lessee data calculated from 229 valid cases reported an average of 470 AUMs with a range from 2 to 4,351 AUMs. Average number of days on the lease was 131, and the average acreage leased was 4,057 with a median of 627 and a range of 3 to 115,000 acres (n = 435). Average stocking rate was 8.63 acres per AUM (n=435). If only the lessees reporting both acres and AUMs are used, the stocking rate is 12.57 acres per AUM (n=229).

Total payments to the landowner ranged from \$40 to \$80,000 and averaged \$7,578 (n = 33). The median payment was \$2,899 and nearly 80 percent of the leases were less than \$10,000. Lessees paid an average of \$4,104 per lease with a median of \$1,560. These ranged from \$1.50 to \$60,000. Almost 87 percent of the leases ranged from \$100 to \$9,500 (n = 281).

Landowners reported that 90 percent of their leases were grazed sometime in the spring, summer or fall. Almost 40 percent were grazed in the spring through the fall and only about 6 percent were grazed on a year-round basis (n = 32). The most common grazing system was short duration (38.5 percent) while season-long and rest rotation each claimed 25 percent of the leases (n = 65). There is a discrepancy in the number of landowners who reported season of use and grazing system because season of use was calculated from a worksheet stating the date the cattle went on and were taken off the lease. Fewer landowners knew the dates of actual use than the type of grazing system.

All lessees reported running cattle on leases sometime in the spring, summer or fall. About one-third of the leases had cattle grazing from the spring through the fall, and 15 percent claimed year-round grazing (n = 228). The most common grazing systems were season-long at 40 percent and short duration at 30 percent (n = 353). Again, there is a discrepancy between the number of lessees who reported the grazing system in use and the dates that cattle were on the lease. Some lessees did not report what dates the animals were placed on and taken off the lease.

The most common type of water on a landowner's lease was a river, stream or creek at 70.7 percent, while an almost equal number of leases contained a spring at 65.5 percent (n = 58). Eighty-five percent of the landowner leases contained a permanent source of water. Lessees reported that 72 percent of their leases had a river, stream or creek and 69 percent had a spring (n = 306). A permanent source of water was found on 87 percent of their leases.

#### Method of Payment or Charging for Forage

Landowners charging on a per head per month basis was the most popular method of lease payment (38.2 percent), while lump sum payments ran a close second at 26.5 percent. About 56 percent of landowners were paid after grazing had taken place, while about 25 percent made payments both before and after the grazing period. Over half of the lease rates were set by negotiation and about 40 percent were the "going lease rate" in the area. More than 70 percent of the leases were verbal contracts. The average length of a lease to one lessee was 5 years (n = 68).

Almost two-thirds of the lessees paid either on a lump sum or per head per month basis. The lump sum payment was most common at 34.5 percent and per head per month was 30 percent (n = 354). Lessees usually paid after the lease had been grazed, and over half of the lease rates had been set through negotiation. The majority of the leases (67 percent) were verbal

contracts. The average length of time that lessees leased from the same landowner was 8.66 years ( $n = 352$ ).

### Outside Factors Affecting Private Grazing Lease Rates

The second objective of this study was to determine if the cost per AUM differed among classes of livestock, forage type, season of use and region of state. Due to a limited number of sheep responses and forage type percentage conversion problems, only the latter two could be tested with the data gathered from this survey.

Most leases were clustered in the spring, summer and fall seasons with prices ranging from \$3.01 to \$15.00 per AUM. However, specific seasons showed no significant difference in price. The region of the state (north, southwest, south-central and southeast) also did not make a significant difference on the lease price per AUM.

### Landowner Services and Lease Rates

Both landowners and lessees were questioned about the services provided with the lease. These services included who constructed the improvements, maintained the improvements, controlled the cattle, provided salt, provided nutritional supplements, hauled water, paid utilities, provided liability insurance, controlled noxious weeds, paid land taxes, and paid for any irrigation water. Tables 2 and 3 show the responses from landowners and lessees, respectively.

Table 2. Frequency of services provided and who provides them, landowner data.

Service	Provided by Landowner	Provided by Lessee	Provided by Both	Does Not Apply
Constructing				
Improvements	58.0%	20.3%	14.5%	7.2%
Improvement Maintenance	46.4%	36.2%	10.1%	7.2%
Livestock Control	29.0%	56.5%	11.6%	2.9%
Salt	20.3%	68.1%	8.7%	2.9%
Nutritional Supplements	13.0%	56.5%	4.3%	26.1%
Water Hauling	11.8%	19.1%	2.9%	66.2%
Utilities	34.8%	11.6%	2.9%	50.7%
Liability Insurance	57.4%	26.5%	10.3%	5.9%
Noxious Weed Control	62.4%	20.3%	8.7%	8.7%
Land Taxes	87.0%	10.1%	0%	2.9%
Irrigation Water	40.6%	0%	1.4%	58.0%

Table 3. Frequency of services provided and who provides them, lessee data.

