Registration of Germplasms

REGISTRATION OF TWO NAVY BEAN GERMPLASM LINES L226-10 and L227-1

Two breeding lines of navy beans (Phaseolus vulgaris L.) L226-10 (GP 50) and L227-1 (Reg no. GP 51) were developed and released cooperatively by ARS-USDA and the agricultural experiment stations of Michigan State Univ. (MSU) and the Univ. of Puerto Rico (UPR). These breeding lines represent significant progress in combining high levels of disease resistance from tropical germplasm sources, upright architectural type (architype) for the Great Lakes temperature zone, and high yield potential.

The lines originated from crosses made in Puerto Rico (PR) in 1976 to combine the multiple disease resistance of the Puerto Rican black bean line '2B-5-1' (‘La Vega’/15R-55/‘Mexico 309’/La Vega) with the high yielding upright navy bean breeding line N76012 (‘NEP-2’/‘BTS’) from the MSU program. The original F1 was backcrossed to N76012 and a F4-derived line, N80051 (2B-5-1/2*N76012) was selected in Michigan (MI) for combination of erect architecture and disease resistance. N80051 was subsequently crossed with N81009 (‘Bunsi’/NEP-2) to produce N82159 (coded L226-10 in PR). N80051 was crossed to X80101 (W-18/‘Kentwood’/Bunsi/NEP-2) to produce N82160 (coded L227-1 in PR). These lines originated as F2 single plant selections made in MI and reselected on a F3 row basis in PR for multiple disease resistance, upright plant habit and vigor. The lines were advanced and continually selected through F4 and F5 generations alternating between PR and MI. Then they were entered in replicated yield trials in PR, Dominican Republic (DR) and MI during the 1982–1983 season.

Both lines exhibit the type II, erect short vine plant habit of the MSU architype. Plants average 50 cm tall, are erect, narrow in profile, have few basal branches, well developed branched tap roots and a stiff hypocotyl that remains erect through harvest. The modified plant architectural characters of both lines are based upon breeding for the ideotype concept proposed by Adams (1). Both lines require a full season (97 to 98 days) to reach maturity in MI and have exceeded the yields of standard 'Seafarer' and 'W-117' bean cultivars by 16 to 30% over 2 years at 10 locations in PR, MI, and the DR. These lines have shown no appreciable daylength sensitivity and have grown and yielded well under hot (30 to 35 °C) and humid tropical conditions. The yield potential and yield stability are in the range of the best tropical black bean cultivars; thus these are the first

REGISTRATION OF RED CLOVER GERMPLASM RESISTANT TO BEAN YELLOW MOSAIC VIRUS

Both lines have an ovoid white seed ranging in size from 18.2 to 20.6 g/100 seeds with dry seed color of 61.6 for L226-1 and L227-1, respectively. Seed size and color values are within the acceptable range exhibited by standard navy cultivars grown across years. Seed for experimental purposes may be obtained from J.D. Kelly, Crop and Soil Sciences Dep., Michigan State Univ., East Lansing, MI 48824.

G. F. FREYTAG, J. D. KELLY, M. W. ADAMS, J. BEAVER, AND R. ECHAVEZ BADEL

References and Notes

5. Research geneticist, USDA-ARS, Mayaguez, PR. Professor, Dept. of Crop and Soil Sciences, MSU; pathologist, Crop Protection Dep., UPR; professor, Dept. of Agronomy and Soils, UPR; investigator, Crop Protection Dep., UPR; research supported in part by Michigan Agricultural Experiment Station Journal Article No. 84–1.

Published July, 1985