MANAGEMENT NOTES

Planned Grazing for Montana Ranges[1]

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Highlight

Grazing management alternatives for Montana ranches are discussed. Management is usually based on one of the following programs: seasonlong grazing, deferred rotation, rest rotation or seasonal grazing. The grazing program must then be adapted to the individual ranch or range unit.

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There is no grazing system that is best under all conditions. The rancher must make a choice based on the knowledge of his range, livestock operation, and economic position. The system that he follows must then be tailored to fit his operation (Anderson, 1967a).

Specialized grazing systems, such as the deferred rotation or rest rotation, are designed to increase the quantity of desirable range vegetation. They are not designed to increase individual livestock gains. Increased grazing capacity and gains per acre will result from the production of a greater amount of forage and more efficient use of it. If the stocking rate was correct prior to initiating a specialized grazing system, a large increase in the gains of individual animals will probably not occur. However, over a period of years, the rancher will be able to increase his stocking rates and increase his livestock production per acre.

Seasonlong Grazing

Seasonlong grazing is the term used to designate grazing a single range unit throughout the entire growing season. Seasonlong grazing in Montana is least harmful to ranges dominated by low growing grasses capable of vegetative reproduction. Grasses such as blue grama (*Bouteloua gracilis*), buffalograss (*Buchloe dactyloides*), and Kentucky bluegrass (*Poa pratensis*) are quite resistant to total defoliation and can withstand repeated grazing. Bunchgrasses such as green needlegrass (*Stips viridula*), bluebunch wheatgrass (*Agropyron spicatum*), and rough fescue (*Festuca scabrella*) depend upon seeds for reproduction. They are more readily defoliated and are easily damaged unless rest periods are provided.

With proper rates of use, range condition can be maintained under seasonlong grazing. However, it is difficult to improve a range with this type of grazing management.

Some improvement in range condition may occur in response to the development of additional water facilities or through fencing to obtain better distribution of grazing livestock. Obtaining proper distribution of the grazing animals and determining a realistic stocking rate are the two hardest problems encountered in seasonlong grazing.

Advantages

1. Cattle have access to the entire range area throughout the growing season. They are allowed greater selectivity of forage during the early portion of the grazing season than under any other system.

2. Cattle, especially cows, tend to find a "home" for themselves. This reduces "fencewalking" and "fencecrawlers."

3. There is a minimum of livestock herding and movement involved.

4. The investment in fencing and labor is minimal.

5. Under similar range conditions, gains of individual animals are often greater than under the deferred rotation system.

Disadvantages

1. It is difficult to obtain adequate distribution of livestock to eliminate or reduce areas of overgrazing and undergrazing.

2. It is difficult to obtain the proper stocking rate and to retain flexibility in stocking to avoid overgrazing during dry years.

3. The preferred grasses are subjected to both early and repeated grazing which are especially detrimental. It is difficult to maintain key forage species under these conditions.

Deferred Rotation Grazing

Rotation grazing refers to a system in which livestock are periodically moved from pasture to pasture when proper or full use has been attained. Under deferred rotation grazing, each year the grazing on at least one pasture is deferred until the key species have produced seed. The order in which the pastures are grazed is changed yearly or every two years so no pasture receives use during the same period every year (Anderson, 1967b). A diagramatic scheme is shown in Figure 1.

	Spring	Summer (Seed Maturity)		Fall
First Year	Unit A	Unit B	Unit C	Unit A
Second Year	Unit C	Unit A	Unit B	Unit C
Third Year	Unit B	Unit C	Unit A	Unit B

FIG. 1. Example of a deferred rotation grazing system with three grazing units.

A deferred rotation system may be established with two, three or more pastures. When deferment is alternated between two pastures, it can be called a switchback system. Another variation involves grazing all pastures throughout the grazing season except the pasture being deferred. A different pasture is deferred each year.

The period when grazing is most detrimental varies between the species of grasses, forbs, and shrubs. It is most important that pastures are not grazed at the same time each year. Systematically changing the time of grazing will tend to maintain all of the more desirable species.

Advantages

1. Concentrating livestock on a smaller area forces the livestock to utilize portions of the range that normally would receive little or no grazing.

2. The movement of livestock from pasture to pasture reduces the repeated grazing of preferred plant species. These plants are allowed to mature and build up high carbohydrate reserves on a portion of the range each year.

3. Livestock breeding efficiency may be increased due to the greater concentration of the breeding herd.

4. Forage production usually increases rapidly on low condition bunchgrass ranges. Ranges in high condition or ranges dominated by clubmoss or blue grama sods respond less rapidly.

Disadvantages

1. This system is more easily adapted to ranges not having large differences in vegetation or topography. Large differences in elevation present problems of range readiness for early grazing. Areas with several vegetation types are often more easily managed when fenced so that each type is in a separate unit.

2. To adapt a range for deferred rotation grazing usually requires additional fencing and water development. Springs, seeps, and ponds which furnish adequate water for a small number of livestock throughout the grazing season are often inadequate for large livestock numbers over a short period of time.

3. Livestock must be handled more frequently than under seasonlong grazing. This handling can often be reduced by allowing a period for the natural drifting of cattle into the next pasture to be grazed. The movement of livestock should be considered during planning to eliminate long or difficult drives between pastures.

