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- 3204: Harvesting the power of fungal entomopathogens for controlling arthropod pests in Brazil

Introduction: Mycopesticides comprise environmentally-friendly components in IPM programs that minimize reliance on chemical insecticides and mitigate insecticide resistance. Organic agriculture is expanding in Brazil, offering new opportunities to exploit microbial agents of arthropod pests. Brazil has the largest microbial control program worldwide using the fungal pathogen *Metarhizium anisopliae* for controlling spittlebugs on over 3 million hectares of pasture and sugarcane. Additionally, the anamorphic ascomycetes *Beauveria bassiana*, *Isaria* spp., and *Lecanicillium* spp. are expanding their use throughout the country targeting a wide range of pests. Other fungal entomopathogens are little explored owing to their limited range of targets or difficulties in large scale production. Advances in mass production and formulation play an important role in this commercialization. However, most mycopesticides (>70%) encompass unformulated technical concentrates (active biomass+substrate), which may result in inconsistent results and hinder further commercial development.

Methods: Here we summarize our progress in innovative liquid fermentation and formulation technologies that produce stable, infective fungal propagules for use in biocontrol of arthropod pests.

Results/Conclusions: Although solid-substrate produced conidia remain the predominant propagule used as mycopesticides, vegetative propagules consisting of blastospores or microsclerotia are gaining interest for the biocontrol of above and below ground pests. We believe that the selection and production of virulent and environmentally stable fungal products will foster increased acceptance by stakeholders contributing to a more sustainable agricultural system in Brazil.

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