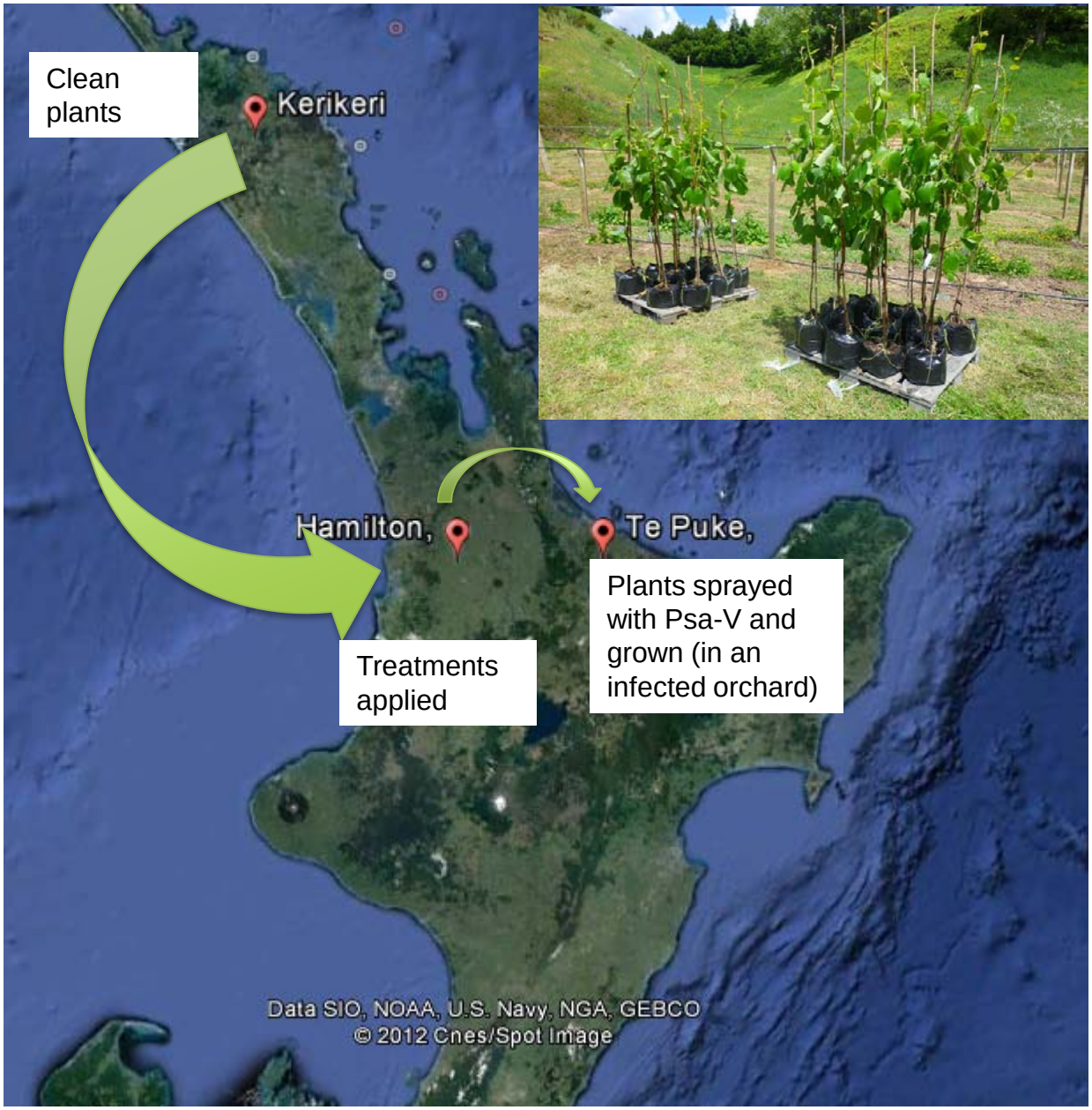
Field Testing Update

Jayson Benge

7 June 2012

General approach



Results from initial trials - presented previously (9 Feb)

Hort16A (Dec/Jan):

- Coppers and KeyStrepto, applied once, significantly reduced leaf spotting throughout
- The elicitors, Actigard (applied once) and BioAlexin (applied twice), and Serenade Max (applied once) reduced leaf spotting initially but not in latter weeks

Hayward (Dec/Jan):

- Coppers, Actigard and KeyStrepto reduced leaf spotting throughout the entire trial
- Serenade Max did not reduce leaf spotting significantly

Subsequent trials:
Copper and BCAs (16A)

