

REHABILITATION- DETERIORATED FARMS

IN THE KING COUNTRY.

OPENING UP OF CROWN AND NATIVE LANDS:

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The first ballot for Crown Lands held in the Te Kuiti District was on the 30/6/96 for the Paemako Settlement. This was opened under the Improved Farm Settlement Act. The next two ballots were in the Mairoa District in 1900 and 1902. The tenures under which these lands were leased were "Occupation with a Right to Purchase" and "Lease in Perpetuity". Some of the later Sections were opened up under the Bush and Swamp Act which gave the applicant 4 years exemption from rent and residence.

The Te Kuiti Village Settlement was opened up in 1902 and leased in areas of 2 acres under the "lease in Perpetuity" tenure. The first sale of Te Kuiti Native Township leases was held in 1904.

The Waitomo County was constituted in -1905 and the Borough of Te Kuiti in 1910.

Native leases have not proved satisfactory as in most cases there was no compensation payable for the improvements effected by the Lessee. Even in the few cases where compensation was payable the lessee found it almost impossible to obtain the necessary finance.

When the above rural land was opened the access was mainly by 6 to 8 feet tracks formed by the Government, old Native tracks and tracks made by the settlers themselves. The areas of the first farms ranged from 150 to 1000 acres approximately. The country was in its natural state -- easy undulating to broken country covered with bush, fern and manuka scrub. The formation was light loam with a clay sub-soil on limestone, sandstone? rubble and papa, the altitude being from 250 to 1500 feet.

When the land was first cleared of bush and sown with English grasses an excellent result was obtained. This lasted for approximately 10 years, then the pastures started to deteriorate and second growth -- bracken fern and scrub -- became apparent while in some places a little ragwort appeared.

REASONS FOR DETERIORATION:

1. Light porous nature of the soil.
2. Very heavy rainfall. which encouraged, second growth.
3. Overstocking with breeding ewes and insufficient cattle and subdivisinal fencing .
4. Lack of fertility in the soil and. no topdressing.
5. Introduction of dairying with the consequent reduction in sheep and the invasion of ragwort which very much restricted the dairying and greatly reduced production .
6. Poor roads and the heavy cost of carting and packing the farm requirements.
7. As a result of the 1922 slump, the settlers lost all of their equity in their stock and were unable to meet their (liabilities,)

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liabilities and purchase manure for topdressing or effect the necessary improvements. Proceeds from dairying -mere *only* sufficient **for** living expenses and partly maintaining the dairy pasture which was seriously menaced by ragwort.

Because of the abandonment of holdings due to the foregoing causes and the widespread nature of the deterioration in the King Country the Land Development Branch of the Lands and Survey Department was constituted in the Te Kuiti District at the latter end of 1933.

The four Blocks on which returns are given can be classed as a fair sample of the land under development in the King Country.

These four Blocks are all situated in the Waitomo County -- 1 six miles to the North, 1 twelve miles to the East, 1 thirty miles to the West and 1 thirty miles to the South of Te Kuiti.

The areas of these Blocks are as follows:

Waitanguru (30 miles West of Te Kuiti)	2377	acres
Ngatamahine (30 miles South of Te Xuiti)	2418	acres
Lee's Block (6 miles North of Te Kuiti)	241	acres
Pururu Block(12 miles to-East of Te Kuiti)	1990	acres.

Of the 1990 acres comprising Pururu Block only 1000 acres are being developed. The major portion of the remainder is in standing bush and in my opinion there is no wisdom in felling further extensive areas of-bush while so much deteriorated land can readily be made productive.-

The livestock on these Blocks before development commenced were 2000 sheep and 300 run cattle.

Figures for these Blocks for the years ending March 31st, 1935, and March 31st, 1938, are as follows and these show that the rehabilitation of these farm lands is definitely on the right lines.

In 1934-35 48 bales of wool were shorn on these four Blocks while in 1937-38 season 138 bales were shorn -- an increase of 90 bales.

Livestock Carried.

	<u>1934/35:</u>	<u>1937/38:</u>
Sheep	2800	11832
Dairy cattle	574	758
Run Cattle	233	530

Sales :

	<u>1934/35:</u>	<u>1937/38:</u>
Butterfat	£617	£4770
Fat Lambs	£941	£392
Fat Sheep	£181	£2880
Store Sheep	£550	£189
Wool	£286	£1841
Dairy Cattle	£382	£309
Run Cattle	£185	£1844
Pigs	£62	£474

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It will be noticed that the sale of fat lambs shows a marked decrease in the 1937-38 season and this is due to the fact that a change over from Southdown to Romney Rams took place in this season., Owing to the extension of development operations it was considered advisable as far as possible to breed our own replacements and this practice is being adhered to.

