INTRODUCTION TO THE FARMING SCENE IN MID-CANTERBURY

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LOCATION

MID-CANTERBURY is bounded on the south by the Rangitata River, on the north by the Rakaia River, and stretches from the sea to the Main Divide. The occupied area is 1,300,000 acres of which 700,000 is improved land comprising the plains and a narrow belt of foothills, while the balance, 600,000 acres, consists of the mountain slopes and inland basins of the high country with a plant cover of tussock and associated plants. Ignoring the part-time farms, the plain is occupied in approximately 1,500 holdings, giving an average of close to 500 acres, but actual size varies widely with soil type and other factors.

CLIMATE

Wide variations occur within the area. Rainfall at the coast averages 24 to 26 in,, 28 to 29 in. at Ashburton, and increases progressively towards the hills where it is 35 to 45 in. With high temperatures-over 80° on 28 days in the year on the average-and, with some wind on most days, evaporation is high and effective rainfall is much less than that recorded. The result is some degree of drought in most years, and it is calculated that soil moisture at Winchmore is below wilting point for an average of 42 days annually. Drought periods generally fall in January and February but may occur for short periods at other times.

SOILS

The raw material of the Canterbury Plains is the greywacke rock of the mountains. The deep shingle fans forming the plains have been covered with loess blown from the mountains and riverbeds and, in places, with alluvial deposits left by flooding rivers. The higher parts

of the old shingle fans form the light land with a thin mantle of loess, part of which has been washed into the deeper layers. Nearer the rivers, particularly on the south banks, the loess is deeper-several feet in places-giving rise to the good cropping soils of the Barrhill type. Alluvial soils are found along the Ashburton and Hinds Rivers, again good cropping soils, the Wakanui, Temuka and related types. Between the Hinds and Ashburton Rivers are the **peaty** soils, developed out of swamp.

FARMING SYSTEMS

Soil and climate, together with such factors as available markets and idiosyncrasies of farmers, determine the type of farming enterprise developed. The wide range of soil and climatic factors found within the mid-Canterbury district leads to an equally wide range of farming systems. At one end of the scale, speaking now of the developed country only, there is on the lightest land, sheep farming and fat lamb production in its purest form-no cattle, no crop. As the soil improves and the rainfall increases, there is more cropping associated with sheep until, on the heaviest land, cropping is the main enterprise and pasture and stock are primarily for fertility maintenance and only incidentally are income producing. Superimposed on the pattern, but mainly on the medium and light land, is irrigation from the Ministry of Works schemes and on the cropping land sprinkler irrigation from drains and bores. Towards the hills, under a rainfall of 30 to 40 in., better moisture conditions and generally deeper soils lead to greater feed production. Here cattle are becoming of increasing importance. The high country with its fine-woolled sheep, merino and half-bred, grazing mainly native pastures is a separate region with great potential as a breeding ground for cattle for fattening on the plains.

CARRYING CAPACITY AND PRODUCTION

As is shown by Table 1, carrying capacity and production have increased greatly on all classes of land over the past twenty-odd years.

Since 1960 these livestock increases have been paralleled by spectacular increases in cash crop acreage. Wheat which in 1960-1 occupied 34,000 acres has now risen to over 60,000 acres and corresponding increases have taken place in peas and barley. In 1967-8, over 100,000 acres of cash crop were harvested and indications are that the total will be higher still in the coming year. Much the same

TABLE 1: LIVESTOCK INCREASES. 1940-68

Year	*Breeding Ewes*	*Sheep Shorn*	*Lambs Tailed*	*Total Cattle*
1940-1	647,700	838,500	627,500	17,200
1945-6	701,000	908,000	672,000	16,200
1950-1	845,000	1,011,000	79 1,000	21,500
1955-6	1,124,500	1,492,000	1,208,000	29,600
1960-1	1,505,000	1,782,000	1,509,000	30,500
1965-6	1,804,000	2,070,000	1,812,000	32,000
1967-8	1,885,000	NA	1,958,000	38,000

pattern has been shown by the very considerable (40-50,000 acre) pasture seeds industry, though, at the moment, depressed prices have caused a reduction in area.

Increases in production have come from a number of factors :

(a) *Improvements in techniques,* including lime, superphosphate, improved pasture plants, and pest control.

(b) *Capital in-put* through the buoyant nature of the farming economy during the 1950s.

(c) Falling prices, particularly for wool, have encouraged production in an effort to maintain incomes.

Despite the progress that has been made, there is still scope for further production. A wide gap exists between average production figures and those being achieved by top farms in their respective classes. This gap must narrow if many farms are not to become uneconomic under the cost-price squeeze.

The following broad classification of farms deals with past, present and possible future production.

