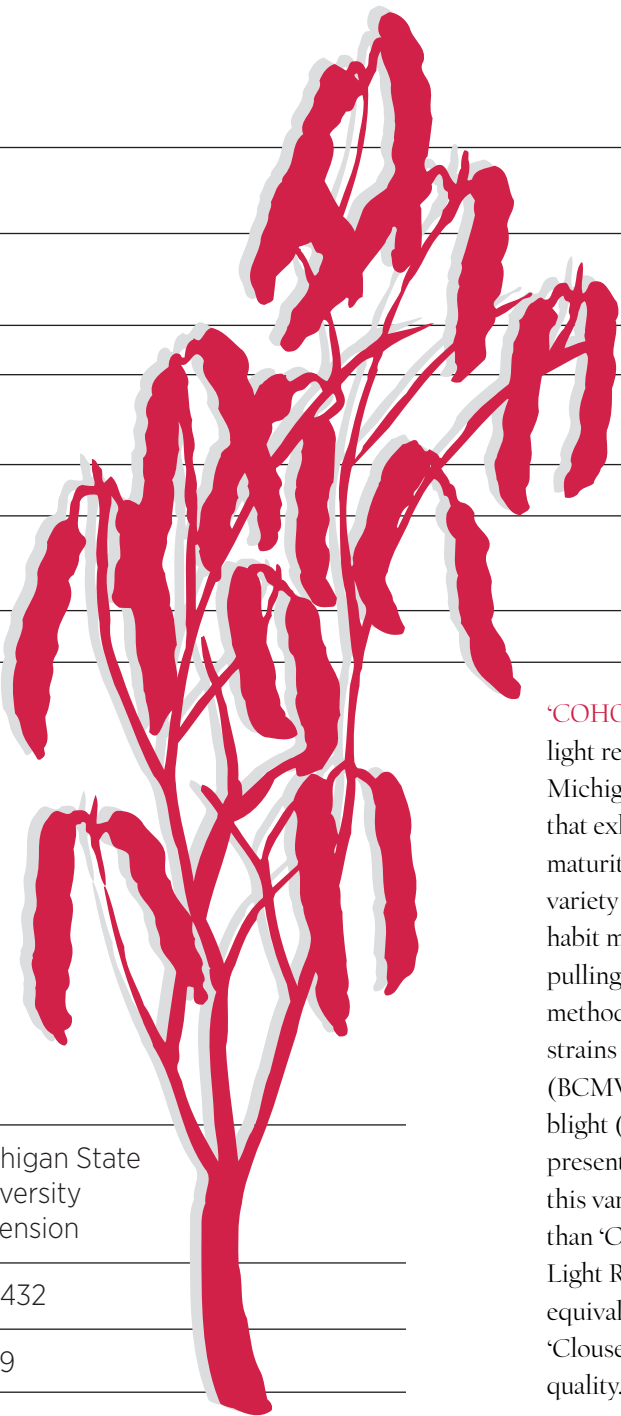


NEW from MSU

'COHO'

A New Light Red Kidney Bean Variety
for Michigan



- New full-season light red kidney bean variety with better harvest dry down.
- Produced yields in excess of 40 hundredweight per acre (cwt/acre) under irrigation.
- Exhibits uniform maturity coupled with enhanced dry down.
- High levels of resistance to common bacterial blight and bacterial brown spot.
- Exhibits partial resistance to Fusarium root rot.
- Attractive light red kidney bean seed, smaller than 'Clouseau'.
- Possesses acceptable canning quality.

'COHO' is a new erect, high-yielding light red kidney bean variety from Michigan State University (MSU) that exhibits better dry down at maturity. This full-season maturing variety has a determinate bush growth habit more suited for traditional pulling and windrowing harvest methods. 'Coho' is resistant to strains of *bean common mosaic virus* (BCMV), strains of common bacterial blight (CBB) and Fusarium root rot present in Michigan. The seed of this variety is slightly smaller in size than 'Clouseau', and 'California Early Light Red Kidney -CELRK'. 'Coho' is equivalent to the industry standards, 'Clouseau' and 'CELRK' in canning quality.

Origin and Breeding History

'Coho', tested as MSU light red kidney bean breeding line K15601, was developed from the cross of dark red kidney bean variety 'Red Cedar' x K11916, a white kidney breeding line. 'Red Cedar' is a new dark red kidney bean variety that combines resistance to CBB with the desirable agronomic and canning quality characteristics. K11916 was a very early maturing white kidney breeding line from MSU that combines resistance to CBB with high yield potential. The cross was made to introduce earliness into dark red kidney beans but resulted

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in development of a red kidney bean that exhibited CBB resistance and favorable seed quality traits of a light red kidney bean. Seed color genes for light red kidney were present in the white kidney bean parent but were not expressed as white nonpigmented color masks the red color genes.

Agronomic and Disease Information

‘Coho’ exhibits a determinate bush growth habit combined with erect plant structure (1.1 on a 1/5 scale, Table 1). Plants average 20 inches in height, similar to the heights of other light red kidney bean varieties. ‘Coho’ is a full-season bean, maturing 99 days after planting. The range in maturity is from 96 to 105 days, depending on season and location. It matures two days later than ‘Clouseau’, five days later than ‘CELRK’, three days earlier than ‘Rosie’ and six days earlier than ‘Inferno’. ‘Coho’ has demonstrated uniform maturity and improved dry down compared with ‘Rosie’, and ‘Inferno’. ‘Coho’ has a higher agronomic acceptance rating based on its disease resistance package and improved uniform dry down at maturity.

