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Capri, A New Cranberry Bean for Michigan  
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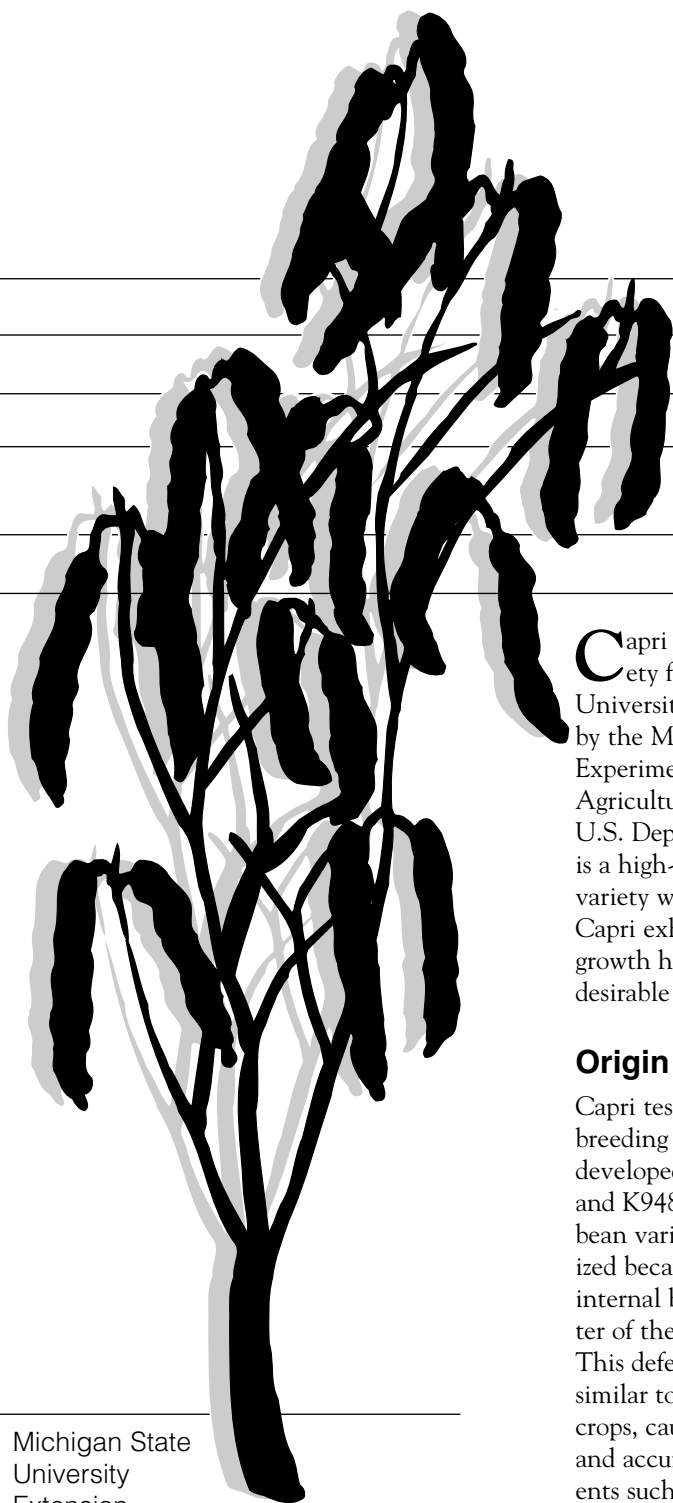
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**NEW from  
MSU**

# Capri

A NEW CRANBERRY BEAN  
*for Michigan*



- New high-yielding bush cranberry bean variety.
- Complete resistance to bean common mosaic virus.
- Four days later in maturity than Taylor Horticultural and Etna.
- Highly desirable large cranberry bean seed (170 seeds/100 grams).
- Low incidence of internal black spot problem in seed.

Capri is a new cranberry bean variety from Michigan State University. Capri was released jointly by the Michigan Agricultural Experiment Station and the Agricultural Research Service of the U.S. Department of Agriculture. Capri is a high-yielding, midseason maturity variety with resistance to mosaic virus. Capri exhibits a determinate bush growth habit and produces a highly desirable large cranberry bean seed.

## Origin and Breeding History

Capri tested as MSU cranberry bean breeding line C99833, which was developed from the cross of Cardinal and K94803. Cardinal is a cranberry bean variety that was not commercialized because of the high frequency of internal black spot problem in the center of the seed known as “marsh spot.” This defect is a physiological disorder similar to “hollow heart” in vegetable crops, caused by limited translocation and accumulation of key micronutrients such as boron in the bean seed. K94803 was a large white kidney bush bean from MSU that does not exhibit this problem. The original cross was made to correct the seed quality problem present in Cardinal yet retain the large cranberry seed size, high yield,

bush habit and bean common mosaic virus resistance. Kidney beans were also used as parents to help introduce new genetic diversity into the bush cranberry bean class which has a very narrow genetic base. The cross was made in 1996, advanced to the F6 generation and entered into yield trials in 1999 with the code number C99833.

