



Tropentag, September 15-17, 2021, hybrid conference

“Towards shifting paradigms in agriculture  
for a healthy and sustainable future”

## In Vitro Antagonism of Native Guatemalan Isolates of *Trichoderma Harzianum* and *T. Viride* for Biological Control of *Rhizoctonia Solani*

JOSÉ ALEJANDRO RUIZ-CHUTÁN<sup>1</sup>, JULIO ERNESTO BERDÚO-SANDOVAL<sup>2</sup>, MARIE KALOUSOVÁ<sup>1</sup>,  
BOHDAN LOJKA<sup>1</sup>, AMÍLCAR SÁNCHEZ-PÉREZ<sup>2</sup>

<sup>1</sup>*Czech University of Life Sciences Prague, Fac. of Tropical AgriSciences, Dept. of Crop Sciences and Agroforestry, Czech Republic*

<sup>2</sup>*Universidad de San Carlos de Guatemala, Facultad de Agronomía, Guatemala*

### Abstract

*Rhizoctonia solani* is a basidiomycete present in the soil that currently affects the production of potato crops in Guatemala's western highlands, causing the disease known as black scurf. The current classification of *R. solani* is based on the ability of the hyphae to merge and form an anastomosis group (AG), 13 AG being recognised so far. Due to the negative impacts of chemical disease control, a viable alternative is presented in usage of fungi from the genus *Trichoderma* as a biological control strategy. The research objective was to identify the AG of *R. solani* present in the western highlands of Guatemala through specific PCR. The potential of native isolates of *T. harzianum* and *T. viride* as biological control agents characterised by the molecular marker AFLP was also evaluated. Of the 78 isolates of *R. solani*, the groups AG<sup>-3</sup>PT, AG-4-HG-II and AG-5 were identified with an incidence of 46.16 %, 14.10 % and 17.96 %, respectively, while 17 isolates could not be assigned. Isolates of *T. harzianum* showed a higher average percentage inhibition of radial growth (PIRG) of *R. solani* (56.71 %) than *T. viride* (37.58 %) ( $p < .001$ ). We determined that the phylogenetic groups of *T. harzianum* and *T. virens* are equally effective against the 3 AG identified, highlighting the benefit of using native isolates. We suggest using sequencing of the ITS region for the identification of unassigned isolates of *R. solani* through sequence comparison of NCBI genbank sequences and field evaluations to assess the efficiency of *T. harzianum* and *T. viride* native isolates.

**Keywords:** Anastomosis groups, genetic diversity, percentage inhibition of radial growth (PIRG)