

Mountain or Mesa Ranges

A Comparison of Costs and Returns Determines Relative Value of Each

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Anyone who has had ranching experience knows that it costs more to run cattle and produce beef on rough, rugged mountain range than on level, easily accessible mesa range. Yet, little if any detailed information is available on comparative costs and returns from ranching in the two kinds of cattle range in the semi-arid Southwest. Following, is information on the various items of operating costs and the factors influencing them. It should point the way to more efficient herd and range management, and aid in appraising the sale, rental, or lease value of the two kinds of ranges.

Comparative records of costs and returns from both mesa and mountain rangelands have been obtained for a seven-year period, from 1940 through 1946, on the Jornada Experimental Range, a branch of the Southwestern Forest and Range Experiment Station, 23 miles north of Las Cruces, N. M.

Even though, because of changing economic conditions, the data apply directly only to the period of record, they provide a good economic comparison between the two types of range when grazed by cattle of the same herd and managed by a single operator.

Range Rough and Rugged

To represent rough, mountainous range, the 41,000-acre mountain pasture of the Jornada Experimental Range was used. The San Andres Mountains run the full length of the pasture. The topography is so rugged that the steep east cliff of the mountain, with practically no fencing, is used as the eastern boundary of the experimental range. The pasture is rough and broken, much of it being cut by steep ravines and canyons. The higher elevations are so rugged they are largely inaccessible to cattle.

The rugged nature is further reflected in the considerable altitude variation within a comparatively small area. Within a distance of three miles, elevation increases from about 4,900 feet in

the foothills to nearly 8,000 feet at the top of San Andres Peak.

In the mountain pasture, average annual rainfall is 13 inches, with about 70 percent falling during the summer growing season. The vegetation is characterized by browse (shrubs and low trees) which covers 65 percent of the area. Grasses cover 30 percent and weeds, the remaining 5 percent.

Wide Variety of Grasses

The bulk of the forage is provided by a variety of perennial grasses. Gramas, including sideoats, black, hairy, and blue, contribute 53.5 percent of the total forage supply. Several palatable species of browse, including mountain mahogany and dalea, provide nutritious winter forage and annual weeds and grasses usually are available in late winter and early spring.

There are no complete interior division fences, but natural rock barriers, supplemented by short stretches of fence, provide a fairly effective means of controlling drift and regulating livestock distribution. The pasture is watered by 10 permanent springs, two deep wells and seven surface tanks. Nineteen miles of secondary roads traverse only about half the full length of the pasture. This necessitates transportation of supplies by packhorse to the more remote roadless parts.

The remainder of the Jornada Experimental Range, an area comprising approximately 140,000 acres and including eight experimental pastures, represents mesa range. Here, the topography, which is typical of a large area of southwestern rangelands, is level or gently rolling. This is indicated by an altitude range of only 800 feet over the entire mesa area. The land slopes gently upward to the foothills region, adjacent to the mountain pasture, but is easily accessible to livestock.

Annual Rainfall Under Nine Inches

Annual rainfall, most of which falls in the summer season, averages slightly less than nine inches. The mesa range is primarily a grassland and the forage consists mostly of perennial grasses with black grama making up most of the

winter forage and tobosa providing the summer prazing. Other important forage grasses are the dropseeds and threeawns. A variety of annual weeds and grasses are available in those years when winter and spring moisture conditions are favorable.

Shrubs predominate in the mesquite, sandhills type, which cover almost one-third of the mesa, and in the tarbush, creosotebush type, which occupies almost as large an area on the heavier soils. However, browse plants supply only a small part of the total forage on the mesa ranges. Mesquite leaves and beans and yucca flowers are grazed when available.

Division fences provide for seasonal control of cattle in the pastures that vary in size from 1,780 to 80,739 acres. The range is watered by six deep wells, 15 large surface tanks and 52 small temporary tanks or water holes. The area is well covered by secondary roads, nearly every part being accessible by trucks.

Production Records Compared

Separate livestock production and cost and return records were kept for the mountain and mesa areas (table 1).

