

Research Note

INCIDENCE OF ANTHRACNOSE IN LONG-DAY PIGEONPEA TRIALS¹

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Anthracnose was observed in the summer season of 1992 during the evaluations for incidence of fungal diseases in long-day pigeonpea trials established at the Isabela Substation, Agricultural Experiment Station (AES) of the University of Puerto Rico at Mayagüez (UPR-M). The precipitation was 864 mm and the mean minimum and maximum temperatures were 21 and 30°C, respectively.

The symptoms were confined to the pods, from which the pathogen was isolated in pure culture and preliminarily identified as *Colletotrichum gloesporioides*. Koch's postulates were satisfied by inoculating healthy pods with a suspension of 3×10^4 conidia per milliliter. In case of severe infection, pods showed pink brown cankers delimited by reddish brown borders (Figure 1), resulting in pod malformation, low seed number, and death of the pod. Pigeonpea anthracnose was first reported in Puerto Rico in 1927 (Tucker, 1927). All *Colletotrichum* species affecting legumes are seedborne. This finding has been a principal factor in their wide dissemination (Lenné, 1992). We have observed severe infection on private farms at Isabela, on the northwest coast of Puerto Rico, where rapid dissemination of the disease was probably due to the use of susceptible cultivars and high humidity conditions.

Five long-day pigeonpea genotypes, I-8-2, I-58-1 (early-maturing) and I-13, I-58-3 and II-56 (late-maturing), naturally infected with *C. gloesporioides* were evaluated for resistance to this pathogen in trials replicated four times and with four planting dates (May, June, July and August) of 1992 at the Isabela Substation.

Pod anthracnose was evaluated by adapting the scale reported by Schoonhoven and Pastor-Corrales (1987), in which ratings of 1 to 3 (0 to 1% of the pod surface area affected) were considered as resistant, 4 to 6 (2 to 10%) as intermediate, and 7 to 9 (11 to 25% or more) as susceptible. The disease severity was recorded four months after planting (pod filling stage). An analysis of variance was performed for disease severity. Means were separated by Tukey's test.

Significant differences for disease severity among pigeonpea genotypes were not detected (Table 1). Anthracnose was significantly higher ($P < 0.05$) in May than in the June and July plantings (Table 2). Genotypes II-56, I-13, I-58-1 and I-58-3 showed intermediate levels of resistance, and the early-maturing I-8-2 was susceptible. It is necessary to locate sources of resistance to anthracnose by screening new genetic materials available from the International Crops Research Institute for Semi-Arid Tropics (ICRISAT) (D.V. Reddy, ICRISAT, Andhra Pradesh, India, personal communication) and incorporate these sources into our promising pigeonpea genotypes available in the pigeonpea breeding program of the AES, UPR-M.

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FIGURE 1. Pigeonpeas pods five days after inoculation with *Colletotrichum gloeosporioides* showing small and large cankers delimited by reddish brown borders.

TABLE 1.—Average of anthracnose disease severity of five long-day pigeonpeas sown on four planting dates of 1992 at the Isabela Substation.

Genotype	Description of genotype	Severity grades ¹
I-8-2	early-maturing, 4 to 5 grains/pod, green pod	7.00
I-13	late-maturing, 5 to 6 grains/pod, light brown pod	6.41
I-58-1	early-maturing, 5 to 6 grains/pod, light brown pod	6.31
I-58-3	late-maturing, 5 to 6 grains/pod, light brown pod	6.38
II-56	late-maturing, 5 to 6 grains/pod, light brown pod	5.81
Tukey ($\alpha = 0.05$)		NS
C.V (%)		17.24

¹CIAT scale of pod anthracnose: severity grades 1 to 3 = 0 to 1% of the pod surface area affected, considered as resistant (R); grades 4 to 6 = 2 to 10%, as intermediate (I), and 7 to 9 = 11 to 25% or more, as susceptible (S).

NS = not statistically significant at $P < 0.05$ according to Tukey's test.

TABLE 2.—*Anthraco­nose severity of long-day pigeonpeas planted in May, June, July and August of 1992 at Isabela, Puerto Rico.*

Anthraco­nose severity grades ¹			
May	June	July	August
7.37 b ²	5.75 a	5.85 a	6.55 ab

C. V. (%) = 17.24

¹CIAT scale of pod anthracnose: severity grades 1 to 3 = 0 to 1% of the pod surface area affected, considered as resistant (R); grades 4 to 6 = 2 to 10%, as intermediate (I), and 7 to 9 = 11 to 25% or more, as susceptible (S).

²Mean values in line followed by the same letter do not differ significantly at P < 0.05 according to Tukey's test.

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