



# WATER STAIN REMOVAL IN KIWIFRUIT

TECH NOTE SERIES

## General Information

Water staining in kiwifruit can vary from season to season, with some years more challenging than others. Generally, what determines how bad staining can be for the year is the condition of the canopy going into the harvest.

If the canopy is showing signs of breaking down there is the potential for water staining. Likewise, stain can result if pruners have left an unnecessary amount of pruning material in the canopy that has since decayed. It is this combination of dead leaf and moisture from rain, irrigation or heavy dew, that causes the tannin from the dead leaf to deposit on the surface of the fruit. It is important to remove these stains to reduce downgraded fruit that may be rejected due to visual appearance. Growers should always ensure the product used to remove these stains is Zespri approved.

Grosafe® has two safe proven options for stain removal. For cost effective stain removal growers can use phosphoric acid based products like **Kiwi Sheen CP**. Phosphoric acid based stain removers are cost effective and perform even in damp conditions. Where staining is light or early in the harvest, for example during the kiwi start period, **Kiwi Sheen CP** is the product of choice as it can remove staining one day after application.

For stubborn staining or difficult blocks growers can use a lactic acid based product like **Kiwi Stainoff LF**. Some lactic acid based products can be difficult to mix as they tend to foam in the tank. Grosafe® has overcome this problem by using a high quality, food grade, low foam surfactant and a higher quality formulation.

## Key Points

- Waterstain is a cosmetic defect that can be removed with Grosafe's calcium phosphate/ phosphoric acid based product, **Kiwi Sheen CP** and lactic acid based product, **Kiwi Stainoff LF**.
- High water rates are recommended with 3000L/ha and up to 4000L/ha under heavy staining.
- Good coverage is essential as the complete fruit needs to be wet.
- Grosafe's products are best applied the day before harvest. This allows for complete drying before picking. However, lactic acid products need up to three days to give the product the maximum amount of time to remove the stain. Therefore for main season crops that will be placed into medium to long term storage, **Kiwi Stainoff LF** should be applied the day before harvest. This leaves the day of harvest and the curing period at the packhouse for the product to activate and remove any stain before going over the grading table.

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## Kiwi Stainoff LF

**A low foam phosphate buffered solution of lactic acid and surfactant in the form of a water soluble concentrate.**

Contains 700g/L total acid in the form of a phosphate buffered Lactic Acid.

**Kiwi Stainoff LF** is a unique buffered, food grade low foam lactic acid formulation. Gentle yet effective on stubborn stains and easy to mix with significantly less foaming in the spray tank. Being an improved formulation, **Kiwi Stainoff LF** has a higher lactic acid content at 700g/l and is formulated with a new proprietary low foam, food grade surfactant avoiding the foaming problems associated with other lactic acid alternatives. The formulation ensures a product that gives top stain removing performance.



- Higher active ingredient content
- Gentle on fruit and vines
- Removes stubborn stains
- Brightens fruit
- Provides long term protection including during storage
- No insoluble salt deposits
- Buffered to reduce equipment wear
- Fully biodegradable food grade surfactant
- Excellent coverage
- No additional wetters or surfactants needed!
- Low Foam - easy to use
- Zespri approved

**Timing:** Apply shortly before harvest (i.e. 1-3 days) in good drying conditions to dry fruit. May be applied to damp fruit, but only in good drying conditions.

**Application Rate:** 5 litres per 1000 litres of water as a dilute spray. No additional surfactant is required.

**Spray Rate:** Use 3000 litres of water per hectare. Increase rate to 4000 litres for difficult conditions (bad staining or dense canopy). Consider split applications in opposite directions through block.

**Tractor Speed:** For best results maintain a tractor speed of between 3-4km/h.

**Compatibility:** **Kiwi Stainoff LF** can be used with Du-Wett Stainless in low water rate applications. For surfactant and water rates follow the Du-Wett Stainless label recommendations.

**Rainfall:** Delay application if rainfall is imminent. Optimum results are obtained when applied to dry kiwifruit.

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## Kiwi Sheen CP

**A buffered solution of calcium phosphate and surfactant in water formulated for use as a pre-harvest treatment for the removal of water stain on kiwifruit.**

**Kiwi Sheen CP** gives a superior result to Citric Acid while providing a lower cost alternative to **Kiwi Stainoff LF**.

**Kiwi Sheen CP** has been proven and tested independently, and is Zespri approved.

**Kiwi Sheen CP** has been commercialised for 14 years and is endorsed by many growers.

**Kiwi Sheen CP** provides:

- Clean, bright fruit at packing - lower rejects
- No scummy or powdery white deposits
- Stains go and do not re-appear in storage
- Fruit does not have to be dry for application



**General Information:** Care should be taken to clean the spray tank before and after applying **Kiwi Sheen CP**. Any sludge residue in the tank could be dissolved by **Kiwi Sheen CP** causing deposits on the fruit. Flushing the tank out after use is advisable to minimise corrosion to the spray tank and pump by the acid solution.

**Application Rate:** Mix 500ml of **Kiwi Sheen CP** per 100 litres of clean water (15 litres per 3000 litres of water) and apply as a dilute spray. Full coverage is essential for good results. A spray volume of 3000 litres per hectare of mature canopy is recommended 1-3 days before harvest. Total spray coverage of the fruit is essential for good results. Two passes of 1500 litres/ha from opposite directions will achieve best results. For heavy staining and/or dense canopy use a higher application rate of 4000 litres/ha (ie, 20 litres in 4000 litres water/ha applied in two spray runs).

**Wetting Agent:** **Kiwi Sheen CP** is formulated with adequate surfactant - no additional wetting agent is required.

**Rainfall:** Delay application if rainfall is imminent. Optimum results are obtained only when applied to dry kiwifruit.

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# WATER STAIN REMOVAL IN KIWIFRUIT



Before Treatment



After Treatment

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