
D Diagnosing Insect & Mite Pests Of Saskatoons

Richard G. St-Pierre, Ph.D. (January 2006)

Introduction

A large variety of insects, and a species of mite feed on the saskatoon. All parts of the plant are attacked, including leaf and flower buds, flowers, immature fruit, ripe fruit, leaves, new shoots, older branches and stems and roots. The extent of damage that these insects cause is variable and dependent upon year and orchard location. However, only a few species appear to be of major significance to the grower. These few insect pests can be very destructive and have a major impact on fruit crop production. Inconsistent fruit crops are often caused by insect damage, but such damage may be difficult to detect. Some insect pests of saskatoons are small, attack the plant early in the season before flowering, and complete their life cycle before harvest.

The timing of insect feeding has a great effect on the extent of damage caused. Insect damage prior to bloom, and during flowering and fruit set, decreases potential crop yield through flower bud, flower and fruit loss; insect damage during fruit development can cause the loss of young, green fruit. At later stages of fruit development, damaged fruit are not lost, but marketable yield is reduced. The effects of leaf feeding insects are less clear. Most leaf feeding insects cause little damage. However, some can defoliate branches or even the entire plant. Unlike many other shrubs and trees, saskatoons that have

suffered from defoliation will not produce new leaves that same season. If damage to the total leaf area of a shrub is great enough, some fruit loss could occur because sugar production would be substantially reduced. Flower bud production (which occurs in July and August) could also be reduced. Additionally, leaf feeding could affect the storage of sugars within the plant and this could have longer-term effects on plant survival and growth, depending upon the severity of the damage.

General Principles Of Insect & Mite Pest Control

Only a small number of the organisms that may be found in a fruit orchard or plantation are pests. Many organisms are beneficial and include decomposers of organic matter, pollinators, predators and parasites, organisms that provide shelter or food for natural enemies of pests, and so on. Other organisms are incidental and have little or no impact on crop production. Additionally, many pest species can be tolerated because there are so few, or they cause little damage.

The first steps in designing any pest management program are to understand which pests cause crop damage, to determine what conditions are necessary for damage to occur, and to properly diagnose the problem. The development of an

integrated pest management program includes regular inspection of plants for pests or damage, use of crop management practices that prevent pest invasions, buildups or damage, and techniques for control that are applied at appropriate times.

The primary purpose of a pest management program is not to eliminate pests, but to allow the harvest of a food product in an acceptable quantity and quality (eg. fruit crops can often tolerate some leaf damage). Pest management strategies must be continually tested, evaluated and redesigned if necessary.

In general, growers must: a) be able to recognize the symptoms of insect damage; b) positively identify the presence of a pest insect; c) monitor plants regularly and in a representative manner to assess the presence of insect damage or pests; d) determine if the damage or abundance of insect pests is sufficient to require control; and e) be familiar with the general life cycles of the major insect pests.

How To Monitor For Insect Pests

Systematic checking for pests and damage symptoms should be carried out weekly as a minimum. The presence of insect pests is often associated with a particular developmental stage of the plant. Useful equipment includes a hand-lens (having a magnification of 7 to 10X), small jars or plastic bags for samples, 70% rubbing alcohol, and an insect sweep net.

The following methods may be of some help to growers in monitoring for

some of the insect pests of saskatoons.

1) Sweep representative bushes or sections of the orchard with an insect sweep net. Place the insects collected in a jar of 70% rubbing alcohol.

2) Gently tap flower clusters into a jar containing white tissue and examine for thrips, or other insects.

3) Hang small (10 by 25 cm) heavy cards painted white and coated with STP engine additive in arbitrary locations throughout the orchard. These cards will attract and capture the saskatoon sawfly.

4) Collect plant parts from representative bushes or sections of the orchard. Using a magnifying glass, examine this material carefully. The undersides of leaves may contain fine webbing and mites. New shoots, leaf and flower buds, flowers, and immature fruit may contain feeding holes of various sizes.

5) Cut off the bottoms of large, plastic containers to a depth of about 5 cm. Paint the insides yellow. Yellow ice cream buckets may also be used. Fill these containers with 2 to 3 cm of water, and a drop or two of dish detergent, and place these in representative locations within the orchard. These traps will attract and capture the woolly elm aphid.

6) Redbanded leafroller pheromone traps used in apple orchards may be useful for leafrollers in saskatoon orchards. This pheromone is primarily used for monitoring, but also for some trapping.

7) All insects captured may be preserved in jars of 70% rubbing alcohol for storage or transportation.

Pest Identification

Misidentification of pests accounts for many control failures. Do not hesitate to seek help from an advisor. Be familiar with pest life cycles and be able to recognize characteristic types of damage.

Damage Tolerance Levels

Integrated pest management involves the fundamental concept that a certain amount of pest damage, or number of pests, can be tolerated. Unfortunately, it is often very difficult to determine the point at which some action must be taken to control the pests so as to prevent unacceptable damage. Guidelines for applying control measures have not been developed for insect pests of saskatoons. A crop's ability to tolerate pest damage depends on the stage of crop development, part of plant attacked, weather, and pest distribution. Control measures may not be necessary if the incidence of the pest organism is low.

Useful Management Practices

It is important to maintain strong, vigorous plants, to keep the orchard clean by disposing of fallen fruit and leaves, to burn pruned stems and branches, and to encourage the presence of insect-eating for control of insect pests.

Vigorously growing crops can often tolerate more pest damage (even though they may be more attractive to pests) than a less vigorous one. Dry, dusty conditions are conducive to the buildup of mite populations. Excessive levels of nitrogen may promote aphid problems.

