



Oystershell Scale

Fact Sheet No. 33

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Biology, Description, and Habits

The oystershell scale belongs to a group of insects called the armored scales. The adult insect is enclosed in a shell made up of its own shed skins and waxy secretions. Under this covering is a sac-like animal that is quite different in appearance from most insects. It has no legs, eyes, or antennae.

There is considerable disagreement and/or confusion among the experts as to how many different forms of the oystershell scale there are. The most common description refers to a gray form (also known as the lilac form or the banded form) and a brown form (also known as the apple form). There are over 130 different host plants recorded for oystershell scale and most authors categorize the host plants in relation to the scale form that most commonly infests them. Major hosts listed for the gray form are ash, aspen, cottonwood, lilac, maple, poplar, and willow. The most common hosts listed for the brown form are apple and dogwood. Additional hosts infested by one form or the other include almond, apricot, beech, birch, boxwood, cotoneaster, currant, elm, fig, grape, horse chestnut, linden, mountain ash, pear, peony, plum, quince, raspberry, rose, sycamore, Virginia creeper, walnut, and many others.

There is also confusion as to the developmental characteristics of the different forms of the oystershell scale. Some authors state that there is one generation per year in the northern part of the country and two in the southern areas. Others report that the gray form has one generation per year and the brown form produces two generations. Oystershell scales in Utah apparently produce only one generation per year.

In Utah, the eggs are deposited in late summer and early fall and overwinter under the female scale. Estimates of egg production range from 40 to 150 eggs per female. Egg hatch begins in late May or early June and continues for about two weeks. The newly-hatched, tiny white to light yellow nymphs are called "crawlers" and have functional legs. They move about over the bark for a short period of time, settle down and insert their long, thin mouthparts into the host plant, and begin to secrete the protective waxy coating. Once they settle down to feed, the female scales remain in the same place for the rest of their lives. The functional legs are lost when the insect molts. The scale gradually takes on the "oystershell" appearance as it goes through successive molts and grows.

In the eastern part of the country, both male and female scales occur. In California only

females are produced. These female scales reproduce parthenogenetically (production of young without fertilization). The oystershell scales have not been studied sufficiently in Utah to determine whether or not males are produced. The current assumption is that our scales follow the general pattern of the scales in California. In areas of the country where males are produced, they begin to mature about mid-summer. Adult females are approximately 1/8 inch long; males are somewhat smaller. The males emerge from under their scale coverings (as small yellowish-white winged insects), mate with the sedentary females, and die soon after.

The females begin depositing eggs under and at the back of the scale. As egg deposition progresses, the females gradually decrease in size and move to the front of the scale. They die soon after egg-laying ceases and the eggs are left to overwinter under the old scale.

Egg hatch occurs earlier in the spring the further south one goes. If two generations are produced, depending on the area or the scale forms, the second group of crawlers is produced in August.

Damage

Infestations generally begin on individual branches of the host. Subsequent generations form clusters around and spread out from these initial infestation sites. Heavily infested portions of the plant may become completely encrusted with scales.

The bark on infested trees may appear scaly and eventually crack. The plant will lose vigor and have a generally unthrifty appearance. The foliage may be off-color and abnormally small. Heavy infestations can cause decline and may eventually kill individual branches and even entire trees over a period of years.

Control

Oystershell scales are most susceptible to insecticides during their crawler stage - after the eggs have hatched, but before the nymphs have settled down and secreted the protective waxy coating. Materials should be applied when crawlers are first noticed and reapplied in about 10 days to provide control of late-hatching nymphs.

The crawlers can be detected by wrapping a piece of double-sided sticky tape around an infested twig around the middle of May. The tape should be checked every other day for the presence of crawlers. Replace the tape whenever it becomes wet or covered with dust and continue the monitoring process until egg hatch has been detected. Another method of detection is to hold a piece of white paper or a white pan under the branches and tap the branches with a stick. Any crawlers can be easily seen on the white surface. The color of the crawlers may be shades of white, yellow, orange, or purple.

Heavily infested or sickly branches can be pruned from the tree. In some cases, heavy accumulations of scale can be removed from the bark with a stiff scrub brush or a plastic scrub pad.

Insecticides frequently recommended for oystershell scale control which can be used by homeowners include formulations of acephate (Isotox, Orthene), calcium polysulfide

(Orthorix), carbaryl (Sevin), malathion, and various oils. Products for commercial use include certain restricted-use-products such as azinphos-methyl (Guthion, Sniper) and chlorpyrifos (Dursban),

Superior-type oils (dormant oils), light-to-medium summer oils, and canola oil are registered for scale control on some ornamentals, although they are generally not as effective on oystershell scale as are crawler sprays. Oils should not be used on certain plants including maple, beech, walnut, and Japanese flowering cherry. Check the product labels for these and other restrictions before use.

Before using any insecticide, refer to the specific product label for a list of registered plants, application rates, application timings, techniques, restrictions, and cautions. Not all products are registered on all plants and some products will actually damage some species of plants. Check the label carefully for a list of plants that may suffer a phytotoxic reaction if the product is used. Most of the insecticides above are potentially toxic to honeybees. Do not treat when the plant is in bloom or when bees are foraging.

Natural enemies of oystershell scales may provide some degree of control. These include certain species of ladybird beetles (ladybugs; such as the twice-stabbed and seven-spotted varieties), parasitic wasps (*Aphytis mytilaspidis* and *Encarsia citrina*), and predatory mites (in the genera *Neophyllobius* and *Rhyzobius*).

Precautionary Statement

All pesticides have both benefits and risks. Benefits can be maximized and risks minimized by reading and following the labeling. Pay close attention to the directions for use and the precautionary statements. The information on pesticide labels contains both instructions and limitations. Pesticide labels are legal documents, and it is a violation of both federal and state laws to use a pesticide inconsistent with its labeling. The pesticide applicator is legally responsible for proper use. Always read and follow the label.

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