

ANALYSIS OF THE PATHOGENIC VARIABILITY OF *Phaeoisariopsis griseola* IN BRAZIL

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Understand the pathogenic variability and the knowledge of broadly based sources of resistance to angular leaf spot are fundamental for any breeding program. Consequently, the main goals of this work was to identify among the *Phaeoisariopsis griseola* (Sacc.) Ferraris differential cultivars, those with widest resistance spectra for this pathogen in Brazil. All data were collected from the previously published papers on the Brazilian isolates of this fungus that were classified by using the differential series developed by Pastor Corrales and Jara (Fitopatologia Colombiana 19:15-24. 1995)

Our analyses showed that between 1996 and 2002, it was identified a total of 51 *P. griseola* pathotypes in Brazil (Table 1). Pathotypes 31-39, 63-31, 63-23, 63-39, 63-47, 63-55 and 63-63 are the most frequent and wide distributed, and are commonly found in the States of Goiás and Minas Gerais. Some of these pathotypes were also identified in bean samples from the States of Roraima, Paraíba, Pernambuco, Alagoas, Santa Catarina and Espírito Santo. The pathotypes 5-07, 2-23, 7-23, 7-31, 7-39, 9-23, 11-19, 11-39, 13-23, 13-55, 15-07, 15-23, 15-31, 15-33, 15-47, 15-55, 29-55, 31-07, 31-15, 31-17, 31-21, 31-31, 31-33, 31-47, 31-53, 31-55, 39-23, 45-39, 47-31, 47-47, 55-23, 55-39, 57-23, 59-23, 59-47, 61-41 and 63-35 were identified in only one Brazilian State. Although the number of collected isolates was different from each State, our data showed that the Goiás State presented the highest *P. griseola* variability (25 pathotypes) followed by the State of Minas Gerais (20 pathotypes) (Table 1).

Differential Mesoamerican cultivars México 54, Cornell 49-242 and BAT 332, with seeds originated from CIAT's Germoplasm Bank, are the most resistant ones to this disease in Brazil, and are incompatible with 36, 27 and 23 *P. griseola* pathotypes. The association of genes present in these three resistant sources will confers resistance to all the 50 identified pathotypes, except for the pathotype 63-63. The Andean genes of cultivars G 5686 and Amendoim are also important sources conferring resistance to 30 and 21 pathotypes, respectively.

Table 1. Pathotypes of *Phaeoisariopsis griseola* identified in Brazil.

	Virulence phenotype of differential cultivars												Pathotype	States ^b										
	1 ^a	2	3	4	5	6	7	8	9	10	11	12		G	M	R	S	P	E	P	B	M	A	P
													O	G	R	C	E	S	B	A	S	L	R	
1	+	-	-	-	-	-	+	+	+	-	-	-	05-07 ^b					X						
2	+	-	+	-	-	-	+	+	+	-	+	-	02-23 ^b	X										
3	+	+	+	-	-	-	+	+	+	-	+	-	07-23 ^b											
4	+	+	+	-	-	-	+	+	+	+	+	-	07-31 ^b											
5	+	+	+	-	-	-	+	+	+	-	-	+	07-39 ^b	X										
6	+	-	-	+	-	-	+	+	+	-	+	-	09-23 ^e	X										
7	+	+	-	+	-	-	+	+	-	-	+	-	11-19 ^c											X
8	+	+	-	+	-	-	+	+	+	-	+	-	11-39 ^b	X										
9	+	-	+	+	-	-	+	+	+	-	+	-	13-23 ^b	X										
10	+	-	+	+	-	-	+	+	+	-	+	+	13-55 ^b					X						

Table 1. (Cont.)

