Fig. 1. Bacterial Canker of Tomato. Plant at left showing "one-side" development of the disease. Plant at right is healthy.
BACTERIAL CANKER OF TOMATO

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During the past few years, bacterial canker of tomato has been destructive in Spokane, Asotin, Pierce and King Counties. The distribution of this disease includes practically every state in the United States where tomatoes are extensively grown. The dwarfing and death of portions of affected plants reduces yields and it is common for many of the plants in affected fields to be killed prior to the ripening of the fruit.

CAUSE

The bacterial canker disease is caused by a bacterium known as Aplanobacter michiganense E. F. S. The organism is carried on the outside of the seed and to a lesser extent within the seed and gains entrance to the seedling in the seed bed. Older plants may become infected through the spread of the organism in water or by cultural practices following the introduction of diseased plants into the field. The organism enters the plant, largely through wounds in the root system, and progresses upward inside of the plant in the water-conducting tissue. There is a possibility that the organism may live over the winter in the soil or in undecayed plant tissue under mild climatic conditions.

SYMPTOMS

The early symptoms of the disease are wilting, rolling, and browning of the leaves which are often followed by the development of pale, yellowish streaks and brownish, cankered areas that extend up the outside of the stem. Stems that are cut longitudinally show yellow to brown streaks extending up the plant in the vicinity of the water- and food-conducting tissue and often collapsed and discolored pith in the cankered areas. The organism may progress up one side of the plant resulting in a misshapen plant with dead foliage on one side (Fig. 1). The symptoms of the disease do not appear until the plants have been transplanted to the field and often not until considerable fruit has formed. In extreme cases, entire plants may die soon after the first appearance of a few rolled, browed leaves.
This disease is sometimes confused with Fusarium and Verticillium wilt. The latter two diseases show as rolling and yellowing of leaves, wilting and death of plants with reddish to brown discoloration in the water-conducting tissue of the lower portion of the stems. The presence of the yellowish streaks and cankers on the stem and yellowish discoloration of the water-conducting tissue are quite distinctive of bacterial canker.

**CONTROL**

During the past 10 years, an increasing tendency towards the extraction of seed from the pulp by direct washing methods has largely replaced the old pulp-fermentation method. This change appears to be somewhat responsible for the increase in the incidence of bacterial canker during the past decade as it has been shown that pulp fermentation for three to six days previous to seed extraction practically prohibits seed transmission of the organism.

In attempts to control or eliminate this disease the following precautions should be observed.

1. Care should be taken to select seed from healthy plants only.

2. Tomato pulp should be fermented for three to six days previous to seed extraction.

3. Seed should be treated with corrosive sublimate, 1-3000 (one tablet in three pints of water or one ounce in 22 gallons of water) for 10 minutes, rinsed in clean water, and dried or planted before thoroughly dry. The disinfecting solution should be kept in wooden, glass or glazed crockery containers, and used only once. The seed may be tied loosely in cheesecloth bags, submerged in the solution, and agitated frequently to remove air from around the seed. Mercuric chloride is poisonous to all animals, and precautions should be taken in its use and disposal.

4. Plowing and complete destruction of tomato refuse should be practiced, as the organism may live over the winter in tomato refuse.

5. It is advisable to rotate crops so that tomatoes are grown on the same area only once in three or four years.

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