

are some extensive gravel ridges. The soils, being for the most part sandy, gravelly, and shallow, and therefore well drained, dry out badly in the summer and autumn. This area would probably respond best of all the plains to irrigation, and there seems no reason to suppose that under irrigation along with top-dressing, the production could not be greatly increased. Conditions are somewhat more acid than on the Opawa Series. The available potash is slightly lower than in the Opawa Series, but available phosphate is of the same order though not so consistently maintained in the subsoil. Holdings would average about 200 acres. Mixed sheep and crop farming is carried on. The pastures rapidly deteriorate if the plough is not kept going, but top-dressing, at present almost unknown, may help in the maintenance of good permanent pasture. Some excellent malting barley is grown, the yields reaching as much as 70 bushels or 80 bushels per acre at times, but the average would be about 40 bushels. Oats, garden peas, red clover, white clover, and a little wheat (usually for seed) are also grown. Old ewes are brought in, mated to black-faced rams, and sold fat with their lambs. Store lambs are brought in. Lambs are fattened off their mothers and off clover, but a little rape is also grown for fattening.

Spring Creek.—From Selmes Road east to Spring Creek the soils are heavier and damper, drainage being a problem because of the lack of fall. Gravel ridges are seldom in evidence. A common profile is about 24 in. of silt loam on sandy loam or sands. The Spring Creek Series includes some of the most fertile land on the plains. The acidity is approximately the same as for the Rapaura Series and the available potash is of the same order, but the available phosphate is very slightly higher. The pastures are better, but the farming is similar to that at Rapaura. Dairying is also carried on to a limited extent, more cream being sent in from the mixed cropping farms here than at Rapaura. Store lambs are fattened as on the lighter soils to the west. The carrying-capacity without top-dressing but with additional feeding is about four ewes per acre. Top-dressing is carried on to a small extent, 2 cwt. to 3 cwt. of super being used, but the practice is an innovation and is still in its experimental stages with most farmers.

Opawa.—A strip following the Opawa River from about Hammericks Road to the railway-line consists of very highly fertile soil deposited in some cases within the lifetime of old inhabitants. The profile is usually silt loam down to a depth of 36 in. or more. In places sands are met with at 24 in. from the surface, but there are no gravel ridges. This is the least acid of all the series, while the available potash is adequate to good, and the available phosphate figures are high. Holdings are small and the farming is similar to that at Spring Creek, but there is also some market gardening.

PEAT.

One mile north-west of the new aerodrome there is a patch of peat several feet deep about 120 acres in extent, completely surrounded by a strip of 6 in. of peaty loam on clay loam of about the same area. On the inner part logs and stumps come up thickly as the water is carried away by the co-operative drain. The surface is dry, open, and springy to walk upon, but there are small wet patches. The pasture is mainly rye-grass. The outer part is mostly dry and firm to walk over. Very good crops are raised on the peaty loam, including peas and red clover, and the pasture is excellent.

NOTE.

Near the sea there is a considerable area of land which has been built up by the Opawa River. For some distance back from the sea the river is tidal, and at times when heavy rains coincide with very high tides salt water floods over the paddocks. Samples have been taken, and a map prepared showing the areas affected and the degree of salinity. The part nearest the sea is not farmed, but at least 3,600 acres of land continuously farmed is fairly badly to very badly affected.

PAKIHI SOILS OF WESTPORT.

By C. S. HARRIS.

INTRODUCTION.

Field-work on the pakihi soils was commenced at the end of October, 1937, and completed in May, 1938. About three-quarters of the area was photographed by the New Zealand Aerial Mapping Co., the assembled photograph, on a scale of 6 in. to a mile, coming to hand at the beginning of February. They were extremely useful, making it possible to fix many boundaries accurately and rapidly. Previously it had been found necessary to run chain and compass traverses at convenient intervals in order to form a basis for mapping soil type boundaries, as practically no landmarks were present. Unemployed labour was used to some extent for this purpose.

The total area surveyed was roughly 120 square miles, most of which was "pakihi" land, extending from Charleston north to Waimangaroa.

CLIMATE.

Mild temperatures prevail, but there are cold winds during the winter. The annual rainfall during the last ten years has averaged nearly 79 in., each month averaging 6 in. to 7 in.

PARENT MATERIAL.

Over the greater part of the area sandstone or granite gravels, originally deposited by the sea, constitute the parent rock, and give rise to "pakihi" land. On the remainder the soil is formed from recent alluvial material, sand dunes, or from small patches of limestone, and for the most part give rise to much better soils than the "pakihi."