

Registration of 'Negro Tacaná' Common Bean

Negro Tacaná, a black-seeded common bean (*Phaseolus vulgaris* L.) cultivar (Reg. no. CV-138, PI 592898), was developed in a Collaborative Regional Project for Central America, Mexico, and the Caribbean basin (PROFRIJOL) with partial financial support from the Swiss Commission for Development (COSUDE) and technical advice from the International Center for Tropical Agriculture (CIAT). Negro Tacaná was released in 1995 by the National Research Institute for Forestry, Agriculture, and Livestock (INIFAP) of Mexico as a bean golden mosaic virus (BGMV) resistant cultivar for the tropical lowlands of Mexico. It was selected for disease resistance using the modified pedigree method from an F₂ population made at CIAT (Cali, Colombia) in 1986.

Negro Tacaná originated from the double cross (DOR 364/G 18521)/(DOR 365/LM-30630). Bred lines DOR 364 and DOR 365 are adapted to the tropical lowlands of Central America, while G 18521 and LM-30630 were bred for Brazil. All four parents were selected for a degree of resistance to BGMV. Individual plant selections were made at CIAT (Palmira, Colombia) in the F₂, based on plant type. Selections were increased in F₃, and F₄ families were planted at Cuyuta, Guatemala, where individual plants were selected for reaction to BGMV. Families in the F₅ were planted at Monjas, Guatemala. Fifteen plants were taken in selected families, seeds bulked, and planted at Jutiapa, Guatemala. In the F₆ generation, selection was performed on best families. Selections from the F₄ to F₆ generations were based on disease reactions: scores less than 3 (on a scale of 1 to 9, where 1 = symptomless and 9 = dead plant), mainly against BGMV.

Negro Tacaná is of indeterminate bush growth habit Type II (1), with relatively small leaves and purple flowers. It matures 1 and 3 d earlier than 'Jamapa' and 'Negro Cotaxtla 91', respectively, and is adapted to similar latitudes (approximately 16 to 25°N) (2). It has a more erect, compact growth habit than all other tropical bred cultivars grown in Mexico. Prior to release, Negro Tacaná was designated as DOR 390 and was distributed for yield testing in Central America and Mexico in 1989. From 1992 to 1994, Negro Tacaná was tested at several locations in the humid tropics of Mexico. In the state of Veracruz, averaged over 3 yr, it produced 9 and 27% more than Negro Cotaxtla 91 and Jamapa, respectively. In uniform yield trials conducted in several states of the tropical lowlands of Mexico, Negro Tacaná averaged 997 kg ha⁻¹, compared with 916 and 724 for Negro Cotaxtla 91 and Jamapa, respectively. In tests at Tapachula, Chiapas, under a strong pressure of BGMV, Negro Tacaná outyielded all local landraces and cultivars from 26 to 200%. In eight commercial plots (1 ha each) established at different locations in the state of Veracruz, Negro Tacaná, Negro Cotaxtla 91, and Jamapa yielded an average of 1214, 1142, and 867 kg ha⁻¹, respectively.

The average flowering date of Negro Tacaná is 38 d after planting, which is similar to most tropical landraces and cultivars. In the lowland tropics of Mexico, Negro Tacaná is resistant to BGMV and anthracnose [caused by *Colletotrichum lindemuthianum* (Sacc. & Magnus) Lams.-Scrib.] and displays tolerance to angular leaf spot [caused by *Phaeoisariopsis griseola* (Sacc.) Ferraris] and rust [caused by *Uromyces appendiculatus* (Pers.:Pers.) Unger var. *appendiculatus*]. Negro Tacaná has an opaque black seed coat, and its 100-seed weight averaged 18 g, similar to most landraces and cultivars in its class. The technological and nutritive quality of Negro Tacaná showed no differences to that of previously released cultivars Jamapa, Negro Veracruz, Negro Huasteco 81, and Negro Cotaxtla 91. Its seed protein content (25.1%, dry weight basis) and its crude fiber content (8.8%) are superior to those of most cultivars in its class.

Breeder seed is maintained by the Cotaxtla Experiment Station, Veracruz of INIFAP and is available upon request from E. López-

Salinas. Small quantities of seed of DOR 390 can also be obtained from the bean program at CIAT.

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Registration of 'ICMV 88904' Pearl Millet

ICMV 88904, a grain cultivar of pearl millet [*Pennisetum glaucum* (L.) R. Br.] (Reg. no. CV-13, PI 591068), was developed by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, Andhra Pradesh, India. ICMV 88904 was released on 17 Aug. 1993 by the Government of India under the designation 'ICMV 221' as a higher-yielding alternative to 'ICTP 8203' (2) in all pearl millet producing regions of India except central and western Rajasthan and northern Gujarat that receive <400 mm mean annual precipitation. ICMV 88904 was tested under the experimental designation MP 221 by the All India Coordinated Pearl Millet Improvement Project (AICPMIP).

In the 1987 dry season, 1000 cycle-3 S₁ progenies of the ICRISAT Bold Seeded Early Composite (BSEC) (4) were evaluated under postflowering drought stress conditions at ICRISAT Asia Center. We selected 124 S₁ progenies for superior threshing percentage (grain mass as a percentage of panicle mass) among progenies having grain yield above the mean of the trial. Remnant seeds of the selected progenies were sown as a bulk in an irrigated isolation plot during the 1988 dry season, and the plants were allowed to random-mate to produce an experimental population designated ICMV 88904. During this and one subsequent random mating, mass selection was applied against late, tall plants and weak plants. ICMV 88904 was evaluated in 21 trials across nine locations in India during the 1988 rainy season. Grain yield averaged 2.7 ± 0.2 t ha⁻¹, 15% more than ICTP 8203 (2.3 ± 0.1 t ha⁻¹).

