

# West Coast Farming

Based on data drawn from results of a special survey made by Dr. M. M. Burns and Messrs R. H. Bevin and P. G. Stevens with the co-operation of the S.I.R. Department, Lands Department, Mr H. W. McIntosh and the Westland Progress League.

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## GENERAL FEATURES OF WESTLAND:

Since the earliest days of settlement Westland has been primarily dependent upon mining.

The development of farming has had a chequered progress but there are signs at present of a very definite interest in the agricultural possibilities.

Westland consists of a rather narrow area of country of varied relief ranging from the alps to the narrow coastal plains which the rivers have developed on the seaward side of the coastal ranges. The farming land is mainly associated with these flood plains and with the consolidated coastal dunes. The area of land suitable for development for agriculture is limited and, in many places, is subject to drainage problems, flood dangers and river bank erosion. Dredging operations accentuate these problems especially in the Grey Valley.

## CLIMATE:

The rainfall is heaviest in South Westland where it reaches nearly 200 inches per year at Weheka and Wataroa and it declines up the Coast until it is only 77 inches at Westport and 74 inches at Karamea. A similar reduction in total fall occurs from east in the high mountain ranges (Inchbonnie 190 inches) to the coastal belts (Greymouth 102 inches). Stations up on the coastal ranges record intermediate figures (Rewanui 165 inches). The effects of the high rainfall are offset in part by the relatively mild temperatures. Except for the high country, frosts are not severe and snow rarely falls near the coast. The inland valleys have a more severe climate than the coastal strip but even here it is more equable than that of much of the dairy country of the central plateau of the North Island or of Southland.

It is of interest here to record that Inglewood, one of the best dairy-ing districts in Taranaki, has an elevation of 1500 feet and an annual rainfall near 100 inches.

The hours of sunshine are much higher than would be expected, an indication that much of the rain falls at night and in falls of high intensities. The yearly total hours of sunshine for Hōkitika 1895, and Westport 1953 are less than those of New Plymouth 2235, Wellington 2040, and Christchurch 1967, but more than those of Palmerston North 1818, and Invercargill 1632.

The yearly mean temperatures of Hokitika 52.5 degrees F., and of Westport 52.8 degrees F., are higher than those of Lincoln 51.1, Taihape 50.4, and Invercargill 50.1.

The mild winter temperatures are reflected in the growth of pasture plants and especially along the coastal belt, pastures, sown with vigorous strains and adequately topdressed with lime and phosphates, continue to make some growth throughout the winter period.

The high rainfall figures are frequently the only factor considered but due attention should also be directed towards the even temperatures, the relative absence of persistent strong winds, the good sunshine figures and the mild winters.

## SOIL TYPES:

The soils adaptable to farming in Westland may be divided into two groups, each of which contains several sub-groups. These groups are:

- (a) Soils associated with the coastal dunes. On some of these soils lucerne could be introduced.
- (b) Soils associated with the lower river flats. On some of these soils the growing of phormium flax to form river topdressed belts might be practiced. As-

sistance could be rendered by provision of heavy machinery for clearing work and of ditch digging machinery for drainage.

#### GENERAL CHARACTERISTICS OF THE WESTLAND SOILS:

There are certain features which are common to all soils of Westland.

**Texture:** On a textural basis the mineral soils fall very largely into coarse sandy, fine sandy, silty or silt loam classes. The open textured classes of soil permit rapid leaching of nutrients but this disadvantage is more than offset by the free drainage of water and their resistance to poaching by stock. Soils with a high proportion of clay are rare while peaty soils and peats are characteristic of the low-lying areas.

**Acidity:** The high rainfalls, the open texture and mainly shallow soils, and the tussock scrub or forest vegetation which produces a rather sour litter combine to produce soils of marked acidity. This is general throughout Westland though the more recent soils of the river flats are less acid than those on the older deposits. There is a slight lessening in the degree of acidity from S. to N. paralleling the lessening of the rainfall.

The correction of the marked acidity is the basic step in development of the land for farming and the amount of lime required to reduce the acidity to satisfactory levels is not as great as would be required for soils with a higher clay content and it is doubtful if applications of more than two tons of ground limestone or its equivalent would be required for an initial dressing on any soil.

