

# HORTICULTURAL OIL™

A superior horticultural spray oil for insect and mite pest management.

## GUARANTEED ANALYSIS

### Active Ingredients

Mineral Oil*	98.8%
Other Ingredients:	1.2%
<b>Total</b>	<b>100.0%</b>

\*Contains petroleum distillates

\*Unsulfonated Residue of Petroleum Distillate ..... 92.0% Min

\*50% Distillation Point of Petroleum Distillate ..... 414.0 °F

\*Flash Point ..... 345.0 °F

Weight per Gallon ..... 7.1 lbs

EPA Reg. No. 74779-9      EPA Est. No. 044956-AL-001

**NET CONTENTS:** 2.5 gallons (9.5 L)

## KEEP OUT OF REACH OF CHILDREN CAUTION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

See Side/Back Panel for Additional Precautionary Statements,  
First Aid and Directions for Use

### Distributed by:



# Rainbow™ Ecoscience

Rainbow Treecare Scientific Advancements DBA:

**Rainbow Ecoscience**

11571 K-Tel Dr. Minnetonka, MN 55343

1-877-272-6747

[www.rainbowecoscience.com](http://www.rainbowecoscience.com)



<b>FIRST AID</b>	
<b>IF ON SKIN OR CLOTHING</b>	<ul style="list-style-type: none"><li>Take off contaminated clothing.</li><li>Rinse skin immediately with plenty of water for 15-20 minutes.</li><li>Call poison control center or doctor for treatment advice.</li></ul>
<b>IF SWALLOWED</b>	<ul style="list-style-type: none"><li>Immediately call a poison control center or doctor.</li><li>DO NOT INDUCE VOMITING unless told to do so by a poison control center or doctor.</li><li>Do not give <b>any</b> liquid to the person.</li><li>Do not give anything by mouth to an unconscious person.</li></ul>
<b>IF IN EYES</b>	<ul style="list-style-type: none"><li>Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li><li>Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li><li>Call poison control center or doctor for treatment advice.</li></ul>
<b>IF INHALED</b>	<ul style="list-style-type: none"><li>Move person to fresh air</li><li>If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to mouth, if possible.</li><li>Call a poison control center or doctor for treatment advice.</li></ul>

### HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor or going for treatment.

For 24 hour medical emergency assistance (human or animal), or chemical emergency assistance (spill, leak or accident).

**Call CHEMREC at 1-800-424-9300.**

### NOTES TO PHYSICIAN

Contains petroleum distillates. Vomiting may cause aspiration pneumonia. Aspiration may occur after swallowing or vomiting and result in serious, and sometimes delayed, lung injury.

## PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS

**CAUTION:** Harmful if absorbed through skin, swallowed or inhaled. Avoid contact with eyes, skin, or clothing. Avoid breathing spray mist. Remove and wash contaminated clothing before use. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals

### PERSONAL PROTECTIVE EQUIPMENT (PPE):

**Mixers, loaders, applicators, flaggers, and other handlers must wear:**

- Long-sleeve shirt and long pants
- Shoes plus socks
- Chemical-resistant gloves made of Barrier Laminate, Nitrile Rubber ≥ 14 mils, Neoprene Rubber ≥ 14 mils, or Viton ≥ 14 mils

**See Engineering Controls for Additional Requirements.**

### USER SAFETY REQUIREMENTS

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent material that have been drenched or heavily contaminated with the product's concentrate. Do not reuse them.

## USER SAFETY RECOMMENDATIONS:

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing.
- As soon as possible, wash thoroughly and change into clean clothing.

## ENGINEERING CONTROLS

Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR 170.240(d)(6)). When handlers use closed systems, enclosed cabs or aircraft in a manner that meets with requirements listed in the WPS for agricultural pesticides (40 CFR 170.240(d)(4-6)), the handler PPE requirements may be reduced or modified as specified in the WPS.

## ENVIRONMENTAL HAZARDS

This pesticide is toxic to aquatic invertebrates. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water or rinsate. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Avoid drift or runoff into storm drains, drainage ditches, or surface waters. Applying this product in calm weather when rain is not predicted for the next 24 hours will help to maximize the chances that wind or rain will not blow or wash pesticide off the treatment area. Rinsing application equipment over the treated area will help to avoid runoff to water bodies or drainage systems.

## DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product through any type of irrigation system. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Do not apply this product in a way that will contact adults, children, or pets, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

## AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard (WPS), 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the WPS.

Do not enter or allow worker entry into treated areas during the Restricted-entry interval (REI) of 4 hours.

PPE required for early entry to treated areas that is permitted under the WPS and that involves contact with anything that has been treated, such as plants, soil, or water, is: coveralls, shoes plus socks, and chemical-resistant gloves made of any waterproof material, such as Barrier Laminate, Nitrile Rubber ≥ 14 mils, Neoprene Rubber ≥ 14 mils, or Viton ≥ 14 mils.

## NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Do not enter or allow others to enter until sprays have dried.

## USE SITE RESTRICTIONS

This product may be applied on the plants listed on this label which are growing in or around habitable buildings, along city streets and other rights-of-ways, as well as in agricultural settings. Refer to the appropriate table for the application rate specified to control a specific pest on a specific plant.

## PESTS CONTROLLED

This product may be used to control adelgids, aphids, lace bugs, leafhoppers, leafminers [larvae], mealybugs, mites, plant bugs, psyllids, sawfly larvae, scales, thrips, whitefly and eggs of aphids, mites and hairless caterpillars on vegetables, fruits, tree nuts, certain field crops, shrubs, trees, greenhouse plants, ornamental foliage plants and flowers. This product may be applied up to harvest.

## MIXING DIRECTIONS

1. Add sufficient water to the mixing tank to allow proper agitation by pump or paddles.
  2. Add other desired pesticide. If a wettable powder formulation is to be added, mix the water and powder thoroughly so that the powder is totally suspended in the water before the oil is added. If other pesticide to be added is an emulsifiable formulation, do so after the oil and water have been thoroughly mixed.
  3. Add oil under agitation when the tank is ¾ full. Top off with water to form milky white solution, indicating good emulsification.
  4. Maintain agitation until solution is used.
  5. In small equipment lacking agitators, stir or shake diluted spray frequently during application.
  6. Read and follow all directions and restrictions on the labels of the proposed tank-mix products.
  7. Flush fluid in sprayer hose lines back into tank reservoir if fluid is allowed to stand for more than 20 minutes.
8. DO NOT USE THIS MATERIAL IF IT DOES NOT EMULSIFY.

## APPLICATION INSTRUCTIONS

The target pest must be completely covered with spray. Oil residue on the plant surface often acts as a feeding and oviposition deterrent. However, the primary target is the pest itself as oil is a contact pesticide.

**Dilute Applications:** Use the minimum number of gallons needed to completely cover all the tree surfaces, but not to the point of runoff. For most tree fruits, this can be as much as 300-800 gallons of spray solution per acre or as low as 100 gallons of spray solution per acre for smaller trees. For mature citrus trees, this can be as much as 800-2,000 gallons of spray solution per acre. Dilute applications typically provide better coverage than concentrate applications.

**Concentrate Applications:** (usually from 45 to 125 gallons of spray solution per acre) may reduce coverage and effectiveness. Concentrate application includes the use of low volume [from 10 to 100 gallons of spray solution per acre] sprays. A concentrate application can provide satisfactory results as long as the spray unit is properly engineered, calibrated and operated. Speed of travel for ground application is extremely important. Tractor speed from 1 mph to 4 mph is recommended depending on crop, crop size and target pest. Low volume applications of this product will require approximately the same amount of oil per acre as dilute sprays but will be applied with much less water. Spray oil calculations are based so that runoff of the oil phase of the mixture is minimized.

## SPRAY DRIFT ADVISORIES

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT. BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

## IMPORTANCE OF DROPLET SIZE

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

## CONTROLLING DROPLET SIZE - GROUND BOOM

- **Volume** - Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- **Pressure** - Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.
- **Spray Nozzle** - Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

## CONTROLLING DROPLET SIZE - Aircraft

- **Adjust Nozzles** - Follow nozzle manufacturer recommendations for setting up nozzles. Generally, to reduce fine droplets, nozzles should be oriented parallel with the airflow in flight.

## BOOM HEIGHT - Ground Boom

- For ground equipment, the boom should remain level with the crop and have minimal bounce.