‘Coho’ has been tested for four years (2015-2018) in 10 locations by MSU researchers in cooperation with colleagues in Michigan. The combined yield data comparisons with other light red kidney cultivars are shown in Table 1. Over 10 locations, ‘Coho’ yielded 32.5 cwt/acre and out-yielded ‘Clouseau’ by 6%, ‘Rosie’ by 8% and ‘CELRK’ by 17%. Yield ranged from a high of 45.1 cwt/acre in Montcalm County, Michigan, in 2016, to a low of 20.0 cwt/acre under rainfed conditions in Gratiot County, Michigan, in 2017.

Under irrigated management systems, ‘Coho’ has produced competitive yields in excess of 40 cwt/acre in Michigan and is recommended for production in more

highly managed production systems, where irrigation is available. Growers should follow current recommended practices for fertility and weed control in growing ‘Coho’ beans. Recommendations can be found online from the Saginaw Valley Research and Extension Center (<http://agbioresearch.msu.edu/saginawvalley>) and MSU Weed Science (www.msuweeds.com).

‘Coho’ possesses the single dominant *I* gene, which confers resistance to seed-borne BCMV. All the light red kidney varieties listed in Table 1 possess the same resistance gene. Over three years of field testing, ‘Coho’ has exhibited moderate levels of resistance to CBB and was rated 1.5 on a 1–5 scale, whereas ‘Clouseau’ rated 4.0, and ‘Big Red’ and ‘CELRK’ rated 3.8 (Table 1). ‘Coho’ is resistant to anthracnose race 73, but is susceptible to the less common race 7 that preferentially attacks kidney beans (Table 1). ‘Coho’ exhibits improved tolerance to Fusarium root rot compared with other light red kidney bean varieties, based on high stand counts and yield performance in inoculated soils. ‘Coho’ is partially resistant to bacterial brown spot based on screenings conducted in Wisconsin.

Quality Characteristics

‘Coho’ has a typical light red kidney bean seed, averaging 54 g/100 seeds and a size range from 49 to 57 g/100 seeds. The seed is smaller in size to ‘Clouseau’ (71 g), ‘CELRK’ (68 g), and ‘Big Red’ (65 g). ‘Coho’ exhibits a favorable pink color at harvest, and retains this color during storage when other light red kidney beans after-darkened to tan color in overall appearance.

In canning trials, ‘Coho’ has been subjectively rated by a team of trained panelists as being excellent in cooking quality. This evaluation is based on whole bean integrity (no splitting or clumping),

uniformity of size (uniform water uptake), pink seed color (limited color leaching) and clear brine (no starch extrusion into canning liquid). ‘Coho’ rated 4.0 on a scale of 1 to 5 where 5 is best and 3 is mid-scale (neither acceptable nor unacceptable). Within the commercial light red kidney bean class, ‘Coho’ was rated equivalent in visual appearance when compared with ‘Clouseau’ (4.0), ‘CELRK’ (3.7) and ‘Big Red’ (3.1), and superior to ‘Rosie’ (1.5) and ‘Inferno’ (2.6).

Release and Research Fee

‘Coho’ was released by Michigan State University with the option that ‘Coho’ 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 the production location (east or west of the continental divide). Plant Variety Protection (PVP) from the USDA Agricultural Marketing Service is anticipated. Parties interested in licensing ‘Coho’ may contact MSU Technologies (<http://technologies.msu.edu>) by phone at 517-355-2186 or by email at msut@msu.edu.

Table 1. Comparison of yield, agronomic, disease and canning characteristics of 'Coho' with five other light red kidney bean varieties over 4 years testing (2015-2018) in Michigan.

Traits	Varieties					
	'Coho'	'Clouseau'	'Rosie'	'CELRK'	'Big Red'	'Inferno'
Agronomic traits						
Days to flower	39	37	39	37	38	43
Days to maturity	99	97	102	94	95	105
Height in inches	20	19	21	18	19	21
Lodging score ^a Average (1-5)	1.1	1.3	1.5	1.0	1.0	2.0
Agronomic index ^b Average (1-7)	5.3	3.7	4.6	3.6	4.0	4.2
100-seed weight in grams	53.8	70.8	59.6	68.4	64.8	65.6
Mean yield ^c (cwt/acre)	32.5	30.7	29.9	27.2	27.8	32.6
Yield percentage	100	94	92	83	85	106
Disease resistance traits ^d						
BCMV ^e	R	R	R	R	R	R
Anthracoese Races 7 & 73 ^f	S/R	R/R	S/R	S/R	--	S/R
Common bacterial blight (1-5) ^g	1.4	4.0	2.8	3.8	3.8	2.7
Bacterial Brown Spot (1-5) ^h	4.5	2.7	4.7	--	--	--
Plant Stand (1-5) ⁱ	4.3	3.3	4.5	2.3	3.3	3.3
Canning quality traits						
Visual rating ^j	4.0	4.0	1.5	3.7	3.1	2.6

a Lodging: 1 = Erect, 5 = Prostrate

b Agronomic index: 1 = Worst, 7 = Excellent

c Yield was averaged over 10 locations from 2015 to 2018

d Diseases: R = Resistant, S = Susceptible

e BCMV = Bean Common Mosaic Virus

f Anthracnose: race7/race 73

g CBB 1=highly resistant, 5= highly susceptible

h Bacterial Brown Spot: 1,2= Susceptible, 4,5= Resistant

i Plant Stand rated on 1=<20% to 5>80% stand in field heavily infected with *Fusarium solani* species complex in Montcalm Research Center in 2015

J Visual rating: 1 = Very undesirable, 3 = average, 5 = Very desirable

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