**Phosphate Status:** The level of available phosphate was extremely low in all samples taken from undeveloped or partially developed areas. The position was somewhat better in the developed areas but not one single sample of the many taken showed a high level. This acute deficiency of phosphate is a major limiting factor in the pasture improvement and annual applications of phosphate may well be of greater importance than maintenance dressings of lime after an initial application of lime has been given.

**Nitrogen Status:** Although no chemical checks were made of the available nitrogen status of the soils there was ample evidence from the growth of the pastures to show that especially in the winter and spring nitrogen was also a critical nutrient deficiency. Under lower rainfall con-

ditions with less severe leaching the supply of nitrogen can be maintained from the clovers in the pastures and from the stock excreta but this is not likely to be so for Westland pastures. The slow start of pasture growth in spring is due more directly to this shortage of nitrogen than it is to low soil temperatures. The use of nitrogen fertilisers suitably balanced with phosphates on at least one field on each farm would provide a valuable addition to early spring feed supplies.

**Other Nutrients:** There was no definite evidence to suggest that there were deficiencies of potash, magnesium or trace nutrients such as copper, cobalt, or boron over the greatest portion of the areas inspected.

It should be noted, however, that the sandy nature of the soils suggests that deficiencies of potash and magnesium will develop after liming and topdressing with phosphates has been carried on intensively for some years. The use of serpentine superphosphate in place of ordinary superphosphate would probably be desirable because of its magnesium content and trials with potash fertilisers used in conjunction with lime and phosphate should be made on representative soil.

The possibilities of deficiencies of copper on the isolated peat areas and of cobalt in the Cronadun area should not be overlooked.

#### PASTURES AND GRASS

##### FARMING:

Improvement in production per acre can be brought about in a relatively short time by the adoption of certain practices:

1. The sowing of grasses suitable to the country. These are Short Rotation and Perennial Ryegrasses, with Timothy and White Clover. Lotus Major and Fog will always come in under cattle grazing but instead of being dominant they can be regarded as contributing species to the sward production if good management is adopted.

2. Adequate applications of lime and phosphate to maintain the fertility of the pasture land.

3. Adequate drainage to enable surface water to get away quickly and to limit growth of rushes and other weeds which flourish under wet conditions.

It appears that cultivation for pasture establishment may range from ploughing, followed by one or two forage crops before sowing down, to the surface working of existing pastures with discs or "bush and bog" harrows and surface sowing of grass

after levelling off the top with heavy tripod harrows. The application of 2 cwt. of super per acre plus a heavy application of lime should accompany the sowing of all pastures.

The rapid growth of grass which may result in rank unpalatable herbage should be countered by adequate subdivision of the dairy farms so that controlled rotational grazing may be followed together with topping when the grass tends to get away.

The utilisation of surplus grass in early summer to provide hay for winter feed is not easy as the weather does not normally favour haymaking. Grass silage may be made or controlled grazing practiced. Graze as hard as possible during summer, using dry stock to follow the cows on pasture, then topdress, harrow and set aside two or three paddocks in late autumn. These paddocks can then be allowed to get away and utilised as winter feed before calving and for the early milking period before the main flush of feed occurs.

Rushes and other water loving weeds are always there ready to assert themselves if the drainage becomes faulty or inadequate. Clover and the better grasses will soon disappear if the lime and phosphate in the soil fall to a low level. The heavy growth of grass in spring and early summer must be controlled if the quality grasses are not to smother themselves and allow the poorer species to come in and dominate the sward.

#### LIVESTOCK INDUSTRY:

**Dairy Production:** Of the estimated 60,000 acres at present used for dairying very little has been brought to a high production level and much of it is still only semi-improved. Although these semi-improved areas provide a convenient "run-off" their value for this purpose is likely to be over-rated.

The total number of cows milked is 24,000 but the number of cows supplying dairy factories is estimated at 20,600. The average production per cow approaches 200 lbs of butterfat with an average per acre production of 72 lbs.