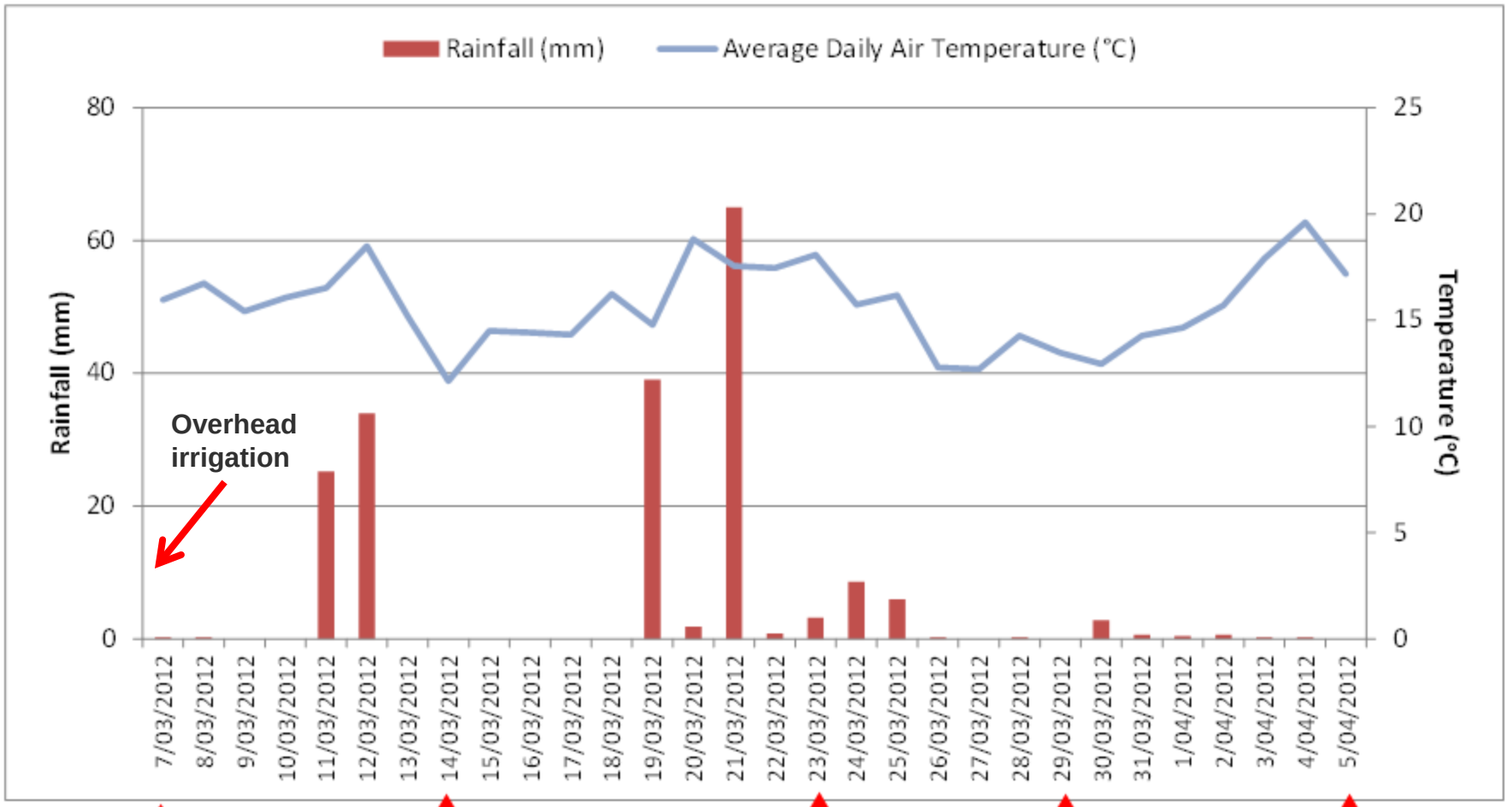
Copper trial

Aim: to clarify the levels of copper required for control and any associated phytotoxicity

- Hort16A in March/April
- 4 products: Kocide Opti, Nordox 75 WG, Champ DP and Liquicop
  3 rates:
  - 10g Cu/100L
  - 20g Cu/100L
  - 30g Cu/100L

  } Summer rates
- Applied once prior to inoculation with Psa-V (10^6 cfu/mL)
- Plants overhead irrigation for 30 hours to create an infection period (= 35 to 50mm of rain)
- Percentage of total leaf area covered in spots visually estimated at approx. weekly intervals; same person assessed all plants each time to ensure consistency in scoring

Copper trial



Inoculation (Mar 7)

