Plant & Food RESEARCH
RANGAHAU AHUMĀRA KAI

www.plantandfood.com

Effect of Eco Enhancer and Protector on conidium germination of *Elsinoe piri* and *Venturia inaequalis*

Scheper, RWA, Wood PN, Fisher BM

August 2009

A report prepared for

Henry Manufacturing Limited

Scheper, RWA, Wood PN, Fisher BM
Plant & Food Research, Hawke's Bay

PFR SPTS No. 2853
PFR Client Report No: P/243003/01
PFR Contract No: 23095

This report has been prepared by The New Zealand Institute for Plant and Food Research Ltd (Plant & Food Research), which has its Head Office at 120 Mt Albert Rd, Mt Albert, AUCKLAND. This report has been approved by:

Research Scientist
Reiny Scheper

Date: 24 August 2009

Science Group Leader, Applied Plant Pathology
Bob Fullerton
Date: 24 August 2009

Results of a poison slides assay

Treatment	Mean percentage conidium germination (back-transformed means in brackets) *Elsinoe piri*		*Venturia inaequalis*		Maximum length of germination tube (µm) *Elsinoe piri*	*Venturia inaequalis*
Water	70.0 (70.1)	a	62.0 (62.1)	b	125	250
Eco Enhancer® 0.5%	67.5 (67.7)	a	77.3 (77.3)	a	35	200
Eco Enhancer® 1%	15.8 (15.5)	b	11.5 (10.5)	c	25	100
Eco Enhancer® 2%	0 (0)	c	0.8 (0.2)	d	0	100
Eco Enhancer® 3%	0 (0)	c	0 (0)	d	0	0
Eco Enhancer® 4%	0 (0)	c	0 (0)	d	0	0
Protector® 0.5%	0 (0)	c	0 (0)	d	0	0
Protector® 1%	0 (0)	c	0 (0)	d	0	0
Protector® 2%	0 (0)	c	0 (0)	d	0	0
Protector® 3%	0 (0)	c	0 (0)	d	0	0
Protector® 4%	0 (0)	c	0 (0)	d	0	0

Within each column, means with the same letter are not significantly different (α=0.05, *P*<0.001).

Results of this experiment

Conidium germination of both *Elsinoe piri* and *Venturia inaequalis* was significantly reduced when Eco Enhancer® or Protector® were added to the spore suspension, compared with the control.

Protector effectively reduced conidium germination at 0.5%, 1%, 2%, 3% and 4%, with no spores germinating at all.

Eco Enhancer significantly reduced germination of conidia of both *E. piri* and *V. inaequalis* when the concentration was 1% or greater, with 16% of *E. piri* conidia and 11% of *V. inaequalis* conidia germinating at a concentration of 1% Eco Enhancer. None of the *E. piri* conidia germinated when the concentration Eco Enhancer was 2% or greater, and none of the *V. inaequalis* conidia germinated when the concentration Eco Enhancer was 3% or greater. A low concentration (0.5%) Eco Enhancer did not reduce spore germination of *E. piri* or *V. inaequalis*. In fact, *V. inaequalis* spore germination was higher at this concentration.

Germination tubes of both *E. piri* and *V. inaequalis* decreased in length as the concentration Eco Enhancer increased.

Protector and Eco Enhancer will need to be tested in glasshouse and field trials to determine whether they can effectively control the diseases caused by *E. piri* and *V. inaequalis*.

