SCRUB WEED CONTROL WITH CUTTING AND SLASHING MACHINES

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Summary

Rotary slashers and choppers are well suited to scrub weed control in any pasture renovation programme on tractor country. It is a cheaper technique than other methods of control and as effective. It also has a place in removing existing scrub cover in a development programme. The ultimate success of mechanical methods of scrub control is intimately tied up with subsequent management of the area.

INTRODUCTION

ANY scrub weed control programme aims at killing the existing weed infestation and preventing its reintroduction. This paper is largely concerned with the first part of this programme in the control of manuka (*Leptospermum scoparium*) and gorse (*Ulex europaeus*). Stock are often used for scrub and weed control in the development of good pastures on undeveloped or reverted country and indeed certain classes of stock have proved to be very suited to this work. However, it is unwise to push stock too hard in this direction when it is possible to use machinery as effectively and more cheaply in their place.

It is probably true to say that use of rotary slashers and choppers has done more to increase pasture production than any other farm implement introduced since the Second World War. These machines have cheaply and effectively reclaimed large areas of pasture from gorse, manuka, and other scrub weeds. They are best suited to a pasture renovation programme but they also have a place in land development.

Other methods of scrub weed control have the disadvantage of seriously affecting the existing pasture, often allowing further weed regeneration. Rotary cutting does not have this disadvantage and in addition is cheaper than most other methods.

THE MACHINE

There are two distinct types of machines which are useful for this type of work; the rotary slasher and forage chopper. The rotary slasher which has its cutter bar revolving parallel with the ground surface has a different application from the forage chopper which incorporates flails revolving at right-angles to the ground surface as its cutting mechanism.

The rotary slasher used for this type of work has to be a rugged and fairly heavy machine. In its most common form, it consists of a horizontal

rotating cutting device mounted on a robust frame and adequately shielded. The actual cutters are often attached by single high-tensile pins to a rotating disc and are thus free swinging. When the machine is in operation, centrifugal force keeps the cutters in the cutting position. Power is supplied from the tractor power take-off and a heavy-duty gearbox is incorporated in the drive. On some machines a safety clutch is fitted to absorb shocks and to slip under prolonged overload. Other machines rely on the swinging action of the blades to avoid serious damage to the machine when obstacles are encountered.

The tip speed of the cutters is considerable. With a power take-off speed of 540 rpm, the tip speed of the blades is often in the vicinity of 11,000 ft/min. Obviously this high speed has a great deal to do with the cutting efficiency of the machine but a slightly tapered edge to the blade also helps with the cutting and lessens power requirements.

It is sometimes considered desirable not only to cut the scrub but to mulch it up also and the more enclosed the cutter is the more it will mulch the material cut. However, the limiting factor in performance here is often the available power, so in some cases it may be better to let the material dry and then cover the ground again and do a thorough job of the mulching.

Like the rotary slasher, the forage chopper used for this type of work should desirably be a rugged machine. The flails on the horizontally mounted rotor of these machines vary somewhat in design and size, some machines having very heavy flails which can be an advantage in heavy scrub clearing. The heavy flails assist in maximizing the centrifugal force which keeps the flails in the chopping position during operation.

When operated at high rotor speeds, the forage chopper produces a reasonably short chopped material. This is desirable as short chopped material will rot down more quickly. However, in heavy scrub it may not be possible to operate at a high rotor speed so, as with the rotary slasher, it may be necessary to go over the area again later in order to obtain a satisfactory mulching.

CONTROLLING MANUKA

A farmer intending to develop tractor country covered with manuka up to 10 ft tall can crush it with a crawler tractor using a blade or by pulling a cleated roller or discs. The next stage is to burn, and if the farmer gets a poor burn he is left with a stick problem. A rotary slasher will knock down the scrub just as well, and, because it cuts off the plant and smashes it to pieces, a much better burn results. Any remaining sticks lie flat on the ground with subsequent quick rotting. The costs are at least comparable and often rotary slashing is cheaper because a farmer can use his existing tractor instead of having to hire a contractor and crawler tractor.

If the farmer had shorter scrub, he could burn it standing prior to cultivating, but once again a poor burn means standing sticks that take a long time to decay. The use of a rotary chopper prior to burning will avoid this nuisance.

Rotary slashers and choppers are probably best suited to controlling regrowth manuka in an existing pasture, where mere removal of the weed will allow pastures to recover. There is no really suitable alternative in this case if the pasture is not to completely revert. Cutting the bushes by hand is satisfactory and may be an alternative but it is labour-consuming and costly.

Scrub of up to $\frac{3}{4}$ in. basal diameter is best handled with a chopper because it is too whippy to stand up to slashing. Bushes need to be about 3 ft high with a diameter greater than $\frac{3}{4}$ in. for best results with a slasher. Contract costs for cutting regrowth are about \$4 to \$5/acre and a farmer with his own machine can do the job for \$3 to \$4/acre.

CONTROLLING GORSE

Gorse, in its various stages of growth, can be handled in the same way by choppers and slashers more cheaply and as effectively as by cultivation techniques or chemicals. The seed regeneration problem with gorse is acknowledged to be its major strong point, but repeated slashing will eliminate all plants in time. The benefits of burning following slashing are not proven and a common programme is to slash a paddock twice in one year, and once in the following year, coupled with oversowing where necessary, topdressing and stocking.

Costs of developing land this way are cheaper than by spraying, and a better pasture results. A study of a problem gorse farm on the Coromandel Peninsula showed that gorse 4 to 8 ft high was replaced by pasture following slashing in March, with another slashing in May for a total cost of \$6 per acre. Subsequent treatment was to close and cut the area for silage with a forage harvester in the following spring and correct soil deficiencies by applying adequate dressings of the correct fertilizer.

PREVENTING WEED REINFESTATION

The second part to any pasture weed control programme is to develop a sward which will compete with any weed regrowth. These machines are in many cases more effective than chemicals, cultivation or burning, and their use does not destroy the pasture. If, however, burning off the cut scrub weed is carried out then oversowing is often necessary.

Seeding may be necessary to provide a competitive pasture, but often the existing pasture rejuvenated with topdressing will compete with regrowth. Pasture competition is essential and removal of the light intercepting weed cover coupled with topdressing will stimulate pasture recovery. Grazing management must aim at consolidating the pasture and chewing off regrowth shoots and seedlings. All soil deficiencies must be attended to and a careful watch maintained for insect pests that will damage the establishing pasture.

It cannot be over-emphasized how important it is in this type of development to ensure that all factors limiting pasture establishment are corrected.