STATE OF HAWAII
Department of Agriculture

ACCEPTED

LICENSE NO. 8914.2

SunSpray® Ultra-Fine®

SPRAY OIL

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

Active Ingredient:
Mineral Oil*. 98.8%

Inert Ingredient:
Emulsifier 1.2%

Total 100%

***Unsulfonated Residue of Mineral Oil . . . . . 92.0% Min**

***50% Distillation Point of Mineral Oil . . . . . 414.0°F**

***10%-90% Distillation Range of Mineral Oil . . . . . .65.0°F Max**

***Flash Point . . . . . 345.0°F**

Weight per Gallon . . . . . 7.1 lbs.

**Contains petroleum distillates*

KEEP OUT OF REACH OF CHILDREN

CAUTION

FIRST AID

If on skin or clothing:
Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes followed by washing with soap & water. Call a poison control center or doctor for treatment advice.

If swallowed:
Immediately call a poison control center or doctor.
DO NOT INDUCE VOMITING unless told to do so by a poison control center or doctor.
Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

If in eyes:
Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing the eye. Call a poison control center or doctor for treatment advice.

If inhaled:
Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, if possible. Call a poison control center or doctor for further treatment advice.

HOT LINE NUMBER
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-918-594-6000 for emergency medical treatment information.

NOTE TO PHYSICIAN
Contains petroleum distillates - vomiting may cause aspiration pneumonia.
Aspiration may occur after swallowing or vomiting and results in serious, and sometimes delayed, lung injury.

According to the California Safe Drinking Water and Toxic Enforcement Act of 1986 Regulations, otherwise known as "Proposition 65"- ATTENTION- This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

EPA Registration No. 86330-11
See Additional Precautionary Statements Inside Booklet.
See Directions For Use Inside Booklet.

PRODUCED FOR
HOLLYFRONTIER®
LUBRICANTS & SPECIALTY PRODUCTS

HollyFrontier Refining & Marketing, LLC
Plymouth Meeting Executive Campus
660 West Germantown Pike, Suite One
Plymouth Meeting, PA 19462 • 800-456-4786

PRECAUTIONARY STATEMENTS

Hazards to humans & domestic animals.
Caution: Harmful if absorbed through skin. Avoid contact with eyes, skin, or clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category G on an EPA chemical-resistance category selection chart.
Mixers, loaders, applicators, flaggers, and other handlers must wear: long-sleeve shirt and long pants,shoes plus socks, and chemical–resistant gloves made of Barrier Laminate or Viton. See engineering controls for additional 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.

ENGINEERING CONTROLS FOR AERIAL APPLICATIONS

Engineering Controls: Pilots must use an enclosed cockpit that meets the requirements listed in the WPS for agricultural pesticides [40 CFR 170.240(d)(6)].

USER SAFETY RECOMMENDATIONS

Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Users should 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.

ENVIRONMENTAL HAZARDS

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 washwater or rinsate. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Apply this product only as specified on this label.

STORAGE AND DISPOSAL

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

Pesticide Storage:
Store in a cool, dry, locked area out of the reach of children. Keep oil container tightly closed in storage to prevent entry of water.

Pesticide Disposal:
Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal:

Rigid, nonrefillable plastic containers equal to or less than 5 gallons:
Nonrefillable container. Do not reuse or refill the container. Offer for recycling, if available. Triple rinse (or equivalent) promptly after emptying. 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 1/4 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. If recycling is not available, puncture and dispose of container in a sanitary landfill or by incineration.

Rigid, nonrefillable containers greater than 5 gallons:
Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Triple rinse (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 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.

For Plastic containers greater than 5 gallons:
If recycling is not available, puncture and dispose of container in a sanitary landfill, or by incineration.

For Metal containers greater than 5 gallons:
If recycling is not available, puncture and dispose of container in a sanitary landfill, or by other procedures approved by State and Local authorities.

