Surround® WP

Crop Protectant

Department of Agriculture
STATE OF HAWAII
LICENSED
PERIOD 2008-2010 LIC. NO.

Department of Agriculture
STATE OF HAWAII
LICENSED
PERIOD 2011-2013 LIC. NO.

Department of Agriculture
STATE OF HAWAII
LICENSED
PERIOD 2014-2016 LIC. NO.
8046.7

Surround WP crop protectant forms a barrier film, which acts as a broad spectrum agricultural crop protectant for controlling damage from various insect and disease pests, growth enhancer, and as a protectant against sunburn and heat stress.

NOT A PLANT FOOD INGREDIENT

ACTIVE INGREDIENT:

Kaolin 95.0%

OTHER INGREDIENTS: 5.0%

TOTAL: 100.0%

KEEP OUT OF REACH OF CHILDREN

CAUTION/PRECAUTION

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

FIRST AID	
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 eye. • Call a poison control center or doctor for 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 1-800-877-1737 for emergency medical treatment information.	

The use of **Surround WP** in agricultural crop protection applications is covered by US Patents 6,027,740; 6,069,112; 6,110,867 and 6,156,327.

EPA Reg. No. 61842-18 **EPA Est. No. 51036-GA-001**

Growth enhancer uses are not registered in California.

Product of U.S.A.
Produced for:
Tessenderlo Kerley, Inc.
2255 N. 44th Street, Suite 300
Phoenix, AZ 85008 USA
1-800-525-2803

OMRI™ Listed
Organic Materials Review Institute

For Organic Production

Net Contents: 25 pounds (11.34 kg) **FPO Item # NSV1SPUS0508**

PRECAUTIONARY STATEMENTS

HAZARD TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

PERSONAL PROTECTIVE EQUIPMENT (PPE)
Applicators and other handlers must wear:
- Long sleeved shirt
- Long pants
- Socks and shoes
- Dust/mist-filtering respirator (MSHA/NIOSH approval number prefix TC-21C), or a NIOSH approved respirator with any N, R, P or HE filter.

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (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.

Nuisance dust masks and goggles provide the best protection for harvesters especially when plants are shaken during harvest.

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

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. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

For terrestrial uses: **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.

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 in a way that will contact workers or other persons, either directly or through drift. Only protected handlers can 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.

DO NOT apply **Surround® WP crop protectant** through any type of irrigation system.

Use **Surround WP** in accordance with directions on this label.

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, in forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment. In nurseries and greenhouses workers are prohibited in the treated area and 25 feet in all directions of the nursery or the enclosed treated area until application is complete. **The restricted-entry interval (REI) is 4 hours from the time of application. DO NOT enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours unless wearing appropriate PPE.** Personal protection equipment required for early entry workers are long-sleeved shirts, long pants, and shoes plus socks.

I. GENERAL INFORMATION

Surround® WP crop protectant forms a mineral-based particle film intended for protection of agricultural crops, plants in nurseries, and greenhouses. When **Surround WP** is applied to plants, a dry white film results. Many pests are listed as suppressed, which means that full control often is not achieved, and supplemental methods often are needed to enhance the level of control. **Thorough, uniform, and consistent coverage is essential throughout the infestation or stress period.**

Pre-harvest intervals (PHI): Surround WP may be applied up to the day of harvest.

For fresh market crops that will not be washed or for field packed crops where a residual white film is not desired, make applications early-season only. White residue at harvest may be minimized if applications to smooth skin crops like apples stop when the fruit is approximately 1/4 of its expected size.

Plant Response Precautions: Surround WP keeps plant surfaces cooler and an advance or delay in maturity may result. Pome and stone fruit may have maturity delays of 3 to 7 days, especially in cool regions.

A. MIX INSTRUCTIONS:

For Agitating Sprayer Tanks

1. Slowly add **Surround WP** powder into the water in a recirculating sprayer tank, making sure to keep agitation brisk. **DO NOT** add **Surround WP** to a sprayer tank that does not have adequate agitation. A pre-mix tank can speed up loading operations if sprayer does not have mechanical agitation. Add directly into the mix basket if pump recirculation empties into the mix basket. If there is no mix basket, add **Surround WP** very slowly to the recirculating water. Avoid dumping **Surround WP** directly into the pump intake area as this could plug the filter or intake. Mix thoroughly.
2. Add tank mix pesticides, if any. See compatibility section below before adding any tank mix pesticides.
3. Continue agitation until all of the material is sprayed from the tank.
4. At the end of the application, spray until empty and flush system and nozzles with fresh water. Periodically check in-line strainer and clean if necessary. Properly dispose of rinse water.