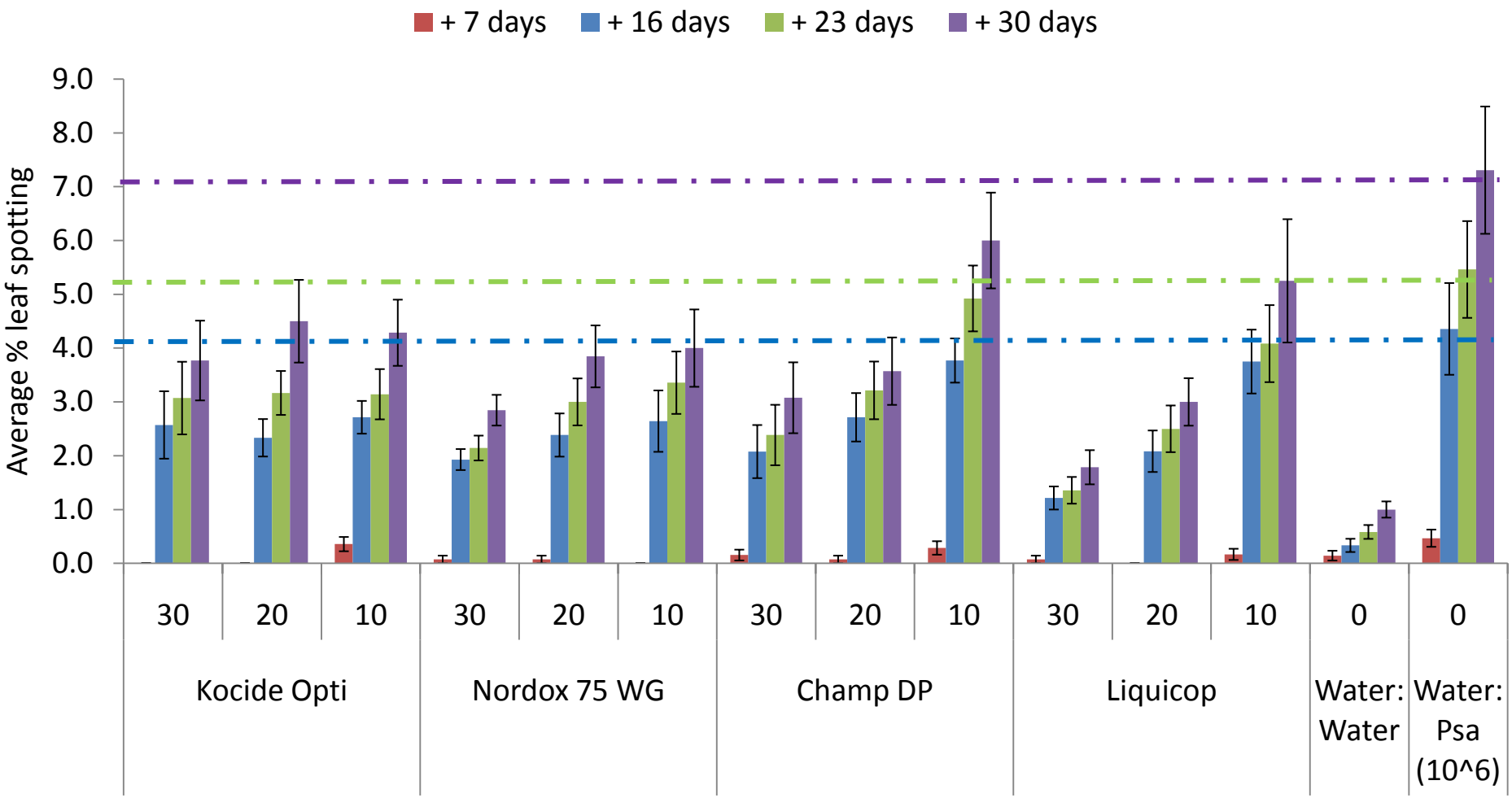
1st assessment (Mar 14)

2nd assessment (Mar 23)

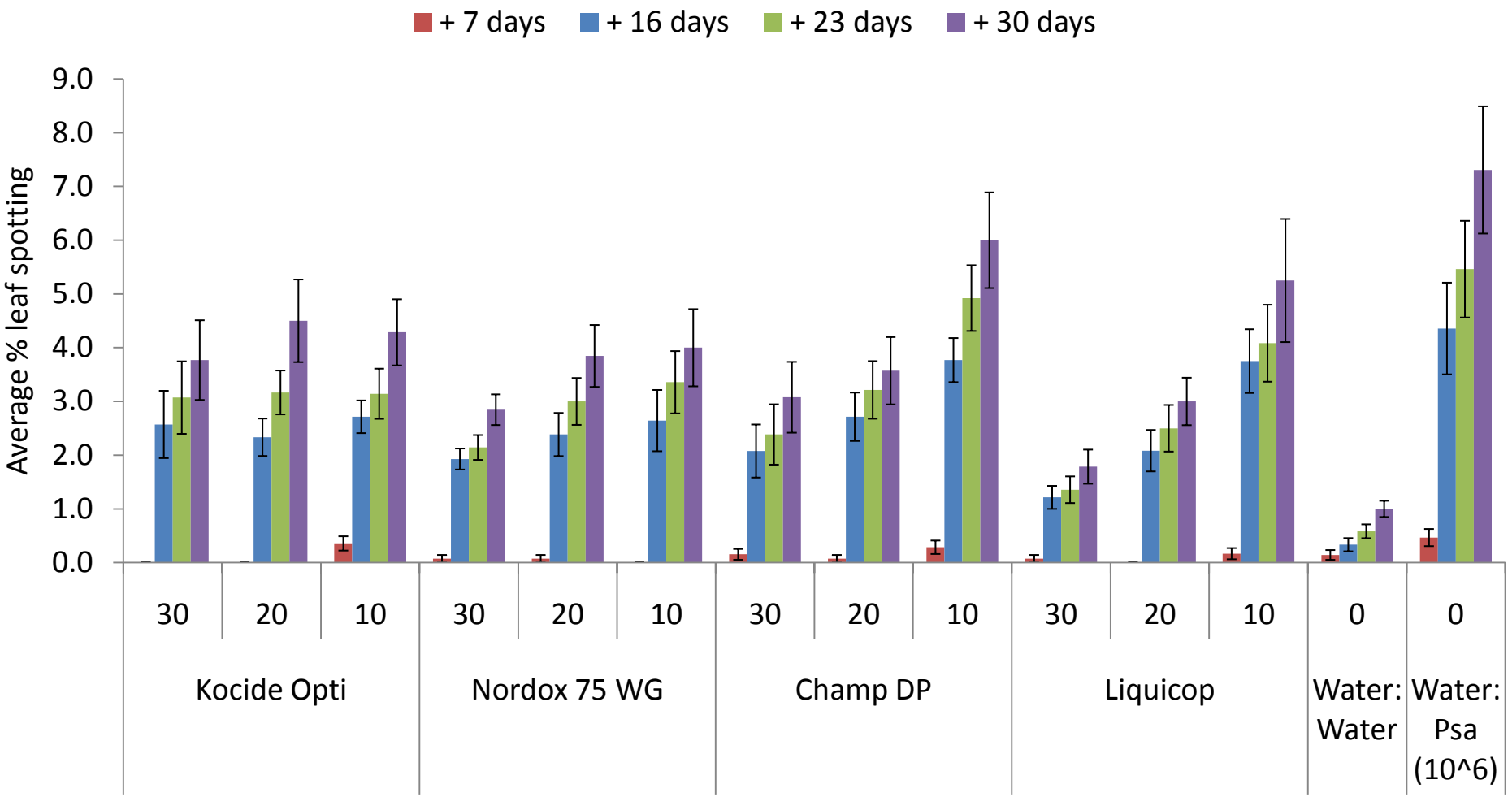
3rd assessment (Mar 29)

