Registration of ‘Mackinac’ Navy Bean

‘Mackinac’ navy bean (Phaseolus vulgaris L.) (Reg. no. CV-143, PI 596630) was developed and released cooperatively by the Michigan Agricultural Experiment Station and the USDA-ARS in 1997 as an upright, midseason, disease-resistant cultivar.

Mackinac, tested as N93296, was derived from a cross made in 1991 between navy bean breeding lines, N90435/‘Avanti’. N90435 is a midseason, disease-resistant, upright, indeterminate (Type II) breeding line and Avanti is a Type II, midseason, disease-resistant cultivar with excellent seed and canning quality. The F1 plants were advanced in the greenhouse and space-planted in an F2 nursery at the Bean and Sugarbeet Research Farm near Saginaw, MI. A single-plant F2 selection was identified as possessing the desired agronomic and navy seed traits. The F3 progeny were advanced as a plant row in Puerto Rico. A single-plant selection was made in a space-planted F4 nursery in Michigan on the basis of agronomic traits, seed traits, and resistance to bean rust [caused by Uromyces appendiculatus (Pers.:Pers.) Unger] and bean anthracnose [caused by Colletotrichum lindemuthianum (Sacc. & Magnus) Lams.-Scrib.]. The F5 progeny were advanced as a plant row in Puerto Rico. The F6 breeding line, coded N93296, entered replicated yield trials in 1993.

Mackinac was extensively tested for yield and agronomic traits at 27 locations in Michigan over four seasons (1993–1996). Mackinac averaged 2340 kg ha⁻¹ and outyielded Avanti by 6% over 20 locations. At 17 to 24 locations, Mackinac outyielded the superior canning quality and resistance to halo blight [caused by Pseudomonas syringae pv. phaseolicola (Burkholder) Young et al.] of Montcalm (2). The F1 plants were advanced as a plant row in Puerto Rico. The F6 breeding line, coded N93296, entered replicated yield trials in 1993.

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Mackinac has demonstrated uniform maturity and excellent drydown across a broad range of environments.

Mackinac carries the single dominant hypersensitive I gene for resistance to bean common mosaic virus (BCMV), but is sensitive to temperature-insensitive necrosis-inducing strains of bean common mosaic virus (BCMNIV) such as NL 3 and NL 8, which induce the black root reaction. Mackinac carries the Co-I gene, which conditions resistance to Races 65 and 73 of anthracnose, and the Ur-3 rust resistance gene, which conditions resistance to Race 53 and all indigenous bean rust races prevalent in Michigan. Mackinac is tolerant to Michigan isolates of hal blight [Pseudomonas syringae pv. phaseolicola (Burkholder) Young et al.], but is susceptible to Michigan isolates of root rot [primarily Fusarium solani (Mart.) Sacc. f. sp. phaseoli (Burkholder) W.C. Snyder & H.N. Hans.] and to common blight [caused by Xanthomonas campestris pv. phaseoli (Smith) Dye]. Mackinac has tolerance

Mackinac navy bean has been released as a new variety, with the option that Mackinac may not differ significantly from other commercial navy bean cultivars. Breeder seed is maintained by the Michigan Agricultural Experiment Station, East Lansing, MI 48824, in cooperation with the Michigan Dry Bean Improvement Association.

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References and Notes


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Registration of ‘Red Hawk’ Dark Red Kidney Bean

‘Red Hawk’ dark red kidney bean (Phaseolus vulgaris L.) (Reg. no. CV-144, PI 596751) was developed and released by the Michigan Agricultural Experiment Station and the USDA-ARS in 1997 as a full-season, disease-resistant dark red kidney bean cultivar with excellent processing quality.

Red Hawk, tested as K90101, was derived in 1988 between dark red kidney bean cultivars Isles and Drake by a margin of 1 to 16%; one cultivar, Vista, yielded 5% more.

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