For Non-agitating Sprayer Tanks, Such as Handheld and Backpack Sprayers

The following mixing sequence must be followed:

1. Use **Surround WP** powder at a rate of 1/4 to 1/2 lb of **Surround WP** powder per one gallon of water. One-half pound is approximately 3 cups. For sprayers difficult to shake, premix in a 5 gallon bucket per the directions below and pour suspension into sprayer.
2. Add **Surround WP** powder into 1/4 to 1/2 of the water that will be used in the batch to allow adequate space for vigorous shaking. Allow **Surround WP** to wet and sink into the water slowly.
   DO NOT fill with a hose or shake the container while powder is floating on top of the water.
3. Mix thoroughly by shaking the closed container vigorously for 30 seconds.
4. Add tank mix pesticides, if any. See compatibility section below before adding any tank mix pesticides.
5. Add the remainder of the batch water and shake the closed container for an additional 30 seconds.
6. Shake the sprayer occasionally during application.
7. At the end of the application, spray until empty and flush system and nozzles or, blow air pressure out of the line and nozzle (usually by upending) and store in a cool place. Apply the leftover mix within two to three weeks to avoid spoilage. Rinse the sprayer and allow to air-dry before the next batch.

B. COMPATIBILITY:

Surround WP is not generally affected by most other insecticides, miticides, and fungicides. However, to ensure compatibility, test tank mixes before use. When mixing with other products, make up a small batch and observe slurry and film characteristics. Curdling, precipitation, spray beading and/or excessive run-off leading to lack of film formation, or changes in viscosity are signs of incompatibility. **Add tank mix pesticides after the Surround WP powder has been added.** Use of anti-foaming agents can interfere with proper coverage. Oil tank mixes can temporarily reduce the whiteness of the

film. Use adequate water on oversprays of products that require absorption into the plant to ensure wetting of the **Surround WP** film.

Tank mixing with other white mineral particulate products such as diatomaceous earth, or other sunburn materials, such as those containing wax, latex or polymer based materials, can lead to postharvest washoff problems. Applications of **Surround WP** over such products or oversprays of such products over **Surround WP** can also impair post harvest wash off.

C. GENERAL APPLICATION INSTRUCTIONS (see also, specific crop use instructions):

Rates: Rate is dependent on the amount of foliage that needs to be covered.

Concentration (the amount of **Surround WP** per 100 gallons of water): The best concentration of **Surround WP** is between 25 to 50 lbs **Surround WP** per 100 gallons, but concentrations of up to 100 lbs per 100 gallons are allowed for specific crop uses.

Coverage: Use sufficient spray volume to obtain thorough **near-drip** coverage. Two or more applications are desirable for complete coverage. For optimal performance as an insecticide, applications must coat all portions of plant that are to be protected, including both sides of the leaves. Apply an additional spray if coverage is insufficient. Spreading on waxy plant surfaces is usually better when the plant surface is warm.

Dwarf, semi-dwarf, and otherwise well-pruned trees will be easier to cover than large trees. Optimum efficacy often is more difficult to achieve in large trees due to increased difficulty achieving thorough coverage.

Applications to tree crops can be made with commercial air blast or high-pressure sprayers that provide enough air turbulence to coat both sides of the leaves, bark, and fruit. The best coverage is achieved at a tractor speed of less than 3 mph when using airblast sprayers.

Plant Color Change: Plant surfaces will typically turn a hazy white color after drying. Additional treatments will turn the plant surfaces a deeper white. This is normal, and indicates appropriate film formation.

Foliage Dryness: Applications to dripping wet foliage can provide inadequate coverage.

Under Hot, Dry Conditions: Best results are obtained with nozzles that produce a fine spray when using **Surround® WP crop protectant** under normal temperature and humidity conditions. Under very hot and dry conditions, increase volume of water and droplet size to improve deposition.

