



Fact Sheet #9—Elm Insects & Diseases

Other threats to our elm trees!

We are constantly on the lookout for signs of Dutch elm disease on our American and Siberian elms, but there are other insects and diseases we should be aware of that can harm these beautiful trees. This fact sheet examines the insect pests, disease threats and environmental damage that could affect elms in Saskatchewan.

Insect Pests

Leaf Galls:

Galls are caused by insects and other organisms. Growth-related chemicals are released by the larvae as they feed, causing the tree tissue to form into a gall. One type of gall that appears on the American elm is called the **Elm Cockscomb Gall**. The gall itself looks like the comb of a rooster. **Mite Galls** (*Aceria ulmi*) occur on the leaves of elms (Figure 1) and are identified by their long, finger-like shape, that are green in colour. Mite galls are not harmful to the tree, but do cause it to look unsightly. There is no treatment available or required to rid a tree of galls once they are present as galls do not harm the tree. For aesthetic purposes, pruning can be done to remove heavily galled areas.



Figure 1. Elm Mite Galls

Canker Worms:

Two types of cankerworms infest trees in Saskatchewan. The trees of preference for cankerworms are Manitoba maple and American elm. In Saskatchewan the **fall cankerworm** (*Alsophila pometaria*) is the dominant species and accounts for most of the damage. Fall cankerworms lay their eggs on upper branches of the tree just before winter. **Spring cankerworms** (*Paleacrita vernata*) lay their eggs just after spring thaw lower down on the trunk and branches. Small “shot” holes in new leaves are signs of cankerworm feeding. These holes can become so large there is nothing left but the veins of the leaf.



Figure 2. Cankerworm banding

One way of preventing infestations of cankerworms is by banding your trees with a sticky band (Figure 2) to capture the flightless females as they move up the tree. For more information on banding, please contact the address on the back of this fact sheet.

Aphids:

Aphids feed on the leaves of trees and deposit a residue (called honeydew) which can turn into sooty mold (as described later). A heavy aphid infestation can cause the leaves to become deformed. A pesticide can be used to manage aphid infestations or if it's a small infestation the aphids can be washed away with a strong stream of water.

Elm Lace Bugs:

Elm lace bugs (*Corythucha ulmi*) are sucking insects found on the underside of elm leaves (Figure 4). As a result of their feeding, pale specks appear on the top surface of the leaves (Figure 5). Prolonged feeding slows tree growth and causes the tree to shed its leaves prematurely. Lace bugs generally have two generations per year spending the winter either as eggs or adults under the bark. Feeding activity is resumed when new foliage appears on the tree. Lace bugs will not seriously harm the tree but will affect how the tree looks. Trees that have a large lace bug population are annoying to the public as the honeydew they produce covers everything beneath the tree.

Red Elm Bark Weevil:

The red elm bark weevil (*Magdalis armicollis*), is attracted to dead or dying elms. Adults are free moving leaf eaters. Females lay eggs in elm twigs and the larvae, which are white and legless, feed under the bark causing the twig ends to die off. The larvae pupate under the bark then adults exit the twig leaving small exit holes (Figure 3). To avoid an infestation of weevils keep trees healthy and properly pruned.



Figure 3. Red Elm Bark Weevil exit holes

Linden Looper:

Linden loopers are similar in shape, size and movement to cankerworms. Colouring sets them apart as the linden looper is yellow and striped with wavy black lines, and heads that are orange-brown. Eggs of the looper hatch in early spring and the larvae feed as individuals throughout the leaves of elms and other deciduous trees. The larvae feed for approximately one month then fall to the ground where they burrow into the soil to pupate. In the fall the adults emerge. The wingless females then crawl up the tree while the males search them out by flying at dusk. The linden looper is cyclical and will not do permanent damage so control is not required.



Figure 4. Elm Lace Bugs found on the underside of elm leaves



Figure 5. Feeding damage by Elm Lace Bugs on top of an elm leaf

Woolly Elm Aphid:

Woolly elm aphid (*Eriosoma americanum*) eggs are laid in the crevices of the elm bark in the fall, hatching as aphids in spring. The aphids feed on elm leaves causing the leaves to swell, curl and roll at the edges. The deformed leaves are quite gnarled and dry looking where aphid feeding is evident. The bluish-white aphids are found in the protection of the curl. Two generations of offspring are produced each summer and in the fall they migrate to saskatoon bushes. The aphids feed on the roots of the saskatoon bushes then winged adults emerge from the roots and fly back to the elm bark to lay their eggs. Elms are not seriously damaged, but heavily infested trees drip honeydew which can be annoying. Spraying with an insecticide can be done to control the population of aphids, but if the leaves have already curled it is too late to spray.

Elm Scales:

Two types of elm scale (*Parthenolecanium corni* and *Chionaspis furfura*), are commonly found on American elm trees in our province. *Parthenolecanium corni* produces one set of offspring per year and overwinters as nymphs in the cracks of the bark. The nymphs, whitish and oval in appearance, emerge in early spring feeding on twigs and branches. Eggs are laid by the dome-shaped females (Figure 6) in June, and hatch late June to July. The newly hatched nymphs then travel to the leaves to feed. The cycle of *Chionaspis furfura* has not been well studied, but it is thought to also have only one set of offspring per year overwintering as eggs. Small infestations of scale insects cause minimal damage to the tree, but a large population can weaken branches resulting in dead limbs. Scale insects seem to thrive in shaded areas.



