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 AGRICULTURAL RESEARCH SERVICE  
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 AND  
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RELEASE OF BLACK AND WHITE DRY BEAN GERMPLASM LINES ICB-3,  
 ICB-8, AND ICB-10 WITH RESISTANCE TO COMMON BACTERIAL BLIGHT

The Agricultural Research Service, U.S. Department of Agriculture, and the Puerto Rico Agricultural Experiment Station announces the release of three dry edible common bean (*Phaseolus vulgaris* L.) germplasm lines with moderate levels of resistance to common bacterial blight (caused by *Xanthomonas campestris* pv. *phaseoli* - *Xcp*). Common bacterial blight is a major disease problem in humid production regions of the United States. All three lines exhibit good yield potential in both tropical and temperate environments. These lines also possess various combinations and levels of resistance to ashy stem blight (*Macrophomina phaseolina*), rust (*Uromyces appendiculatus*), and have the *I* gene for resistance to bean common mosaic virus (BCMV) and bean common mosaic necrosis virus (BCMNV). These lines were selected from interspecific populations generated at the Tropical Agriculture Research Station in Mayaguez, PR. Greenhouse screening for reaction to different *Xcp* strains by Mildred Zapata in Mayaguez, PR and field screening for common bacterial blight reaction by Ken Grafton in North Dakota is acknowledged.

ICB-3 (previously tested as I9322-37b, I9365-33, H9652-2, and ICB-3-8) is a small opaque black bean developed from an interspecific "Population IV" (Great Northern #1, Sel 27/Pc-37) by single plant selection in the greenhouse for resistance to *Xcp* strain 484a (three generations) and intermittent progeny row selection in the field for moderate maturity, good yield potential, and resistance to rust and ashy stem blight diseases endemic to Puerto Rico. The original *P. vulgaris* parent GN#1, Sel 27, is a breeding line from Nebraska with resistance to common bacterial blight derived from tepary bean. The *P. coccineus* parent, Pc-37, was developed by recurrent selection for seed yield and multiple disease resistance from materials released by N.G Vakili (USDA-ARS) in Puerto Rico in 1979. ICB-3, in field tests conducted at Othello, WA in 1997, matured in 96 days, one day earlier than the check cultivar UI 911, and yielded 2800 lbs./A compared to 3400 lbs./A for UI 911. It exhibits an indeterminate prostrate Type III growth habit. Average weight of 100 seeds was 20 grams, 2 grams less than UI 911. This line had a resistance rating of 2 (where 1=no disease to 9=>50% of the leaf canopy showing chlorotic symptoms) for reaction to common bacterial blight in the field in North Dakota (1997) compared to 7 for the cultivar Raven. ICB-3 averaged a score of 2.9 versus 2.4 for GN#1, Sel 27 (where 1= no infection and 5=highly susceptible) for greenhouse reactions to eleven *Xcp* isolates: 983 (Guatemala), 9502 (Honduras), 1018 and 1042 (Nicaragua), 484a (Puerto Rico), 872 (Dominican Republic), 924 and 931 (Costa Rica), 1024 and 1025 (El Salvador), and 972 (USA).

ICB-8 (previously tested as VCV-III-7, I9322-348w, I9365-20w, and H9652-13) is a small white dry bean developed from an interspecific cross (*P. vulgaris*/*P. coccineus*//233B) by single plant selection in the greenhouse for resistance to *Xcp* strain 484a (three generations) and intermittent selection among progeny rows in the field for moderate maturity, good yield potential, and resistance to rust and ashy stem blight diseases endemic to Puerto Rico.

The original *P. vulgaris* parent was a dry bean derived by recurrent selection for seed yield and resistance to diseases endemic to Puerto Rico. The *P. coccineus* parent was developed by recurrent selection for seed yield and multiple disease resistance from materials released by N.G Vakili (USDA-ARS) in Puerto Rico in 1979. The backcross parent, 233B, is a dry bean line developed by G.F. Freytag with high yield and semi-upright architecture. ICB-8 matured in 97 days at Othello, WA in 1997, five days later than Huron navy bean. Yield, at 1900 lbs./A, was 550 pounds less than Huron. It exhibits an indeterminate Type III prostrate growth habit. The weight of 100 seeds averages 28 grams, 2 grams more than Huron. The seed of this line exhibits a small brown spot of color on both sides of the hilum region. This line averaged a 3.0 greenhouse severity score to the 11 *Xcp* strains listed above.

ICB-10 (previously tested as VCV-II-10, I9322-256b, H9652-5, and ICB-10-5) is a small shiny black bean developed from an interspecific cross (*P. vulgaris*/*P. coccineus*//233B) by single plant selection in the greenhouse for resistance to *Xcp* strain 484a (three generations) and intermittent selection among progeny rows in the field for moderate maturity, good yield potential, and resistance to rust and ashy stem blight diseases endemic to Puerto Rico. Parental description is the same as for ICB-8. The 90-day maturity for ICB-10 was seven days earlier than UI 911 at Othello, WA in 1997. Yield at 3000 lbs./A was 400 pounds less than UI 911. Average weight of 100 seeds was 22 grams same as UI 911. It exhibits an indeterminate Type II upright growth habit, and has the I gene for resistance to BCMV and BCMNV. This line scored a 2 for severity of common bacterial blight reaction in the field in North Dakota (1997) compared to 7 for Raven. ICB-10 averaged a score of 2.7 versus 2.3 for GN#1, Sel 27 (where 1= no infection and 5=highly susceptible) for greenhouse reactions to three *Xcp* isolates 983 (Guatemala), 9502 (Honduras), and 1042 (Nicaragua).

These germplasm lines should be useful for improving resistance to common bacterial blight in black and navy dry edible bean market classes. A limited quantity of seed of each release is available from Dr. Phillip Miklas (pmiklas@tricity.wsu.edu), Vegetable and Forage Crop Production, USDA-ARS, 24106 N. Bunn Rd., Prosser, WA 99350-9687. Genetic material of this release will also be deposited in the National Plant Germplasm System where it will be available for research purposes, including development and commercialization of new varieties/cultivars. It is requested that appropriate recognition be made if this germplasm contributes to the development of a new breeding line or cultivar.

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Date

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