



## Evaluation of the efficacy of **Bestcure**® for the control of *Xanthomonas arboricola* pv. *pruni* on Stonefruit (plum)

Schoor, JA., Schoor DR., Du Toit M., Lara, J.M., and Fernández, C.

### Introduction

Bacterial leaf spot caused by *Xanthomonas arboricola* pv *pruni* is a severe disease that attacks only *Prunus* species and particularly fruit crops such as almonds, peaches, cherries, plums, and apricots. Infected leaves show small, irregular, with dark lesions which can coalesce and cause the leaves to develop a general yellowing. The bacteria attack the foliage, stems, and fruit of the plum tree. The most obvious symptoms occur on the leaves and, therefore, the disease is often referred to as bacterial leaf spot. In order to test an environmental friendly tool for the control of *X. arboricola* pv *pruni* two trials were performed at different locations and plum varieties with Futureco Bioscience product **Bestcure**®, a natural plant defences activator. Its formulation is based on *Rutaceae* extract (Citrus sp), rich in organic acids (ascorbic and citric acids) and bioflavonoids. **Bestcure**® induces an antimicrobial effect against a wide broad spectrum of fungal and bacterial pathogens, either preventively or curatively. **Bestcure**® at all the dosage rates tested was found to be significantly effective to control/suppress bacterial leaf spot on plum. Results were consistent with / better than the standard treatment applied. No symptoms of phytotoxicity were visible on any of the plum trees treated during the trial.

### Materials and Methods

The efficacy of **Bestcure**® to control bacterial spot (*Xanthomonas* sp.) on plums was assessed at 3 different rates, alone or in combination with a chemical product (Copper Hydroxide SC), in two different trials in Western Cape, South Africa. The first trial was carried out from September to October 2014 on Plums variety "Favour King" in the locality of Pniel, whereas the second trial was performed in Villiersdrop from October 2014 until January 2015, on Plums variety "Sensation". Both trials consisted of 8 different treatments (Table 1) with 6 replicates each (48 plots/trial; each plot 8m<sup>2</sup>). Plums were treated 3 times (treatment #7); 6 times (treatments 2, 3, 4, 6 and 8), 8 times (treatment # 5). The experimental design was a randomized complete block with 8 treatments replicated randomly in 6 blocks. By the end of each trial, assessments regarding incidence and severity were determined on 25 fruits from each plot. Percentage of infected fruits as well as bacterial spot severity ratings was subjected to statistical analysis (Bartlett's X<sup>2</sup>). Any signs of possible adverse effects on growth (e.g. yellowing/chlorosis, stunting, necrosis or node curl) were monitored for possible phytotoxic reactions to the applications.

Table 1. Treatments and application timing.

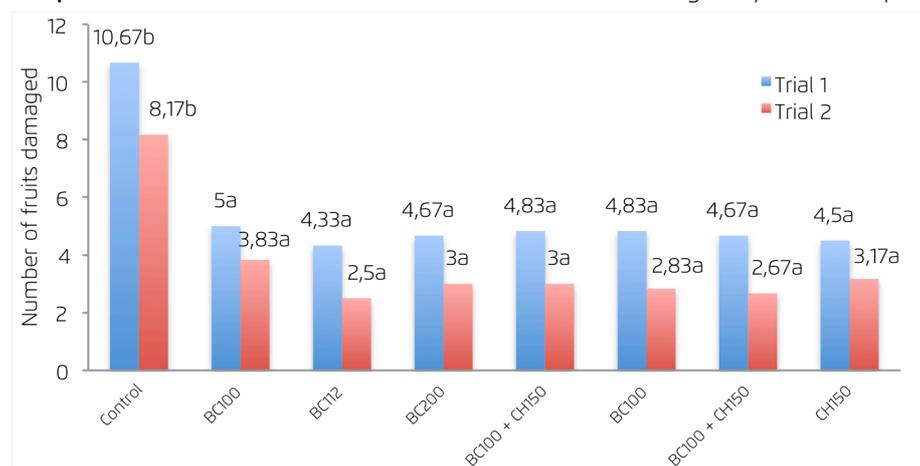
#	Product name	Dose rate (mL/100L)	Application timing	Number of applications
1	Untreated Check	-	-	-
2	Bestcure (BC)	100	ACEGJ	6 (biological)
3	Bestcure	112.5	ACEGJ	6 (biological)
4	Bestcure	200	ACEGJ	6 (biological)
5	Bestcure	100	ABDFHIJ	7 (biological)
	Copper Hydroxide SC	150	D	1 (chemical)
6	Bestcure	100	ACEGJ	6 (biological)
7	Bestcure	100	EI	2 (biological)
	Copper Hydroxide SC (CH)	150	A	1 (chemical)
8	Copper Hydroxide SC	150	ACEGJ	6 (chemical)