Spray Methods: Air blast, high-pressure handgun, or boom sprayers provide the best results. **DO NOT** apply by chemigation. Observe specific crop label instructions for directions regarding spray volume. Calibrate spray equipment per equipment manufacturer to deliver the required volume. At given concentrations, the flow rate of suspended **Surround WP** is similar to water. Strainers, preferably no finer than 40 mesh, in the spray system and behind each nozzle per normal practice help to reduce nozzle clogging.

When the dry foliage has lost its white appearance or when gently rubbing the treated area with a dark piece of cloth does not leave a white residue on the cloth, reapplication is necessary. Heavy rainfall, new growth, and wind erosion will affect film quality. Reapply to re-establish coverage after heavy rain as soon as the foliage is dry. However, reapplication often is not necessary if all target surfaces remain thoroughly coated and insect pressure is light. Excessively thick coatings can provide poor performance.

Overhead Irrigation and Overhead Cooling: Overhead irrigation is not preferred. **DO NOT** use with overhead cooling.

Aerial Application: Surround WP applied by air will reduce heat stress and sunburn damage if sufficient coverage can be achieved and maintained. Aerial applications often are not effective for controlling insects or diseases.

It is best when using aerial applications to take all precautions needed to minimize or eliminate drift, e.g., **DO NOT** spray under windy or gusty conditions. It is best to make applications not more than ten feet above the top of the largest plant unless a greater height is required for aircraft safety. It is best when making applications at low relative humidity to increase droplet size to compensate for evaporation.

Non-Target Surfaces: DO NOT spray where the resulting visible white film will be undesirable or cannot be washed off, such as porous wood, masonry, asphalt, and other valuable goods.

D. GROWTH ENHANCER, SUNBURN AND HEAT STRESS PROTECTANT:

When applied at given rates and frequencies, benefits such as increased plant vigor and improved yields typically occur on many crops. Under high ambient temperatures, **Surround WP** reduces canopy temperature and, therefore, can help to reduce heat and water stress. When **Surround WP** is used, many fruits have shown improved fruit color, soluble solids, smoothness, and size with less russet, dropping, sunburn, and cracking.

Sunburn Suppression: Apply to sunburn-prone fruit, leaf, or limb and trunk bark surfaces before conditions leading to sunburn occur. If initiating sprays for sunburn suppression where there have been no prior sprays, provide thorough coverage of all fruit or other plant surfaces prior to sunburn-causing conditions with one to two full rate applications 7 days apart. Depending upon the length of the high heat period, three to four applications in total often are needed, with subsequent applications every 7 to 21 days. Good coverage on typical semi-dwarf trees is best achieved with the initial one to two sprays at 50 lbs in 100 to 200 gallons per acre to achieve **near-drip** coverage on the fruit or other plant surfaces. However, if allowed (see specific crop group directions), up to 100 lbs/100 gallons are allowed when spray frequencies need to be reduced. Make subsequent applications at half to full rates if even coverage is maintained throughout the high heat period. Under windy conditions, **Surround WP** can be rubbed off by leaf movement making reapplication necessary.

Aerial Application: Aerial applications for sunburn and heat stress reduction are best made at concentrations of no more than 1 lb of **Surround WP** per 1 gallon of water. Use no less than 10 gallons per acre, but on trees 20 or more gallons per acre are preferred. Repeat applications 3 to 4 times per above intervals or as necessary to establish and maintain even coverage on fruit surfaces throughout the high heat period. See aerial applications under I C.

E. PACKING AND PROCESSING:

Washing is required unless only early season applications are made and the film weathers off before harvest. Most residues wash off with packing line brushing and forced water sprays. An approved washing detergent is typically helpful if used in the packing line and/or wash tank. Perform a pre-harvest washing trial to determine if a washing detergent is necessary. Waxing further improves fruit appearance.

For fresh market apples that will not be waxed, such as apples for organic markets or specific export markets that DO NOT accept waxed apples or for washed crops where traces of white residue are not acceptable: Unless washing facilities are adequate, cease applications enough in advance of harvest to allow residue to weather off completely. For 'Red Delicious' and 'Braeburn' apple varieties **DO NOT** apply any later than two months prior to harvest.

II. CROP GROUPS

A. TREE FRUIT:

Volume: Apply to **near-drip. DO NOT** apply to run-off to avoid waste and poor coverage. For typical semi-dwarf trees in full foliage, it is recommended to use 100 to 200 gallons per acre. Adjust volume per Tree Row Volume to achieve near-drip for larger or smaller trees.

