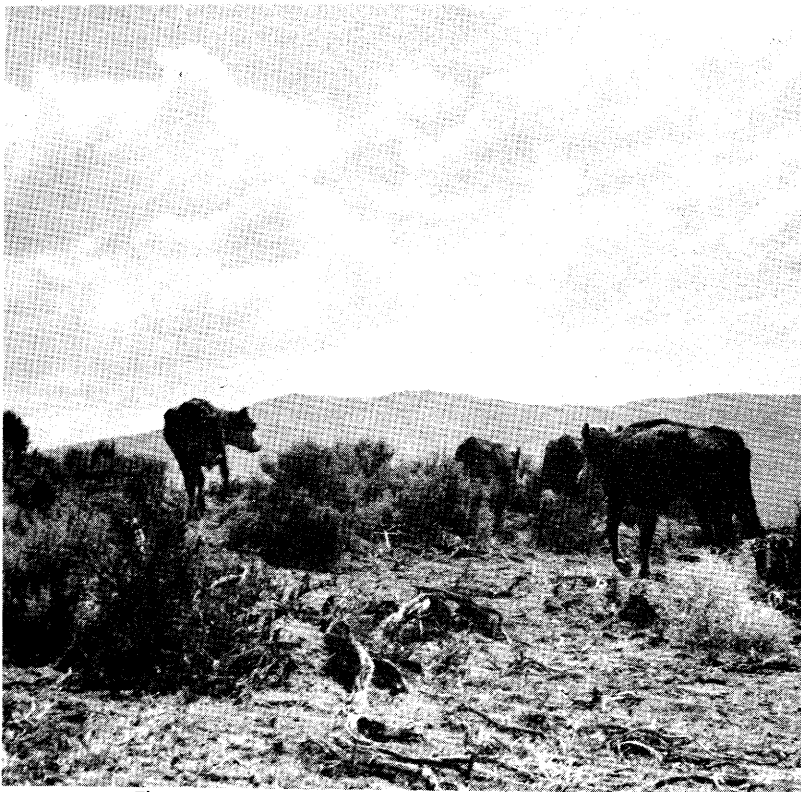


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The unimproved table is a poor forage producer.

# There's more to eat on 'The Likely Table'

By **BURGESS L. KAY\***  
and **JOHN CHOHLIS**

WHAT do you do with sagebrush range when it obviously needs to have *something* done to it?

Improve it, of course!

But how, and with what? More important, how much will it cost and will it be profitable? That's what Modoc County cattlemen wanted to know. Eight years ago, when the University of California was searching for a "demonstration range," Modocers harnessed their curiosity with that of UC researchers on an area of sagebrush-covered table land near Likely.

To university scientists, the demonstration site was ideal, since it was typical of a wide area. Originally owned by the Flournoy family, whose members have cooperated throughout the 8-year experimental period, the area is currently owned by Warren Flournoy.

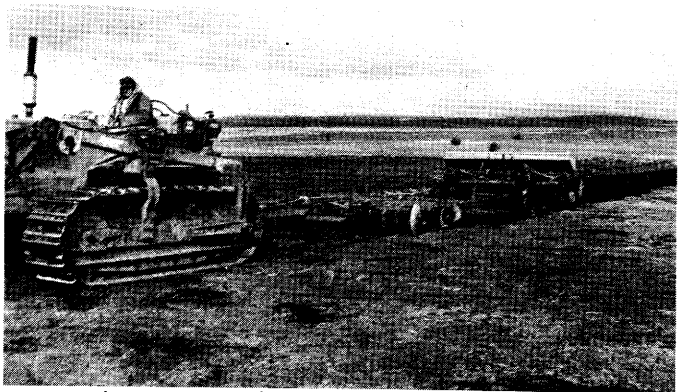
Precipitation at Alturas, 20 miles north, averages 12.8 inches with seasonal totals varying widely. In the experimental area it is 20% less. Growing season is short and variable in the 4,500-ft. elevation where winter temperatures commonly fall below zero and summer readings may exceed 100 degrees.

Getting rid of the sagebrush was the first move. After eight years, during which spraying, plowing, beating and burning were tried, fire has proven to be the most practical. Fire not only kills the sagebrush, but consumes the plant, clearing the area of trash permitting cultivation with conventional grain farming equipment and planting to perennial grasses. But fire, though inexpensive, is hazardous, and is effective only in years when there is enough cheatgrass to carry the fire. Spraying with 2,4-D is practical only when there is an understory of perennial grasses which can increase after the sagebrush is dead.

On the Likely Table, unless wheatgrasses are planted after the sagebrush is removed, cheatgrass production will increase. And, although it's better than sagebrush, it leaves much to be desired as a forage plant. It is green for only four to six weeks and production can vary--from almost none in 1959 to 1,160 lb. of dry weight forage per acre in 1962.

The extreme variation in cheatgrass yield and its critical dependence on April and May rainfall (see Table 1) emphasized a big need for more dependable feed.

Commercial fertilizing trials show that forage production is even more erratic from fertilized cheatgrass than from non-



Disking, harrowing, and seeding are done in one operation between storms.



These heifers on Greenar intermediate wheatgrass gained 1.7 lb. per day from April 14-18, even though stocked twice as heavy as the check.

fertilized, as can be seen in Table 2. But, even when there was a response in good years, in no case has the cost of the fertilizer been justified by the increased forage produced by cheatgrass.

