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MARDEN BRUSH CUTTER TRIALS

Roy W. Ritchie and Marvin Dodge^{1/}



Filling the Marden Duplex Brush Cutter with water prior to the Latour State Forest tests.

^{1/} Forest Technician, Manager Latour State Forest, Redding, and Forest Technician, Riverside, respectively, California Division of Forestry.

Millions of acres of California timber and range lands are infested with brush and chaparral. Present methods of clearing brush are costly. A method that would reduce the cost of clearing brush to improve range land or prepare timber sites for tree seeding or planting is needed.

A Marden Brush Cutter^{2/} (cover photo) was field tested at Ranchita Range Study in San Luis Obispo County and at Latour State Forest in Shasta County. This machine has been successfully used in the southern United States,^{3/} and tested in the Pacific Northwest.^{4/}

The Marden Brush Cutter

The Marden Duplex (B-7) Brush Cutter (cover photo) is a tandem pair of water filled drums with knives set parallel with the long axis of each drum. The drums are aligned so that there is an angle between their axes. This alignment imparts a rolling, sidewise cutting action to the blades as is seen in a tandem disk used in farming. This action should result in an effective brush cutting and washing job. Each drum is 64 inches in diameter. When filled with water, the two-drum machine weighs 11 tons. The Brush Cutter was towed by a D-8 tractor with blade in these tests.

Ranchita Range Study Trial

Dense brush stands reduce the grazing capacity of range land in California. At Ranchita Range Study area in San Luis Obispo County different methods of controlling brush are being demonstrated.

A Marden Duplex (B-7) Brush Cutter was field tested on this study area in May, 1960. In medium density brush, four to eight feet tall, the Marden Cutter chopped about 70 percent of the brush into the ground in one pass as shown in figure 1. Chamise (Adenostoma fasciculatum), wedgeleaf ceanothus (Ceanothus cuneatus), mountain mahogany (Cercocarpus betuloides), California sagebrush (Artemisia californica) and black sage (Salvia mellifera) were the brush species in this test.

2/ No endorsement of a commercial product by the State of California is implied. This is a factual report of observations on a type of equipment which is available to perform field work of interest to owners of forest and brush covered lands.

3/ WOODS, F. W. 1959. Converting scrub oak sandhills to pine forests in Florida. Jour. For. 57:2, 117-119.

ANON. 1949. More and better grass with Marden Duplex Brush and Weed Cutter. Marden Mfg. Co. Auburndale, Florida. 20 pp.

4/ HOPKINS, H. G. and L. N. ANDERSON. 1960. The Marden Brush Cutter for slash disposal and ground preparation. Jour. For. 58:5, 377-379.



Fig. 1. Closeup showing mulched brush and small ridges made by Brush Cutter knives. Ranchita Range Study Area.



Fig. 2. Marden Brush Cutter and clearing in tall ceanothus at Ranchita Range Study Area.

In heavy whitethorn (Ceanothus leucodermis) and wedgeleaf ceanothus, 18 to 20 feet in height, the Marden Cutter crushed the brush and partly chopped it on the first pass. The heavy volume of branches and stems formed a cushion which prevented complete cutting and burying of the brush (fig. 2). A second pass was made over this heavy material. Then about 80 percent of the vegetation was chopped into the soil, leaving a small amount on the surface.

Live oak (Quercus agrifolia), a species with pliable branches and stems, was the toughest brush for the cutter to handle.

The slopes at Ranchita vary from broad sloping ridges to steep gullies. Soils are light textured and not rocky. The maximum practical slopes for this machine at Ranchita were about 30 percent. To reduce erosion, the Marden Cutter should be operated straight up and down slope.

The Marden Cutter successfully chopped the brush in this trial and left a prepared seedbed.

Latour State Forest Trial

Converting brush field to timber stands is part of the experimental work at Latour State Forest in eastern Shasta County. The brush must be removed to plant or seed the selected area to trees.^{5/} The brush stands are composed of manzanita (Arctostaphylos parryana var. pinetorum), chinkapin (Castanopsis sempervirens) and snowbrush (Ceanothus velutinus).