The amount in permanent pasture in 1935 was 1 024 acres while in 1938 2529 acres were in permanent pasture. The dairy herds on the four main Blocks showed very satisfactory returns, the cows under test averaging for the 1937/38 season 253 lbs. of butterfat per cow.

The contour of the land in these Blocks is from easy undulating with about 300 acres of drainable swamp to fairly steep hills, Approximately. half of the area is ploughable.

When the land came under the control of the Land Development Branch at least two thirds of the cleared area had reverted to fern, scrub, ragwort, gorse and blackberry and the other third was partly reverted pasture, a portion of which has been reconditioned, The fencing in most cases was useless and the buildings in a very bad state of repair,

Methods of Reconditioning:

It was found that where English grasses had run out and danthonia had taken possession it was not economic to recondition by topdressing, stocking, fencing etc, but necessary where possible to plough and crop before laying down in English grasses. On hilly country which had reverted to fern and second growth the method adopted has been to cut the second growth, burn and surface sow with English grasses and topdress with lime and super, fence into reasonably small paddocks and heavily stock in the first instance with wethers to tramp in the seed and control the fern and ragwort.

By this method it takes approximately 5 years to establish a sole of grass, consolidate it and clean the country; then a proportion of breeding ewes and run cows can be carried, During the three years of rehabilitation 3 applications of manure are required. This should be viewed as a capital charge, The difficulty of controlling second growth, noxious weeds and pasture on the hilly country in the early Spring where there is insufficient ploughable land to grow the necessary fodder crops to carry the stock through the Winter, has been overcome by growing sufficient root crops, hay and ensilage on the easier country, so that the extra stock can be wintered and transferred to the hilly country as required,

This obviates the necessity of purchasing stock at a high price in the Spring and selling at a low price in the Autumn. In this way stock has always been readily available to maintain and improve pastures and to effectively control noxious weeds and fern.

The following mixture is used for surface sowing:

Surface Sowing on Hill Country.

12 lbs.	Government Certified Perennial Rye P.P.
3 lbs.	Italian Rye Certified Corm.
3 lbs.	N.Z. Cocksfoot
2 lbs.	Crested Dogstail.
2 lbs.	Timothy.
2 lbs.	N.Z. Red Clover
<u>24 lbs</u>	<u>c/f.</u>

B/f 24 lbs. grass seed
 2 lbs. White Clover Cert. P.P.
 $\frac{1}{2}$ lbs. Subterranean Clover
 6 lbs. Paspalum (Aust.)

 32 $\frac{1}{2}$ lbs. per acre,

Cultivated Ground,

20 lbs. Perennial Rye-Government Certified P.P.
 5 lbs. Italian Rye Certified Commercial
 3 lbs. N.Z. Cocksfoot
 3 lbs. Crested Dogstail
 2 lbs. Timothy
 2 lbs. N.Z. lied Clover
 2 lbs. White Clover Cert. P.P.
 $\frac{1}{2}$ lb. Sub. Clover
 3 lbs. Paspalum (Aust.)

 40 $\frac{1}{2}$ lbs. per acre

It has been found in 'the King Country that the sowing of grass can be successfully carried out either in the Spring or Autumn but it is no-t advisable to attempt Spring sowing later than approximately the middle of October.

Ploughable land on which the pastures have run out and reverted to fern, gorse, blackberry and ragwort, has been treated in the following way. Clear, plough and crop with several fodder crops for two years before laying down in English grasses. It has been proved that to thoroughly clean the land, at least three ploughings are necessary before laying down in permanent pasture,

In this light country, land should be rolled on the furrow before sowing and after where possible. When land cannot be rolled it is advisable to use large mobs of wethers both before sowing and after, to consolidate it,

Proper stocking and fencing are most essential so that the pastures can be improved, the land consolidated and the noxious weeds kept under control. For the first three to five years this should be done by sheep and run cattle. It has been proved conclusively that no dairying should be undertaken until the pasture has been well established and the noxious weeds under control. This has been borne out where we have started dairying in the second year and the result now is that considerable areas of the pasture will have to be ploughed and regrassed, before it can be successfully farmed as single units in areas of **50** to **75** acres, though it would be quite satisfactory for the grazing of sheep and run cattle on larger areas as the sheep would control the ragwort and other weeds provided 'that it was annually topdressed.

