Efficacy and endophytic potential of *Beauveria bassiana* (Ascomycota: Hypocreales) against *Brevicoryne brassicae* (Hemiptera: Aphididae)

Patient Niyibizi Gakuru [1,2,3], Marcellin Cuma Cokola [1,4], Kenza Dessauvages [1], Jean-Pierre Mate Mweru [2], François Muhashy Habiyaremye [3], Rudy Caparros Megido [1], Frédéric Francis [1], Ibtissem Ben Fekih [1]

1. Functional and Evolutionary Entomology, Gembloux Agro-Bio Tech, University of Liège, Passage des Déportés 2, 5030 Gembloux, Belgium. – 2. Regional Post-Graduate Training School on Integrated Management of Tropical Forests and Lands (ERAIFT), UNIKIN. BP 15373 Kinshasa, DRCongo. – 3. Department of Crop Sciences, Faculty of Agriculture and Environmental Sciences, University of Goma, BP 204 Goma, DRCongo. – 4. Department of Crop Sciences, Faculty of Agriculture and Environmental Sciences, Université Evangelique en Afrique, BP 3323 Bukavu, DRCongo. E-mail : patientgakuru@gmail.com ; entomologie.gembloux@uliege.be

Introduction

Beauveria bassiana (Bals.) Vuil. is a cosmopolitan entomopathogenic fungus which can affect a wide range of insect hosts. It is also recognized as an endophytic fungus with the ability to colonize plant tissues. We assessed three strains (GHA, KA14, GxABT-1) of *B. bassiana* for direct virulence and endophytic performance against the cabbage aphid *Brevicoryne brassicae* L.

Material and methods

➢ Origin of *Beauveria bassiana* strains

Fungal strain	Source of isolation	Country	References
GHA	Botanigard 22WP		Dessauvages et al., 2024
KA14	Infected *earwig*	DRCongo	Cokola et al., 2023
GxABT-1	Soil	Belgium	Dessauvages et al., 2024

➢ Impact of direct spray of fungal treatments on *B. brassicae*

Aphids sprayed with 1ml of 1×10^8 conidia mL^{-1} of fungal inoculum
Aphid mortality checked daily over 8 days

➢ Indirect impact of *B. bassiana* on *B. brassicae*

Aphids exposed on treated leaves at 7 & 14 days after inoculation (DAI)
Aphid mortality checked daily over 8 days

➢ Endophytic properties of *B. bassiana*

- Performance to colonize plant tissues (leaves, stems & roots)
- Dual-choice tests between fungus-treated and control plants

Results

➢ *Mortality*

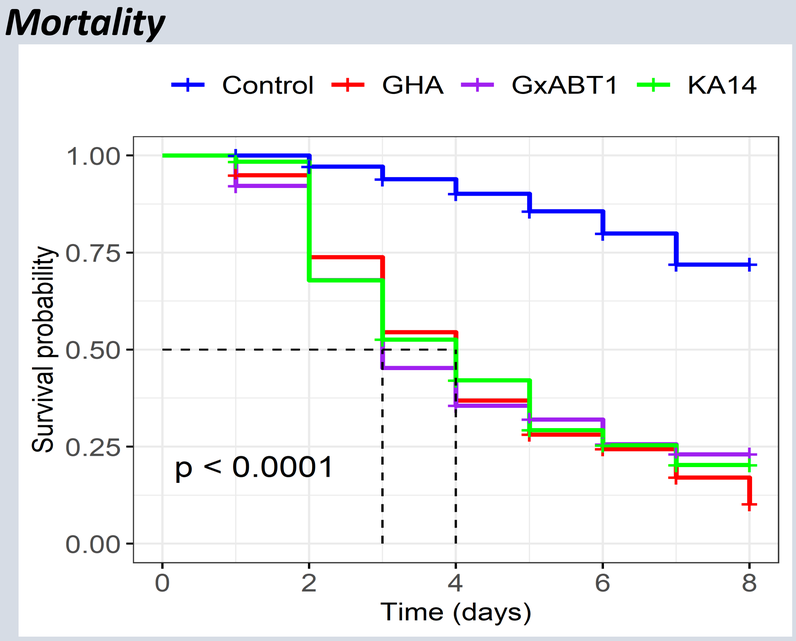

Fig. 1. Kaplan-Meier survival curves following direct application of *B. bassiana* to adult *B. brassicae*