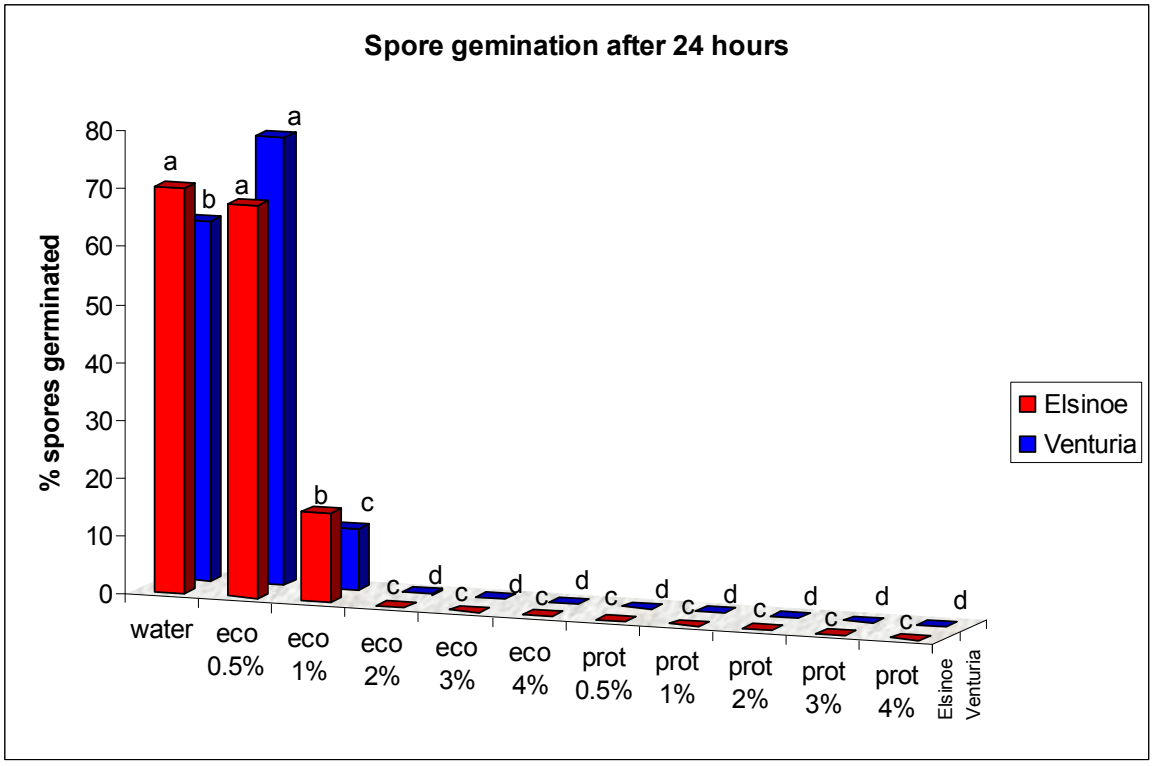


Figure 1. Mean conidium germination rates of *Elsinoe piri* and *Venturia inaequalis* after 24 hours at 20˚C in different concentrations of Eco Enhancer® or Protector®, compared with a water control. Means with the same letter within each pathogen are not significantly different (α=0.05, *P*<0.001).

