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# Extension Extra

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COLLEGE OF AGRICULTURE & BIOLOGICAL SCIENCES / SOUTH DAKOTA STATE UNIVERSITY / USDA

## Determining Pasture Rents

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One of the more difficult decisions facing two parties in a pasture rental situation is determining the rent rate. Pasture rental charges often are based more on tradition than on a logical decision-making process. The rate must be deemed “fair” by both parties before a rental arrangement can be made.

Several factors generally influence the rental value of pasture. Many of these factors are not directly related to the value of the available forage but to services and facilities which may or may not be present and/or provided by the landowner.

### **Per Acre or Per Head**

Rates usually are determined on a per acre or per head basis. A per acre rate is convenient in that the actual number of acres within a pasture is usually known by both parties. However, a rate based on the number of acres in a pasture still requires adjustments for hard-to-determine factors such as the intended level of use and the quality of the available forage.

Pastures rents set on a per head basis may not adequately recognize differences in stocking rates. Livestock owners who are opposed to a per acre rate may desire low stocking rates which result in higher weight gains per head, while landowners may desire higher stocking rates to increase income from the rented pasture.

Often a per head rental rate is computed in terms of Animal Units (AUs) or Animal Unit Months (AUMs – the amount of forage required to feed a 1000-pound cow for one month). A per AUM rate centers more on the carrying capacity of the pasture. Whether the rental rate is based on a per acre, per head, or per AUM depends primarily on the desires of the parties involved.

### **Stocking Rate**

Start by agreeing on the number of livestock to be pastured. The stocking rate usually is based on 1) the condition of the pasture, 2) the management goals of the landowner for the pasture, 3) the forage needs of the tenant to meet desired rates of gain, and 4) the income needs of the landowner. Agreement up front is necessary to avoid disagreements between the parties and to maintain the quality of the grass stand.

### **Location**

The location of the pasture affects the cost incurred by the livestock owner in taking care of his stock. This includes the number of trips required for checking the cattle for count, health, salt and minerals, and water supply, as well as hauling or driving the cattle to and from the pasture.

### **Water Availability**

The availability of a good quality water source in the proper locations improves cattle weight gain. If water is unavailable during part of the grazing season, consider the costs of hauling water or removing livestock.

### **Landowner Services**

Services the landlord provides to the livestock owner will greatly influence the actual rental rate. These services might include counting, checking health and water, providing salt and minerals, and maintaining fences. These charges, in some agreements, make up a substantial portion of the gross rent.

### **Method of Payment**

Lump sum payment of pasture rent at the beginning of the grazing season can result in a lower per monthly rate than a plan in which payment is made throughout or at the end of the grazing season.

Lump sum payments transfer production risk from the owner to the renter unless provisions are written into the lease which reimburse the renter if the pasture cannot be grazed at the rate initially agreed upon. Events that can affect the amount of use are droughts and early snows.

In addition, Lump sum payments provide the landowner with cash to invest and, thus, an opportunity to earn interest on the investment.

## WAYS TO DETERMINE RENT RATES

There are infinite ways to determine pasture rental rates. The following five methods provide a starting point; further negotiation may help you arrive at the rate appropriate for your situation. Each method has its own strengths and weaknesses.

### Naive Model

The “naive” model is the simplest method—the pasture rent this year is based on what the rate was last year. Using this method to determine the value of pasture assumes that: 1) the rate was “fair” or correctly reflected the value of the forage the previous year; 2) no substantial structural changes have occurred in the pasture land lease market; and 3) livestock prices have not significantly changed.

This method often is used because both parties perceive last year's rate as satisfactory or they assume it's easier to accept the current rate than to take the time and effort to find out what it could be. In the latter case, the parties may not have enough information to justify making adjustments to last year's value.

This method is simple, but it has potential drawbacks. First, it's possible that one party may be unaware of significant changes in the pasture rental market. Thus, one individual may be in a position to take advantage of another. The second drawback reflects a management philosophy that it's just bad business to make decisions on as little data as required by the naive model.

### Market Survey

Find out what your neighbor is getting for his or her pasture. The survey may be as simple as asking your neighbors at the coffee shop or sale barn or as large as obtaining information from regional or state-wide surveys conducted by the state crop and livestock reporting services or universities.