LIMITED WARRANTY AND LIABILITY

This product conforms to the description and is suitable for the uses set forth on this label but is strictly limited to those uses solely as directed under the specified label conditions, and only if purchased in the original unopened container. **TO THE EXTENT CONSISTENT WITH APPLICABLE LAWS, MANUFACTURER AND SELLER DISCLAIM ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE** (except as specified on this label). Buyer and all users shall assume all risk, liability and damage if this product is used, stored, handled or applied other than as specifically set forth on this label. **TO THE EXTENT CONSISTENT WITH APPLICABLE LAWS, LIABILITY OF MANUFACTURER AND SELLER AND USER'S REMEDIES SHALL BE LIMITED TO REFUND OF THE PURCHASE PRICE OR REPLACEMENT OF THE SPECIFIC QUANTITY INVOLVED. TO THE EXTENT CONSISTENT WITH APPLICABLE LAWS, IN NO EVENT SHALL MANUFACTURER OR SELLER BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

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. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 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 Worker Protection Standard. 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 Worker Protection Standard and that involves contact with anything that has been treated, such as soil or water, is: coveralls, shoes plus socks, and chemical-resistant gloves made of any waterproof material.

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 for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to protect 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 has been thoroughly mixed.
3. Add oil under agitation when tank is 3/4 full. Top off with water to form milky solution.

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.

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 300-400 gallons per acre or as low as 100 gallons per acre for smaller trees. For mature citrus trees this can be as much as 800-1500 gallons per acre. Dilute applications typically provide better coverage than concentrate applications.

CONCENTRATE APPLICATIONS (usually from 45 to 125 gallons spray per acre) may reduce coverage and effectiveness. Concentrate application includes the use of low volume (from 10 to 100 gallons spray per acre) sprayers. 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 M.P.H. to 4 M.P.H. is recommended depending on crop, crop size and target pest. Low volume applications of SunSpray Ultra-Fine Spray Oil will require approximately the same amount of oil per acre as dilute sprays but applied with much less water. Spray oil calculations should be based on no runoff of the oil phase of the mixture.

SPRAY DRIFT MANAGEMENT

A variety of factors including weather conditions (e.g., wind direction, wind speed, temperature, relative humidity) and method of application (e.g., ground, aerial, airblast) can influence pesticide drift. The applicator and grower must evaluate all factors and make appropriate adjustments when applying this product. Do not apply at wind speeds greater than 15 mph at the application site. Apply as a medium or coarser spray (ASABE standard 572), and the minimum volume mean diameter (VMD) for spinning atomizer nozzles.

If applying at wind speeds less than 3 mph, the applicator must determine if a) conditions of temperature inversion exist, or b) stable atmospheric conditions exist at or below nozzle height. Do not make applications into areas of temperature inversions.

GROUND-BASED EQUIPMENT APPLICATION: Apply using a nozzle height of no more than 4 feet above the ground or crop canopy. Do not apply at wind speeds greater than 15 mph at the application site. Apply as a medium or coarser spray (ASABE standard 572), and the minimum volume mean diameter (VMD) for spinning atomizer nozzles.

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. Helicopter only. Apply quantity of product shown for each listed crop for control of listed insects in sufficient water to make a minimum of 20 gals. dilute spray per acre. For aerial applications of agricultural products, do not release spray at a height greater than 10 feet above the ground, top of crops, or above the orchard canopy. The boom length must not exceed 90% of the rotor blade diameter. When applications are made with a cross-wind, the

swath will be displaced downwind. The applicator must compensate for this displacement at the downwind edge of the application area by adjusting the path of the aircraft upwind. Leave at least one swath unsprayed at the downwind edge ot the treated field. Do not apply at wind speeds greater than 15 mph at the application site. Apply as a medium or coarser spray (ASABE standard 572), and the minimum volume mean diameter (VMD) for spinning atomizer nozzles.

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: SunSpray Ultra-Fine Spray Oil may be mixed with other pesticides to improve the level of kill. Read and follow all directions and restrictions on the labels of the proposed tank-mix products. The combination of SunSpray Ultra-Fine Spray Oil 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 SunSpray Ultra-Fine Spray Oil. Always conduct a test spray for plant sensitivity before making a full-scale application.

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 SunSpray Ultra-Fine Spray Oil 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 SunSpray Ultra-Fine Spray Oil, however this list is not exhaustive: anilazine (Dyrene), captan (Captan), captofol (Difolatan), cyprex (Dodine), chlorothalnil (Bravo), dimethoate (cygon), dinocap (Karathene), dithianon (Delan), fentin hydroxide (Supertin) fentinacetate (Fentin), folpet (Folpet), methiocarb (Metmercapturon), oxythioquinox (Morestan), PMA(Agrosun), propargite (Omite), 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 SunSpray Ultra-Fine Spray Oil .