Trial 1 BBCH: A: 61, B: 62, C: 63, D: 64, E: 67, F: 69, G: 71, H: 71, I: 72, J: 73

Trial 2 BBCH: A: 61, B: 65, C: 65, D: 65, E: 65, F: 67, G: 67, H: 69, I: 69, J: 72

### Results

Graphic 1. Effect of treatments on mean number fruit damaged by bacterial spot.



The ascorbic acid of **Bestcure**® induces the plant to synthesize endogenous phytoalexins, which act as natural defences of plants. **Bestcure**® also contains bioflavonoids from citrus extract, that protect from oxidation as also does ascorbic acid, enhancing its effect. Both compounds are antioxidants that protect and act synergistically preserving the natural aroma of fruits and vegetables. In addition, applying **Bestcure**® on the ground invigorates the growing thanks to the contribution of L-amino acids easily absorbed.



Bacterial Leaf Spot on plums.  
Photograph by Bill Shane, MSU Extension,  
Michigan University, USA



These trials were performed in Cape Town, in South Africa. They were ran by Agricultural Science Consultant Jan van Schoor Pr. Sci. Nat (Reg. no 400278/05), the stufy director Dawid Ryk van Schoor and the research manager Matthys du Toit Lombard for Futureco Bioscience SA.

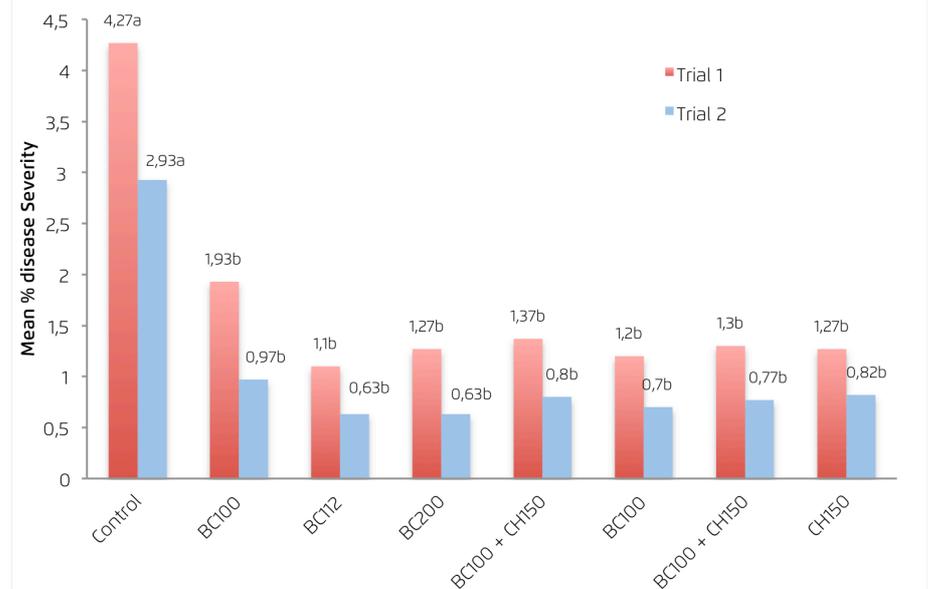
For more information about this article please contact [research@futurecobioscience.com](mailto:research@futurecobioscience.com)  
For more information about Bestcure®: [technical@futurecobioscience.com](mailto:technical@futurecobioscience.com)

