WILD BEANS AS SOURCE OF RESISTANCE TO *Colletotrichum lindemuthianum*

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Dry beans (*Phaseolus vulgaris* L.) are one of the most important leguminous crop in Brazil. It is the host of several fungus, bacterium and virus diseases. Among the air borne fungal diseases anthracnose, caused by the fungus *Colletotrichum lindemuthianum* (Sacc. & Magn.) Scrib., is one of the most important due to its constant appearance in the field and to the losses it causes. This disease affects susceptible cultivars established in local with moderate to low temperature and high relative humidity. Losses due to the disease can be as high as 100%.

Different strategies are used to control the disease such as cultural practices, chemical control and genetic resistance. The principal cultural practices include the use of disease free seeds and crop rotation. Although chemical control is not ecologically accepted, most of the time farmers do not have any other choice. Anthracnose control through fungicides includes chemical seed treatment and aerial foliage spray. Due to fungicide prices, these practices are used mainly by medium and large farmers. Consequently, the use of resistant cultivar, especially by small farmers, is the most practical and economical way to safely control the disease. However, the pathogenic variability presented by the causal agent makes the development of new resistant cultivars more complex in a breeding program.

Common beans are considered to present a narrow genetic basis mainly because only a small number of wild beans genotypes was domesticated through the evolution process. From the breeding point of view, to broaden the genetic basis of common beans, it is necessary to use the genetic diversity available in the cultivated as well as in the wild beans to enhance the possibility to find new useful genes.

The objective of this study was to test different wild beans of the Embrapa Rice & Beans germplasm bank in order to identify new resistant source to anthracnose.

The experiment was conducted in Embrapa Rice & Beans, Santo Antonio de Goiás, Goiás, Brazil. It was used 118 wild beans genotypes (*Phaseolus vulgaris* var. *aborigineus*) from the bean germplasm bank. Each entry were sown in lines of 0,7 m long, spaced by 0,2 m, in an isolated nursery. One line of the susceptible cultivar CNPF 10 was sown every 10 lines of the tested genotypes. Each entry was inoculated with the following *C. lindemuthianum* pathotypes: 89 (Alfa-Brazil), 95 (Kappa), 453 (Zeta) e 585 (Alfa-Brazil-TU Susceptible). Before each inoculation the isolated nursery was irrigated. For inoculation it was used a spore suspension of $1,2 \times 10^6$ conidia ml^{-1}. After each inoculation the isolated nursery was covered with a black plastic, during the first night, to ensure high humidity for spore germination. Symptoms were evaluated 8-10 days after inoculation according to a 1 to 9 scale where 1 = no visible symptoms and 9 = death of much of the plant tissues. Plants rated 1 to 3 (incompatible reaction) were considered resistant and 4 to 9 (compatible reaction), susceptible.

From 118 genotypes evaluated, only 20 were considered resistant to all pathotypes tested (Table 1). Entry 8202 showed a mixture of susceptible/resistant reaction for the pathotype 585 and probably is a mixture of pure lines that needs to be purified. Entries 8155, 8306 and 8336, and 8052 and 8061 were rated 2 when inoculated with pathotypes 453, and 89 and 453, respectively. In conclusion, some of wild entries were resistant to all tested *C. lindemuthianum*

pathotypes. These genotypes are very useful to enhance the resistance level of black and carioca beans that are widely grown in Brazil.

Table 1. Common bean wild genotypes resistant to pathotypes 89, 95, 453 and 585 of *Colletotrichum lindemuthianum*.

Identification	**Pathotypes**			
	89 (Alfa-Brazil)	**95 (Kappa)**	**453 (Zeta)**	**585 (Alfa-Brazil TU S)**
8050	1	1	1	1
8052	2	1	2	1
8061	2	1	2	1
8089	1	1	1	1
8090	1	1	1	1
8108	1	1	1	1
8109	1	1	1	1
8150	1	1	1	1
8155	1	1	2	1
8163	1	1	1	1
8169	1	1	1	1
8172	1	1	1	1
8174	1	1	1	1
8175	1	1	1	1
8195	1	1	1	1
8202	1	1	1	4/1 e 3/6
8208	1	1	1	1
8265	1	1	1	1
8306	1	1	2	1
8310	1	1	1	1
8336	1	1	2	1