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. May cause discoloration.

Note: This pesticide is to be sold only in this original unopened container.

TABLE 1A

Crop	Pest	Application Rate				Time of Application (Stage of Development)
		Dilute Spray Gal.Oil per 100 Gal. Water	Dilute Spray Quarts Oil per 25 Gal. Water	Concentrate Gallons Oil per acre	Aerial* Gallons Oil per acre	
Apples	Aphids (eggs) Apple Red Bug Mites (eggs) including European Red Mite Scales (hard and soft) Scurfy Scale Fruit Tree Leaf Roller (eggs)	2 2 2 2 2 2	2 2 2 2 2 2	6 - 8 6 - 8 6 - 8 6 - 8 6 - 8 6 - 8	6 - 8 6 - 8 6 - 8 6 - 8 6 - 8 6 - 8	Dormant through Tight-cluster
	Mites Scales	1 1 - 2	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	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	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 Postharvest.
Almonds Apricots Cherries	Aphids (eggs) Fruit Tree Leaf Roller (eggs) Tent Caterpillars San Jose Scale	2 2	2 2	6 - 8 6 - 8	6 - 8	Dormant or Delayed Dormant. Dormant
	Mites and Scales	1 - 1.5	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.

**Aerial application (helicopter only) should be used only as emergency application when soil conditions do not permit regular ground application.*

1 gallon of oil/100 gallons of water = 1 quart of oil/25 gallons of water = 32 fluid ounces of oil/25 gallons of water

1 quart = 0.95 liters. 1 gallon = 3.785 liters

TABLE 1A *(Continued)*

Crop	Pest	Application Rate				Time of Application (Stage of Development)
		Dilute Spray Gal.Oil per 100 Gal. Water	Dilute Spray Quarts Oil per 25 Gal. Water	Concentrate Gallons Oil per acre	Aerial* Gallons Oil per acre	
Peaches Nectarine	Aphids (eggs) Fruit Tree Leaf Roller (eggs) Mites (eggs) Peach Twig Borer (hibernaculae)	1 - 2	1 - 2	4 - 8	4 - 8	Dormant or Delayed Dormant.
	Cottony Peach Scale San Jose Scale	2	2	6 - 8		Dormant
	Mites Scales	1 - 2	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	1.5 - 2	4 - 6	4 - 6	Dormant or Delayed Dormant to 1/2" Green Tip
	Mites Scales	1 - 1.5	1 - 1.5	4 - 6	4 - 6	Summer (Foliar or Cover) or Postharvest. Do not apply over certain fresh market fruits after bloom starts to form as the oil spray will remove the waxy bloom. Application should not be made over oil sensitive varieties.
Pecans	Aphids (eggs) Scales Mites (eggs)	2	2	6 - 8	6 - 8	Dormant
	Aphids Mites	1 - 1.5	1 - 1.5	4 - 6	4 - 6	Summer (Foliar or Cover) or Postharvest

Aerial application (helicopter only) should be used only as emergency application when soil conditions do not permit regular ground application.

1 gallon of oil/100 gallons of water = 1 quart of oil/25 gallons of water = 32 fluid ounces of oil/25 gallons of water
1 quart = 0.95 liters. 1 gallon = 3.785 liters

TABLE 1A *(Continued)*

Crop	Pest	Application Rate				Time of Application (Stage of Development)
		Dilute Spray Gal.Oil per 100 Gal. Water	Dilute Spray Quarts Oil per 25 Gal. Water	Concentrate Gallons Oil per acre	Aerial* Gallons Oil per acre	
Walnuts	Aphids (eggs) Scales Mites (eggs)	4 - 6	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 (200 gal. water/acre)	4 - 6	NR	NR	Foliar - Late Spring to early Summer when the leaves are fully expanded

NR = Not Recommended

1 gallon of oil/100 gallons of water = 1 quart of oil/25 gallons of water = 32 fluid ounces of oil/25 gallons of water
1 quart = 0.95 liters. 1 gallon = 3.785 liters

TABLE 1B

Crop	Pest	Application Rate			Comments
		Dilute Spray Gal.Oil per 100 Gal. Water	Dilute Spray Quarts Oil per 25 Gal. Water	Concentrate Gallons Oil per acre	
Lemons and Grapefruit*	Mites Scales including California Red Scale	1.0 - 1.4 1.0 - 1.6	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 & Valencia Oranges, Other Citrus 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 - 1.3 1.3 - 1.6 1.0 - 1.3 1.0 - 1.3	1.0 - 1.4 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.

