ANGULAR LEAF SPOT.

R. A. V. Garcia[1], M. S.Carneiro[1], A. Sartorato[2]

[1]Universidade Federal de Goiás, C 131, 74001 - 970, Goiânia, GO, Brazil, [2]Embrapa Arroz e Feijão, C. P. 179, 75375 - 000, Santo Antônio de Goiás, GO, Brazil
E-mail: sartorat@cnpaf.embrapa.br

Common bean angular leaf spot (ALS), caused by *Phaeoisariopsis griseola* (Sacc.) Ferr., is widely distributed in tropical and subtropical regions worldwide, being responsible for great economic losses, especially in Latin America and the great lakes region in Africa In recent years, this disease became one of the most important bean productions constraints in Brazil. In this country, seed yield loss can be as high as 80% depending on the susceptibility of the cultivars and the time of the disease symptoms appearance In addition to yield losses, the quality, market value and suitability of seed for transport and use across bean-producing regions and national borders may be severely affected. In Brazil, a major part of bean production is by medium/small or subsistence farmers who do not apply fungicides to their crops due to its high cost. Although ALS can be controlled by fungicides, the development of resistance cultivars would constitute a more environmentally and friendly alternative of the disease control that could be used in integrated crop protection strategies to reduce pesticide inputs. This paper reports results of the evaluation for bean angular leaf spot resistance to Mesoamerican races of *P. griseola* aiming the development and deployment of durable resistance do this disease.

Plant material for the screening consisted of part of the CIAT's *P. vulgaris* core collection, including 357 accessions, representing the available range of crop types and ecogeographical location within the species. Out of the 357 *P. vulgaris* accessions evaluated, 281 belonged to the Middle American and 76 to the Andean gene pool. The pathotypes 63-15, 63-39, 63-23 and 31-31 of *P. griseola* were obtained from naturally infected common bean cultivars collected in different places in Brazil. Seeds of each cultivar were sown in aluminum pots containing 2,0 kg of soil at the rate of five seeds per pot. Conidia suspensions, for all inoculations, were obtained by culturing the fungus in bean-leaf-dextrose-agar medium. Inoculum was adjusted to 2 x 10^4 conidia mL^{-1}. Bean plants were inoculated 14-16 days after planting by spraying the conidial suspension onto the upper and lower leaves surfaces The inoculated plants were incubated in a moist chamber (> 95% RH) for 36-40 h. After this period of time, plants were transferred to greenhouse benches for another 14-18 days and evaluated for disease symptoms by determining the percentage of leaf area affected by the disease. Plants up to 5% of leaf area affected by the disease were considered as resistant.

As expected a great variability of reactions to Mesoamerican races of *P. griseola* was found between accessions of the core collection, ranging from complete resistance to full susceptibility. Fourteen (Table 1) of the 357 accessions were resistant to the four pathotypes, 44 to three, 35 to two and 70 to only one pathotype. Pathotype 31-31 were the most pathogenic followed by pathotypes 63-51, 63-39 and 63-23.

Table 1. Characteristics of the 14 most resistant genotypes to four pathotypes of *Phaeoisariopsis griseola.*

Genotype	Gene pool	Seed color	Country of origin
G 23804 B	Andean	White	Peru
G 23565	Andean	Yellow	Peru
G 6861	Mesoamerican	Others	Honduras
G 21130	Andean	Pink	Mexico
G 10909	Mesoamerican	Purple	Guatemala
G 19048	Andean	Pink	Mexico
G 18780 A	Mesoamerican	Black	Mexico
G 18451	Mesoamerican	Yellow	Nicaragua
G 21178	Andean	Beige	Mexico
G 22651	Mesoamerican	Purple	Zaire
G 10436	Andean	Red	Portugal
G 22623	Mesoamerican	Purple	Zaire
MUNHOND 002	Mesoamerican	-	-
Leche Blanco	Mesoamerican	White	-

Most of the resistant genotypes were originated from three countries, Peru (14.3%), Mexico (28.6%) and Zaire (14.3%), that together, represented 57.2 % of the resistant germplasm. However, when considered as a percentage of the total accessions, Honduras (14.3%), Nicaragua (14.3%), Zaire (18.1 %) and Portugal (20%) were the countries with highest proportion of resistant accessions to Mesoamerican *P.* griseola pathotypes. It is important to emphasize, the performance of the Leche Blanco (G3936) accession, that when inoculated with four of *P.* griseola pathotypes, did not present any symptom of the disease. Although the grain color of this genotype is not of commercial interest in Brazil, this accession showed a great potential to be explored in breeding programs for the improvement for resistance to the common bean angular leaf spot. The accessions G 21130, G 10909, G 19048, G 18780, G 22651 and G 22623 are also good sources of genetic resistance.