

WAIRAU PLAINS SOIL SURVEY.

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GENERAL.

In June, July, and August of 1937 the area mapped comprised all the plains' land on the south side of the Wairau River between the Blenheim-Picton railway-line and the Wye Stream, thirty-five miles from Blenheim, together with the lower eight miles of the Waihopai Valley and a number of fans along the foot of the Wither Hills, the total being roughly 58,000 acres. Attention was confined to those parts already contoured at 10-foot intervals by the Public Works Department in connection with the irrigation projects.

RAINFALL AND IRRIGATION.

Some of the mean annual rainfall figures are as follows: Erina, 37 in.; Waihopai, 32 in.; Renwicktown, 28 in.; Blenheim, 26 in.; Spring Creek, 30 in. Although the rainfall is not particularly low, except at Blenheim and Renwicktown, the porous nature of the soils, hot north-west winds, and high evaporation cause serious droughts in some years. Spring Creek district appears to receive an underground seepage from the Wairau and does not suffer to any extent. Lack of sufficient moisture in most years is the limiting factor to higher production and various methods of irrigation are being considered by the Public Works Department.

SOIL SERIES.

Hillersden.—From the Waihopai to the Wye there are three main river terraces, the highest and oldest of which, consisting of silt loams on gravels, together with some of the Waihopai Valley, contains small areas with a tendency to pan formation. (The lower terraces in the upper Wairau are included in the Waurau Series.) There are numerous gravel ridges on all terraces. These soils are the most acid on the plains and, according to chemical tests, show the greatest need for lime. The available potash, although low, may be adequate, but phosphate appears to be deficient, those types in the Waihopai Valley being lower in available phosphate than those of the Wairau Valley. The cover is chiefly brown-top, danthonia, and a little sweet vernal, the main weeds being matagauri, manuka, and fern. A good deal of the area is farmed in conjunction with the hills. Oats are grown for green feed and chaff, but no grain crops are grown. Wool, mutton, and store sheep and lambs are the main sources of income, and in good seasons some lambs are fattened.

Wairau.—All the soils in the upper Wairau, except those on the highest terrace, are included here. The soils nearest to the river are mainly 3 in. of sandy loam on gravels, while the higher ground back from the river consists of silt loam and sandy loam resting on sands. The phosphate status is high as is usual with recent alluvial greywacke soils, but the available potash is rather low. These soils are less acid than the Hillersden Series, but still show the need for lime. This series is farmed in conjunction with the Hillersden Series and, being of somewhat higher fertility, is partly used for growing supplementary feed crops. The pasture is slightly better than that on the Hillersden Series.

Fairhall.—Soils developed on the Fairhall fan, adjacent small fans, and a small area at Renwicktown have been classed under this heading. The profile varies a great deal, in places silt loams and sandy silt loams resting on gravels at a depth of 6 in. to 24 in., while in others there is about 6 in. of heavy silt loam resting on clay loams and clays. Gravel ridges are common. Chemical analyses indicate a moderate need for lime, while the available potash figures are average to good and the available phosphate fairly high. The wetter parts of this series are of lower fertility and are more acid. The fertility is low, partly owing to dryness, and very little cropping is done, most of the area being confined to sheep.

Taylor.—The Taylor fan has given rise to silt loams which vary in depth from 2 in. on the southern higher ground to 18 in. on the lower northern margin of the fan. They rest on gravels. The acidity here is lower than on the Fairhall Series, but in phosphate and potash status the two series are similar. Sheep-farming is the main pursuit, but a little cropping is done and there are one or two small apple orchards. Subterranean clover is being tried out on the dry shallow types, the results so far being excellent. The indications are that it would also prove very good on the more gravelly parts of the Fairhall, Omaka, and Hillersden series and in the Opawa River bed.

Omaka.—The Omaka River, flowing north across the Wairau Plains, has deposited gravels, sands, and finer sediment along its banks. The profiles vary from gravelly sandy loam on gravels at 2 in. to 8 in., sandy loam on sands, to 36 in. of silt loam. Analyses indicate moderate acidity and available phosphate is high, but the potash figures are only fair.

There is a fair amount of cropping, these soils ranking in fertility about the same as the Rapaura Series. Where the farms include lands on the Fairhall and Omaka series, supplementary feed crops are usually grown on the latter.

Rapaura.—The area east of the Waihopai River grades rapidly into more fertile country, until on the eastern side of Renwicktown the cropping area begins. At this point blue borage, a really troublesome weed, makes its appearance. Following the Wairau River there is a strip, constituting the Rapaura Series, running east from the Wairau bridge for about two miles, bounded on the south by the Opawa River. In this region the soils consist mainly of sandy silt loams and sandy loams on gravels, but there