4th assessment (Apr 5)

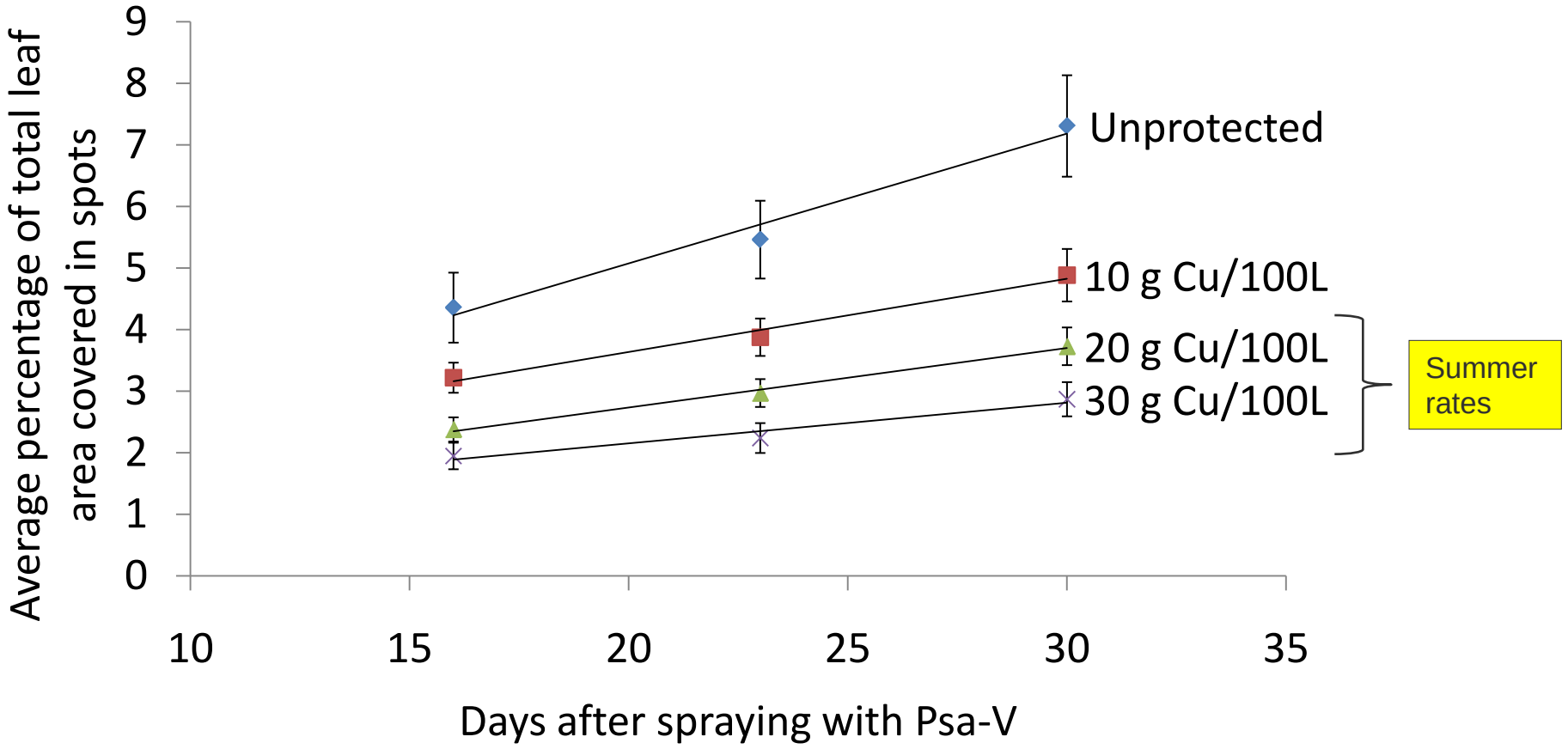
Leaf spotting



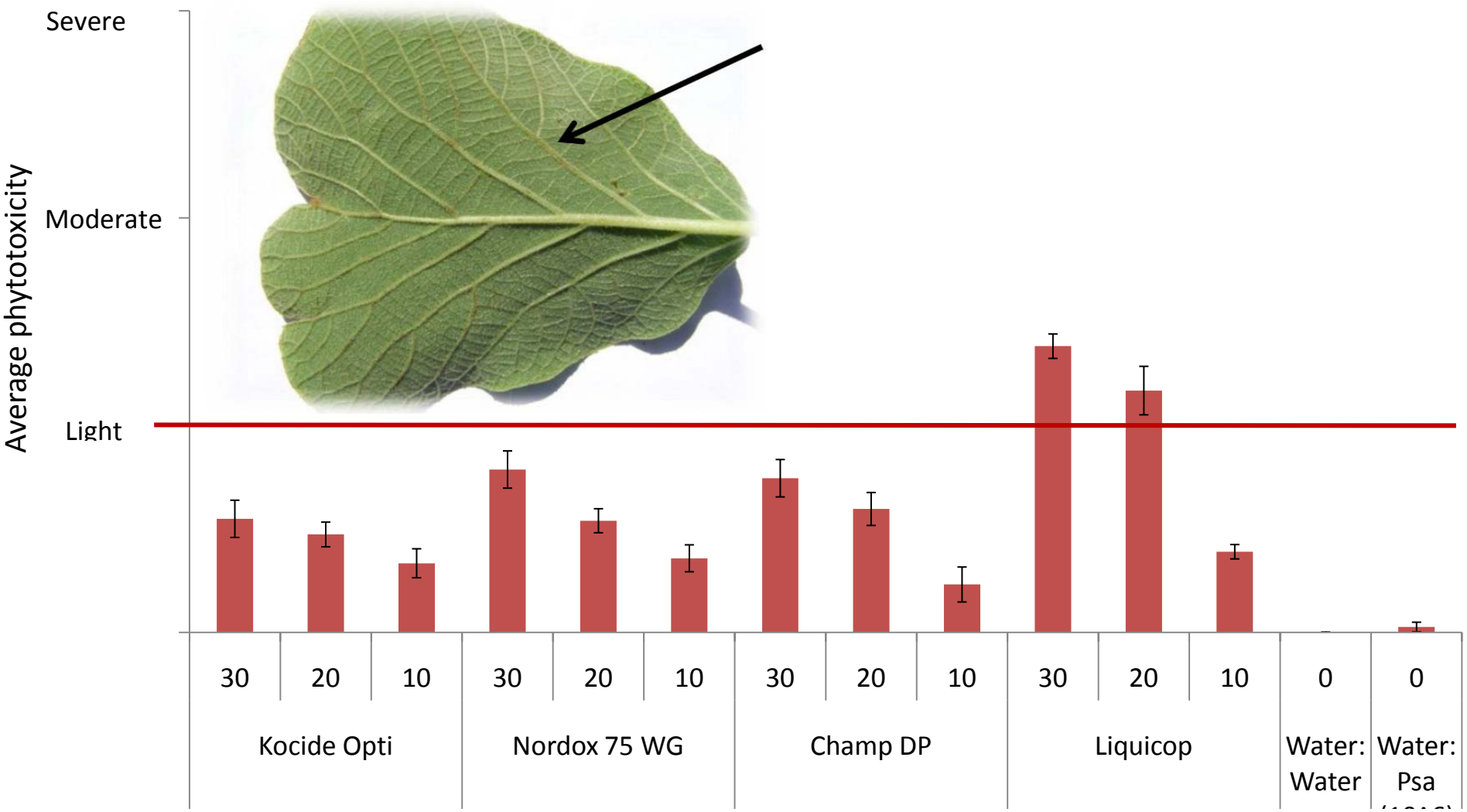
Leaf spotting



Efficacy
(average of all products)



Leaf phyto


Severe
Moderate
Light
Average phytotoxicity
30
20
10
30
20
10
30
20
10
30
20
10
0
0
Kocide Opti
Nordox 75 WG
Champ DP
Liquicop
Water: Water
Water: Psa