Depending upon the type of country the topdressing mixtures for grass land would be:

- a. 3 cwt. 'lime and 2 cwt. super) annually.
- b. 2 cwt. lime and 3 cwt. super)

In reconditioning run out pasture where possible heavy harrowing is necessary to ensure a seed bed. After sowing the land should be again harrowed with a chain and tripod harrow. The filling mixture used is **10** to **12** lbs. of certified Perennial Rye P.P. and 2'lbs. of ' White Clover,

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It may be stressed here that several of the Blocks of land under the control of the Land Development Branch were considered to be unsound for sheep but it has been successfully demonstrated that through pasture control and the use of limonite and salt licks, sheep can be bred for, flock purposes on these properties.

With reference to the four Blocks mentioned previously, Waitanguru (in the Mairoa District) was considered unsound for sheep but ewes bred on the property are now in the flock and this year these ewes will be producing their first lambs.

Owing to the deficiency of lime in this district and the heavy cost of cartage, we have established a lime crushing plant at Waitanguru and thus a plentiful supply of lime is available at low cost.- This lime has been made available to settlers in this locality.

At the present time there are approximately 60,000 acres being developed under the control of the Land Development Branch at Te Kuiti and the total livestock carried are as follows:

Sheep	55,534
Dairy Stock	1,466
Run Stock	3,832
Horses	295
Pigs	249.

In conclusion I would like to point out that by 1922 large areas of hill country had deteriorated and were abandoned to farming, Many people passed over the problem of this country by saying that the bush should never have been felled or the land settled. But this attitude does not face the problem; the bush had been felled and the land settled and something had to be done. The purpose of this paper has been to show how the problem of re-settling the land has been tackled and to indicate that much of the abandoned land is capable of re-settlement and thus become a permanent asset to New Zealand.

S M A L L F A R M S S C H E M E.

L E E ' S B L O C K.

F A R M I N G R E C E I P T S F O R Y E A R S I N D I C A T E D.

	<u>1934-35.</u>	<u>1935-36.</u>	<u>1936-37.</u>	<u>1937-38.</u>
Wool	£10. 0. 0.	£28. 0. 0.	£133. 0. 0.	£64. 0. 0.
Butterfat	Nil,	£267. 0. 0.	£556. 0. 0.	£886. 0. 0.
Lambs	£74. 0. 0.	£129. 0. 0.	£301. 0. 0.	£195. 0. 0.
Sheep	£32. 0. 0.	£8. 0. 0.	£175. 0. 0.	Nil.
Miscellaneous	Nil,	£1. 0. 0.	£5. 0. 0.	£13. 0. 0.
Pigs	Nil,	£38. 0. 0.	£53. 0. 0.	£116. 0. 0.
Cattle	£2. 0. 0.	Nil.	£123. 0. 0.	£2. 0. 0.
	<u>£118. 0. 0.</u>	<u>£471. 0. 0.</u>	<u>£1346. 0. 0.</u>	<u>£1276. 0. 0.</u>

Area of Block: 241 acres
Area in permanent pasture. 160 acres
Area under plough 5 acres
Swamps: Non-permanent pasture 76 acres

Note: The reason for the reduction in returns for 1937-38 year was due to prevalence of eczema in cows and sheep,

STOCK ON FOUR MAIM BLOCKS- AS AT 31st. MARCH, 1938.

WAITANGURU:

1233 ewes
553 we-them 2th
2207 wethers 4th.
1231 lambs
51 rams
16 dairy cows
7 dairy heifers
4 dairy calves
155 steers
12 horses
2 hacks

NGATAMAHINE:

1926 ewes
881 wethers 2th
140 wethers 4th
1071 lambs
64 rams
6 dairy bulls
211 dairy cows
57 dairy heifers
55 dairy calves
338 steers
13 horses
5 hacks
82 pigs.

LEE'S:

221 ewes
46 lambs
13 rams
3 dairy bulls
68 dairy cows
23 dairy heifers
27 dairy calves
3 horses
33 pigs.

EURURU:

961 ewes
435 wethers 2th
113 wethers 4th
652 lambs
34 rams
o dairy bulls
169 dairy cows
47 dairy heifers
59 dairy calves
37 steers
13 horses
2 hacks
65 pigs

DISCUSSION ON TWO PRECEDING PAPERS.