The estimated, state-wide average cash rent paid for pasture, as compiled by the South Dakota Agricultural Statistics Service, is shown in Table 1.

These are statewide averages and may or may not apply to a given region in the state.

Per acre and per AUM rates by region from a recently completed SDSU survey of rangeland lease rates are listed in Table 2.

### Income Needs vs Ability to Pay

In the third method, the rental rate is based on two criteria: 1) landowner costs per acre or AU and 2) livestock owner's returns. The final rate is negotiated between these two criteria. This method is similar to setting upper and lower limits on what the final rental rate can be.

The minimum acceptable rate to a landowner will depend on the time frame of the decision. In the short run, the landowner has the option to rent the land or leave it idle. The landowner will be better off if a final rental rate is established above the variable costs of grazing cattle. Indeed, the landowner may be better off with any rate set above zero, provided the livestock owner pays for all costs associated with grazing livestock.

In the long run, the minimum acceptable rate to a landowner would depend on the options available for the money he/she has invested in the land. The minimum acceptable rate would be equal to what the landowner would receive by: 1) grazing his/her own cattle on the land or 2) selling the land and investing the proceeds. For example, if land sold for \$100/acre and the landowner invested the proceeds in a bank savings deposit at 8% interest, the minimum rental rate would be \$8 plus applicable real estate tax costs per acre. An example of determining landowner ownership costs per acre and per head is given in Table 3.

The maximum rent the livestock owner can pay depends on the expected return from grazing livestock. The livestock owner could either calculate the value of the gain produced while on the rented pasture or estimate the cost of substitute feed (hay and grains) as a basis for establishing the maximum rental rate. What the livestock owner could pay per acre for a specific tract of land would then depend on its productivity and how many animal units the land could support.

Again, determining the productivity of the land is the most difficult part of the decision process. A sample calculation for determining livestock owner returns is given in Table 4. Based on Tables 3 and 4, the lease rate would be negotiated between \$3.20 and \$4.12 per acre.

This “income needs vs ability to pay” method of determining pasture rents is more clearly explained in NCR

Table 1. Cash Rents of Pastures in South Dakota, 1979-89<sup>a</sup>

	Pastures Rented for Cash	
	Rent Per Acre <sup>b</sup>	Ratio Rent To Value
	Dollars	Percent
1979	9.20	3.6
1980	9.50	3.3
1981	10.00	5.2
1982	9.50	5.0
1983	9.30	5.5
1984	8.83	5.5
1985	8.10	7.3
1986	7.30	7.5
1987	6.30	8.7
1988	6.40	8.7
1989	7.10	7.9

<sup>a</sup>From "South Dakota Agriculture, 1988-89. South Dakota Agricultural Statistics Service. May, 1989.

<sup>b</sup>Dollar values represent estimates as of March 1 for 1979-81, April 1 for 1982-85, and February 1 for 1986-89.

Table 2. South Dakota Private Rangeland Lease Rates per Acre and Animal Unit Month (AUM) by region, 1986-88<sup>a</sup>.

Region <sup>b</sup>	Average Dollars Per Acre			Average Dollars Per AUM		
	1986	1987	1988	1986	1987	1988
	-----DOLLARS-----			-----DOLLARS-----		
North Central	9.42	9.32	9.25	12.55	11.75	11.86
East Central	7.74	7.58	7.77	11.93	11.33	11.77
South Central	5.97	5.39	5.39	11.57	11.30	11.48
West Central	4.14	3.87	3.92	10.00	9.44	9.72
Southwest	3.35	3.49	3.65	8.92	9.22	9.06
West Northwest	3.29	3.42	3.62	8.84	8.68	8.78
East Northwest	3.22	3.14	3.11	7.92	7.84	7.57

<sup>a</sup>From "An Economic Analysis of Public and Private Rangeland Lease Arrangements and Land Values in South Dakota". Unpublished MS Thesis by John Cole. Economics Department. 1989.

<sup>b</sup>Counties included in each region are: North Central - Campbell, McPherson, Brown, Marshall, Walworth, Edmunds, Potter, Faulk, Spink, Day, and Clark; East Central - Sully, Hughes, Hyde, Hand, Buffalo, Brule, Aurora, and Davison; South Central - Jones, Lyman, Mellette, Todd, Tripp, and Gregory; West Central - Lawrence, Pennington, Meade, Haakon, Jackson, and Stanley; Southwest - Custer, Fall River, Shannon, and Bennett; West Northwest - Harding, Butte, and Perkins; East Northwest - Corson, Ziebach, and Dewey.

