

PASTURE ESTABLISHMENT ON EAST COAST NORTH ISLAND HILL COUNTRY

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Abstract

Large areas of North Island hill country are producing below potential as a result of low fertility and poor pasture composition. Removal of undesirable species and replacement with a higher producing pasture is essential for increased productivity but is difficult to achieve. A development programme is described where the use of glyphosate in close association with oversowing and stock management has allowed rapid pasture establishment, marked increase in carrying capacity and a quick return on investment.

Keywords: Pasture establishment, glyphosate, oversowing, white clover, subdivision, productivity.

INTRODUCTION

Climatic conditions, soil type variation and the steep contour of farmland in the Wairoa area all contribute to make development of this land difficult. The soils are generally a combination of mudstone and pumice, depending on weathering and proximity to the coast and have a high phosphorous retention and are low in trace elements. These are characteristics which favour establishment of native grasses, and weeds rather than desirable grazing species. Throughout the region one is able to see evidence of poor management resulting in pasture reversion to undesirable species such as ratstail (*Sporobolus africanus*), rushes (*Juncus spp.*), niggerhead (*Carex secta* Boot), manuka (*Leptospermum scoparium* Forst) and blackberry (*Rubus spp.*).

Provided the correct pasture and stock management can be practiced Wairoa hill country can maintain a good pasture year round and has potential to easily carry 10 su/ha compared with 2.5 su/ha currently carried on these reverted properties. According to Scott (1981) average carrying capacity for hill country in this region is 4.5 su/ha with top farmer levels of 11.4 su/ha.

This paper describes the results achieved from a project by which large areas of land were developed to provide rapid increases in carrying capacity and stock performance producing a quick return on investment.

DEVELOPMENT PROCEDURES AND RESULTS

A rundown hill country block (433 ha) was purchased by W.Morunga in 1979 at Mohaka, south west of Wairoa. At the time of purchase the property was running 2.4 su/ha. Predominant cover by eye estimate was blackberry 35%, ratstail 30%, manuka 10%, ryegrass (*Lolium perenne* L.) browntop (*Agrostis spp.*) suckling clover (*Trifolium dubium* Sibth) pasture 20% with the remainder other weeds and bare ground.

The property was initially subdivided into blocks of approximately 70 hectares, a separate block to be developed each year. In July 1980 manuka scrub scattered through the 70 hectares on the first development area was cut and the entire block sprayed by helicopter with glyphosate ('Roundup') herbicide in late December 1980. Application rate varied depending on ground cover ranging

from 3 ltr/ha for runout pasture, 6 ltr/ha niggerheads and 9 ltr/ha for blackberry. Where increased rates of Roundup were required this was simply achieved by multiple passes over the area. The Roundup was applied in 220 litres of water per hectare.

The entire sprayed area was burnt in February, aerially oversown and top-dressed one month later. The oversown mixture contained 'Grasslands Huia' white clover (*Trifolium repens* L.) (6kg), 'Mt Barker'/'Woogenellep' sub clover (*Trifolium subterraneum* L.) (2kg), 'Grasslands Ruanui' (2kg), 'Grasslands Nui' (11 kg), 'Ellet' ryegrass (11 kg) and superphosphate 205 kg.

The area was subdivided by conventional post and wire fencing into 14 hectare blocks. With increased pasture production, extra sheep were purchased in June 1981 and January 1982 to give a year round carrying capacity on the 70 ha block of 8 su/ha. Apart from spring grazing when all sheep were set stocked, the small blocks were rotationally grazed. During the 1982/83 season further stock was purchased so that the original block was able to maintain 12 su/ha throughout the year based on total grazing days.

The initial costs incurred at the beginning of the development phase have been herbicide plus application \$250/hectare, oversowing and fertiliser \$114/ha and fencing \$175/ha. Apart from the cost of purchase and normal maintenance of stock, costs incurred during later steps in development have been water provision in dams (1 per 14 ha block), \$30/ha, and maintenance fertiliser \$15/ha. At the onset of the programme it was assumed that considerable expenditure would be required for retreatment of blackberry regrowth. To date this has been almost nil because of the intensive grazing management.

It is now two years since the initial block was established. Following the severe 1982/83 drought a pasture composition cover analysis revealed the major components as white clover 44%, perennial ryegrass 28% with 21% bare ground. Despite the heavy grazing and bare areas, no erosion has occurred.

In the second year 81/82 a further 70 hectares was developed in a similar manner and on the 1982/83 season a 100 hectare block was sprayed and oversown. General stock performance over the whole farm has improved dramatically as shown in Table 1. The total stock now carried on the property is 6.9 su/ha and at this stage only 50% of the property has been improved.

Table 1: STOCK PERFORMANCE TRENDS 1980-82 OVER THE WHOLE FARM — W.MORUNGA, MOHAKA.

| | Lambing Percentage | Wool kg/ha |
|------|--------------------|------------|
| 1980 | 59 | 4.8 |
| 1981 | 69 | 20.0 |
| 1982 | 82 | 29.9 |

DISCUSSION

The productivity increase on this property has been dramatic. The key to success has been the ability for large areas to be brought into full production in a relatively short period of time which should enable the farmer to quickly re-

turn to a profitable situation. During the first and second season of this development only eight weeks elapsed between burning and first grazing.

Traditional herbicide treatments for this type of programme have been dessicants such as paraquat, which have been used successfully in hill country development especially in tussock grassland areas (Begg 1972, 1975). The use of a dessicant herbicide on a property such as described in this paper would have been only partially successful because of the nature of the vegetation present. As the majority of species present in the reverted pasture were perennials, their subsequent regrowth following application of a dessicant would be undesirable leading to competition against newly sown species and ultimately a weed infested pasture.

The use of glyphosate is an integral part of this system as it provides the means to not only dessicate for burning, but also to kill the major weeds such as blackberry, rushes and ratstail which cannot be controlled by any other single herbicide application. There are no soil residues with glyphosate therefore enabling oversowing to occur immediately following burning.

One of the key elements in the success of this development programme has been the grazing management of the new pastures. Fencing to aspect and paddock size allowing high grazing pressure to be maintained is the main priority. Hard grazing has controlled any subsequent blackberry regrowth yet has allowed rye-grass and clover to remain a high proportion of the pasture even following a severe drought, although it may now be necessary to OVERSOW with further rye-grass and cocksfoot (*Dactylis glomerata*) to cover the bare ground areas.

Further development on this property is planned with the entire area being completely re-pastured by the 1985/86 season. On the basis of results to date it is reasonable to expect that overall capacity of 12 su/ha will be able to be maintained throughout the year over the entire property, over 5,000 sheep on a property originally carrying just over 1000.

REFERENCES

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