

Innovation in Coatings: Biocompatibility between Biopolymers and *Trichoderma virens*

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INTRODUCTION & AIM

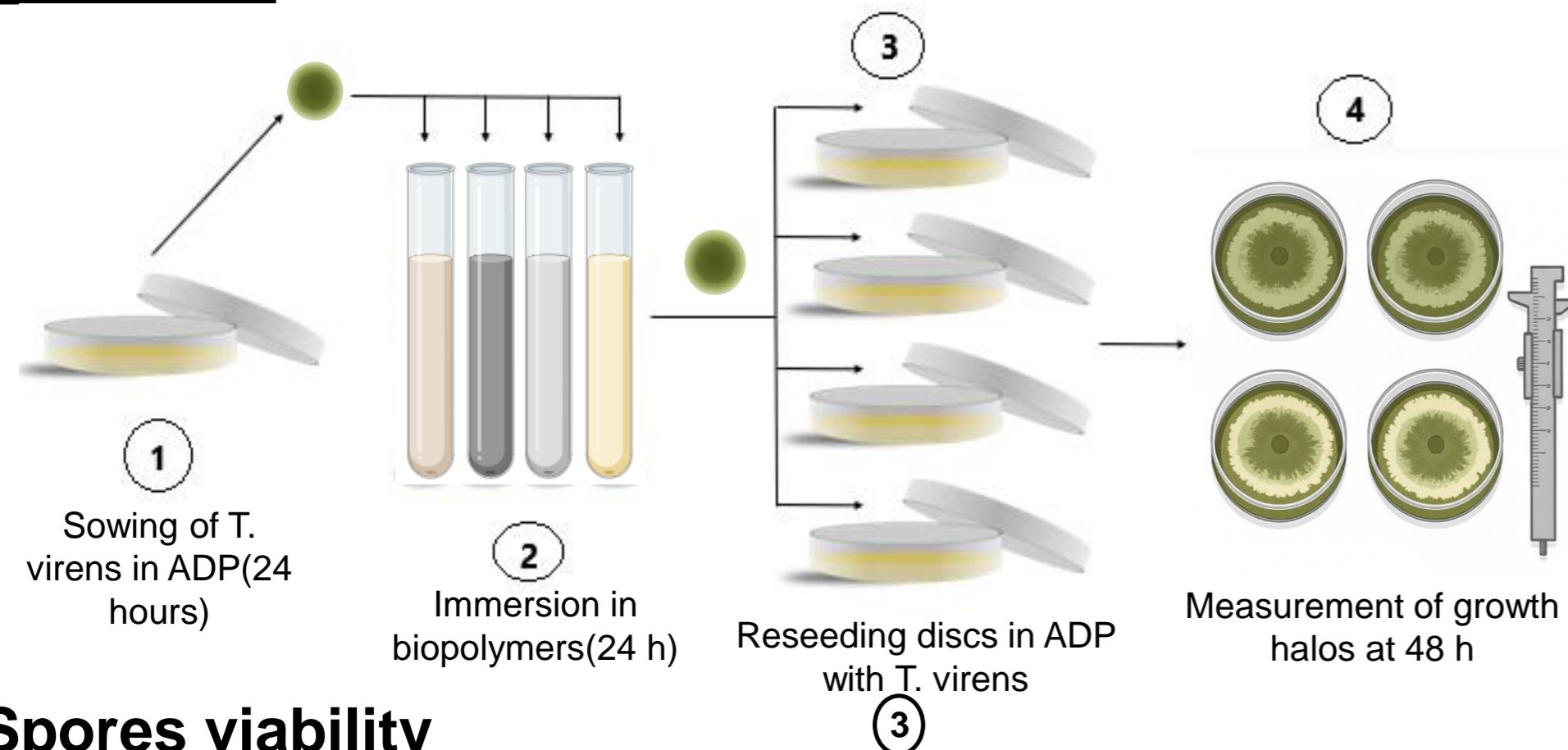
Coating and biopriming techniques stand out as biotechnological tools, where seeds are coated with a thin layer of biopolymers and inoculated with growth-promoting agents, which induce defense mechanisms in the plant and optimize nutrient mobilization, among other benefits (Cañizares et al., 2025).