Concentration (the amount of **Surround WP crop protectant** per 100 gallons of water): It is best to use 25 to 50 lbs **Surround WP** per 100 gallons of water, but concentrations of up to 100 lbs per 100 gallons are allowed. Early applications typically use 37.5 to 50 lbs per 100 gallons of water per acre while follow-up applications may only require 25 lbs per 100 gallons of water per acre.

Pome Fruits
Such as apple, crabapple, quince, pear, and loquat

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Pear psylla	50[1]	• On mature pear trees apply 100-200 gal/acre. • **Prebloom:** Apply 3 applications, applying every 7-10 days starting at delayed dormant, but no later than green cluster bud. • **Petal Fall:** Apply 3 applications, applying every 7-14 days starting at first petal fall. • Spring populations can be reduced with a fall or winter application.

Insects **Pear:** Cutworms, pear midge, pear slug **Apple:** Apple sucker, climbing cutworm, eastern tent caterpillar, European apple sawfly, Gypsy moth, Japanese beetle, June beetle **Pear and Apple:** Grasshoppers, green fruit worm, leafrollers, Lygus bug, Mormon cricket, periodical cicada, stink bug, tarnished plant bug, thrips	25-50	Suppression only*. Start before infestation and continue at 7-14 day intervals. **DO NOT** widen respray interval past 14 days.
Apple or Pear Diseases Fabrea leafspot	25-50	Suppression only*. Apply prior to conditions favoring disease development and maintain coverage throughout the disease infection period. Supplements are generally necessary especially in high-pressure areas.
Over-wintering leafrollers, especially obliquebanded leafroller (OBLR)		Apply 2 sprays 7 days apart starting just prior to green tip or at initial emergence of leafroller larvae.
Leafhoppers[2]		Apply first spray within 3 days of first petal fall or at initial infestation. Continue every 7-14 days during infestation period.
Lacanobia		• **Oviposition:** Apply at least one spray at start of oviposition. A second spray within 5-7 days improves efficacy. • **Egg Hatch:** Apply 2-3 sprays starting at initial egg hatch and continuing at 7-day intervals. • Using **Surround WP** for the later generation of lacanobia is allowable if fruit will be thoroughly washed prior to picking or packing.
Apple maggot		Apply 2 sprays 7 days apart before expected oviposition or first detection of infestation. Continue applications every 7-14 days to keep fruit completely covered during egg lay period.
Codling moth (first generation only), oriental fruit moth, plum curculio		Suppression only*. Apply at biofix or first detection. Continue applications every 7 days to keep fruit completely covered during egg lay period.
Sunburn and heat stress		See I D.

[1]Rates of 100 lbs in 100 to 200 gallons allowed on pear trees during prebloom for high infestation.
[2]Applications at petal fall can sometimes disrupt leaf miner parasitism, requiring control measures.
*If complete control is needed, consider using supplemental controls.

Horticultural Benefits
Surround WP often enhances fruit quality (see I D for general horticultural benefits) if applications start at petal fall and are continued until mid to late season. For petal fall applications, see footnote 2 above about leaf miner. Many pear cultivars, particularly Comice and Anjou varieties, have shown improved fruit color, smoothness, and size with less russet when **Surround WP** is used. Some apple cultivars have shown less bitter pit and corking in season-long programs.

Diseases
Surround WP sometimes can enhance the efficacy of wettable sulfur and/or lime-sulfur against scab, powdery mildew, sooty blotch, and flyspeck. See Product Guides for specific mixture directions. The use of wettable type sulfurs are preferred if tank mixing sulfur with **Surround WP**. **DO NOT** tank-mix elemental sulfurs with **Surround WP**.

Non-waxed Fresh Apples and Pears (also, see I E)
For fresh market apples and pears that will **not** be waxed, such as fruit for organic markets or specific export markets that **DO NOT** accept waxed fruit: It is best that **Surround WP not** be applied any later than two months prior to harvest as slight traces of white sometimes can still be visible after washing. This especially applies to 'Red Delicious' and 'Braeburn' cultivars.

