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PHYSIOLOGICAL RESISTANCE OF COMMON BEAN LINES TO *Sclerotinia sclerotiorum*

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INTRODUCTION. White mold (WM), caused by the fungus *Sclerotinia sclerotiorum*, is a serious constraint of common bean during the fall-winter season in Brazil. The most commonly used control measure is fungicide application. However, the high cost and the potentially deleterious effects on human health and environment have motivated the search for new options of WM management. Genetic resistance is a key component of the WM management, because it is easier for farmers to adopt and is environmentally safe. Since 2008, we have screened common bean lines/cultivars for WM resistance from the field trials named Value for Cultivation and Use (VCU) conducted under WM pressure. The lines screened in these trials have been developed by Federal University of Viçosa, Federal University of Lavras, EPAMIG and Embrapa Rice and Beans. Beginning in 2015, we have evaluated the genotypes screened in the VCU trials in comparison to three WM-resistant checks (A195, G122, and Cornell 605) in advanced field trials, straw and/or detached leaflet tests. Here, we present results from the straw and the detached leaflet tests to assess physiological resistance of lines/cultivars originally screened for resistance to foliar diseases and high yield.

MATERIAL AND METHODS. Seventeen genotypes screened in the VCU field trials [12 with putative resistance, two with intermediate resistance (Pérola and BRS Estilo), and three with susceptibility to WM (Ouro Negro, Ouro Vermelho and BRSMG Majestoso)] along with the WM-resistant checks were evaluated in a straw test (greenhouse) and in a detached leaf test (laboratory), both in Viçosa, Minas Gerais. In both tests, an isolate of *S. sclerotiorum* with high aggressiveness collected in Itararé, State of São Paulo, was used. In the straw test, three plants of each genotype were grown in 3.0 L-pots as described by Lehner et al. (2015). WM severity was evaluated 7 days after inoculation, using the 1-9 scale of Terán et al. (2006), in which 1 = no infection and 9 = invasion of the third internode > 2 cm or plant death. In the detached leaf test, leaflets of the youngest fully expanded trifoliate leaves of 5-week-old plants were placed on filter paper moistened with 5 mL of sterilized distilled water inside plastic boxes. Two-day-old mycelial discs from the first subculture were placed between the main vein and the leaflet edges; one disc on each side of the main vein. Boxes containing inoculated leaves were kept at 23°C in the dark. The lesion diameter was assessed 24 h after inoculation. In both trials, treatments were replicated four times in a completely randomized design.

RESULTS AND DISCUSSION. The common bean genotypes were separated into three groups based on WM severity and lesion length in the straw test and into four groups based on lesion diameter in the detached leaflet test (Table). The resistant checks (A195, G122, Cornell 605) confirmed their high physiological resistance to WM, especially A195. The lines CNFC 10720, CNFP 10798, VC17 and the cultivar Ouro Branco did not differ significantly from the WM-resistant checks G122 and Cornell 605. Among the most susceptible genotypes to WM were

CNFC 11946, CNFC 10432 and the cultivar BRS Estilo. The susceptible cultivars to WM in the field, Ouro Negro and Ouro Vermelho, exhibited some level of physiological resistance to WM.

Table. Lesion diameter evaluated 24 hours after inoculation on the detached leaf test and white mold (WM) score and lesion length in the straw test.

Genotype	Detached leaflet test		Straw test	
	Lesion diameter (cm)	WM score	Lesion length (cm)	
CNFC 10720	12.6 C ¹	5.50 C	4.52 C	
CNFC 10722	12.1 C	5.75 B	5.28 C	
CNFP 10798	12.2 C	5.13 C	5.71 C	
G122	11.8 C	5.08 C	3.46 C	
Ouro Branco	12.4 C	5.00 C	3.23 C	
VC17	12.6 C	5.25 C	3.90 C	
VC26	13.4 B	5.00 C	3.00 C	
BRS Vereda	11.5 C	5.78 B	5.63 B	
Ouro Negro	14.6 B	5.00 C	2.96 C	
A195	9.1 D	5.00 C	2.69 C	
Ouro Vermelho	13.3 B	5.08 C	3.36 C	
BRSMG Majestoso	16.6 A	6.00 B	6.14 B	
CNFC 11946	13.6 B	6.67 A	8.88 A	
Pérola	10.7 D	5.75 B	5.38 B	
CNFC MG11-06	14.6 B	5.17 C	3.78 C	
Cornell 605	11.6 C	5.00 C	2.69 C	
CNFC 10432	15.7 A	6.67 A	7.88 B	
CNFP 11990	14.1 B	5.25 C	3.88 C	
BRS Estilo	15.3 A	5.92 B	6.12 A	
VC27	13.4 B	5.38 C	4.07 B	

¹ Means followed by the same letters belong to the same group (Scott-Knott test, $p = 0.05$).

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