

PAKIHI DEVELOPMENT : FARMING EXPERIENCE TN GOLDEN BAY

J. D. McLELLAN

Farmer, Bainham

G. A. FENWICK

Ministry of Agriculture and Fisheries, Motueka

Abstract

Description of development method and problems experienced in farming pakihi in Golden Bay and present costs of development and maintenance of pasture are given. It is considered that with high fertilizer cost dairy farming is the most economic use of pakihi. Problems likely to occur in dairy farming on pakihi are discussed.

INTRODUCTION

PAKIHI AREAS in Golden Bay appear to have a similar natural fertility, or lack of it, as pakihi areas on the West Coast. Consequently, topdressing practices for establishment and maintenance of pasture are much the same. However, there is one important difference. The Onahau and Kotinga soils, which form the bulk of pakihi areas in Golden Bay, are of gently rolling nature. Most are situated on relatively small terrace plains above the alluvial flats. This has allowed for much better surface drainage and drier farming conditions than on the West Coast further south.

The first trials on pakihi in Golden Bay were carried out by D. de S. Baylis, Fields Instructor, Department of Agriculture, in 1910. These were successful in establishing good pasture. However, cost of fertilizer and lime and problems of maintaining a high-producing sward appear to have deterred farmers. It was not until the early 1960s that farmers really began developing pakihi in earnest. Intensive trial work carried out by, in particular, E. T. Chittenden, Pedologist for the Cawthron Tnstitute, helped solve fertility problems.

Among the farmers who began developing pakihi at this time were the McLellan family.

FARMING EXPERIENCE

(J. D. McLellan)

I farm in the Aorere Valley, Golden Bay, with my brother and father. We have a dairy farm milking 200 cows on good, alluvial

soil. Over the last 16 years we have been developing pakihi land some 10 km away from the home unit. My father first bought 40 ha as a runoff, but since then we have bought other pakihi blocks adjoining this and now own 177 ha of pakihi of which 160 ha are in grass.

The first block we bought for \$2.50 per ha, the next for \$37, and prices since then have skyrocketed, with the last sale of undeveloped pakihi in the district at \$300 per ha for an 80 ha block that was not ring fenced.

DEVELOPMENT METHOD

When we first started we did not know of anyone doing much development on pakihi, so we tackled it in much the same way as we would alluvial land. This consisted of rotary slashing the light scrub, burning, and rotary hoeing. Seed was sown with 875 kg/ha 30% potassic superphosphate and 2.5 tonnes/ha of lime.

Since then we have found out much more about the fertilizer requirements and pastures are now sometimes established by over-sowing. We now use 750 kg/ha of a pakihi establishment fertilizer (see Table 1) with 3.75 tonnes/ha of lime.

Pasture establishment has been very good with no failures. We follow up in spring with 500 kg/ha 40% potassic sulphurized superphosphate, and 250 to 375 kg/ha 30% potassic superphosphate in autumn. Every three years it is essential to apply copper, cobalt and boron (5 kg CuSO_4 , 600 g cobalt sulphate, 10 kg agricultural borate per hectare). In future we will probably apply the new pakihi maintenance fertilizer in spring (see Table 1) which should take care of any trace element problems. It is becoming very expensive to apply these high rates of fertilizer. Lime is required at 2.5 tonnes/ha every 3 years.

TABLE 1: STANDARD PAKIHI FERTILIZER MIXES

<i>Pakihi Establishment Mix</i>			<i>Pakihi Maintenance Mix</i>		
		%			%
Serpentine	superphosphate	78.74	Serpentine	superphosphate	62.14
Sulphur		4.00	Sulphur		7.00
Potassium chloride		16.00	Potassium chloride		30.00
Fertilizer borate		0.60	Fertilizer borate		0.40
Copper sulphate		0.60	Copper sulphate		0.40
Cobalt sulphate		0.05	Cobalt sulphate		0.08
Sodium molybdate		0.02			

Once land is topdressed and sown down, gorse becomes an increasing problem. Flat areas can be controlled by rotary slashing, but terrace slopes are stony which makes gorse difficult to control. Most of these terrace faces will eventually go into trees. These faces are of higher fertility with no pan, so trees should grow well there and provide shelter as well.

