

## **Abstract:**

Fusarium wilt, caused by *Fusarium oxysporum* F. sp. *phaseoli* caused growers to abandon the most popular climbing bean cultivar, Umubano (G2333) in Rwanda. The present objective was to determine the nature of inheritance of fusarium wilt resistance and recommend a breeding strategy to introduce resistance into susceptible cultivars. Two cultivars, vuninkingi (G685) and flora were donors of resistance to fusarium wilt whereas G2333 was highly susceptible. Injured root tips of 10-day old seedlings of the parents, progenies of F1 and F2 (G2333 × G685) and (G2333 × Flora), backcrosses F2 (G685 × Flora) were inoculated with  $10^6$  conidia ml<sup>-1</sup> of Rwandan isolate of *F. oxysporum* F. sp *phaseoli* (FOP-RW2) in a glasshouse. The disease severity was rated 28 days later using the CIAT scale of 1 - 9, where 1 - 3 represent resistant, 4 - 6 tolerant and 7 - 9 susceptible reactions. The chi-square analysis was performed to determine the Mendelian segregation ratios of resistant and susceptibility among the inoculated progenies. The F1 and the backcross progenies to the resistant parents segregated in the ratio of 1:0 as did the F2 population (G685 × Flora). The F2 progenies segregated in the ratio of 3:1. The backcross progenies to the susceptible parent segregated in the ratio of 1:1. Resistance to fusarium wilt is conditioned by a single highly heritable major dominant gene. The resistance can be achieved by backcross breeding.