The adoption of better management policies would result in an increased cow population, and in higher herd and per acre returns. It is significant that the butter factories are equipped to handle greater production than is coming forward at present. The vision of the pioneers has not yet reached fulfilment. A herd average of 300 lbs of butterfat per cow and

a per acre production of 150 lbs is a reasonable estimate of production on well managed farms. That a number of farmers have exceeded these standards gives ample and practical support for such an estimate.

Of particular interest from the dairy farm management point of view is the spread of production during the season. Returns from herd testing and the monthly butter output of the factories show a very long time-lag in reaching peak production, a short but high mid-season production and a rapid fall soon after peak production has been reached. These facts suggest that a full utilisation of grass production is not being obtained; a conclusion which is strengthened by the low per cow production of many herds and by monthly production figures from individual farms.

**Time of Calving:** Despite the favourable winter conditions, calving dates during spring are widespread, with a marked tendency towards late spring (mid-September) calving. This results in a reduced lactation period with a short mid-season peak production.

In most areas the climb to peak production is slow and the peak months November, December and January supply nearly half the total production.

**Supplementary Feed:** This production lag is due partly to the calving spread but it is tied up also with the provision of winter supplementary feed and the failure to make some attempt to accelerate the grass growth in early spring.

During the spring and early summer it is evident that low producing herds were utilising the vigorous pasture to build up their body reserves in addition to their milk production and in consequence milk production has suffered. It is evident that the provision of adequate supplies of supplementary feed will give immediate and profitable returns.

**Herd Testing:** Of the 24,000 cows milked some 5,600, or nearly 25 per cent, are under Group Herd Test. Although this compares favourably with other dairying areas in New Zealand it falls far short of the ideal if the problem of production improvement is to be tackled seriously.

There are many well bred herds in the area and most herds are headed by bulls with outstanding pedigrees but the full value of these animals to the industry can only be fairly judged by the adequate feeding and the continuous testing of their

progeny.

The improvement of production which results from continuous herd testing must be regarded as a long term plan and will only be effective when full development of production by pasture control and increased supplementary feeding has been obtained.

The vaccination of calves against the risk of contagious abortion is widely practised.

**Pig Raising:** The present pig population of some 12,000 is equivalent to approximately 50 pigs per 100 cows milked and compares favourably with dairying areas in other parts of the Dominion.

In the main, housing leaves little to be desired and units of the modern "Canterbury" house are common throughout the whole area. The improvement in housing has been accompanied by an improvement in the quality of the pigs produced. During recent years dairy farmers from this area have consistently received the major awards in the "Bacon Carcase" competitions conducted by the Canterbury District Pig Council.

Pig production is carried out with the use of minimum quantities of supplements to the dairy by-products. Meal supplements are difficult and costly to obtain. The growing of forage crops for wintering pigs was stimulated by the subsidy and it is to be hoped that the withdrawal of the subsidy will not have the effect of reducing the area of forage crops grown for the over-wintering of the pig population. These home-grown crops, however, do not replace the need for better supplies of meal supplements. Direct importation on a co-operative basis of meat meal and of grains from Canterbury or the Westland.

North Island should receive special attention.

**Beef Cattle:** The estimated beef cow herd is 12,000 with a fattening steer herd of two-year-olds and over of 7000.

The area is an important producer of beef cattle for the Christchurch winter fat stock market. Most of the beef is produced in the far south, on country which, because of difficulties of access, is as yet suitable only for this type of production. The provision of better access—roads and bridges—could certainly result in considerable improvement. Even in well established dairying areas considerable numbers of beef cattle are also fattened. The high price for winter beef on the Christchurch market combined with the low cost of production make beef raising a profitable enterprise.

**Sheep:** Total sheep in the area number approximately 132,000. The flocks are distributed throughout the whole area with, in general, big flocks on the higher levels and small flocks in the dairying areas. Fat lamb raising is of some importance and, although no export processing works are available in the district, transport services are available to both Nelson and Canterbury.

At the present time the fat lamb production is far from being fully exploited, the numbers for export being only 30,000 to 40,000 annually. On those farms where lamb raising is being taken seriously there has been a gradual but marked improvement in the class of ewe carried and it is evident that the extension of the use of Romney ewes mated to Southdown rams should be regarded as an important step in increasing the returns from the grasslands of

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