

Redchief, a New Strawberry Variety Resistant to Many Races of Red Stele Root Rot¹

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Redchief, formerly tested as Md-US 3068, is a new strawberry variety originated by the cooperative strawberry breeding project of the Maryland Agricultural Experiment Station and the U. S. Department of Agriculture. Plants of Redchief are notable

Yields and size of fruits of Redchief and other varieties are given in Table 1 for Salisbury, where the soil is a fine sand, and in Table 2 for Beltsville, where the soil is a light silt loam. Plots were narrow, matted rows 20 inches wide and 10 feet long, in all

Table 1. Yield and fruit size of Redchief, Sunrise and Surecrop at Salisbury, Md.—1966-1968.

Variety	1966		1967		1968	
	Yield Lbs/A No.	Fruit Size ¹ No.	Yield Lbs/A No.	Fruit Size No.	Yield Lbs/A No.	Fruit Size No.
Redchief	11,963a ²	118b	16,790a	117a	15,895b	79a
Sunrise	12,566a	107b	14,543b	121a	13,782b	89b
Surecrop	10,755a	91a	14,798b	111a	18,007a	76a

¹Fruit size expressed as numbers of berries per quart.

²Duncan's Multiple range test. Means within a column followed by different letters are significantly different at the 5 percent level.

for being resistant to red stele races A-1, A-2, A-3, A-4 and A-6. Plants are also moderately resistant to verticillium wilt, leaf scorch (caused by *Diplocarpon earliana*) and powdery mildew (caused by *Sphaerotheca macularis*).

Redchief originated from a cross of NC 1768 × Surecrop made in March 1958. Seedlings were screened for resistance to red stele in a greenhouse at Beltsville, Md., during the winter of 1958-1959 and the resistant seedlings planted at Salisbury, Md. in April 1959. The selection was made in the spring of 1960, and has been evaluated continuously since then at Salisbury and Beltsville and, more recently, at other locations.



Fig. 1. Redchief, a new red stele resistant strawberry which has performed well at Beltsville and Salisbury, Md.

¹See article by G. D. Oberle in Vol. 22, No. 4 of Fruit Var. and Hort. Digest for performance of Redchief in Virginia.

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Table 2. Yields and fruit size of Redchief and 4 other strawberry varieties at Beltsville, Md., 1964 to 1968.

Yields in pounds per acre by years					
Variety	1964 No.	1965 No.	1966 No.	1967 No.	1968 No.
Catskill	32,529a ¹	18,545ab	26,160ab	28,277a	32,508a
Redchief	28,028b	16,553bc	24,318ab	23,013bc	24,718b
Pocahontas	28,028b	21,905a	26,808a	22,540bc	22,104bc
Surecrop	26,136b	15,183bcd	19,490c	21,258c	24,917b
Sunrise	21,430c	13,442d	18,047c	17,225d	20,337bc

Fruit size in berries per quart by years					
Variety	1964	1965	1966	1967	1968
Catskill	76a	78a	53a	62a	65ab
Redchief	85b	73a	62b	63a	70b
Pocahontas	76a	80a	73c	77b	79c
Surecrop	76a	79a	61b	63a	63a
Sunrise	80ab	78a	60b	72b	63a

¹Duncan's Multiple Range Test. Means within columns followed by different letters differ significantly at the 5 percent level.

Table 3. Ratings of varieties for fresh fruit and plant characters at Beltsville, 1967.

Variety	Firmness		Symmetry	Shape	Color	Flavor	Resistance to			
	Flesh	Skin					Red stele	Vert. wilt	Leaf scorch	Leaf spot
Catskill	4 ¹	4	6	6	6	7	S ²	R	R	R
Redchief	9	9	7	8	8	7	R	MR	R	S
Pocahontas	7	6	7	7	8	7	S	S	S	S
Surecrop	7	6	8	7	8	7	R	R	R	R
Sunrise	8	8	8	8	8	8	R	R	R	S

¹Ratings are on a scale of 10 to 1 with 10 being the most desirable and 1 the least desirable condition and a rating of 5 or lower being unacceptable for commercial purposes.

²S = susceptible, MR = medium resistance, R = resistant

trials.

At Salisbury, Redchief was equal to or more productive than Surecrop and Sunrise in 2 of the 3 years of the trials, but was exceeded by Surecrop in 1968, following a dry summer that had reduced runner production. Fruit sizes were similar for the three varieties in the three years (Table 1). At Beltsville, Redchief has consistently yielded well over the five-year period of the trials, and in some years has equalled Catskill, a high-yielding variety (Table 2). Redchief has equalled or exceeded Surecrop yields each year. At Beltsville, Redchief has been similar to Surecrop except for smaller

fruit size in 1964. In three of the five years Redchief was as large as Catskill, which is notable for its uniform, large size.

