

**EXPLOITING FUNGAL MICROBIOMES FOR PLANT STRESS RESISTANCE AND IMPROVED
YIELDS IN CULTIVATED COTTON**

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Abstract

Beneficial fungal endophytes can confer protection to plants from a variety of stressors and improve yields in major agricultural crops. We have been systematically evaluating the ecological, physiological and agronomic effects of fungal endophytes originally isolated from cultivated cotton (*Gossypium hirsutum*). Using simple seed treatment protocols, individual cotton plants can be inoculated with endophytic fungi with resulting phenotypic effects detectable across the entire growing season. Through a combination of greenhouse assays and extensive field trials, we have demonstrated that the targeted application of fungal endophytes in cotton can mediate resistance to multiple stressors including insects, nematodes and drought, with significant positive impacts on plant performance and yields in the field. A commercial product utilizing this technology was launched during the 2016 growing season that demonstrated a positive impact on yields at multiple sites across the US cotton belt.