Stone Fruit
Such as apricot, sweet or tart cherries, nectarine, peach, plum, pluot, plumcot[1], and prune

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Japanese beetle, rose chafer	25-50	Suppression only*. Start one week prior to expected infestation and follow with 3-4 applications at 5-7 day intervals.
Obliquebanded leafroller (OBLR), thrips		Suppression* only for OBLR. Start at pink bud and continue applications at 5-7 day intervals through jacket split.
Leafhoppers including sharpshooters		Suppression only*. Start before expected infestation, if possible. • **Until harvest:** Apply at 7-14 day intervals up to bloom. • **Post harvest:** Apply 2 or more applications at 7-14 day intervals.
Cherry fruit flies, grasshoppers, June beetle, leafhoppers, navel orange worm, oriental fruit moth		Suppression only*. Start before expected infestation, if possible, and continue at 7-14 day intervals.
Plum curculio		Suppression only*. Apply at 7 day intervals throughout egg laying period.
Sunburn and heat stress[1]	25-100	See I D.
[1]Rate of 100 lbs in 100 to 200 gallons are allowed for post-harvest sunburn and heat stress use. *If complete control is needed, consider using supplemental controls.		

Special Directions
Special Washing Considerations for Stone Fruit: For fresh market fruit, special washing is required; especially for fuzzy peaches. Most residues wash off with brushing and forced water sprays. An approved fruit cleaning detergent can be used in packing line and/or wash tank. Prior to brushing, a pre-soak in approved fruit cleaning detergent is usually needed for fuzzy peaches. A pre-harvest washing trial is a good practice to determine if a detergent is necessary. Waxing further improves fruit appearance. If fresh market stone fruit cannot be washed as noted above, discontinue sprays when the fruit are approximately 3/4 inch in diameter. Residues of **Surround WP crop protectant DO NOT** affect processed fruit quality.

If cherries are for fresh market, discontinue application when fruit are half size (approximately 1/4 inch) if no washing is available.

Citrus Fruits
Such as lemon, lime, grapefruit, mandarin, satsuma mandarin, pummelo, mandarin, tangelos, kumquat, and oranges

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Thrips	50-75[1]	Start at pre-bloom. Continue at 5-7 day intervals throughout bloom. Post-bloom continue at 7-14 day intervals through infestation.
Leafhoppers including sharpshooters		Suppression only*. • Apply every 7-14 days as infestation occurs. • **Near-harvest:** Apply at least 2 applications 7 days apart for pre-harvest control of sharpshooters.
Citrus psyllid, diaprepes root weevil, grasshoppers		Suppression only*. Apply every 7-14 days as infestation occurs.
Sunburn and heat stress		See I D.
[1]50 lbs per 200 gallons per acre preferred for 12 foot trees. *If complete control is needed, consider using supplemental controls.		

B. NUT CROPS:

Volume: Apply to **near-drip**, not to excessive run-off. For 20-foot trees, it is best to use 200 gallons per acre. Large trees like walnut and pecan can require up to 300 gallons per acre.

Concentration (the amount of Surround WP per 100 gallons of water): It is best to use 25 to 50 lbs Surround WP per 100 gallons of water.

Tree Nuts
Such as almond, beech nut, Brazil nut, butternut, chestnut, cashew, filbert, hickory nut, macadamia nut, pecan, walnut, and including pistachio

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Aphids such as pecan, black, and yellow aphid, codling moth, grasshoppers, husk fly, leafhoppers, naval orangeworm, stink bug	50-75[1]	Suppression only*. Start at biofix or as infestation occurs. Apply every 7-14 days throughout infestation. For codling moth, apply a minimum of 2 sprays per generation.
Sunburn and heat stress		See I D.
[1]50 lbs per 200 gallons per acre preferred. *If complete control is needed, consider using supplemental controls.		

c. Small Fruits:

Volume: Apply to **near-drip**. **DO NOT** apply to run-off to avoid waste and poor coverage. The volume of water/acre required will increase throughout the growing season in relationship to the increasing size of the crop and its foliage.

Concentration (the amount of **Surround WP crop protectant** per 100 gallons of water): It is best to use 25 to 50 lbs **Surround WP** per 100 gallons of water.

