

EVALUATION OF THE INHERITANCE OF ANTHRACNOSE RESISTANCE GENE *Co-1* IN COMMON BEAN

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Common bean (*Phaseolus vulgaris* L.) is being cultivated worldwide due to its high dietary demand. Bean anthracnose, caused by *Colletotrichum lindemuthianum*, is the most destructive fungal disease of common bean which can lead up to 100% yield loss under severe conditions. The introduction of resistant varieties is considered the most effective method over other measures for controlling the disease. Top Crop is a high-yielding variety of bush bean commonly grown by Sri Lankan farmers yet severely susceptible to bean anthracnose, while PC-50 is an imported bush bean variety that is highly resistant to bean anthracnose. An investigation was conducted to assess the heritability of resistance to bean anthracnose in bush bean cultivar PC-50 in the genetic background of bush bean variety Top Crop. The present study evaluated the effectiveness of the *Co-1* gene in imparting resistance across generations in the cross between PC-50 and Top Crop. The F₂ generation of Top Crop and PC-50 seedlings was inoculated with spore suspension of *C. lindemuthianum* by artificial and natural field inoculation. Symptoms in bean leaves and pods were evaluated on a nine-point disease severity scale. The results were analysed by the Chi-square test and revealed no significant difference between the observed and expected ratios ($p>0.05$), confirming that inheritance of the gene happened according to Mendel's first law. In conclusion, the inheritance of the *Co-1* gene occurs independently in bean cultivar PC-50 in the genetic background of the variety Top Crop and can be utilized effectively in the development of anthracnose-resistant bush bean varieties.

Keywords: *Colletotrichum lindemuthianum*, heritability, PC-50, *Phaseolus vulgaris*, Top Crop