## RELEASE HEIGHT – Aircraft

- Higher release heights increase the potential for spray drift. When applying aerially to crops, do not release spray at a height greater than 10 ft above the crop canopy, unless a greater application height is necessary for pilot safety.

## SHIELDED SPRAYERS

- Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

## TEMPERATURE AND HUMIDITY

- When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

## TEMPERATURE INVERSIONS

- Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upwards and rapidly dissipates indicates good vertical air mixing. Avoid applications during temperature inversions

## WIND

- Drift potential generally increases with wind speed.
- **AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS.**
- Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

## BOOM-LESS GROUND APPLICATION

- Setting nozzles at the lowest effective height will help to reduce the potential for spray drift.

## HANDELD TECHNOLOGY APPLICATIONS

- Take precautions to minimize spray drift.

## AIRBLAST EQUIPMENT APPLICATION

For Airblast Applications, turn off outward pointing nozzles at row ends and when spraying outer row. To minimize spray loss over the top in orchard applications, spray must be directed into the canopy.

## AERIAL APPLICATIONS

Use only as an emergency application when soil conditions do not permit regular ground application on deciduous fruit and nut trees. Aerial applications are permitted for fruit and nut trees and potatoes only. Apply quantity of product shown for each listed crop for control of listed insects in sufficient water to make a minimum of 20 gallons dilute spray solution per acre, except where label indicates otherwise.

## TIMING THE TREATMENT

Applicator must determine the precise timing to fit local growth and climatic conditions. DO NOT EXCEED MAXIMUM RATES OR APPLY MORE OFTEN THAN INDICATED IN THIS BOOKLET. THIS PRODUCT MAYBE USED UP TO DAY OF HARVEST.

## TANK MIXES

This product may be mixed with other pesticides to improve the level of kill. Use ¼ to 1% of this product (0.25 – 1 gallon of this product per 100 gallons of finished solution) in combination with other products. Read and follow all directions and restrictions on the labels of the proposed tank-mix products. The combination of this product with more than one additional pesticide is not recommended. Use caution and read all labels thoroughly when using any insecticides or miticides in combination with this product. Always conduct a test spray for plant sensitivity before making a full-scale application. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

## USE PRECAUTIONS

Keep oil container tightly closed in storage to prevent entry of water. All horticultural oils interfere with or slow plant transpiration and respiration during the period of evaporation. Do not spray plants under stress (i.e. drought, disease). Do not apply during periods of prolonged high temperature combined with high relative humidity. Do not spray immediately prior to, during, or following unusually cold weather or freezing temperatures. Due to the reduced respiration rate of the insect at temperatures below 50°F, the effectiveness of this product is reduced. Do not tank-mix with any herbicides. Do not tank-mix with any insecticide or miticide whose label indicates that it should not be used with oil. Do not use with Sevin 50W formulation (carbaryl) on deciduous fruit trees.

The following list of pesticides represents some of the compounds that should not be used with this product, however, this list is not exhaustive: captan (Captan), cyprex (Dodine), chlorothalonil (Bravo), dimethoate (cygon), folpet (Folpet), propargite (0mite), lime sulfur, wettable sulfur, or any other product containing sulfur. For fungicides not included in this listing, consult the label of the specific fungicide formulation for compatibility information when used with oil. Consult your local extension agent for local recommendations relative to a specific fungicide/oil mix on a specific crop. Keep spray equipment used for these other products separate from the equipment used for this product, or ensure all equipment is free of these residues. Do not use propargite (0mite) with or within 30 days before or after using this product. Application safety during the bloom period should be determined for each individual species of plant to be treated by conducting a small test. Protect painted surfaces, carpet and furnishings from overspray. This product may cause discoloration of concrete, brick or stone walkways.