Berries
Such as blackberry, raspberry, dewberry, boysenberry, loganberry, elderberry, blueberry, ribes such as currant and gooseberry, and including cranberry

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Blackberry psyllid, grasshoppers, Japanese beetle, leafhoppers, leafrollers, plum curculio, rose chafer, thrips	25-50[1]	Suppression only*. Begin applications after fruit set and prior to infestation, applying every 7-14 days.
Blueberry maggot		Suppression only*. Apply 2 sprays 7 days apart before expected infestation or first detection of infestation. Continue applications every 7-14 days during egg lay period.
Sunburn and heat stress		See I D.
[1]25 lbs per 50 gallons per acre preferred. *If complete control is needed, consider using supplemental controls.		

Special Directions
Apply on fresh market berries only up to the first three weeks after fruit set as trace residues can be difficult to remove after harvest. Application of plain water via normal sprayer prior to harvest can help to reduce **Surround WP** residues. Processing blueberries can be washed using detergent and water sprayers capable of rinsing away residues in the packing line. Minor residues of **Surround WP** on blueberries for processing are acceptable provided no other pesticides are also present.

Grapes

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Thrips	25-50[1]	Apply 1-2 applications 7 days apart when pest reaches treatment threshold.
Rose chafer, omnivorous leafroller, grape leafroller, grape leaf folder, grasshoppers, grape leaf skeletonizer, Japanese beetle, June beetle		Suppression only*. Start at biofix or as infestation occurs, applying a minimum of 2-3 applications by applying every 7-14 days.
Leafhoppers including sharpshooter		Apply initial application as infestation occurs, applying at least 2-3 applications by applying every 7-14 days throughout the infestation.
Sunburn and heat stress		See I D.
[1]25 lbs in 50 gallons per acre preferred. *If complete control is needed, consider using supplemental controls.		

Special Directions
Wine grapes: Harvest parameters can be altered and maturity can be delayed especially in white wine varieties. Closely monitor harvest parameters to determine optimal time to harvest. Changes in harvest parameters can affect final taste. Wine grapes sprayed up to veraison will have minimal adherence to berries. Applications after veraison will adhere more on grape berries.

Raisin grapes: It is best that raisin grapes be sprayed only up to bunch closing. Infestations can be sprayed up to first bloom, and again after harvest.

Table grapes: DO NOT spray table grapes from first bloom to harvest as white residue can remain on the rachis and fruit until harvest. Infestations can be sprayed up to first bloom, and again after harvest.

D. FIELD VEGETABLES:

Volume: Apply to **near-drip**. **DO NOT** apply to run-off to avoid waste and poor coverage. The volume of water/acre required will increase throughout the growing season in relationship to the increasing size of the crop and its foliage. Seedlings will need less water and a lower amount of **Surround WP crop protectant** than fully mature plants to uniformly coat their surfaces. Adjust the volume of water and rate used throughout the season based upon plant size. Lower volumes and rates are typically used only for immature plants.

Concentration (the amount of **Surround WP** per 100 gallons of water): It is best to use 25 to 50 lbs **Surround WP** per 100 gallons of water.

Legume Vegetables
Such as beans, pea, chickpeas, and soybean

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Bean leaf beetle, flea beetles, grasshoppers, Japanese beetle, leafhoppers, Mexican bean beetle, three cornered alfalfa hopper, thrips	25-50[1]	Suppression only*. Start prior to infestation, applying every 7-14 days throughout infestation.
Sunburn and heat stress	25-100	See I D.
*If complete control is needed, consider using supplemental controls.		

Special Directions
Only spray beans that are difficult to wash, such as string beans, when beans are small. **DO NOT** apply to other field and garden vegetables if they are intended for the fresh market and cannot be adequately washed after harvest to completely remove **Surround WP** residues. Minor residues of **Surround WP** on field and garden vegetables for processing are acceptable provided no other pesticides are also present.

Root and Tuber Vegetables
Such as potato, garden beet, sugar beet, horseradish, radish, ginseng, rutabaga, carrot, ginger, sweet potato, yams, and turnip

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Flea beetles, grasshoppers, leafhoppers	25-50	Suppression only*. Start prior to infestation, applying every 7-14 days throughout infestation.
Sunburn and heat stress		See I D.
*If complete control is needed, consider using supplemental controls.		

Fruiting Vegetables
Such as tomato, pepper[1] and including eggplant[1]

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Cucumber beetles, flea beetles, grasshoppers, leafhoppers, thrips	12.5-50[2]	Suppression only*. Start prior to infestation, applying every 7-14 days throughout infestation.
Sunburn and heat stress	25-100	See I D.
[1]For fresh market apply only up to 1/4 of fruit size unless washing capabilities are sufficient. [2]12.5 lbs/25 gallons preferred up to fruit set. *If complete control is needed, consider using supplemental controls.		