Copper trial

Summary

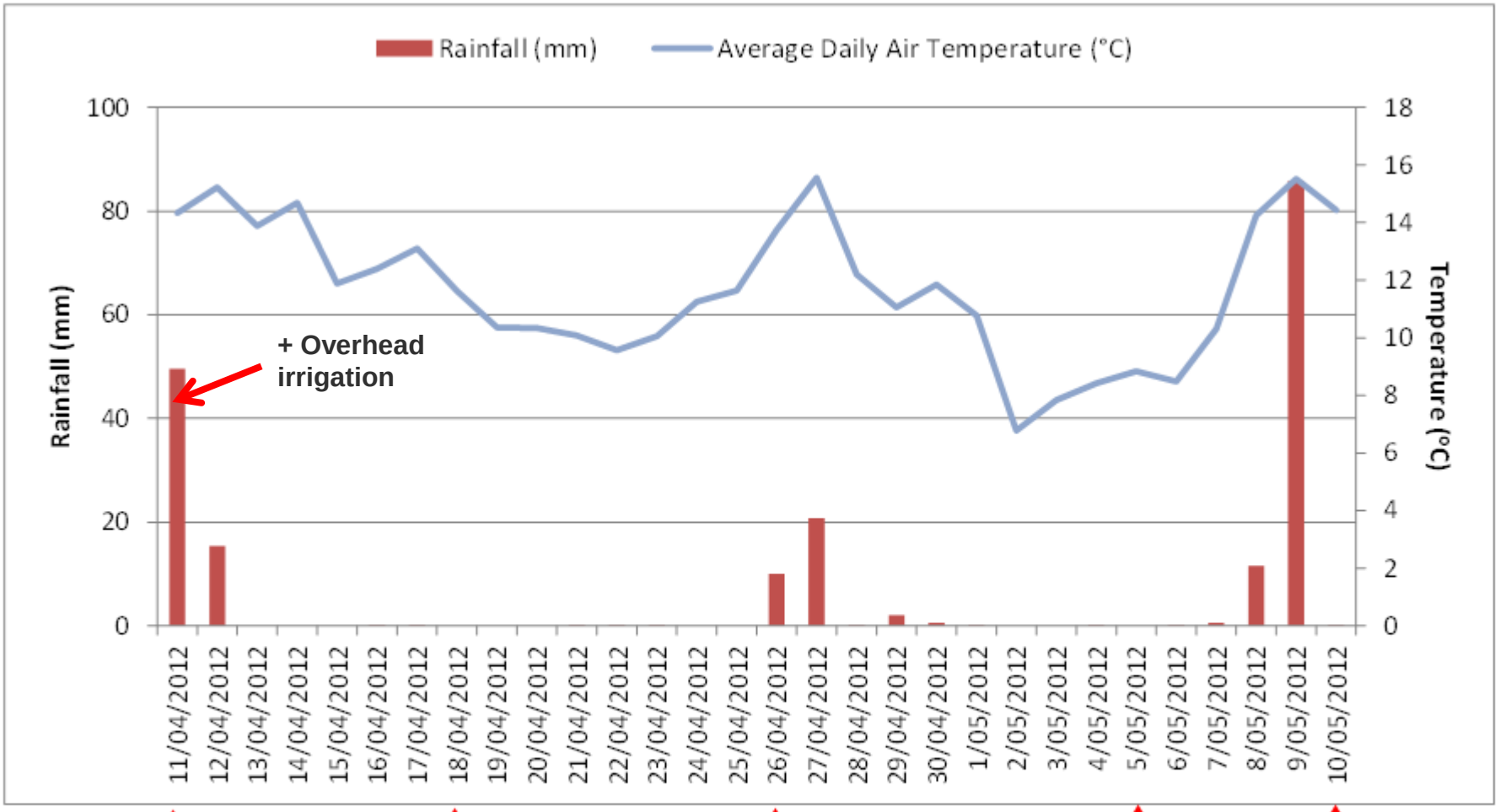
- Higher rates of copper increased protection but they also increased phyto
- There were generally small differences between products for efficacy
- The use of coppers will be a balancing act between applying sufficient copper for control but minimising the amount to a avoid phyto especially under repeat application conditions
- Single applications of the lower rates probably not sufficient; further work required to understand efficacy achieved by multiple applications of lower rates

Biological control agents (BCA) trial

Aim: To identify other options for the control of Psa-V

- Hort16A in April/May
- Range of BCAs + ArmourZEN (Chitosan)
- Applied once prior to inoculation with Psa-V (10^6 cfu/mL)

