

PINYON NEEDLE SCALE

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Pinyon needle scales (*Matsucoccus acalyptus*) are very small (0.5 mm) sucking insects that feed on pinyon, singleleaf pinyon, and foxtail pines in the southwestern United States. Outbreaks of these native insects occur in both naturally occurring stands and ornamental plantings. The first noticeable sign of pinyon needles scale colonization is an overall thinning of the foliage leaving only tufts of needles at the branch tips (Figure 1). Repeated colonization weakens and frequently kills small trees. In addition, pinyon needle scale may predispose larger trees to colonization by other insects, primarily pinyon pine engravers (*Ips confusus*).

Understanding the biology and behavior of these insects is critical to effective management. In central and northern Arizona, wingless, adult females emerge from the previous

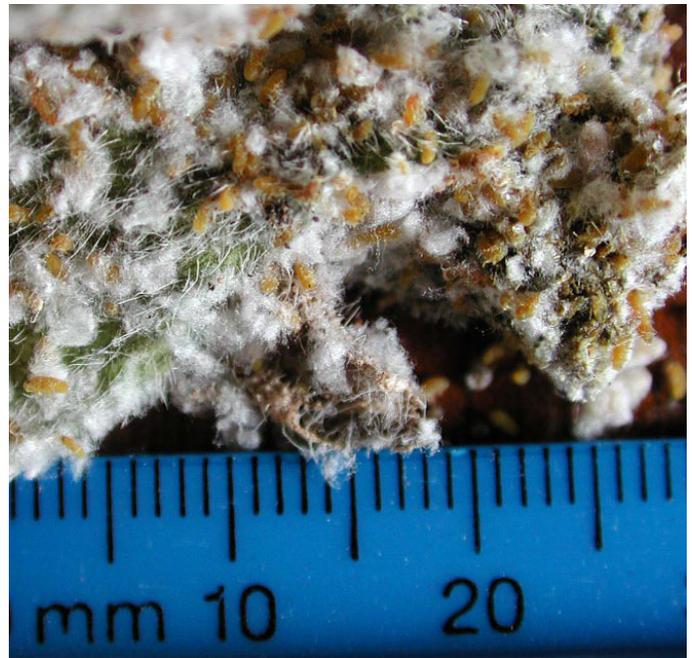


Figure 2. Pinyon needle scale egg mass.

year's scale coverings during mid- to late-April and mate with winged males. Most males overwinter in silk webbing in litter beneath trees. After mating, the females lay yellow eggs in clusters of white, cottony webbing (Figure 2) at the base of the tree, on undersides of large branches, in branch crotches, or in cracks of rough bark. About four weeks after the eggs are laid, tiny red eyespots appear which are visible with the aid of a hand lens. Seven



Figure 1. Fading pinyon pine with needle scale.

AT A GLANCE

- Pinyon needle scales are small sucking insects.
- Removing egg masses can effectively reduce populations.
- Deep, infrequent irrigation increases tree vigor during drought periods.
- Insecticides are effective, but timing of application, life stage, and use of the appropriate product is critical.



Figure 3. Pinyon needle scale crawler.

to ten days after the eyespots appear, the eggs hatch into crawlers (nymphs) (Figure 3) which climb upward in the tree to the foliage at the ends of branches. The crawlers usually colonize the previous year's foliage causing severe needle stunting and defoliation. They may also colonize new foliage during heavy infestations. They feed on the cell sap of foliage using piercing mouthparts. Once feeding begins, they become immobile, cover their body with a wax coating, and turn black. In central and northern Arizona, this normally occurs in late May or early June. The scales remain as small (1 to 1.5 mm) black beans (second instar nymphs) that are attached to the needles throughout the winter (Figure 4). By early spring, the nymphs resume development, change into adults, and move to the trunk, tree base, and larger branches. These adults mate and lay cottony egg masses to begin the next generation.

Cultural control methods can greatly reduce population levels and minimize the need to apply insecticides. Monitor egg-laying activity and destroy the egg masses before they hatch. First, rake up the egg masses, bag, seal, and discard with household waste. Next, force the remaining egg masses away from the tree with a high-pressure nozzle attached to a garden hose.

Tree vigor can be maintained through deep, infrequent irrigation. During drought periods, irrigation should start three to four weeks after the soil has dried in spring and continue until summer rainfall begins. Soaker hoses placed at the tree's drip line are an inexpensive and practical means to irrigate.

The adult's waxy, protective coating safeguards them from environmental factors, predators, and contact insecticides. However, chemical control can be effective if applied at the proper life stage. Contact insecticides, such as malathion and horticultural oil, are effective when scales are in the crawler stage. Dimethoate is a systemic insecticide labeled for application on pinyon needle scale egg masses prior to emergence. Egg masses at the

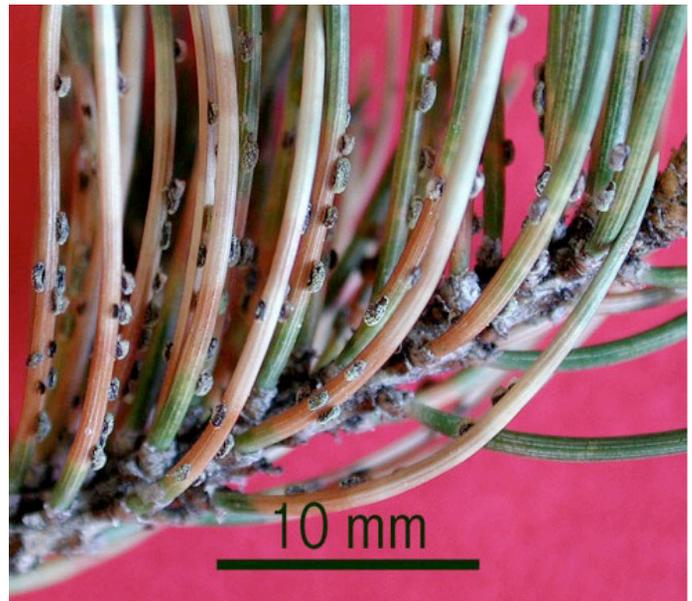


Figure 4. Pinyon Needle Scale in the bean stage.

base of the tree and in branch crotches should be treated. Dimethoate should only be applied to the bark as contact with foliage may result in phytotoxicity. Do not harvest/eat pinyon pine nuts from pine trees treated with insecticides. Always select the most appropriate insecticide to minimize the effect on non-target organisms.

No endorsement of named products is intended, nor is criticism implied of similar products not mentioned. Pesticides are poisonous. Always read and carefully follow label directions for safety when purchasing, mixing, applying, and disposing of pesticides.



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