NOVEMBER 2014

FACT SHEET 04

THE NEW ZEALAND
POPLAR & WILLOW RESEARCH TRUST

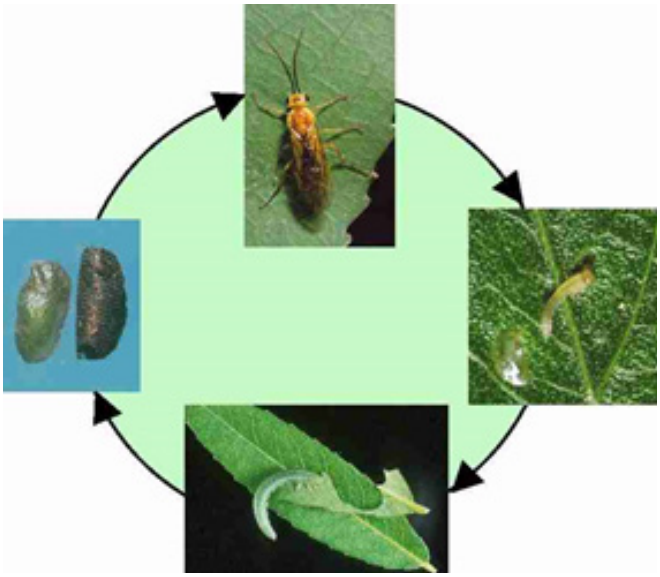
Willow Sawfly *Nematus oligospilus*

Willow sawfly was first discovered in Auckland in 1997, and is now found throughout New Zealand.

Willow sawfly larvae feed exclusively on willows. All tree willows in New Zealand are susceptible.

Population levels were very low from 2004 to 2013 with no reports of serious defoliation. However, in 2013-14 significant, though not widespread, tree willow defoliation was again reported from separate locations in the North Island.

WILLOW SAWFLY BIOLOGY



The adult willow sawfly is ~ 10 mm long

The sawfly life cycle, from egg to adult, is completed in 20 to 30 days during summer.

Larvae enter diapauses in May for about five months, and adults emerge from cocoons in October.

Several generations can occur in a single season.

HOW DO I RECOGNISE SAWFLY DAMAGE?

Willow sawflies are most often seen during the larval stage, when characteristic feeding damage can be seen on the leaves.

The egg is 1-2 mm long, is laid just under the surface of the leaf and leaves a visible blister when the larva hatches. The emerging larva eats a 'window' in the leaf, and then feeds along the edge of the hole. After moulting it usually moves to the edge of the leaf, and continues to feed. A single larva may eat several entire leaves.

Defoliation increases rapidly during late larval stages. Trees may lose all their leaves by January, creating a wintery scene in the middle of summer.

WHAT IS THE IMPACT OF WILLOW SAWFLY?

The impact of willow sawfly depends on the prevailing environmental conditions.

Sawfly outbreaks are most common in mid to late summer, in regions experiencing hot, calm and settled weather.

Defoliation reduces the photosynthetic capability of the plant, and hence less energy is available for plant growth and root development.

If the defoliation is severe and repeated, the branches and roots become brittle, and die. This is of concern in erosion control and riverbank protection plantings.

Regrowth is abnormal and often comes from the trunk, not the branches.

Dieback from the top and abnormal trunk growth in riverbank willows on Whakatane River after repeated sawfly defoliation.

CAN WILLOW SAWFLY OUTBREAKS BE CONTROLLED?

Insecticides will kill willow sawfly. Consider possible consequences before using them.

More 'resistant' shrub varieties, e.g. the Japanese willow Kinuyanagi (Salix schwerini), could be considered for new plantings. However, shrub willows have a less extensive root system than the more commonly used tree willows.

There are no immediate control solutions for new and existing plantings of tree willows.

The most resistant willows in the germplasm collection were identified following the initial outbreak, and a seed collection of these was made from California and utilised for hybridization.

Sawfly resistant hybrid tree willows have now been bred. These are currently being field trialled for release and commercial use in soil conservation and riverbank protection.

Red buds emerging on trunks of willow in response to sawfly defoliation stress

WHAT IS THE FUTURE RISK?

Damage from willow sawfly is serious but periodic. This behaviour is reported for willows in Argentina and Chile where the pest has the same status. No biological control agents have been observed in New Zealand. Bird predation may be providing some control. Based on our experience since 1997 the future risk is considered to be low and does not warrant introduction of biological control agents.

Projected future climate conditions and increased willow plantings are expected to be favourable to willow sawfly.

FOR MORE INFORMATION ON USE OF POPLARS & WILLOWS

The New Zealand Poplar & Willow Research Trust: www.poplarandwillow.org.nz

Bay of Plenty Regional Council: http://www.boprc.govt.nz/media/29173/LandManagement-090526-Factsheet21.pdf
http://www.boprc.govt.nz/media/29176/LandManagement-090526-Factsheet22.pdf

Environment Canterbury: http://ecan.govt.nz/publications/General/PlantingPoplarWillow.pdf

Environment Southland: http://www.es.govt.nz/environment/land/climate/drought-mitigation-strategies/

Hawkes Bay Regional Council: http://www.hbrc.govt.nz

Northland Regional Council: http://www.nrc.govt.nz/Environment/Land/Poplars-for-erosion-control/

Taranaki Regional Council: http://www.trc.govt.nz/assets/Publications/information-sheets-and-newsletters/land-management-information-sheets/soil-conservation-information-sheets/35poplarwillowavailable.pdf

Growing Poplar and Willow Trees on Farms: http://maxa.maf.govt.nz/sff/about-projects/search/04-089/growing-poplar-and-willow-trees-on-farms.pdf