Research Activities.

During the period under review the main lines of research work have been in connection with—

(1) Tobacco-seed diseases.
(2) Control of mosaic disease.
(3) Chemical investigations relating to tobacco soils and the quality of tobacco-leaf.

In addition, a survey has been made by the Tobacco Research Officer of the general conditions under which tobacco is grown both in the Nelson district and at Pongakawa, Bay of Plenty. Arrangements were also made for the selection and production of tobacco-seed of the main varieties grown in the Nelson district.

In the conduct of the research work Dr. K. M. Curtis, in co-operation with Mr. J. M. Allan, has been responsible for the work on tobacco-seed diseases and mosaic-control investigations.

The chemical work has been conducted at the Cawthron Institute under the general direction of Sir Theodore Rigg and Dr. H. O. Askew.

Report of Tobacco Research Officer.

On arrival of the Tobacco Research Officer in Nelson at the end of November arrangements were immediately made to co-operate with the tobacco investigations being conducted by the Cawthron Institute and to secure a first-hand knowledge of the conditions ruling in the Nelson tobacco industry, particularly in regard to problems which required investigation.

Disease Investigations.—In co-operation with Dr. K. M. Curtis, records of the percentage of mosaic were made in a large number of tobacco fields, and carefull consideration was given to the different factors which might operate in the dissemination of the mosaic virus. In addition, several small experiments were made to determine the means of transference of the virus in the tobacco-seedling bed.

Plants of the supposedly mosaic-resistant Porto Rican tobacco variety, Ambalema, are being raised in a glasshouse at the Cawthron Institute to determine resistance to the disease and in the hope of developing a suitable resistant commercial variety by crossing with the at present favoured susceptible varieties.

A tobacco disease prevalent in the Nelson district this season is believed to be the virus disease ring spot. It was found on occasional plants in a large number of crops and affected up to 5 per cent. in a few crops. Ring spot is seed-borne and is transferred by handling, in the same way as mosaic.

In one crop a fair percentage of plants was found affected with a serious stalk-rot, believed to be "black leg" or "hollow stalk" caused by *Bacillus aroideae.*

Seed-production.—To prevent the introduction from other countries of serious tobacco diseases—*e.g.*, blue mould, wildfire, &c.—which are seed-borne, it is considered desirable to encourage the use of locally grown seed. The Tobacco Research Committee agreed to the proposal that the Research Officer should select seed from growers' crops and tend, clean, and disinfect it for next season's requirements. The tobacco-manufacturing companies were invited to co-operate in an experiment for the use of local seed. All have agreed to grow at least part of their requirements next season from the seed so selected.

Pongakawa Tobacco Area.—The tobacco-growing area at Pongakawa, under the control of the State Forest Service, was visited at the end of the season. An area of 43 acres was under production, from which a yield of approximately 35,000 lb. of leaf was obtained. The maximum yield was not realized owing to serious storm damage earlier in the year. The leaf harvested contained a high proportion of bright grades; body and texture were good, and the quality of the leaf generally was comparable with much of that grown in the Nelson Province. The soil is a light pumice type and should be suited to tobacco culture. Rainfall and climatic conditions generally also appear to be favourable. One disadvantage is lack of permanent water-supply in close proximity to the area.

The area of suitable soil in the valley is approximately 200 acres, but it is typical of other valleys in the locality, giving quite a large area in aggregate.

Review of the Nelson Tobacco Industry.—Harvesting of the crop was practically complete by the end of March. The season was an exceptionally good one—it is claimed to be the best for several years. Although somewhat delayed by prolonged wet weather at the latter end of the season, the harvest was finished earlier than usual and escaped all danger from frost and hail which frequently curtailed its completion in other seasons. Some trouble was experienced among the "air-drying" growers where the excessive humidity caused "shed burn" in crowded sheds, but the trouble was accentuated by unsatisfactory buildings. Yields of leaf were high and the quality exceptionally good.

The mosiac disease was more prevalent than usual, high percentage of infection having occurred in a large number of crops, in some cases over 90 per cent. being recorded. Fortunately, however, growth conditions were such that, despite the high precentage of infection, symptoms tended to be masked and the reduction in yield and quality was considerably less than under conditions less favourable to vigorous growth.

Mosaic Investigations at the Cawthron Institute.

During the 1937–38 season a large-scale experiment was conducted by the Cawthron Institute to determine the relative importance of glasshouse, seedling-bed, and field in the dissemination of tobacco mosaic. The two major tobacco-manufacturing companies co-operated with the Institute by supplying the seed of eight varieties and selecting the growers to whom the seedlings were subsequently distributed.