IAPAR 81 – Common bean

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ABSTRACT

IAPAR 81 is a common bean cultivar developed by the Agronomic Institute of Paraná State (IAPAR). It belongs to the carioca commercial group and has yield potential similar to that of the Carioca cultivar, broad adaptation and erect stem for direct mechanical harvesting. IAPAR 81 was resistant to the common mosaic virus and moderately resistant to anthracnose, rust and powdery mildew. It also presented good tolerance to high temperature and short periods of water stress which may happen during the reproductive stage.

KEY WORDS: *Phaseolus vulgaris,* common bean, cultivar description, seed production.

INTRODUCTION

IAPAR 81 is a common bean cultivar (*Phaseolus vulgaris L.*) from the "carioca" commercial group which was developed by the Agronomic Institute of Paraná State (IAPAR). After field evaluations during the 1994/95, 1995/96 and 1996/97 seasons, under the inbred line denomination LP93-56 it was released for sowing throughout the state of Paraná. The cultivar was submitted for approval and recommendation of the Southern-Brazil Bean Committee in 1997 and subsequently registered for commercialization at the National Service for Cultivar Protection of the Ministry of Agriculture, under the number 00093, on September 30th, 1998.

PEDIGREE AND BREEDING METHODS

IAPAR 81 (Figure 1) originated from a multiple cross among inbred lines resistant to the main diseases found in the State of Paraná. The F_2, F_3 an F_4 segregating populations were obtained by the single pod descendant method (Fehr, 1987) when the number 11 selected plant progeny was carried out by the pedigree method up to generation F_7, from which the inbred line LP93-56 was selected. The inbred line was evaluated in 41 environments in the state of Paraná, during 6 crop seasons: three dry seasons and three wet seasons. The number of locations ranged from seven to 11 per season.

Breeder's seed was obtained through the use of two generations of progeny tests. A initial sample of 1.000 plants was obtained from the experimental material and all the seeds from the selected plants were sowed in individual rows. The rows which presented unusual plants or seeds were eliminated and all seeds from the homogeneous rows were individually harvested and sowed in individual blocks on the following season. The homogeneous blocks for plant and seed characteristics were combined in a single stock to form the breeder seed.

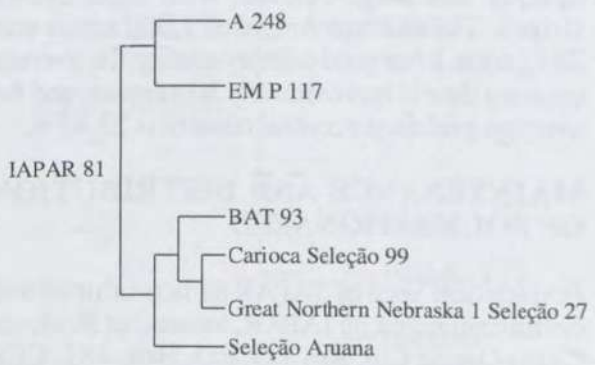

Figure 1- IAPAR 81 pedigree.

PERFORMANCE

IAPAR 81 has been indicated for sowing in the states of Paraná, Santa Catarina, São Paulo, Minas Gerais and Goiás. It flowers and reaches its physiological maturity at 43 and 92 days after emergence respectively. During the yield trials of the colored bean genotypes, in 41 environments in the state of Paraná , in the 1994/95, 1995/96 and 1996/97 season, the IAPAR 81 cultivar showed an average yield of 1,967 Kg/ha. This yield was approximately 4% higher than that of IAPAR 14 cultivar and similar to that of the Carioca cultivar (Table 1).One of the advantages of this cultivar, when compared to "Carioca", is the erect architecture of the plant, which favors direct mechanical harvesting.

Table 1- Grain yield (Kg/ha) of IAPAR 81 and control cultivars in 41 environments of Paraná, during the wet and dry seasons of 1994/95, 1995/96 and 1996/97.

Cultivars	Wet/94	Dry/95	Wet/95	Dry/96	Wet/96	Dry/97	General mean
IAPAR 81	2586	1516	1887	1744	2096	1971	1967
CARIOCA	2338	1584	2006	1747	1916	2097	1948
IAPAR 14	2484	1387	1818	1634	2029	2012	1894

OTHER CHARACTERISTICS

IAPAR 81 has indeterminate growth habit, type II plant (Singh, 1982), erect stem and an average plant height of 0.76m. Direct mechanical harvesting is possible with acceptable losses, as long as area declivity, population and plants development are adequate. It carries gene I, which confers resistance to the common mosaic virus (Drifjhout et al., 1978) and in moderately resistance to anthracnose, rust and powdery mildew (Moda – Cirino et al., 2000). It is moderately tolerant to high temperatures and short periods of water stress which may happen during the reproductive stage (Galera et al., 1997). The flowers are white and the average number of pods per plant and seeds per pod was 16 and 6, respectively. Seed coat is opaque and beige-colored, with light brown stripes. The average weight of 1,000 seeds was 251 grams. It has good culinary quality, the average cooking time is approximately 30 minutes, and the average protein percentual content is 23.45%.

MAINTENANCE AND DISTRIBUTION OF FOUNDATION SEED

Foundation seed of IAPAR 81 is produced and commercialized by IAPAR, located at Rodovia Celso Garcia Cid, Km 375, P.O. Box 481, CEP 86001-970, Londrina, PR, Brazil. Small amounts of seeds for research or evaluation tests can be obtained at this address.

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