**TABLE 1A**

CROP	PEST	APPLICATION RATE			TIME OF APPLICATION [Stage of Development]
		DILUTE SPRAY: Gals of product in 100 gals water applied at 100-600 gals dilute spray solution per acre.	CONCENTRATE: Gals of product in 45 gals – 125 gals of water per acre.	AERIAL: Gals of product in 20 gals of water minimum per acre.	
Apples	Aphid (eggs) Apple Red Bug Mite (eggs) including European Red Mite Scales (Hard & Soft) Scurfy Scale Fruit Tree Leaf Roller (eggs)	2	6-8	6-8	Dormant through Tight-Cluster
	Mites Scales	1 1-2	4 4-6	4 4-6	Summer (Foliar or Cover) or Postharvest. Do Not apply over fruit after waxy Bloom forms.
Pears	European Red Mite (eggs) Pear Leaf Blister Mite (eggs) Pear Psylla Scales Fruit Tree Leaf Roller (eggs)	1-2 2 2 2 2	4-6 4-6 4-6 4-6 4-6	4-6 4-6 4-6 4-6 4-6	Dormant or delayed dormant (up to and including petal fall).
	Two-Spotted Spider Mite Brown Mite Pear Rust Mite Pear Leaf Blister Mite Pear Psylla Thrips	1 1 1-2 1.5-2 1.5-2 1.5-2	4 4 4-6 4-6 4-6 4-6	4 4 4-6 4-6 4-6 4-6	Summer (Foliar or Cover) or Post-harvest.
Figs	Fig Scale	3			Dormant or delayed dormant
	Mites Mealybugs Scales	2			Summer (Foliar or Cover)

1 Gallon of Product/100 gals of water = 1 quart of product/25 gals of water = 32 Fluid ounces of product/25 gallons of water 1 Quart = 0.95 liters. 1 gallon = 3.785 liters

**TABLE 1B**

CROP	PEST	APPLICATION RATE			TIME OF APPLICATION (Stage of Development)
		DILUTE SPRAY: Gals of product in 100 gals water applied at 100-500 gals dilute spray solution per acre.	CONCENTRATE: Gals of product in 45 gals – 125 gals of water per acre.	AERIAL: Gals of product in 20 gals of water minimum per acre.	
Almonds Apricots Cherries	Aphid (eggs) Fruit Tree Leaf Roller (eggs) Tent Caterpillars San Jose Scale	2 2 2 2	6-8 6-8 6-8 6-8	6-8 6-8 6-8 6-8	Dormant or Delayed Dormant Dormant or Delayed Dormant Dormant or Delayed Dormant Dormant
	Mites and Scales	1-1.5	4-6	4-6	Summer (Foliar or Cover) or Postharvest. Application should not be made over oil sensitive varieties. Do not apply to trees lacking adequate moisture.
Peaches Nectarines	Aphid (eggs) Fruit Tree Leaf Roller (eggs) Mite (eggs) Peach Twig Borer (hibernaculae) Cottony Peach Scale San Jose Scale	1-2 1-2 1-2 1-2 2 2	4-8 4-8 4-8 4-8 6-8 6-8	4-8 4-8 4-8 4-8 4-8 4-8	Dormant or Delayed Dormant Dormant or Delayed Dormant Dormant or Delayed Dormant Dormant or Delayed Dormant Dormant Dormant
	Mites Scales	1-2	4-6	4-6	Summer (Foliar or Cover) or Postharvest
Plums Prunes	Aphids (eggs) Scales Mites (eggs) Peach Twig Borer (hibernaculae)	1.5-2	4-6	4-6	Dormant or Delayed Dormant to $\frac{1}{2}$ " green tip
	Mites Scales	1-1.5	4-6	4-6	Summer (Foliar or Cover) or Postharvest. Application should not be made over oil sensitive varieties. Do not apply over certain fresh market fruits after bloom starts to form as the oil spray will remove the waxy bloom.
Pecans	Aphids (eggs) Scales Mites (eggs)	2	6-8	6-8	Dormant
	Aphids Mites	1-1.5	4-6	4-6	Summer (Foliar or Cover) or Postharvest

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**TABLE 1C**

CROP	PEST	APPLICATION RATE			TIME OF APPLICATION (Stage of Development)
		DILUTE SPRAY: Gals of product in 100 gals water applied at 200-400 gals dilute spray solution per acre.	CONCENTRATE: Gals of product in 45 gals – 125 gals of water per acre.	AERIAL: Gals of product in 20 gals of water minimum per acre.	
Walnuts	Aphids (eggs) Scales Mites (eggs)	4-6	NR	NR	Delayed Dormant - Use only on trees that have not suffered from lack of moisture at any time during the growing season. Do not apply to orchards where soil moisture is low. Trees must have been fully dormant
	Mites	4-6 gals of oil in 100 gals of water applied at 200 gals of spray solution per acre.	NR	NR	Foliar-Late Spring to early Summer when the leaves are fully expanded.