Ratings for nine characters of the varieties are given in Table 3. Redchief is outstanding in firmness of flesh and toughness of skin. This is reflected in the good appearance of the fruit during handling. The shape, color, and flavor of Redchief fruits are comparable with Surecrop and Sunrise. Plants of Redchief have the same resistance to red stele root rot as Surecrop and Sunrise, but are not quite as resistant to verticillium wilt. Redchief plants produce runners free-

Table 4. Ratings of strawberry varieties and selections for 3 characters in frozen pack samples, Beltsville, Md. 1967.

Flavor		Color		Texture	
Variety	Mean rating	Variety	Mean rating	Variety	Mean rating
Earliblele	7.9 ¹ a ²	Md-US 3184	9.1 a	Md-US 3184	8.9 a
Md-US 3184	7.9 a	Earlibelle	8.4 ab	Pocahontas B	7.9 b
Md-US 2915	7.8 a	Pocahontas B	8.1 bc	Tioga	7.9 b
Pocahontas B	7.7 ab	Earlidawn	8.0 bc	Earlibelle	7.8 b
Surecrop	7.7 ab	Md-US 3451	8.0 bc	Md-US 3451	7.6 bc
Md-US 3451	7.6 abc	Md-US 2915	7.9 bc	Midway 1	7.2 bcd
Earlidawn	7.5 abcd	Surecrop	7.8 bcd	NC 2841	7.2 bcd
Redchief	7.4 abcde	Redchief	7.5 cde	Surecrop	7.1 bcd
Md-US 3699	7.4 abcde	Tioga	7.4 cdef	NC 2840	7.1 bcd
NC 2841	7.1 abcde	NC 2840	7.3 cdef	Earlidawn	7.0 bcd
Md-US 3079	7.0 abcde	NC 2841	6.9 defg	Md-US 3699	6.9 cde
Tioga	6.9 abcdef	Midway 1	6.7 efgh	Pocahontas A	6.7 cdef
Md-US 2856	6.9 abcdef	Md-US 3699	6.6 fgh	Md-US 2915	6.6 def
Midway 1	6.7 bcdefg	Md-US 3079	6.4 fgh	Md-US 3079	6.5 def
Sunrise	6.6 cdefg	Suwanee	6.1 ghi	Redchief	6.5 def
NC 2840	6.5 cdefg	Md-US 2856	5.7 hij	Sunrise	6.5 def
Suwanee	6.4 cdefg	Commercial	5.4 ijk	Suwanee	6.0 efg
Commercial	5.8 fgh	Sunrise	5.2 ijk	NC 2934	5.9 fg
Pocahontas A	5.6 gh	Pocahontas A	4.9 jk	Md-US 2856	5.4 gh
NC 2934	4.9 h	NC 2934	4.5 k	Commercial	4.9 h

¹Ratings are on a scale of 10 to 1 with 10 being the most desirable and 1 the least desirable condition and a rating of 5 or lower being unacceptable.

²Duncan's Multiple range test. Means within a column followed by different letters are significantly different at the 5 percent level. The authors gratefully acknowledge the analysis of the data by E. J. Koch, Biometrical Services, ARS, USDA, Beltsville, Md.

³Pocahontas B harvested fully mature on June 13; Pocahontas A harvested June 1 before full maturity.

ly, but not so abundantly as Surecrop and Sunrise.

Redchief ripens two to three days later than Surecrop. Its medium-sized berries are conic in shape, have a firm, glossy surface, firm flesh, and uniformly deep red color. Secondary and later berries have slight necks, and the calyx or cap is easily removed. Flavor is subacid, with good dessert quality that is maintained in frozen products.

In Table 4 are given the values for samples that were sliced, mixed with sugar at 4 parts berries to 1 part of sugar, frozen and stored at 0° F for 5 months and then rated by a panel of nine judges. Eight samples were judged at a time, and each selection or variety was examined either three or four times during the course of the evaluations. Redchief was satisfactory for all three characters that

were evaluated, but not equal to Earlibelle and Md-US 3184, the two highest scoring kinds.

Redchief's principal values are red stele resistance and consistently good yields. Plants have been productive in Maryland, New Jersey, Massachusetts, Michigan, Ohio, Missouri and southern Illinois but unproductive and unattractive in Arkansas and North Carolina.

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