NOTICE OF NAMING AND RELEASE OF RAVEN, A NEW MID-SEASON UPRIGHT BLACK BEAN FOR MICHIGAN AND THE GREAT LAKES REGION

The Michigan Agricultural Experiment Station and the Agric. Res. Service, United States Department of Agriculture, announce the joint release of Raven, a new upright, mid-season, multiple disease resistant, black bean cultivar.

Raven tested at MSU no. B90222 was derived from a cross made in 1986 between MSU breeding lines N84004/B85009. N84004 is a mid-season, anthracnose resistant navy bean breeding line; B85009 is a full season black bean breeding line with resistance to all known strains of bean common mosaic virus (BCMV). The cross was designed to incorporate earliness and anthracnose and virus resistance into black bean germplasm. The cross was coded 86N301 and F₃ single-plant selection no. 28 was identified as possessing the desired agronomic and seed traits. Progeny were advanced to the F₅ generation where disease resistant breeding line numbered 86N301-28-01-01 was identified and was entered into replicated yield trials in 1990 and coded with the permanent accession number B90222.

Raven was developed by the dry bean breeding team at East Lansing, Michigan, consisting of Dr. J.D. Kelly, Mr. J. Taylor and Dr. S.D. Haley of Michigan State University, Department of Crop and Soil Sciences; Dr. G.L. Hosfield of ARS, U.S. Department of Agriculture, Sugarbeet, Bean and Cereal Research Unit; Dr. M.A. Uebersax of Michigan State University, Department of Food Science and Human Nutrition; and Mr. G.V. Varner of the Michigan Dry Bean Production Research and Advisory Board.

Raven was extensively tested for yield and agronomic traits for five seasons (1989-93) over 31 locations. Raven averaged 2450 kilograms per hectare and outyielded early season black bean cultivars by 13 percent; but yielded from 6-18 percent less when compared with full season cultivars.

Raven exhibits the upright, type II indeterminate growth habit averaging 50 centimeters in height combined with excellent resistance to lodging (score of 1). Raven is a mid-season bean maturing 92 days after planting with a range in maturity from 87-98 days depending on season and location. Raven matures a week earlier than the full season cultivar Midnight and five days earlier than T-39. Raven has demonstrated uniform maturity and excellent dry-down across a broad range of environments and fits an unique nitch for a mid-season black bean cultivar in Michigan.
RAVEN BLACK BEAN

Raven carries the single dominant hypersensitive I gene resistance to BCMV combined with the recessive bc-3 gene. This gene combination provides complete protection to all known strains of BCMV including the temperature insensitive necrosis inducing strains of BCMV like NL 3 and NL 8 which cause the black root reaction in cultivars with the unprotected I gene. Presence of Ibc-3 gene combination was confirmed using molecular markers linked to both resistance genes. Raven is the first bean cultivar to exhibit complete resistance to BCMV worldwide which will ensure no yield loss to necrotic strains of BCMV present in the western seed production states. Raven carries the A gene for resistance to alpha anthracnose which attacks all other black bean cultivars except Blackhawk. Raven carries the Ur-3 rust resistance gene which conditions resistance to all indigenous rust races prevalent in Michigan. Raven has shown no tolerance to white mold in spite of the avoidance afforded by its very erect plant architecture.

Raven has a small flat black bean seed averaging 16.5 grams per 100 seed and ranged from 16-20 grams per 100 seed. The seed is slightly smaller than other cultivars but is equivalent in color and shape to other commercial black bean cultivars. Canning quality is not a major selection criteria in black beans since this commodity is marketed overseas and not canned commercially. In canning trials Raven has been subjectively rated by a team of panelists as being acceptable in canning quality. Raven scored 2.8 or equivalent to other commercial black bean cultivars on a five-point hedonic scale where 3 is average. Data on cooked color, hydration and drained weight ratios exhibited no differences between Raven and other commercial black bean cultivars. The texture of 70 kilograms per 100 grams is well within the acceptable range of 65 to 85 kilograms 100 grams for processed black beans.

Seed of Raven for experimental purposes may be obtained from Dr. J.D. Kelly, Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824. The Agricultural Research Service has no seed for distribution.

Raven black bean is being released as a public, non-exclusive cultivar, jointly by the Michigan Agricultural Experiment Station and the Agricultural Research Service. A research fee will be assessed on each unit (hundredweight) of certified seed sold.

__________________________________________________________________________________________

Director
Michigan Agricultural Experiment Station

__________________________________________________________________________________________

Administrator
Agricultural Research Service