



Biological control of southern blight (*Sclerotium rolfsii* L.) on beans (*Phaseolus vulgaris* L.) with *Trichoderma harzianum* r.

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Introduction

- Beans are a legume of great importance for human consumption worldwide, mainly in developing countries, due to their high protein and nutrient content. Latin America ranks first among the world's tropical regions in terms of bean production and consumption.
- Southern bean blight disease, caused by the pathogenic fungus *Sclerotium rolfsii* L. can account for up to 25% of crop losses during dry and hot periods. Soil health plays an important role in pathogen control.
- Therefore, the promotion of soil microorganisms can reduce crop losses and obtain positive yields. In recent years, alternative technologies have been studied and promoted for the control of southern blight. Among these is the use of biopreparations such as bokashi, lombriabono, and mountain microorganisms.

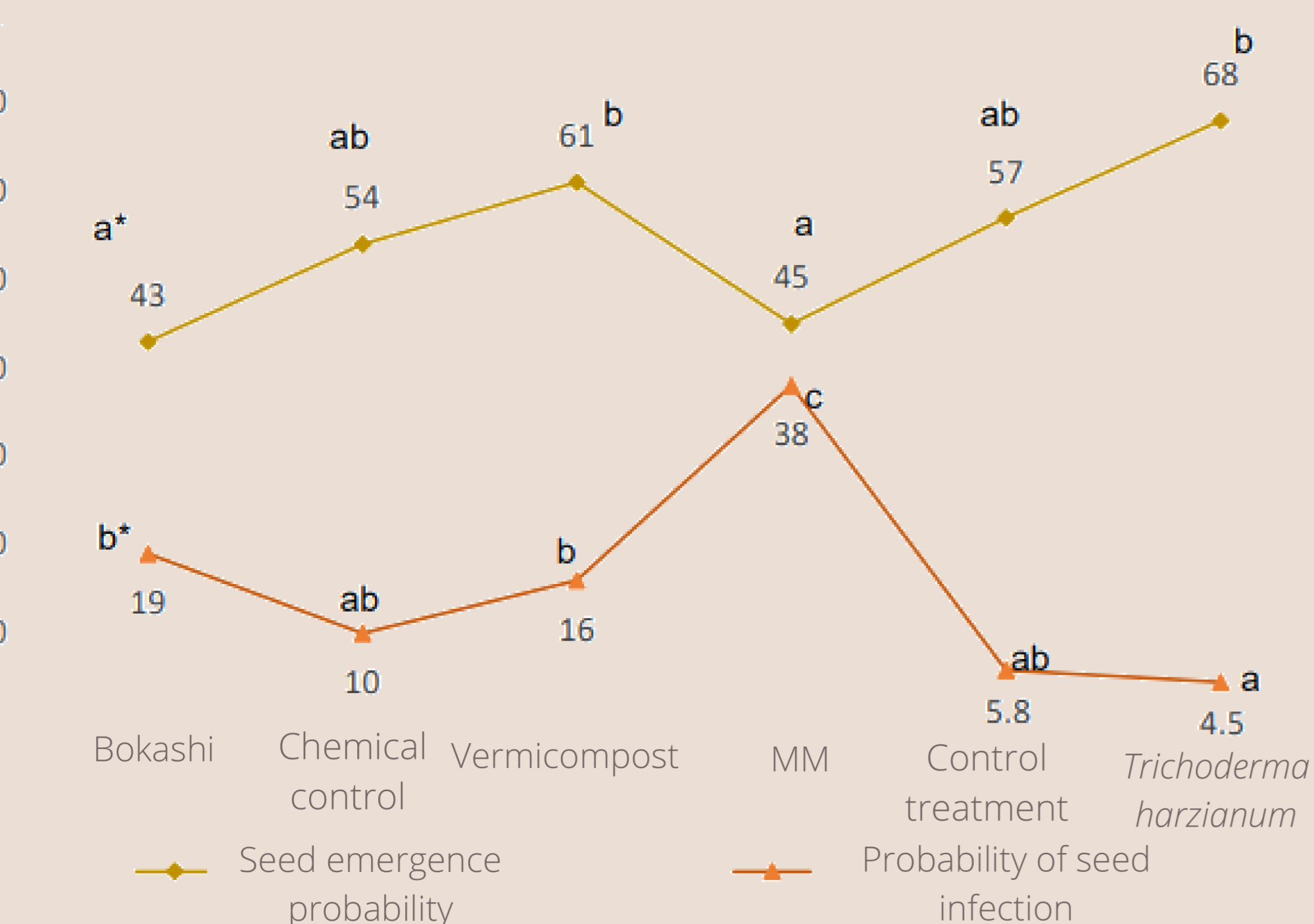


Material and Methods

- The research was conducted in the laboratory and greenhouse at the University of El Salvador between 2016 and 2017. A laboratory methodology was used; first, collecting soil material contaminated by the pathogen *Sclerotium rolfsii* R. Second, the sclerotia were reproduced and isolated.
- In the greenhouse methodology, the pathogen was inoculated in sterilized soil. The laboratory trial was divided into four treatments, control, and chemical treatment.
 - 1.- Mountain microorganisms
 - 2.- Worm compost
 - 3.- Bokashi
 - 4.- *Trichoderma harzianum*
 - 5.- Chemical control (Cooper hydroxide)
 - 6.-Control Treatment
- The treatments were divided into two forms of application: a soil amendment and direct seed treatment.

Results

Figure 1. Effect of seed treatment on seed infection and seed emergence.



Key findings

Soil amendments have a significant effect in reducing *Sclerotium rolfsii* L. infection in bean plants. However, liquid amendments such as Mountain Microorganisms can favor pathogen infections.

Application of vermicompost as a soil amendment showed a lower probability of seed infection. In addition, *Trichoderma harzianum* L. showed the lowest infection rate by the pathogen in the seed treatments.

Finally, The combination of application form and biopreparations reduces the probability of pathogen infection.

Figure 2. Effect of application method at emergence, infection at emergence, and infection at plant infection at emergence and infection at the plant.