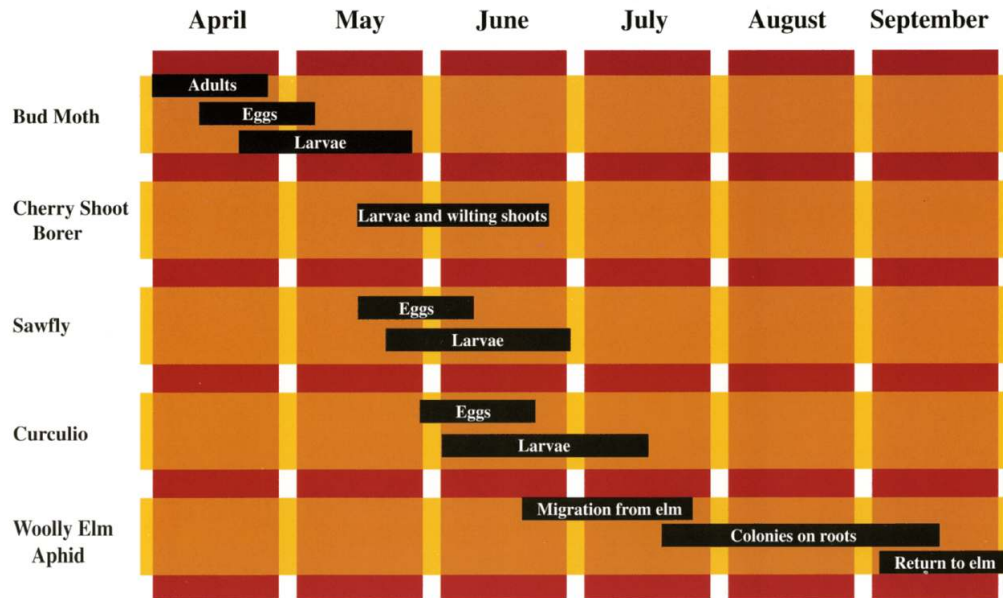
Most pest organisms come from sources within the orchard itself, or adjacent areas. They survive on alternate hosts, crop debris, or as dormant forms (eggs, pupae) in the soil. Some are accidentally brought in on contaminated transplants, soil or equipment. Sanitation practices are required to remove or minimize these sources. Check transplants for aphids.

If available, use cultivars, or rootstocks, that are resistant to important insect pests and diseases where possible. Intercropping and companion planting of nectar- and pollen-producing flowering plants (especially of the family Umbelliferae) grown within or near the orchard can attract, support and increase the activities of beneficial insects, especially tiny parasitic wasps, syrphid flies, other predatory insects and mites. Most biological control can occur naturally without assistance. This is usually noticed when a broad spectrum pesticide is applied for control of a particular pest, and a new pest (secondary pest outbreak) becomes a serious problem; the pesticide kills off beneficial insects as well as pest insects.

The following table and graphic are aids to identifying common insect pest and mite problems of saskatoons.

Primary Symptoms	Possible Causes
Flower buds with small holes; oozing droplets may be present; may contain a tiny caterpillar	Saskatoon bud moth
Young leaves & flowers tied together with white threads or webbing	Saskatoon bud moth
Green fruit extensively damaged, hollow; may contain a larval insect	Saskatoon sawfly
Substantial yellowing & loss of green, unripe fruit	Saskatoon bud moth; saskatoon sawfly; lygus bug
Lack of vigour in young plants; early flagging (change of color) of leaves in late-July or early-August	Woolly elm aphid
White, woolly masses on plant's roots immediately under soil surface	Woolly elm aphid
Partial leafing-out, followed by plant death early in season	Woolly elm aphid
Green fruit, shoot tips with distinctive dark punctures	Apple curculio
Presence of white larval insect within center of ripe fruit	Apple curculio
Sudden wilting & death of new green shoots & flower or fruit cluster	Cherry shoot borer
Leaves & green fruit clusters tied & rolled together with webbing; may contain a caterpillar	Leaf rollers
Large, yellow or brown patches on leaves; presence of green, black, or orange sluglike insects	Pear slug
Stippled or mottled, yellowing leaves; presence of many, lacy-winged insects on undersides of leaves	Lace bugs
Leaves with a stippled appearance; yellowing of leaves; presence of very fine webbing on the undersides of leaves	Spider mites

Seasonal Occurrence Of Common Insect Pests Of The Saskatoon



Notes: Timing of occurrence varies depending on location and season; only the stages of the life cycles relevant to the grower are indicated.

Copyright 2006 by Richard G. St-Pierre, Ph.D.
www.prairie-elements.ca. All rights reserved. Any copying or publication or use of this publication or parts thereof for financial gain is not permitted. Users of this publication are allowed to print one (1) copy for personal use only. Otherwise, this publication may not be reproduced in any form, or by any means, in whole or in part for any purposes without prior written permission of the author. Due recognition must be given to the author for any use which may be made of any material in this publication. Requests for permission to copy or to make use of material in this publication, in whole or in part, should be addressed to: Richard St-Pierre, Email: prairie.elements@sasktel.net

Disclaimer: This publication was designed to be an educational resource for individuals who are interested in growing saskatoons, in orchards, shelterbelts, or gardens. Every effort has been made to ensure the accuracy and effectiveness of the information in this publication. However, the author makes no guarantee, express or

implied, as to the information and procedures contained herein. The information cannot be guaranteed because knowledge of the biology and culture of the saskatoon may not be applicable to all locations every year. Additionally, the information that is available often changes over time. Little scientific research has been done on many aspects of the culture and management of saskatoons. Consequently, this publication can only serve as a guide. All actions taken which are based on the information presented in this publication are solely the responsibilities of the readers or users, and the author is not liable for any direct, indirect, incidental, or consequential damages in connection with or arising from the furnishing, performance, or use of this material. Comments on information contained in this publication are welcomed.