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NR = Not Recommended

TABLE 2

CROP	PEST	DILUTE SPRAY: Gals of product in 100 gals water ap- plied at 500-2000 gals dilute spray solution per acre.	CONCENTRATE: Gals of product in 45 gals – 125 gals of water per acre.	TIME OF APPLICATION (Stage of Development)
Lemons Grapefruit*	Mites Scales including California Red Scale	1.0 – 1.4 1.0 – 1.6	8 - 24	Spray during Fall, early Winter & Spring months when red scale are more easily controlled and trees generally less reactive to oil. For all citrus oil sprays ensure adequate soil moisture: leaves should not wilt before noon.
Navel & Valen- cia Oranges, Other Varieties including Non-Bearing*	Mites including Rust Mite Spider Mite Scales including Black Scale California Red Scale Whitefly & Blackfly Sooty Mold	1.0 - 1.4 1.0 - 1.4 1.0 - 1.4 1.0 - 1.3 1.0 - 1.3 1.3 - 1.6 1.0 - 1.3 1.0 - 1.3	8 - 24	For low volume oil spray treatment during the Spring, application should be discontinued as soon as temperatures go above 90°F during the day or relative humidity is expected to go down to 20 percent or below. Oils should not be used in late Fall if there is any danger of damage from cold. The addition of a tank mix insecticide registered for use on these crops may improve performance against scales.

\*RESTRICTIONS: Citrus: The maximum application rate for citrus in Texas and Florida is 159 pounds active ingredient per acre (maximum 1500 gallons of spray mix per acre), and in California, 212 pounds of active ingredient per acre (maximum 2000 gals of spray mix per acre).

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TABLE 3A: SHADE TREES, SHRUBS, ORNAMENTALS, FLOWER AND FOLIAGE PLANTS

CROP OR PLANT	PEST	APPLICATION RATE	TIME OF APPLICATION
Shade Trees* and Shrubs including Conifers, Deciduous Broadleaf Evergreens & Woody Ornamentals. Ornamental Trees* and Shrubs including: Conifers, Deciduous and Broadleaf Evergreens located along city streets, other rights-of-ways and in or around habitable buildings.	Aphids Adelgids Eriophid Mites Gall Mites Honey Locust Plant Bug Lace Bug Leaf Beetle Larvae Leafminer Leafrollers Mealybugs Psyllids (Immature) Sawfly (Larvae) Scales (Immature) Spider Mites Thrips Webworms Whiteflies	Dilute Spray: 2-3 gals of product per 100 gals of water applied at 100-500 gals spray solution per acre.	Winter Dormant Period.
Flowering and Foliage Plants including Roses and other Flowering Shrubs		Dilute Spray: 1-2 gals of product per 100 gals of water applied at 100-500 gals spray solution per acre.	Summer (Foliar or Cover)
Foliage Ornamentals & Bedding Plants		Dilute Spray: 2-3 gals of product per 100 gals of water applied at 100-250 gals spray solution per acre.	Winter Dormant Period.
		Dilute Spray: 1-2 gals of product per 100 gals of water applied at 100-250 gals spray solution per acre.	Summer (Foliar or Cover)
		Dilute Spray: 2-3 gals of product per 100 gals of water applied at 50-150 gals spray solution per acre.	Winter Dormant Period.
		Dilute Spray: 1-2 gals of product per 100 gals of water applied at 50-150 gals spray solution per acre.	Summer (Foliar or Cover)

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TABLE 3B: CHRISTMAS TREES

CROP OR PLANT	PEST	APPLICATION RATE	TIME OF APPLICATION
Christmas Trees*	Aphids Adelgids Scales (Soft & Hard) (Immature) Spider Mites	Dilute Spray: 2-3 gals of product per 100 gals of wa- ter applied at 100-250 gals spray solution per acre.	Winter
		Dilute Spray: 1-2 gals of product per 100 gals of wa- ter applied at 100-250 gals spray solution per acre.	Summer

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**FOR TABLES 3A AND 3B**

\*Oil removes the glaucous (blue) bloom from such evergreens as Colorado blue spruce and Koster Spruce. Always use lower dosage or test spray oil sensitive plants such as Cryptomeria, Smoke Tree, Chamaecyparis, Juniper, Japanese Holly and Spruce. Tendency toward sensitivity: Red Cedar and Douglas Fir. Do not spray when buds have fully opened and shoot elongation is occurring. Do not spray Walnut foliage.