Futureco Bioscience SA,  
Avenida del Cadí 19-23  
Sant Pere Molanta 08799  
Olèrdola (Barcelona)

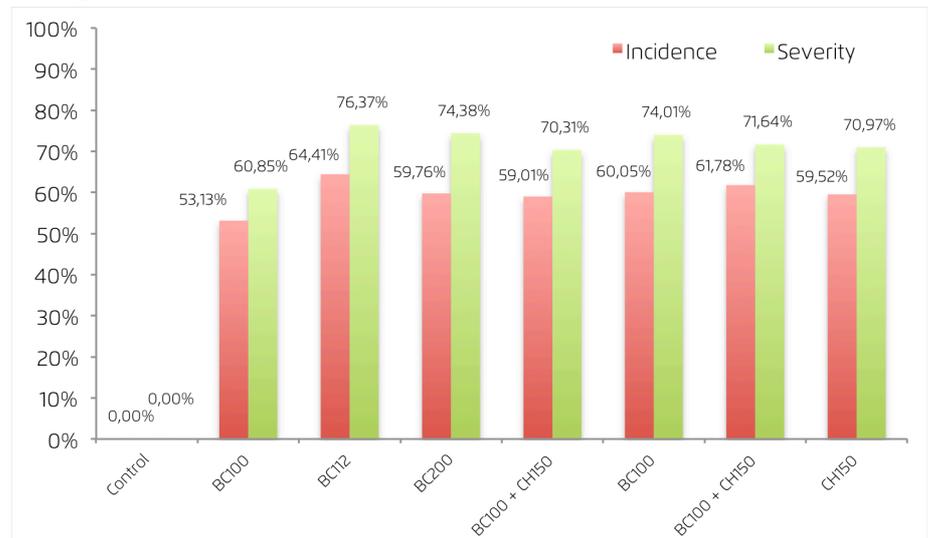
[www.futurecobioscience.com](http://www.futurecobioscience.com)

Good for your crops, good for the environment

**Graphic 2.** Effect of treatments on Disease Severity caused by Bacterial Leaf Spot.



**Graphic 3.** Effect of treatments on mean percentage bacterial leaf spot severity. Average of both trials.



## Conclusions

Significant bacterial leaf spot (*Xanthomonas arboricola* pv. *pruni*) control/suppression in two varieties of plum (Favour King and Sensation) was achieved by **Bestcure**® applications in the Western Cape area in both trials. **Bestcure**® at all the dosage rates tested was found to be effective regarding number of fruits infected, as well as fruit severity. Results were consistent with / better than the standard chemical treatment applied. Respective to disease incidence in fruits, treatments did not differ significantly from each other. Efficacy on Incidence ranged from 53.13% to 64.41% in the **Bestcure**® treatments, and from 59.01% to 61.78% in the combined treatments (**Bestcure**® and Copper Hydroxide) and 59.52% in the chemical standard (Copper Hydroxide alone). Concerning Fruit Disease Severity, there were also no significant differences among the efficacy of treatments: plants treated with 3 different doses of **Bestcure**® showed efficacy on Fruit Disease Severity between 60.85% and 76.37%, whereas it was 70.31-71.64% in the combined treatments and 70.97% in the chemical standard. Therefore, **Bestcure**® is effective to control *Xanthomonas arboricola* pv. *pruni* alone or in combination with a chemical standard. Bestcure is effective for the treatment of *Xanthomonas arboricola* pv. *pruni* on stonefruit at doses from 100mL/100L to 200mL/L. No symptoms of phytotoxicity were visible on any of the plum trees treated during any given time of the trial.