

In the 1946-47 spacing experiment the tobacco grown with a 4 ft. by 2 ft. spacing gave 1.74 per cent. nitrogen in leaf samples, while the 4 ft. by 21 in. spacing gave leaf with a content of 1.65 per cent. nitrogen.

Nutrient Intake Experiments.—The intake of plant nutrients continues during the harvesting period not only by the plant as a whole, but by the ripening leaves. The intake of plant nutrients is affected greatly by weather conditions, but a proportion as high as one-third to one-half of the total season's intake may be associated with the harvesting period.

Influence of Season on Composition of Tobacco-leaf.—Considerable differences occur in sugar and nitrogen contents of leaves harvested in any one season. In 1944 and 1947 the sugar content of harvested tobacco-leaves rose to a distinct maximum, and then fell towards the end of the season. Nitrogen content of the leaf was low when sugar content was high. In the 1945 season, however, sugar content was highest in the early part of the season and fell consistently as the season advanced. Nitrogen content in this season was low in the early part of the season and increased at later stages of harvesting. Climatic conditions would appear to offer the best explanation of these seasonal variations in sugar and nitrogen content of the tobacco.

DISEASE INVESTIGATIONS

This work has included inspection of tobacco seedlings grown by nurserymen at Nelson and Motueka; surveys of tobacco-seedling beds and tobacco fields for mosaic, verticillium wilt, black root-rot, and angular leaf-spot. In addition, experiments have been continued at the Tobacco Research Station and at the Cawthron Institute concerning the control of mosaic, black root-rot, verticillium wilt, and sclerotinia in tobacco-seedling beds and in field plots.

Mosaic Disease

During October and November the seedling beds of twenty-five tobacco-growers were inspected, and the beds were found unusually healthy. Apparently greater care is being exercised by growers in the selection of sites for their seedling beds, in the choice of soil, and in the general management of the beds. The survey showed that tobacco-growers were raising more tobacco plants by direct sowing of seed in the beds. At least eleven growers out of those visited had some of their beds sown direct with tobacco-seed. Mosaic was observed in only small amount, twenty-three out of twenty-five growers having apparently clean beds.

During January an inspection was made of the tobacco fields of twenty-five representative growers located in different parts of the tobacco-growing districts, and it revealed less mosaic infection than in previous years.

In six comparisons between plants grown from direct seeding in the beds and pricked-out plants, the average amount of initial mosaic was 10 per cent. in the former and over 30 per cent. in the latter.

An experiment was designed to test the value of different chemicals in the treatment of the soil prior to sowing the seed or the pricking-out of tobacco seedlings. Mosaic counts on field plots planted with tobacco plants grown under the different treatments showed only 3 per cent. initial mosaic with the standard treatment and 43 per cent. with pricked-out plants. Steam, chloropicrin, and calcium cyanamide plus urea gave similar results, the percentage of initial mosaic in the field plots varying only from 2.6 per cent. to 3.5 per cent. The use of different amounts of standard fertilizer and increased amounts of nitrogen in the manurial treatment of the seedling beds was not associated, under the conditions of the experiment, with any increase of initial mosaic in the field plots. A considerable amount of secondary mosaic infection occurred in all the field plots, the percentage of secondary infection being similar, irrespective of the different treatments originally applied in the seedling beds.