Service	Provided by Landowner	Provided by Lessee	Provided by Both	Does Not Apply
Constructing				
Improvements	38.8%	38.2%	17.8%	5.1%
Improvement Maintenance	29.9%	57.1%	10.2%	2.8%
Livestock Control	9.9%	84.5%	5.4%	0.3%
Salt	10.5%	87.9%	1.7%	0%
Nutritional Supplements	5.4%	77.4%	1.1%	16.1%
Water Hauling	4.5%	23.2%	0.6%	71.7%
Utilities	24.0%	17.8%	1.7%	56.5%
Liability Insurance	27.7%	50.6%	4.3%	17.3%
Noxious Weed Control	46.0%	33.8%	8.2%	11.9%
Land Taxes	92.9%	4.8%	0.8%	1.4%
Irrigation Water	28.3%	5.4%	0.8%	65.4%

Statistical analyses of the services showed that services provided by the landowner do affect the lease rate. When the landowner provided the salt, lease rates increased \$3.63 per AUM. When the lessee provided the salt, lease rates only decreased by \$0.47 per AUM. This is an indication that lease prices do not vary much if the lessee is the provider for salt.

A premium is also placed on the lease rate when the landowner constructs the improvements. If the lessee builds and pays for the improvements the lease rate decreases by \$1.01 per AUM, while if the landowner provides this service, it adds \$1.27 to the lease price.

Another value placed on the lease when figuring the net forage value is a credit for prepayment. Because a majority of leases are paid after grazing, an interest charge must be considered. Grazing period averaged 131 days, thus the prepayment credit is \$0.33 per AUM (\$9.33 per AUM X (131 days/365 days X 10 percent APR interest rate)).

Lease rates adjusted by the value of services and prepayment credit are shown in Table 5 on page 8. This table compares forage values with the 1990 private lease study done by the University of Idaho, the 1992 Federal Grazing Fee Study, and USDA - National Agricultural Statistics Service (NASS) lease rates.

### **Comparing Lease Rates and Forage Values Among Grazing Lease Studies**

#### 1990 Private Lease Survey

Results from the 1990 survey (Rimbey, et al. 1991) indicated two "services" provided by the landlords had significant impacts on private land lease rates. These services were maintenance of improvements and liability insurance. If the lessee maintained improvements (\$1.09 per AUM) and paid liability insurance (\$1.61 per AUM), lease rates were lower than if the landlord provided these factors.

### 1992 Federal Incentive Grazing Fee Study

Idaho was one of three states involved in a large federal grazing fee study conducted in 1992 and early 1993 (GFTG, 1993; VanTassell, et al. 1993). A random sample of public and private graziers was surveyed to determine the total costs of grazing public and private lands. The basic goal of the project was to determine if federal rangeland forage values could be estimated given the existing political and social climate. Results from this study indicated that the total cost approach yielded inconsistent results (BLM cattle forage values were in the \$2.50 to \$4.50 per AUM range, while Forest Service and sheep operations showed negative forage values). Analysis of grazing permit values showed that federal forage was worth \$3 to \$5 per AUM. Ranchers are paying this amount through the existing fee structure, non-fee grazing costs and investments in federal grazing permits. Increases in fees to the \$3 to \$5 per AUM level will erode permit value and transfer wealth to the government.

A portion of this study dealt with private leases and attempted to derive estimates of forage value using statistical analyses. One hundred fifty-one private leases (49 from Idaho) were included in the three state sample. Regression techniques were utilized to analyze the variation in private lease rates, non-fee grazing costs and total grazing costs (fee and non-fee). This analysis was able to isolate two of the services and estimate their impact on lease rates and total grazing costs. Livestock care, if provided by the lessor, added \$2.42 per AUM to the base lease rate. The lessor providing water to the livestock added \$1.96 per AUM to the lease rate.

Services provided by the landlord also impact total forage harvesting costs by the lessee. In the federal study, regression techniques were used to analyze the effect of services on total grazing costs. From the lessee's perspective, if the landlord provided livestock care and water, non-fee costs declined by \$6.16 and \$2.67 per AUM, respectively.

Why the differences in values from the lessor and lessee perspectives? Generally, lessors are closer to the lease property and are able to provide livestock care and water "cheaper" than the lessee. In other words, because of the relative proximity to the lease, it only costs the lessor an additional \$2.42 per AUM to provide livestock care. Because of the greater distances that the lessee must travel to reach the lease (average distance of 35 miles for Idaho lessee), having livestock care provided with a lease is worth \$6.16 per AUM to the lessee. Differences of smaller magnitudes (lessor: \$1.96 versus lessee: \$2.67 per AUM) are also apparent with the water service variable. This analysis also found that lease rates declined by \$0.00007 per AUM as size of lease increased (economics of size) and that lessee grazing costs increased by \$0.053 per mile as distance from the ranch headquarters increased.

### Grazing Permit Values

Grazing leases/permits on state and federal lands have a monetary value exhibited through the sale of ranches and/or permits. Past grazing fee policy has contributed to these values and current ranchers have paid this cost. Some of the value of public land grazing has been capitalized into the value of ranches and is bought and sold in the competitive ranch real estate market. From a federal lands perspective, legal precedent has found that permit value does not have to be considered in setting grazing fee policy. However, the allocation of permit value remains a central issue in the on-going federal grazing fee debate.

