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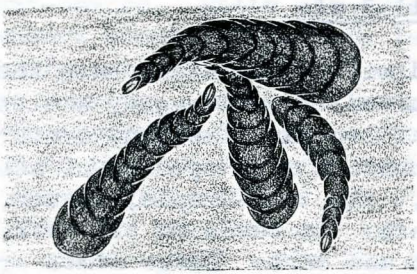
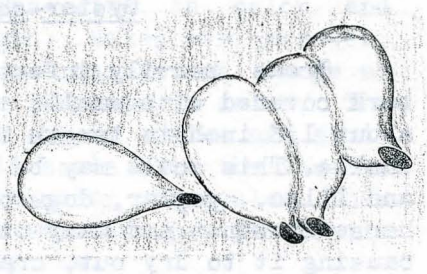
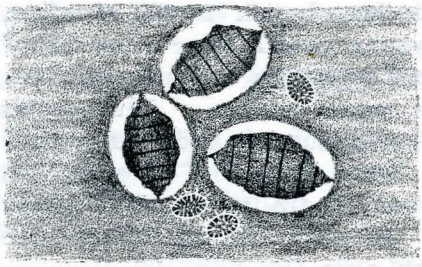
Several Scale Insects Affecting Shade Trees In Nebraska



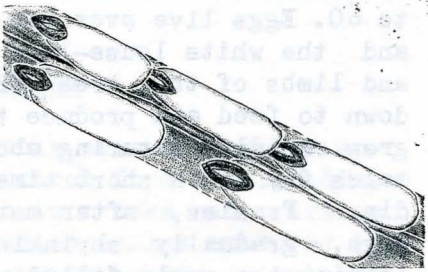
OYSTER-SHELL SCALE



SCURFY SCALE



EUROPEAN ELM SCALE



PINE LEAF SCALE

Cooperative Extension Work in Agriculture and Home Economics University of Nebraska College of Agriculture, and the United States Department of Agriculture cooperating, W. H. Brokaw, Director, Lincoln.

SEVERAL SCALE INSECTS AFFECTING SHADE TREES IN NEBRASKA

Martin H. Muma, Extension Entomologist

Scale insects are among the most important pests of shade and ornamental trees in Nebraska. Losses, such as severe defoliation and the death of part or all of a tree, often occur. Four important scales are the oyster-shell scale, scurfy scale, European elm scale and pine leaf scale*.

Oyster-shell Scale

Trees heavily infested with this insect have the bark covered with small, curved, brownish-grey scales about 1/8 inch in length that appear like tiny oyster shells. This scale may be found on most species of ash and lilac, poplar, dogwood, elm, soft maple, linden, horse chestnut and many others. It feeds on the bark, causing it to dry out, crack and curl. Large limbs or the entire tree may die. The tiny white eggs produced by the female under the scale vary in number from 50 to 60. Eggs live over the winter, hatch in the spring, and the white louse-like young crawl over the trunk and limbs of the tree for a few hours before settling down to feed and produce the waxen scale. The scales grow rapidly, maturing about mid-summer and the winged males fly for a short time, mate with the females and die. Females, after mating, begin to deposit their eggs, gradually shrinking in size until they die leaving the scale filled with eggs.

This insect may be controlled by a thorough spraying with one part of lime sulfur (33° Be) to seven or eight parts of water in the early spring before the

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*Oyster-shell scale, *Lepidosaphes* sp.
Scurfy scale, *Chionaspis* sp.
European elm scale, *Gossyparia spuria* Modeer.
Pine leaf scale, *Chionaspis pinifoliae* Fitch.

leaves appear. It may be necessary to repeat the treatment two or three years before complete control is obtained. One part of nicotine sulfate to 600 parts of water is an effective spray in the late spring when the young scales are hatching.

Scurfy Scales

These bark-feeding scales attack young elm, willow, dogwood, ash, Japanese quince and a number of other fruit and shade trees. Older trees rarely have heavy infestations. Mature female scales are somewhat pear-shaped, white to greyish-white in color and measure about 1/8 inch in length. Males are narrower, straight-sided and are only one quarter as large as the females. Young scales are purplish in color. The life histories of the several scurfy scales are similar to that of the oyster-shell scale with the insects over-wintering in the egg stage under the scales. This scale may have one or two generations per year while the oyster-shell scale has only one.

Control of scurfy scales is the same as that for the first insect discussed.

European Elm Scale

This scale which attacks only elms differs in appearance, life history and control from the two discussed above. Winter is passed in cracks and crevices as half-grown, flat-bodied, reddish scales embedded in masses of cottony wax. In the spring they move out and begin feeding along the lower sides of branches and trunk. Upon maturing, females mate with either wingless or winged males, attach themselves permanently and begin laying eggs. Newly hatched young are a lemon yellow but soon become coated with a cottony wax. Young scales migrate to the smaller limbs, twigs and leaves where they feed during the summer. In the fall they return to the trunk and larger limbs.

The hibernating stage may be controlled by use of

a 4 or 5 per cent miscible oil emulsion such as Volck, Sunoco or others. The spray should be applied thoroughly in the spring before leaves appear. A 2 per cent miscible oil spray applied when the young are hatching is fairly effective. A nicotine sulfate spray such as that recommended for the oyster shell may also be used. Many young scales can be killed by spraying with plain water under high pressure.

Pine Leaf Scale

This scale is probably the most injurious insect of evergreens in the state. It attacks most of the pines as well as the blue and white spruce. Severe infestations cause yellowing of the needles and defoliation; many times death results, especially in young trees. This scale confines its feeding to the needles. Mature females are a snowy white, measure from 1/8 inch to 1/6 inch in length and vary from a pear-like shape on spruce needles to a linear shape on pine. Males are straight-sided and only 1/25 inch long. The life cycle of this insect is similar to that of the oyster-shell scale except that there are two generations each year. Winter is passed in the egg stage under the old scales, each female laying 20 to 30 small purplish eggs.

Control of the pine leaf scale is difficult. Evergreens should not be sprayed in the fall or on bright hot days. Moderately warm cloudy days should be chosen for applications of the spray. A dry mix lime-sulfur spray consisting of 1 pound of dry lime sulfur to 18 gallons of water is suggested. Nicotine sulfate (1-600) may also be used for the young pine leaf scales.

Other Scales

Several other scale insects, including the brown pine scale, Putnam's scale, San Jose scale, and the cottony maple scale also attack shade and ornamental trees in the state. Infestations occur very rarely though and for the most part they may be controlled by one or more of the measures given above.