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EC1812 Alfalfa Wilt and the Maintenance of Alfalfa Stands

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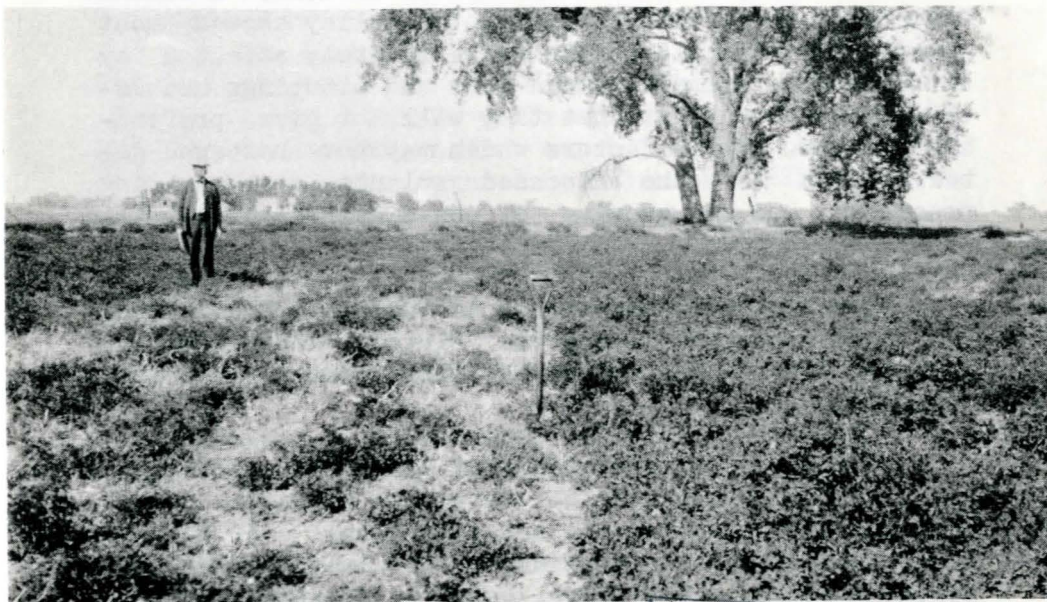
ALFALFA WILT AND THE

MAINTENANCE OF ALFALFA STANDS

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A clear example of a wilt-susceptible next to a wilt-resistant variety of alfalfa.

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ALFALFA WILT¹/ AND THE MAINTENANCE OF ALFALFA STANDS

By John L. Weihing²/

INTRODUCTION

According to widespread reports alfalfa stands throughout the state were severely damaged during the past winter. Many relatively young meadows showed such extreme losses of plants that the fields have been or soon will be plowed up. While there are several factors which may have contributed to these winter losses, preliminary surveys indicate that the primary cause is bacterial wilt, a serious disease of alfalfa. A recent inspection of alfalfa in the Platte Valley showed most plants in 3-year old stands to be severely affected by this disease, whereas many 4-year old plantings had deteriorated to a point that they will not give profitable returns. Other factors which may have hastened deterioration of the diseased plants are cutting practices and the growing of non-winter-hardy varieties.

Bacterial wilt is not new to Nebraska. The disease has been a problem along the Platte, Republican and Missouri Rivers, and on upland irrigated soils for more than 20 years.

SOURCE OF THE WILT ORGANISM

The wilt organism is not seed borne. It is soil borne and should be considered as always present in Nebraska soils. Therefore, control measures for this disease should never be relaxed.

Intensification of the disease in a field is immensely aided by irrigation which not only distributes

¹ *Corynebacterium insidiosum*.

² Extension Plant Pathologist.

the wilt organism over the field but also creates an excellent environment for its activity.

INFECTION AND SYMPTOMS OF BACTERIAL WILT

Infection occurs during spring and early summer. Entrance of the organism is gained through wounds resulting from winter injury and mechanical damage, and also from diseased stems to healthy stems by the sickle bar during cutting.

Usually the first symptom to be noticed is a dwarfing and yellowing of the entire plant. The stems are short, the leaves are small and pale, and the growth is slow.

When the roots of these dwarfed plants are cut across, a yellow to brownish colored ring is found just under the bark. In the early stages of the disease in the root, the yellow color may be in narrow streaks which soon merge into a continuous yellowish to brownish ring.

Death is not sudden, but usually takes place during late summer of the second year after infection.

MAINTENANCE OF ALFALFA STANDS

Satisfactory maintenance of alfalfa stands over long periods involves the use of winter-hardy, wilt-resistant varieties and proper cutting practice.

Variety

The varieties Ranger and Hardistan are both winter-hardy and resistant to bacterial wilt, whereas Cossack and Ladack are winter-hardy but wilt-susceptible. The latter two varieties show some tolerance to bacterial wilt, hence they may withstand the disease a year or two longer than the extremely susceptible varieties Grimm, Nebraska Common, and Dakota 12. Varieties that are both winter- and wilt-susceptible and

which should never be grown in Nebraska are the Argentine, Chilean and Southwestern Common sorts.

Seed Source

Alfalfa seed sown in Nebraska should have been produced in a region that has winter conditions comparable to, or more severe than, those of Nebraska. This will give maximum assurance that it is of a variety which possesses sufficient winter-resistance to withstand the rigorous conditions of Nebraska.

Cutting Practices

Cutting practices should be so designed as to afford both high yield of good quality hay and sufficient replenishment of food reserves in the roots to maintain plant vigor. Repeated experiments have shown that these can be accomplished by delaying cuttings until the plant reaches the 1/10 to 1/2 bloom stage. Little is gained by permitting the plant to go beyond 1/2 bloom.

Immediately following cutting, the food reserves decline until the plant reaches a height of 8 to 10 inches. This low point of food reserves should be considered at all times but especially during the fall. To cut plants in this stage, late in the summer, results in insufficient stored food for the plant to survive the winter in a vigorous condition.

Cultural Operations

Any operation that causes wounds to the crowns and roots opens an avenue for invasion by the wilt organism. Nothing is gained by spring-toothing or intertilling broadcast stands of alfalfa.