Jaguar A New Black Bean for Michigan
Michigan State University
Michigan State University Extension
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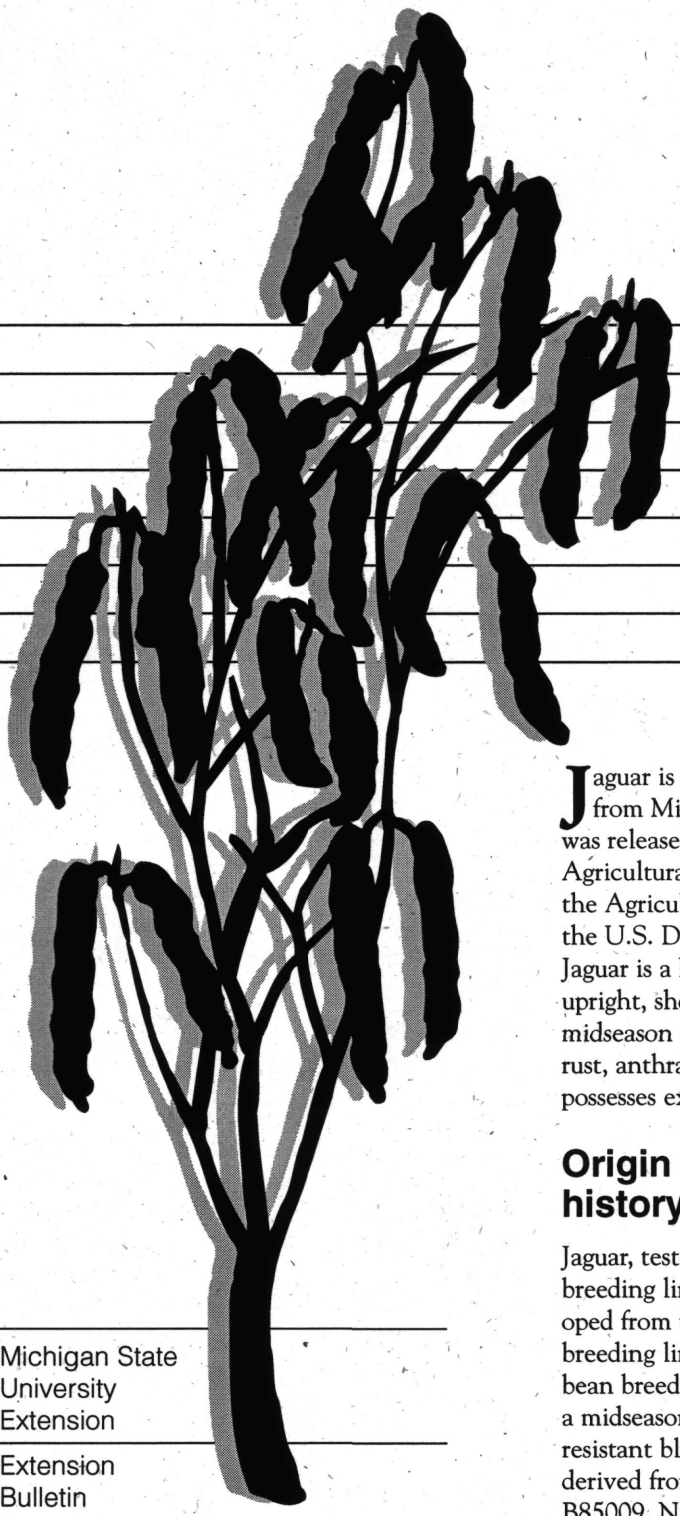
NEW from MSU

Jaguar

A New Black Bean for Michigan



- Upright, short vine growth habit similar to that of Phantom.
- Taller and more resistant to lodging than T-39.
- Similar in maturity to T-39 and Black Jack.
- Recommended for narrow-row production.
- Resistant to all anthracnose races present in mid-Michigan.
- Improved canning quality and color retention after cooking.

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Jaguar is a new black bean variety from Michigan State University. It was released jointly by the Michigan Agricultural Experiment Station and the Agricultural Research Service of the U.S. Department of Agriculture. Jaguar is a high-yielding variety with an upright, short vine growth habit and midseason maturity. It is resistant to rust, anthracnose and mosaic virus and possesses excellent canning quality.

Origin and breeding history

Jaguar, tested as MSU black bean breeding line No. B95556, was developed from the cross of black bean breeding line B90211 with the navy bean breeding line N90616. B90211 is a midseason, virus- and anthracnose-resistant black bean breeding line derived from the cross of N84004 with B85009. N90616 is a mid- to full-season, upright navy bean breeding line with tolerance to white mold. It is derived from the cross of Mayflower with Crestwood. The purpose of the cross was to improve the yield potential and combine anthracnose, virus and white mold resistance with good canning quality for future black bean varieties. The cross was made in 1992, advanced to the F6 generation and then entered into yield trials in 1995 with the code number B95556.

Yield performance

Jaguar was tested extensively for yield and agronomic traits for five seasons (1995-99) over 26 locations (Table 1). The yield of Jaguar, averaged over all locations, was 26.6 cwt/acre and was equivalent to the average yield of Phantom and T-39. The small yield differences shown in Table 1 were not significantly different ($P<0.05$). In the absence of disease such as blight and white mold, Jaguar produced yields in excess of 43 cwt/acre and outyielded the Raven parent by 12 percent (2.8 cwt/acre), averaged over eight locations.