Drainage improves remarkably once the pasture is established. Really bad swamp areas need open drains, but a few surface drains are all that is required on most areas to take away runoff. A turf mat has been built up and pastures do not pug up much at all. Rushes tend to come in after a few years, but they can be controlled by rotary slashing.

PRODUCTION AND MANAGEMENT

It is difficult to measure production on the property because it is run in conjunction with the home farm. All our hay is made up on the pakihi block. We run our dairy beef bulls, 275 yearlings this winter, as well as 80 dairy replacements. All stock are rotationally grazed.

The main comment on production would be that pasture production slows down much faster on pakihi land than on alluvial soils, particularly when it gets too dry, or too wet. Other periods of growth seem to be fairly similar.

Regular topdressing is essential. We missed topdressing when beef prices fell and pasture production quickly declined. It does not hold as it will on alluvial soils.

PROBLEMS EXPERIENCED

(1) *Water.* Streams that originate and flow through pakihi areas dry out in summer when the land is developed. We have had to pump water up 65 m from the Aorere River.

(2) *Dries out rapidly in drought.* Pasture fades very quickly after a few weeks without rain. Clovers just shrivel up over the whole farm and it is difficult to get heavy hay crops, or to save feed in a dry period.

(3) *Animal health.* Young stock sometimes do not do as well on pakihi areas as on alluvial land, even when cobalt and copper salt licks are provided.

(4) *Shelter.* Trees on terrace faces give some shelter, but it may be difficult to get trees growing on pakihi flats, Sonie areas are very exposed.

DEVELOPMENT COSTS

The costs of developing pakihi in Golden Bay by rotary slashing and oversowing are broadly as follows. Costs are as at August 1976.

	\$/ha
Rotary slashing	30
Liming — 3.75 tonnes	30
Establishment fertilizer 875 kg/ha (spread)	66
Seed (see Table 2)	30
Access	25
Water supply	20
Fencing — 2-wire mains electric into 2 ha paddocks	50

\$251

If the land is cultivated, which is sometimes necessary because of the uneven surface, costs will be more, but grass production in the first two years is likely to be more than by oversowing.

TABLE 2: SEED MIX FOR PAKIHI OVERSOWING

	kg/ha
'Grasslands Huia' white clover (inoculated)	3.5
'Grasslands Turoa' red clover (inoculated)	2.0
'Grasslands Ruanui' or 'Ariki' ryegrass	8.0
'Grasslands Manawa' ryegrass	8.0
'Grasslands Apanui' cocksfoot	2.0
'Grasslands Kahu' timothy	1.0

Sowing is usually carried out from March to April and there have been very few failures,

MAINTENANCE OF PAKIHI

It has been the experience of most farmers in Golden Bay that highest production on pakihi comes from well topdressed pasture under a long rotation. Failure to do one, or both, of these management practices results in depressed pasture growth after a few years. Clover vigour must be maintained for good pasture production. Unfortunately, the cost of doing this is high.

	\$/ha
Spring topdressing 625 kg pakihi maintenance fertilizer (see Table 1)	47.50
Autumn topdressing 250 kg 30% potassic superphosphate	14.50
Maintenance liming equivalent to 0.8 tonnes/yr	6.00
	<hr/> \$68.00 <hr/>

This cost is difficult to justify under sheep and cattle farming, but is quite reasonable under dairy farming where returns per hectare are higher.

DAIRY FARMING ON PAKIHI

Grass production on pakihi areas under a long rotation over the last two years is illustrated in Figs. 1 and 2.

Last year it would have been quite possible to milk 2.5 cows/ha (without replacements) although calving would have been better delayed until the beginning of September. It is during a season like that of 1974-5 that problems would occur (see Fig. 2).

The slump in pasture production in October was caused by very wet weather over that period. This would be particularly serious under dairy farming when at this time feed requirements are at a peak. Very wet conditions in September-October have occurred (see Table 3) in four of the last eight years, so this situation is not unusual.

