

## TOMATO SOILS

*Nitrogen Status of Tomato Soils.*—Studies relating to the effect of steam, soil disinfectants, and different types of nitrogenous fertilizers on the available nitrogen level of Nelson tomato soil have been continued, and the results from the previous year have been written up for publication. Some of the more important conclusions are summarized as follows: Sterilization by chloropicrin at the rate of 4 c.c. per square foot delayed nitrification some five to six weeks compared with steam treatment of the soil. On this account nitrogen applied as sulphate of ammonia or dried blood to chloropicrin-treated soils remained mainly in the form of ammonia for some ninety days after the application of the fertilizers. Steam and chloropicrin treatments of the soil both raised the level of available nitrogen in the soil, steam treatment being more effective than chloropicrin in this respect.

## TOMATO RESEARCH

In certain cases the results given below relate only to one season's work, and caution should be exercised in their application to commercial tomato culture. Where investigations have been carried out over a number of years, a summary giving the more important conclusions has been included.

## TESTS WITH STEAM AND SOIL DISINFECTANTS

These have comprised tests with steam, chloropicrin, and D-D under glasshouse conditions, and trials with chloropicrin and D-D in outside tomato gardens.

For the third year in succession, chloropicrin, used at the rate of 36 c.c. per square yard, gave a result equal to that obtained with steam treatment of the soil. D-D used at the rates of 27 c.c. and 45 c.c. per square yard respectively also gave a satisfactory improvement in yield, but not quite so good as with chloropicrin. Tomatoes grown on the D-D plots were affected with a distinct flavour that sometimes was rather objectionable. Typical yields from the different treatments are as follows: unsterilized, 5.2 lb.; steam, 8.6 lb.; chloropicrin, 8.6 lb.; and D-D, 8.3 lb., per plant.

With the exception of the flavour shown in tomatoes grown on the D-D treated plots, quality of tomatoes was similar in the case of steam, chloropicrin, and D-D treatments.

Good results, likewise, were obtained with chloropicrin and D-D in the treatment of outside tomato soil. The result was pronounced in the case of chloropicrin: not only was there a marked improvement in the growth of the plants, but yield and quality of tomatoes was beneficially affected. In one experiment the increase in yield, averaged over six plots, was 0.6 lb. per plant. In a second experiment the increase in yield with chloropicrin treatment was as much as 2 lb. per plant. In the case of D-D the increase in yield was not so marked, and the tomatoes frequently had an undesirable flavour.

The association of a peculiar flavour with tomatoes grown on Nelson soil treated with D-D requires further investigation. The soil used for the experiments was a heavy loam, which presents difficulties in the quick elimination of chemical products arising from the use of soil disinfectants. It is possible that greater aeration of the soil, and a longer interval between treatment of the soil with disinfectants and the actual planting of the crop, may greatly reduce or eliminate the occurrence of undesirable flavour in the crop.

## VALUE OF COMPOST, SAWDUST, ETC., FOR GLASSHOUSE SOIL

Experiments have been continued to ascertain the value of compost, sawdust, and cocoa-bean husks in the treatment of glasshouse soil. Compost used at the rate of 15 tons per acre again gave very good results in improving yield of the crop. Sawdust, which was applied in the 1945 season at the rate of 30 tons per acre, no longer