Under the narrow-row (20-inch) width, Jaguar has topped the standard black bean trial for the past three seasons (1997-99). Jaguar is recommended for narrow-row production (less than 28-inch row width) — its narrow, erect plant profile appears to be best suited to these row widths.

Agronomic features

Jaguar exhibits an erect, short vine growth habit averaging 20 inches in height with the pods positioned high in the plant canopy. It has a narrow plant profile and excellent resistance to lodging compared with T-39 and Black Jack, with a score of 1 versus 3 for T-39 and Black Jack on a 1 to 5 scale, where 1 is the most erect. Jaguar has purple flowers and blooms 48 days after planting. Jaguar is a midseason variety, maturing 93 days after planting with a range in maturity from 91 to 99 days, depending on season and location. It matures with T-39 and Black Jack and seven days earlier than Blackhawk. Jaguar has demonstrated uniform maturity and excellent dry-down across a broad range of environments and fits a niche for an erect, high-yielding, midseason black bean variety in Michigan.

Disease resistance

Jaguar carries the single dominant hypersensitive I gene resistance to bean common mosaic virus (BCMV) but is sensitive to the temperature-insensitive necrosis-inducing strains of BCMV that cause the black root reaction. Jaguar is resistant to the alpha race (race 17) of anthracnose, including the new alpha-brazil race (race 89), and races 7, 65 and 73 present in Michigan. Jaguar has equivalent levels of resistance to anthracnose as Phantom black bean.

Jaguar carries the *Ur-3* rust resistance gene, which conditions resistance to all local rust races prevalent in Michigan. Jaguar's tolerance to white mold is similar to that of T-39 but lower than that of Phantom. Therefore, chemical control of white mold is recommended when weather or growing conditions favor disease development. Jaguar has a level of susceptibility to common blight similar to that of other commercial black bean varieties.

Quality characteristics

Jaguar has a typically small, opaque black bean seed averaging 21 g/100 seeds. Size ranges from 19 to 23 g/100 seeds. The seed is equivalent to T-39 seed in size, shape and color. Rated by a team of panelists as acceptable in canning quality, Jaguar scored 4.5 (T-39 scored 2.8) on a visual rating scale of 1 to 7, where 4 is midscale (neither acceptable nor unacceptable). Jaguar showed equivalent color retention to Black Jack (19 vs. 18, respectively, on the L-color scale) and produced an acceptable canned product superior to T-39 in appearance.

There was no difference in texture, hydration and drained weight ratios after cooking between Jaguar and other acceptable commercial black bean varieties. Within the commercial black bean class, Black Jack demonstrated the best overall canning quality with a score of 5.6.

Release and research assessment

Jaguar is released as a public, three-class, non-exclusive variety jointly by the Michigan Agricultural Experiment Station and the Agricultural Research Service. A research fee will be assessed on each unit (hundredweight) of either foundation or certified seed sold. The fee will be collected by Michigan Crop Improvement Association.

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Table 1: **Jaguar Black Bean**: Comparison of Agronomic, Disease and Canning Characteristics of Jaguar to Five Other Black Bean Varieties: Phantom, T-39, Blackhawk, Black Jack and Midnight.

Varieties	Jaguar	Phantom	T-39	Black-hawk	Black Jack	Midnight
Agronomic Traits						
Days to Flower	48	50	48	50	47	50
Days to Mature	93	95	93	100	93	99
Height	50	52	47	55	47	54
Lodging Score	1.0	1.5	3.0	1.5	3.0	1.5
Selection Index	6.0	5.5	3.5	5.0	4.0	5.0
100 Seed Weight	21	21	22	25	22	21
Yield (Percent)	100	102	101	95	92	100
Disease Resistance Traits						
BCMV	R	R	R	R	R	R
Anthracnose:						
Race 65	R	R	S	R	R	S
Race 73	R	R	S	S	S	S
Race 7	R	R	S	R	R	S
Rust Race 53	R	R	R	R	S	R
Common Blight	S	S	S	S	S	S
White Mold	37.8	17.8	33.3	—	—	—
Canning Quality Traits						
Color L-Scale	19	17	18	15	18	16
Washed Drained Ratio	1.2	1.2	1.2	1.3	1.3	1.3
Hydration Ratio	2.1	2.0	2.0	2.0	1.9	2.0
Texture	63	66	69	68	56	68
Visual Rating	4.5	4.4	2.8	4.3	5.6	4.5

Lodging: 1 = Erect, 5 = Prostrate; 100 Seed Weight - Grams
Selection Index: 1 = Worst, 5 = Average, 9 = Excellent; Height - CMS
Diseases: BCMV = Bean Common Mosaic Virus, BCMNV = Bean Common Mosaic Necrosis Virus
R = Resistant, S = Susceptible
White Mold: Percent Disease Incidence (Average of 90 Plants Grown Under Disease Pressure)
Visual Rating: 1 = Very Undesirable, 4 = Neither Desirable Nor Undesirable, 7 = Very Desirable
Texture - KG/100G

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