Extension Publication No.149, Pasture Rental Arrangements for Your Farm, available through the SDSU Cooperative Extension Service.

### Feed Value Approach

The fourth method is to base pasture rent on the quality or value of the feed itself in the diet of the grazing animal. This method contends that pasture rental rates should account for livestock weights and the quality of forage provided. A suggested formula<sup>1</sup> for computing pasture rent using this method:

$$\begin{array}{r} \text{Average animal weight during} \\ \text{the pasture season (in 1000 pound units)} \\ \times \\ \text{Average value per ton of standing} \\ \text{alfalfa during the pasture season} \\ \times \\ \text{Pasture quality factor} \end{array} = \text{Monthly Charge}$$

Average animal weights in 1000-pound units convert the number of livestock grazing to Animal Units (AUs). This puts the rent calculation on an Animal Unit Month (AUM) basis.

The second part of the equation relates pasture rental values to the value of alfalfa, about which more information on prices, etc., is available. The average value of standing alfalfa is computed by taking the average price of stacked alfalfa hay during the pasture season and subtracting harvesting costs, including a weather risk factor (for South Dakota this may range between \$25 to \$35/ton). The weather risk factor reflects value loss because of weather damage associated with hay production. (An estimate of this value is 10% of the selling price of hay during the grazing season.)

<sup>1</sup>Calculating Monthly Pastures Charges on the Basis of Feed Value. Extension Bulletin EB 1191. Washington State University. Pasture Rental Arrangements for Your Farm. NCR Extension Publication No. 149. March 1981.

**Table 3. Landowner Ownership Costs/Acre or Head**

<b>A. Price of Land</b>	<b>\$64,000</b>		
1. Interest		x <u>5 %</u> =	\$ <u>3,200</u>
2. Taxes		XXXXX	\$ <u>160</u>
<b>B. Other investments:</b>			
1. Fence	\$ <u>3,200</u>		
2. Pens	\$ <u>800</u>		
<b>C. Total (B1 + B2)</b>	<b>\$ <u>4,000</u></b>		
1. Depreciation		/ <u>20 yrs.</u>	\$ <u>200</u>
2. Interest		x <u>8 %</u>	\$ <u>320</u>
3. Repairs		XXXXX	\$ <u>200</u>
4. Taxes		XXXXX	\$ <u>20</u>
5. Insurance		XXXXX	\$ <u>-</u>
<b>D. Total Ownership Costs/Pasture</b>			<b>\$ <u>4,100</u></b>
<b>E. Number of Acres</b>		/ <u>1280</u>	
<b>F. Ownership Costs/Acre</b>			<b>\$ <u>3.20</u></b>
<b>G. Stocking Rate (Acres/Head)</b> (6 month grazing season)		x <u>12</u>	
<b>H. Ownership Costs/Head/Year</b>			<b>\$ <u>38.40</u></b>

Table 4. Livestock Owner Returns (6 month grazing period)

A. Investment:	<u>650</u> lbs. x \$ <u>65.00</u> cwt.	= \$ <u>422.00</u>
B. Costs (As % of A):		
1. Interest	\$ <u>422.50</u> x <u>9</u> % x <u>6/12</u> year	= \$ <u>19.01</u>
2. Taxes, vet, insurance	<u>1</u> % = \$	<u>4.22</u>
3. Death loss	<u>1</u> % = \$	<u>4.22</u>
4. Purchasing, selling, hauling	<u>3</u> % = \$	<u>12.66</u>
C. 1. Labor	<u>1</u> hour @ \$ <u>5.00</u>	= \$ <u>5.00</u>
2. Management		= \$ <u>10.00</u>
D. For Cows (additional costs)		
1. Depreciation		= \$ _____
2. Bull charge		= \$ _____
E. Total Costs		= \$ <u>477.61</u>
F. Sell:	<u>850</u> lbs. @ \$ <u>62.00</u> cwt.	= \$ <u>527.00</u>
G. Gain due to pasture/head		= \$ <u>49.39</u>
H. Stocking Rate (acres/head)	/ <u>12</u>	
I. Livestock Owner Returns/Acre		= \$ <u>4.12</u>

### Suggested pasture quality factors

Excellent (.30) Seeded grass or grass-legume pastures, abundant growth, tender with no blooms or seed heads showing. Yearlings on pastures in this category would be expected to gain 1 3/4 pounds per day.

