Evaluation on Diseases Resistance of Cotton Material and Its Utilization

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Fusarium wilt and *Verticillium* wilt are important worldwide fungal diseases on cotton that cause damage to yield and quality. The pathogens survive in soil as microsclerotia for many years, and can be transmitted through seeds, soil, stream, and plant residues. And currently, no effective chemical control is available for those diseases. Production practices have established that planting wilt disease-resistance varieties was one of the most effective and safe measures to control those diseases with low cost. However, screening for wilt-resistance germplasm resources is the basis for resistance breeding. To provide resistant resources for breeding and help to gain resistant varieties, all materials in Sichuan provincial regional tests since 2001 were evaluated for their resistant levels. From 2001 to 2007, 456 lines were evaluated in Sichuan province for their resistance levels on the basis of standard criterion. The results showed that among the 456 lines, 45 lines, 9.87% of the total number, were highly resistant to *Fusarium* wilt; 328 lines, 70.18%, were resistant to *Fusarium* wilt; and 79 lines were tolerant to *Fusarium* wilt. Meanwhile, 1 line was highly resistant to *Verticillium* wilt; 59 lines, 13.00%, were resistant to *Verticillium* wilt; and 312 lines, 68.72%, were tolerant to *Verticillium* wilt. High resistance levels were shown in 28 lines, such as RVH01, RVH02, 98-1028, etc., of which the disease indexes of *Fusarium* wilt varied from 3.36 to 8.82, while that of *Verticillium* wilt varied from 9.52 to 17.28. With those wilt disease-resistance resources above employed, 14 varieties, such as ChuanMian 243, ChuanMian 239, and ChuanMian 65, were developed, and then authorized by national or Sichuan provincial government, while ChuanZaMian 26 with resistance to *Fusarium* wilt and *Verticillium* wilt, and ChuanZaMian 25 with resistance to *Fusarium* wilt and tolerance to *Verticillium* wilt, were authorized by Hunan provincial government. Great economic benefit has been obtained by planting those authorized varieties, which showed good potential for the disease resistance varieties.