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PLANT DISEASES

BACTERIAL WILT OF ALFALFA

Bacterial wilt is widely distributed through the major alfalfa growing regions of the United States but in Washington is of major importance in the irrigated areas. This disease can kill plants so rapidly that fields may become unprofitable after 3 or 4 years.

Wilt is caused by the bacterium, Corynebacterium insidiosum. These bacteria do not produce spores or other resting structures but survive in diseased alfalfa roots. Where soil temperatures are mild the bacteria continue to develop during the winter months. The bacteria may also survive in dry infected material for as long as 10 years.

The bacteria enter through broken roots and other wounds resulting from winter injury (heaving of soil) or mechanical injury. They enter the water conducting tubes of the root where they develop and multiply. In the process of multiplying, the bacteria produce gums and other materials that plug the water conducting tubes. Some toxic materials may also be produced by the bacteria. Eventually the root tissue disintegrates and the masses of bacteria are released into the soil where they can start new infections in healthy alfalfa plants.

Diseased plants are stunted and have small, yellow, misshapen leaves. Stems are smaller and more numerous than on healthy plants. The tips of the stems droop and progressively wilt and die. During hot, dry weather wilting and drying may be rapid.

The most certain symptom in identifying bacterial wilt is the discoloration of the taproot. When the outer bark is removed, the inner tissues have a yellow to pale-brown color. These appear as streaks up and down the root. A cross section of the roots shows these as scattered discolored spots or areas in the outer rings of the root.

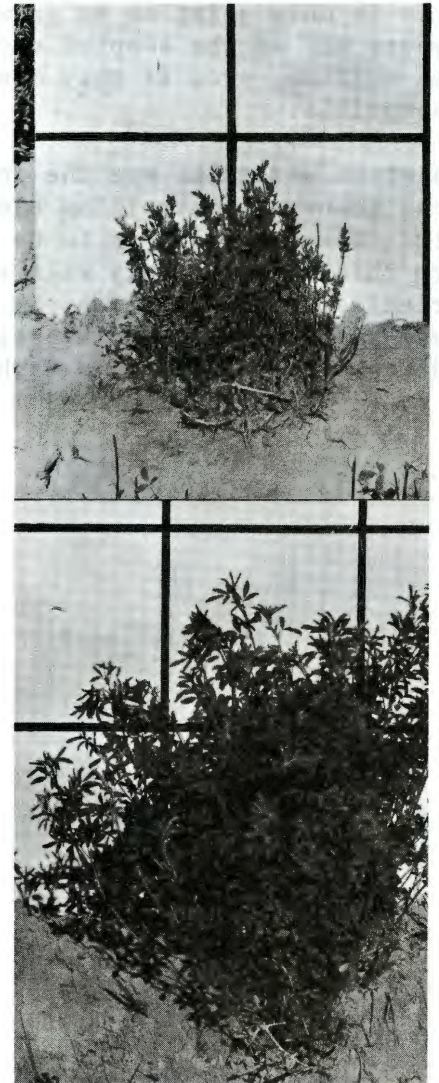


Fig. 1--Diseased plant (upper photo) is severely stunted compared with healthy plant (lower photo).

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Because of the importance of wounds for the bacteria to enter the plant, practices that injure the crowns, such as spring-tooth harrowing and heavy grazing, should be avoided when susceptible varieties are grown in areas where the disease occurs.

Few plants are infected in their first year of growth. In severely wilt infested soil most infection occurs during the second and third years. Where alfalfa is only going to be grown for 3 or 4 years any of the adapted varieties will suffice, even if they are wilt susceptible.

Resistant varieties are the only practical means of controlling bacterial wilt. Where alfalfa is to be grown for more than 4 years, only wilt resistant varieties should be grown. A number of these are available and Ranger, Vernal and Washoe are adapted to Washington conditions.



Fig. 2--Diseased root (right) has dark streaks in vascular tissues.

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