

UNITED STATES DEPARTMENT OF AGRICULTURE
Science and Education Administration
and
Agricultural Experiment Station of the
University of Puerto Rico

NOTICE TO PLANT BREEDERS OF RELEASE OF MULTIPLE
DISEASE RESISTANT WHITE BEAN GERM PLASM

MITA-6383

The Agricultural Research, Science and Education Administration, United States Department of Agriculture, and the Agricultural Experiment Station of the University of Puerto Rico announce the release of a multiple disease resistant white bean, Phaseolus vulgaris L., line MITA-6383.

The development of this germ plasm was carried out with partial support from the Agency for International Development under a contract (AID/CM/TA-C-63-26) entitled "Improvement of Tropical Production of Beans and Cowpeas Through Disease and Insect Control."

The white bean MITA-6383, is a selection from P.I. accession 151395 from Colombia. It was selected for its resistance to rust, very high tolerance to field incidence of bacterial blight and resistance to soil-borne diseases.

In a multiple disease resistance screening trial on white bean accessions in 1974 at Isabela, Puerto Rico, over 50% of the plants in Row-1074 survived soil-borne diseases and rust epiphytotic for 3 months. Seeds of these plants were bulked and sown for disease resistance comparison with the black cultivar Mexico-309 (immune to soil-borne diseases and rust, but highly susceptible to common bacterial blight) in replicated rows and challenged with rust and bacterial blight. At 65 days after sowing, Mexico-309 was defoliated by bacterial blight while plants from 1074-BK retained over 80 percent of their normal foliage. From 1975 to 1979, the seeds of 1074-BK were designated as M-1 and subjected to greenhouse inoculation tests and field screening trials at four field locations. The selected seeds are being released under acquisition number MITA-6383.

MITA-6383 has a short vine habit, is daylength sensitive, and varies in length from 50 to 80 cm. It is non-twining, has dark green leaves, pods measuring 11.2 x 1.2 cm, has 6.1 seed per pod and a 100-seed weight of 17.2 grams. At sea level it flowers at 55 days and its pods mature at 85 days; at 500 m elevation, it flowers at 62 days and its pods mature at 110 days after sowing. It has had an average yield of 3.6 grams per plant under severe field screening trials. It has an average of 28.9% and a range of 25.5 to 29.7% of protein per dry weight of seed.

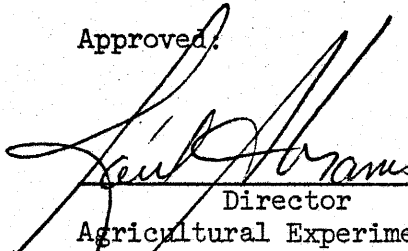
MITA-6383 is immune to the rust, Uromyces appendiculata, population (18 races recognized) on the island. It is highly tolerant to Xanthomonas strains causing common bacterial blight symptoms. It has field resistance to the soil-borne disease complex causing southern blight, Sclerotium rolfsii, rhizoctonia root rot, Rhizoctonia solani, fusarium root rot, Fusarium solani, and charcoal rot, Macrophomina phaseoli. It is resistant to greenhouse inoculation with bean common mosaic virus (BCMV) (systemic

mosaic strain) and cucumber mosaic virus (CMV). It is field resistant to cowpea mosaic virus (CPMV), but has variable seedling response of resistant to moderately susceptible when challenged by this virus in the greenhouse. It is resistant to cercospora leaf spots and cercospora pod blotch, Cercospora cruenta and C. canescens.

MITA-6383 has a low seed emergence, varying between 85 to 75 percent of seeds sown. The low emergence was recorded in four different soil types and at different seasons. Heavy foliage, high humidity, and late harvest of ripe pods result in seed infection and subsequent low emergence. No seedling damping off was observed. It is highly susceptible to the black root (systemic necrosis) strain of BCMV, and susceptible to angular leaf spot, Isariopsis griseola, during the rainy season of the intermediate highlands. Under optimum conditions for bacterial blight development and severe disease pressure, it becomes susceptible to Xanthomonas strains causing bacterial canker and black spot symptoms.

A limited amount of seed is available on a pro-rata basis to qualified persons who request it in writing from
Mayaguez Institute of Tropical Agriculture, SR, AR, SEA,
P. O. Box 70, Mayaguez, Puerto Rico 00708.

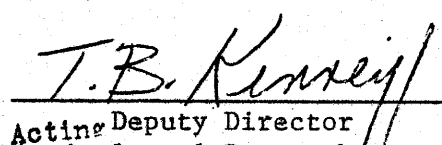
Approved:



Director
Agricultural Experiment
Station
University of Puerto Rico

24/5/79

Date



Acting Deputy Director
Agricultural Research
Science and Education Administration

6/11/79

Date