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Stewart's Wilt: *Pantoea (Erwinia) stewartii*

Introduction

Stewart's Wilt of corn is caused by the bacterium, *Erwinia stewartii* (syn. = *Pantoea stewartii*). It is common in Eastern North America. Field corn varieties tend to be more resistant than sweet varieties, though some field varieties are very susceptible. Losses arise from withered seedlings, weakened plants, increased susceptibility to stalk rots, and kernel infection.

Symptoms and Signs

On sweet corn, leaves have pale green to yellow streaks running parallel to the veins. The margins of the streaks are irregular or wavy. Streaks eventually dry out and turn brown. In addition to the symptoms on leaves, tassels may be premature, bleached in color, or dead. Chocolate brown cavities may form in the interior of the stalk close to the ground. This indicates a systemic infection meaning the bacterium is spreading throughout the plant's vascular system. The bacterium can be found in roots, stalks, leaves, tassels, husks, cobs, and kernals. The whole plant may wilt very quickly.

Kernals are rarely infected in field corn except in highly susceptible varieties. Similarly to sweet corn, field corn leaves develop pale green to yellow streaks. The streaks usually appear after tassels form, so this leaf blight phase is often called "late infection". The streaks eventually dry out and turn light brown and whole leaves can die.

On both sweet and field corn, the defoliation and weakening of the plants lead to lower yields and higher susceptibility to stalk rot diseases. One potential diagnostic symptom is a yellowish ooze (actual bacteria) from the cut edges of the infected leaves and/or stalks.

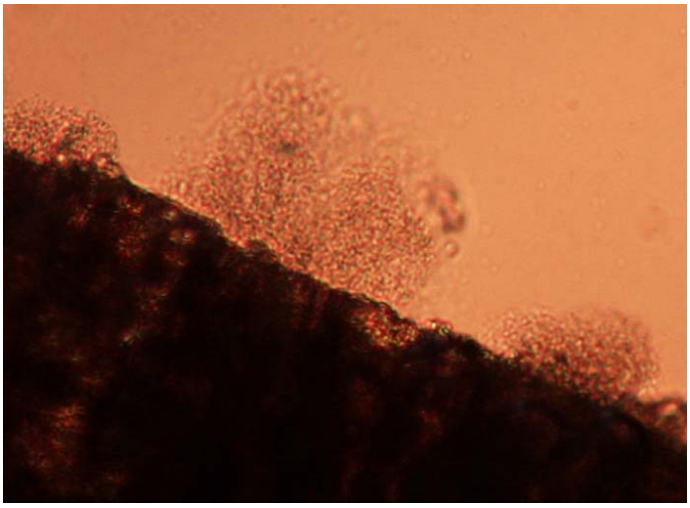

Figure 1: Bacterial streaming from a corn leaf lesion (provided by **S. Jensen, Cornell University)**

Disease Cycle

The bacteria survives the winter in the bodies of the corn flea beetle, *Chaetocnema pulicaria*. The corn flea beetle also spreads the bacterium as it feeds on the leaves. Other insect species are involved in spreading the disease, but they are minor compared to the importance of the corn flea beetle.

Flea beetles emerge in the spring and begin to feed on leaves causing initial infections. As beetles feed on infected leaves they spread the disease to other leaves causing more disease as the season progresses. In the fall the beetles go into hibernation for the winter.

Management Strategies

Stewart's wilt can be managed by controlling the flea beetle vector with an early season application of an insecticide such as carbaryl. In New York State, the pesticide Gardentech Sevin Concentrate Bug Killer (EPA Reg. # 264-334-71004) is currently registered for managing flea beetles on sweet corn in the home garden, but additional products may also be available. Be sure any other product you purchase is registered for this use. In addition, there are resistant hybrids and varieties of corn available. High levels of nitrogen and phosphorus can increase susceptibility. In contrast, high levels of calcium and potassium can decrease susceptibility.

Disease levels can be predicted for each season depending on temperatures over the preceding winter. Flea beetles are more likely to survive mild winters where the sum of the average temperatures for December, January, and February is above 37-38° C (98-100°F). Flea beetle populations are lower after cold winters where the sum of the average temperatures for December, January, and February is below 32°C (90°F).

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READ THE LABEL BEFORE APPLYING ANY PESTICIDE! Changes in pesticide regulations occur constantly. All pesticides distributed, sold, and/or applied in New York State must be registered with the New York State Department of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension Specialist or your regional DEC office.

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