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Blackhawk, a New Black Bean for Michigan  
Michigan State University Extension Service  
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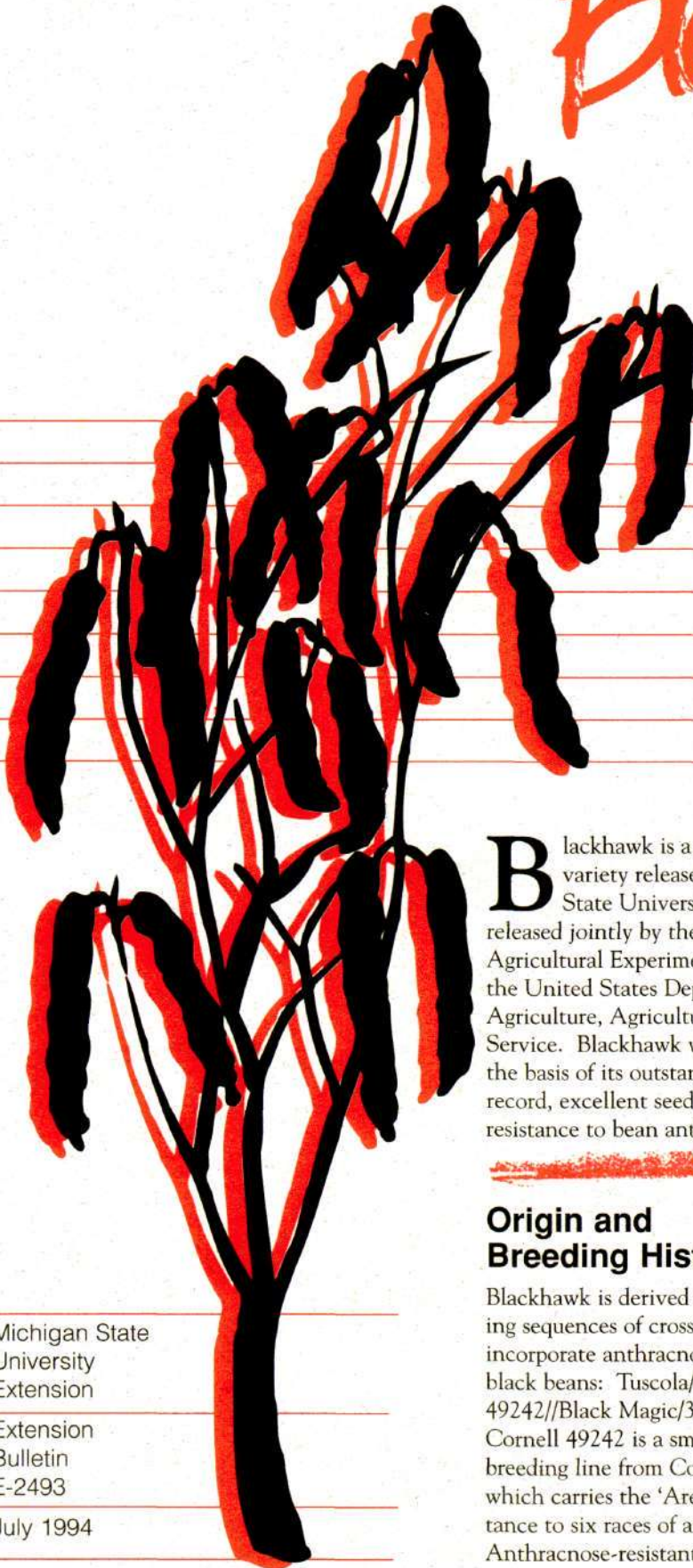
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**NEW from  
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# Blackhawk

A NEW BLACK BEAN  
*for Michigan*



- Outstanding lodging resistance
- Excellent seed quality
- Resistant to bean anthracnose
- Highly resistant to rust
- Upright growth habit
- Full-season variety

**B**lackhawk is a new black bean variety released from Michigan State University. It was released jointly by the Michigan Agricultural Experiment Station and the United States Department of Agriculture, Agricultural Research Service. Blackhawk was released on the basis of its outstanding performance record, excellent seed quality and its resistance to bean anthracnose.

