Forest Leaflet 14: Spruce spider mite
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Cat. No. Fo29-31/14E
ISBN 0-662-19021-1
ISSN 1183-8655

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When referring to this publication, please cite:
Tidsbury, C.; Emond,F.J.; Cerezke, F.J. 1991. Spruce spider mite. For. Can., Northwest Reg., North. For. Cent., Edmonton, Alberta. For. Leafl. 14.

Cette publication est également disponible en français sous le titre *Tétranyque de l'épinette.*

Printed on recycled paper.

Canada

Spruce spider mite

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Distribution and Hosts

The spruce spider mite (*Oligonychus ununguis* [Jacobi]) is distributed throughout Europe and North America and attacks spruce and other conifer species. In Canada, it occurs from coast to coast, and usually attacks white and Colorado or blue spruces. It also readily attacks black, Norway, and Engelmann spruces, as well as balsam fir, Douglas-fir, cedars, hemlock, junipers, Siberian larch, and some pines. Within the prairie provinces, the most intense, long-term infestations have occurred on the southern prairie and in parkland zones.

Symptoms and Damage

The spruce spider mite is mainly of concern when it is present on conifers planted as ornamentals, in shelterbelts, and in urban parks; in these situations high infestations tend to persist over many years. Infestations may occasionally occur in nurseries and in natural forests, but these are usually short-lived and result in little permanent injury.

Tree damage caused by the spruce spider mite results from its feeding activity on old and new needles and, to some extent, young shoots. Various stages of the mite feed by inserting needle-like mouth parts into the foliar tissue and sucking out the cell sap; the numerous punctures that result give the needles a mottled appearance, and cause them to dry out gradually, turn yellow to brown, and fall off prematurely. The mites also spin large amounts of silken webbing around needles and twigs. Dust particles, dead needles, and other debris that collect on this webbing impart a greyish coloration to the infested branches and contribute to the overall unhealthy appearance of the tree. The presence of silken webbing is usually indicative of a high population of mites.

Feeding injury may be first noticed in mid-to-late May, and it tends to increase as the summer progresses. At first, damage is noticeable on the inner portion of lower crown branches; it then spreads upward and outward within the tree crown. After several years of severe infestations, tree vigour may be reduced and lead to branch dieback or the premature death of the tree.

Causal Agent

The spruce spider mite is scarcely visible to the naked eye. However, one method of confirming a mite infestation is to use a hand lens to inspect one or more branches. Another method is to hold a sheet of white paper under a branch while tapping the branch to dislodge the mites; if present, the mites can be seen crawling against the white background.

The spruce spider mite overwinters in the egg stage under loose bark scales or buds and at the base of needles. Eggs that have overwintered begin hatching into young larvae in May and early June. The larvae are oval in shape, with 3 pairs of legs. At first they are pinkish in color, but turn green after they start to feed on needles and young shoots. In a few days they molt to a nymphal stage that has 4 pairs of legs and closely resembles the adult form. The nymphs develop to the adult stage, completing the first generation in June. Four to six overlapping generations are probably produced each year. Subsequent generations appear at about 15-day intervals until mid-September when the overwintering eggs are deposited. The adult is dark green to brown and about 0.5 mm long. An exceptional reproductive capacity (each female lays 40–50 eggs) and short life cycle allow the spruce spider mite to develop high populations over a relatively short period of time.

Prevention and Control

Heavy precipitation accompanied by high winds and high humidity provide the main forms of natural control. Trimming the lower branches also increases light and air circulation into the tree crown and helps limit the mite population buildup. On small trees and on the branches of larger trees (i.e., branches that can be conveniently reached with a garden hose), mite populations can be reduced or controlled by washing the foliage a few times during the summer with a strong jet of water. This removes much of the silken webbing and debris, dislodges part of the mite population, and raises the humidity level, which may reduce the rate of subsequent population buildup. Spruce spider mite populations tend to increase most rapidly during spring and early summer and again in the fall: hot dry weather may favor their survival.

When mite infestations are severe and regular washings cannot be maintained, the application of pesticides may be necessary for control. A number of insecticides (or acaricides) are registered to control the spruce spider mite and should be applied in two consecutive treatments, the first during the third week of May and the second in late June or early July.

For the most recent information on chemicals available for control of this pest, call Agriculture Canada's Pesticides Directorate in Ottawa (toll free) at 1-800-267-6315.

Chemical pesticides are toxic to humans, animals, birds, fish, and beneficial insects. Follow all instructions and precautions listed by the manufacturer.