The objective of this work is to evaluate the compatibility between *Trichoderma virens* and biopolymers at different concentrations

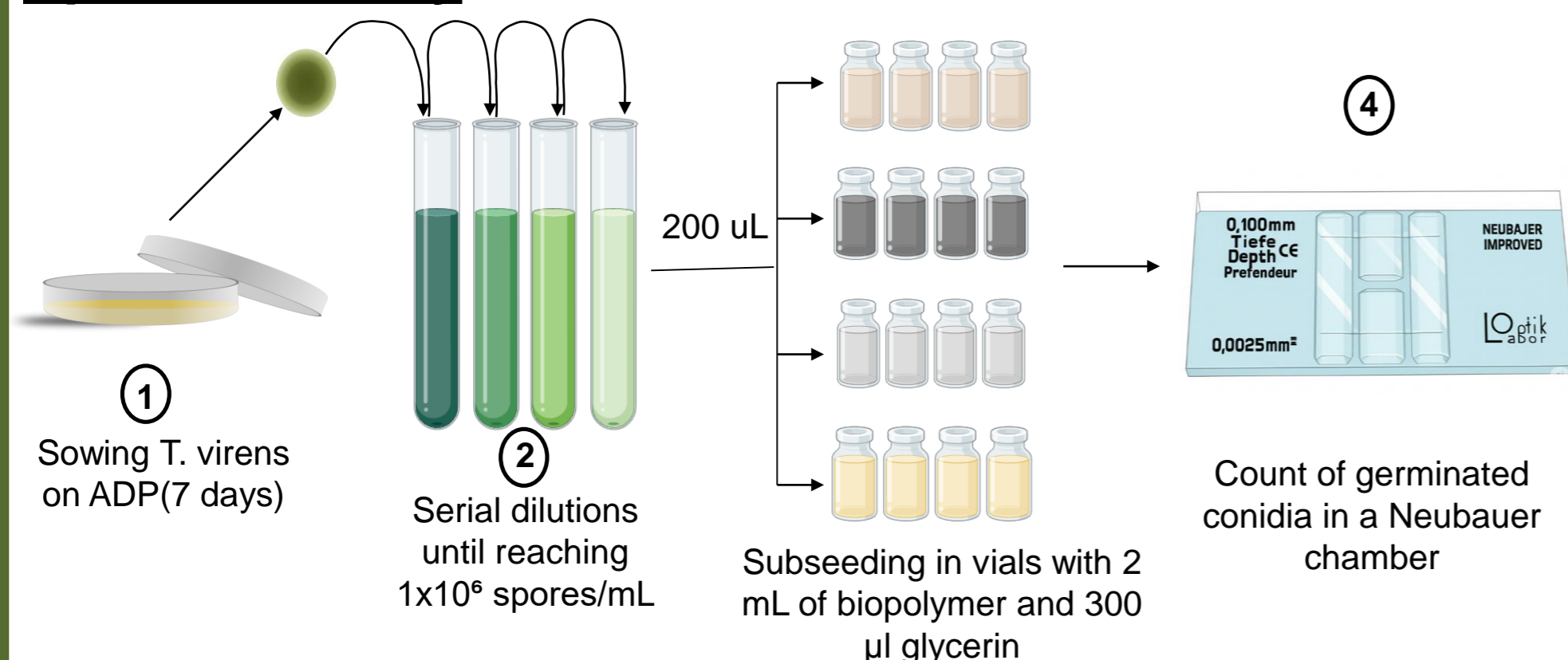
METHOD

Biopolymers used: Maltodextrin (10%; 20%; 30%; 40%), Sodium alginate (0.5%; 1.0%; 1.5%; 2.0%), Gum arabic (25%; 30%; 35%; 40%), and Guar gum (0.25%; 0.5%; 0.75%; 1.00%). Biological agent: *Trichoderma virens* (T. virens) from the fungal collection of the Department of Phytopathology (FCA-UNNE).

