resistant to Race 53 and all indigenous rust races prevalent in Michigan; presence of the Ur-3 gene was confirmed using a linked RAPD marker (3). Raven is tolerant to Michigan isolates of halo blight [caused by *Pseudomonas syringae* pv. *phaseoli-cola* (Burkholder) Young et al.] and is susceptible to Michigan isolates of root rot [caused primarily by *Fusarium solani* (Mart.) Sacc. f. sp. *phaseoli* (Burkholder) W.C. Snyder & H.N. Hans.], common blight [caused by *Xanthomonas phaseoli* (Smith) Dowson], and white mold [caused by *Sclerotinia sclerotiorum* (Lib.) de Bary] in spite of the avoidance afforded by its upright plant architecture.

Raven has a small flat black seed averaging 16.5 g 100 seed$^{-1}$, and ranged from 16 to 20 g 100 seed$^{-1}$. The seed is slightly smaller than other cultivars, but is equivalent in color and shape to other commercial black bean cultivars. Raven has been subjectively rated by a team of panelists as being acceptable in canning quality. Raven scored 2.8, which was equivalent to other commercial black bean cultivars on a five-point hedonic scale (where 5 is best). This evaluation is based on whole-bean integrity, uniformity of size, color retention when cooked, and clear brine. Raven does not differ from other commercial cultivars for cooked color, texture, hydration, and drained weight ratios.

Raven black bean has been released as a public nonexclusive variety, with a research fee to be assessed on each unit (hundredweight) of certified seed sold. Variety protection has been applied for under the Plant Variety Protection Act, Public Law 91-577, with the option that Raven may be sold for seed by name only under the certified class. Breeder seed is maintained by the Michigan Agricultural Experiment Station, East Lansing, MI 48824, in cooperation with the Michigan Foundation Seed Association.

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References and Notes


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Registration of 'Isles' Dark Red Kidney Bean

'Isles' dark red kidney bean (*Phaseolus vulgaris* L.) (Reg. no. CV-113, PI 578076) was developed and released cooperatively by the Michigan Agricultural Experiment Station and the USDA-ARS in 1994 as a full-season, disease-resistant cultivar with excellent processing quality.

'Isles' tested as K86012 was derived from a cross made in 1981 between X82405/'Isabella'. X82405 is a full-season, dark red kidney bean (DRK) bean breeding line resistant to anthracnose

[caused by *Colletotrichum lindemuthianum* (Sacc. & Magnus) Lam.-Scrib.]; it is derived from the cross CN49242/3*'Montcalm'/'Charlevoix'. Isabella is a high-yielding, early-season light red kidney bean cultivar. The cross was designed to incorporate earliness and anthracnose resistance into dark red kidney bean germplasm. The F$_1$ plants were selfed in the field and space-planted in an F$_2$ nursery at Montcalm, MI, in 1983. A single-plant F$_2$ selection was identified as possessing the desired agronomic and seed traits. The F$_2$ progeny were advanced as a plant row at Isabela, PR. A single F$_2$ plant row was mass-selected in Michigan on the basis of uniform maturity, anthracnose resistance (based on greenhouse inoculations with delta race on remnant F$_2$ seed), and seed traits. An F$_2$ row was grown in Michigan and inoculated with halo blight [caused by *Pseudomonas syringae* pv. *phaseolicola* (Burkholder) Young et al.]. Selections were made for halo blight resistance, plant height, lodging resistance, and uniform maturity. A disease-resistant F$_2$ breeding line coded as K86012 was entered in replicated yield trials in 1986.

'Isles' was extensively tested for yield and agronomic traits at 37 locations over seven seasons (1987-1993). Isles averaged 2450 kg ha$^{-1}$ and was equivalent (+2%) to yield in the standard cultivar Montcalm across all locations. Isles outyielded Montcalm by 14% in the northern location (Presque Isle, MI).

Isles exhibits an upright Type I determinate bush growth habit, with plants averaging 45 cm in height. Isles is equivalent to Montcalm in growth habit, height, root system, and lodging resistance. Isles is a full-season line, maturing 95 to 99 d after planting, or 2 to 3 d earlier than Montcalm. It exhibits more uniform maturity and better dry-down than Montcalm by dropping its leaves earlier and exhibiting less of a tendency for green stem at maturity.

'Isles' carries the single, dominant, hypersensitive I gene resistance to Bean Common Mosaic Virus (BCMV) and is susceptible to the temperature-insensitive necrosis-inducing strains of BCMV, such as NL 3 and NL 8, which induce the black root reaction; presence of the I gene was confirmed with a linked RAPD marker (1). Isles is the first dark red kidney bean to possess the A and Are genes, which condition resistance to all known North American races of anthracnose. Isles is essentially immune to the indigenous rust [caused by *Uromyces appendiculatus* (Pers.:Pers.) Unger] races prevalent in Michigan and is tolerant to Michigan isolates of halo blight, but is susceptible to Michigan isolates of root rot [caused primarily by *Fusarium solani* (Mart.) Sacc. f. sp. *phaseoli* (Burkholder) W.C. Snyder & H.N. Hans.].

Isles has larger seeds than Montcalm, averaging 64 g 100 seed$^{-1}$, compared with Montcalm's 58 g 100 seed$^{-1}$. In canning trials, Isles has been subjectively rated by a team of panelists as being equivalent to Montcalm in cooking quality, scoring 3.5 vs. 3.6 for Montcalm, on a five-point hedonic scale (where 5 is best). This evaluation is based on whole-bean integrity, uniformity of size, color, and clear brine. Isles does not differ from Montcalm for cooked color, texture, hydration, and drained weight ratios. Canning tests, conducted independently by two commercial companies for 3 yr on both hand- and machine-harvested seed, rated Isles as highly acceptable compared with Montcalm.

Isles dark red kidney bean has been released as a public nonexclusive variety, with a research fee to be assessed on each unit (hundredweight) of certified seed sold. Variety protection has been applied for under the U.S. Plant Variety Protection Act, Public Law 91-577, with the option that Isles may be sold for seed by name only under the certified class. Breeder seed is maintained by the Michigan Agricultural Experiment Station, East Lansing, MI 48824, in cooperation with the Michigan Foundation Seed Association.