

# Surround<sup>®</sup>

Agricultural Crop Protectant



## Suppress Asian Citrus Psyllid in Citrus

Developed in conjunction with the United States Department of Agriculture (USDA), Surround<sup>®</sup> Crop Protectant is an EPA-registered insecticide specially formulated with calcined kaolin to suppress insect activity. Surround covers plants with a protective film which also provides protection from sunburn and heat stress and can lead to greater rates of photosynthesis allowing plants to achieve their full yield potential. In Florida, Surround has been found to be effective in suppressing Asian Citrus Psyllid (*Diaphorina citri* kuwayama) (ACP).

On-going research at the Citrus Research and Education Center at the University of Florida is centered on the protection of young citrus trees from Huanglongbing (HLB) or Citrus Greening Disease.

Preliminary results:

- HLB is primarily spread through the saliva of ACP as it feeds on citrus leaves.
- Surround treated leaf surfaces inhibit the ability of ACP to grasp and maneuver in order to feed. This inability of ACP to feed on Surround treated leaf surfaces prevents the spread of HLB.
- Reliance on soil applied systemic insecticides alone can result in increased rates of HLB due to the development by ACP of insecticide resistance.
- Neonic systemic insecticides plus a rotation of either foliar insecticides or Surround kept trees HLB free for 15 months after planting.
- Proper insecticide rotation is vital to achieve the expected level of protection from HLB.
- An intensive, multi-pronged insecticide treatment program to control ACP is necessary to ensure a return on the investment of young tree plantings.

For a complete copy of the preliminary University of FL report visit [www.novasource.com/AsianCitrusPsyllid](http://www.novasource.com/AsianCitrusPsyllid).

Surround works best when used in a preventative program, applied to the tree before the pest appears. For a year long ACP regime in young citrus trees, start with higher rates to achieve thorough initial tree coverage in the first one or two sprays. Consider alternating the spray direction of the first two applications. Maintain coverage in subsequent cover sprays paying particular attention to coverage of new growth. Lower rates in subsequent cover sprays may provide adequate protection. The use of Surround in a season long program with foliar and systemic insecticides may maximize the effectiveness of conventional insecticides by avoiding their overuse, thus minimizing the likelihood of insect resistance.

Surround may suppress beneficial insect activity. Closely monitor and employ a typical control program for scale and mite.

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## SURROUND EPA LABEL RECOMMENDATION FOR CITRUS PSYLLID

Problem	Lbs/Acre	Application Instruction
Citrus Psyllid	50-75 <sup>1</sup>	Suppression only* Apply every 7-17 days as infestation occurs.

\*If complete control is needed, consider using supplemental controls.

<sup>1</sup>50 lbs. per 200 gallons per acre preferred for 12 ft. trees.

### Tips for Improving Deposition

- Use the amount of water volume per acre to achieve near-drip. Too much spray volume causes excessive run off. Too little spray volume will not allow sufficient spreading and speckling will result.
  - For trees under 10 to 12 feet, 100 gallons of water per acre is normally sufficient.
  - For trees over 12 feet, 200 gallons per acre is recommended for complete coverage.
- Apply at ground speeds around two miles per hour or slower.
- Apply each application in the opposite direction of the previous application.
- Use of a spreader may help Surround spread more evenly.
- Don't apply if leaves are dripping wet.
- After drying, the foliage and fruit should have a uniform chalky white appearance. First coats may appear to be splotchy, but subsequent sprays will fill in the coverage. Often it takes two thorough sprays to establish a full coating.
- Surround can be tank mixed with most pesticides. When tank-mixing, always add Surround to the tank first. A pre-mix tank is suggested for sprayers without mechanical agitation.
- Aerial application of Surround is not recommended for insect suppression as adequate coverage of large trees is difficult to achieve.

### Post-Harvest Considerations

Kaolin, the active ingredient in Surround crop protectant, is approved for use as a food additive at levels up to 2.5 percent, according to the United States Food and Drug Administration (FDA). As well, kaolin is exempted from requirements of a tolerance by the United States Environmental Protection Agency (EPA), under CFR 40, 180.1001(c). Citrus fruit may have a white film of Surround remaining at harvest. Though Surround is designed to have moderate adhesion to fruit surfaces, the film is normally removed with common washing techniques. Where washing techniques are not adequate or for fruit that will not be washed, Surround sprays may be discontinued when the fruit are still small. The remaining film coating will eventually weather off the fruit from rain and wind attrition. This attrition will be more pronounced in rainy climates. **Note however, that when Surround applications are discontinued and the crop begins to lose its protective coating, insect suppression benefits will be lost.**

For more information on washing Surround off of fruit, consult the Surround Wash Guide at [www.novasource.com/Surround](http://www.novasource.com/Surround).

Important: Always read the label before buying and follow label instructions when using this product.

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.

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

Failure to strictly follow label directions may cause injury to crops, animals, man or the environment. Tessenderlo Kerley, Inc. (TKI) warrants that the product conforms to the chemical description on the label and is reasonably fit for the purpose referred to in the directions for use when properly applied in normal weather conditions. TKI makes no other warranty or representation of any kind, express or implied, concerning the product, including no implied warranty of merchantability or fitness for any particular purpose. The exclusive remedy against TKI for any cause of action relating to the handling or use of the product is a claim for actual out-of-pocket damages, and in no event shall TKI be liable 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 TKI, breach of warranty, strict liability in tort, or any other cause of action. TKI and the seller offer the 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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Photo courtesy of the University of Florida.

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