Good (.25) Abundant growth of seeded or native grasses or legumes, but less palatable grasses than the "excellent" classification, or with a high proportion of plants in the early to late bloom or seed stage. Yearlings on pastures in this category would be expected to gain from 1 1/4 to 1 3/4 pounds per day.

Fair (.20) Grasses which are less abundant but adequate. Pastures are either weedy or of lower quality because of lack of moisture or advancing maturity. Yearlings on pastures in this category would be expected to gain from 3/4 to 1/4 pounds per day.

Poor (.15) Short and overgrazed, droughty, or heavily infested with weeds. Yearlings on pastures in this category would be expected to gain less than 3/4 pounds per day.

To demonstrate this procedure, assume that the average weight of the cow herd is 1,100 pounds, the average

weight of calves during the grazing season is 350 pounds, and alfalfa hay is selling for \$80/ton. The pasture classification is good. The resulting monthly pasture charge per cow/calf pair would be:

Animal units involved: 1,100 lbs. + 350 lbs.  
=1,450 lbs. /1,000  
=1.45 AUs

Value of standing alfalfa: \$80/ton hay price  
- \$30 harvest charge  
- \$ 8 weather risk factor  
= \$42/ton.

Pasture charge per  
cow/calf pair / month: 1.45 AUs  
x \$42 value of standing alfalfa  
x .25 quality factor  
=\$15.23 per month

If hay prices were \$60/ton, the resulting pasture rental per month would be \$8.70 per cow/calf pair.

This method does not include adjustments for services provided by the landowner, fencing, etc., that would need to be negotiated using the computed rate above as a starting point.

## Land Value Approach

This is a fairly simple way to determine the base rental rate per acre. The base rate then can be used to negotiate the final rate, depending how the responsibilities and contributions of each party affect the agreement.

To determine the base rate, multiply the estimated value of the land by an accepted rent-to-value ratio and divide by 100. Rent-to-value ratios for South Dakota by regions are presented in Table 5.

## SUMMARY

In addition to the five methods outlined here, there are other, more complex methods for determining pasture rental rates. These include fixed rates based on a share of

cattle returns and variable rates based on rate of gain and/or market price of livestock. Which method is best depends on your circumstances.

One goal of setting pasture rent or any other rental rates is to set a "fair" price, one to which all parties are agreeable. The determination of what is fair needs to be left to the individuals involved.

Whatever rental arrangement is used, remember to write down the terms of the agreement. Written arrangements leave little doubt as to what was agreed upon 5 months earlier, and they are of extreme importance in the event of the death or bankruptcy of one of the parties involved. An example of a written rental arrangement is included in the NCR Extension publication No.149 mentioned earlier.

Table 5. South Dakota Rent-to-Value Ratios by region, 1988<sup>a</sup>.

<u>Region<sup>b</sup></u>	<u>Rent-to-Value Ratio</u>
North Central	8.6
East Central	8.0
South Central	7.5
West Central	6.7
Southwest	6.4
West Northwest	6.0
East Northwest	5.2

<sup>a</sup>From "An Economic Analysis of Public and Private Rangeland Lease Arrangements and Land Values in South Dakota". Unpublished MS Thesis by John Cole. Economics Department. 1989.

<sup>b</sup>Counties included in each region are: North Central - Campbell, McPherson, Brown, Marshall, Walworth, Edmunds, Potter, Faulk, Spink, Day, and Clark; East Central - Sully, Hughes, Hyde, Hand, Buffalo, Brule, Aurora, and Davison; South Central - Jones, Lyman, Mellette, Todd, Tripp, and Gregory; West Central - Lawrence, Pennington, Meade, Haakon, Jackson, and Stanley; Southwest - Custer, Fall River, Shannon, and Bennett; West Northwest - Harding, Butte, and Perkins; East Northwest - Corson, Ziebach, and Dewey.



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