REGISTRATION OF GERMPLASM

Registration of USWA-20 Virus and Root Rot Resistant Pinto Dry Bean Germplasm

Pinto dry bean (Phaseolus vulgaris L.) germplasm line USWA-20 (Reg. no. GP-179, PI 599691), with resistance to bean common mosaic virus (BCMV), curly top virus (CTV), and the root rot complex present in the U.S. Pacific Northwest was jointly released in November 1996 by the USDA-ARS and Washington State University Agricultural Research Center, and the Idaho and Oregon Agricultural Experiment Stations. USWA-20 is an F₁ selection from the cross ‘Othello’/’Sierra’. Othello is an early-maturing pinto cultivar developed by D.W. Burke (USDA-ARS, Prosser, WA) with complete resistance to CTV, bc-2⁻ resistance to all strains of BCMV except Pathogroup 7, and some tolerance to the root rot complex present in the U.S. Pacific Northwest (1). Sierra was developed at Michigan State University by J.D. Kelly as the first upright-architectured pinto bean with a strong root system and late maturity (2). Sierra is susceptible to all strains of BCMV; however, it possesses the \textit{Ur}⁻-3 gene for rust resistance.

USWA-20 has a flabby, indeterminate, short-vine plant habit (III-A CIAT classification), and is a full-season variety (95 d, vs. >100 d for Sierra and 90 d for Othello). Its yield was 1173 and 553 kg ha⁻¹ greater than Othello (5211 and 4043 kg ha⁻¹, compared with 4038 and 3490 kg ha⁻¹) in 1995 and 1996 preliminary yield trials conducted at Othello Research Farm. Most high-yielding cultivars are relatively small seeded; however, USWA-20 is exceptional in being both high-yielding and large-seeded (43.5 g 100 seed⁻¹). Most commercial pinto bean cultivars range from 32 to 38 g 100 seed⁻¹. USWA-20 seed is similar to that of Sierra in being plump with a faintly colored pale corona and a slightly dark background.

USWA-20 has a high level of broad-spectrum resistance to the fusarium yellows root rot disease (caused by Fusarium oxysporum Schlechtend. Fr. f. sp. phaseoli J.B. Kendrick & W.C. Snyder). Greenhouse trials for resistance to \textit{F. oxysporum} f. sp. \textit{phaseoli} cultures from Holland, Brazil, and several locations in the USA were conducted at least twice, using the clipped root technique with appropriate control cultivars. The resistance to fusarium yellows was unexpected, since neither parent is as resistant to as broad a range of fusarium yellows isolates as is USWA-20, which is resistant to all available isolates, including the highly virulent strain found in Colorado and Nebraska (3,4).

A limited quantity of seed of USWA-20 is available from Dr. Phillip Miklas, Vegetable and Forage Crop Production Research Unit, USDA-ARS, 24106 N. Bunn Road, Prosser, WA 99350-9687. It is requested that appropriate recognition be given if this germplasm contributes to the development of a new breeding line or cultivar. Genetic material of USWA-20 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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References and Notes

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Registration of USWA-27, a Black and White, Virus-Resistant Dry Bean Germplasm

A black and white mottled seed Anasazi-type (1) dry bean (Phaseolus vulgaris L.) germplasm USWA-27 (seed lot numbers 94-4061 and 95-2159) (Reg. no. GP-178, PI 599690) with resistance to bean common mosaic virus (BCMV) and curly top virus (CTV) was jointly released in November 1996 by the USDA-ARS and the Washington State University Agricultural Research Center, and the Idaho and Oregon Agricultural Experiment Stations. Resistance to BCMV and CTV is needed in the bean seed production areas in the arid Western states. USWA-27 is an \textit{F₉} derived \textit{F₇} population from the cross A55/Anasazi. A55 is a black-seeded, upright II-A plant habit type developed by S. Singh (CIAT, Columbia), with dominant \textit{l} gene resistance to BCMV, and high tolerance to CTV. It is also tolerant to the root rot complex (Fusarium, Rhizoctonia, and Pythium spp.) found in the bean seed production areas of the U.S. Pacific Northwest.

The Native American landrace Anasazi-type dry bean (red and white mottled) of the U.S. Southwest has a late-maturing, vigorous, recumbent plant habit III-B, and is very susceptible to BCMV and CTV. This landrace is uniquely well adapted to the arid high-altitude regions of the U.S. Southwest. Planted in the spring, landrace Anasazi dry bean emerges on residual winter moisture, and develops deep roots and restricted top growth until the August monsoonal rains, after which plants put on a rapid spurt of top growth and then flower and mature rapidly in the dry fall that follows. They are more photosensitive than the dry bean cultivars normally grown in bean-producing areas of North America. In the northern latitudes, landrace Anasazi dry bean will not bloom until late in the season. This lateness in the northern latitudes often results in the crop being frozen before seed harvest.

Plants of USWA-27 are upright and lodging resistant; they have unprotected dominant \textit{l} gene resistance to BCMV and complete resistance to CTV (presumed to be due to two dominant epistatic genes). In replicated yield trials at Othello, WA, USWA-27 bloomed 60 d after planting; it matured in 102 d after planting in 1995, and in 100 d after planting in 1996. USWA-27 yielded 4632 and 3588 kg ha⁻¹ in 1995 and 1996, respectively. Seeds of USWA-27 are black-and-white mottled, plump, and medium-sized, with 100-seed weight of 27 to 30 g. After cooking, the dark part...