Screening with ADP disks



Spores viability



RESULTS & DISCUSSION

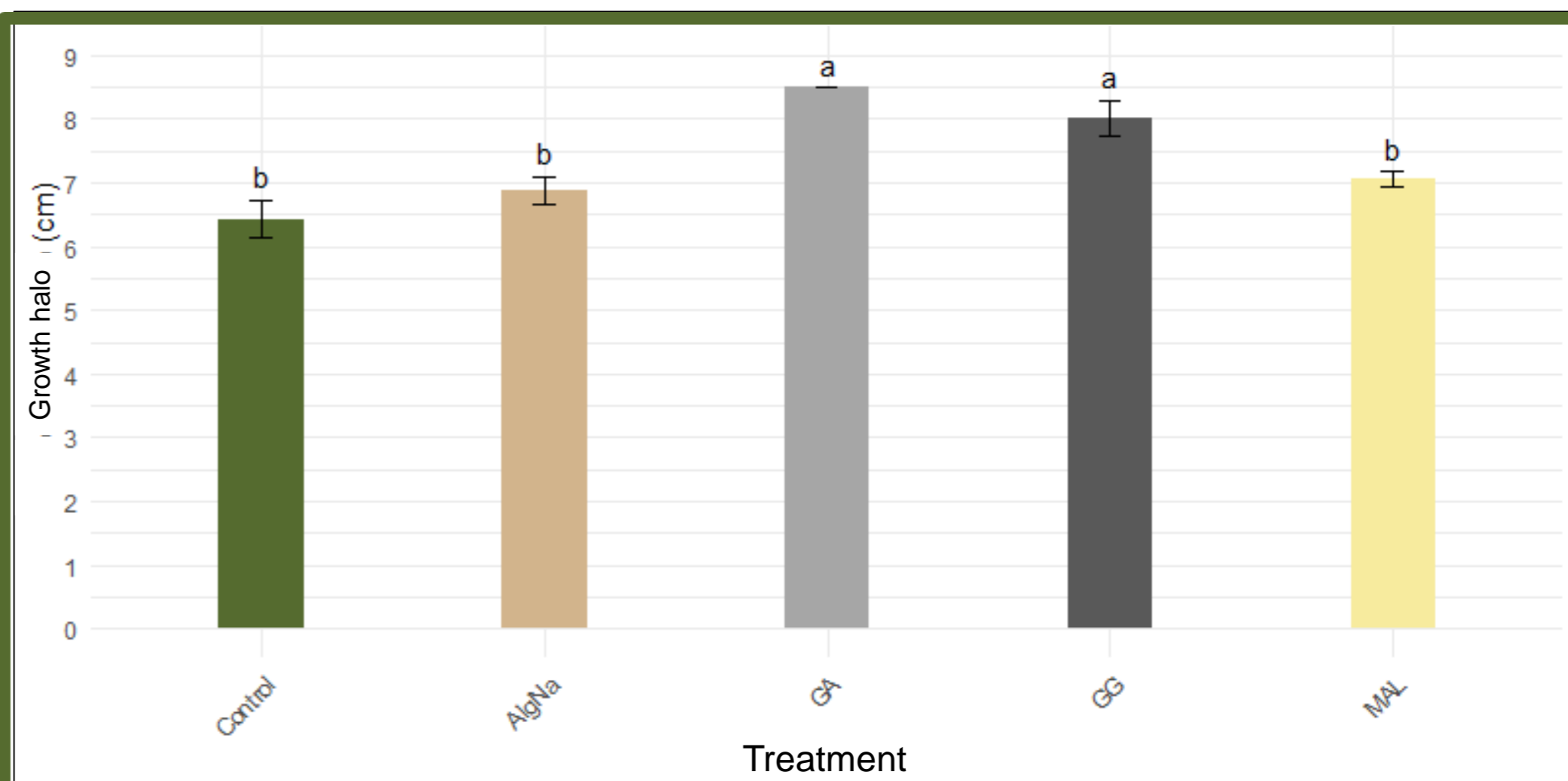


Figure 1. Growth halos of *Trichoderma virens* according to different biopolymer treatments. Different letters indicate significant differences between treatments ($p < 0.05$). AlgNa (Sodium alginate), GA (Gum arabic), GG (Guar gum), MAL (Maltodextrin).