	Graze early	Rested or deferred	Graze late	Rest
First Year	Unit A	Unit D	Unit C	Unit B
Second Year	Unit B	Unit A	Unit D	Unit C
Third Year	Unit C	Unit B	Unit A	Unit D
Fourth Year	Unit D	Unit C	Unit B	Unit A

FIG. 2. Example of a rest rotation grazing system with four grazing units.

4. Extreme care must be used to avoid overgrazing during the earliest grazing period. Usually, the grasses are in a rapid growth stage during this period and are easily damaged. The stocking rate of a pasture during the early part of the growing season is not as great as it would be later.

Rest Rotation Grazing

Rest rotation grazing might be termed the "crash program" management system. Under this system, the range area is divided into four or more grazing units of approximately equal grazing capacity (Fig. 2). With a four pasture system, two or three of the pastures are grazed each year. One unit is grazed early, and another unit is grazed after seedset. A third unit is either grazed late in the growing season or rested to build up the vigor of the key forage species. At least one pasture receives complete rest from grazing. The grazing sequence is rotated every year so that each pasture receives over a four year period, one year of early grazing, one or two years of late grazing, and at least one year of complete rest.

The theory behind this system can best be explained by following a pasture through a four year cycle (Hormay and Talbot, 1961). The first year, the pasture would be grazed heavily during the early portion of the year to obtain full forage use on the area. It would then be protected during the latter part of the season. The second year, the pasture would receive no use or late use allowing the plants to regain vigor. The third year, the pasture would be grazed during the latter part of the season after seeds have been produced by the key species. This grazing would aid in distributing and covering seeds. The pasture would be rested the fourth year to allow seedling establishment.

Advantages

1. Bunchgrass ranges in poor to fair condition respond rapidly to this type of management. These ranges are dependent mostly on seeds for regeneration.

Seed production is of less importance to the recovery of plains ranges and is much less reliable. Range improvement in these grasslands is a result of a) vegetative reproduction of rhizomatous species such as western and thickspike wheatgrasses (*Agropyron smithii* and *A. dasystachum*); b) increased vigor and plant size of desirable bunchgrasses; c) reduced density of clubmoss and blue grama sods; and d) new seedlings of desirable grasses, forbs, and shrubs.

2. Other range improvement practices such as reseeding and weed or brush control can fit into this program quite easily.
3. Distribution of range use may be improved due to concentrating greater numbers of livestock on a small area for a short period of time. Selective grazing is reduced, at least to some extent (Ratliff, 1962).

Disadvantages

1. If the range has been stocked to obtain full use of the entire range unit prior to the initiation of this grazing system, the grazing intensity often employed under the rest rotation program can be detrimental.

If the entire range unit has not been utilized, but key portions have received heavy use, then only slightly heavier overall use of range plants will result due to the improved livestock distribution. The effect of this grazing is usually overcome by the years of rest or deferment.

2. This system is most easily applied to areas of similar vegetation and topography.

3. More fences and water developments are required with this system than under seasonlong grazing. Adequate watering facilities are especially critical when a rest rotation grazing system is used.

4. The heavier grazing intensity may initially result in lower individual gains on yearling cattle. This effect on the weight gains will diminish as the productivity of the pastures increases.

Seasonal Grazing

Many Montana ranchers must fit their livestock operations to ranges with dissimilar vegetation and large elevational differences. This is especially true of the foothills and mountain valley ranches utilizing mountain rangelands or cut-over timberlands. A specialized grazing system may be used on a portion of the range, but the livestock grazing must be scheduled to fit the seasonal availability of forage.

Advantages and Opportunities

1. Grazing can be scheduled when grasses are most palatable and nutritious, or to meet the requirements of the vegetation or livestock.

2. Individual pastures can be deferred, rested or lightly grazed to build up vigor and improve range condition.

3. Pastures seeded to introduced cool season grasses can be used to defer or delay grazing on native species. These pastures also fill the need of lactating animals for large quantities of early forage (Houston and Urick, 1967).

4. When possible, a deferred or rest rotation system should be incorporated in the grazing program.

Disadvantages

1. Unless the operator has an adequate knowledge of the range plants and their reactions to grazing, little improvement of the range will be attained.

2. On rougher range units, poor livestock distribution is often the cause of overgrazing, not excessive livestock numbers. Better distribution of livestock on these ranges can be attained by improving watering facilities, salting, riding,

etc. The intensive use of small pastures for short periods rather than large pastures will also result in better distribution of grazing.

Summary

No grazing system can override the effects of continuous overuse on the range. The maximum profit from a piece of rangeland involves a compromise between maximum livestock gains per acre and maximum gains on a per head basis. Maximum gain per acre is attained with heavy stocking of the range and maximum individual gains occur with light stocking rates (Harlan, 1958).

Specialized grazing systems such as the deferred rotation or rest rotation systems can improve range condition and increase forage production on most Montana ranches. As range condition improves, the range can sustain greater livestock numbers, the production per individual grazing animal can increase, or both may occur. The degree to which livestock production is improved will be influenced by past grazing management and the range condition.

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