

## **PATHOGENIC VARIABILITY IN *Phaeoisariopsis griseola* FROM BRASIL**

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### **Introduction**

Angular leaf spot caused by the fungus *Phaeoisariopsis griseola* (Sacc.) Ferr. presents a world wide distribution. In Brazil it is one of the principal bean diseases. Losses due to the disease can be as high as 70%. The causal agent of angular leaf spot has been shown to be highly variable showing a large number of pathotypes. As a result, a breeding program needs constantly monitor the pathogen variability and identify new resistance genes to be transferred into local cultivars. The objective of this study was to determine the *Phaeoisariopsis griseola* pathogenic variability.

### **Materials and Methods**

Bean leaves showing angular leaf spot symptoms were collected in fields in the State of Santa Catarina, Paraná, Goiás, Minas Gerais and Paraíba. After single spore isolation, isolates were maintained in individual glass flasks, filled with sterile distilled water (Castellani method), in the refrigerator. The 12 differential cultivars established at CIAT (Pastor-Corrales & Jara, 1995) and the susceptible cultivar Rosinha G-2 were sown in a 2,0 kg aluminum pot, 3 plants/pot. Spores for inoculation were obtained growing the fungus in Petri dishes containing bean leaf-dextrose-agar medium (Silveira, 1958) in a BDO chamber at  $24 \pm 2$  °C. After for 14 days, 5-10 mL of sterile distilled water was added to each Petri dish and the spore suspension was filtered in a double layer of cheesecloth for the removal of the pathogen mycelium. The spore suspension was adjusted to a concentration of  $2 \times 10^4$  conidia.mL<sup>-1</sup>. Inoculation took place when plants were in the V3 stage (14-16 days old). After inoculation, plants were kept in a humid chamber (>95% RH) for 48 hours and then they were transferred to greenhouse benches until evaluation (14-18 days after inoculation). Plants evaluation were according to a 1 to 9 descriptive scale developed by CIAT (1987). Plants rating 1 to 3 was considered resistant and those rating 4 to 9 susceptible. When inoculated plants in the greenhouse showed symptoms but no sporulation were observed, they were transferred to a humid chamber for 24 hours. After that, if no sporulation was observed plants were considered resistant, otherwise, susceptible.

### **Results and Discussion**

From the 42 tested isolates it was identified 7 different pathotypes. Not including pathotypes 31-23 and 55-31, all others were capable of inducing compatible reactions in all Andean cultivars. Since all pathotypes were isolated from small or medium-seeded common bean cultivars and were capable of inducing compatible reactions in either Andean and Middle American cultivars they may be classified as Middle American pathotypes.

The most widespread pathotypes were 63-31 and 63-63. The fact that 35.7% (15 pathotypes) of the pathotypes belong to pathotype 63-63 suggest that the searching for new resistance source to angular leaf spot in Brazil must be pursued.

Table 1. Reaction of differential cultivars inoculated with 42 isolates of *Phaeoisariopsis griseola*.

Pathotype	Andean beans						Middle American beans						Num of Isolates
	1 <sup>a</sup>	2	3	4	5	6	7	8	9	10	11	12	
31-23	+ <sup>b</sup>	+	+	+	+	- <sup>c</sup>	+	+	+	-	+	-	1
55-31	+	+	+	-	+	+	+	+	+	+	+	-	1
63-15	+	+	+	+	+	+	+	+	+	+	-	-	1
63-23	+	+	+	+	+	+	+	+	+	-	+	-	1
63-31	+	+	+	+	+	+	+	+	+	+	+	-	21
63-39	+	+	+	+	+	+	+	+	+	-	-	+	2
63-63	+	+	+	+	+	+	+	+	+	+	+	+	15

<sup>a</sup>(1)Don Timóteo; (2) G 11796; (3) Bolón Bayo; (4) Montcalm; (5) Amendoin; (6) G 5686; (7) Pan 72; (8) G 2858; (9) Flor de Mayo; (10) Mexico 54; (11) BAT 332; (12) Cornell 49-242.

<sup>b</sup>Compatible reaction (+)

<sup>c</sup>Incompatible reaction (-)

Table 2. Geographical distribution of pathotype and isolates of *Phaeoisariopsis griseola* identified in Brazil.

Pathotype	Isolate Origin					Total Num of Isolates
	SC <sup>a</sup>	PR	GO	MG	PB	
31-23				1		1
55-31				1		1
63-15	1					1
62-23	1					1
63-31	12	2	4	3		21
63-39				1	1	2
63-63	9		2	4		15
Total	23	2	6	10	1	42

<sup>a</sup>(SC) Santa Catarina; (PR) Paraná; (GO) Goiás; (MG) Minas Gerais; (PB) Paraíba

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