Animal production records, including calf crop percentage, calf weight, and death loss records, are important in that they reflect management and have a definite bearing on net income.

Cost records included labor, grazing charges, feed, supplies, overhead expense such as taxes, interest, transportation, depreciation, and all other costs incurred in the ranching enterprise.

Gross receipts from the sale of all livestock from the areas provided the basis of the comparative net income.

All bull and cow replacements for both areas were raised by the operators. These costs, therefore, are reflected in the items of gross income. Likewise, since the operating cost is prorated on a per-cow basis, these costs are further considered in the item of grazing charges. The interest charge listed is for operating capital only. Rainfall and forage production were about average for the two areas over the seven-year period.

Costs Higher on Mountain Ranges

The cost data reveal that operating costs per cow for the mountain range exceed those for the mesa range by approximately 15 percent. Most of the excess cost on rough range is equipment and improvement depreciation, which runs more than \$3 per year higher than on the mesa.

Because of the terrain, a greater per-cow investment in improvements is necessary than for the mesa, and depreciation and the wear and tear of equip-



Mountain pasture on the Jornada Experimental Range is rough and broken. Sideoats grama and palatable browse make up the principal forage.



On the level-to-rolling topography of the Jornada mesa ranges, black grama is the principal source of forage. Mountain pasture in background.

ment is greater. For the same reason, more labor and labor supplies are required to care for the cattle properly on the mountainous range. Transportation costs are higher due to greater distances involved and rougher roads.

The only item in which the mesa costs were appreciably higher than for the mountain is feed and salt. This increased feeding activity reflects the easier accessibility of the feed and salt grounds on the mesa, although the availability of more high-protein browse in the mountain pasture also decreased the need for protein supplement.

Smaller Calf Crop in Mountains

Gross annual income per cow was nearly \$3 less from the mountain pasture than from the mesa range. This is due partly to the lower calf crop percentage in pasture II. The 74 percent average calf crop on the mountain range compares with an 88 percent calf crop obtained on the mesa. The reduction in calf crops for the mountain range reflects the rugged nature of the mountain pasture, since about the same ratio of bulls to cows was used for both areas.

Average weights of individual cattle and calves sold from the two kinds of

range showed no appreciable difference. Death losses do not affect the economic comparison since these averaged 1.4 percent for both areas.

The net income per cow from the mountain pasture was about 20 percent less than that from the mesa range. This smaller net income was the result of a 5 percent smaller gross and a 15 percent greater operating cost on the rough mountainous range.

On Reducing Costs

To offset the handicap of rough ranges, special care should be directed to management practices which will increase income and avoid high operating costs. Use of more bulls and more riding to distribute them are necessary to obtain good calf crops in rough country. Many rough ranges may yield better returns at lower costs by change from a breeding cow to a steer operation.

To reduce investment for improvements, special attention should be given to better planning of water developments to make full use of natural springs and seeps which can be developed and maintained with a maximum of cost and effort. Advantage should be taken of rim rocks and other natural

barriers in planning pastures in order to minimize the cost of fence construction and maintenance. Salt grounds and feeding stations should be located on portions of the range that otherwise would receive too little grazing. Other relatively inexpensive means of livestock control, such as riding and temporary closing of selected waters, should be used to obtain uniform proper use of the forage at the desired season.

Table 1

Average annual costs and returns per cow on mesa and mountain ranges, Jornada Experimental Range, 1940-1946.

Annual Costs and Returns, Per Cow.		
Items	Mesa	Mountain
Gross income, all sales	\$60.03	\$57.24
Costs:		
Labor	3.90	4.17
Grazing charges	7.28	7.28
Labor supplies, (chuck, etc.) ..	.86	2.37
Feed and salt	5.31	4.28
Cattle supplies .....	.15	.05
Equipment repairs .....	.70	.74
Gasoline, oil, etc. ....	.56	.35
Taxes, County and State .....	.58	.67
Interest .....	.66	.71
Equipment and improvement ..		
depreciation	3.51	6.60
Miscellaneous ranch expense ..	.91	.78
Total operating cost	24.42	28.60
Net income	35.61	28.61

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