

**PYRAMIDED LINES OF “CARIOCA” COMMON BEAN AND THEIR REACTION TO  
*Pseudocercospora griseola***

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**INTRODUCTION:** The bean diseases are a major cause of losses of yield of this culture. The angular leaf spot caused by the fungus *Pseudocercospora griseola* (Sacc.) Crous & U. Braun is one of the main diseases of beans. The present work aimed to characterize lines produced by the Breeding Program of Common Bean (PMGF) of the Federal University of Viçosa (UFV), called ‘Ruda R3’ and ‘Pérola R1’, in reaction to different races of *P. griseola*.

**MATERIAL AND METHODS:** The genotypes were lines of F<sub>4</sub> population [(MAR-138A-1-11-4 x BAT-67-15-8) x Ruda R] (Sanglard et al., 2007) and isolines derived from the cross between ‘Pérola’ and ‘Ouro Negro’ (Sanglard et al., 2005). The inoculum of each isolate was reproduced according to Sanglard et al. (2009a) and Pastor-Corrales & Jara (1995), respectively. After inoculation, the disease severity was visually assessed at 15, 18 and 21 days using a scale of nine degrees of severity proposed by Pastor-Corrales & Jara (1995). Plants with notes 1 to 3 were considered resistant; between 3 and 6, with intermediate resistance; and between 6 and 9 susceptible.

**RESULTS AND DISCUSSION:** The results of this work are summarized in Table 1. The line ‘Ruda R’, the parent lines of group ‘Ruda R3’, presented susceptibility to 16 of the 17 isolates tested, demonstrating the ineffectiveness of your resistance locus (Carvalho et al., 1998; Ragagnin et al., 2009) compared to the isolates obtained by Balbi et al. (2009). The other parental lines ‘MAR-138A-1-11-4’ (Oliveira et al., 2005) and ‘BAT 67-15-8’ (Caixeta et al., 2003) showed resistance to each of eight isolates. The interpolation of the spectra of strains resistant ‘MAR-138A-1-11-4’ and ‘BAT-67-15-8’ reactions to generate resistance 12 of the 17 isolates tested, which were found in most strains of the group ‘Ruda R3’. If we consider spectra while the resistance of the lines ‘MAR-138A-1-11-4’, ‘BAT-67-15-8’, ‘COR-25-12-9’ and ‘MEX-37-3-6-3’ (Caixeta et al., 2005; Sanglard et al., 2007), potentially achieve resistance 15 of the 17 isolates tested, except B<sub>146</sub> and B<sub>750</sub>, which were classified as race 63.63 (Balbi et al., 2009). In recent years, most of the isolates obtained in this race have been classified, and is considered as one of the most frequent and distributed in Brazil (Balbi et al., 2009). Analyzing the reactions of the parents of the lines of group ‘Pérola R1’, note that the cultivar ‘Pérola’ was susceptible or intermediate to 16 of the 17 isolates tested, confirming the trend of susceptibility to angular leaf spot of this cultivar. However, the cultivar ‘Ouro Negro’ showed intermediate reactions to four isolates and susceptibility to just two. This cultivar has been recommended as a source of resistance to angular leaf spot, with notably lower levels of severity in the majority of the isolates (Sanglard et al., 2009b). In fact it is well-known the relevance of use of the cultivar ‘Ouro Negro’ as a source of resistance, since it was the only parent to be tolerant to the B<sub>146</sub> and B<sub>750</sub> isolates classified as race 63.63. The ‘Pérola R1’ lines showed considerable improvement in the spectrum of resistance when compared to the parent lines ‘Pérola’ with incompatibility reactions to eight isolates. Possibly, these did not reach the same pattern observed in ‘Ouro Negro’ due to several rounds of backcrossing with ‘Pérola’ as recurrent parent, which would have led to the loss of smaller effect of genes, and not monitored by molecular markers while dragging (Sanglard et al, 2005;. 2013).

**Table 1.** Characterization of the parents and selected lines to isolated (races) of *P. griseola*.

Genotypes	Isolates (Races) of <i>P. griseola</i>																
	A <sub>1</sub> 13 (15.7)	A <sub>2</sub> 4 (63.7)	B <sub>1</sub> 46 (63.63)	B <sub>3</sub> 8 (63.47)	B <sub>4</sub> 4 (47.39)	B <sub>4</sub> 6 (31.4)	B <sub>7</sub> 50 (63.63)	C <sub>1</sub> 17 (3.23)	C <sub>1</sub> 28 (63.6)	C <sub>2</sub> 10 (23.23)	CM <sub>1</sub> 2 (63.63)	CM <sub>3</sub> 11 (63.31)	Cb20 (63.7)	Cb21 (31.7)	SM32 (63.23)	Vic3 (63.23)	Vic7 (63.63)
MEX-37-3-6-3	*R	R	S	S	R	R	S	R	R	R	S	S	R	R	R	R	S
COR-25-12-9	R	R	S	S	S	R	S	R	R	R	S	R	I	R	R	R	S
MAR-138A-1-11-4	R	I	S	R	S	S	S	S	I	R	S	S	R	R	I	R	R
BAT-67-15-8	R	R	S	R	R	R	S	S	R	S	S	S	R	R	S	S	S
Rudá R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	I
R3-12-42-15	R	R	S	R	R	R	S	S	R	I	S	S	R	R	S	R	R
R3-12-43-6	R	R	S	R	R	R	S	S	R	I	S	S	R	R	S	I	I
R3-15-25-13	R	R	S	R	R	R	S	S	R	R	S	S	R	R	S	I	R
R3-16-17-9	R	R	S	R	R	R	S	S	R	I	S	S	R	R	S	I	R
R3-27-11-26	R	R	S	R	R	I	S	S	R	R	S	S	R	R	S	I	I
R3-16-17-13	R	R	S	R	R	R	S	S	R	R	S	S	R	R	S	I	I
R3-27-11-18	R	I	S	R	I	S	S	S	R	I	S	S	R	R	S	S	R
R3-15-25-10	R	R	S	R	R	R	S	S	R	R	S	S	R	R	S	I	R
R3-16-17-12	R	R	S	R	R	R	S	S	R	I	S	S	R	R	S	I	R
Ouro Negro	R	R	I	R	R	I	R	S	R	R	R	I	R	I	S	R	R
Pérola	I	I	I	I	I	S	I	I	S	I	I	S	I	I	S	S	R
P1-78-23-1	I	R	I	I	R	S	R	I	R	I	R	S	R	I	S	R	R
P1-78-23-2	I	R	I	I	R	S	R	I	R	I	R	S	R	I	S	R	R
P1-88-16-5	I	R	I	I	R	S	R	I	R	I	R	S	R	I	S	R	R
P1-88-16-3	I	R	I	I	R	S	R	I	R	I	R	S	R	I	S	R	R
P1-41-6-7	I	R	I	I	R	S	R	I	R	I	R	S	R	I	S	R	R
P1-41-6-4	I	R	I	I	R	S	R	I	R	I	R	S	R	I	S	R	R

\* Classifications obtained by the average rating of 12 plants of each genotype; R: resistant (1 to 3); I: intermediate (3 to 6); S: susceptible (6 to 9). Isolates obtained by Balbi et al. (2009).

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