

Trial EcoBac: Control of *Phytophthora* in Bell Pepper at nursery

Product: EcoBac
Crop: Bell Pepper

Trial setting: Nursery
Location: Mexico

Objective

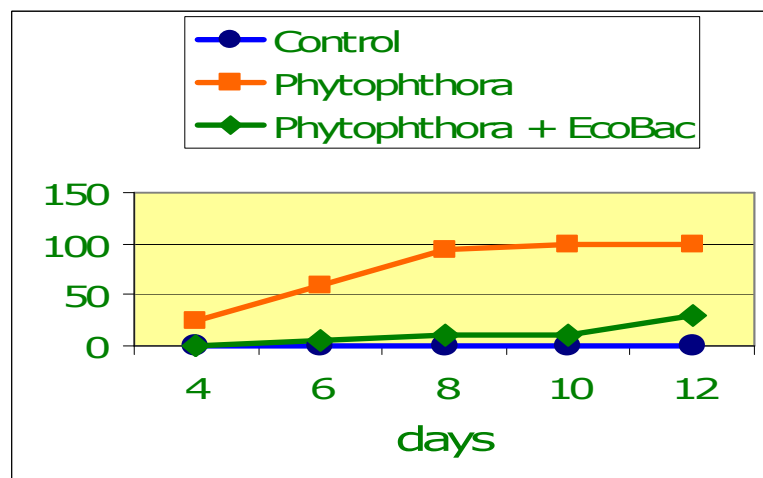
Control of *Phytophthora capsici* in Bell Peppers in a nursery

The fungi *Phytophthora* causes great economic damage to agricultural crops around the world. Peppers crops in the Southwest of the USA and in Mexico are seriously affected by this fungal pathogen. Many of the chemical fungicides used to control *Phytophthora* are classified as carcinogens by the EPA, are toxic to humans, wildlife and other non-target species. In addition, many reports indicate that chemical fungicides have become less effective due to the development of pathogen resistance. Biological control with antagonistic microorganisms to directly or indirectly control target pests is postulated as a solution. Biological control is safer for humans and the environment, and allows production of organic crops.

Methods and Results

Two trials were carried out in a nursery in Mexico. Peat moss was steam sterilized in polypropylene bags and transferred to 300 ml nursery pots. *Phytophthora capsici* grown in V8C media for 8 days was placed for two days in a Petri dish with sterile water to induce sporangia and zoospore production. The contents of a Petri dish were suspended in one liter of sterile water using a conventional blender. 40 ml of this suspension were inoculated into each pot, except for the control treatments. EcoBac was added (6×10^6 cels/ml of soil) to the soil of half of the pots inoculated with *Phytophthora*. *Phytophthora* and EcoBac were added simultaneously to the sterilized peat moss. Bell pepper plantules grown for 4 weeks had between 3 and 4 leaves at the moment of transplant. Bell peppers were planted just after the inoculation. The percentage of disease incidence was determined on days 4, 6, 8, 10 and 12 after planting. Twenty pots were set per treatment. Results are presented in Graph 1.

Graph1.
Percent incidence of root rot caused by *Phytophthora capsici* and its biocontrol by EcoBac in bell peppers.



The data was analyzed by ANOVA followed by Tukey's test to determine differences between treatments. Statistically significant differences ($P < 0.05$) were determined at every sampling point between the *Phytophthora* and the *Phytophthora* + EcoBac treatment, as well as between the *Phytophthora* and the Control treatment. Significant differences were determined between the Control and the *Phytophthora* + EcoBac treatment only at the last sampling.

A second nursery trial was setup whereas the inoculum of *Phytophthora capsici* used was twice the amount used in the previous trial. The same three treatments and methods were used as in the previous trial, this time using six pots per treatment.

The effect of the pathogen was severe as all plants inoculated with it died, except for the ones also treated with EcoBac. In fact none of the plants of the later treatment died. Furthermore, these plants were as healthy as the control plants (Photograph 1.).

Photograph 1.
Second nursery trial
with Ecobac for
control of
Phytophthora capsici
in bell peppers.

