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INVESTIGATING KOA WILT AND DIEBACK IN HAWAI'I

Pathogenicity of *Fusarium* species on *Acacia koa* seedlings

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ABSTRACT

Fusarium isolates obtained from diseased *Acacia koa* Gray (Fabaceae) plants, adjacent soil, and seeds and seedpods may or may not be pathogenic on young seedlings under greenhouse conditions. This includes isolates of *Fusarium oxysporum*, the putative cause of koa wilt and dieback disease ("koa wilt") in Hawai'i. We tested 10 *Fusarium* isolates, made up of 4 different species (*F. solani*, *F. subglutinans*, *F. oxysporum*, *F. semitectum*), for their pathogenic potential on koa seedlings under greenhouse conditions. All tested *Fusarium* isolates completely colonized seedling root systems and became systemic, spreading to above-ground plant tissues (stems, branches, and leaves). Virulence was quantified on the basis of disease symptoms (mortality, wilting, foliar chlorosis, or necrosis) and effects on seedling height, stem diameter, and root volume. Results varied, ranging from nonpathogenic to high levels of virulence. Pathogenic screening of many more isolates will be necessary to identify pathogens that can be effectively used to screen families of koa for potential resistance to the koa wilt and dieback disease that is seriously affecting this important Hawaiian tree species.

Dudley NS, James RL, Sniezko RA, Yeh A. 2007. Investigating koa wilt and dieback in Hawai'i: pathogenicity of *Fusarium* species on *Acacia koa* seedlings. *Native Plants Journal* 8(3):259–266.

reforestation, dieback disease,
Fabaceae, *Fusarium oxysporum*,
Fusarium semitectum, *Fusarium solani*,
Fusarium sterilihyphosum,
Fusarium subglutinans

Fungi: Nelson and others (1983)
Insects: ITIS (2007)
Plants: USDA NRCS (2007)