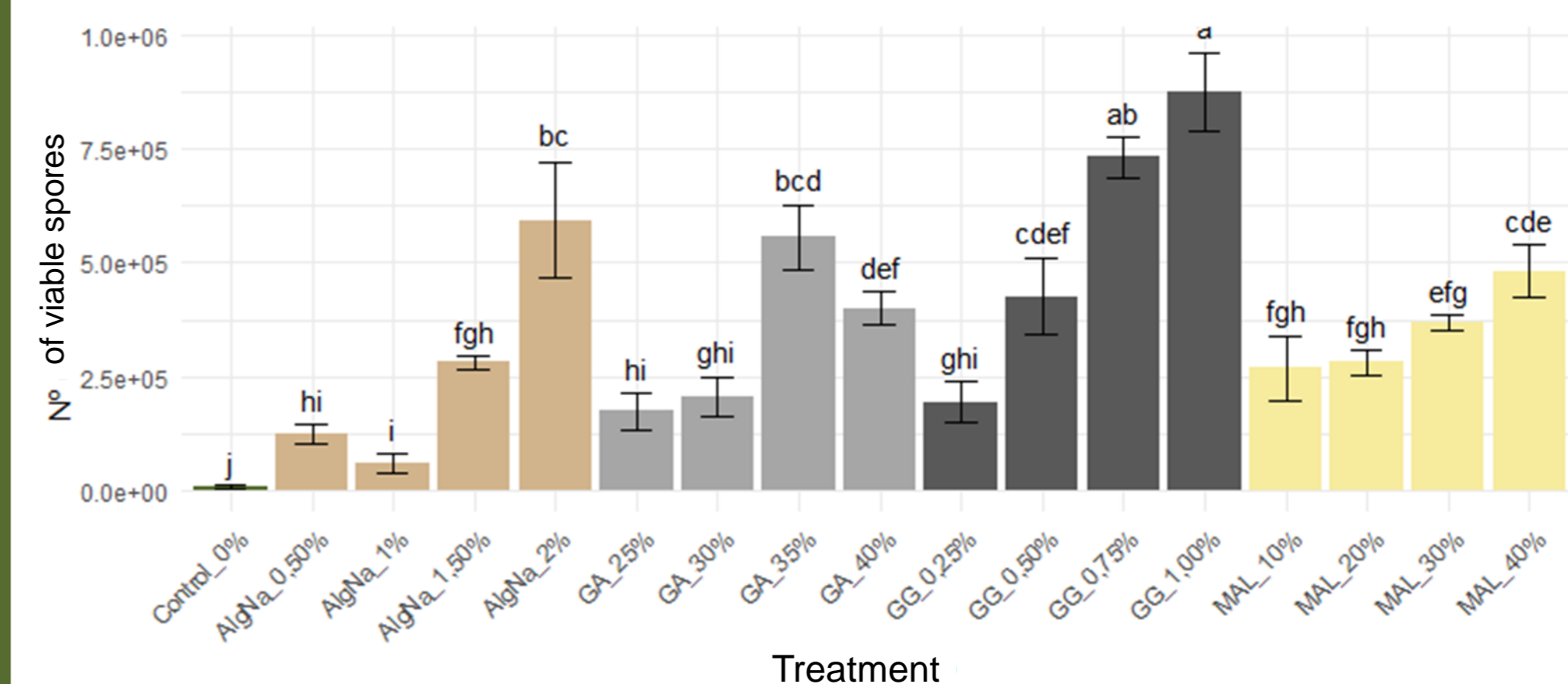


Figure 2. Viability of *Trichoderma virens* spores according to different biopolymers and concentrations. Different letters indicate significant differences between treatments ($p < 0.05$). AlgNa (Sodium alginate), GA (Gum arabic), GG (Guar gum), MAL (Maltodextrin).

Figure 1 shows that both guar gum (GG) and gum arabic (GA) showed statistically significant differences in mycelial growth, the vegetative stage of *T. virens* associated with colonization. GG at concentrations of 1% and 0.75%, followed by sodium alginate (AlgNa) at 2%, stood out in the spore viability test (Figure 2), registering the highest numbers of germinated conidia. It is worth noting that, regardless of the biopolymer and its concentration, they showed statistically significant differences compared to the control, suggesting that they serve as a nutrient source for the fungus.

CONCLUSION

The proposed biocompatibility was verified to be effective; those concentrations of each biopolymer with differential results will be included in future imbibition trials with cowpea seeds.

FUTURE WORK / REFERENCES

Cañizares, E., et al. (2025) Seeds of Change: exploring the transformative effects of seed priming in sustainable agriculture. *Physiologia Plantarum*, 177(3), e70226.