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Title: An endophytic *Beauveria bassiana* strain increases spike production in bread and durum wheat plants and effectively controls cotton leafworm (*Spodoptera littoralis*) larvae

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Abstract

Entomopathogenic fungi have traditionally been assumed to help regulate insect populations. However, some hypocrealean ascomycetes, such as *Beauveria bassiana*, play other, poorly understood ecological roles that might be useful in developing novel strategies for both increased crop production and crop protection. The primary aims of this work were (a) to assess endophytic colonization of bread wheat and durum wheat plants by the applied fungus *B. bassiana* strain EABb 04/01-Tip; (b) to examine the impact of various *B. bassiana* inoculation methods on growth, yield, phytohormone levels and nutrient uptake in the plants, and (c) to quantify mortality of cotton leafworm (*Spodoptera littoralis*) larvae fed with leaves from inoculated plants. Three experiments involving different inoculation methods (viz., 'soil treatment', 'seed dressing' and 'leaf spraying'), and a fourth experiment to assess mortality in *S. littoralis* larvae fed with leaves from endophytically-colonised plants, and were conducted according to a completely randomized design. *Beauveria bassiana* successfully established within, and colonized, bread wheat and

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