

Merlot New Small Red Dry Bean *for Michigan*

- ! Erect short vine growth habit suitable for direct harvest.
- ! First high-yielding upright small red variety with resistance to lodging.
- ! Matures in 95 days, 3-days earlier than Brooks and Rufus.
- ! Attractive large burgundy colored red seed not prone to color loss prior to harvest.
- ! Only small red bean variety with resistance to rust and mosaic virus.
- ! Excellent canning quality, seed color and integrity after cooking.

MERLOT is a new small red dry bean variety developed by the United States Department of Agriculture, Agricultural Research Service in conjunction with Michigan State University Agricultural Experiment Station. Merlot small red is a high yielding variety with an upright, short-vine growth habit and mid-to-full season maturity. Merlot is resistant to strains of bean rust and bean common mosaic virus in Michigan.

Origin and Breeding History: Merlot, tested as ARS breeding line R98026, was developed to be the first upright, type-II, short-vine, full-season maturity small red bean variety with disease resistance and good canning quality. Merlot was derived from a cross between two small red breeding lines, ARS-R94037 and ARS-R94161, with the intent of maintaining the upright architecture and good canning quality of ARS-R94037 while incorporating the rust resistance of ARS-R94161. Merlot is unique in that it is the first commercial small red cultivar with upright growth habit and resistance to bean rust disease and bean common mosaic virus (BCMV).

Agronomic and Disease Information: Merlot exhibits an upright and indeterminate Type-II growth habit that is superior in lodging resistance to the decumbent architecture of current commercial small red varieties. Plants of Merlot are upright in appearance and average around 22 inches in height (Table 1). Merlot has white flowers and blooms 45 days after planting. Merlot is a mid-to-full season variety maturing on average 95 days

after planting with a range from 90 to 100 days, depending on the location and season. Merlot matures 4 days earlier than Brooks and Rufus and 5 days later than UI-239, other small red varieties that were tested. Maturity and dry down are very uniform and dry plants of Merlot exhibit an appealing straw-yellow color at maturity.

Merlot has been tested extensively for 5 years (1998-2003) (*Note— will add 2004 data when available*) at 22 locations and averaged 26 cwt./acre. Data from 2001 was omitted because of severe drought conditions that caused atypical regrowth at all testing locations that year. Merlot has shown a 10% yield advantage over Brooks, 11% over Rufus, and 24% over the early-season UI-239. Based on agronomic traits, Merlot most closely resembles Brooks yet Merlot exhibits higher yield, better canning quality and has enhanced disease resistance.

Merlot carries the *Ur-3* gene which conditions resistance to all current races of bean rust present in Michigan. In addition, Merlot possesses the *bc-1²* gene that conditions resistance to many of the strains of BCMV present in the U.S. Merlot is similar to other small red dry bean varieties like Brooks and Rufus in being susceptible to white mold, common bacterial blight, and anthracnose.

Quality Characteristics: Merlot has a burgundy red seed coat and black hilum ring typical of the small red bean market class. The intensity of the color is more pronounced than most other small red bean varieties giving the dry seed a highly desirable and appealing appearance. The average seed size is 36g per 100 seed but seed size can range from 30-45g per 100 seed. The average seed size for Merlot is slightly higher than the five control cultivars tested but is well within the acceptable range for commercial small red varieties (Table 1). Unlike Rufus, the undesirable ‘buckskin’ color has not been observed in Merlot seed exposed to wet fall conditions.

Merlot was rated by a team of panelists as above average for canning quality, scoring a 5.6 on a scale of 1 to 7 where 1 is the worst, 7 is the best, and 4 is considered average. Rufus scored only slightly better with a 5.9 for canning quality while the other two varieties tested scored much lower than Merlot or Rufus. Over five years of testing, Merlot has consistently stood out as having above average visual canning quality. After canning, Merlot did not differ significantly from other commercial small red bean

varieties for hydration and drained weight ratios, but it exhibited slighter softer texture than Rufus.

Marketing Information: Merlot was released as a public, three-class, non-exclusive variety jointly by the Agricultural Research Service and Michigan Agricultural Experiment Station. A research fee will be assessed on each unit (hundred-weight) of either foundation or certified seed sold. The variety is licensed to Michigan Crop Improvement Association who will collect the research fee.

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Table 1. Comparison of Agronomic, Disease and Canning Characteristics of Merlot with Three other Small Red Bean Varieties: Brooks, Rufus, and UI-239.

VARIETIES	MERLOT	BROOKS	RUFUS	UI-239
AGRONOMIC TRAITS		Semi-		
PLANT TYPE	Erect	Erect	Prostrate	Prostrate
DAYS TO FLOWER	45	47	43	39
DAYS TO MATURITY	95	98	98	90
HEIGHT (inches)	22	19	12	10
LODGING	2.8	4.1	4.9	4.0
100 SEED WEIGHT (g)	36	33	33	32
YIELD (PERCENT)	100	90	89	76
CANNING QUALITY TRAITS				
WASHED-DRAINED RATIO	1.5	1.3	1.3	1.4
HYDRATION RATIO	1.8	1.8	1.7	1.9
TEXTURE (KG/100g)	64.2	65.4	72.4	56.9
VISUAL RATING	5.6	3.2	5.9	3.8
DISEASE RESISTANCE TRAITS				
Bean Rust	R	R	S	S
Bean Common Mosaic Virus	MR	S	HR	S

Lodging: 1=erect, 5=prostrate

Visual Rating: 1 = worst, 7 = best, and 4 =average canning quality

Diseases: R=Moderate Resistant (*bc-1²* gene); HR=Highly Resistant (*bc-2²* gene); S= Susceptible