

# FIELD EVALUATION OF COMMON BEAN GENOTYPES FOR REACTION TO ANTHRACNOSE DISEASE

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## Introduction

Dry bean (*Phaseolus vulgaris* L.) is an important grain crop popular for its high protein content. Health benefits including prevention and treatment of diseases such as diabetes mellitus, heart disease, low blood sugar and obesity, Type 2 diabetes, high blood pressure, and colon cancer, rendering it ideal as a food and nutrition security crop.

Anthracoese of dry bean is a seedborne fungal disease caused by *Colletotrichum lindemuthianum*. The disease is economically important and can cause heavy yield losses of up to 100%. Anthracnose symptoms include blackening of the abaxial leaf vein that extends to the petiole and stem, and sunken lesions on pods.

## Objective

To assess the reaction of common bean genotypes to anthracnose disease.

## Materials & Methods

Field screening trials were conducted to evaluate the reaction of fifty-one common bean germplasm varieties and twenty-six South African commercial dry bean cultivars to anthracnose disease. Trials were conducted in Potchefstroom (607 mm average annual rainfall) and in Cedara (824 mm average annual rainfall). The trials were arranged in a randomized complete block design with three replications, comprising four-row plots that were five meters long with 7.5 cm intra-row and 75 cm inter-row spacings. The Potchefstroom trial was subjected to artificial inoculations using purified race 6 (1.2 x 10<sup>6</sup> spore/ml), while the trial in Cedara was under natural infestation. A disease severity scale of 1-9 was used for evaluation where 1 is resistant and 9 susceptible. Data were captured and processed using Microsoft Excel 2016.

## Results & Discussion

Location	Evaluated material (germplasm & cultivars combined) resistant to anthracnose
Potchefstroom	70 (91%) (race 6)
Cedara (humid)	38 (49%)

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Rust - caused by *Uromyces appendiculatus*  
Common bacterial blight - caused by *Xanthomonas campestris* pv. *phaseoli*  
Angular leaf spot - caused by *Phaeoisariopsis griseola*



## Conclusions and Recommendation

There was a variation in the reaction to anthracnose among local dry bean cultivars and germplasm varieties. Variation was further observed in yield mainly between the two locations. The study showed a weak correlation between yield and disease severity within and between locations. Findings of this study form the basis for future projections where the identified anthracnose resistant germplasm varieties should be used as sources of genetic resistance in a common bean breeding programme.

## References

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