## Yield Performance

Capri was tested for yield and agronomic traits at 20 locations in Michigan over seven seasons (1999-2005) and averaged 25 hundredweight (cwt)/acre. Over 18 common locations, Capri yielded 25.4 cwt/acre compared with 22.3 cwt/acre for Taylor Horticultural. This represents a 12 percent yield increase over Taylor Horticultural. Capri outyielded Etna by 4 percent at eight locations and Hooter by 9 percent at 11 locations. Since cranberry bean production is limited to the sandy textured soils in Michigan, so the number of locations where Capri can be directly compared with other commercial cranberry bean varieties is limited. Under irrigation, Capri exceeded 30 cwt/acre in 2003 and 2004 and over 40 cwt/acre in Montcalm County in 2002.

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## Agronomic Features

Capri exhibits the Type-I upright bush (determinate) growth habit combined with good resistance to lodging. Capri has exhibited a tendency to lodge slightly more than Taylor Horticultural and is equivalent to Hooter in lodging resistance (Table 1). Plants average 20 inches in height and look overall similar to other bush cranberry varieties. Capri produces a typical lavender flower and blooms 37 days after planting. Capri is a midseason bean that matures 97 days after planting and ranges in maturity from 90 to 98 days, depending on season and location. Capri matures uniformly about 4 days later than Taylor Horticultural and Etna, and 6 days earlier than hooter. It has demonstrated the same uniform maturity and dry-down as Taylor Horticultural with agronomic acceptance similar to that of other bush cranberry varieties. Fertility and weed management practices used with other dry bean classes can be used in the production of Capri beans.

## Disease Resistance

Capri possesses the I gene that conditions resistance to all non-necrotic strains of the seed-borne bean common mosaic virus (BCMV), but it will produce top necrosis or black root reaction to the necrosis-inducing strains of BCMV present in the western United States. Capri exhibits slightly more tolerance (67 percent) to white mold than Taylor (75 percent), and Hooter (90 percent). These data were collected from the Montcalm Research Farm in 2002, which was a particularly bad year for white mold because of low temperatures and high rainfall. Despite the white mold pressure, Capri yielded 42 cwt/acre compared with 25 cwt/acre for Hooter, which was severely damaged by white mold. Capri exhibits resistance to the indigenous rust races prevalent in Michigan and has levels of susceptibility to anthracnose, curly top virus, common bacterial blight and halo blight similar to those of other commercial cranberry bean varieties.

## Quality Characteristics

Capri produces a typical large-sized cranberry bean seed averaging 60 g/100 seeds (or 170 seeds/100 g) and size ranges from 50 to 68 g/100 seeds. Seed size is larger than that of Taylor Horticultural, Etna and Hooter (Table 1). The incidence of internal black spot in seed was 9 percent for Taylor Horticultural and 49 percent for the Cardinal parent. The incidence of internal black spot for Capri and Hooter were similar (14 to 15 percent) and internal black spot in Capri does not appear to occur at frequencies higher than current commercial varieties. In canning trials, the cooking quality of Capri rated higher than that of other processed bush cranberry beans. Capri rated 4.1 on a visual acceptance scale compared with 3.2 for Taylor Horticultural. Data on hydration and drained weight ratios exhibited no differences between Capri and the other commercial varieties. Its high texture — 95 g/100 g — might account for an overall higher visual score — a firmer texture implies better integrity of processed seed. The commercial market for bush cranberry seed is the dry pack market, so canning quality is less important than seed size and dry seed color. However, Capri produced an acceptable canned product that could substitute for processed vine cranberry beans. Within the commercial bush cranberry class which is normally not canned, Capri demonstrated the best overall canning quality.

**Table 1. Comparison of agronomic, disease and canning characteristics of Capri with three other cranberry bean varieties: Taylor, Hooter and Etna (1999-2005).**

Varieties	Capri	Taylor	Hooter	Etna
<b>Agronomic Traits</b>				
Days to Flower	37	37	40	37
Days to Maturity	97	93	101	93
Height (inches)	20	18	22	18
Lodging Score (1-5)	2.6	1.9	2.4	2.0
Seed Size (Seeds/100G)	167	192	179	182
Internal Black Spot (%)	15	9	14	—
Yield (Percent)	100	88	91	96
<b>Disease Resistance Traits</b>				
BCMV	R	S	R	R
Rust	R	T	T	R
White Mold (%)	67	75	90	—
<b>Canning Quality Traits</b>				
Hydration Ratio	1.1	1.1	1.1	—
Washed Drained Ratio	2.2	2.2	2.2	—
Texture (kg/100g)	95	71	65	—
Visual Rating	4.1	3.2	3.6	2.7

Lodging: 1 = erect, 5 = prostrate; seed size is measured as number of seeds in 100 grams; percent of split seeds showing an internal black spot.

Diseases: BCMV = bean common mosaic virus, R = resistant, S = susceptible, T = tolerant.

White mold: percent disease incidence (rated under severe disease pressure in Montcalm in 2002).

Overnight soak prior to canning; texture of canned beans measured in kg/100g of force to shear cooked beans.

Visual rating: 1 = very undesirable, 4 = neither desirable nor undesirable, 7 = very desirable.

## Release and Research Fee

Capri was released by Michigan State University with the option that Capri 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 the Michigan Crop Improvement Association which will collect the royalty. Plant variety protection is pending.

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