Figure 6. Dome shaped female elm scale insects

Spiny Elm Caterpillars:

Spiny elm caterpillars are the larvae of the morningcloak butterfly (*Nymphalis antiopa*). The caterpillars are easily identified, as their bodies are black, with black spines. They also have red dots on the first seven sections of their abdomens. One generation of the butterfly is produced each year. Eggs are laid in clusters in early summer and once the larvae hatch evidence of feeding is seen on the leaves of the tree. The evidence is small holes and notches on the leaves. Young larvae feed in groups and will strip the branch whereas older larvae can be found feeding all over the tree. The larvae will then attach to twigs and shed their skin to become pupae with adult butterflies emerging in August and September. The butterflies overwinter under the bark of the tree. The best control of this pest is crushing the egg clusters. Pruning and spraying can also be effective control methods.

Disease Threats

Cankers:

Siberian elms are very susceptible to a canker called *Botryosphaeria dithidea*. The canker is identified as an area on the tree that has soft, water-soaked bark and is reddish-brown to black in colour. Trees infected with the canker should be pruned if the infection is not too far advanced. Otherwise, removal is the best way to prevent infecting other trees. A canker that affects American elms is called *Dothiorella ulmi* (see description below). Cankers can be avoided by taking care not to nick the tree when mowing near tree trunks and pruning any dead or dying branches. Hire an ISA certified or equivalent pruner to ensure a well pruned tree. A tree that has sufficient water and fertilizer is less likely to develop cankers.

Dothiorella Wilt:

The symptoms of dothiorella wilt are often mistaken for Dutch elm disease. Leaves will wilt and turn yellow prematurely and there will be brown staining under the bark. The only way to be sure which disease is affecting the tree is by taking a sample and having it sent for analysis. Dothiorella wilt is a fungus that is also transmitted by native elm bark beetles. This disease has only been found in American elms.

Verticillium Wilt:

This is a fungus that lives in the soil and enters the tree through the root system and like DED affects the water-conducting ability of the tree. Verticillium wilt (*Verticillium albo-atrum*) shows symptoms which resemble Dutch elm disease. Testing is required to determine which disease is present. As with DED, there is brown streaking under the bark. Symptoms are faded leaves that drop without wilting early in summer. There is no cure for verticillium wilt, but trees have been known to recover with proper pruning, fertilizing and watering. If you remove the tree do not plant another tree that is susceptible to the disease in the same spot as the fungus can live in the soil for many years.

Sooty Mold:

Sooty mold occurs as a result of honeydew deposits created by aphids on the leaves of elms. It shows up as a black substance on the shaded leaves of the tree. It affects the appearance of the tree and how much light the tree receives but does no real harm. The occurrence of sooty mold is reduced as the number of honeydew generating insects are reduced.

Leaf Anthracnose:

Leaf anthracnose (*Gloeosporium inconspicuum*) thrives in wet conditions. The symptoms are dark, tarlike spots on young leaves. The leaves curl and distort with only a portion of each leaf dying. Mature leaves are usually not infected except when conditions are favourable, i.e. very wet. The fungi overwinters in infected twigs and spreads to new growth again in the spring by rain splashing the spores or by water sprinkling. Pruning can help to control the disease by removing infected twigs and branches.

Bacterial Wetwood (Slime Flux):

Bacterial wetwood (*Erwinia nimipressuralis*) is a bacterial infection which occurs in elms and poplars. The bacteria produces a build up of moisture in the tree causing oozing from wounds and branch stubs (Figure 7). The oozing brownish liquid is foul smelling and leaves yellow streaking on the tree. To relieve the pressure in the tree one can drill a small hole just below the area that is infected and insert a pipe to drain away the excess moisture (make sure the pipe will drain out from the tree). To prevent a tree from developing wetwood, keep it healthy and prune any infected branches back to healthy wood.



Figure 7. Bacterial Wetwood (slime flux)

Environmental Damage

Sulfur Dioxide (SO₂):

SO₂ damage to trees can occur near pulp mills, smelting plants and potash mines. Other common pollutants are exhaust from diesel and gasoline engines and the drifting of herbicide sprays such as 2,4-D. Symptoms of a tree affected by SO₂ are browning along the edges of the leaf or near the vein (Figure 8). Sometimes it will show as pale spots on the leaf surface. SO₂ damage is often confused with leaf scorch which occurs when the tree is not getting sufficient water from the roots usually during dry spells. Other symptoms of SO₂ damage are stunted growth, leaf separation (dead foliage from live foliage), and a slowing in growth rate.



Figure 8. SO₂ damage on leaf margins

Recommended Resources:

A field guide to Forest Insects and Diseases of the Prairie Provinces: Special Report 3;

Y. Hiratsuka, D.W. Langor, and P.E. Crane, 1995
UBC Press, University of British Columbia,
6344 Memorial Rd. Vancouver, B.C. V6T 1Z2
ISBN 0-660-15948-1

Insect Pests of the Prairies:

H Philip and E. Mengersen, 1989
University of Alberta, Faculty of Extension
Corbett Hall, Edmonton, Alta. T6G 2G4
ISBN 0-88864-870-7

Tree and Shrub Insects of the Prairie Provinces:

W.G.H. Ives and H.R. Wong, 1988
Georgetown Terminal Warehouse
34 Armstrong Avenue, Georgetown ON L7G 4R9
ISBN 0-662-15770-2

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