

Satisfactory progress has been made with the detailed surveys of Gisborne flats, where 9,000 acres have been mapped, and of Central Otago, where 7,000 acres of orchard and potential orchard land have been examined.

The field survey of the Wairarapa Plains is now completed.

At the request of the Department of Island Territories a survey was made of the soils of Niue Island. In this isolated community the local production of foodstuffs is most important, and the limited soil resources must be husbanded with care. These soils are formed from volcanic ash, which lies on a rugged surface of coral limestone. Of a total area of 64,900 acres, only about one-half has a soil covering available for agriculture, the remainder consisting of bare limestone rock with the ash soil occurring in narrow fissures. This rocky land grows forest and coastal scrub. The deeper soils occur as pockets throughout the island and total approximately 32,000 acres. Some 24,000 acres are used for food-production on a five-year to nine-year rotation, with a spell of three to five years in which the soil is allowed to revert to a native shrubland cover. These soils are maintaining their fertility and producing good crops, although the interval between cropping tends to be shorter near villages and the soil fertility falls correspondingly. On some 8,250 acres, soils formerly used for agriculture have now reverted to fern and scrub, since these soils no longer have the natural fertility necessary to grow food crops. A solution of this problem is necessary for the future well-being of the Islanders.

Other surveys of small areas have been made at the request of various bodies. They include surveys of Raoul Island, the market-garden areas of Greytown, parts of the flats bordering Rangitikei River, and parts of Castlepoint County.

Five further surveys—namely, Matakaoa, Makara, Marlborough, Ellesmere, and Inchelutha—have now been finalized and reports are being prepared for publication.

Reconnaissance Survey of Fiji.—As the result of a visit to Fiji, a report was made to the Fiji Legislative Council on a proposed reconnaissance survey of the two main islands by the Soil Bureau.

SOIL CHEMISTRY

Soil Phosphates.—Radioactive phosphate added to a North Auckland and a Wellington soil showed that the plants secured practically all their phosphate from the added dressings.

Yellow-leaf in Phormium Flax.—In co-operation with the Botany Division, radioactive phosphorus was made available to the roots of healthy flax and to those affected by yellow-leaf. It was found that while the phosphate appeared in the leaves of healthy plants none appeared in the leaves of plants with yellow-leaf. This means that the roots of the diseased plants are not functioning normally.

Manganese Deficiency in Peach-trees.—Further tests show that reduction of alkalinity and application of manganese sulphate to the soil does not increase the manganese content of the leaves. At present it appears that the only practical remedy is the spraying of the leaves with the manganese salt.

Compost.—Assistance has been given to local bodies in the composting of organic waste at Auckland, Dannevirke, and Masterton. Analyses have been made of green flax waste at Foxton.

Clay Minerals.—These are identified by X-ray and thermal analyses. Results have been already used in soil mechanics in correlating data in different localities.