Registration of ‘Flor de Junio Marcela’ Common Bean

‘Flor de Junio Marcela’ common bean (Phaseolus vulgaris L.) (Reg. no. CV-204, PI 631494) was developed and released by the bean program at ‘El Bajío’ Experiment Station of the National Research Institute for Agriculture, Forestry and Livestock (INIFAP) of Mexico as the first improved, high-yielding Flor de Junio cultivar suited for the midaltitude irrigated conditions of Mexico. The commercial Flor de Junio (FJ) bean class in Mexico is classified as a medium-sized bean with a seed coat color pattern of a predominant pink stripe on a cream background. Flor de Junio Marcela was released in 1996 and issued the registration number FRI-069-280597 by the variety section of the Committee for Plant Variety Certification of the National Seed Inspection and Certification System (SAGARPA) in Mexico. Flor de Junio Marcela, tested as FJ 96001, was derived from the single cross made in 1990 between a ‘Flor de Junio’ landrace cultivar (Jalisco race) from the state of Zacatecas and ‘Flor de Mayo M38’, a high-yielding cultivar with multiple disease resistance (Acosta-Gallegos et al., 1995). The F1 generation was grown in the greenhouse during the winter of 1990 and advanced to a space planted F2 nursery for preliminary selection under irrigated conditions in the early season of 1991. All generations were planted and selections made in “El Bajío” Experiment Station, located at 1600 m above sea level near Celaya, Guanajuato in Central Mexico. The F2 generation was grown during the summer of 1991 in single-plant progeny rows and selection was conducted among and within rows for plant vigor, pod load, disease resistance, and midseason maturity. The F3 selected individual plants were advanced during the early season of 1992 and F3 (F4i) single-plant progeny rows were grown during the summer. Rows with preferred agronomic characteristics and superior phenotypic performance were bulk harvested and those with uniform FJ seed were planted in a preliminary yield trial during the early and summer seasons of 1993. To assist in selection, the parental cultivars were systematically planted throughout all nurseries for comparison purposes.

During the winter season of 1993–1994, cooking time and acceptance tests were conducted with a group of experienced panelists to choose among different FJ lines on the basis of appearance and flavor of broth and cooked grain. Flor de Junio Marcela was the top rated cultivar in the tests.

Flor de Junio Marcela entered replicated trials as a F3 line under irrigation in 1994 at two locations in the state of Guanajuato. The yield of Flor de Junio Marcela under irrigation from 1994 to 1997 averaged 2940 kg ha⁻¹ and was superior to Flor de Mayo M38 by 6% over 10 location–year combinations. During 1996 and 1997 seasons, Flor de Junio Marcela outyielded the most popular FJ landrace by 21% across six locations. From 1998 to 2000, Flor de Junio Marcela was planted under rainfed conditions in the state of Zacatecas in the semi-arid region, and it displayed an average yield of nine trials of 680 kg ha⁻¹, 15% higher than the one of Flor de Mayo M38.

Flor de Junio Marcela is photoperiod sensitive and flowers 55 d after planting, has white flowers, and exhibits midseason maturity, maturing in 105 d. The unripe green pods turn red in color approaching physiological maturity. Flor de Junio Marcela has a Type III indeterminate growth habit with pod distribution in the middle of the plant canopy. It is suited for irrigation systems during the early season (February–March) in midaltitude locations, below 1800 m above sea level. In trials conducted in a N₂ depleted soil, Flor de Junio Marcela showed a biological nitrogen fixation capacity of up to 93 kg ha⁻¹, determined by the difference method (Rosas and Bliss, 1986).

Flor de Junio Marcela is resistant to the prevalent races of Bean common mosaic virus in the state of Guanajuato, but displays an intermediate reaction to rust [caused by Uromyces appendiculatus (Pers.:Pers.) Unger var. appendiculatus], anthracnose [caused by Colletotrichum lindemuthianum Magn] and common bacterial blight [caused by Xanthomonas campesstris pv. phaseoli (Smith) Dye]. Because of its intermediate disease susceptibility, Flor de Junio Marcela is recommended for production under irrigated conditions during the early dry season and under rainfed conditions in locations where foliar diseases are not a problem, such as the rainfed areas of Zacatecas. When grown during the early dry season, maturity might occur at the start of the rainy season, and in contrast with most landraces and bred cultivars in the Flor de Mayo and FJ commercial classes, the seed of Flor de Junio Marcela is not deteriorated by excess rain.

The seed of Flor de Junio Marcela averaged 34 g 100 seeds⁻¹ and is similar in size, shape, and color to traditional FJ landraces. Flor de Junio Marcela is the first bred cultivar in the Flor de Junio commercial class that usually receives premium price. Premium bean classes in Mexico are those with superior seed physical appearance, short cooking time, desirable taste, and appearance of the final cooked product. Since short cooking time is a highly desirable characteristic among Mexican consumers, Flor de Junio Marcela, with a relative short cooking time of 65 min, meets the market expectations. Its cooking time is shorter than that of Flor de Mayo M38 (Acosta-Gallegos et al., 1995) and similar to most landraces in its commercial seed class.

Breeder and Foundation seed of Flor de Junio Marcela is maintained at the “El Bajío” Experiment Station and small samples can be obtained from the corresponding author for research purposes.

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References


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