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Spruce spider mite, *Oligonychus ununguis* (Jacobi)

Acarina :Tetranychidae

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Conifers in Pennsylvania are hosts for a large number of phytophagous arthropods. One of the most common and persistent is the spruce spider mite, *Oligonychus ununguis* (Jacobi).

Hosts and Distribution: This mite occurs worldwide and is most damaging in nurseries, Christmas tree plantations, and ornamental plantings. As the common name implies, spruce is the favored host. However, the grower and homeowner should realize the host range is wide and may also include arborvitae, *Cryptomeria*, dawn redwood, Douglas fir, false cypress, fir, hemlock, juniper, larch, pine, and yew. *Oligonychus ununguis* has been collected from 43 species of conifers in Pennsylvania (Lehman, 1982).

Identification: Spruce spider mite is closely related to the European red mite and the twospotted spider mite. Actively feeding forms are green or red to almost black (Fig. 1). The elliptical body is 0.3 to 0.4 mm long. As with all mites, specific identification depends upon microscopic examination of slide-mounted specimens.

Fig. 1. Female spruce spider mite.

Life History: The overwintering eggs are deposited near the base of the needles in early October and hatch as early as March 27 in southcentral Pennsylvania. The stages of larva, protonymph, and deutonymph require 11-23 days before the adults develop. Six or more generations may be produced in a single season.

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Damage and Detection: Spruce spider mites have mouthparts capable of being inserted into host tissue and withdrawing cellular fluids, causing chlorotic spots on the needles (Fig. 2). Eventually the needles may turn brown and drop from the tree. Seedlings and young trees can die as a result of heavy infestations (Jeppson et al. 1975). Also, excess accumulation of frass, dirt, and cast skins in the webbing causes the foliage to appear dusty (Fig. 3).

Fig. 2. Fir showing chlorosis caused by spruce spider mite feeding.

Early populations feed on last season's growth and move to the new foliage in late spring (Fig. 4), after the growth has hardened off. Feeding is seldom seen on needles older than two years, although damage from earlier populations will be apparent. Unlike mite damage to deciduous hosts, the conifer foliage will always show previous damage. This may prove aesthetically unacceptable and make the plant unmarketable. In addition, damage may become most apparent during hot, dry weather. Therefore, it is important to keep populations of spruce spider mite in check. Periodic spot sampling by tapping foliage over white paper would reveal the presence

of the mites and be beneficial for early control.

Fig. 3. Upper (left) and lower (right) views of hemlock branch with severe damage.

Fig. 4. Typical damage to older growth

Control: Spray with approved miticides in early May and mid-September, or anytime of the year when populations are increasing. The use of carbaryl, some pyrethroids, and imidacloprid for other conifer pests may enhance population growth of spruce spider mites by destroying their natural enemies. The simultaneous application of a miticide would be advisable when applying the above-mentioned insecticides.

Literature Cited: Jeppson, L. R., H. H. Keifer, and E. W. Baker. 1975. Mites injurious to economic plants. Univ. California Press, Berkeley and Los Angeles. 614 pp.; Lehman, R. D. 1982. Mites (Acari) of Pennsylvania conifers. Trans. Am. Entomol. Soc. 108:181-286.

[1]Revised 2002, R. Lehman