REGISTRATION OF CROP CULTIVARS

REGISTRATION OF 'DOMINO' AND 'BLACK MAGIC' TROPICAL BLACK BEANS

'DOMINO' (Reg. no. 71) and 'Black Magic' (Reg. no. 72) black beans (Phaseolus vulgaris L.) were developed and released cooperatively by the Michigan Agricultural Experiment Station and USDA-ARS in 1981, as upright, full-season black bean cultivars.

Domino, formerly known as MSU no. 61380, was derived from a single F₁ generation plant selection from the cross 'NEP-2'/Black Turtle Soup' (BTS). Black Magic, formerly designated as MSU no. 61356, was a single F₁ generation plant selection from the same NEP-2/BTS cross.

Domino and Black Magic are among the first black bean cultivars with architype (2) characteristics, since selection for high yield was based on the ideotype breeding concept proposed by Adams (1). The concept features a distinctively modified plant architecture, coupled with greater yield stability; the plants of both cultivars are taller, more erect, narrower in profile, with fewer basal branches and possess a more dominant, and stronger central axis than the BTS parent. These architectural characteristics are combined with a more uniform black seed color and retain that color under narrow row management (20 to 35 cm row width) and thus reduce losses by harvesting plants directly.

Domino and Black Magic both exhibit the Type II, upright short vine plant habit with plants averaging 55 cm in height. This is about 10 cm taller than the standard black cultivar 'T-39'. Both cultivars require a full season to reach maturity, usually from 94 to 99 or 4 days later than the T-39 cultivar and outyield the standard black bean cultivars by 5 to 10% on minimally tilled and compacted soil, respectively. A comparison of yield stability (4) of Domino and Black Magic with 26 other cultivars grown across 42 location-years, indicated that both cultivars respond to improved environmental conditions and possess high yield stability when grown across diverse environments in Michigan.

Domino and Black Magic carry the single dominant hypervarsensitive I-gene form of resistance to all strains of bean common mosaic virus (BCMV), and are essentially immune to the indigenous rust [incited by Uromyces phaseoli (Rebn. var. typica Arth.) Wint. var. typica Arth.] races prevalent in Michigan, Nebraska, North Dakota, and Colorado (5). Domino is resistant only to the gamma race of anthracnose while Black Magic is resistant to the beta, gamma, and delta races of anthracnose caused by Colletotrichum lindemuthianum (Sacc. & Magn.) Briosi & Cav. Both cultivars are tolerant to oxidant air pollution injury caused by ozone; are tolerant to Michigan isolates of halo blight incited by Pseudomonas syringae pv. phaseolicola (Burkholder) Young et al., and to angular leaf spot caused by Isariopsis griseola Sacc. Domino exhibits significant field tolerance (avoidance) to white mold caused by Sclerotinia sclerotiorum (Lib.) by, while both cultivars exhibit good field tolerance to root rot incited by Fusarium solani (Mart.) Appel and Wr. f. sp. phaseoli.

Domino and Black Magic have flat black seeds averaging from 18.0 to 20.0 g/100 seeds, respectively. These seed sizes are within the range of 17.5 to 22.0 g/100 seeds characteristic of commercially acceptable tropical black bean cultivars. The surface color of the dry and processed beans was measured using the L-scale of Hunter Lab Color and Color Difference Meter (6). The L-values of dry seed from several tests across years and locations were 15.9, 15.8 and 16.2 for Domino, Black Magic and BTS, respectively. The lower L-values (15.1, 16.2, 17.2) of processed beans, indicate that both cultivars have a more uniform black seed color and retain that color after cooking.

Domino and Black Magic had washed bean drain weight ratios, [washed bean drained weight (g)/soaked bean weight (g)] of 1.4 and 1.5, respectively, while textures measured with a Kramer Shear Press (3) were 66.9 kg/100g of cooked beans for Domino and 62.5 kg/100g for Black Magic. These values are within the acceptable range of 1.3 to 1.7 for washed bean drain weight ratios and 45.0 to 75.0 kg/100g for textures of tropical black beans.

Breeder seed is maintained by the Michigan Agri. Exp. Stn. E. Lansing, MI 48824, in cooperation with the Michigan Foundation Seed Association.

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References and Notes


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REGISTRATION OF 'ISABELLA' LIGHT RED KIDNEY BEAN

'ISABELLA' light red kidney bean (Phaseolus vulgaris L.) (Reg. no. 73) was developed and released cooperatively by the Michigan Agricultural Experiment Station and USDA-ARS in 1982, as an early maturing, upright, kidney bean cultivar.

Isabella, formerly known and tested as MSU no. 70688, was derived from the cross of 'Redkloud'/Mecosta'. Single plant selections from the F₂ generation were advanced and selected in F₃ and F₄ generation rows. MSU no. 70688 was identified as an F₄ mass-selected row in 1976 and was entered in preliminary yield trials in 1977.

Isabella exhibits the type-I, upright, determinate growth habit with plants averaging 45 cm tall. This is about 5 cm taller than the standard determinate cultivar, 'Sacramento'. The erect, upright growth habit coupled with a vigorous root

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