Bulb Vegetables
Such as onions, garlic, leek, and shallot

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Thrips	25-50	Suppression only*. Start prior to infestation and apply every 5-7 days throughout infestation. Good coverage down into the plant crown is essential for efficacy.
Sunburn and heat stress	25-100	See I D.
*If complete control is needed, consider using supplemental controls.		

Cucurbit Vegetables
Such as cucumber, summer and winter squash, pumpkin, citron melon, muskmelon, and watermelon

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Cucumber beetle, grasshoppers	25-50	Suppression only*. Start prior to infestation, applying every 5-7 days, with the first two applications 3 days apart.
Powdery mildew		Suppression only*. Apply every 7-14 days as required to maintain coverage.
Sunburn and heat stress	25-100	See I D.
*If complete control is needed, consider using supplemental controls.		

Brassica (Cole) Leafy Vegetables
Such as broccolis, brussels sprouts, Chinese cabbages, cauliflower, collards, cabbages, mustard greens, kale, kohlrabi, and including canola.

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Flea beetles, grasshoppers	25-50	Suppression only*. Use only in early season to avoid residue at harvest. Apply every 7-10 days making sure to wet the plant surface completely.
Sunburn and heat stress		See I D.
*If complete control is needed, consider using supplemental controls.		

Leafy Vegetables (Non-Brassica)
Such as arugula, celery, lettuces, parsley, rhubarb, and spinach

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Flea beetles, grasshoppers	25-50	Suppression only*. Use only in early season to avoid residue at harvest. Start prior to infestation. Apply every 3-5 days to maintain adequate coverage throughout infestation.
Sunburn and heat stress		See I D.
*If complete control is needed, consider using supplemental controls.		

Asparagus

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Common and spotted asparagus beetle, grasshoppers	12.5-25	Suppression only*. Start prior to infestation. Apply every 7-10 days being sure to maintain coverage throughout infestation.
Sunburn and heat stress		See I D.
*If complete control is needed, consider using supplemental controls.		

E. OTHER AGRICULTURAL CROPS:

Volume: Apply to **near-drip**. **DO NOT** apply to run-off to avoid waste and poor coverage. The volume of water per acre required will increase throughout the growing season in relation to the increasing size of the crop and its foliage.

Concentration (the amount of **Surround WP crop protectant** per 100 gallons of water): It is best to use 25 to 50 lbs **Surround WP** per 100 gallons of water.

Cotton

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Boll weevil, cotton fleahopper, flea beetles, grasshoppers, thrips	25-50	Suppression only*. Start prior to infestation. Spray every 7-14 days with the first two sprays 7 days apart.
Sunburn and heat stress		See I D.
*If complete control is needed, consider using supplemental controls.		

Cereal Grains and Nongrass Animal Feeds
Such as corn, popcorn, oats, barley, wheat, rice, sorghum, and alfalfa

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Armyworm, flea beetles, grasshoppers, leafhoppers, thrips	12.5-37.5	Suppression only*. Start prior to infestation. Apply every 5-10 days during infestation, with the first two applications 3 days apart. Tighten spray intervals during fast growing periods.
Sunburn and heat stress	25-100	See I D.
*If complete control is needed, consider using supplemental controls.		

Tropical Crops
Such as coffee, avocado, banana, guava, mango, passion fruit, starfruit, papaya, and pineapple

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Avocado looper, coconut bug, fruit flies, grasshoppers, leafhoppers, leafrollers, mango weevil, thrips	25-50	Suppression only*. Start prior to infestation. Apply minimum of 2 applications 7-14 days apart during application.
Sunburn and heat stress		See I D.
*If complete control is needed, consider using supplemental controls.		

Special Directions
Initial application over waxy surfaces such as mango fruit can bead and not spread adequately.

Miscellaneous Crops
Such as artichoke, fig, hops, globe, kiwifruit, olives, okra, paw paw, peanut, persimmon, pomegranate[1], and water chestnut

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Flea beetles, fruit flies, grasshoppers, leafhoppers, olive fruit fly, thrips	25-50	Suppression only*. Start prior to infestation. Spray every 7-14 days throughout infestation.
Sunburn and heat stress		See I D.
[1]Apply to pomegranates only post harvest. *If complete control is needed, consider using supplemental controls.		