BCA trial



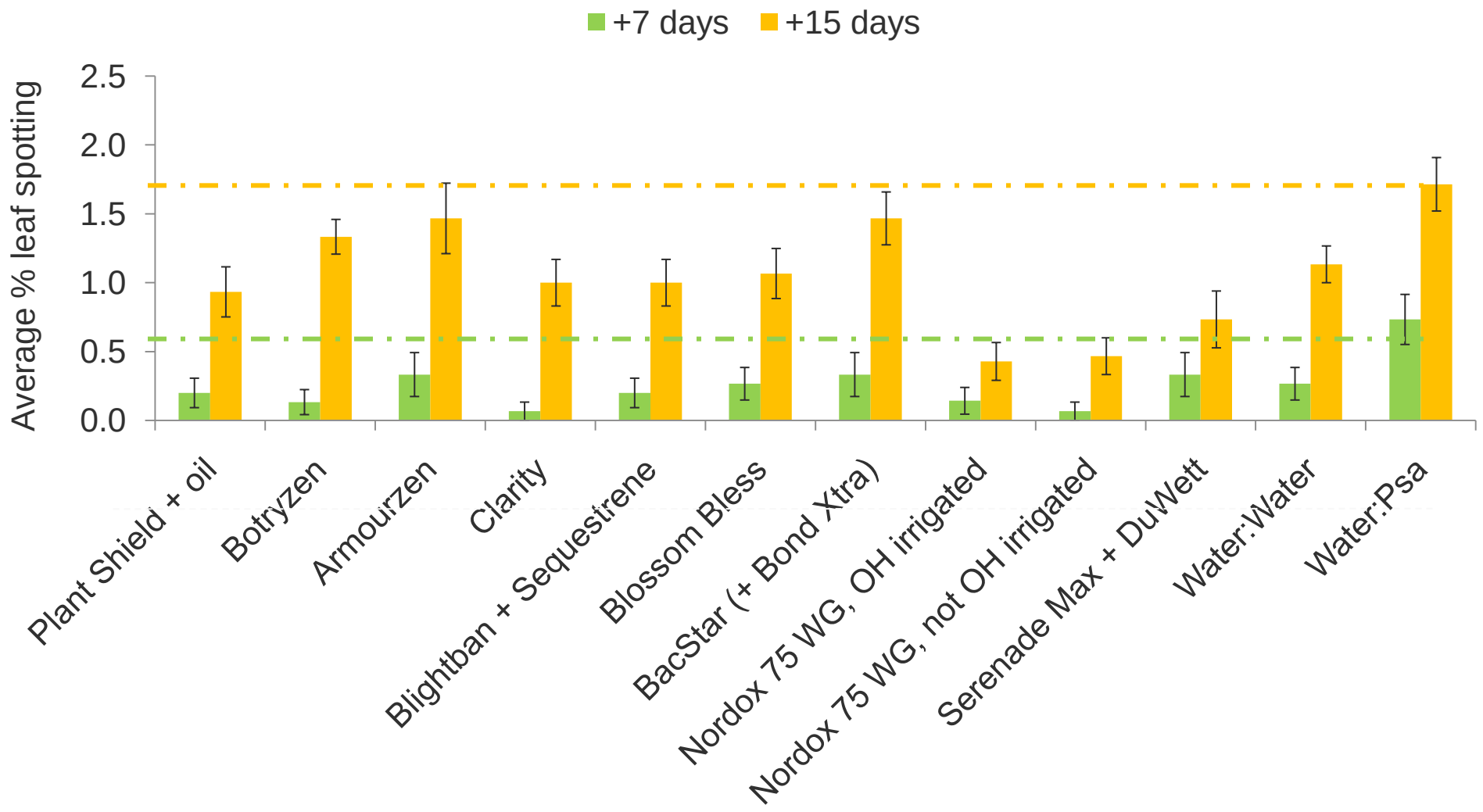
Inoculation (Apr 11)

1st assessment (Apr 18)

