

Host range and prevalence of species and races of *Verticillium* isolates infecting tomatoes and other vegetable crops in Brazil

Author(s) Ailton Reis, Leonardo Silva Boiteux

Institution(s) 1. CNPH, Embrapa Hortaliças (Embrapa Vegetable Crops), BR 060, Km 09, Zona Rural, C. Postal 218, 70359-970, Brasília-DF

Abstract:

The genus *Verticillium* has two species that are important plant pathogens: *V. dahliae* and *V. albo-atrum*. A simple technique has been used to separate these two fungi species which is based upon their differential ability in forming microsclerotia in culture medium. *Verticillium dahliae* isolates produce microsclerotia, whereas in *V. albo-atrum* these structures are absent. *Verticillium dahliae* is a cosmopolitan, polyphagous, causing vascular wilting on hosts such as: tomato, eggplant, gilo, cotton, strawberry, cocoa, okra, and other plant species. This pathogen has also physiological specialization in tomato with two races being reported so far. The objective of the present work was to determine the relative incidence of species and physiological races of *Verticillium* in a collection of 96 isolates obtained from distinct vegetable crops in Brazil. All isolates evaluated as well as the standard isolates were able to produce microsclerotia in culture medium, indicating the exclusive presence of *V. dahliae* isolates in Brazil. Results obtained after inoculating a set of tomato differential cultivars indicated the presence of 19 isolates from race 1, 70 isolates of the race 2 and seven isolates were classified as avirulent on tomato. Race 1 isolates were predominant during the 1990s, but nowadays the race 2 isolates are the prevalent ones, probably due to the massive employment in Brazil of tomato cultivars resistant to race 1. Four *V. dahliae* isolates were selected for host range studies. These four isolates were inoculated in 62 accessions of 54 plant species comprising 40 genera of 18 botanic families. Twenty-seven new experimental hosts of *V. dahliae* were identified. Accessions displaying a non-host-like reaction included all monocot species, *Datura stramonium*, *Nicandra physaloides*, *Physalis floridana*, cauliflower 'CNPH-003', watermelon 'Crimson Sweet', lettuce 'Regina' and 'Robinson', carrot 'Brasília', dry bean, green soybean, table beet, *Passiflora edule*, *Trapaeolum majus* and *Talinum triangulare*. The discovery of this set of new host plants of *V. dahliae* will impact the selection of alternative crops in rotation systems as well as the employment of resistance cultivars in field areas after cultivation with highly susceptible host crops.

Key words: *Verticillium dahliae*, taxonomy, variability, host range, pathogenicity