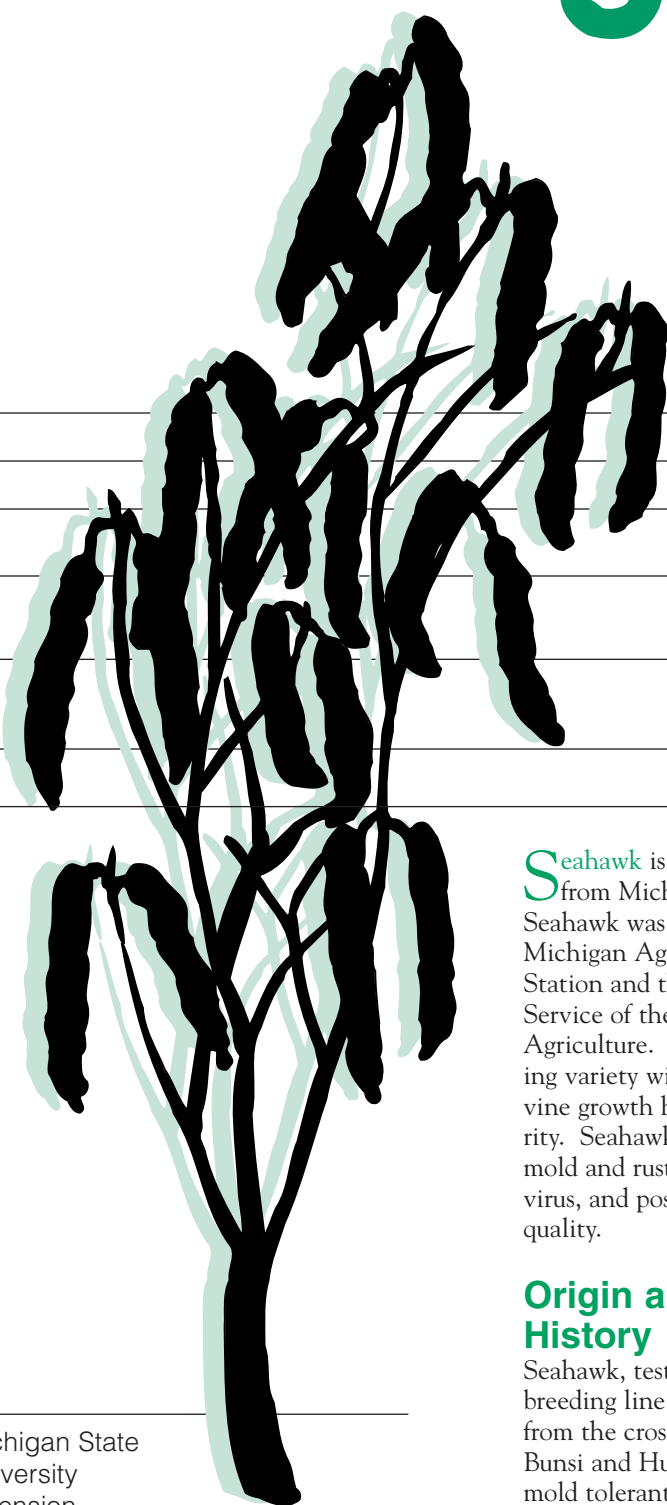


**NEW from
MSU**

Seahawk

A NEW NAVY BEAN

for Michigan



- Semi-erect short vine growth habit suitable for direct harvest.
- Yield equivalent to Vista and Mayflower.
- Similar in maturity to Schooner, 3-days earlier than Vista.
- Recommended for narrow-row production where white mold is problematic.
- Highest levels of tolerance to white mold among commercial navy beans.
- Improved canning quality and seed integrity after cooking.

Seahawk is a new navy bean variety from Michigan State University. Seahawk was released jointly by the Michigan Agricultural Experiment Station and the Agricultural Research Service of the U.S. Department of Agriculture. Seahawk is a high-yielding variety with a semi-erect, short vine growth habit and midseason maturity. Seahawk navy is tolerant to white mold and rust, is resistant to mosaic virus, and possesses excellent canning quality.

Origin and Breeding History

Seahawk, tested as MSU navy bean breeding line N97774, was developed from the cross of navy bean varieties Bunsu and Huron. Bunsu is a white mold tolerant, mid-season, commercial navy bean variety with a semi-prostrate indeterminate growth habit that exhibits a persistent green stem at maturity. Huron is a white mold tolerant, early-season, short-erect indeterminate commercial navy bean variety

with excellent canning quality. The purpose of the cross was to improve yield potential and combine anthracnose, virus and white mold resistance with good canning quality for future navy bean varieties. The cross was made in 1994, advanced to the F6 generation and then entered into yield trials in 1997 with the code number N97774.

