MANAGEMENT NOTES

Flexibility to Combat Fluctuating Forage Production

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Highlight

Ranchers, range managers, and range conservationists are faced with the problem of year to year fluctuating forage production when making range and livestock management plans. By understanding livestock needs and the forage resource, they can build flexibility into a workable management plan. Flexibility helps the grassland manager get optimum use of the range and related resources despite fluctuating forage production.

As every rancher, range manager, and range conservationist knows, climatic conditions are seldom the same two years in succession, thus causing forage production to fluctuate year to year. This presents the grassland manager with two main problems: First, how to keep from overusing the forage resources produced in low production years and still fully use forage produced in high production years. Second, how to keep ranch income as high and stable as possible when the source of income, the forage crop, is so variable. A solution may be a flexible, workable, range management program based on knowing the forage resource and the livestock needs.

Passey and Hugie (1963) found in their Idaho study that total herbage production varied considerably from year to year. The experience of a west Texas rancher in the Edwards Plateau area demonstrated that soundly planned range improvement and ranch management made it possible to operate profitably while adjusting to fluctuating forage supplies (Skeete, 1966). According to Leithead (1960) an eastern Washington rancher found profitable results for both ranch income and range resource by applying good grass management even though forage production fluctuated from year to year.

McColley and Hodgkinson (1970) in their study showed that three range sites in excellent condition produced different kinds and amounts of vegetation. The study area was located 4.4 miles west of Davenport, Washington. The annual precipitation at Davenport from 1931 to 1969 was 16.48 inches. The average precipitation for the crop year (Sept. 1–June 30) for 1960 through 1970 was 14.74 inches (Table 1).

Table 1. Annual crop year (September 1–June 30) precipitation, 1960–1970, at Davenport, Washington.

Year	Inches	Year	Inches	Year	Inches
1960	17.26	1964	14.08	1968	10.83
1961	18.39	1965	14.08	1969	15.92
1962	13.85	1966	11.99	1970	14.92
1963	15.59	1967	15.44	Average	14.74

Soil texture, climate, elevation, topography, and aspect on the study area were uniform. The only difference between the three range sites was soil depth.

The Very Shallow Site correlated to Bakeoven[1] cobbly silt loam soil, 5 inches deep to basalt bedrock. The major plants are Sandberg bluegrass (*Poa secunda*) and stiff sagebrush (*Artemisia rigida*).

The Shallow Site correlated to Kuhl[1] silt loam soil, 12 inches deep to basalt bedrock, with bluebunch wheatgrass (*Agropyron spicatum*) as the key forage species.

The Loamy Site correlated to Anders[1] silt loam soil, 25 inches deep to basalt bedrock. The main forage plants on this site are Idaho fescue (*Festuca idahoensis*) and threadleaf sedge (*Carex filifolia*).

For the years 1967 through 1970, regardless of range site, forage yields fluctuated with precipitation year (Fig. 1).

By tradition, many rangeland managers stock grasslands on the basis of so many acres per animal. However, as found in the study mentioned, not all rangelands produce the same amount of forage every year. Therefore, each pasture should be stocked on the basis of its actual forage production.

The feedlot operator decides how many animals he can profitably feed only after he determines how much roughage and concentrates are available. If his feed supply is low, he does not try to feed a large number of animals, regardless of how much yard space he has. Likewise, on rangelands the most successful livestock operator stocks on the basis of the amount of forage available rather than on the acres within his ranch or farm.

The Soil Conservation Service helps landowners through Soil and Water Conservation Districts evaluate the total resources of their rangelands includ-

[1] The soil series names "Bakeoven," "Kuhl," and "Anders" are recommended for establishment, but are not yet approved.

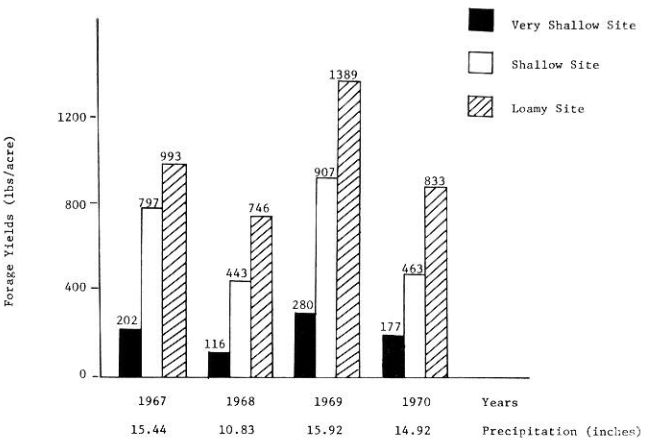

FIG. 1. Total forage production yields (lb./acre, air dry) for each range site as compared to crop year precipitation (Sept. 1–June 30).