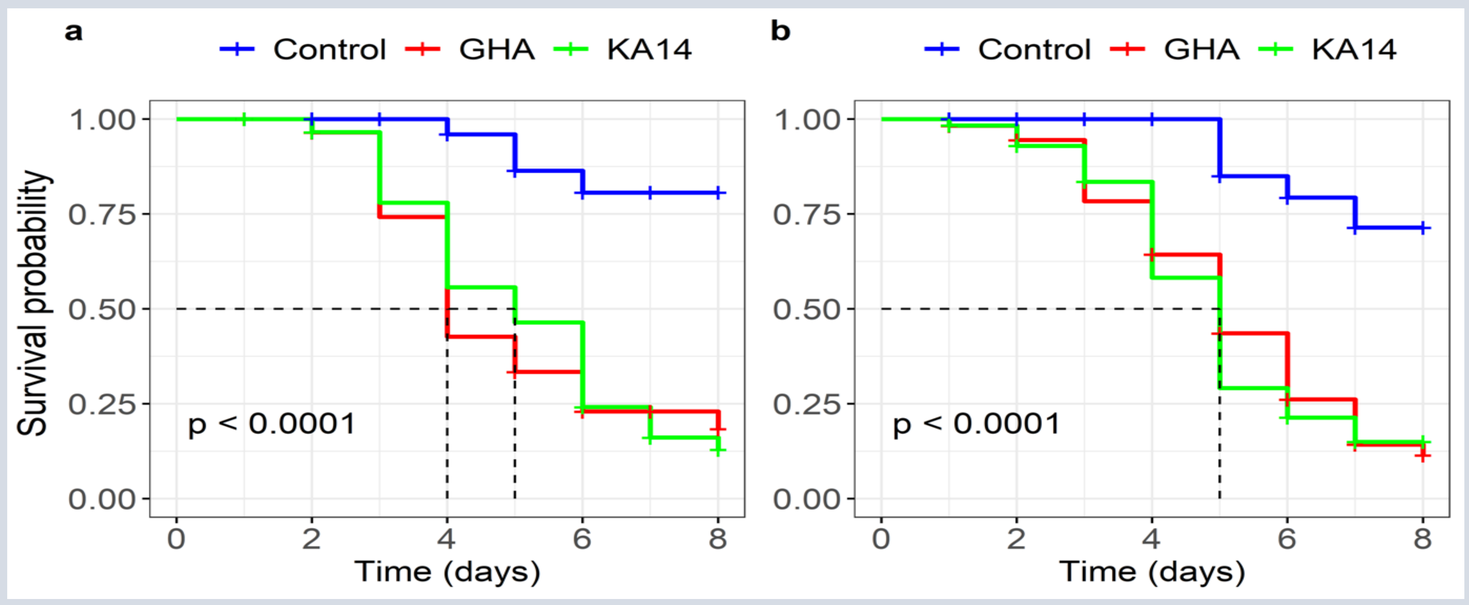

Fig. 2. Kaplan-Meier survival curves following insect exposure to fungus-treated leaves at (a) 7 DAI and (b) 14 DAI

