

tion increases and becomes available to the deeper-rooted grasses. I feel that the most important result of chiseling is the increased amount of water infiltration into the soil.

A chiseling done late in mid-May of 1983 illustrates that water infiltration increases. Two inches of moisture was recorded during 3 weeks after chiseling. At the end of the 3-week period, I checked soil water conditions in areas skipped by the chisels. There was no sign of available soil moisture in these areas. In contrast, the moisture had reached an approximate depth of 20 inches on the chiseled site. Western wheatgrass had already responded on the chiseled site, but little new wheatgrass growth was found on the non-chiseled site. In addition to improved water infiltration into the soil profile, chiseling also improves soil aeration.

A Montana rancher near the Canadian border chiseled a clubmoss-infested field in 1977. Within 2 years after the treatment, the rancher states that he has increased his stocking rate on the area by a factor of 3. A similar study conducted by Montana State University compared the useable forage on a plot dominated with clubmoss and blue grama

with a similar plot that had received a double-pass chiseling treatment. In this study, desirable forage production doubled within 2 years on the chiseled area. Proper range management should follow any range improvement project. The area treated should be protected from grazing during the first growing season, except for light use after September 1 to allow for seed trampling.

In summary, the chiseling rips up the mat of dense clubmoss and blue grama. Secondly, it improves soil aeration. Thirdly, and possibly the most important, it improves the infiltration of water into the soil, which increases the production of more desirable grasses such as western wheatgrass and green needlegrass. As with any project, cost must be considered. It is estimated that a single-pass chiseling project costs approximately \$12 to \$15 per acre. Again, I will stress the importance of grazing management. Remember, corrective measures are of no avail unless good management is practiced after the improvement. Every year these mat forming rip-offs are the instigators of multi-million dollar crimes. With the use of mechanical treatment these bandits can be stopped.

Project to Renew 66,000 Acres

Bill Keil

The whump, whump, whump of helicopter blades echoes across the south central Oregon hills of BLM's Lakeview district. Seed whirls from the dangling bucket onto the fire-scoured rangeland as crews race the weather to complete one of BLM's largest range fire rehabilitation projects in Oregon.

At the same time, crawler tractors, rubber-tired tractors, and even front-end loaders temporarily assigned from western Oregon road maintenance crews pull heavy-duty rangeland drills round and round the range, discing, metering out seed, and covering it.

The project involves dozens of BLM employees from top managers and purchasing people, to resource professionals and technicians, to the employees running the equipment, and the contractors and local cooperating ranches.

Project Covers Ground

By the time they finish this month (November 1983), they will have seeded the equivalent of a 2-mile-wide swath from Portland to Salem, or from Klamath Falls to Ashland. That's some 66,000 acres.

Last August, managers flew over the still-smoking 72,010 acre Sharp Top fire. They knew that strong winds would

soon whip up the ashes and soil. Something had to be done fast to protect the soil on a large share of the burn.

The staff soon had a plan to reseed the land and the outcome was an emergency financing proposal, approved by Washington, D.C., for nearly one million dollars.

Archeologists Check Sites

First action was for a crew of ten temporary archeologists to locate spots that obviously should not be disturbed—prehistoric campsites and such locations as hunting blinds. These were pulled from the project.

At the same time, the purchasing people started on the trail of seed—some 500,000 pounds of it. This year had not been a bumper crop for grass seed and they scrambled to round up a supply of rye and crested wheatgrass.

The vigorous-rooted annual rye produces a temporary cover to hold the soil and nurse the crested wheatgrass which eventually will dominate. The two are mixed before seeding.

Seeded from Air

The final plan calls for about one-fourth of the area to be seeded from the air, but it isn't just a matter of spreading the seed onto the ground. It must be covered. They "chain" it into the ground, shackling an end of a large ship's anchor chain

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Panorama of featureless country after burn shows seven sets of rangeland drills working ever-widening swath. Thirty-five drills were used on the project.

to each of two crawler tractors. The tractors drag the 350-foot-long chain across the seeding, covering the seed about one inch deep.

But the old standbys, the range drills, are still carrying the heavy part of the project. BLM's Vale district people scoured the West to locate 35 of the wheeled drills which carve furrows, deposit seeds, and cover them with soil. The problem was complicated this year by other large western range fire rehabilitation projects requiring equipment at the same time.

The tractors drag the drills down a long skirmish line, etching the pattern of furrows behind them as they go around miles-along swaths.