LIGHT LAND (Dry)

This land, comprising half the plains, was classed before development as ½ to 1 ewe to the acre country. Development was based on subterranean clover, lime, superphosphate, and grass grub control. It is now usually utilized by a fat lamb flock, with about one-tenth of the area in cash crop. Carrying capacity averages 3 ewe equivalents with 5 ewe equivalents on very heavily stocked farms. The pasture production is theoretically capable of 6 ewe equivalents but utilization must be perfect. Future potential lies in lucerne and lucerne-dominant pasture for

grazing. Its resistance to drought and to grass grub and its high dry matter production warrant at least one-quarter and probably half the area in lucerne. Few 'farms have yet reached this.

HIGHER RAINFALL PLAINS AND FOOTHILLS

It was here, under a rainfall of 30 to 40 in., that spectacular development with lime and superphosphate was first demonstrated. Though fat lamb production is the main enterprise, cropping plays an increasing part, despite the bouldery nature of much of the soil. Cattle are increasing rapidly and it is probable that most further production capacity will go into either breeding or fattening cattle. A typical farm of 500 acres carries over 2,000 ewe equivalents and grows 60 to 80 acres of crop, mainly wheat and peas. Carrying capacity is about 4.5 ewe equivalents with 7 ewe equivalents on spring grazing. With its favourable climate, this country has much further potential.

IRRIGATION

On schemes totalling 166,000 acres, about 45,000 acres are bordered and some 15,000 acres irrigated by wild flooding. In addition, an area estimated at 5,000 acres, mainly of cropping land, is irrigated by sprinkler systems. Great potential lies in irrigation and undoubtedly the time will come when all the suitable land in the county, probably a further 200,000 acres, will be irrigated, Irrigation will then be used to achieve maximum production rather than, as at present on many farms, insurance against drought periods.

Irrigated land, with unlimited water and under experimental conditions, has been carrying 7½ ewes per acre and fattening their lambs. On commercial properties, bordered land will be carrying about 6 ewe equivalents, though this is difficult to assess as it is invariably farmed in conjunction with unirrigated land. The potential, on a dry matter basis, is probably as high as 8 or 9 ewe equivalents.

The application of water to crops, either by flooding or spray, is giving substantial yield increases and more use of it for this purpose is expected. Shortly the demand for water from creeks and drains is likely to exceed the supply, leading to some knotty problems of allocation.

CROPPING

Some 125,000 acres can be classed as predominantly cropping land, from the heavy Temuka soil, through the fertile Wakanui to the soils of the deep loess, Barrhill, Hatfield and similar types. Much, of course, of the present 120,000 acres of cash crop is grown on soils in the previous classes. The Ashburton County has long been known as the granary of New Zealand. In the sheep boom of the 1950s it passed this honour to Australia. Today, with over 60,000 acres of wheat, cropping is again a major enterprise. It is estimated that with modern techniques up to 150,000 acres of crop could be maintained annually. The search is on for alternative crops. One of the most promising is peas and other vegetables for processing. The district is being given wide publicity as an area with great potential for this avenue of production.

HIGH COUNTRY

Finally, there are the tusscck grasslands, traditionally the producer of fine wool. Small areas of flat land are cultivated for winter feed and the paddocks and easier slopes are topdressed. Further topdressing and oversowing will boost the production of this country. The unsatisfied demand for calves for fattening down-country provides the opportunity for the economic utilization of this potential by breeding cows. Their numbers will, I believe, quadruple over the next few years.

CONCLUSION

In conclusion, some mention must be made of the problems. The main one, of course, is the problem common to farming everywhere-that of getting an adequate return for effort, in times of relatively low commodity prices and steeply rising costs. It is being tackled realistically, by increased production and by diversification into various aspects of cropping and into cattle. It is being tackled by economy in expenditure and, finally and most important, it is being tackled by the move towards larger units. The marginal farm is disappearing, swallowed up by the more efficient, and the marginal farmer, too, must disappear over the next few years.

On the technical side, the main problem is that of pasture pests. The relative freedom enjoyed over the past fifteen years from grass grub *(Costelytra)* and porina *(Wiseana)* has been responsible in no small measure for

the phenomenal progress that has been made in production and farming techniques. It is therefore with alarm that one sees approaching the end of this freedom. Despite changes in pasture and pasture management, it is doubtful whether production can be maintained, let alone increased, without an economic and efficient chemical control of the number one enemy, grass grub,

DISCUSSION

Table 1 showed that, prior to 1955-6, ewe numbers were lower and lambing percentages less than for the periods following. In reply to a question whether this was a sudden switch or due to many factors, Whatman stated that the change was relatively smooth and was brought about in several ways. Examples were improvements in management, the use of more grass as feed, changes in breeds used, and other factors. It had been a vital change and it was hoped that it would continue. The present lambing percentage of 106 could well be increased by a further 10% over the next few years.