The Incentive Grazing Fee project involved analysis of ranch sale information gathered from appraisers in the Intermountain area. Although this project and analysis is continuing, preliminary results indicate state grazing leases and federal grazing permits have a value allocated by the appraisal profession. For 365 Idaho, Nevada and Oregon ranch sales which took place between 1985 and 1991, these values are \$42 per AUM for USFS permits, \$37 per AUM for BLM permits and \$36 per AUM for State cattle leases and \$33 per AUM for State sheep leases, all of which have declined over the 7 years of the data series. This information can be used to derive an annual investment cost associated with the permits and leases. This capital cost can then be combined with current fee levels to derive current estimates of implied forage values on public lands. Table 4 summarizes these values for Idaho, given the permit values, capitalization rate and fees listed in the table.

Table 4. Comparison of forage values derived using average permit values for Idaho, \$/AUM, 1985-1991.

Item	U.S. Forest Service	BLM	State of Idaho Cattle	State of Idaho Sheep
Permit Value	\$42	\$37	\$36	\$33
Cap. Rate (%)	3.35	3.35	3.35	3.35
Capital Cost	1.41	1.24	1.21	1.11
Grazing Fee	<u>1.86</u>	<u>1.86</u>	<u>4.99</u>	<u>3.74</u>
Total Implied Forage Value	3.27	3.10	6.20	4.85

#### 1992 Idaho Private Grazing Lease Study

The recent Idaho Private Grazing Lease Study found that average 1992 lease rates had risen to \$9.33 per AUM. This figure is not significantly different from the published USDA-NASS rate of \$9.49 per AUM, nor from the GFTG Idaho private lease rate of \$8.70 per AUM. The 36 percent increase in U of I lease rates between 1990 and 1992 is to be expected given the decline in forage supply resulting from 6 years of drought.

It appears that private forage suppliers and users made adjustments in grazing periods in the face of the drought conditions. Average grazing period declined from 185 days in 1990 to 131 days in 1992. Due to the nature of the questionnaire and changes in sampling procedures, it is not possible to determine if livestock numbers were also reduced. However, average lessee livestock use declined from 1,205 AUMs in 1990 to 470 AUMs in 1992, and leased acreage increased from 1,890 acres to 4,057 acres. Stocking rates declined substantially between 1990 and 1992, from 1.56 acres per AUM to 8.63 acres per AUM. Again, all of these figures indicate substantial adjustments were made on private grazing leases in response to the drought during the 1992 grazing season.

Comparisons of the three aforementioned studies are found in Table 5. Adjustments for services are made from the basis of average lease rates (both NASS lease rates and U of I averages are used in these calculations). Coefficients for service values are from the statistical



analysis and are applied to both lease rates. Prepayment credit applied to 1990 and 1992 lease rates are similar by coincidence. Lease rates were higher (\$9.33 vs \$6.84) and the grazing period was shorter in 1992 (131 days vs 185 days).

Table 5. Comparison of items affecting private grazing lease rate and resulting net forage value, by method, (\$/AUM).

Item	1990 Study NASS	1990 Study U of I	1992 GFTG (Lessor)	1992 GFTG (Lessee)	1992 Study NASS (Lessee)	1992 Study U of I (Lessee)	1992 Study NASS (Lessor)	1992 Study U of I (Lessor)
Lease Rate	\$8.42	\$6.84	\$8.14	\$13.26	\$9.49	\$9.33	\$9.49	\$9.33
Care			2.42	6.16				
Water			1.96	2.67				
Improve					1.01	1.01	1.27	1.27
Salt					0.47	0.47	3.63	3.63
Maint.	1.09	1.09						
Liability	1.61	1.61						
Prepay	<u>0.43</u>	<u>0.33</u>			<u>0.34</u>	<u>0.33</u>	<u>0.34</u>	<u>0.33</u>
Total Adjust.	3.13	3.03	4.38	8.83	1.82	1.81	5.24	5.23
Net Value	<u>5.29</u>	<u>3.81</u>	<u>3.76</u>	<u>4.43</u>	<u>7.67</u>	<u>7.68</u>	<u>4.25</u>	<u>4.10</u>
Base Value	2.09	1.51	1.48	1.75	3.03	3.04	1.68	1.62

Notes: NASS: USDA National Ag. Statistics Service published lease rate

Last 4 columns compare NASS and U of I lease rates with adjustments made for lessee doing the services (Lessee) and landlord providing the services (Lessor).

Prepay is a credit for prepayment of grazing leases and is calculated at 10 percent APR of the lease for a period of 185 days (1990) or 131 days (1992).

GFTG refers to 1992 Federal Fee Incentive Study--Lessor column makes adjustments from average lease rate by lessor provided services. Lessee column makes adjustments from total non-fee costs based upon lessor provided services.

Base Value is the Net Value indexed back to the 1964-68 base.

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Figure 1. Private Lease Surveys Completed in Each Geographical Region of Idaho