ICMV 88904 was subsequently tested as MP 221 in 79 replicated trials conducted by AICPMIP over 3 yr (1989-1991). In the 72 trials at locations in AICPMIP's Zone B (corresponding to all pearl millet producing regions in India that receive >400 mm mean annual precipitation), ICMV 88904 yielded 2.07 t ha⁻¹ of grain, 14% more than 'WC-C75' (1). In the third year of these trials (across 20 locations), ICMV 88904 yielded 15% more grain than ICTP 8203 and 24% more than WC-C75. On average, ICMV 88904 flowered in 46 d (51 d for WC-C75) and had a plant height of 165 cm (177 cm for WC-C75).

ICMV 88904 has thick, semicompact to compact, lanceolate to oblanceolate panicles that often taper sharply toward the apex.

Seeds are obovate to globular and large (13 g 1000 seed⁻¹). Other morphological characters closely resemble those of ICTP 8203, except that ICMV 88904 has a lower frequency and intensity of purple pigmentation of anthers and nodes. ICMV 88904 tillers more than ICTP 8203, and has better panicle exertion.

ICMV 88904 has good resistance to downy mildew [caused by *Sclerospora graminicola* (Sacc.) J. Schröt.], with 3.2% incidence over 3 yr of screening in AICPMIP disease nurseries, compared with 3.6% for resistant WC-C75. Like other open-pollinated cultivars of pearl millet, ICMV 88904 is less affected by smut [caused by *Moesziomyces penicillariae* (Bref.) K. Vánky; syn. *Tolyposporium penicillariae* Bref.] than single-cross hybrid cultivars produced using the A₁ system of cytoplasmic-nuclear male sterility. Thakur et al. (3) have suggested that open-pollinated pearl millet cultivars are also less affected by ergot (caused by *Claviceps fusiformis* Loveless) than such single-cross hybrids.

Breeder seed of ICMV 88904 is being produced by the Genetic Enhancement Division, ICRISAT Asia Center, and is available to public and private seed agencies in India.

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Registration of 'CD-II' Crested Wheatgrass

'CD-II' crested wheatgrass (Reg. no. CV-24, PI 594024) is a 10-clone synthetic derived from the cultivar Hycrest (1), which is a hybrid between induced tetraploid *Agropyron cristatum* (L.) Gaertner and natural tetraploid *A. desertorum* (Fisch. ex Link) Schultes. CD-II was developed by a research team at the USDA-ARS Forage and Range Research Laboratory, Utah State University, Logan, UT, and was released on 25 Jan. 1996 in cooperation with the Utah Agricultural Experiment Station and the USDA-NRCS. CD-II was evaluated as Hycrest-II.

A breeding program was initiated in 1985 to improve the Hycrest breeding population. The base population was derived from 100 clonal lines, which were selected from a Hycrest foundation seed-increase block consisting of 40 000 spaced plants. Selection was based primarily on vegetative vigor and absence of purple leaves during the early spring, tolerance to diseases and insects, and leafiness.

The 100 clonal lines were evaluated a second time in a 10-replicate crossing block for the same vegetative characters, as well as for individual seed weight and emergence of polycross seedlots from deep seedings. Polycross progenies from 30 selected clonal lines were bulked in equal quantities to form a breeding population, which was advanced through two additional breeding cycles of selection for leafiness, vegetative vigor, and seedling vigor. Polycross seed from 10 clonal lines selected from the final breeding cycle was bulked to form breeder seed.

CD-II has been distinguished from Hycrest on the basis of random amplified polymorphic DNA (RAPD) fingerprinting profiles. It was selected for improved leafiness and produces significantly more forage under cold temperatures in the growth chamber than Hycrest. Seedling vigor of CD-II on a field site near Logan, UT, was significantly greater than Hycrest. Under more xeric conditions, ease of stand establishment, forage yield, and persistence were comparable to Hycrest and were significantly greater than 'Nordan' and 'Fairway', particularly during and

immediately following establishment. The cultivar produces from 670 to 900 kg seed ha⁻¹ on sites receiving 400 to 450 mm of annual precipitation with no supplemental irrigation. CD-II produces abundant forage during the spring and early summer, and it is recommended for semiarid range sites in the Intermountain Region and Great Plains receiving 200 to 450 mm annual precipitation at altitudes up to 2200 m. When drilled under dryland range conditions, a seeding rate of 7 to 9 kg ha⁻¹ is recommended.

Breeder, foundation, and certified seed classes of CD-II will be recognized. Breeder seed will be maintained by the USDA-ARS Forage and Range Research Laboratory at Logan, UT. Rights for production and sales of foundation and/or certified seed will be awarded. Protection under the U.S. Plant Variety Protection Act of 1994 is pending (Application no. 9600240), with the requirement that seed of CD-II can be marketed only as a class of certified seed. Genetic material of this release will be deposited in the National Plant Germplasm System, where it will be available for research purposes, including development and commercialization of new cultivars.

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