**Citrus: Do not exceed a maximum of 159 pounds active ingredient (in a maximum volume of 1500 gallons of spray mix per acre) when treating citrus inTexas and Florida. Do not exceed a maximum of 212 pounds of active ingredient (in a maximum volume of 2000 gallons of spray mix per acre) when treating citrus in California.*

1 gallon of oil/100 gallons of water = 1 quart of oil/25 gallons of water = 32 fluid ounces of oil/25 gallons of water
1 quart = 0.95 liters. 1 gallon = 3.785 liters

TABLE 2 SHADE TREES, SHRUBS, ORNAMENTALS, FLOWER AND FOLIAGE PLANTS, CHRISTMAS TREES

Crop or Plant	Pest	Application Rate: Gallons Oil per 100 Gallons	Application Rate: Quarts Oil per 25 Gal. Water	Time of Application
Shade Trees* and Shrubs including Conifers, Deciduous Broadleaf Evergreens & Woody Ornamentals	Aphids Adelgids Eriophyid 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	2 - 3	2 - 3	Winter Dormant Period
Ornamental Trees* and, Shrubs including: Conifers, Deciduous and Broadleaf Evergreens located along city streets, other rights-of-ways and in or around habitable buildings		1 - 2	1 - 2	Summer (Foliar or Cover)
Flowering and Foliage plants including Roses and other Flowering Shrubs		2 - 3	2 - 3	Winter Dormant Period
Foliage Ornamentals & Bedding Plants		1 - 2	1 - 2	Summer (Foliar or Cover)
Christmas Trees*	Aphids Adelgids Scale (soft & hard) (immature) Spider Mites	2 - 3	2 - 3	Winter
		1 - 2	1 - 2	Summer

** 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, Chamaecypris, 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.*

NOTICE: *Make no more than 4 spray applications per year. Allow at least 2 weeks to pass between consecutive spray applications. SunSpray Ultra Fine Spray Oil 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, reduce rate to 2 gallons oil per 100 gallons water, or 2 quarts oil per 25 gallons water, and limit use only to: American Red Oak, Japanese Black Pine, Dogwood, Weeping Cherry, Cornelian Cherry, Crabapple, Norway Maple, Purple Leaf Plum.*

1 gallon of oil/100 gallons of water = 1 quart of oil/25 gallons of water = 32 fluid ounces of oil/25 gallons of water

1 quart = 0.95 liters. 1 gallon = 3.785 liters

Powdery Mildew Control on Ornamentals:

Apply a rate of 1-2 gallons SunSpray Ultra-Fine Spray Oil per 100 gallons water (1-2 quarts SunSpray Ultra-Fine Spray Oil per 25 gallons water) 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. SunSpray Ultra-Fine Spray Oil 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 (1 quart of product per 25 gallons water) except for greenhouse-grown roses for the cut flower market where the concentration shall not exceed 0.5 gals SunSpray Ultra-Fine Spray Oil/ 100 gals water (0.5 quart SunSpray Ultra-Fine Spray Oil/25 gallons water) if applied weekly. A test spray should be conducted due to increased sensitivity of greenhouse grown plants.

TABLE 3 SMALL FRUITS

Crop	Pest	Application Rate		Time of Application
		Gallons Oil per 100 Gallons	Quarts Oil per 25 Gal. Water	
Caneberries	Aphids Leafhopper Mites Whitefly Psyllid	2 1 2	2 1 2	Dormant Spring - Summer Postharvest
Cranberries	Leafhopper Scale Mites	1 - 2	1 - 2	As needed
Blueberries	Thrips Mites Sawfly (eggs) Scales	2 2 2 3	2 2 2 3	Foliage Foliage Dormant
Strawberries	Aphids Mites	1	1	Dormant and Foliage

1 gallon of oil/100 gallons of water = 1 quart of oil/25 gallons of water = 32 fluid ounces of oil/25 gallons of water
1 quart = 0.95 liters. 1 gallon = 3.785 liters

