Incidence of summer outbreaks of fire blight in tree nurseries of South Alberta, Canada

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Growing trees in South Alberta

Nine commercial nurseries growing trees on 776 hectares of land are found in South Alberta (marked with a star on the map). The trees are sold in near-by cities, where an economic boom is fed by revenues from gas and oil exploration.

In this region, the summer is typically a short growing season of dry weather and mild temperatures (20°C to 30°C), whereas winter can be long and cold with extended periods at -20°C to -30°C.

Impact on agricultural crops

Above: A local hail storm caused severe damage to corn fields.

Right: A cotoneaster hedge growing on a private property, about 500 meters from a commercial tree nursery. The dead branches show infection by fire blight. This hedge is a source of inoculum for fire blight bacteria during windy weather.

Picture of a cotoneaster hedge and a cornfield damaged by hail.

The extent of fire blight damage

From 2007 to 2010, over 5000 Malus trees have been destroyed because of fire blight (see the chart below). Other susceptible hosts were affected to a smaller extent (395 Crataegus, 376 Sorbus and 24 Pyrus).

For the period covered, the lost market value for these nurseries is over CDN $1.2 millions, not counting removal and disposal of infected trees.

The vast majority of strikes occurred during summer months. Spring infection is minimized by strict sanitation of overwintering cankers, avoidance of overhead irrigation during bloom, and repeated spray applications during early bloom with an antibiotic (streptomycin) and biofungicides (Pantoea a., Pseudomonas f. or Bacillus s.).

For these nurseries, current management procedures and available pesticides are sufficient to successfully manage the spring stage of fire blight.

However, new tools are required for management of summer strikes, including early field detection of new infections, sanitation of native hosts outside the nurseries, and new pesticide products to reduce disease incidence after hail.

Further references: