



WashGard™

**Superior Adjuvant Protection
Against Rain Wash Off**

**WashGard™
a patent pending
natural carnauba emulsion for
enhanced effectiveness of copper sprays.**

WashGard

Copper Sprays to Control Diseases in Citrus

Copper is used in Florida and other humid citrus growing regions in the world to control the infestation of citrus canker and melanose. Melanose is a fungal disease caused by *Diaporthe Citri*. Citrus Canker is a bacterium disease caused by *Xanthomonas Citri*. Both diseases can cause lesions on the fruit as well as its leaves. Fresh market tolerance for fruit with lesions is very stringent and most infested fruit end up in the juice bin. Successful control of these diseases depends on both an even distribution and good retention of the copper spread all over the plant.



Copper sprays are used as protectant fungicides that must be applied evenly onto the plant or fruit surface before the disease develops in order to prevent infection. Over time, the coverage of copper over the plant or fruit surface deteriorates due to fruit growth and effects of weather conditions such as rain and wind. In areas of wet conditions, copper fungicides would tend to offer a shorter period of protection than if conditions were dry, as it is washed off easily.

Application Recommendations

- For best performance, use WashGard every time copper applications are being made.
- WashGard does not have any pesticide activity.
- WashGard extends and enhances the activity of copper as a fungicide.
- Always apply a tank mix of copper fungicides with 2.5 gals/acre of WashGard, approximate total volume of 250 Gals/acre of spray solution.

WashGard™ Features and Benefits

WashGard is Rain-Fast

- When WashGard is applied with copper, finely dispersed spray particles cover both foliage and fruit evenly and won't wash off during rain events.

WashGard Increases Adherence of Copper

- When combined with copper, WashGard has proven to increase the stickiness of copper sprays to reduce incidence of both Melanose and Citrus Canker.

Citrus Foliage with CU and without WashGard™ after a rain event.



Citrus Foliage with CU and WashGard™ after a rain event.



WashGard Product Development

WashGard™ was developed by Pace International in collaboration with the USDA Citrus & Subtropical Product Laboratory in Winter Haven, Florida.

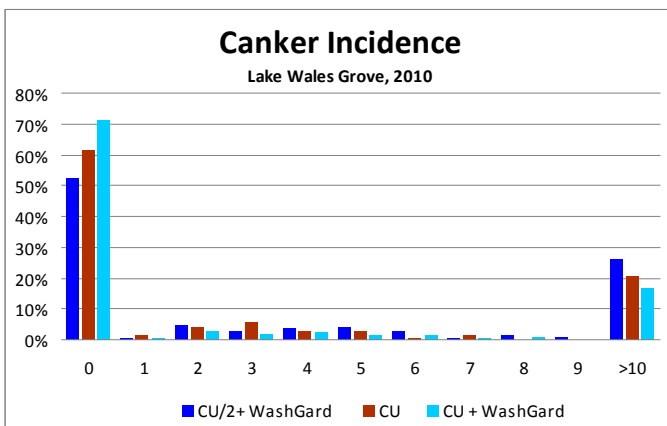
WashGard is a patent pending carnauba based citrus coating designed for pre-harvest applications to enhance rain fastness of beneficial materials such as copper. WashGard is a natural emulsion, rated food grade and does not require pesticide registration in Florida.

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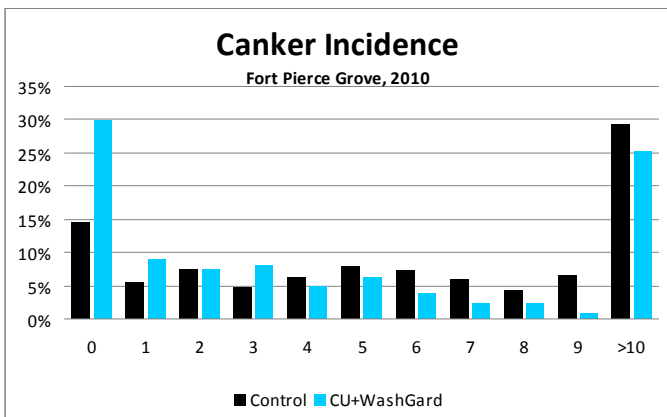
WashGard™ - Efficacy Trial Results

WashGard trial results from past several years have found increased efficacy in the prevention of Citrus Canker and Melanose when combined with copper. In 2010, semi-commercial trials were performed in the interior (Lake Wales) and coastal (Fort Pierce) areas of Florida with similar beneficial results.

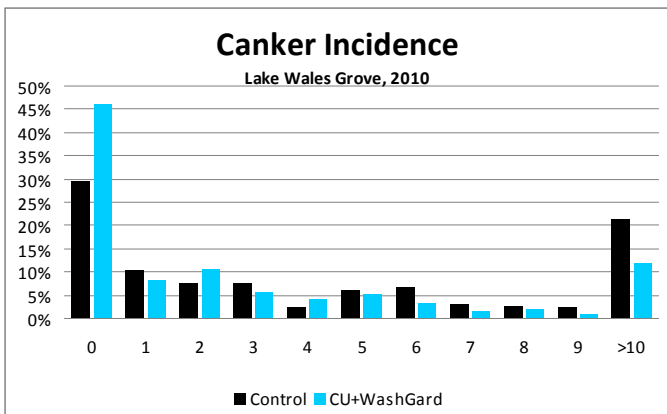
In 2010, semi-commercial trials were performed in the interior (Lake Wales) and coastal (Fort Pierce) areas of Florida with similar beneficial results. These trials were conducted with the use of Citrus Canker and Melanose Evaluation Scales based on number of lesions and percentage of disease coverage on fruit.



Citrus Canker Evaluation Scale



Melanose Evaluation Scale



Treatment	Incidence (%)	Severity rating
Untreated control	92.0 b	5.4 b
Copper	79.2 b	3.2 a
Copper + WashGard	58.0 a	3.3 a
	(<i>P</i> = 0.020)	(<i>P</i> = 0.016)

Table 1: Incidence and severity of Melanose (*Diaporthe Citri*) on White Grapefruit with copper sprays with and without addition of WashGard. Lake Wales, Florida 2009.

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For additional information, contact your local distributor or Pace representative.

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