To find the kind of plants that out-produce cheatgrass, especially in poor years, UC workers began testing species from all parts of the world and although they've settled on four, the search and testing for even more productive strains continues. As the figures in Table 3 show, there is no great difference in yield among



Modoc ranchers listen as Warren Flournoy explains how he improved his sagebrush range with wheatgrass.

the wheatgrasses best adapted to the area—crested, intermediate and pubescent.

There are, however, other important differences. Both Topar (pubescent) and Greenar (intermediate) have proven easier to establish than crested. Topar and Greenar seed is twice the size of crested and can, therefore, be planted deeper than crested and still successfully emerge. This is an important consideration on the "Table" where, according to locals, "for every inch of rain, we get two inches of wind."

In addition, Topar and Greenar produce underground stems the second or third year, thus thickening the stand. Crested does not. Nor does it reseed itself in this location. As a consequence, stands of crested become progressively poorer. The three wheatgrasses produce grazeable forage at about the same time, usually between April 1-15. However, Greenar stays green longest.

Big bluegrass, an excellent producer, often outyields the three wheatgrasses and produces grazeable growth several weeks ahead of wheatgrasses, even in poor feed years. It also matures earlier. In 1959 and 1961, the two poorest feed years, big bluegrass produced almost three times as much as any of the wheatgrasses.

But on this dry, windy site, the very small seed of big bluegrass and the fact that seedlings can be easily pulled up by grazing cattle, prevent its widespread use.

Best of the alfalfas are Rambler and

Table No. 1. Total herbage production and precipitation on a cheatgrass range 1955-1962.

Year	Total herbage production (pounds/acre oven dry)	Precipitation (inches)	
		April and May	July 1-June 30
1954-55	210	2.10*	8.73*
1955-56	200	2.20*	14.61*
1956-57	1090	3.31*	15.48*
1957-58	110	1.52*	17.40*
1958-59	0	0.79**	4.92**
1959-60	390	1.58**	7.28**
1960-61	60	0.57**	5.37**
1961-62	1160	4.98**	10.19**

\*Alturas-U. S. Forest Service data

\*\*Measured on experimental range

Table No. 2. Herbage responses to annual applications of nitrogen and sulfur to a cheatgrass range—yields are pounds of herbage per acre—oven dry.

Year (Spring)	N120S80	N30S80	Check
1955	210	210	210
1956	1450	610	200
1957	6810	3110	1090
1958	3040	460	110
1959	0	0	0
1960	2350	670	390
1961	0	30	60
1962	3610	2800	1160

Table No. 3. Yields of four promising grasses—1957-1958. Trial planted fall 1955—yields are pounds per acre oven dry.

	Commercial Crested Wheatgrass	Greenar Intermediate Wheatgrass	Topar Pubescent Wheatgrass	Sherman Big Bluegrass
1957	1490	1180	1060	1770
1958	430	520	340	400
1959	250	290	290	830
1960	370	300	480	450
1961	220	220	200	570
1962	750	640	720	1230

Ladak. Rambler looks particularly good, probably because under light grazing it produces underground stems. It should be better adapted to the site's shallow soil (10-20 inches) than the tap-rooted varieties such as Ladak.

Although some fall seedings have been successful on the "Table," spring seedings (from early March to late April) have been more consistent. Greatest advantage of spring seeding is weed control;

cheatgrass, a vigorous competitor is killed in the seedbed preparation.

If improved forage species doubled production in poor years, can you expect additional increases by fertilizing? The answer, for this area, is 'no.' Responses were similar to those from fertilizing cheatgrass. More important, however, was the wheatgrass mortality on the fertilized plots during the dry years. No mortality was detected on the unfertilized check plots. The higher the fertilizer rate, the greater the mortality; and mortality was greater on grazed-fertilized plots than on protected fertilized plots.

But the real value of the Likely Table demonstration lies in a 900-acre pasture which was burned in August, 1957. The pasture was fenced into two equal units of 450 acres each. One was allowed to revegetate naturally into a cheatgrass range which was used as a check. The other was seeded to Greenar and alfalfa in alternate 7-inch rows in the spring of 1958, after the area had been double disked and harrowed with a spike tooth.

The results were outstanding! No grazing was done during the year of planting and the following year (1959) was so dry—4.92 inches—that essentially no growth was produced.

On April 14, 1960, the Flournoys turned 97 short yearling Hereford heifers into the wheatgrass pasture and 50 into the cheatgrass check. After two weeks, animals were removed and weighed. The 50 heifers in the check were just holding their own—not gaining or losing.

The 97 in the wheatgrass had gained 1.7 lb. per head daily.

After weighing, 80 were returned to the wheatgrass and 50 to the check. All heifers were removed and weighed June 2. The 50 in the check averaged 1.1 lb. of gain during the second period and the 80 in the wheatgrass 1.3 lb.

The 450 acres of wheatgrass produced 16 lb. of beef per acre for the entire spring—the cheatgrass only 4 lb. per acre. Though not measured, the unimproved sagebrush probably produced less than 1 lb. per acre.

Another grazing trial was attempted in 1962, an excellent feed year despite below-normal rainfall, but the established wheatgrass and the cheatgrass grew so fast that animals were unable to keep up with the feed.

Is an improvement program like this profitable? If you need spring feed badly enough and own grain farming equipment, you can figure it out for yourself. Warren Flournoy did. In the spring of 1963 he planted the 450 acres used as a check in the grazing trial to Topar and Rambler alfalfa.

End

\*Burgess L. Kay is Associate Professor in Agronomy, University of California, Davis.