



Tips on Using Insecticidal Soaps and Horticultural Oils

Insecticidal Soaps

These specially formulated soaps contain potassium or sodium salts of certain fatty acids. They have become popular because of their low toxicity to humans, pets, and many beneficial insects.

Insecticidal soaps are one of the safest choices available for controlling pests in the garden or on ornamental plants. They control adelgids, aphids, mealybugs, whiteflies, mites, and other pests.

Insecticidal soaps work only on contact, so the spray solution must coat the pest. Once the spray has dried, an insect will not be harmed by walking over the residue. For example, spraying only the upper leaf surface will leave whiteflies alive and healthy because they usually feed on the undersurfaces of the leaves. Whitefly immature stages move little or not at all and will not be killed by contact with the wet material.

Spray only when and where an infestation appears, not as a preventative measure. Symptoms such as leaf or shoot distortion, sooty mold, and holes in leaves require further investigation to determine the cause and the extent of an infestation. Once you find the pest, treat only affected plants or spots.

Watch for phytotoxicity, an adverse plant reaction, or injury from the soap treatment. Symptoms on foliage include yellow or brown spotting, "burned" tips, and yellow or brown scorching on leaf edges. Soap spray may also cause marking on certain pome (e.g. apple, pear)

and stone fruit varieties. Phytotoxicity is perhaps most people's greatest concern when using insecticidal soap.

Avoidance of Plant Injury

1. Do not treat plants that are under stress. Drought is a major stress factor. Newly planted ornamentals, transplants, and unrooted or newly rooted cuttings are under stress and should not be sprayed until they are well established. Conifers are particularly susceptible when under drought stress. Make sure plants are well watered before treatment.

2. Avoid treating sensitive plants. The following plants may show phytotoxic reactions after treatment:

Horsechestnut	<i>Aesculus hippocastanum</i>
Mountain ash	<i>Sorbus Americana</i>
Japanese maple	<i>Acer palmatum</i>
Gardenia	<i>Gardenia spp.</i>
Bleeding heart	<i>Dicentra Formosa</i>
Sweet pea	<i>Lathyrus odoratus</i>
Maidenhair fern	<i>Adiantum pedatum</i>
Crown of thorns	<i>Euphorbia millii</i>
Lantana	<i>Lantana spp.</i>
Nasturtium	<i>Nasturtium spp.</i>
Easter lily	<i>Lilium longiflorum</i>
(during bud formation)	

Certain varieties of azalea, begonia, camellia, fuchsia, geranium, and impatiens may be sensitive. Rinse these plants with a clean water spray if they show signs of wilting within a few hours after treatment. Test a small portion of palms, delicate

ferns, ornamental ivies, and succulents before treating an entire plant or area.

3. Wait for new growth to harden off before treating. Tender, young foliage of evergreen trees or shrubs is especially sensitive. Fruit and nut trees in bloom should not be sprayed. If in doubt, test a small part of the plant first. If the plant is sensitive, phytotoxic symptoms will appear within 48 hours.

4. Do not apply if the temperature is above 90°F or the plant is in full sun. High temperatures and high relative humidity may increase plant stress and therefore sensitivity. The best time to apply insecticidal soap is early morning.

Compatibility with Other Pesticides and Fertilizers

Insecticidal soap is compatible with many pesticides but should not be mixed with rotenone-based insecticides, Manzate, Dithane, lime sulfur, copper sulfate, or copper fungicides such as Bordeaux mixture. It should also not be combined with concentrated mineral fertilizers for spraying on foliage.

Compatibility with Water

Use soft water to dilute the soap. Hard water is unsatisfactory because soap combines with and is precipitated by certain minerals, especially calcium, iron, and magnesium, found in hard water. Test water by allowing a quart of the prepared spray solution to stand for 15 minutes. A scum or "curd" of soap scale on the surface indicates hard water and the need for a water conditioner. The solution should be a light milky color. Calgon can be added to soften the water.

Source: Pest Management Around the Home Part II. 2003-2004. Cornell Cooperative Extension. Pages 6-7.

Horticultural Oils

These highly refined petroleum oils are manufactured specifically to control plant pests. They are paraffinic, degrade rapidly through evaporation, and have very low toxicity to humans and wildlife when used properly.

Horticultural oils, applied both in the summer and when plants are dormant, have gained wide acceptance in pest management programs. They are relatively safe for plants and the environment and control many insect and mite pests. They are also relatively nontoxic to the applicator and leave no toxic residue.

Horticultural oils interfere with respiration and membrane function, causing suffocation, and disrupt feeding activities of certain insects and mites. Complete coverage of the infested parts of the plant is essential. Horticultural oils are most effective against eggs, immature forms, and soft-bodied adults. Aphids, scales, mealybugs, leafhoppers, whiteflies, mites, and eggs of almost all species are readily killed.

Several grades of horticultural oil are available. Some are strictly limited to dormant use; others can be applied to actively growing plants in spring and summer. Most trees can be treated in the summer, but check the label to be sure. Under adverse spraying conditions such as high heat and relative humidity, sensitive species may suffer from phytotoxicity. The following plants appear to be sensitive: maples, hickories, and black walnut (dormant sprays); smoke tree and certain varieties of azalea (summer sprays); and cryptomeria (both). The following plants show a tendency

toward sensitivity: beech, redbud, spruce, and Douglas fir (dormant sprays); savin junipers and photina (summer sprays); and Japanese holly (both). *Glaucus* evergreens (those with a bluish bloom) may temporarily lose their blue color if oil is applied, and the natural bloom may not return for one or two years. Never spray when trees are under stress or temperatures are expected to exceed 90°F.

A preventative application in late winter and early spring when trees are dormant can save valuable time later in the season. The oil is applied to aboveground plant parts and is effective against scales, adelgids, and mites in their overwintering stages. Oil should not be applied to plants for 48 hours before or after freezing temperatures occur or are predicted.

Spring and summer applications are safe on a wide variety of plants when used properly. Phytotoxicity may result if plants are under moisture stress. The biological stage of the pest will determine whether a dormant or summer application is needed. Pests that can be controlled by horticultural oil include:

- Aphids
- Balsam twig aphid
- Cooley spruce gall adelgid
- Cottony maple scale
- Cottony taxus scale
- Eastern spruce gall adelgid
- Elongate hemlock scale
- Euonymus scale
- European red mite
- Fletcher scale
- Golden oak scale
- Hemlock scale
- Hemlock wooly adelgid

- Juniper scale
- Magnolia scale
- Maple bladdergall mite
- Oystershell scale
- Pine bark adelgid
- Pine eriophyid mites
- Pine needle scale
- Pine tortoise scale
- Rust mites
- Spruce spider mite
- Twospotted spider mite
- White prunicola scale