

CHEMICAL INVESTIGATIONS

The analyses of some 90 samples of tobacco from the experimental plots at the Tobacco Research Station and from the Takaka experimental area have been completed. The more important points are as follows:—

Small applications of borax at the rate of 5 lb. per acre raised the boron content of tobacco leaf from 17.9 p.p.m. to 32.5 p.p.m. A further substantial increase in boron content was obtained when the application was increased to 10 lb. per acre. Borax did not appear to have any effect on the nitrogen and reducing-sugar contents of the leaf.

In the 1948–49 season lime treatment or the omission of calcium from the fertilizer mixture had no marked effect on sugar, nitrogen, or mineral content of the leaf.

Leaf heavily infected with mosaic had 2.11 per cent. nitrogen, compared with 1.37 per cent. for non-mosaic leaf, and had only 16.67 per cent. sugar, compared with 25.13 per cent. for non-mosaic leaf.

A commercial fertilizer mixture gave a higher leaf-nitrogen figure than the standard fertilizer used at the Station (containing equal proportions of nitrogen in nitrate, ammonia, and organic form) or than a special mixture containing two-thirds of the nitrogen as nitrate of soda. The sugar content of the leaf from the different experimental treatments was not appreciably affected.

The effect of dolomite in the manurial treatment of tobacco was reflected in higher percentages of magnesium in the tobacco samples, but there was no significant effect on either sugar or nitrogen contents.

Different distances of spacing or different heights of topping had no marked effect on either sugar or nitrogen contents of leaf samples.

The omission of nitrogen or of sulphur from the fertilizer mixture gave low nitrogen figures in leaf samples. A low sugar content was associated with leaf grown without nitrogen. High nitrogen and high sugar content characterized leaf grown without potash. Omission of phosphate or calcium did not give any outstanding differences in either nitrogen or sugar content.

Analyses of leaf samples from the tobacco plots where cover-crops had been disked in prior to planting gave the following percentages for nitrogen and total reducing sugars respectively: blue lupins, 2.18 and 15.57; rye-corn, 1.15 and 26.35; rye-grass, 1.28 and 26.01; oats and tares, 1.54 and 25.05. In each case the tobacco crop was manured with 1,200 lb. of standard fertilizer per acre. The figures emphasize the detrimental effect of lupins as a cover-crop.

Analyses of leaf samples from the Takaka experimental plots gave high nitrogen (2.85 to 3.25 per cent.) and low sugar (3.61 to 8.94 per cent.). The samples were abnormally high in calcium (5.80 to 6.75 per cent. CaO), in magnesium (1.18 to 1.59 per cent. MgO), and in total ash (17.05 to 21.48 per cent.).

DISEASE INVESTIGATIONS

Disease Surveys.—The examination of the seedling beds of twenty-seven growers indicated an unusual freedom from root diseases this season. Small amounts of damping-off disease, black root-rot, and serious mosaic infection were found, while angular leaf-spot was almost absent.