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A CASE OF ARSENICAL INJURY TO TOMATO PLANTS

F. A. FENTON

On August 15, 1921, the writer was called to examine the tomato plants in one of the experimental plots of the Iowa State College Horticultural Department which were dying from some unknown cause. Upon examination, many plants were found showing all stages of what appeared to be some wilt disease. The caretaker stated that the trouble was manifested at first by a wilting of the entire plant which was often followed in a few days by its death (Fig. 1-3). Upon examination, the first plant revealed the presence of a small mite in large numbers. These were found throughout the lower portions of the main stem and it was thought at first that these *acar*i were the cause of the trouble. Subsequent examinations of other affected plants failed to disclose the mite in all cases and it was evident that this species was a secondary invader. Doctor J. C. Gilman, of the Plant Pathology section, was called and took specimens to his laboratory for further tests. He reported later that he could isolate no pathogenic organism.

In every case it was observed that there was a large scar or lesion on the main stem of the plant at or just below the surface of the soil. Death of the plant resulted when this area of dead tissue encircled the stem. In many cases roots had developed above the canker and the plants were recovering (Fig. 4). Upon further questioning it was found that the plot had been treated by a laborer with poison bait for protection against cutworms. The bait had been prepared by the writer and was composed of the usual poisoned bran mash formula for cutworms, with Paris green as the arsenical and amyl acetate as the attractant. Instead of scattering the bait thoroughly over the ground, it had been placed thickly in large lumps near the base of each plant. Every time the field was cultivated more of the bran was brought into contact with the main stems of the plants. That portion of the planting which had been watered frequently after the bran had been used was the worst affected by this disease. It was evident therefore, that enough water soluble arsenic in the Paris green had been dissolved to have produced the injury.

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Fig. 1. Healthy tomato plant.



Fig. 2. Plant showing first symptoms of arsenical poisoning.



Fig. 3. Plant dead as a result of arsenical poisoning.



Fig. 4. Uprooted tomato plant showing lesion caused by the poison and roots developing above this point.