TABLE 3 SMALL FRUITS *(Continued)*

Crop	Pest	Application Rate			Time of Application
		Dilute Spray	Dilute Spray Quarts Oil per 25 Gal. Water	Concentrate Spray* (40-100 Gals. Spray per Acre)	
Grapes	Mealybug	4 - 6 Gal. with 200 to 300 Gal. water/acre	2 quarts oil with 25 Gal water per acre	NR	Dormant - A tank mix using an insecticide improves control.
	Mites	2 gal. per 100 gal. water	2 quarts oil per 25 Gal water	NR	Bud swell or shoot growth of 5 - 7 cm (2-3 in) in spring.
	Mealybug	Not recommended		4	Spray when crawlers are active and exposed usually around early Summer.
	Leafhopper	Not recommended		4	Spray during first brood, if possible. Sprays after grapes are more than 1/4" diameter may affect bloom.
	Mites	2 gal. per 100 gal. water	2 quarts oil per 25 Gal water	NR	Postharvest
	Powdery Mildew	1 gal. per 100 gal. water	1 quart oil per 25 Gal water	NR	Begin Application after budbreak 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.

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 SunSpray Ultra-Fine Spray Oil treatments has been seen in the vineyards of cabernet, merlot, chardonnay or ribier when used for insect control. Do not mix SunSpray Ultra-Fine Spray Oil with dicofol (Kelthane), 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.*

NR = Not Recommended

1 gallon of oil/100 gallons of water = 1 quart of oil/25 gallons of water = 32 fluid ounces of oil/25 gallons of water

1 quart = 0.95 liters. 1 gallon = 3.785 liters

TABLE 4 VEGETABLES: OUTDOOR AND GREENHOUSE

Crop	Pest	Application Rate		Time of Application
		Gallons Oil per 100 Gallons	Quarts Oil per 25 Gal. Water	
Asparagus **Beans** **Beets** **Cabbage** **Cauliflower and other cole crops** **Celery** **Corn** **Cucurbit** **Eggplant** **Lettuce** **Melon** **Pepper** **Potato** **Radish** **Squash** **Sweet Potato** **Tomato** **Tobacco** **Herbs and Spices:** **Basil** **Lemon Balm** **Mexican Oregano** **Spearmint**	Aphids Mites Beetle Larvae Leafminers Thrips Leafhopper Whitefly	1 - 2	1 - 2	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 SunSpray Ultra-Fine Spray Oil at the specified rate range, conduct a small test on 1or 2 plants of the specific variety to be treated.

Disease Control on Vegetables

Apply a rate of 1-2 gallons SunSpray Ultra-Fine Spray Oil per 100 gallons water (1-2 quarts SunSpray Ultra-Fine Spray Oil per 25 gallons water) 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 others of the vegetables listed in ***TABLE 4****, first conduct a small test spraying before treating the whole crop. Limit greenhouse applications to the rate of 1 gallon of product per 100 gallons of water (1 quart of product per 25 gallons of water).*

1 gallon of oil/100 gallons of water = 1 quart of oil/25 gallons of water = 32 fluid ounces of oil/25 gallons of water
1 quart = 0.95 liters. 1 gallon = 3.785 liters

TABLE 5 FIELD CROPS

Crop	Pest	Application Rate		Time of Application
		Gallons Oil per 100 Gallons	Quarts Oil per 25 Gal. Water	
Alfalfa	Aphids	2	2	Do not exceed 4 applications in a growing season. Space applications at intervals of approximately 2 weeks.
Corn (sweet & field)	Mites	2	2	
Cotton	Leafminers	2	2	
Peanuts	Corn Earworm, Rootworm	1 - 2	1 - 2	
Soybeans	Whitefly	2	2	
Sugar Beets		2	2	

1 gallon of oil/100 gallons of water = 1 quart of oil/25 gallons of water = 32 fluid ounces of oil/25 gallons of water
1 quart = 0.95 liters. 1 gallon = 3.785 liters

TABLE 6 GREENHOUSE

Crop or Plant	Pest	Application Rate		Specific Comments
		Gallons Oil per 100 Gallons	Quarts Oil per 25 Gal. Water	
Ageratum **Crown of Thorns** **Dieffenbachia** **Ferns** **Ficus** **Lisianthus** **Orchid** **Palms** **Petunia** **Poinsettia** **Schefflera** **Sunflower**	Aphids Fungus Gnats Leafminers Mealybugs Scales (soft & hard) Spider Mites Thrips Whitefly	1	1	Due to varietal differences in response to a treatment of SunSpray Ultra-Fine Spray Oil at the specified rate, conduct a small test on 1 or 2 plants of the specific variety to be treated.
Leaf Polish for hardy plants.		1	1	

