

Blanket wipers for tall weed control

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This Farmnote describes how blanket wipers work, their advantages and disadvantages, some major weeds they can be used to control and how to construct a blanket wiper.

Introduction

Weed wipers work on the principle that weeds often grow taller than the surrounding pasture or crop, particularly in spring when flowering occurs.

These applicators wipe herbicides onto the taller weeds leaving the shorter, desirable pasture or crop species unaffected.

There has been an increased interest in weed wipers in recent years. Several new designs have been developed that greatly improve on the wiper applicators of the 1970s and 1980s.

The idea for weed wipers is not new. In the 1970s and early 1980s, the rope wick applicator was developed following the introduction of glyphosate. Although Western Australian tests with rope wick applicators showed reasonable control when applying glyphosate on cape tulip, bracken and rushes, rope wicks were not widely used. Their low level of acceptance was mainly due to:

- the high cost of the units (up to \$1000/m of wick);
- slow operating speeds (2 to 4 km/hr);
- inefficient flow control: and
- ropes which were easily torn from the chemical reservoir, which wasted expensive herbicide.

Blanket wipers

Blanket wipers have been developed as an alternative to rope wick applicators. An increase in the use of this equipment is evident in the ways that wipers are now being employed. They are operating within horticultural and broadacre farming systems and environmental areas to control many undesirable weed species. The main feature of the blanket wiper is the vertical strip of material (which acts as the wiping surface) attached to a horizontal frame. Herbicide is delivered to the blanket surface and then wiped on to the target plants.



Figure 1. ATV (All Terrain Vehicle) with 2 m blanket wiper.



Figure 2. 1 m 'golf buggy' wiper

Materials used for blankets vary widely and include hessian bags, felt, car upholstery fabric and marine carpet. The experimental units described in this Farmnote used a melded synthetic upholstery fabric, or marine carpet.

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Advantages of wiping herbicides

- Increased operator and environmental safety, because there is no spray drift.
- Herbicide is **not wasted** on non-target plants, because it is only applied to taller weeds.
- Optimum application times are not compromised due to unfavourable windy conditions.
- Homemade units are inexpensive and simple to construct.
- Units can be mounted on the front or rear of a vehicle or towed as a separate unit behind the vehicle.
- Blanket wipers are easy to use.
- They are light, robust, and have few moving parts that require servicing.
- Blankets are easy to clean and replace, if necessary.

Disadvantages of wiping herbicides

- Dense weed infestations may require a double pass from two directions at slower speeds to ensure sufficient chemical coverage.
- Blankets may become dirty and clogged, which reduces the effectiveness of some herbicides.
- Uneven terrain may result in target weeds being missed by the wiper.

Field tests

Ongoing field-testing of a 2 m unit mounted on a quad bike, all-terrain vehicle (ATV), continues to show encouraging results with good control of several tall growing weeds. A small 1 m-wide unit has also been fabricated. The 1 m-wide blanket is mounted on a golf buggy and pushed along by hand. It is particularly effective for controlling weeds in areas where the use of conventional equipment is not appropriate or



Figure 3. One-leaf Cape tulip at York in the season following treatment with a blanket wiper

spraying may not be an option. Good results have been achieved (see Table 1) using the herbicides metsulfuron methyl or chlorsulfuron on Cape tulip, Guildford grass, bracken, onion weed, Paterson's curse and arum lily. Glyphosate and paraquat were also used successfully in experiments to control the seed set of annual ryegrass and silver grass in clover pastures, and radish in lupins and chickpeas.

Table 1. Summary of weeds controlled using a blanket wiper

Weed	Chemical	Chemical	Water	Dilution ¹
				Time of treatment
Docks	glyphosate	1 L	2 to 3 L	Bolting stage, that is, when stems are just starting to elongate. When actively growing. If rushes are particularly dense, slash first and then treat the new growth.
Rushes	glyphosate	1 L	2 to 3 L	
Bracken	glyphosate	1 L	2 to 3 L	Slash old growth in early summer and treat young fronds in Jan. to Feb.
	+ metsulfuron	15 g	5 L	
Thistles	glyphosate	1 L	2 to 3 L	Bolting stage, that is, when stems are just starting to elongate. Apply June to September.
Cape tulip	metsulfuron or chlorsulfuron	1 to 5 g	5 L	
Guildford grass	metsulfuron or chlorsulfuron	1 to 5 g	5 L	Apply June to September.
Paterson's curse	metsulfuron	1 g	5 L	Treat at early to mid flowering stage for seed set control.
Parramatta grass	glyphosate	1 L	2 to 3 L	
Annual grasses	glyphosate or paraquat	1 L	27 L	Treat at the early to mid flowering stage for seed set control.
		1 L	19 L	
Arum lily	chlorsulfuron	5 g	5 L	Treat when at least 80% of infestation is flowering.
Dune onion weed	metsulfuron or chlorsulfuron	7.5 g	5 L	Treat at the early to mid flowering stage.
		10 g	5L	
Watsonia	chlorsulfuron or metsulfuron	10 g	5L	Treat from flower stem emergence to mid flowering.
		10 g	5L	

Note: ¹ The rates stated in Table 1 are assuming a volume of application of 10 L/ha.

