

# **Virulence, variability and physiological races of the angular leaf spot pathogen *Phaeoisariopsis griseola* in Kenya**

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## **Abstract**

A study was undertaken to characterise the virulence variability in *Phaeoisariopsis griseola*, the causal agent of angular leaf spot of common bean (*Phaseolus vulgaris* L.) and to determine the physiological races of the pathogen occurring in Kenya. Isolates of the pathogen were collected from farmers' fields in five districts representing the diverse agroecological zones under which beans are produced in the country. Virulence variability of the isolates was determined by their reactions in a set of 12 differential bean cultivars. One hundred isolates were characterised into 44 physiological races, indicating great virulence variability in the pathogen. The races were grouped into three virulence categories, namely Andean, Afro-Andean and Middle American. Fifty-five per cent of the races were Middle American, 27% were Afro-Andean and 18 % were Andean. Cluster analysis of the virulence data revealed a 53% similarity between Middle American isolates and Andean and Afro-Andean isolates, whereas Andean and Afro-Andean isolates clustered together with no clear-cut separation. There was wide variation in virulence of isolates collected from the same geographical location. Similarly, isolates obtained from the same bean cultivar, either at the same or different locations, did not necessarily exhibit similar virulence patterns. There was a positive correlation ( $r= 0.519$ ) between the virulence level of a race and its frequency of detection. Middle American races were the most virulent and also the most widely distributed, whereas Andean and Afro-Andean races were more rare and less virulent. Bean differential cultivar Mexico 54 showed high levels of resistance to 41 races of *P. griseola* and is, therefore, a good source of resistance to angular leaf spot. However, the high level of virulence variability in the angular leaf spot pathogen implies that multiple sources of resistance are required for effective management of the disease.