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FULL STORY



Columns - Plant Health
Understand the Ins and Outs of Oils ans Insecticides and Fungicides
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The recent interest in sustainable production has growers looking for "soft" products to incorporate into their pest management program.

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Scott W. Ludwig is an extension program specialist at Texas AgriLife Extension Service, swludwig@ag.tamu.edu.

The recent interest in sustainable production has growers looking for "soft" products to incorporate into their pest management program. Oils are often used as alternatives to synthetic pesticides for control of insects, mites or plant pathogens. Oils can be distilled from petroleum (horticultural or mineral oils) or extracted from plants and animals. It is important to understand the different types of oils, their limitations and how to properly use them. Incorrect use can result in lack of pest control and crop damage.

Oils are generally effective against soft-bodied insects such as aphids, scale crawlers, mealybugs, spider mites and whiteflies. Small larvae of some caterpillars and sawflies may also be controlled with oils. Dormant oil sprays are also used against overwintering eggs and scales. Horticultural and plant oils are commonly used to suppress certain fungal diseases, like powdery mildew and black spot on rose.

Mode of action

Oils do not act as poisons. When applied to the plant, a thin film of oil covers the target insect or mite. The oil plugs the spiracles or pores through which the insect breathes, and the insect dies by suffocation.

Oils can also disrupt insect membrane function or structure. Since these products must cover their target pests, thorough coverage is essential. Some oils may also disrupt feeding by the insect.

Use these products against low pest populations. Multiple applications may also be needed. When used against plant pathogens, oils may smother fungal growth and reduce spore germination on treated surfaces.

Apply dormant oil sprays only after winter hardening has occurred.

Petroleum (mineral) oils

Petroleum oils are referred to by many names including horticultural oil, spray oil, dormant oil, summer oil, supreme oil, superior oil, Volck oil or white mineral oil. The terms "summer oil" or "all-season oil" indicates the product can be safely used on plant foliage during the growing season.

Modern, petroleum-based horticultural oils are refined to standard specifications. The unsulfonated residue (UR) is a measure of the degree of oil refinement and is expressed as a percentage. Oils contain saturated and unsaturated hydrocarbons. Saturated hydrocarbons are more stable than unsaturated hydrocarbons, which can form toxic substances when sprayed on plants. In general, the higher the UR, the less unsaturated hydrocarbon content in the oil and the less likelihood of plant injury. Viscosity is a measure of oil thickness. In general, the lower the viscosity, the less likelihood for plant injury. Distillation range is a measure of the purity of the oil fraction, and it is expressed in degrees Fahrenheit. In general, the more narrow the distillation range, the more predictable the performance of the oil. Distillation ranges of 80°F or less are considered narrow range appropriate for spray oils.



Oils are generally effective against soft-bodied insects such as aphids.



Some neem oil products contain an additional active ingredient, azadirachtin, which is an insect anti-feeding agent and insect growth regulator. Canola oil is generally sold as dormant oil, although there are products recommended for use during the growing season. Fish oils are often combined with plant oils, and are listed as an inert ingredient.

Oil application

When applying oils, it is best to agitate hand pump-sprayers frequently and keep tank spray agitators running to reduce the risk of oil separation.

Always read pesticide product labels carefully to make sure it can be mixed with oil. Most labels prohibit the use of sulfur pesticides within 30 days of oil treatment. Oils may be incompatible with copper applications in some crops.

Although generally considered safe, oils can injure susceptible plant species. Symptoms include leaf scorching and browning, defoliation, reduced flowering and stunted growth. Do not treat stressed plants and apply when conditions are lower than 85°F degrees and 90 percent humidity. The longer wet oil sprays remain on foliage, the greater the chance of phytotoxicity.

Some plants listed as being oil sensitive include: azalea, fuchsia, hibiscus, impatiens, photinia, rose, cryptomeria, juniper, Japanese holly and spruce.

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