Constructing a blanket wiper

Although commercial blanket wipers are available, some farmers have built their own low-cost units. The diagrams and information in this Farmnote describe the 2 m ATV-mounted experimental unit and are intended only as a guide for the construction of a blanket wiper. The golf buggy wiper is a simpler device and uses marine carpet instead of melded synthetic upholstery fabric. It does not have the conveyer belt rubber as support. This wiper has the option of wiping both forwards and backwards.

Blanket material

The wiper mounted on the front of the ATV used a melded synthetic upholstery fabric as the wiping

surface. It proved to be a tough fabric that wetted up quickly while not retaining large quantities of liquid and was suitably wear-resistant.

The blanket is made by stitching one layer of fabric and one layer of PVC together. It is backed by conveyer belt rubber 12 mm thick, to provide support for the wiping surface and to be sufficiently flexible to ride over obstructions. Refer to Diagram B.

Enclosed between the fabric and the PVC is the chemical delivery line with micro sprays or micro tube spaced every 50 to 100 mm. Two thin felt strips spaced 50 mm apart are stitched inside the bottom of the blanket across the full width to help distribute liquids evenly.

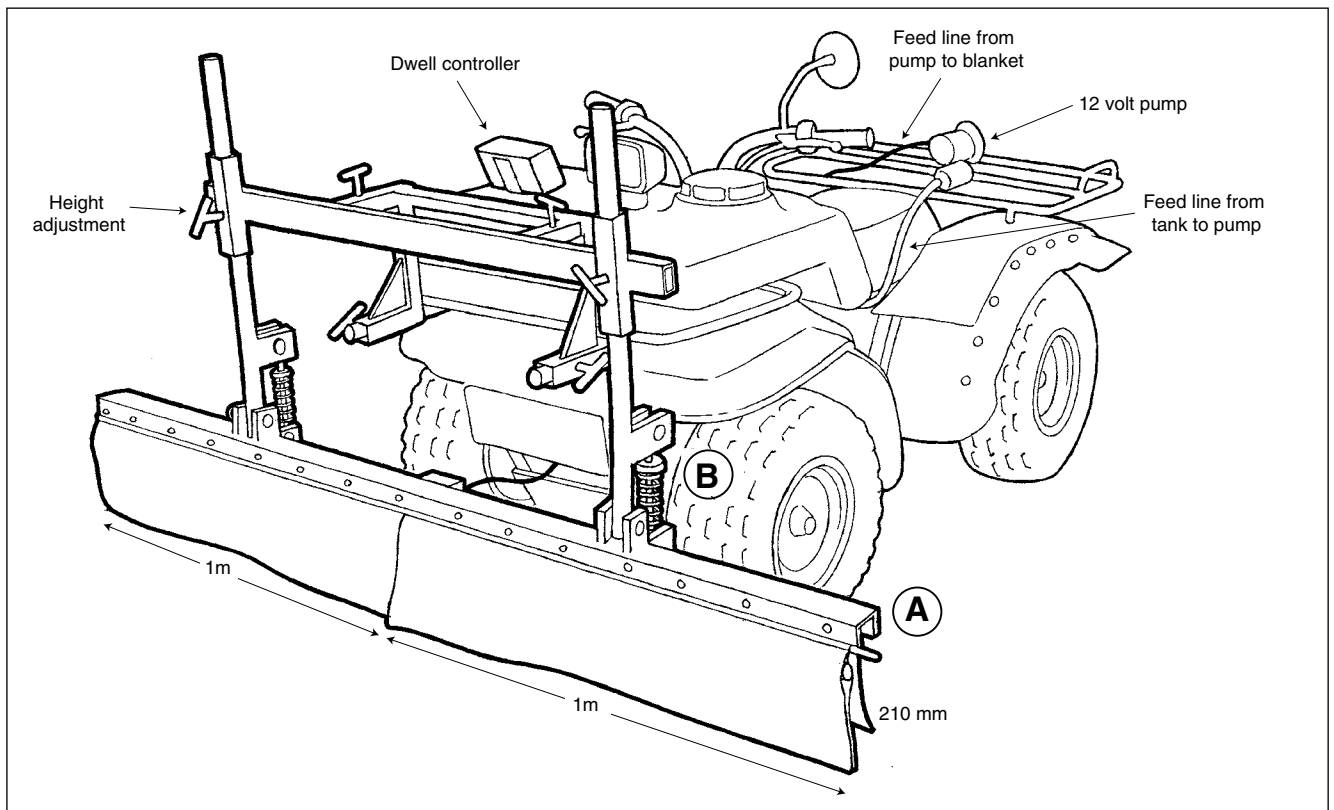


Figure 4. Front-mounted 2 m blanket wiper. A and B details are given in Figures 5 and 6.