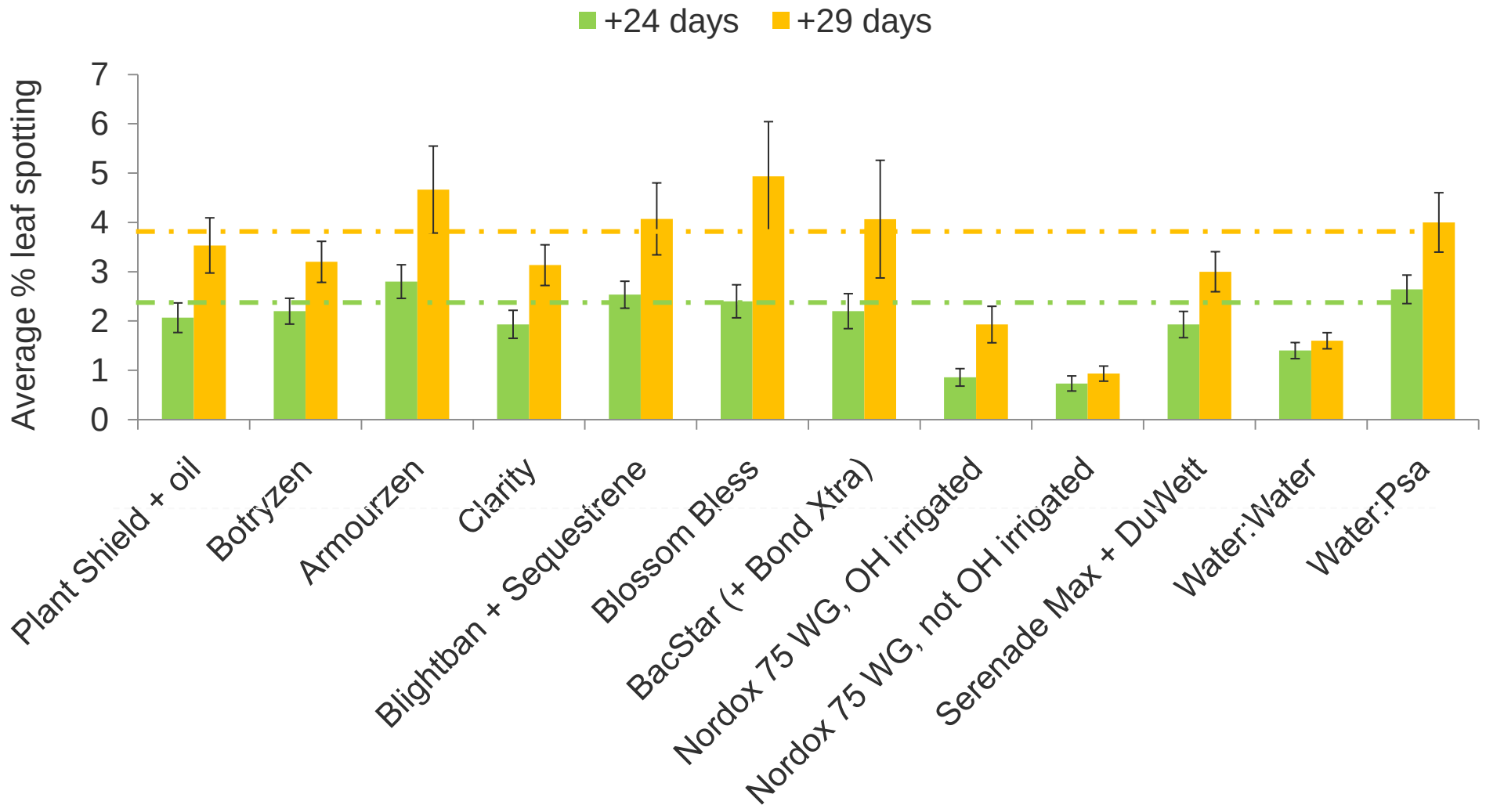
2nd assessment (Apr 26)

3rd assessment (May 5)

4th assessment (May 10)



In the first few weeks, when leaf spotting was very low overall, a number of treatments had significantly less leaf spotting than the unprotected control



3 – 4 weeks after incoulation, when leaf spotting was higher, only Nordox had significantly reduced leaf spotting compared to the unprotected control

Biological control agents (BCA) trial

Summary

- Plants treated once with BCAs had less leaf spotting initially when leaf spotting overall was very low, but not later
- Serenade Max reduced leaf spotting again (on Hort16A)
- Nordox was the best treatment and resulted in significantly less leaf spotting throughout the entire trial
- The conditions of the trial could be considered as less than ideal for BCAs (i.e. significant initially watering and declining daily temperatures). Therefore, it is recommended they be tested under different conditions (next spring) and with repeat applications

2011/12 Field Trials: Take Home Messages

- The focus of the potted plant field trials to date has been to identify and confirm which products work in the field
- Coppers, KeyStrepto and Actigard all reduced leaf spotting (in both Hayward and 16A)
- BioAlexin reduced leaf spotting in Hort16A (not tested on HW)
- Higher copper rates give better control but increase the risk of phyto
- Other products like BCAs not as effective as those above but maybe helpful under lower disease pressure and if frequently re-applied.
- Phyto from coppers but not an issue at this time of the year -> consider postharvest applications to protect vines heading into spring (see KVH recommendations)

What next? (next season)

- Optimize the use of products that have been shown to work i.e. try multiple applications, different rates, combinations of products, different conditions

- Continued testing of products yet to be tested or which have promise in order to identify more options for growers

- Try products on new varieties particularly G3; may require a different approach given G3 doesn’t seem to spot much

Product testing

Research projects & reports
Product testing
Stage 0 - Product pre-screening
Stage 1 - In Vitro & Green house testing
Stage 2 - Field trials
Stage 3 - Registration
Psa CPP

ZESPRI is coordinating the screening of the effectiveness of a wide range of products to control the virulent type of *Pseudomonas syringae* pv. *actinidiae* (Psa-V).

The screening programme has been developed to identify, rigorously test and then get permission to use suitable products as part of the crop protection programme (CPP) to control the spread of Psa-V and eventually to cure vines infected with Psa-V.

To understand the steps in the product testing programme the process is outlined below.

All new results are highlighted in yellow in the documents below. The results have been split into in field trials, in vivo and in vitro.

Click here for the latest product testing results from field trials—updated 30.05.12

Click here for latest product testing results in vivo (on the plant)—updated 16.05.12

Click here for latest product testing results in vitro (outside the plant)—updated 21.03.12

Click here for detailed information on the product testing process.

Field trials commenced November 2011.

Acknowledgements

- John Holwerda and Phil Reid
- HortEvaluation Ltd (Lynda Hawes/Peter Sanders)
- Plant and Food Research
- Dunromain Nurseries
- Graham Milne
- Moonlight Cartage