

Wood-preservation.—The application of wood-preservatives on a field scale is still proceeding. In order to gain information regarding the penetrability of commercial species of New Zealand timber by water-soluble wood-preservatives under pressure, arrangements have been made with the Forest Products Laboratory, Princes Risborough, England, to have a series of pressure impregnation tests made. A series of the main commercial species of timber both native and exotic has been obtained and shipped. Advice has been received that the shipments have arrived safely. These tests are in addition to those which are under way at the Forest Products Division of the Commonwealth Council of Scientific and Industrial Research.

TOBACCO RESEARCH

Advisory Committee.—Sir Theodore Rigg (Chairman), Messrs. F. R. Callaghan, L. J. Schmitt, W. K. Dallas, N. J. Adamson, H. L. Wise, C. C. Nash, E. M. Hunt, F. A. Hamilton, B. T. Rowling, J. F. Balek, and R. Thomson.

During the year four meetings of the Tobacco Research Committee have been held. Further improvements have been effected on the Station grounds, and a large shed has been built which serves as a combined implement and coal shed with accommodation for leaf-tying during the harvesting season.

As in former years, the tobacco research work has been carried out jointly by the staff at the Research Station and by officers of the Cawthron Institute. Work at the Research Station has consisted of fertilizer studies both quantitative and qualitative, methods of fertilizer application, seed-production trials, variety trials, and mosaic investigations. At the Cawthron Institute the work has included chemical studies dealing with the intake of plant nutrients, the chemical composition of cured leaf, nicotine extraction from waste tobacco leaf, and the preparation of tobacco dusts. In addition, considerable time has been devoted to mosaic and disease investigations, seed-germination tests, and the prosecution of the soil survey of tobacco lands.

1942-43 SEASON

During the present season variable weather has been experienced, but nevertheless crop prospects are good and it is anticipated that the yield will be similar to that of the previous year. During the planting period frequent strong winds and rather dry weather were experienced. Five inches of rain during the early part of December undoubtedly leached out of the soil much of the soluble nitrogen in the base dressing of fertilizers. Very dry weather was then experienced for a period of a month, and this was accompanied by low night temperatures which bordered on frost on several occasions. Heavy rain during February somewhat interfered with harvesting, and a frost of 4° on the 12th of March spoiled about two hundred sticks of tobacco leaf.

The results of fertilizer experiments for the 1942-43 season will not be available until the leaf is graded, but the following field notes give some indication of the results which have been obtained. Where the standard fertilizer was used at different rates the heaviest application has given the highest yield. Maturity of leaf was somewhat delayed, but not to a serious extent. The effect of nitrogen from different sources showed some interesting differences. The organic forms of nitrogen were conspicuous in maintaining growth after the heavy rains in early December. On the other hand, the more readily available nitrogenous fertilizers gave the quickest recovery when the top-dressing was applied after the rain. The studies of different methods of fertilizer application showed that a reasonable proportion of the fertilizer should be within easy reach of the root system during the early growth stages.

Fertilizer Experiments.—The crop in the 1941-42 season amounted to 13,427 lb. of cured leaf from 13 acres. The quality was satisfactory, and the average price realized was 2s. 2d. per pound. A profitable increase of yield in tobacco leaf was obtained by increasing the quantity of standard fertilizer from 1,000 lb. to 1,200 lb. per acre. When the fertilizer was still further increased to 1,600 lb. per acre, the increase in yield was not sufficient to justify the additional cost of fertilizer. In the experiment dealing with the effect of varying amounts of nitrogen and potash in the fertilizer the highest yield of leaf was obtained from the plots receiving extra nitrogen. This increase did not appear to have been obtained at the expense of leaf quality. On the plots without nitrogen the tobacco leaf was not only lower in yield, but the quality was likewise lower. When the quantity of potash in the fertilizer was altered little effect was shown on yield of leaf, but extra potash gave better body and texture of leaf.

Seed-bed Work.—In the manurial treatment of the seedling beds it was found that $\frac{1}{2}$ lb. of standard fertilizer (3:8:8 mixture) per square yard gave the best results both in the case of bed-sown and pricked-out plants. Fertilizers containing a high proportion of organic ingredients proved unsatisfactory for the seedlings. In the bed-sown beds the reduction of the rate of seed to half the usual quantity produced sturdier and better-rooted plants which were less subject to damping-off disease. The same advantage of thin seeding was noticed in the case of box-raised seedlings.

Mosaic and Disease Investigations.—These have been conducted partly at the Tobacco Research Station and partly on the grounds of the Cawthron Institute, Nelson. During the past three seasons the amount of mosaic on typical blocks at the Tobacco Research Station has been reduced from over 40 per cent. to less than 5 per cent. initial infection. Strict attention to the removal of sources of infection and the observance of well-recognized rules for the care and handling of tobacco seedlings have played the major part in controlling mosaic.