**RESTRICTIONS:** Make no more than 4 spray applications per year. Allow at least 2 weeks to pass between consecutive spray applications. This product may be used in rotation with other compatible insecticides or fungicides. Do not spray when there is obvious moisture deficit in leaves, or the plant is under stress. Early morning applications are recommended. For fall dormant applications, use no more than 2 gallons oil per 100 gallons water, and limit use only to: American Red Oak, Japanese Black Pine, Dogwood, Weeping Cherry, Cornelian Cherry, Crabapple, Norway Maple, Purple Leaf Plum.

**Powdery Mildew Control on Ornamentals:** Use 1-2 gallons of this product per 100 gallons water at 50-100 gals spray solution per acre from midsummer to early fall every 2-4 weeks to zinnia, lilac, azalea, monarda, phlox, helianthemum and aster. If application to other woody or herbaceous ornamental plants is desired, conduct a small scale test on specific plants that are to be treated to check for sensitivity to the oil treatment. This product is not effective if the plant canopy is extremely dense because adequate coverage is difficult to attain. For greenhouse applications, use 1 gallon of product per 100 gallons of water at 50-100 gals spray solution per acre except for greenhouse-grown roses for the cut flower market where the concentration shall not exceed 0.5 gals this product / 100 gals water at 50-100 gals spray solution per acre if applied weekly. A test spray should be conducted due to increased sensitivity of greenhouse grown plants.

**TABLE 4A: SMALL FRUITS**

CROP	PEST	APPLICATION RATE	TIME OF APPLICATION
Caneberries	Aphids Leafhopper Mites Whitefly Psyllids	2 Gals of product in 100 gals of water applied at 100-250 gals of spray solution per acre.	Dormant and Postharvest
		1 Gal of product in 100 gals of water applied at 100-250 gals of spray solution per acre.	Spring-Summer
Cranberries	Leafhopper Scales Mites	1-2 Gals of product in 100 gals of water applied at 100-250 gals of spray solution per acre.	As needed
Blueberries	Scales	3 Gals of product in 100 gals of water applied at 100-250 gals of spray solution per acre.	Dormant
	Thrips Mites Sawfly (eggs)	2 Gals of product in 100 gals of water applied at 100-250 gals of spray solution per acre.	Foliage
Strawberries	Aphids Mites	1 Gal of product in 100 gals of water applied at 100-200 gals of spray solution per acre.	Dormant and Foliage

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**TABLE 4B: GRAPES**

CROP	PEST	DILUTE SPRAY: Gals of product / 100 gals water.	CONCENTRATE SPRAY: (45 – 100 gals spray solution per acre)*	TIME OF APPLICATION
Grapes	Mealybugs	4-6 gals of product in 100 gals of water applied at 200-300 gals per acre.	NR	Dormant - A tank mix using an insecticide improves control.
	Mites	2 gals of product in 100 gals of water applied at 100 gals per acre.	NR	Bud Swell or shoot growth of 5-7 cm (2-3 in) in Spring
	Mealybugs	NR	4 gals of product in a minimum of 45 gals of water	Spray when crawlers are active and exposed usually around early Summer.
	Leafhopper	NR	4 gals of product in a minimum of 45 gals of water	Spray during first brood, if possible. Sprays after grapes are more than 1/4" diameter may affect bloom.
	Mites	2 gals of product in 100 gals of water applied at 100 gals per acre.	NR	Postharvest
	Powdery Mildew	1 gal of product in 100 gals of water applied at 100 gals per acre.	NR	Begin application after bud break or according to local recommendations. Continue spraying every 10 to 14 days in rotation with other compatible fungicides. Frequent applications in short spray intervals may result in damage to plants.

