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Chinook a New Light Red Kidney Bean for Michigan
Michigan State University Extension Service
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Issued July 1994
2 pages

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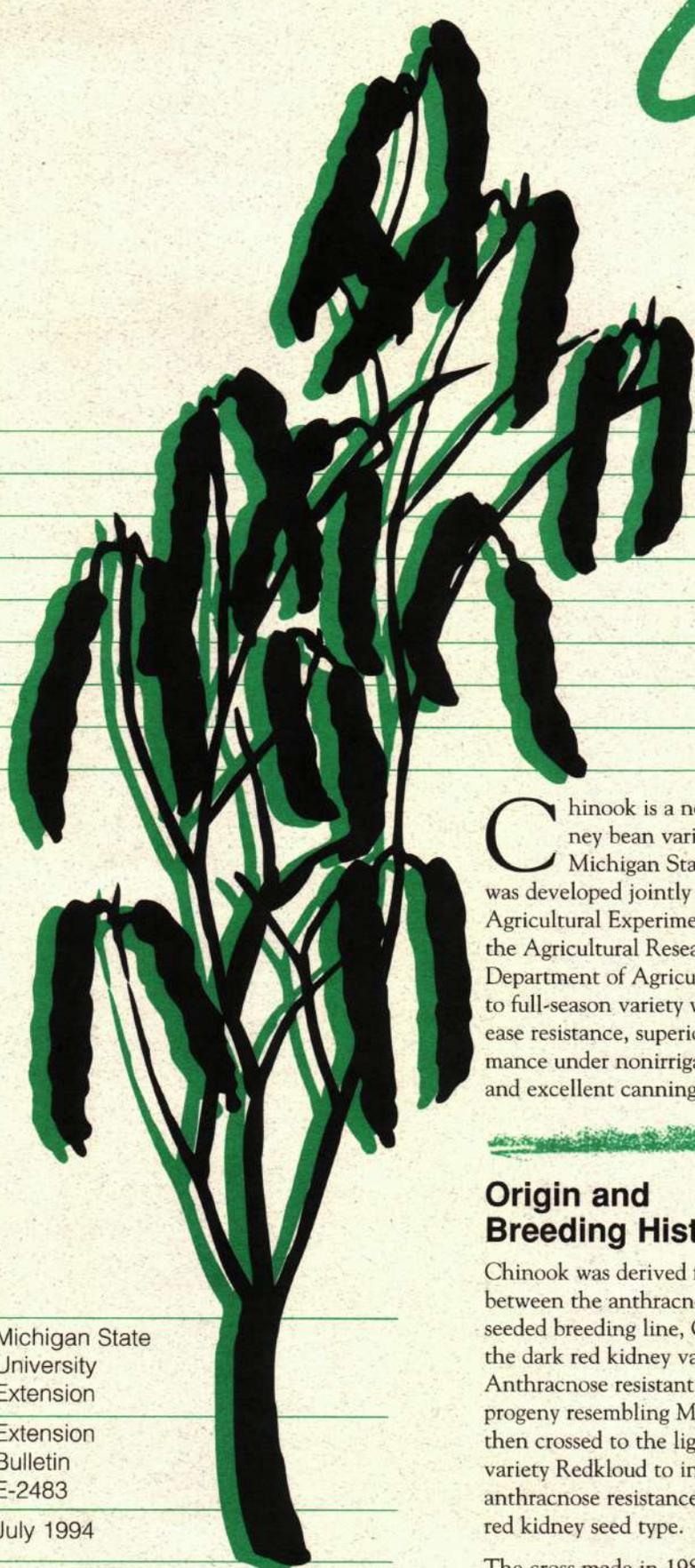
**NEW from
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Chinook

A NEW LIGHT RED
KIDNEY BEAN

for Michigan

- Performs well under nonirrigated conditions
- Mid- to full-season maturity
- Plants average 20-inches tall
- Excellent lodging resistance
- Resistant to anthracnose
- Large, bright-pink seed
- Superior canning quality



Chinook is a new light red kidney bean variety released by Michigan State University. It was developed jointly by the Michigan Agricultural Experiment Station and the Agricultural Research Service, U.S. Department of Agriculture. It is a mid- to full-season variety with excellent disease resistance, superior yield performance under nonirrigated conditions and excellent canning quality.

