

with steam and chloropicrin treatments. The yield of tomatoes (Kondine) are shown in the following table :—

Treatment.	Yield, Pounds per Plant.
Control	5.3
Steam	6.4
Chloropicrin	6.2
Formalin, 2 per cent.	6.3
Formalin, 1 per cent.	5.8

NOTE.—All plots received *standard fertilizer treatment*.

The results from steam, chloropicrin, and 2 per cent. formalin are approximately the same and are significant. The result from 1 per cent. formalin is intermediate and is not significant.

(f) *Effect of Soil Amendments on Outside Tomato Soil*.—In view of the high percentage of clay and rather low plant-food status of the soil used for tomatoes on the grounds of the Institute, several materials were tested to ascertain their effect on both yield and quality of tomatoes. The materials comprised coarse river sand at the rate of 300 tons per acre, charcoal, sawdust, sheep-manure, and cocoa-bean husks all at the rate of 30 tons per acre. These materials were spread on the topsoil and worked into the top 8 in. of soil. Cocoa-bean husks and sheep-manure had a marked effect on growth of the plants and also yield of tomatoes. Sawdust very detrimentally affected growth and yield, while charcoal failed to benefit yield, but the appearance of the plants was rather better than on the corresponding control plots. Coarse sand induced early growth of the plants and had a beneficial effect on yield of tomatoes.

The following table shows the yield of tomatoes from the different plots :—

Treatment.	Yield of Tomatoes, Pounds per Plant.
Control (no fertilizer)	6.1
Control (fertilizer)	6.0
Sawdust (fertilizer)	4.5
Charcoal (fertilizer)	5.6
Sheep-manure (no fertilizer)	6.8
Cocoa-bean husks (no fertilizer)	6.9
Coarse sand (fertilizer)	8.0
Cocoa-bean husks (fertilizer)	9.2

Although several of the materials used in the above experiment have exerted a marked effect on the growth of tomatoes and yield of fruit, it should be noted that the experiment must continue over a period of years before any final statement can be made concerning their relative value for the treatment of Nelson tomato soil.

(g) "*Hard Core*."—A great deal of work has been carried out in connection with the elucidation of factors which operate in the production of "hard core." Although it is not possible in this brief report to review all the available data, it can be stated that steam treatment or the use of chloropicrin or 2 per cent. formalin effected a reduction in the amount of "hard core." Cocoa-bean husks, particularly where fertilizer had also been used in the treatment of the plots, likewise effected a very marked reduction in "hard core." Sheep-manure also gave a decrease in percentage of "hard core," but charcoal, sand, and sawdust had little effect. The greatest percentage of ailment occurred on the no-manure plots.

In the fertilizer experiments relating to "hard core" potassic manures, particularly where nitrogen was included in the fertilizer mixture, gave the lowest figures for "hard core." The no-manure plots or those without potash in the fertilizer gave the highest percentages of "hard core."