



# CPPU User Guide

August 2016



## Background

Ambitious 10SL™ has been granted a Full Label Claim for Psa-V control on kiwifruit by the Agricultural Compounds and Veterinary Medicines Group (ACVM) within the Ministry for Primary Industries (and Caplit™ has been granted a Limited Label Claim). The active ingredient is a synthetic plant growth regulator CPPU or (*N*<sub>1</sub>-(2-chloro-4-pyridyl) - *N*<sub>3</sub>-phenylurea) commonly named forchlorfenuron.

CPPU is widely used around the world as a plant growth regulator (PGR) in the production of horticultural crops including kiwifruit, blueberries, apples and grapes. It is also registered for use in the apple industry in New Zealand. **CPPU is not allowed to be used as a PGR in the CPS.**

Like other products in Zespri's Crop Protection Standard (CPS), use of CPPU products is at growers' own risk. Applying CPPU products outside the controls and conditions of use stipulated in this document may have adverse market implications.

CPPU products with a label claim for Psa-V are permitted for use on **green varieties only** in the Zespri CPS during the pre-flowering period only (i.e. not permitted between fruitset and harvest). While CPPU product use is *not* permitted in the post-harvest period due to the

possible risk of residues on producing vines, JA's will be considered under extenuating circumstances.

This is the first time, worldwide, CPPU has been registered for disease control and ACVM's registration was based on Zespri/KVH product testing results. While showing efficacy in potted plant studies, it has not shown the same level of control on Psa-V leafspot in field trials to date. CPPU showed no efficacy on Psa budrot. More research is underway to understand its mode of action and whether efficacy can be improved. CPPU must be used in conjunction with other KVH recommended sprays and not relied upon to give control on its own.

Zespri is taking a conservative position on its use, taking into consideration production and marketing-related risks. In 2016, Zespri has reduced the number of allowed applications in the CPS from two down to one.

### Zespri's residue-testing programme and CPPU

Zespri has a zero-residue policy for CPPU.

CPPU has been, and will continue to be, part of Zespri's residue-testing programme, both onshore and in the markets. Zespri will run a targeted CPPU testing programme throughout the season using an increased level of detection to 0.001mg/kg. CPPU testing will also be included in Zespri's multi-residue testing programme, which tests for more than 300 compounds.

## **GROWERS ARE SOLELY RESPONSIBLE FOR REVIEWING, UNDERSTANDING AND COMPLYING WITH ALL APPLICABLE REQUIREMENTS FOR USE OF AMBITIOUS 10SL™, CAPLIT™ OR ANY OTHER CPPU PRODUCT.**

### CPPU

- Is **not permitted** for use on **Gold** varieties.
- Is **not permitted for use between one week prior to flowering and 15 June 2017** unless a JA is granted (in extenuating circumstances only).
- The orchard owner/manager is responsible for the safe use and any actions resulting from inappropriate use.
- Like all products allowed under the Zespri Crop Protection Standard (CPS), use of CPPU products is at growers' own risk.
- Is included in the Zespri CPS as a **Psa-V protectant** and is **not allowed to be used a plant growth regulator**.
- CPPU products registered for Psa-V control are permitted for use on vines in the budbreak to pre-flowering period.
  - **Fruiting vines and non-fruited vines** – one application is permitted to be made in the budbreak (pre-flowering) period with no JA required. It can only be used in the bud phase period until one week before the first female kiwifruit flowers open in the orchard. Post-harvest applications may be considered under JA in extenuating circumstances until 15 June 2017.
- Most likely to be efficacious when applied during the first half of the budbreak period (before leafspot is seen).
- Avoid spraying non-target varieties where flower buds are present, as fruit deformation is possible. Should be applied as a preventive application (as an elicitor) five to seven days prior to an infection period.
- **Do not apply above label rates.** Typical dilute spray volume required pre-flowering is 600–1000L/ha for mature vines.
- Is expected to be most **efficacious within three weeks of application**.
- Moderately rainfast but absorption is required. Do not apply if rain is likely within 24 hours of application.
- Must be alternated with other proven Psa-V control products.
- Applicators must ensure there is **no risk of spray drift** onto fruit. If an application occurs which may result in residues, report this to Zespri immediately on 0800 155 355.
- Using this product outside of the permitted use pattern is likely to negatively impact fruit quality, dry matter and shape.

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## Conditions of Use and Orchard Best Practices

### Fruiting and Non-Fruiting Vines

#### Spring – budburst to flowering

- CPPU should only be applied in the post-bud break (pre-flowering period). One application is permitted on fruiting vines **up to one week before female flowering**
  - Most likely to be efficacious when applied during the first half of the budbreak period (before leafspot is seen).
  - *Use on fruiting vines of other varieties other than Hayward is not well understood and may have undesirable side effects – use is not permitted on Gold varieties.*
  - **A second application may be allowed under [Justified Approval \(JA\)](#)**
- Apply at label rates only. Higher label chemical rates may increase the risk of potential side effects.
- Use sufficient water to wet the canopy without excessive runoff. Typically in this period, it will require 600–1000L/ha. Read the label and follow instructions carefully.
- Applicators must ensure there is no risk of spray drift onto fruit. If an application occurs that may result in residues, report this to Zespri immediately.
- Always rinse the spray tank out after use including pump, filter and spray lines.

#### Summer (post-flowering to harvest)

Sprays onto fruit are not permitted. Residue finds on fruit may result in Zespri refusing to accept fruit for export.

#### Autumn (post-harvest)

Using CPPU before harvest is completed creates a residue risk from spray drift and/or spray tank contamination.

**CPPU use is not permitted in the post-harvest period** however Zespri may consider a JA in extenuating circumstances from 1 March 2017 if it is clear there is no risk of accidental application on fruit.

Note that offshore trials have not shown benefit from their use in this period.

#### Winter

The mode of action of CPPU is not well understood. However applications over the dormancy period are unlikely to be effective.

#### Mode of action

The limited label claim and allowed use by Zespri are based on initial trial results which indicate CPPU can provide some control of Psa-V leaf spot symptoms. The exact mode of action is not well understood but the active ingredient may not reduce bacterial populations directly, but rather may cause morphological changes in the plant which suppress symptom expression. It may assist the plant by enhancing the physiological response to disease (leaf spot development). However, cytokinins can increase natural defences through salicylic acid responses.

#### Effectiveness

To date a range of trials have been undertaken, or are underway, in New Zealand and offshore to better understand CPPU's effectiveness and any side effects. Results have been variable but there is some evidence CPPU may assist in the control of Psa-V leaf spot. Observed side effects include cytokinin flush (red leaves), thick leaves, thick stalks, unusual appearance of fruit (i.e. hairy and 'rust' coloured) and square fruit (that may be related to the retention of poorer quality flowers). Applications under New Zealand conditions do not appear to be having any consistent fruit sizing responses, however some growers have reported more vigorous canopies with its use. For more information, refer to the [CPPU KiwiTech Bulletin](#). Further research results will continue over the next year.

However growers should be aware that use on cropping *A. chinensis* (gold) varieties may have negative side effects on flowers resulting in fruit deformation. As a result, **use is not permitted on Gold varieties.**

To provide maximum Psa-V control, CPPU must always be used in conjunction with other proven Psa-V control products. However only **limited compatibility research** has been undertaken. Always read the label and, if in doubt, undertake a jar test and assess on a small trial area first.

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