



Spraying with Horticultural Oils

by Anne Skinner, UCCE Master Gardener

Some insecticides can kill beneficial insects or natural enemies of the targeted plant pest. These pesticides can interfere with the reproduction of natural predators and their ability to locate and kill pests. Neonicotinoids are a notable class of systemic insecticides that can move throughout a plant to the flower parts. When bees or other pollinators visit the flowers, they can suffer toxic effects and die.

An alternative approach is a contact insecticide with little or no persistence, such as a horticultural oil. Horticultural oil products are highly refined petroleum oils with most of the sulfur compounds removed, or produced from botanical sources such as seeds of Neem, cottonseed or soybean. Exposed pests like scales and aphids are killed, but natural enemies away from the treated surfaces are not affected.

Horticultural oil is the preferred treatment for exposed feeding insects

Horticultural oil kills eggs, larvae, nymphs and all life stages of soft-bodied insect and mites by smothering them. Targets of horticultural oils include mite eggs, San Jose scale and most soft scales, whiteflies, aphid eggs, mealybugs, peach twig borer and flea beetles. No resistance to oils has been observed in target pests.



Obscure Mealybug Colony

If the pest has a waxy exoskeleton or dense body hair, the oil is not able to cover their body surface as uniformly and may not kill the pest. Horticultural oil must be applied directly on the pest to be effective. The spray needs to cover the entire plant, including the top and underside of the leaves, at the time the pest is present. Horticultural oil does not provide residual protection and, with the exception of Neem oil, it has little effect as a soil drench. (Soil drenches are commonly used in the application of systemic insecticides, not contact insecticides).

Types of Horticultural Oil

Petroleum-based horticultural oils usually contain paraffin. Paraffinic oils are more toxic to insects/mites and safer to use on plants than other oil compounds.

Narrow-range oil is a light oil graded according to the range of temperatures over which it evaporates. By evaporating quickly, there is less risk of plant damage. Label directions on the product specify varying application rates for use during dormancy or the growing season.

Neem oil expressed from the seed kernel of the Neem tree, *Azadirachta indica*, acts as an insecticide and fungicide. It prevents powdery mildew and black spot in roses, fruit trees and vegetables. It can damage or kill plants if applied when the plant is stressed by drought, in full sun or in temperature extremes. Neem oil can be used as a soil drench and deters insects and mites from feeding.

Vegetable oils from cottonseed or soybeans are not as refined, increasing the risk of plant damage from oil application.

Fruit, nut, many landscape trees and roses benefit from dormant oil spraying

An actively growing pest is more vulnerable to the oil, so application as the pest dormancy ends in late winter or early spring is most effective. Dormant fruit trees sprayed with specially refined horticultural oils can kill overwintering eggs or pupae of leafrollers, certain moths and other caterpillars on tree trunks. Aphids, scales and mites can also be controlled by dormant season oil sprays without affecting natural enemies, as opposed to oil applied during spring or summer. Spray before tree buds begin to swell and do not spray trees in full bloom. Avoid oil application when a severe frost is predicted within 3-4 days.

Read and follow the product label instructions

As with any pesticide, store oils out of the reach of children and pets and keep the product in its original container. The label will specify plants or crops which can be damaged by horticultural oil application. Junipers and spruce often lose their blue color after oil is applied. Use caution near ponds or waterways, as airborne oil drift will inhibit oxygen transfer and can harm fish. Avoid spraying on windy days, before rainfall or irrigation, in high humidity or when plant leaves are wet. Horticultural oil will harm beneficial bugs as well as pests, so only spray plants with a confirmed pest problem or when beneficials are not present. The instructions will specify the correct concentration and season for application of the product. Also note that mixing the oil with other products, such as fungicides, should be avoided.

Avoiding plant damage

Plants already stressed by drought or winter injury are more likely to be damaged by oil spraying. Oil may also damage new shoot growth on a plant. If a sulfur spray has been used, do not apply oils for two weeks. Plants susceptible to damage from oils include ferns, maples (Japanese and red maple), black walnut, smoke tree and plume cedar. Redbud, junipers, cedars, spruce and Douglas firs are somewhat sensitive to oils.

Spraying with Horticultural Oil

Water plants thoroughly before applying oil. Clean up fallen leaves and remove any leftover fruit on trees. If you have not used oil on the plant before, test spray a small area of the plant and check in a few days for any leaf damage prior to spraying the entire plant. While spraying, agitate the container frequently to keep the spray mixture from separating and fluctuating concentration.

Horticultural oils are a less-toxic pesticide for control of many common garden pests. Used in appropriate situations and following the product directions, there is less risk to beneficial insects. Many common pests and disease problems can be reduced while improving fruit quality and plant health.

Where can the UCCE Master Gardeners be found this month?

On February 10-12, the Master Gardeners will host a booth at the Visalia Home and Patio Spring FEST at the Visalia Convention Center. Please come by with all your gardening questions as we love to talk about gardening!

You can also find us every Saturday from 8 am until noon at the Farmer's Market in the Visalia Sears parking lot on Mooney.

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