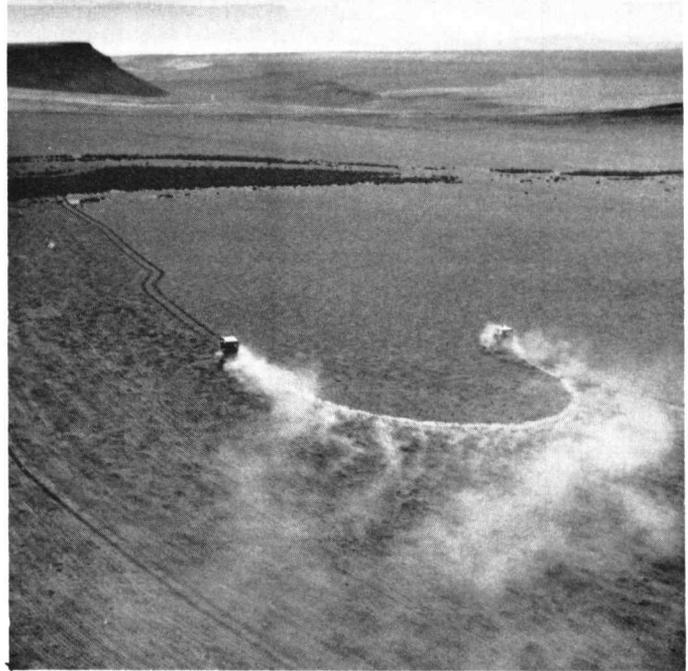
Work Days Are Long

The crews are working ten-hour days, six days a week, and

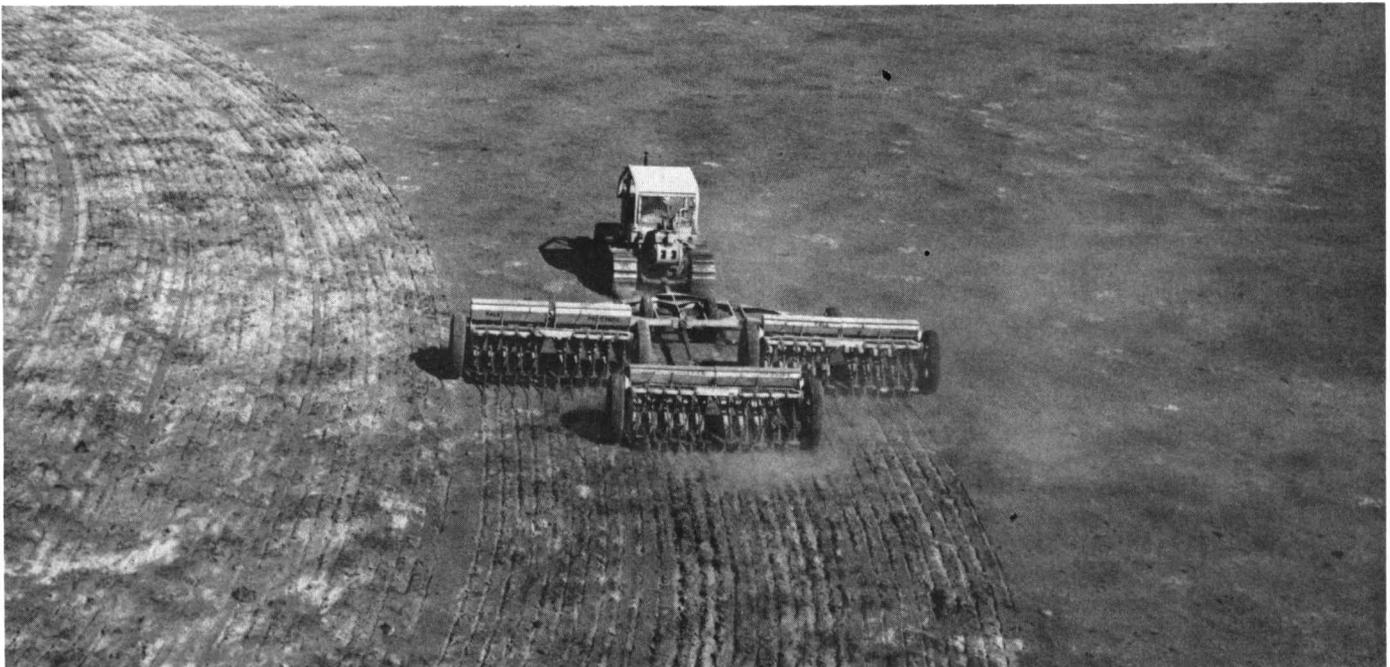
the mechanics work into the night to keep the equipment running.

The operations camp is housing and feeding a crew of 20 operating and maintaining the equipment. The camp's dusty environment more than demonstrates the reason for the entire project as whirlwinds whip dust columns from the nearby burn.

But everyone is of one mind. Get the job done. Get grass back on the land. Hold the soil.



Tractors pull ship's anchor chain across burned rangeland which has been seeded from the air. Chain buries seed about one inch deep.



Rangeland drills, three in tandem, are discing, seeding and covering seed in fire rehabilitation project.