E.B. Levy:

I think you will agree that both these papers cover very difficult regrassing problems in the North Island of New Zealand. Both of them show a great deal of encouragement as far as the successfully farmed part of that deteriorated land is concerned. I am afraid I am a bit of an optimist; I feel certain that we will see them green with grass from one end of the country to the other.

P.W. Smallfield:

I have listened to papers by Mr. Jordan and Mr. Smith with great interest. Hill country deterioration and erosion are one of the great problems in the Auckland Province and it is very interesting to learn that something is being done to rehabilitate those deteriorated farms and most interesting to pasture workers to hear the methods which have been adopted in the grassing. It has been very interesting to me after hearing papers this morning on grassing of gumland and pumice land to hear the papers on the rehabilitation of these deteriorated farms and the part certified seed and manure are playing in the grassing of deteriorated land and regrassing of new country. There is one thing that grassland workers want to remember in the question of rehabilitation of farms - that is the cost of development of virgin country. The Country has already spent a great deal of money in deteriorated areas in construction of roads, bridges, schools and villages but if virgin land is developed it requires new roads, new bridges, new schools, and new villages and I think one of the main things we want to aim at and grassland workers want to consider is that the rehabilitation of large areas is well worth while. Some areas should be let go back to second growth but there are large areas of country that can be regrassed.

H. Woodyear-Smith:

I would like to congratulate Mr. Jordan and Mr. Smith on the practical way and straight forward way they have dealt with both their papers. There is point in Mr. Jordan's paper I would very much like to ask a question about, that is he has given us some very interesting figures showing that the production from those areas had gone up by about 400 per cent in the matter of 4 years but one would be rather interested to know what the cost of producing and if he has figures showing the cost?

J.W. Woodcock:

I was stationed for a while in that particular district and I remember the state of the area before the Lands Department started this scheme of rehabilitation and there is just one point I would like to raise in regard to grass mixtures that are being sown. It was understood a few years ago that had certain species been included in the original bush mixtures the land would not have deteriorated to the same extent as it did. These species were browntop and danthonia. I notice in the mixtures quoted by Mr. Jordan these two species were not included in the plough mixture or surface sown mixture and I was just wondering whether they should be recommended for these areas. Perhaps Mr. Levy could advise on these two species.

H. E. Annett:

I am very pleased indeed to hear these papers. I know what Mr. Jordan has done out there but if you

had seen the class of land at Whatawhata - well Some of us felt it almost impossible, It it had not been for Mr. Smith the Waikato Land Scheme would not have been as it is today. I would like to ask the advisability of sowing paspalum in these mixtures.

E.B. Levy:

There is just a point Mr. Woodcock referred to - the use of danthonia and browntop. I would add another species - Lotus major - to hill country. I feel that this country is not so steep as the country on which I usually advocate brown-top, danthonia and Lotus major and ~~where~~ regular topdressing can be done. Mr. Jordan may be able to make that point quite clear. I certainly would like to see the inclusion of these three species if Sown on fairly steep country or country running to hard fern, or ring fern. Mr. Jordan will make that point quite clear.

A.B. Jordan:

As regards danthonia and browntop, my experience in the King Country, particularly on the easy parts, that is to say anything that can be topdressed, these grass seeds can be well left out. They more or less check the other seeds and have a more or less poor feeding value. We have got very little of them and what we have we would rather be without, We have no very Steep country to deal with, no country that we cannot top-dress by hand or packing, and the soil is fairly good quality and we consider that the mixture that we have put in there is quite suitable to the land and gives very satisfactory results. The question of paspaium, one idea of sowing paspalum on the hill country was to give a late autumn growth - some rough feed for the winter - but we do not get as good results from sowing in the autumn as in the spring.

As regards the cost, Our cost cannot, be taken into consideration in any way. We simply employ the Unemployed. It is your 8d. in the pound that is paying for this work. We employ somewhere at the present time about 800 to 900 of these men and we naturally don't get the full value for our money, but I can tell you this that we have paid 5% interest on the whole of our expenditure including three-eighths of the unemployed wages since we started on the job. Our income last year was \$53,000 gross and we had £5,000 of profit on that basis, after paying 5% interest over all. The results of this will be found in the Annual Report of the Lands and Survey Department set out very fully. We cannot class ourselves as ordinary farmers for having to employ those whom we do,