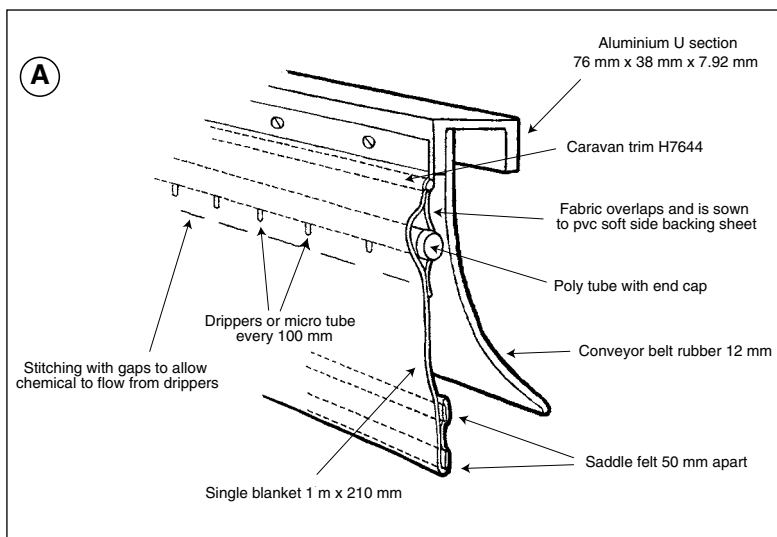


Figure 5. Side view, blanket detail

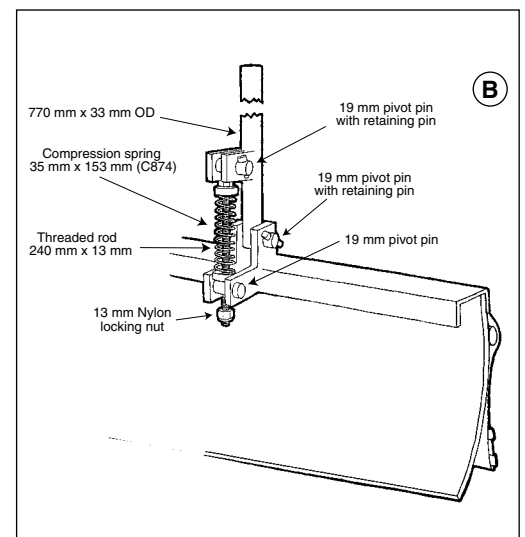


Figure 6. Spring tensioning system

Chemical delivery

A 12 volt pump is used on the experimental unit to deliver liquid to the blanket. Alternative delivery systems which could be used for blanket wipers include gravity feed or compressed air. The correct delivery system will depend on the size of the unit and available funds.

The flow rate is controlled by regulating the pressure and is switched on and off by a solenoid. A dwell meter mounted on the motorbike or inside the vehicle cab determines the interval at which the solenoid will open and the number of intervals open in a given time. Altering the settings on the dwell meter determines the desired flow rate of the herbicide mixture to match the density of the weed infestation, allowing the blanket to be saturated but not dripping continuously. The experimental wiper has an adjustable spring tensioning system to enhance wiper performance, particularly when treating woody or tall-growing weeds such as bracken, Paterson's curse, arum lily and watsonia. (See Diagram B.)

Materials used to construct the ATV-mounted blanket wiper

Blanket materials:

- Blanket backing – PVC 900 soft side (used for sliding curtains on trucks)
- Blanket material – a melded synthetic upholstery fabric
- Felt strips – saddle felt

Support boom:

- Aluminium channel – 76 mm x 38 mm x 6.3 to 7.92 mm
- Caravan trim – 6 mm
- Conveyer belt rubber – 10 mm to 12 mm
- Spring system (optional)

Delivery tube and associated plumbing fittings:

- Black nylon hose - 1/4 to 3/8 inch
- End caps – 1/4 to 3/8 inch
- Reticulation drippers or micro sprays (half circle) or micro tube
- T piece

Controller and electrics:

- Dwell meter
- Solenoid valve – 12 volt DC 1/2 inch barb (plastic body)

Materials used to construct the 'Golf buggy' blanket wiper

Blanket materials:

- Blanket material – marine carpet (5 mm)

Support boom:

- Light weight angle iron

Delivery tube, supply tank and associated plumbing fittings:

- Hose 1/4 inch
- End caps
- Micro sprays or micro tube
- T piece
- 5 L pump-up hand sprayer

For further information, contact Brad Rayner at Vasse Research Centre, Busselton. Tel. 9753 0333.

Further reading

'Farming Ahead', September 1995 (No. 45), pp 24-36, Kondinin Group.

Journal of Agriculture, Western Australia, Vol. 36 (1995). 'Wiping out tall weeds' pp. 18-19.