COMMON BEAN WHITE MOLD RESISTANCE SOURCES IDENTIFIED BY GREENHOUSE SCREENING IN BRAZIL

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INTRODUCTION

White mold (WM) caused by *Sclerotinia sclerotiorum* (Lib.) de Bary is a major disease problem for the common bean crop worldwide (Schwartz and Steadman, 1989). WM can cause severe yield and seed quality losses, which dramatically reduce farmer incomes. In Brazil, *S. sclerotiorum* is widely distributed in the majority of agricultural areas and can cause total yield losses under favorable environmental conditions and without chemical control (Oliveira, 2005). The main goal of the present work was to evaluate the reaction of 39 common bean lines to WM in a greenhouse screening. These bean genotypes include Brazilian cultivars and advanced lines from different market classes, in addition to resistance sources previously reported by CIAT (Cali, Colombia). The effective identification of resistance sources and superior genotypes is a basic and continuous step of breeding efforts aiming to develop/select resistant cultivars to be used in the integrated control of WM.

MATERIAL AND METHODS

Common bean genotypes were grown in a completely randomized design with six replications composed by one plant each. Plants were inoculated at the fourth/fifth node, about 35 days after seedling emergence (R5 stage), using the *S. sclerotiorum* isolate SS 1370, the most virulent one maintained at Embrapa Rice and Beans (Santo Antônio de Goiás, Brazil). Inoculation was accomplished based on the straw test method initially reported by Petzoldt and Dickson (1996), but with modifications. The inoculum (mycelial plugs) was grown for 72 h on PDA medium at 21 ± 1ºC. Plants were inoculated with mycelial plugs using micropipette tips of 200 μL with filter. After inoculation, plants were kept under greenhouse condition (28 ± 1ºC and relative humidity > 85%). WM severity was scored at eight days after the inoculation using a 1-to-9 scale, where 1= no symptoms and 9= dead plants. All six plants of the same genotype were evaluated and the mean scores of disease severity were calculated. Variance analysis was performed followed by the Scott-Knott test.

RESULTS AND DISCUSSION

The results showed significant genetic variation for WM reaction among the 39 screened common bean lines (ANOVA, F test at 1% probability), which were grouped on five resistance levels according to Skott-Knott test at 5% probability. Cultivar BRS Cometa and the advanced line CNFC 9500, both "carioca" seeded genotypes, in addition to the CIAT variety K0407, formed the group with lower severity scores, showing to be potential WM resistance sources to Brazil (Table 1). The "carioca" seeded cultivars BRS Estilo, Pérola, BRS Pontal, BRSMG Madrepérola, and BRS Requinte, in addition to the local variety Bola Cheia, formed the genotype group with high mean severity scores, which range from 6.50 to 8.17 (Table 1). The obtained results are agreed with previous reports from field screening realized in Brazil. The

identified resistance sources are being also evaluated for WM resistance in field trials and will be used as parents in crosses aiming to develop breeding lines resistant to WM.

Table 1. Reaction of common bean lines, including Brazilian cultivars and advanced lines from different market classes, to white mold (*Sclerotinia sclerotiorum*) expressed as mean scores of disease severity.

Genotype	Disease Severity[a]		Genotype	Disease Severity	
BRS Cometa	2.67	a	IAC Alvorada	4.67	c
K0407	2.83	a	CNFC 10429	4.83	c
CNFC 9500	3.17	a	CNFP 10104	4.83	c
AND 277	3.50	b	IPR Colibri	4.83	c
IPR Eldorado	3.67	b	BRS Pitanga	5.00	c
PI204717	3.83	b	BRS Radiante	5.17	c
CNFC 15873	4.00	c	BRS Executivo	5.17	c
BRS Embaixador	4.17	c	BRS Ametista	5.33	d
CNFC 10729	4.17	c	BRS Esplendor	5.33	d
BRS Notável	4.17	c	BRS Supremo	5.33	d
CNFC 15874	4.33	c	BRS Campeiro	5.67	d
Rudá	4.33	c	BRSMG Realce	5.67	d
IPR Juriti	4.33	c	BRSMG Majestoso	6.17	d
CNFP 10794	4.33	c	BRS Estilo	6.50	e
Jalo Precoce	4.50	c	Pérola	6.67	e
IPR Uirapuru	4.50	c	Bola Cheia	6.83	e
K059	4.50	c	BRS Pontal	7.00	e
CNFC 10762	4.67	c	BRSMG Madrepérola	7.33	e
BRS Agreste	4.67	c	BRS Requinte	8.17	e
CNFC 15875	4.67	c			
CV (%): 9.88					
Average: 4.91					

[a]Mean scores of disease severity based on a 1-to-9 scale, where 1= no symptoms and 9= dead plants. Scores followed by the same letter do not differ from each other according to Skott-Knott test at 5% probability. The genotype grouping was done using transformed data ($y=\sqrt{x}$).

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