Virulence phenotype of differential cultivars													States ^b											
	1 ^a	2	3	4	5	6	7	8	9	10	11	12	pathotype	G	M	R	S	P	E	P	B	M	A	P
														O	G	R	C	E	S	B	A	S	L	R
11	+	+	+	+	-	-	+	+	+	-	-	-	15-07 ^b			X								
12	+	+	+	+	-	-	+	+	+	-	+	-	15-23 ^b	X										
13	+	+	+	+	-	-	+	+	+	+	+	-	15-31 ^b		X									
14	+	+	+	+	-	-	+	-	-	-	-	+	15-33 ^c							X				
15	+	+	+	+	-	-	+	+	+	-	-	+	15-39 ^b	X	X									
16	+	+	+	+	-	-	+	+	+	+	+	-	15-47 ^b		X									
17	+	+	+	+	-	-	+	+	+	-	+	+	15-55 ^b			X								
18	+	-	+	+	+	-	+	+	+	-	+	+	29-55 ^c				X							
19	+	+	+	+	+	-	+	+	+	-	-	-	31-07 ^d		X									
20	+	+	+	+	+	-	+	+	+	+	+	-	31-15 ^e	X										
21	+	+	+	+	+	-	+	-	-	-	+	-	31-17 ^d		X									
22	+	+	+	+	+	-	+	-	+	-	+	-	31-21 ^d		X									
23	+	+	+	+	+	-	+	+	+	-	+	-	31-23 ^{b,d,f}	X	X									
24	+	+	+	+	+	-	+	+	+	+	+	+	31-31 ^{b,c,d,e}	X										
25	+	+	+	+	+	+	-	-	-	-	-	+	31-33 ^d		X									
26	+	+	+	+	+	-	+	+	+	-	-	+	31-39 ^{b,c,d}	X	X	X								X
27	+	+	+	+	+	-	+	+	+	+	-	+	31-47 ^e	X										
28	+	+	+	+	+	-	+	-	+	-	+	+	31-53 ^d		X									
29	+	+	+	+	+	-	+	+	+	-	+	+	31-55 ^c						X					
30	+	-	+	+	-	+	+	+	+	-	+	-	39-23 ^c											X
31	+	+	+	+	+	-	+	+	+	-	-	+	45-39 ^e					X						
32	+	+	+	+	-	+	+	+	+	+	+	-	47-31 ^e	X										
33	+	+	+	+	-	+	+	+	+	+	-	-	47-39 ^e	X				X						
34	+	+	+	+	-	+	+	+	+	+	-	+	47-47 ^b			X								
35	+	+	+	-	+	+	+	+	+	-	+	-	55-23 ^b			X								
36	+	+	+	-	+	+	+	+	+	+	+	-	55-31 ^{e,f}	X	X									
37	+	+	+	-	+	+	+	+	+	-	-	+	55-39 ^e									X		
38	+	-	-	+	+	+	+	+	+	+	+	-	57-23 ^e	X										
39	+	+	-	+	+	+	+	+	+	-	+	-	59-23 ^e	X										
40	+	+	-	+	+	+	+	+	+	+	-	+	59-47 ^e	X										
41	+	-	+	+	+	+	+	-	+	-	+	-	61-41 ^d		X									
42	+	+	+	+	+	+	+	+	+	-	-	-	63-07 ^{d,e}	X	X									
43	+	+	+	+	+	+	+	+	+	+	-	-	63-15 ^{e,f}	X			X							
44	+	+	+	+	+	+	+	+	-	-	+	-	63-19 ^{c,d}		X				X					
45	+	+	+	+	+	+	+	+	+	-	+	-	63-23 ^{b,c,d,e,f}	X	X		X							
46	+	+	+	+	+	+	+	+	+	+	+	-	63-31 ^{b,c,d,e,f}	X	X		X		X			X		X
47	+	+	+	+	+	+	+	+	+	-	-	-	63-35 ^c				X							
48	+	+	+	+	+	+	+	+	+	-	-	+	63-39 ^{c,d,f}		X				X	X				
49	+	+	+	+	+	+	+	+	+	-	+	-	63-47 ^{c,d,e}	X	X				X	X				
50	+	+	+	+	+	+	+	+	+	-	+	+	63-55 ^{c,d}	X	X			X						
51	+	+	+	+	+	+	+	+	+	+	+	+	63-63 ^{d,e,f}	X	X		X							
R	0	9	7	8	21	30	0	6	7	36	23	27	Total	25	20	7	6	5	4	3	2	2	2	1
S	51	42	44	43	30	21	51	45	44	15	28	24												

^a1=Don Timóteo, 2=G 11796, 3=Bolón Bayo, 4=Montcalm, 5=Amendoin, 6=G5686, 7=PAN 72, 8=G 2858, 9=Flor de Mayo, 10=México 54, 11=Bat 332, 12=Cornell 49-242.

^bPastor Corrales & Paula Jr., 1996 (RENAFE, doc. 69, v.1, p.239-241); ^cIsolates from Embrapa Arroz e Feijão and identified by Nietsche, 2000, ^dNietsche, 2000 (Thesis DSc., UFV-Brazil), ^eSartorato, 2002a (VII Congresso Nacional de Pesquisa de Feijão. Viçosa, p.120-124), ^fSartorato, 2002b (Fitopatol. bras., v.27, p.78-81).

^gGO=Goiás, MG=Minas Gerais, RR=Roraima, SC=Santa Catarina, PE=Pernambuco, ES=Espírito Santo, PB=Paraíba, BA=Bahía, MS=Mato Grosso do Sul, AL=Alagoas, PR=Paraná.