

Plant Oils Fact Sheet

Summary

The plant oils described here (see Table) are complex mixtures of substances made by plants. Oils such as lemon, orange, and anise give fruits and seeds their characteristic odor and taste. The oils are used as pesticides to repel certain animals and insects, and to kill certain insects. When used as pesticides, these oils do not present any known risks to humans or the environment.

I. Description of the Active Ingredient

Plant oils are mixtures of natural substances that come from various parts of plants, such as flowers, fruits, and wood. They are responsible for the distinctive odor or flavor of the plant they come from. As examples, the different oils produced by oranges, lemons, and mustards give these foods their characteristic smell and taste. See: [Table](#) for list

Each of these plant oils is a complex mixture of chemicals that volatilize and enter the air easily.

The exact amounts and kinds of chemicals in the oils determine their characteristic odor. Many of the volatile chemicals are found in more than one type of oil.

Sometimes the chemicals in the oil, as well as the oil itself, are registered (licensed for use) as pesticide active ingredients. It is also fairly common for two or more oils to be used in the same pesticide product.

II. Use Sites, Target Pests, and Application Methods

- **Use Sites:** Many outdoor and indoor sites. See Table for specifics.

- **Uses:**
 1. Repel dogs, cats, and some wildlife such as squirrels and gophers
 2. Repel and/or kill insects and related species such as mites and millipedes. (See [Table](#) for specifics.)

- **Application Methods:** These oils can be applied and used as liquid sprays, crystals, gels, and pellets, and by impregnating material, such as posts. Other variations are also used.

III. Assessing Risks to Human Health

No adverse effects to humans are expected from use of these substances in repellents and insecticides. Most of these oils are found in common foods, and many are approved as food flavorings by FDA. [Note: Methyl salicylate (oil of wintergreen) can be toxic in large quantities.]

IV. Assessing Risks to the Environment

No risks to the environment are expected from use of these oils in pesticide products. There is some concern about exposure of birds to pellets containing oil of mustard, but the concentration of active ingredient is considered too low to cause adverse effects.

V. Regulatory Information

See [Table](#).

VI. Producer Information

Many companies have received registrations for pesticide products that contain plant oils.

VII. Additional Contact Information

Ombudsman, Biopesticides and Pollution Prevention Division (7511P)
Office of Pesticide Programs
Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, D.C. 20460

Summary of Information for Plant Oils That Are Pesticide Active Ingredients

PLANT OIL (No. of Products)	USE SITES	ACTIONS ON TARGET PESTS	OPP # (CAS #)	REGISTRATION/ REREGISTRATION (YEAR)
Anise ^a (1)	Ornamental plants, lawns	Repels dogs and cats	004301 (8007-70-3)	1952 / 1993
Bergamot ^a (2)	Ornamental plants, homes, garbage cans	Repels dogs and cats	129029 (8007-75-8)	1972 / 1993
Canola ^b (3)	Food crops, ornamental plants, houseplants	Kills insects	011332 (10962-03-0)	1998
Castor (5)	Ornamental plants, lawns, garbage cans	Repels dogs, cats, wildlife such as moles, deer, rabbits,	031608 (8001-79-4)	1947 / 1994

		squirrels		
Cedarwood^a (1)	Mothproofing	Repels larvae of clothes moths	040505 (800-27-9)	1960 / 1993
Citronella^{ab} (>30)	1) Humans and their clothing, homes, outdoor areas 2) Ornamental plants, garbage dumps	1) Repels insects and ticks 2) Repels dogs and cats	021901 (8000-29-1)	1948 / 1997
Eucalyptus^a (4)	Cats, dogs, humans and their clothing, homes	Repels mites; Repels specified insects, including fleas and mosquitoes	040503 (8000-48-4)	1948 / 1993
Jojoba^b (2) <i>[Note: May work as physical barrier]</i>	All crops	Kills/repels whiteflies on all crops. Kills powdery mildew on grapes and ornamentals	067200	1996
Lavandin (2)	Homes, especially closets, drawers, clothes storage containers	Repels clothes moths	040500 (8022-15-9)	1996
Lemongrass^a (2)	Ornamental plants, garbage dumps	Repels dogs and cats	040502 (8007-02-01)	1962 / 1993
Methyl salicylate (5) <i>[Notes: Also called oil of wintergreen; may be toxic in large quantities]</i>	Ornamental plants, indoor and outdoor residential sites (including clothing), garbage dumps.	Repels dogs, cats, moths, beetles	<u>076601</u> <u>(119-36-8)</u> <u>RED (PDF)</u> <u>(31 pp, 165 K, about PDF)</u>	1972
Mint (1)	Ornamental plants in ponds with or without fish	Kills aphids on plants (used with thyme herb)	128800 (8006-90-4)	2000
Mustard^a (11) <i>[Note: Also known as allylisothiocyanate]</i>	Homes, ornamental plants, garbage cans	1) Repels dogs, cats, wildlife such as deer and raccoons 2) Repels and kills insects, spiders, centipedes, etc.	004901 (57-06-7)	1962 / 1993
Orange^a(2)	Ornamental plants, homes, garbage dumps	Repels dogs and cats	040517 (8008-57-9)	1972 / 1993

Soybean ^a(2)	Food and feed crops, ornamental plants, indoor and outdoor sites	Kills mites. Kills beetles and other insect pests	031605 (8001-22-7)	1959 / 1993
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