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NR = Not Recommended

**FOR TABLE 4B**

Apply before mites reach high populations. Vineyard should be vigorous and supplied with ample water prior to application. Do not allow excessive webbing or burning. No sensitivity to treatments with this product has been seen in the vineyards of cabernet, merlot, chardonnay or ribier when used for insect control. Do not mix this product with Captan or sulfur since all can cause phytotoxicity in some varieties.

Avoid more than 4 consecutive sprays. Some varieties of grapes may be sensitive to 4 or more consecutive sprays.

\*Air carrier or air-blast type sprayers are strongly recommended to avoid plant injury and reduce effect on bloom of table grapes.

**TABLE 5: VEGETABLES: OUTDOOR AND GREENHOUSE**

CROP	PEST	APPLICATION RATE – DILUTE SPRAY:GALS OF PRODUCT / 100 GALS WATER.	TIME OF APPLICATION
Asparagus Beans Beets Cabbage Cauliflower and other cole crops Celery Corn Cucurbits Eggplant Lettuce Melon Pepper Potato Radish Squash Sweet Potato Tomato Tobacco	Aphids Mites Beetle Larvae Leafminers Thrips Leafhopper Whitefly	1-2 gallons of product per 100 gallons of water applied at 50 - 100 gallons of dilute spray solution per acre.	Do not exceed 4 applications in a growing season. A 2-week application interval is recommended. Due to varietal differences in response to a treatment of this product at the specific rate range, conduct a small test on 1 or 2 plants of the specific variety to be treated. As needed.
Herbs and Spices Basil Lemon Balm Mexican Oregano Spearmint		1-2 gallons of product per 100 gallons of water applied at 50 gallons of dilute spray solution per acre.	

Use 1 – 2 gallons of product in 100 gallons of water applied at 50 – 100 gallons of dilute spray solution per acre to control powdery mildew on cucurbits, melons and squash; gummy stem blight and Alternaria leaf blight on melons. Apply when the disease is first noticed and continue on a weekly basis to both the upper and lower leaf surfaces. If applying to other vegetables listed in Table 5, first conduct a small test spraying before treating the whole crop. Limit greenhouse applications to the rate of 1 gallon of product in 100 gallons of water applied at 50 – 100 gallons of dilute spray per acre.

This product applied to potatoes via aerial application at a rate of 0.75 gal – 1.0 gal in 5-10 gallons of water per acre, reduces the spread of Potato Y Virus vectored by aphids.

1 Gallon of Product/100 gals of water = 1 quart of product/25 gals of water = 32 Fluid ounces of product/25 gallons of water 1 Quart = 0.95 liters. 1 gallon = 3.785 liters

**TABLE 6: FIELD CROPS**

CROP	PEST	APPLICATION RATE – DILUTE SPRAY:GALS OF PRODUCT / 100 GALS WATER.	TIME OF APPLICATION
Alfalfa Corn (sweet & field) Cotton Peanuts Soybeans Sugar Beets	Aphids Mites Leafminers Corn Earworm Rootworm Whitefly	1-2 gallons of product in 100 gallons of water applied at 50 – 100 gals dilute spray per acre.	Do not exceed 4 applications in a growing season. Space applications at intervals of approximately 2 weeks.

1 Gallon of Product/100 gals of water = 1 quart of product/25 gals of water = 32 Fluid ounces of product/25 gallons of water 1 Quart = 0.95 liters. 1 gallon = 3.785 liters

**TABLE 7A: GREENHOUSE**

CROP OR PLANT	PEST	APPLICATION RATE	SPECIFIC COMMENTS
Aglaonema Aster Azaleas Begonias Browallia Camellias Carnation Celosia Chrysanthemum Coleus Cosmos Dusty Miller Easter Lilies Gardenias Geranium Gerbera Helichrysum	Hibiscus Foliage Hydrangea Impatiens Jade Plant Marigold New Guinea Impatiens Nicotonia Philodendron Portulaca Reiger Begonias Snapdragon Vinca Zinnias	1 - 2 gallons of product in 100 gallons of water applied at 100 – 200 gallons of spray solution per acre.	Due to varietal differences in response to a treatment of this product at the specified rate or rate range, conduct a small test on 1-2 plants of the specific variety to be treated.
Ageratum Crown of Thorns Dieffenbachia Ferns Ficus Lisianthus Orchid Palms Petunia Poinsettia Schefflera Sunflower Leaf Polish for hardy plants	Aphids Fungus Gnats Leafminers Mealybugs Scales (Hard & Soft) Spider Mites Thrips Whitefly	1 gallons of product in 100 gallons of water applied at 100 – 200 gallons of spray solution per acre.	

