A SURVEY OF ENDOPHYTIC FUNGI IN ASYMPTOMATIC TEXAS COTTON WITH IMPLICATIONS FOR DISEASE AND PEST MANAGEMENT

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Abstract

Plants commonly harbor a diversity of fungi as asymptomatic endophytes that can provide protection from a range of biotic and abiotic stressors. In order to better characterize the diversity and potential functions of fungal endophytes associated with cotton (*Gossypium hirsutum*), we surveyed five commercial varieties for the presence of fungal endophytes. We sampled eight sites distributed across two distinct growing regions in Texas at two different times of the season. In addition, we compared the diversity of endophytic fungal species isolated from plants cultivated under organic and non-organic conditions. Fungal isolates were identified using a combination of morphological and DNA identification methods. We identified a number of fungal endophytes such as *Alternaria* sp., *Colletotrichum* sp. and *Phomopsis* sp. that colonized all the varieties analyzed and have been previously isolated from other plant species. Interestingly, other recovered species such as *Epicoccum sp.*, *Cochliobolus sp.*, *Chaetomium* sp., *Arthrobotrys* sp., *Acremonium* sp. and *Exserohilum rostratum* have not been previously reported from cotton. Many of the endophytes we recovered can be latent pathogens, but some such as *Alternaria* sp., *Epicoccum* sp., *Acremonium* sp*., Cladosporium* sp*., Arthrobotrys* sp., *Chaetomium* sp., and *Paecilomyces* sp., for example, are known to act as antagonists against plant pathogens, insects and nematode pests. Our survey provides candidates for further evaluation as potential management tools against a variety of diseases and pests when present as endophytes in cotton.