1975-76 ONAHAU SOIL

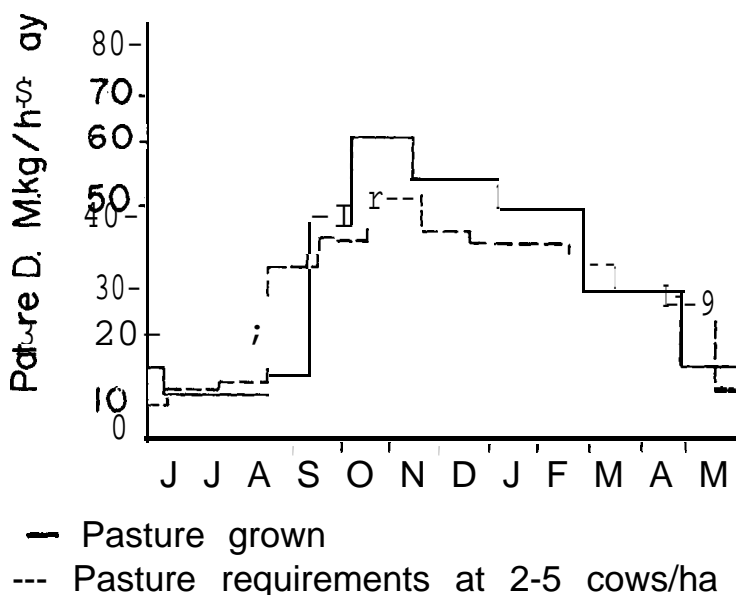
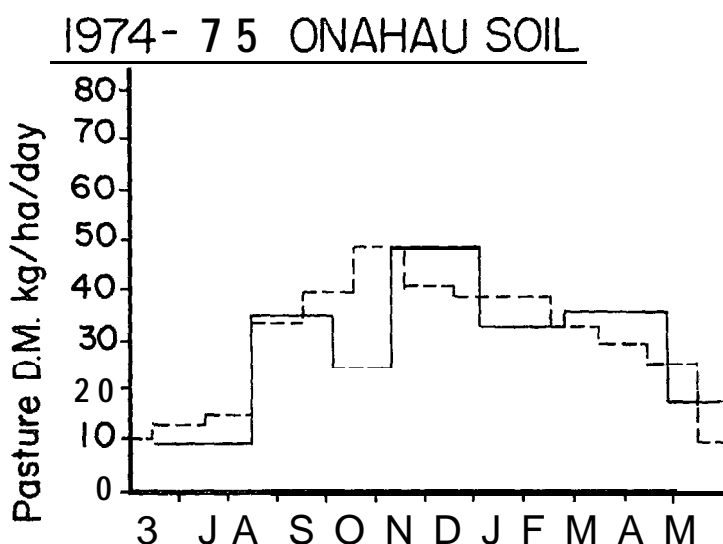


FIG. 1: Pasture growth rate on Onahau soil, Onekaka, from movable pasture frames. Area grazed by cattle. Total DM grown 12 500 kg/ha



— Pasture grown

--- Pasture requirements at 2.5 cows/ha

FIG. 2: Same area as Fig. 1. Total DM grown 10 800 kg/ha.

TABLE 3: RAINFALL FIGURES, ONEKAKA (mm)

Year	Sep.	Ocf.	Year	Sep.	Ocf.
1968	150	392	1972	137	222
1969	436	76	1973	139	107
1970	365	206	1974	254	406
1971	177	297	1975	67	241

Another problem, although it has not been as severe over the last two years, is a dry period in summer when pastures dry out rapidly.

In order to minimize risk and achieve good production, it is considered that dairy farmers on pakihi should:

- (1) Delay calving until the beginning of September.
- (2) Be prepared to practise on-and-off grazing with the use of a loafing pad if there is a wet spring. High-quality silage reserves and some concentrates should be fed at this time.

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- (3) Make a lot of light hay or silage crops during peak of pasture production in November/December. This should allow pastures to be back in the grazing rotation before a possible dry period.

These management practices, along with other good dairy farming practices applicable on all types of land, should help ensure successful dairy farming on pakihi.

CONCLUSION

There are no difficult problems in developing pakihi areas in Golden Bay. Developing costs are not particularly high, but the maintenance of a high-producing pasture is. The most economic use of improved pakihi is likely to be dairy farming, or use as dry stock and haymaking areas by dairy farmers on alluvial farms so that they can milk more cows. Careful attention must be given by intending dairy farmers on pakihi to matching feed requirements to feed demand.

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