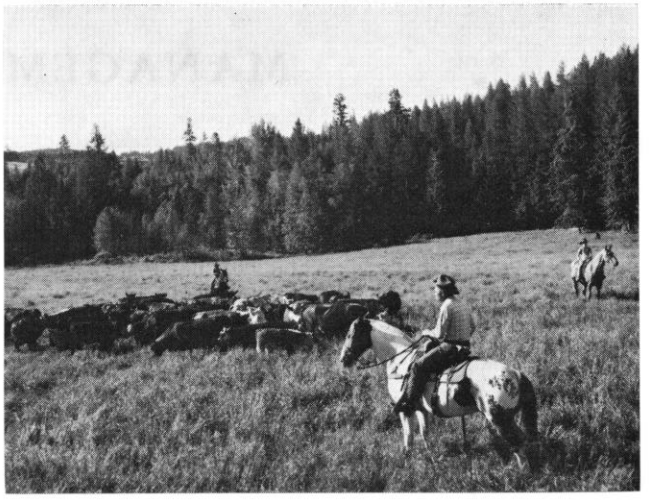

FIG. 2. Flexibility is a part of this range and livestock management program. Cattle are being moved in application of the rotation-deferred grazing system, a way to improve grazing efficiency.

ing range sites, present range condition, and key forage species. Range sites are kinds of rangeland that differ from each other in the kinds or amounts of native plants they are capable of producing. Range sites are correlated with specific soils identified in soil surveys.

Range condition is the present state of vegetation of a range site in relation to the potential or climax plant community for that site. It is determined by comparing present vegetation with the climax for that site.

Key forage species for each grazing unit are identified, so management and growth needs of the plant can be recognized and become part of the conservation plan.

With an understanding of range sites, range condition, key forage species, and the extent of expected fluctuations in forage production, the grassland manager is better able to make proper decisions when planning and to build flexibility into his range and livestock management program (Fig. 2).

Flexibility in the livestock, forage, and feeding program keeps livestock needs in balance with forage production. Areas of consideration in achieving this flexibility may include: (1) Having a combination of pastureland, rangeland, and other grazing land as part of the operating unit; (2) maintaining a portion of the livestock herd as steers or other stock which can be increased, adjusted, or sold on short notice while maintaining the base herd; and (3) keeping the breeding herd below the average stocking rate of the previous five years, or longer if stocking records are available. How much below the average will depend on how much production has deviated from the average. If rangeland pastures are stocked on the basis of production in good or even in average years, they will be severely damaged during dry years. Damage from too-heavy use during a dry year may not be completely corrected by proper grazing during several good years.

Since no two operating units are alike, plans for keeping livestock numbers in balance with forage will not be the same for all units. Whether the forage production year be high or low, it is important for the rangeland operator to plan alternatives in advance, making flexibility a part of his management program.

Livestock numbers can be balanced with the forage supply in low production years to keep from overutilizing the forage resource. This can be done by: (1) Improving efficiency of use of present grazing lands with distribution practices such as fencing, water developments, salting, herding, and using a grazing system tailored to meet planned objectives; (2) selling dry stock and yearling steers early in the season, or as soon as a dry season is indicated; (3) culling breeding herd by selling dry cows, slow breeders, poor milkers, and old animals about the end of the normal growing season when the animals are in good flesh; (4) purchasing needed additional forage or rent other pasture; (5) using supplemental or temporary irrigated pastures if irrigation water is available; (6) maintaining a supply of emergency feed on hand in the form of hay or silage fed in drylot; and (7) grazing the rangeland units in a system that will leave a unit or units either not grazed or grazed lightly so that there will be sufficient old grass on the land to maintain livestock until adjustments can be made.

To adjust livestock numbers in utilizing excess forage production, these ways are suggested: (1) buy dry stock, such as steers, for short-term gains; (2) hold calves longer, and put more weight on each animal; (3) hold over more replacements, which gives greater opportunity for upgrading the

breeding herd; (4) cut excess forage for hay or silage for use in years of low production; and (5) lease or rent grazing to other livestock operators.

Equally important with establishing planned alternatives for keeping livestock numbers in balance with forage is to know *when* to implement them, recognizing as early as possible when adjustments in numbers will be necessary. An operator doesn't need to wait till July to decide whether he is having a good growing season. If moisture is below normal in the soil profile by mid-April, he knows adjustments in his program will need to be made by summer.

Ranchers, range managers, and range conservationists realize good quality grass is the cheapest livestock feed that can be grown on millions of acres of rangelands. They also know that range resources must be managed to meet the needs of both the plants and the animals. Flexibility in management plans will aid the manager in obtaining optimum use of the range and related resources despite fluctuating forage production.

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