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' 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) Lam.- 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 Montcalm. At 17 to 24 locations, Mackinac averaged 2340 kg ha−1 and outyielded Avanti by 6% over 35 locations, and outyielded the commercial dark red kidney cultivars Isles and Drake by 2 and 11%, respectively.

Mackinac has ovoid seed, which averages 21 g 100 seed−1 (range: 19-23 g 100 seed−1). The seed is similar in color and shape to Avanti. In canning trials, Mackinac was subjectively rated by a team of panelists as satisfactory in cooking quality and equivalent to Avanti. Mackinac scored 3.5 on a five-point hedonic scale (where 5 is best). This evaluation is based on whole-bean integrity (no splitting or swelling), uniformity of size (uniform water uptake), color (no after darkening), and clear brine (no starch extruded into canning liquid). After it is processed, Mackinac does not differ significantly from other commercial navy bean cultivars for cooked color, texture, hydration, and drained weight ratios.

Mackinac navy bean has been released as a public nonexclusive variety, with the option that Mackinac may be sold for seed by name only under the certified class. A research fee will be assessed on each hundredweight unit of certified seed sold. Breeder seed is maintained by the Michigan Agricultural Experiment Station, East Lansing, MI 48824, in cooperation with the Michigan Crop 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 cooperatively 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 from a cross made in 1988 between dark red kidney bean cultivars, Charlovezix2* Montcalm. The cross was designed to incorporate the earliness and resistance to anthracnose [caused by Colletotrichum lindemuthianum (Sacc. & Magnus) Lam.- Scrib.] of Charlovezix1 (with 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 in the greenhouse and space-planted in an F2 nursery at the Montcalm Research Farm near Entrican, MI. A single-plant selection was identified as possessing the desired agronomic and kidney 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 and kidney seed traits and resistance to bean anthracnose. The F5 progeny were advanced as a plant row in Puerto Rico. The F6 breeding line coded K90101 entered replicated yield trials in 1990.

'Red Hawk was extensively tested for yield and agronomic traits at 36 locations in Michigan over seven seasons (1990-1996). Red Hawk averaged 2190 kg ha−1; it outyielded Montcalm by 5% over 35 locations, and outyielded the commercial dark red kidney cultivars Isles and Drake by 2 and 11%, respectively. Red Hawk averaged 51 cm in height and exhibits the Type I upright determinate bush growth habit with improved resistance to lodging over Montcalm. Red Hawk flowers 42 d after planting and has a white flower with a slight pink blush on the banner and wing petals. Red Hawk is a full-season bean, maturing 59 d after planting and with a range in maturity from 95 to 100 d, depending on season and location. Red Hawk matures 5 d earlier than Montcalm, 1 d earlier than Isles and 2 d later than Drake. Red Hawk has demonstrated more uniform maturity, has senesced more rapidly and has exhibited less tendency towards green stem at maturity than Montcalm.