Yield Performance

Seahawk was tested extensively for yield and agronomic traits at 47 locations in Michigan over eight seasons (1997-2004) and Seahawk averaged 27.4 cwt/acre. Over 40 locations, Seahawk yielded 27.1 cwt/acre compared to 26.7 cwt/acre for Vista. Seahawk was equivalent in yield to navy bean varieties, Schooner and Crestwood over 12 common test sites. Seahawk out-yielded the commercial navy bean varieties, Avanti, Navigator, Mackinac and Mayflower, by a margin ranging from 5 to 11% over 9, 11, 14, and 18 locations, respectively, where

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the varieties were directly compared. Seahawk demonstrated similar yield superiority among contemporary navy bean varieties entered in the National Cooperative Nurseries grown at 8 locations in North America from 2002 to 2004.

Agronomic Features

Seahawk averages 18 inches in height and exhibits a semi-erect indeterminate growth habit, with moderate tolerance to lodging. Seahawk is more erect than Schooner, but is not as erect as Vista or Mayflower. Seahawk has white flowers and blooms 45 days after planting. Seahawk is a midseason bean, maturing 97 days after planting and has a range in maturity from 90 to 101 days, depending on season and location. Seahawk matures similar to

Schooner, and 3 days earlier than Vista and Mayflower. Plants of Seahawk mature uniformly without the persistent green stem observed in Bunsu, and show excellent dry-down across a broad range of environments.

Disease Resistance

Seahawk carries the single dominant hypersensitive I gene that conditions resistance to bean common mosaic virus (BCMV), and the Co-2 gene, which conditions resistance to Races 7 and 65 of bean anthracnose. Seahawk is susceptible to common bacterial blight and shows moderate tolerance to the bean rust races 38, 39, 40, 41, 43, and 53 that occur occasionally in Michigan. Seahawk is tolerant to white mold and has demonstrated the highest level of tolerance to white mold

among commercial navy bean varieties grown in Michigan. In four years of comparative field-testing, Seahawk exhibited significantly more tolerance (Disease Incidence = 33%) to white mold than Vista (Disease Incidence = 48%).

Mayflower and Schooner are generally less tolerant to white mold than Vista (data not shown).

Quality Characteristics

Seahawk has a large white navy bean seed, which averages 24.6 g per 100 seed (range: 23 - 27g per 100 seed). The seed is slightly larger in size and lighter in color than other navy bean varieties. In canning trials, Seahawk was subjectively rated by a team of panelists as having acceptable canning quality for navy beans. In 12 trials, Seahawk scored 3.8 on a seven-point hedonic scale (7 = most desirable, 1 = least desirable, and 4 = average), and was equivalent to Schooner but had significantly better canning quality than Vista and Mayflower, which scored 3.1 and 2.8, respectively. The canning quality evaluation is based on whole-bean integrity (no splitting or clumping), uniformity of size (uniform water uptake), color (color retention), and brine free from starch extrusion into the canning liquid. After it is processed, Seahawk does not differ significantly from other commercial navy bean varieties for hydration and drained weight ratios, but it exhibits firmer texture and lighter cooked color than Vista.

Table 1. Comparison of Agronomic, Disease and Canning Characteristics of Seahawk with Three other Navy Bean Varieties: Vista, Schooner, and Mayflower.

VARIETIES	Seahawk	Vista	Schooner	Mayflower
AGRONOMIC TRAITS				
DAYS TO FLOWER	45	46	44	48
DAYS TO MATURITY	97	100	97	100
HEIGHT (cm)	46	49	42	50
LODGING SCORE (1-5)	2.6	2.0	3.5	2.0
SELECTION INDEX	4.0	4.5	3.5	5.0
100 SEED WEIGHT (g)	24.6	21.2	22.4	21.3
YIELD (PERCENT)	100	99	100	94
DISEASE RESISTANCE TRAITS				
BCMV	R	R	R	R
ANTHRACNOSE:				
RACE 7	R	R	S	R
RACE 65	R	R	I	S
RACE 73	S	S	I	S
BEAN RUST RACE 53	I	R	R	R
COMMON BLIGHT	S	S	S	S
WHITE MOLD (%)	33.2	48.1	—	—
CANNING QUALITY TRAITS				
COLOR L-SCALE	59	50	51	51
WASHED DRAINED RATIO	1.3	1.3	1.3	1.3
HYDRATION RATIO	1.9	1.9	1.9	1.9
TEXTURE (kg)	72	45	56	80
VISUAL RATING (1 - 7)	3.8	3.1	3.9	2.8

Lodging: 1 = erect, 5 = prostrate; 100 seed weight - grams; Selection index: 1 = worst, 5 = average, 9 = excellent; Height - cm; diseases: BCMV- Bean Common Mosaic Virus, R = resistant, S = susceptible, I = intermediate; White mold: percent disease incidence (average of 90 plants grown under disease pressure)

Canning Visual Rating: 1 = very undesirable, 4 = neither desirable nor undesirable, 7 = very desirable; Texture - kg/100g.

Release and Research Fee

Seahawk was released by Michigan State University with the option that Seahawk be sold for seed by variety name only as a class of Certified seed under the three-class system used in Michigan (Breeder, Foundation, Certified). A royalty will be assessed on each hundredweight unit of either Foundation Seed or Certified seed sold depending on production location. The variety is licensed to Michigan Crop Improvement Association who will collect the royalty. Plant Variety Protection (PVP) is pending.

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