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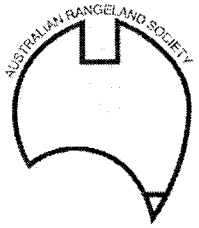

The Australian Rangeland Society

WOODY WEED CLEARING USING A LOW ENERGY GRUBBER

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ABSTRACT

The use of low energy grubbing implements to remove woody weeds is a low cost alternative to the use of chemicals or larger equipment in stands described as open or semi-open. They have a particular application where desirable shade trees are also in the paddock and would be affected by other clearing techniques.

A hydraulically assisted grubbing implement with "V" shaped cutting blade is undergoing preliminary trials at Cobar, in the west of N.S.W. The 'BRUSH BOSS' was imported from the Texas company Harkness Hayporter.

INTRODUCTION

Control of woody weeds is made difficult due to the high cost of control methods relative to land value. Low cost alternatives are few and regrowth often causes a good job to be wasted if not attended. Control by fire is often impractical due to the lack of fuel to burn.

Grubbing is considered effective against all species of woody weed. As opposed to blade-ploughing, grubbing removes the rootstock in friable soils and decreases the chance of suckering. Land is immediately made available to pasture and may promote recruitment due to soil disturbance and protection from the uprooted shrub. The grubbing technique is often used as part of an integrated approach to woody weed control depending on the density of infestation.

The Brush Boss has been trialled in the U.S.A. to control Mesquite and other shrubs with 90-95% kill. Sprouts and seedlings at densities up to 240/hectare were controlled for $15 to $24 per hectare (McFarland & Ueckert 1982).

GRUBBING TURPENTINE REGROWTH

The Brush Boss grubber was mounted on a 3-point linkage 60 hp Massey-Ferguson, rubber tyred tractor. The implement was trialled on turpentine regrowth previously chained in 1988 and progressively pushed up and burnt. Having regrown from rootstock, plants were 10-100cm in height with stem diameter of 0.3-1.5cm. Crown diameter ranged from 5.0-25cm. Costs were calculated for densities of 128 to 744 plants per hectare.

The tractor is reversed on to the shrub and the grubber is lowered 30cm in front of it. The brakes are applied and the hydraulic arm is contracted causing the blade to sweep through an arc removing the shrub and roots.

The tractor was operated at very low revs and fuel consumption was low at 2.02 litres/hour. Grubbing was made easier due to the coarse structure of the soil and some moisture. The operator became suitably proficient at using the implement after a period of approximately one hour.

The cost of clearing was approximated at 11 cents per shrub (including fuel and labour) for the lower density. The higher density proved to be unsuitable for grubbing because numerous plants had resprouted in close proximity from a single original rootstock. These shrubs were tedious to grub out individually as some were very small.

CONCLUSION

Assessment of the rear-mounted grubber indicates its usefulness as a low cost implement for clearing in a low density situation. Having to reverse onto bushes has been recognised as a problem and the Harkness Hayporter company has developed a reverse steering kit to overcome this problem. Front-mounted grubbers would also avoid backwards movement. Trials done in the U.S.A.

indicate that a front-mounted grubber with a wider blade can clear 200 mesquite trees/ha at 1.08 ha/hr (Wiedemann and Cross 1982) whereas the rear mounted grubber clears only 185 plants/ha for a similar period (McFarland and Ueckert 1982). The rear mounted grubber has been adapted and used locally in the Wilcannia district. The cost of control has been reviewed and is comparable to that of the Brush Boss with the advantage of forward movement (O'Leary and March 1992).

To maximise its effectiveness grubbing should be done when the soil is loosest (for instance after 5mm rain for sandy clay loams) so that roots are pulled up without severing. The technique is desirable because the risk of soil erosion is low and the results are immediate.

HARKNESS HAYPORTER® COMPANY
Kaufman, Texas 75142

BRUSH BOSS®
Patent Pending

ISOMETRIC

DETAIL

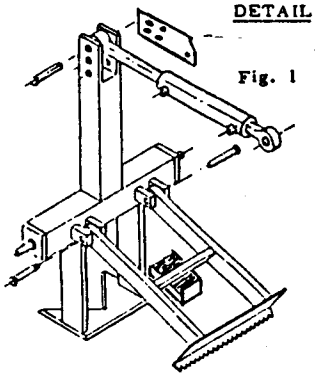

Fig. 1

SCHEMATIC DIAGRAMS OF OPERATION

(Using tractor 3-point hitch)

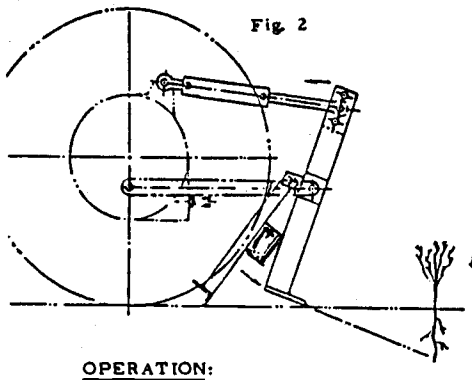

Fig. 2

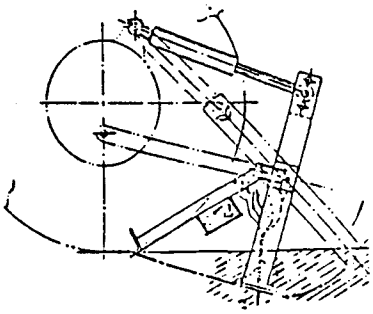

Fig. 3

INSTALLATION:

1. Install lift pins (I or II) in drawbar.
2. Mount plow in lift arms -blade flat.
3. Pin Cylinder butt to tractor
4. Hook up hydraulic hose
5. Extend rod eye 5 inches (half stroke)
6. Pin eye to plow post, use centering bushings, select best fit position with blade still flat, or tilted slightly up.
7. On tractors requiring long top links, follow above, using adapter plates (furnished) bolted inside of post members. Select best combination of holes in post and plates to give best fit. (Slight tilt upward of blade preferred)

OPERATION:

1. Extend cylinder, tilting blade down.
2. Drop lift arms all way down with blade about 10 inches from plant. (Scotching Foot will contact ground first).
3. Back into plant - when blade encounters root below ground -
4. Set brakes firmly, or continue rearward torque, - retract cylinder, swinging blade through arc and grubbing plant.
5. Continue backing - blade rides up, dragging longest roots out.
6. Raise lift arms, tilt blade down - drive forward to clean.

(Experience in your type of brush and soil will determine best grubbing depth - go no deeper than necessary - control depth by starting distance from plant and not with lift arms. The Scotching Foot works automatically and absorbs the brunt of the hydraulic grubbing counter-force. When driving forward be sure plow is LIFTED AND BLADE POINTED DOWN to give ground clearance.

Drawings by Mickey F. Lagow

11/4/80

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