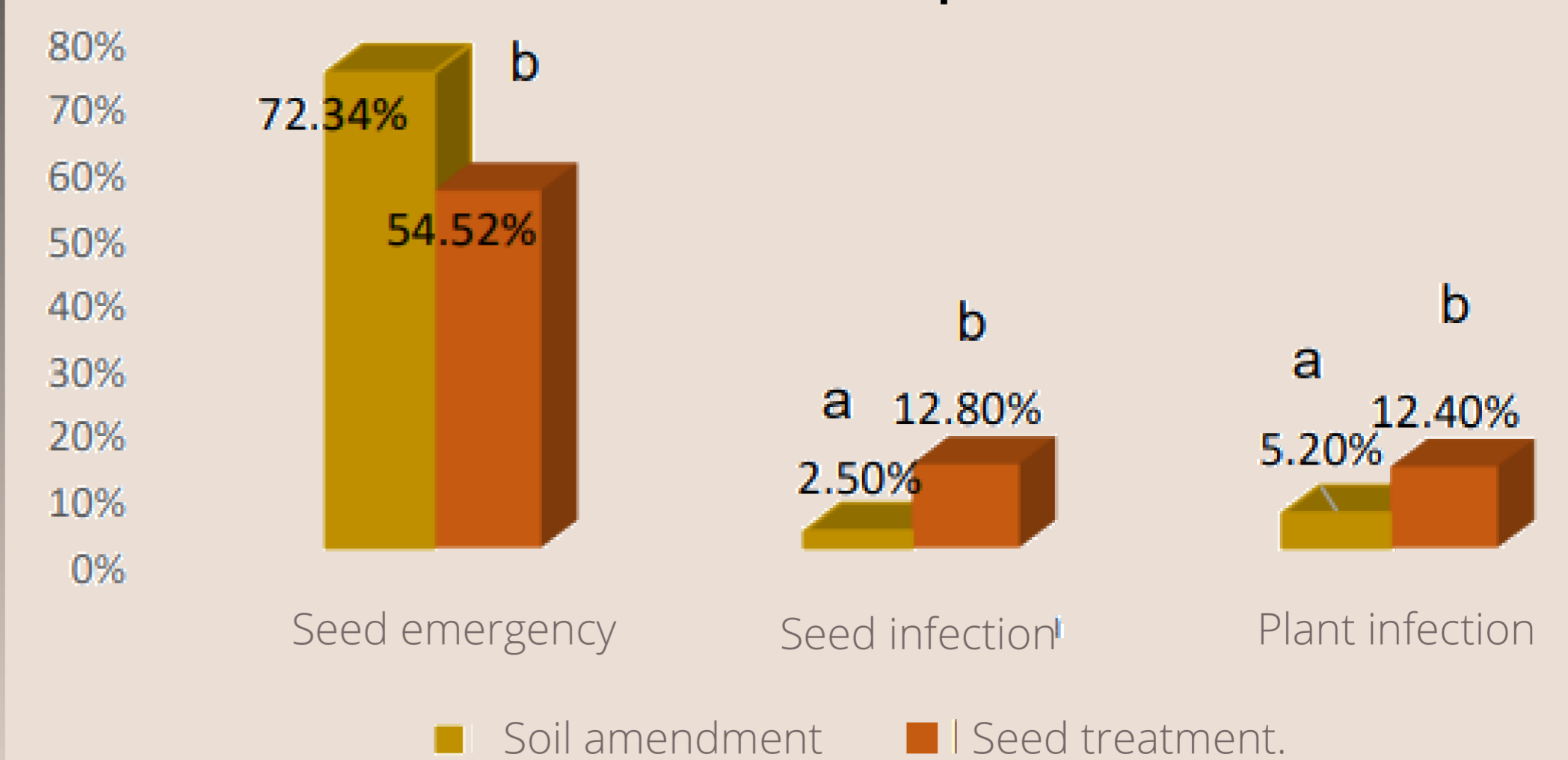
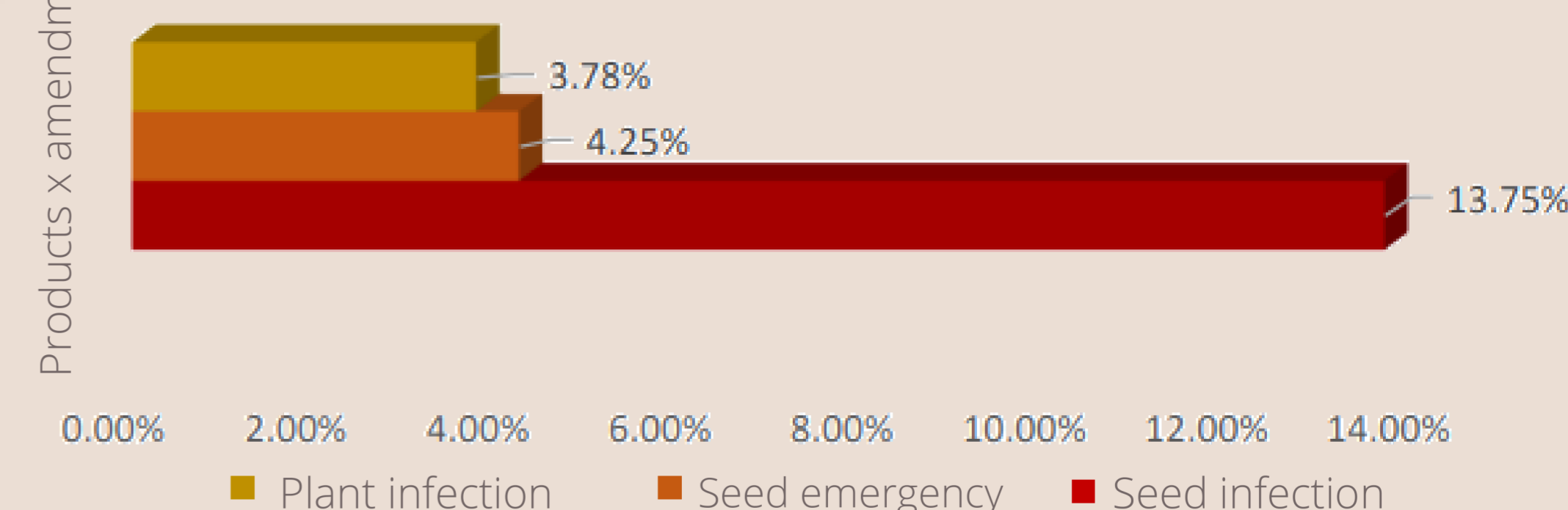


Figure 3. Effect of products applied as a soil amendment in emergence, infection to seed, and infection in plant seed and plant infection.



Conclusions

Use vermicompost as an amendment in small extensions, as it contributes to the reproduction of beneficial organisms and microfauna in the soil.

Pelleting the seed with *Trichoderma harzianum* (Excalibur Gold FS) also brings economic benefits if the commercial strain is used.

Do not apply liquid amendments on compacted and poorly aerated soils, as moisture is a trigger for pathogen infection.



For further information Please help yourself

