All of the 150 acres found on the Gravelly Loam site in 1950 had improved from fair to good condition.

The Bottomland site improved one condition class; 27 acres were in fair condition in 1950, and in 1957 these acres were found to be in good condition.

Range improvement by range site and range condition class from 1950 to 1957 is shown in the accompanying chart.

**Increased Grazing Capacity**

Another way to measure benefits of this system of grass management is in the increase in the animal units that are grazed on the same range. Prior to 1950, Dale ran 40 animal units on his range. Almost immediately after starting this rotation - deferred system of grazing he was able to increase his herd to 55 animal units. This was made possible chiefly because of an even harvest of all of the forage, and re-cropping the pastures that were grazed first each spring. As the condition of the range improved Dale was able to increase the cow herd. In 1957, he carried 80 animal units on the ranch, exactly double the number he was able to run in 1950.

The second chart gives a graphic picture of the yearly increase in animal units Bly has been able to carry on his ranch throughout this period.

**Benefits Summarized**

In summarizing the benefits of the rotation-deferred system of grazing that has been in effect on the Dale Bly ranch for seven years, it can be said that the system corrected a bad distribution problem. He has been able to get improvement over all of his ranch, even though the "key" grasses have a different season of use. He now gets an even utilization of practically all of his forage, which helps in determining proper use.

The systematic harvest of his grass crop has resulted in a 100 percent increase in the carrying capacity. He runs 80 animal units on the same range that would support 40 animal units seven years ago. Plants, when given the opportunity to fully develop before they are harvested, consistently yield more than plants that are harvested at weekly intervals, or more often, which is frequently the case when ranges are grazed season-long.

The quality of the forage has improved. This is reflected in heavier calves.

Dale Bly says it is the only system for his type of country, and he is planning a similar system for another ranch that he has recently acquired.

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**How Much Feed Can This Range Produce?**

R. E. BEMENT and D. W. DAVIS, Work Unit Conservationist and Soil Conservationist, Soil Conservation Service, U. S. Department of Agriculture, Craig, Colorado

Most ranchers in the Great Divide and Yampa Soil Conservation Districts know how much feed their hay lands produce. They also know how much they can expect to increase hay production through better management of these hay lands. The boards of supervisors of these two northwestern Colorado Soil Conservation Districts felt that sound grass management would be practiced more quickly if the same questions could be answered with regard to range lands.

It was decided that information to answer these questions could be obtained at the same time that range site and range condition maps were being made for ranchers cooperating with the districts. A range site is a unit of range land having the potential ability to produce essentially the same kind and amount of forage plants. The Rolling Upland site contains more acres than any other range site in Moffat County so it was here the work was started.

In conservation ranch planning, each range site is classified and mapped as being in excellent, good, fair, or poor condition. This condition classification is based on the number and kinds of plants, the density of the plant cover, the amount of plant litter and residue found on the ground, the vigor of the forage plants and the erosion activity. When such a map is completed, a rancher can tell how many acres of range he has in each condition class found on the ranch. If the amount of forage produced per acre by each condition class within a range site were known, it would be possible to use this map to estimate the range forage produced on the ranch. This information would also make it possible to use the map to get an idea of the potential production of which the ranch is capable. Clip plots were made in each condition class that was mapped in the Rolling Upland site during the 1953 field season.
Condition and Forage Production

In order to establish the relationship between the number and kinds of plants found in each condition class and the weight of the forage produced, the following procedure was used. The range conservationist tallied the plants that occurred along a transect made as he passed through the range being surveyed. These plant lists were then used to determine the position percentage-wise that the various plants occupied in each condition class. This vegetative composition for each condition class was then arranged in chart form and appears in the upper half of the Range Condition Guide prepared for the Rolling Upland site (see figure).

The next step was to clip plots in each condition class to determine the pounds of forage produced per acre. The clippings were made late in the season after the forage had made its full growth. The clip plots were located along the same line of travel used by the range conservationist in determining the plant composition earlier in the season. The forage clipped from each plot was placed in a paper sack and allowed to become air dry before the weights were taken. These weights were then compiled and appear as the lower half of the Range Condition Guide.

This chart showing the percentage of the more important plants found in each range condition class and the pounds of air dry forage produced per acre is furnished each rancher along with his range site and range condition map. It serves as a guide to indicate to him not only what his range is producing but also what it can be expected to produce by raising it to a higher condition class through better grass management.

Several ranchers have compared the 66 pound yield per acre in poor condition class in this site to one bale of hay. Carrying the comparison to the other condition classes indicates that fair condition range produced the equivalent of 2½ bales, the good condition range, 5½ bales, and the excellent condition produced the equivalent of about 8 bales of hay. These clippings are samples of only one year's production, but it is felt that they do indicate significant production differences between the condition classes. It is also believed that as these ranges improve, we will find even higher production in the upper portion of the excellent condition class.

Bluebunch Wheatgrass Key Plant

A study of this guide will show that bluebunch wheatgrass (Agropyron spicatum) is the key plant to watch in this range site. The pounds of forage produced per acre increase as the amount of bluebunch wheatgrass increases. This is the plant a rancher can watch as his range improves. Bluebunch wheatgrass will indicate the trend of his range as it passes either up or down the condition class scale.

All the condition classes mapped in this study had, at one time, been in either fair or poor condition. The good and excellent condition ranges have been raised to their present condition through proper grass management which included deferred and rotation grazing. Improvement of these ranges has been a slow process. As the range gets higher up in the condition class scale, noticeable improvement required less time.

Those ranges in poor condition required more intensive treatment to bring about a noticeable change within a reasonable time. Some of these ranges have been cleared of sagebrush and reseeded to adaptable grasses.

This range condition guide for the Rolling Upland site is helping to answer some of the range questions for the Yampa and Great Divide Soil Conservation District cooperators. It gives an idea of how much the range is producing and also an idea of how much feed it can produce.

Range Condition Guide for the Rolling Upland site on the Great Divide and Yampa Soil Conservation Districts in northwestern Colorado. The vegetative composition for each condition class appears in the upper half of the guide and the forage production for each condition class in the lower half.