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 oil/100 gallons of water = 1 quart of oil/25 gallons of water = 32 fluid ounces of oil/25 gallons of water
1 quart = 0.95 liters. 1 gallon = 3.785 liters

TABLE 6 GREENHOUSE *(Continued)*

Crop or Plant	Pest	Application Rate		Specific Comments
		Gallons Oil per 100 Gallons	Quarts Oil per 25 Gal. Water	
Aglaonema **Aster** **Azaleas** **Begonias** **Browallia** **Camellias** **Carnation** **Celosia** **Chrysanthemum** **Coleus** **Cosmos** **Dusty Miller** **Easter Lilies** **Gardenias** **Geranium** **Gerbera** **Hellichrysum** **Hibiscus Foliage** **Hydrangea** **Impatiens** **Jade Plant** **Marigold** **New Guinea Impatiens** **Nicotonia** **Philodendron** **Portulaca** **Reiger Begonias** **Snapdragon** **Vinca** **Zinnias**	Aphids Fungus Gnats Leafminers Mealybugs Scales (soft & hard) Spider Mites Thrips Whitefly	1 - 2	1 - 2	Due to varietal differences in response to a treatment of SunSpray Ultra-Fine Spary Oil at the specified rate range, conduct a small test on 1 or 2 plants of the specific variety to be treated.

1 gallon of oil/100 gallons of water = 1 quart of oil/25 gallons of water = 32 fluid ounces of oil/25 gallons of water
1 quart = 0.95 liters. 1 gallon = 3.785 liters

TABLE 7 INTERIORSCAPES*

Plant	Pest	Application Rate		Comments
		Gallons Oil per 100 Gallons	Quarts Oil per 25 Gal. Water	
Dieffenbachia **Dracaena** **Ferns** **Palms** **Schefflera**	Aphids Leafminers Mealybugs Scales Spider Mites Whitefly	1	1	Do not apply to plants in direct sunlight behind glass. Due to varietal differences in response to a treatment of SunSpray Ultra-Fine Spray Oil at the specified rate range, conduct a small test on 1or 2 plants of the specific variety to be treated.
Chrysanthemum **Gardenias** **Jade Plant** **Philodendron**		1 - 2	1 - 2	

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

Miscellaneous:

Figs: Dormant or Delayed Dormant: Fig Scale - Use 3 Gals. in 100 Gals. water (3 quarts in 25 Gals. Water) as a foliar spray: Mites, Mealybug, Scale - Use 2 Gals. per 100 Gals. Water (2 quarts in 25 Gals. Water).

Olives: Post bloom through August and Postharvest : Scales - Use 1.5 gals. per 100 Gals. water. (1.5 quarts in 25 Gals. Water). Apply at 400 to 800 Gals. per acre .

Bananas, Plantains: Use as needed to control Yellow Sigatoka Disease - Use 1 - 1.5 Gal. per 100 Gals. water (1 - 1.5 quarts in 25 Gals. Water). This application is also effective in loosening Sooty Mold Fungus and in limiting its formation by the control of Aphids, Mealybugs, Scales and Whitefly.

Avocado (Haas Only) and Mangos: Use 1 - 1.5 Gals. per 100 Gals. water (1 - 1.5 quarts in 25 Gals. Water). as needed to control Aphids, Mealybugs, Mites, Scales and Whitefly.

Persimmons: Use 1 Gal. per 100 Gals. water (1 quart in 25 Gals. Water) for control of Leafrollers, Scale and Book Lice (pscocids).

1 gallon of oil/100 gallons of water = 1 quart of oil/25 gallons of water = 32 fluid ounces of oil/25 gallons of water

1 quart = 0.95 liters. 1 gallon = 3.785 liters

PRODUCED FOR

HOLLYFRONTIER®

LUBRICANTS & SPECIALTY PRODUCTS

HollyFrontier Refining & Marketing, LLC
Plymouth Meeting Executive Campus • 660 West Germantown Pike
Suite One • Plymouth Meeting, PA 19462 • 800-456-4786

#11 SS-3191 12-15-14