Some plants grown in greenhouses are more sensitive to oil treatments if any of the following conditions are present when application is made:

- High Humidity
- A heavy overcast or cloudy day or during rainy periods
- Inadequate air flow
- Intense sun and/or heat build-up that stresses plant
- Night time
- Plants under water or temperature stress.

Frequency of Application: For the greenhouse pests listed, use once a week initially, then as the pest is controlled, decrease the frequency to every 2-3 weeks as needed. Application safety during bloom period should be determined for each individual species of plant to be treated by conducting a small test.

1 Gallon of Product/100 gals of water = 1 quart of product/25 gals of water = 32 Fluid ounces of product/25 gallons of water 1 Quart = 0.95 liters. 1 gallon = 3.785 liters

**TABLE 7B: INTERIORSCAPES**

CROP OR PLANT	PEST	APPLICATION RATE	SPECIFIC COMMENTS
Dieffenbachia Dracaena Ferns Palms Schefflera	Aphids Leafminers Mealybugs Scales Spider Mites Whitefly	1 gal of product per 100 gallons of water applied at 100-200 gallons spray solution per acre	Do not apply to plants in direct sunlight behind glass. Due to varietal differences in response to a treatment of this product at the specified rate or rate range, conduct a small test on 1 or 2 plants of the specific variety to be treated.
Chrysanthemum Gardenias Jade Plant Philodendron		1 – 2 gals of product per 100 gallons of water applied at 100-200 gallons spray solution per acre	

\*Protect floor, floor coverings, and furnishings from overspray.

1 Gallon of Product/100 gals of water = 1 quart of product/25 gals of water = 32 Fluid ounces of product/25 gallons of water 1 Quart = 0.95 liters. 1 gallon = 3.785 liters

**TABLE 8**

CROP	PEST	APPLICATION RATE	TIME OF APPLICATION
Olives	Scales	Dilute Spray: 1.5 gals of product in 100 gals water applied at 400-800 gals dilute spray solution per acre	Post bloom through August and Postharvest
Bananas Plantains	Yellow Sigatoka Disease	Dilute Spray: 1.0 – 1.5 gals of product in 100 gals water applied at 100 gals dilute spray solution per acre	This application is also effective in loosening sooty mold fungus and limiting its formation by the control of Aphids, Mealybugs, Scales, and Whitefly
Avocado (Haas Only)	Aphids Mealybugs Mites Scales Whitefly	Dilute Spray: 1 – 1.5 gals of product in 100 gals water applied at 100 – 400 gals dilute spray solution per acre	Apply through late fall
Mangos	Aphids Mealybugs Mites Scales Whitefly	Dilute Spray: 1 – 1.5 gals of product in 100 gals water applied at 100 gals dilute spray solution per acre	Before bloom
Persimmons	Leafrollers Scales Book Lice (psocids)	Dilute Spray: 1 gal of product in 100 gals water applied at 100 gals dilute spray solution per acre	

1 Gallon of Product/100 gals of water = 1 quart of product/25 gals of water = 32 Fluid ounces of product/25 gallons of water 1 Quart = 0.95 liters. 1 gallon = 3.785 liters

### STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited. Do not reuse empty container.

**Pesticide Storage:** Keep container closed when not in use. Do not store near food or feed. Protect from freezing. In case of spill or leak on floor or paved surfaces, soak up with sand, earth, or synthetic absorbent. Remove to chemical waste area.

**Pesticide Disposal:** Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these cannot be disposed of by use according to label instructions, contact your state pesticide or environmental control agency, or the hazardous waste representative at the nearest EPA regional office for guidance.

#### Container Disposal:

Non-refillable container: Do not reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Offer for recycling, if available or puncture and dispose of in a sanitary landfill, or incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

[non-refillable <5 gallons] Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

[non-refillable >5 gallons]: Triple rinse as follows: Empty the remaining contents into application equipment or mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use for disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

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11571 K-Tel Dr. Minnetonka, MN 55343

1-877-272-6747

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