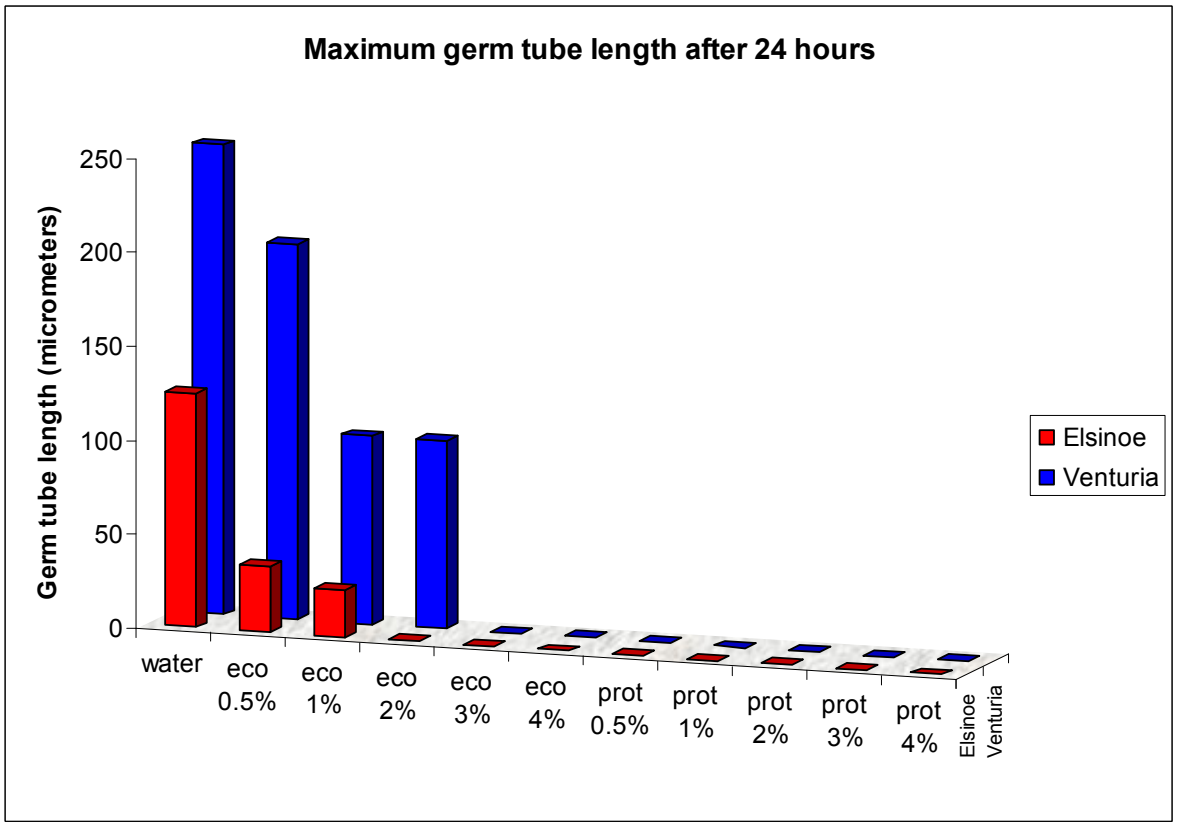
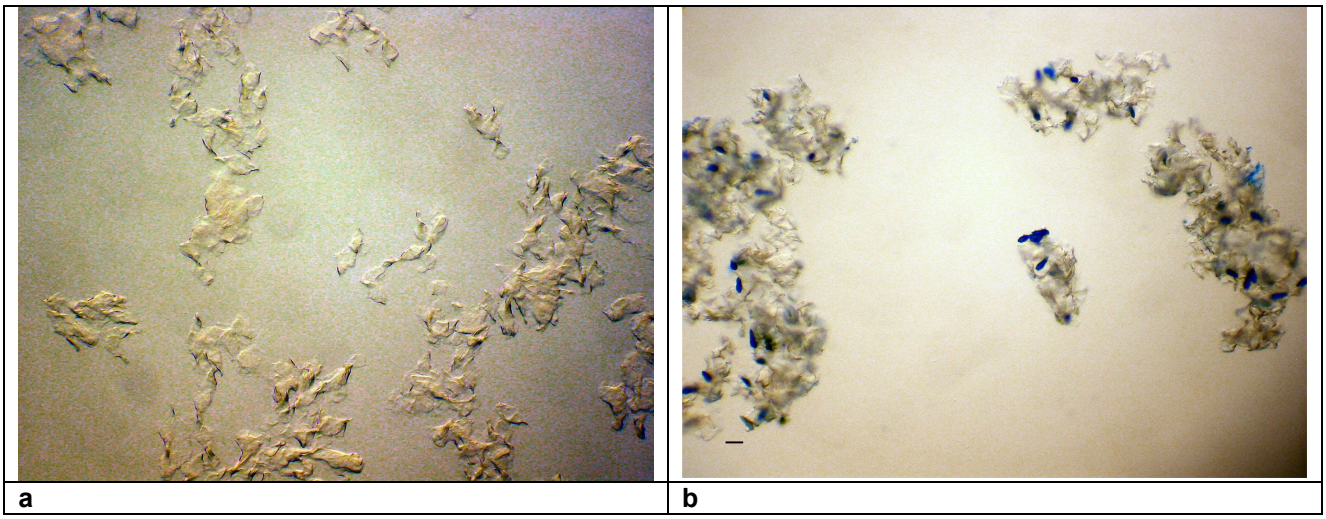
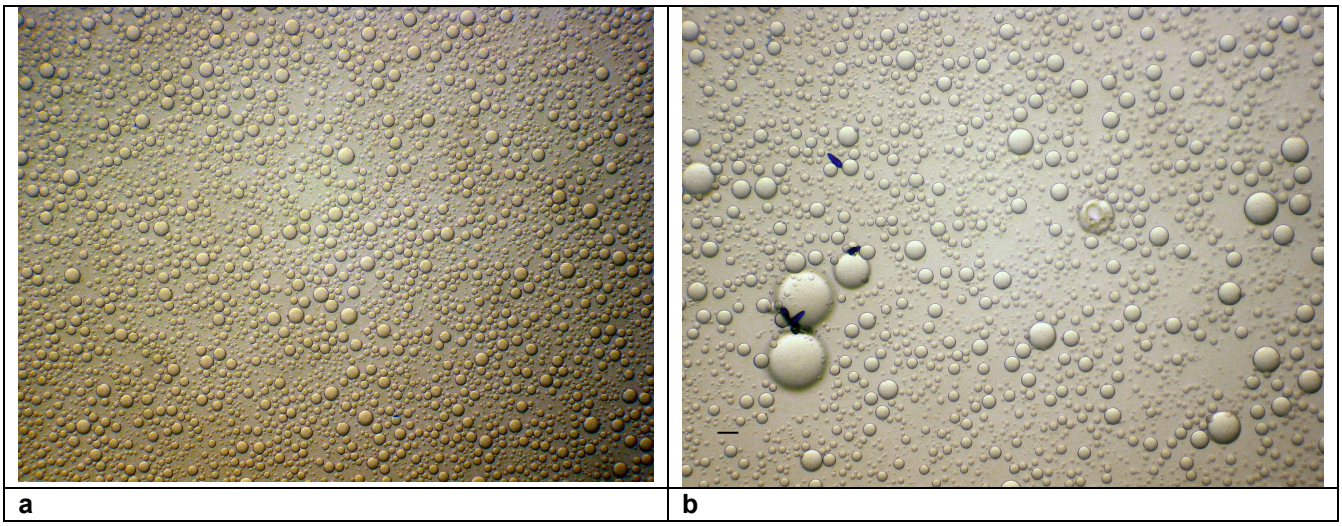


Figure 2. Maximum length of germination tubes of *Elsinoe piri* and *Venturia inaequalis* after 24 hours at 20˚C in different concentrations of Eco Enhancer® or Protector®, compared with a water control.



a **b**

Figure 3. a. A 4% suspension of Protector®, at a magnification of 200x on a compound microscope. b. Conidia of *Venturia inaequalis* did not germinate after 24 hours in a suspension of 4% Protector at 20˚C, scale bar = 25 µm.



a **b**

Figure 4. a. A 4% suspension of Eco Enhancer®, at a magnification of 200x on a compound microscope. b. Conidia of *Venturia inaequalis* did not germinate after 24 hours in a suspension of 4% Eco Enhancer at 20˚C, scale bar = 25 µm.

For further information please contact:

Reiny Scheper or Peter Wood
The New Zealand Institute for Plant & Food Research Ltd
Plant & Food Research Hawke's Bay
Private Bag 1401
Havelock North
Hastings 4157
NEW ZEALAND
Tel: +64-6-975 8880
Fax: +64-6-975 8881
Email reiny.scheper@plantandfood.co.nz