

# INDEXING MODERN COTTON CULTIVARS FOR RESISTANCE TO FUSARIUM WILT

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## Abstract

Fusarium wilt of cotton, caused by *Fusarium oxysporum* f. sp. *vasinfectum*, is a potentially limiting factor in crop production each year in Georgia, and the incidence of the disease has increased in recent years. Six greenhouse experiments were conducted in 2002 to evaluate and index commonly planted cotton cultivars for resistance to Fusarium wilt. Following the method of Wang et al. (1999), the roots of 21-day old cotton seedlings were washed and immersed for 5 minutes in a suspension containing  $1 \times 10^6$  conidia of *Fusarium oxysporum* f.sp. *vasinfectum* per ml. Inoculated seedling were planted individually into 1.5 × 10-inch tubes filled with a mixture of sterile field soil and perlite, placed in a greenhouse for 3-4 weeks, and rated for symptoms of Fusarium wilt and vascular discoloration. For Fusarium wilt, a 0-10 scale (0=no symptoms, 10=plant death) was used; for vascular discoloration, a 0-5 scale was used (0=no discoloration, 5=maximum discoloration). Twenty-five cultivars were evaluated in experiments 1-3, and each cultivar was replicated 8 times in a completely randomized design. A non-inoculated control was also included. Twenty cultivars were used in experiments 4-6, with each inoculated cultivar having a paired, non-inoculated check. Each cultivar was replicated 4 times in a randomized complete block design, and there were 3 plants per replicate. In general, recently released cultivars were no more susceptible to Fusarium wilt than older cultivars, and transgenic cultivars were as susceptible, or in some cases less susceptible, to Fusarium wilt than their conventional counterparts. Results were variable between experiments 1-3 and experiments 4-6 due to higher greenhouse temperatures when the latter were conducted. Cultivars such as DP565 and DP50B tended to be more resistant, based upon vascular wilt ratings, than ST4892 and PSC355. All cultivars in experiments 4-6 were more resistant to Fusarium wilt than the highly susceptible cultivar Rowden. Rowden was not included in experiments 1-3. These results are preliminary, and tests will be repeated to confirm the results reported. Ultimately, field trials will be conducted to determine if the greenhouse test can be used to predict field resistance to Fusarium wilt.