Cost Benefits of Weed Control

ECONOMICS OF SCRUBWEED CONTROL

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Summary

Whether aerial spraying or scrubcutters were used made little difference to the overall cost and profitability of a scrubweed development programme. However the value of government incentives was considerable, reducing the initial capital outlay by up to 34% (from \$495 to \$328 / ha) and the period required for paying back capital from 16 to around 8 years.

INTRODUCTION

Three major changes have occurred in recent years which have made aerial spraying of manuka and other scrubweeds a practical and economic alternative to the more common method of cutting or crushing then burning:

1. The development of a formulation of 2,4,5-T and picloram specifically designed for aerial application to scrubweeds.
2. The greater availability and use of helicopters, better application equipment and improved flying technique. These first two have substantially improved the reliability and degree of scrubweed control.
3. The difficulty and cost of obtaining and maintaining scrubcutters for large scrub blocks.

The aim of this paper is to compare the costs of an aerial spray programme versus scrubcutting and calculate their profitability taking into account the value of government incentive schemes available. Rather than present actual costs from different farms, a composite model is constructed which takes into account all the costs likely to be encountered and shows how they were derived. This then enables it to be used as a basis for costing any individual scrub or brushweed development programme.

BASIC ASSUMPTIONS

To determine the level of inputs necessary, scrubweed development programmes from six farms (two each in the Wairarapa, Taranaki and Wanganui regions) were studied. The blocks were 1-6 years old and 40-130 ha in size. However for the purposes of this study, the costings were based on a block of 50 ha of manuka with an understorey of gorse on 40% of the area which was eligible for a noxious plant subsidy of 75% of the herbicide cost. It was assumed that one stock unit (SU) of cattle would be run for every two of sheep, and the incomes per SU were \$15 per breeding ewe and \$6 per breeding cow, giving an average of \$12 per SU. When fully developed after 3 years, each hectare would carry 10 SU at an initial cost of \$15/SU, but for the first and second years would only carry four and seven SU respectively. The extra stock necessary for this 50 ha block was sufficient to qualify for assistance from the livestock incentive scheme. Details of the other costs involved, using the most recent prices at the time of writing, are in the appendix.

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Cost Benefits of Weed Control

TABLE 1: Scrubweed development costs / ha.

	Without Incentives	With LIS *	With LIS + NPS†	With LIS + NPS
FIRST YEAR COSTS / ha				
Scrubweed spray	157	157	110	-
Scrubcutting	-	-	-	175
Application	44	44	44	-
Roading	15	15	15	15
Fencing	45	45	45	45
Fertilizer	48	48	48	48
Seed	36	36	36	36
Thistle spray	-	-	-	10
Stock	150	30	30	30
	495	375	328	359
TOTAL				
ANNUAL COSTS / ha				
Stock	23	23	23	23
Fertilizer	17	17	17	17
Interest on Development Capital @ 8%	40	30	27	29
	80	70	67	69
TOTAL				
GROSS INCOME / ha	120	120	120	120
NET INCOME / ha	30	40	43	41
Payback period years	16.5	9	7.5	9
Total value of incentives	300	6300	8600	7100
Total capital for 50 ha block	24750	18750	16400	17950
Return on original capital %	14	19	21	19

* LIS = Livestock Incentive Scheme

† NPS = Noxious Plant Subsidy

DISCUSSION

The calculations in Table 1 clearly demonstrate the considerable finance necessary for farmers to undertake a scrubweed development programme; the long wait before the venture returns a profit; and the role government incentives play in relieving the financial burden. The effect of the incentives, particularly the livestock incentive scheme, which not only reduces the capital outlay but also the recurring interest cost, is to halve the payback period from 16 to 9 or 7.5 years. Where all incentives apply they amount to 34% of the development capital.

Looking at individual costs, there appears little difference whether a farmer employs scrubcutters or has the area sprayed. Whichever he chooses, he immediately commits between 30% and 50% of his total capital requirements. Obviously a reliable method is essential, and when one considers some of the disadvantages of scrubcutting – viz. supervision, the period necessary to cut a block and the problems with burning and stick debris; the preference of most farmers for aerial spraying with its almost instant result is understandable. This is especially so where gorse occurs in association with scrub. However, scrubcutting quotes in some areas were less than \$175 / ha, in which case it was the more profitable method.

Cost Benefits of Weed Control

The other costs obviously vary with the contour of and access to blocks and the fertility of the land. Fertilizer can vary between \$40 and \$70 / ha, while seed costs range from \$25 to \$60 / ha depending on the original ground cover, whether a burn occurs, or whether a more expensive species such as cocksfoot is preferred. It is important to appreciate that any return from a block is only obtained if all these inputs follow the initial clearing. Too many blocks visited by the author lay idle for want of subdivision, access and fertilizer.

Referring to the profitability estimation, the return on the original capital at the end of the payback period amounts to between 14% and 21%, which is reasonable by most standards. However, the acquired asset needs constant servicing with stock, fertilizer and extra labour to prevent it reverting to its original state. The value of the investment is only finally realised with the sale of the farm – which brings with it its own set of costs!

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Cost Benefits of Weed Control

APPENDIX Development Costs of 50 ha Scrub Block

Scrubweed Spray	– 22-25 litres proprietary formulation of picloram/2,4,5-T @ \$6.69/litre = \$147 - \$167/ha. Mean = \$157.	
Application	– Helicopter applying 220 litres/ha in half overlapping passes of 110 litres/ha. Higher water rates usually demand higher charges.	
Scrubcutting	– Mean of three quotes/ha.	
Roading	– 30 hours bulldozing @ \$25/hour = \$15/ha.	
Fencing	– 1250m 9 wire fence and gates @ \$1.80/m = \$45/ha.	
Fertilizer	– Autumn dressing applied with seed; maintenance dressing in spring every year including the first.	
Autumn	– 500 kg/ha 20% potassium superphosphate at \$47/tonne = \$23	
	Cartage 80 km @ \$12/tonne less subsidy 4.4 cents/km/tonne = \$ 4	
	Aerial application \$17/tonne less subsidy \$8.50/tonne = \$ 4	
Maintenance	– 300 kg/ha superphosphate @ \$41/tonne = \$12	
	Cartage = \$ 4	
	Aerial application = \$ 3	
	TOTAL FERTILIZER COST FIRST YEAR	\$48/ha
Seed	– 30 kg/ha ryegrass mix @ \$1/kg = \$30	
	2.5 kg/ha white clover @ \$2.50/kg = \$ 6	
	(Applied with autumn fertilizer)	
		\$36/ha
Thistle Spray	– 3 litres/ha MCPB @ \$3.60/litre = \$11	
	Aerial application = \$ 7	
	(NB: Necessary if burn occurs)	
		= \$18/ha

Stock maintenance cost \$2.50/SU = \$25/ha less \$2 for first two years.

Stock Unit Equivalents: Breeding Ewe = 1.0 SU
Breeding Cow = 6.0 SU

LIVESTOCK INCENTIVE SCHEME – Interest free loan of \$12/SU which is written off if an increase of 2% of existing SU on farm is maintained for five years.

NB: This is a simplification of the scheme that nevertheless illustrates the benefits available.

NOXIOUS PLANT SUBSIDY – 75% subsidy on 40% of total herbicide cost of \$157/ha = \$47/ha.