

**FREQUENCY AND CHARACTERISTICS OF *FUSARIUM OXYSPORUM* ISOLATES
IN AUSTRALIAN COTTONSEED IMPORTED FOR CATTLE FEED**

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Abstract

Three lots of cottonseed imported into California for dairy cattle feed in 2001 and 2002 were examined for the presence of live *Fusarium oxysporum*. A total of 17 *F. oxysporum* isolates were obtained from 16,912 seeds. Thus, about 0.1% of the seed contained *F. oxysporum*. Relationships among the isolates and with known Fusarium wilt of cotton pathogens were determined using genetic complementation tests of nitrate nonutilizing mutants. The 17 seed isolates were divided into four vegetative compatibility groups. Australian seed isolate #14 complemented three of four isolates of *F. oxysporum* obtained from wilted plants in Australia by Dr. Kochman in May, 1994. This group was designated as VCG1. Eleven isolates were assigned to VCG2, four to VCG3 and one to VCG4. Pathogenicity was determined using both stem-puncture and root-dip assays. None of the seed or plant isolates from Australia caused wilt or progressively invaded the xylem of 'Rowden' cotton at 25/20 °C (12 hr light/12 hr dark) in the stem-puncture assay. In this respect, the Australian isolates were distinctly different from the type specimens of races 1, 2 and 6 and more than 140 isolates of *F. oxysporum* f.sp. *vasinfectum* from the USA. Thus, identifying the Australian isolates as race 1, 2 or 6 is probably a misnomer. Isolates in VCG1, including seed isolate #14, caused severe root rot and wilt of 2-week-old 'Deltapine 50' seedlings in the root dip assay at 23/18 °C (12 hr light/12 hr dark). Pathogenicity of the Australian isolates generally was correlated to the amount of fusaric acid present in the inoculum. Infected roots in alkaline clay-sand mix were allowed to decompose for four months and then the infested soils were planted with 'Deltapine 50' seed. Fusarium wilt appeared in all seedlings in the soils infested with VCG1 isolates, with 16% seedling mortality, while no disease occurred in soil infested with other isolates, including a *F. oxysporum* f.sp. *vasinfectum* isolate from California. These results demonstrate that the Australian Fusarium wilt pathogen may pose a threat to several million acres of US cotton that currently are not affected by Fusarium wilt because of neutral and alkaline soils and sparse nematode populations.