

OAK DECLINE

Introduction

The Bur Oak, *Quercus macrocarpa* (Michx.) is a very important native prairie landscape tree in Manitoba. It is found in well-drained soils in natural stands along with other species of trees including aspen. Difficult to transplant, the bur oak has traditionally been incorporated into urban landscape plans by constructing around established trees. Bur oaks are extremely sensitive to small changes to their growing environment and are often placed under great stress, or die from grade changes, compaction of soil around the root zone, acute injury from construction or changes to the soil air to moisture ratio. Since 1986, bur oak trees in southern Manitoba have experienced environmentally related stress and dieback leading to considerable damage to landscape, ornamental, and natural stand groupings.

Drought greatly weakens and stresses oaks, causing them to be more vulnerable to insect and disease problems. Bur oaks, so stressed, are usually killed by the two-lined chestnut borer.

Symptoms

Typically, oak tree foliage wilts from the top downward, turns brown and normally remains persistent on the branches. Initial decline due to stress starts a cycle of further deterioration involving the two-lined chestnut borer, *Agrius bilineatus* (Weber) which gains importance in the cycle as the decline progresses.

The Two-Lined Chestnut Borer

The adult borer is a slender dark-coloured winged beetle approximately 8 to 12 mm. in length with two yellow stripes along the back. In late May through July, the adults emerge through D-shaped holes in the bark. Adults feed on foliage, and can fly to nearby trees; adults mate, and then the females lay eggs in crevices in the bark. The young, worm-like larvae, after hatching, bore through the bark and phloem where they construct meandering tunnels. The tunnels will eventually cut off the flow of water and nutrients from the roots to the leaves. This results in branch dieback, which is often first noticed in later summer. Heavy infestations of tunneling larvae will kill the tree.

Preventative Measures

Cultural control is to maintain oak trees in a healthy condition through a comprehensive watering program during periods of dry weather and general tree maintenance which includes removal of dead wood by proper pruning methods. Prune dead limbs that are infested with the borer one-half to one metre onto healthy wood to ensure the borer is removed. Trees killed by this insect should also be removed. All pruning and tree removal should take place either in the late summer, fall, or in winter after the dead wood is noticed. It is important to prevent over wintering larvae from emerging in the spring as adult beetles and thereby potentially infecting other oaks.

Deep root feeding with a fertilizer high in phosphorous during or immediately after drought periods, will assist in promoting and stimulating feeder root growth. This is specifically important if the dry period has caused the fine fibrous root system to die back. A healthy oak tree may withstand an attack of the two-lined chestnut borer by setting down new conducting tissue over the injury caused by the borer.

Oak firewood and lumber containing the borers could easily be the source of future infestations within an already infested area, or if the wood is transported to another area, could initiate a new infestation. Oak firewood control is an important method of preventing the beetles from emerging in the spring. Control options include: (i) burying the wood at sanitary landfill sites; (ii) debarking the wood in late summer or fall; (iii) thoroughly covering the oak wood pile from May through late July to reduce the number of surviving borers, and (iv) chipping all branches and smaller sizes of logs.

In an infested area, large populations of borers can damage healthy trees; therefore, the timely removal of dead wood and trees to eliminate high borer populations is the most practical control strategy.

No insecticides are registered to control this pest.

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