

At Umukuri the work has comprised a great variety of subjects connected with the control of mosaic disease, the use of fertilizers, and the management of the tobacco crop. The experiments have included tests of steam sterilization of the tobacco-seedling beds, the value of direct sowings of tobacco-seed into the beds as compared with the pricking-out of glasshouse-raised seedlings, the value of different varieties of both air-dried and kiln-cured tobaccos, and studies dealing with lateralling and topping of the plants.

At the Cawthron Institute the investigations have included studies of tobacco-seed germination, the use of disinfectants for the treatment of tobacco-seed, chemical studies relating to quality in tobacco, the extraction of nicotine from tobacco, and a detailed soil survey of tobacco lands in the Motueka and Riwaka districts.

A field-day was arranged at the Tobacco Research Station early in February, but the attendance of growers was disappointing. The Committee has received with great regret the resignation of Mr. J. M. Allan, Tobacco Research Officer, who has been appointed Tobacco Advisor to the Department of Agriculture in Western Australia.

REPORT OF TOBACCO RESEARCH OFFICER.

On the whole, the past season was a favourable one for tobacco at Umukuri. A dry spell in November and cold weather in December adversely affected transplanting operations and the early growth of the plants. The weather improved in January and remained satisfactory throughout the rest of the season. Harvesting commenced on the 9th February and continued until the 19th April, when curing was completed. The entire crop was much improved over that of last season, good yields being obtained over all experimental and commercial areas. Approximately twelve thousand sticks were harvested from 13 acres and over one thousand sticks of air-dried tobacco from $1\frac{1}{2}$ acres. Leaf quality is much above that of last season, and a considerably higher average price should be realized when the leaf is sold. The kilns were taxed to their utmost capacity, also the storage-room for leaf. If the same quantity of leaf is to be grown in future years, extra kiln and storage space will have to be provided. It has only been possible to harvest all leaf this season by overloading the kilns, and whereas such a practice enabled all leaf to be brought in from the field it necessarily had some detrimental effect on quality.

Fertilizer Experiments.

It is not possible to give the final results of the experiments until grading is completed and the plot yields are calculated, but certain trends were observed in some experiments which may be indicative of the results to be expected. In the experiment where the fertilizer was applied at rates equivalent to 600, 800, 1,000, and 1,200 lb. per acre there was a slight increase in growth with the two heavier applications of fertilizer. When the nitrogen and potash in the standard mixture were varied, double nitrogen markedly increased growth but the leaf produced was the heavier, ranker type that matured slowly. Double potash appeared to have the effect of hastening maturity, although there was not much indication of increased growth. When both nitrogen and potash were increased the best results were obtained. There was an increase in the growth of the plant, the leaves were of good quality but heavier bodied than in the standard treatment, and earlier maturity was obtained. When the nitrogen was reduced to half, the plants did not grow as large, the leaf was smaller, and the plants ripened off earlier. Reduced potash had a somewhat similar effect; and the same trend was noted but to a greater extent when both potash and nitrogen were reduced to half.

In the experiment designed to test the effect of applying part of the fertilizer broadcast, the best results were obtained when half was applied under the plants before planting and half broadcast along the row at the time of the first hoeing. When all was applied under the plant there was a tendency to earlier maturity with not quite as much growth. Where all fertilizer was broadcast at the time of the first hoeing the plants got a poor start and were late maturing, with considerably less growth than in either of the other treatments.

The most interesting results were obtained in the experiment designed to test the effect of low sulphur content and the inclusion of a percentage of chlorine in the fertilizer. There was no noticeable effect from the inclusion of chlorine in the mixture, but there was a marked difference when the sulphur content was reduced. The plants in the low-sulphur plots stood well above the rest and the leaf was of good quality and greater surface area.

Mosaic Investigations.

Mosaic has been much less serious over the entire area than last year, when infection exceeded 90 per cent. This season the infection averaged over all plots was approximately 30 per cent. In addition to a lower percentage of infection, the disease was much less destructive on the plants.

Where bed-raised and pricked-out seedlings were compared there was a slight improvement in growth in the former lot, but it was not as marked as in the previous year. The most noticeable difference was in the percentage of mosaic in the different treatments. Bed-raised seedlings showed 48 per cent. infection, confined for the most part to the topmost leaves, affecting comparatively few harvestable leaves. Where the seedlings had been pricked out into sterilized soil there was 64 per cent. infection, mostly confined to the tops, but with a greater number of plants affected all over. In the seedlings pricked out into unsterilized soil the mosaic percentage was mostly systematic, affecting many harvestable leaves.