➢ *Endophytism*

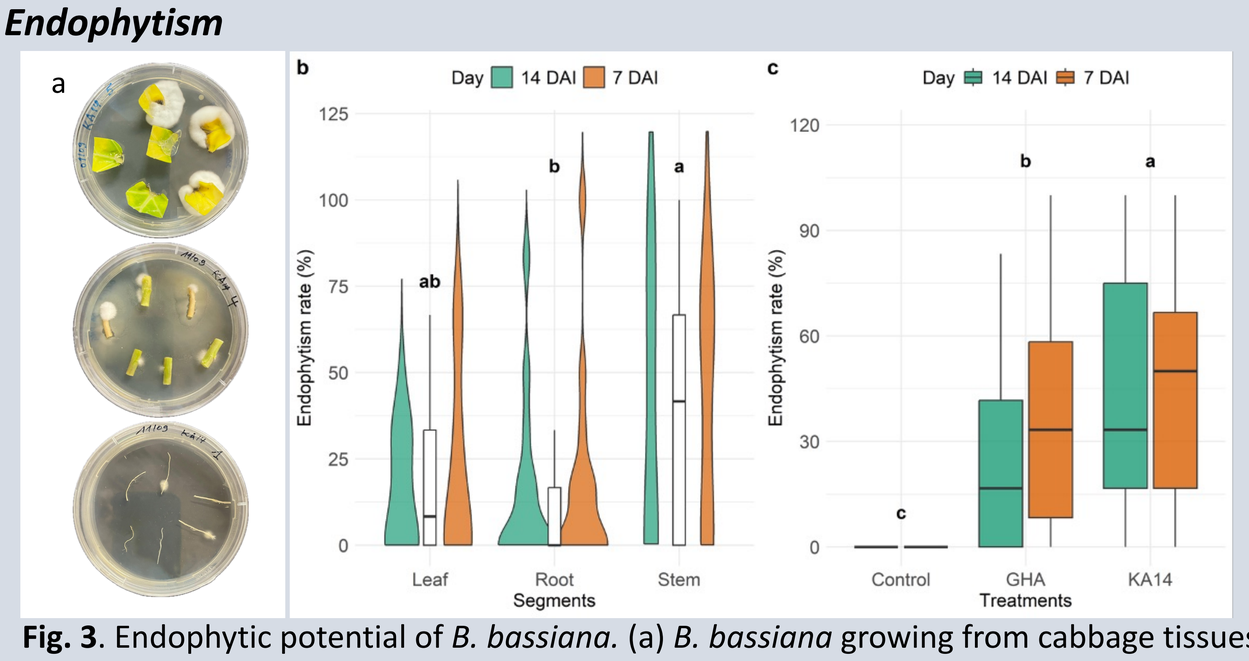

Fig. 3. Endophytic potential of *B. bassiana.* (a) *B. bassiana* growing from cabbage tissues (leaf, stem and root segments), (b) Endophytism rate of different plant segments at 7 DAI and 14 DAI and (c) Endophytism rate according to treatments at 7 DAI and 14 DAI

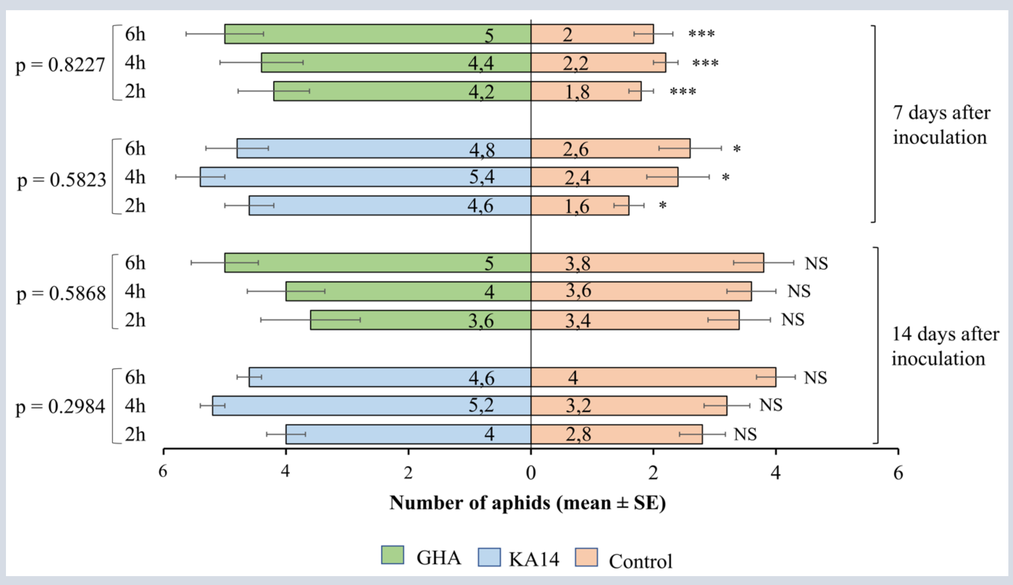

Fig. 4. Selection of plants by aphids between control and fungal inoculated plants after 2, 4 and 6 hours

Conclusion

- The endemic strain *B. bassiana* KA14 has a promising entomopathogenic and endophytic potential as for the commercial strain *B. bassiana* GHA
- The control potential of microbials promises eco-friendly cabbage aphid management

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References

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