Registration of ‘Black Violet’ Common Bean

‘Black Violet’ (Reg. no. CV-213, PI 633616), a large-seeded, purple-podded, black common bean (Phaseolus vulgaris L.), was developed at the Agriculture and Agri-Food Canada (AAFC) Research Centre, Lethbridge, AB, in cooperation with the AAFC Research Station, Morden, MB, and released in 2003. Black Violet was tested in the narrow-row dry bean registration trials in Manitoba for 2 yr and registered in 2003 (Registration no. 5605, Variety Section, Plant Products Division, Canadian Food Inspection Agency). It is a high-yielding upright cultivar, with moderate resistance to white mold [caused by Sclerotinia sclerotiorum (Lib.) De Bary]. It is particularly adapted to narrow-row production high heat unit areas of southern Manitoba.

Black Violet, tested as L95F025, was derived from the cross UI906/WBR22-3. UI906 is an upright Type IIa (Schwartz et al., 1996), small-seeded opaque black bean from University of Idaho, registered in 1991. WBR22-3 is an erect Type II, opaque black bean germplasm line from the University of Wisconsin and EMBRAPA, Brazil, registered in 1989. It has the dominant $I$ gene resistance to Bean common mosaic virus (BCMV, a potyvirus).

The $F_1$ was grown in the greenhouse; the $F_2$ and $F_3$ were grown in the field at Lethbridge; and the $F_4$ increased in the greenhouse during 1991-1992. In the $F_5$ grown in the field at Lethbridge in 1993, some selection was practiced for plant type, maturity, and seed characteristics. This was followed by growing two more indoor generations, and selected $F_7$ plant-to-progenies were sown in the field in 1994. After testing L95F025 in a modified augmented design (MADIIa) in 1994, it was entered into multilocation yield tests.

A series of narrow-row (23 cm) and wide-row (60 cm) yield tests followed in 1995 and 1996 at Lethbridge and Vauxhall, AB. Because L95F025 did not mature earlier than the check, UI906, the subsequent tests were performed in southern Manitoba, a region of greater heat units during, in 1999 and 2000. This was followed in 2001 and 2002 by tests in the narrow-row part of the Manitoba Dry Bean Cooperative Registration test. The data generated in 2001 and 2002 trials formed the basis for seeking support and obtaining registration of Black Violet. Plants from 100 pods collected at Vauxhall in 1997 were grown in the greenhouse in 1998. Progeny-rows were increased at Santiago, Chile during 1998-1999. At Kimberly, ID, 24 progeny rows were grown in 1999 and at Yuma, AZ, in 2000. Finally, a bulk was grown on 0.2 ha at Othello, WA, in 2001 to produce Breeder seed.

When averaged over seven trials, Black Violet matured in 106 d and yielded 3240 kg ha$^{-1}$ compared with a corresponding 106 d and 3480 kg ha$^{-1}$ for ‘AC Harblack’, the highest-yielding check cultivar, with moderate resistance to white mold of over half of the infected plants. Black Violet has the indeterminate growth habit Type IIa with erect stems and branches and rapid growth. The pods turn distinctly purple before maturity compared to green turning buckskin for AC Harblack. The 100 seed weight of Black Violet averaged 19.7 g over trials, which is greater than that of AC Harblack (17.7 g). Black Violet are broadly elliptic in cross-section, as for AC Black Diamond, in contrast to AC Harblack.

Black Violet is moderately resistant to virus (incidence) compared with AC Harblack. Black Violet is resistant to the strain 15 of BCMV and for resistance to the strain 1, with a necrotic death of over half of the infected plants. Black Violet also has similar resistance to the delta race of Colletotrichum lindemuthianum (Sacc. & Magnus) Lams.-Scrib., races α-Brazil and 73. Black Violet is susceptible to the yellow races of bacterial wilt [caused by Curtobacterium flaccumfaciens pv. flaccumfaciens (Hedges) Collins & Jones].

Black Violet has been released on an exclusive basis through a licensing arrangement with the Alberta Pulse Business Unit (2802-5th Avenue North, Lethbridge, AB, Canada T1H 0P1) from where pedigreed seed may be obtained from the corresponding author for at least 5 years. Application for U.S. Plant Variety Protection is not expected.

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