

Farmer-Stockman



Rangeland Miracle

By JERRY LESTER

—Bureau of Land Management Photos

Here is the first spring run-off caught on the redesigned dike system of the Alzada project in Carter county. Snow still remains along the sides of the dike to the right while the excellent job of water spreading can be seen to the left through the sage brush. Such irrigation increased carrying capacity by 350 percent

CHANGING the gumbo-hardpan sage land of southeastern Montana into productive range with $3\frac{1}{2}$ times the animal carrying capacity it formerly rated sounds like nothing short of miraculous, but it has been accomplished on the Alzada water spreading project of the bureau of land management in Carter county.

According to Tom Dudley, range manager, bureau of land management, Miles City, the secret of increasing forage on this type of land lies in spreading the water (mostly spring run-off and heavy flood waters from rains) over the range with a system of dikes that will hold the water for a time but also allow it to flow around and flood lower diked areas.

1,000-Acre Project

The project involved 1,000 acres of gumbo land, much of which was cut up with deep gullies and washed-out draws. The area was one of baked, hardpan soil with sage brush and very little range grass. Surrounding hills formed a considerable drainage basin,

but the water never stayed on the ground long enough to do any good.

"The work was begun," explained Dudley, "with the purpose of stopping the water erosion and facilitating water spreading through a system of dikes that would in turn allow the production of more forage on the range."

Prior to construction, the 1,000 acres of land were given an animal carrying capacity of 10 head but three years later this was raised to 35 head, an increase of $3\frac{1}{2}$ times. The cost of development was about \$3 an acre.

The work was started in 1945 and followed along the usual lines considered common practice in the area. The dikes were laid out herringbone style, following the practice of most ranchers in the area, who diked across the cuts in a manner that allows the water to spread but also flow down the slope of the land. The slope here, incidentally, was from $\frac{1}{2}$ to $1\frac{1}{2}$ percent.

First Dikes Unsatisfactory

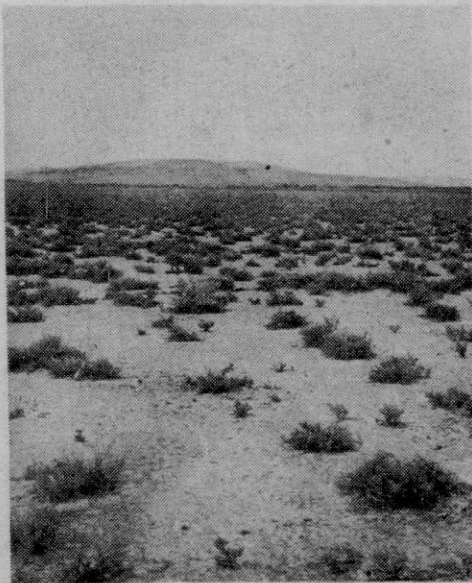
This initial diking, done with a motor patrol grader, was unsuccessful in many ways. The position of the dikes was scraped clean by the blade and then the dirt was thrown up onto the smooth surface. The result was a lack of bond between the hard

surface floor and the new dike material. This caused the dikes to wash out in many places.

Then too, the dikes were put where the eye would say they should be and allowed some grade so that the system would flow smoothly. This was found to be an error, and a contour map was drawn on the area. The original system allowed the water to flow too fast, and channels began to be formed. The dikes washed out that first year, and a stock water reservoir built in the CCC days also went out again.

The next year, the dikes were put in on the contour of the land. Stakes were placed to mark the position of the dikes and then a two pronged ripper was used to rip up the hard pan as deep as possible. Then a bull dozer or motor patrol was used to build up the 3 foot high dikes. Toward the upper end of the system or in the lower places, wherever it was assumed a considerable amount of silt would settle, the

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Before

Here is the gumbo hardpan sage land with sun-baked cracks before the water project was started.

After

Here is the result of the water spreading seen two years later—a good stand of native range grass where only sage brush and a few straggling blades of grass stood before. The men in the picture are, left to right: Leon Huret, forest supervisor, Rocky Mountain experiment station, Missoula; Larry Short, chief of range research, range experiment station, Miles City, and Tom Dudley, range manager, bureau of land management, Miles City.