Origin and Breeding History

Chinook was derived from a cross between the anthracnose resistant black seeded breeding line, CN49242, and the dark red kidney variety, Montcalm. Anthracnose resistant dark red kidney progeny resembling Montcalm were then crossed to the light red kidney variety Redcloud to introduce similar anthracnose resistance into the light red kidney seed type.

The cross made in 1981 was advanced to F5 generation where lines were

screened and selected for tolerance to halo blight under field conditions. An F6 generation breeding line entered yield trials in Montcalm County in 1986 and was coded with the number K86506.

Yield Performance

Performance of kidney beans varies greatly with soil type and moisture availability, due in part to their weaker root development. Early maturing varieties like Sacramento tend to exhibit a lack of yield stability when grown across environments. The lack of irrigation, combined with fine-textured soils lowers the performance of early season kidney varieties. Chinook has performed well under nonirrigated conditions in this area and has demonstrated a more consistent performance over a range of nonirrigated environments. Its mid- to full-season maturity of 95 to 97 days offers the safety of satisfactory maturity combined with yield potential most often found in later maturing varieties. Chinook was tested

Michigan State
University
Extension

Extension
Bulletin
E-2483

July 1994

for seven years over 45 locations and has yielded 24 cwt/acre which was 3 percent above Isabella under irrigation (Table 1), and an 11 percent increase over nonirrigated sites.

The delay of maturity of eight days over Isabella acts as a buffer which stabilizes the performance of Chinook, making it a suitable alternative choice in the light red kidney market class for growers outside the irrigated sandy soils of Montcalm and western Gratiot counties.

Agronomic Features

Chinook has a type I upright determinate growth habit with plants averaging 20

inches tall, about 2 inches taller than the standard determinate cultivar Isabella. The erect upright growth habit, combined with a vigorous root system, contributes to its excellent lodging resistance. It is a mid- to full-season variety, reaching maturity in about 94 to 98 days, or 6 to 9 days later than Isabella.

Disease Resistance

Chinook carries the unique combination of the single dominant I-gene resistance to all strains of bean common mosaic virus (BCMV) plus the recessive bc-1 gene which protects the hypersensitive I-gene against necrosis-inducing strains of BCMV

present in Michigan. Chinook is immune to the indigenous rust races prevalent in Michigan. It is resistant to the alpha race of anthracnose, the most prevalent race in Michigan. It is moderately tolerant to Michigan isolates of halo blight, but is susceptible to Michigan isolates of angular leaf spot.

Quality Characteristics

Chinook has a large, light red kidney seed averaging 55.8 g per 100 seeds. Seed size is within the range of 52 to 60 g per 100 seeds, comparable to other commercially acceptable cultivars. The dry seed has a pink color and retains its bright color after harvest, unlike the Redcloud parent which darkens rapidly with age. Chinook has been rated as superior to Sacramento and Isabella in canning quality. This evaluation is based upon whole bean integrity (no splitting or cracking), uniformity of size (uniform water uptake) and color (no after darkening) and clear brine (no starch extrusion into canning liquid). Data on cooked color, hydration and drained weight ratio show no difference from Isabella, with a texture slightly lower but well within the acceptable range of 45 to 80 kg per 100 g for processed light red kidney beans.

Table 1. Chinook Light Red Kidney Bean — Comparison of Agronomic, Disease, Yield Performance and Canning Characteristics.

Traits	Chinook	Isabella
Agronomic Traits		
Growth habit	Bush	Bush
Flower color	White	White
Days to flower	42	39
Days to maturity	95	88
Seed size (g/100 seeds)	55.8	57.4
Height (cm)	50	45
Lodging score (1-5)	1.5	1.5
Selection index (1-9)	5.6	4.5
Yield (cwt/acre)		
45 locations	23.8	23.0
26 nonirrigated locations	23.6	20.9
Disease Reaction		
Bean common mosaic virus	R	R
Michigan isolates rust	HR	HR
Halo blight	MR	MR
Alpha anthracnose	R	R
Canning Quality		
Processed color L-scale	24.8	25.0
Hydration rates	1.8	1.8
Washed drained ratio	1.3	1.4
Texture (kg/100 g)	64.8	76.0
Organoleptic rating (1-5)	3.0	1.0

Lodging: 1=erect, 5=prostrate

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

Diseases: R=resistant, HR=highly resistance, MR=moderate resistance

Organoleptic rating: 1=unsatisfactory, 5=best

Release and Research Assessment

Chinook was released as a public nonexclusive variety with a research fee to be assessed on each unit (cwt) of certified seed sold.

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