The Marden (B-7) Duplex Brush Cutter did not satisfactorily prepare a site for seeding in a brush clearing test at Latour in August, 1961.

The test site is on a broad gently sloping brushy ridge (fig. 3). The brush is from five to ten feet tall. A light textured soil (Windy series) underlies this brush field. The manzanita has hard woody stems but is easily uprooted, while the chinkapin is pliable and is well rooted.

The Cutter was towed by a D-8 bulldozer in a rectangular pattern over eight acres of a 15-acre test site. With one pass over the area the brush was not completely cut nor mixed into the soil (fig. 4). The direction of travel was then reversed and a portion of the mashed area treated again. Additional passes failed to make any noticeable improvement.

^{5/} COX, Paul and R. W. RITCHIE. 1960. Chemical brush control on Latour State Forest. Calif. Div. of Forestry. State Forest Notes No. 3. Sept. 1960. 8 pp. Processed.

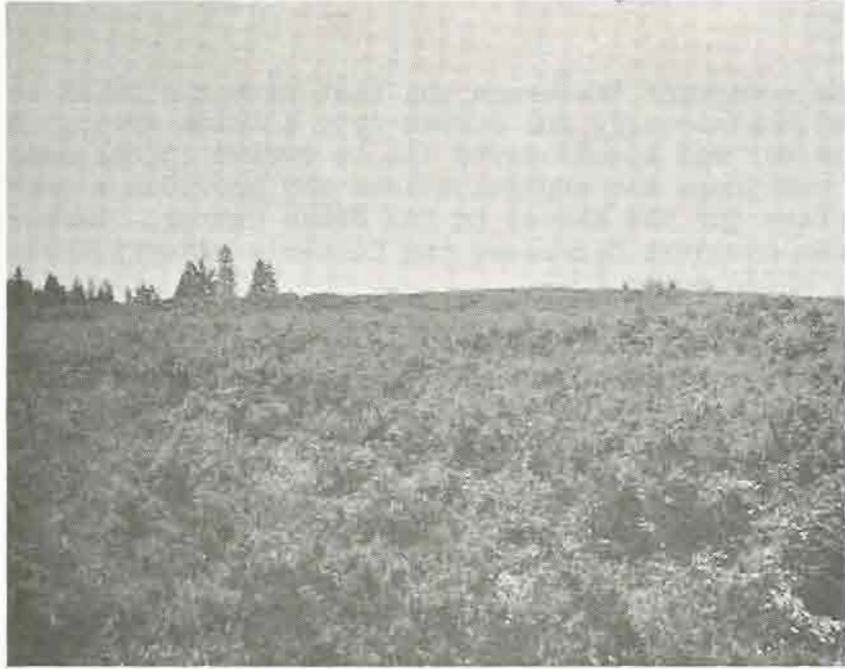


Fig. 3. View of brush field treated on Latour State Forest. One treated swath in foreground.



Fig. 4. D-8 bulldozer towing Marden Brush Cutter at Latour State Forest. Treated area in center is about four Cutter swaths (28 feet) wide.

As the equipment traversed the test site the brush stems were twisted horizontally and formed into a thick springy mat. Beneath this mat was a duff layer six to twelve inches deep which also cushioned the equipment load and provided a poor bearing surface for the knives on the Brush Cutter. Large, partly hidden boulders decreased the Cutter's effectiveness by dulling the knife edges.

From results of the test it appears that this machine might be useful on sites where the brush is shorter, less dense, or where the woody material is more brittle or softer than found on this test site. Sites containing large hidden rocks pose an additional problem.

Conclusion

From these trials we conclude that the Marden Duplex Brush Cutter may have some application to land clearing in California: Still the machine has its limitations. The Cutter worked best on moderate, non-rocky slopes, and in brush fields that were not too dense, or where the vegetation was composed of species with relatively soft brittle wood.