F. NON-FOOD CROPS:

Nursery and Ornamental Plants and Trees
Such as landscape plants, flowers or ornamental tree seedlings/saplings in nurseries or field plantings and forest trees (deciduous or evergreen) in nurseries or field plantings**

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Black vine weevil, diabrotica beetle, grasshoppers, leafhoppers including sharpshooters, Japanese beetle, thrips	6.25-37.5	Suppression only*. Start prior to infestation. Spray every 5-7 days throughout infestation.
Deer, rabbit		Suppression only*. Start prior to animal feeding and maintain coverage during feeding period. For plants on which **Surround WP crop protectant** does not adhere well, respray as soon as possible following rainfall or protection will be lost.
Sunburn and heat stress		See I D. Reduces transplant shock and heat stress when transplanting nursery stock to the field or garden. **DO NOT** dip transplants into **Surround WP** solution.
*If complete control is needed, consider using supplemental controls. ** Sunburn and heat stress only.		

Special Directions
Plants treated with **Surround WP** will appear white from application. If this is undesirable, **DO NOT** spray. On cut-flower plants, it is best to spray only the leafy foliage of the plant, so that cuttings are not affected.

Christmas Trees and Hybrid Poplar Plantations

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Sunburn and heat stress	25-75	See I D. Use 25-50 lbs in 100 gallons of water for best results. Spray 2 applications 14 days apart prior to heat event. Stop sprays 30 days prior to harvest.

G. GREENHOUSE GROWN PLANTS:

Edible and Non-Food Crops
Such as all crops listed on this label

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Pests as listed under specific crop groups on this label.	6.25-37.5	Suppression only*. Start prior to infestation. Spray every 5-7 days being sure to maintain coverage, especially on new growth. Exercise extra care to cover undersides of leaves when targeting pests that inhabit leaf undersides.
*If complete control is needed, consider using supplemental controls.		

STORAGE AND DISPOSAL

DO NOT contaminate water, food or feed by storage or disposal.

PESTICIDE STORAGE: Store in a dry, sheltered location {away from food or feed}. Product is slippery when wet. In case of spill or leak, avoid breathing dust, clean up and dispose of wastes in compliance with applicable Federal, State, and local regulations.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Completely empty bag into application equipment. Dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of the smoke.

Conditions of Sale and Warranty

CONDITIONS OF SALE – LIMITED WARRANTY AND LIMITATIONS OF LIABILITY AND REMEDIES

The directions on this label are believed to be reliable and must be followed carefully. Insufficient control of pests and/or injury to the crop to which the product is applied may result from the occurrence of extraordinary or unusual weather conditions, or the failure to follow the label directions or good application practices, all of which are beyond the control of Tessenderlo Kerley, Inc., or seller. In addition, failure to follow label directions may cause injury to crops, animals, man or the environment. Tessenderlo Kerley, Inc. warrants that this product conforms to the chemical description on the label and is reasonably fit for the purpose referred to in the directions for use, subject to the factors noted above which are beyond the control of Tessenderlo Kerley, Inc. Except as warranted by this label, Tessenderlo Kerley, Inc. makes no other warranties or representations of any kind, express or implied, concerning the product, including no implied warranty of merchantability or fitness for any particular purpose. To the extent allowed by applicable law, the exclusive remedy against Tessenderlo Kerley, Inc. for any cause of action relating to the handling or use of this product is a claim of damage, and in no event shall damages or any other recovery of any kind against Tessenderlo Kerley, Inc. exceed the price of the product which causes the alleged loss, damage, injury, or other claim. To the extent allowed by applicable law, Tessenderlo Kerley, Inc. shall not be liable and any and all claims against Tessenderlo Kerley, Inc. are waived, for special, indirect, incidental, or consequential damages or expense of any nature, including, but not limited to, loss of profits or income, whether or not based on the negligence of Tessenderlo Kerley, Inc. breach of warranty, strict liability in tort, or any other cause of action. Tessenderlo Kerley, Inc. and the seller offer this product, and the buyer and users accept it, subject to the foregoing conditions of sale and limitations of warranty, liability and remedies.

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