## Origin and Breeding History

Blackhawk is derived from the following sequences of crosses designed to incorporate anthracnose resistance into black beans: Tuscola/Cornell 49242//Black Magic/3/Midnight. Cornell 49242 is a small-seeded black breeding line from Cornell University which carries the 'Are' gene for resistance to six races of anthracnose. Anthracnose-resistant black seeded

progeny resulting from the first cross with Tuscola navy bean were crossed back to the commercial black bean varieties Black Magic and Midnight. Selection for upright architecture, anthracnose resistance and agronomic performance was conducted over three years of testing in Michigan and Puerto Rico. An anthracnose resistant breeding line entered yield trials in 1983 with the code number B83302.

## Yield Performance

Blackhawk has been extensively tested for yield and agronomic traits for 11 seasons (1983-93) across 33 locations in Michigan (Table 1). It averaged 24 cwt/acre and has been slightly lower yielding than other full-season black bean varieties. Over 25 to 30 locations, T-39 and Domino out yielded Blackhawk by 5 percent, while Midnight and Black Magic out yielded it by 7-8 percent.

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## Agronomic Features

Blackhawk exhibits the upright, type II indeterminate growth habit averaging 22 inches in height. It exhibits more lodging resistance than present full-season varieties and would be suitable for direct harvest. Blackhawk is a full-season variety maturing 100 days after planting with a range in maturity from 95-105 days, depending on season and location. Blackhawk matures with Midnight and Black Magic 5 days later than T-39 variety.

## Disease Resistance

Blackhawk carries the dominant I gene form of hypersensitive resistance to all strains of bean common mosaic virus. It is highly resistant to all races of rust in Michigan, and has equivalent degree of tolerance to white mold as Black Magic. The degree of field tolerance is higher than that of Midnight and T-39. Blackhawk carries the ARE gene that confers resistance to the alpha, beta, gamma, delta, lambda and epsilon races of anthracnose. Thus, Blackhawk is recognized as the first completely anthracnose resistant black bean variety available in the United States.

## Quality Characteristics

Blackhawk has black seed averaging 23 g per 100 seeds and ranged from 18-25 g per 100 seeds. The seed is slightly larger than other commercial varieties, while the seed color is equivalent to that of commercial black beans. Canning quality is not a major selection criteria in black beans since this commodity is marketed overseas and not canned commercially. However, in canning trials, Blackhawk has been rated by a team of panelists as acceptable in canning quality. Blackhawk scored 2.6 or equivalent to other commercial black bean varieties on a 5-point scale where 3 is average. Data on cooked color, texture, hydration and drained weight ratios showed no differences between Blackhawk and other commercial black bean varieties.

Table 1. Blackhawk Black Bean — Comparison of Agronomic, Disease, Yield Performance and Canning Characteristics.

Traits	Blackhawk	Raven	Midnight	T-39	Black Magic
<b>Agronomic Traits</b>					
Days to flower	51	47	50	49	51
Days to maturity	100	92	100	95	100
Height (inches)	22	20	22	19	21
Lodging score (1-5)	1.5	1.0	2.0	3.5	2.5
Selection index (1-9)	5.5	6.0	5.0	3.5	4.5
100 seed weight (g)	23	17	20	20	20
Yield (percent)	100	94	108	105	107
<b>Disease Resistance</b>					
Bean common mosaic virus	R	R	R	R	R
Black root	S	R	S	S	S
Alpha anthracnose	R	R	S	S	S
Michigan rust races	R	R	R	R	R
Common blight	S	S	S	S	S
White mold (1-5)	2	4	3	3	2
<b>Canning Quality</b>					
Color L-scale	15	19	16	16	-
Hydration ratio	1.3	2.0	1.9	1.9	-
Washed drained ratio	1.8	1.2	1.2	1.3	-
Texture (kg/100 g)	67	70	79	63	-
Taste panel rating (1-5)	2.6	2.8	2.8	2.8	2.1

Lodging: 1=erect, 5=prostrate

Selection index: 1=worst, 9=best, based on adaptation

Diseases: R=resistant, S=susceptible

White mold: 1=resistant, 5=susceptible

## Release and Research Assessment

Blackhawk was released as an exclusive variety with a royalty assessed to each unit of certified seed sold. Certified seed of Blackhawk is produced and distributed by Greater Michigan Seeds, a group of certified seed producers in the 'thumb' area of Michigan. Blackhawk has been granted U.S. Plant Variety Protection Certificate No. 9000107.

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