

size decreases in late season pickings due to having extremely large fruit early in the season.

Yield evaluations of strawberry cultivars should consider production of the various size classes rather than total yield alone. In this study, for instance, the highest yielding cultivar, 'Tennessee Beauty,' did not produce the greatest amount of large fruit. Considering high yields of large fruit, the clones 'Md-US 3082,' 'NC 1768,' 'Md-US 2593,' 'Md-US 2289,' and 'Sunrise' appear to offer the most promise for use in breeding.

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Guardian, a New Root Rot Resistant Strawberry Variety¹

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Guardian is a new strawberry variety notable for resistance to red stele (caused by *Phytophthora fragariae* Hickman) and verticillium wilt (caused by *Verticillium albo-atrum* Reinke & Berth.) root rots. The variety was originated in the cooperative strawberry breeding project of the Maryland Agricultural Experiment Station and the U.S. Department of Agriculture from a cross of NC 1768 × Surecrop made in 1958. The seedlings were grown at Salisbury, Md., in 1959, and selected as Md-US 3079 in the spring of 1960 by I. C. Haut and D. H. Scott. Guardian and Redchief originated from the same progeny (1).

Guardian ripens 4 to 5 days later

than Redchief and Surecrop. Its berries are large with firm, glossy surfaces of uniform light red color (Tables 1, 3). The flesh is firm and has good flavor, but has a light red color that is not attractive in a frozen pack. The fresh berries retain an attractive appearance during harvesting and marketing. Primary berries have an irregular conic shape with a rather rough outline, but secondary and later berries are symmetrical and smooth with slight necks (Fig. 1).

Plants of Guardian are medium in size and produce runners so freely that it is a nurseryman's delight to propagate. The plants are highly resistant to red stele races A-1, A-2, A-4, and A-6 and intermediate in re-

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Table 1. Characteristics of Guardian in comparison with some varieties, Beltsville, Maryland.

Kind	Season ¹	Fruit firmness	Fruit color		Symmetry	Shape	Flavor	Red Stele	Verticillium wilt
			Ext.	Int.					
Guardian	M ¹	9 ²	9	6	7	7	7		Very R. ³
Catskill	M	4	6	6	6	6	7		Very R.
Surecrop	E	8	8	8	8	8	7		Very R.
Redchief	E	9	8	10	7	8	7		I. R.
Sunrise	V.E.	8	8	6	9	9	8		I. R.
Midway	M	8	7	8	7	8	7		S.
Earlidawn	V.E.	7	9	10	7	8	6	S.	Very S.
Dixieland	E	10	8	9	8	8	6	S.	Very S.
Jerseybelle	L	5	6	6	7	8	5	S.	S.
Raritan	M	7	8	6	9	9	6	S.	Very S.
Pocahontas	M	7	8	10	7	7	7	S.	I. R.

¹E = early, M = midseason, L = late, V.E. = very early.²Ratings are on a basis of 1 to 10 with 10 the most desirable expression of a characteristic and ratings of 5 or lower unacceptable for commercial use at Beltsville.³R = resistant, S = susceptible, I.R. = intermediate in resistance.**Table 2. Yields of Guardian strawberry in comparison with other varieties and selections for 3 years at Beltsville, Md.**

1967		1968		1969	
Kind	Qts/A	Kind	Qts/A	Kind	Qts/A
Catskill	18,851 a ¹	Raritan	23,531 a	Md-US 3575	16,097 a
Armored	17,382 ab	Catskill	21,682 a	Md-US 3364	14,935 ab
Raritan	17,291 abc	Surecrop	16,611 b	Md-US 3694	14,935 ab
Midway	15,998 bcd	Redchief	16,478 b	Catskill	14,271 ab
Guardian	15,715 bcd	Earlidawn	16,312 bc	Redchief	14,189 ab
Redchief	15,342 bcd	Md-US 3184	15,964 bc	Raritan	14,189 ab
Jerseybelle	15,142 bcd	Dixieland	15,814 bc	Surecrop	13,193 bc
Pocahontas	15,026 bcd	SI US 170	15,764 bc	Md-US 3184	12,695 bcd
Dixieland	14,553 bcde	Md-US 2915	15,632 bc	Pocahontas	11,533 cde
Surecrop	14,172 cdef	SI US 220	15,150 bc	Md-US 3699	11,450 cde
Md-US 3204	13,914 def	Guardian	15,134 bc	Md-US 2915	11,201 cde
Md-US 2856	13,566 def	Armored	15,068 bc	Guardian	10,953 cde
NJ 357	13,416 def	Pocahontas	14,736 bcd	Jerseybelle	10,953 cde
Md-US 3184	13,093 def	Jerseybelle	13,806 bcde	NC 2788	10,703 cde
Earlidawn	12,902 def	Sunrise	13,558 bcdef	Md-US 3451	10,372 de
Md-US 3297	11,624 efg	NC 2788	13,408 cdef	Sunrise	10,123 de
Sunrise	11,483 fg	Md-US 3204	12,080 def	Md-US 3573	9,210 ef
Md-US 3278	11,317 fg	Atlas	11,798 ef	Earlidawn	8,961 ef
Citation	9,973 g	Md-US 3413	10,802 f	Md-US 3399	8,878 ef
Md-US 2921	9,616 g	Redcoat	6,804 g	Md-US 3297	7,385 f

¹Duncan's multiple range test at 5 percent level. Values followed by same letter are not significantly different within years.

Table 3. Fruit size of Guardian strawberry in comparison with other varieties and selections for 3 years at Beltsville, Md.

1967		1968		1969	
Kind	Size ¹	Kind	Size ¹	Kind	Size ¹
Md-US 3204	47 a	Md-US 3204	46 a	Md-US 3699	54 a
<i>Guardian</i>	48 a	Atlas	47 a	Md-US 3399	54 a
Md-US 3184	49 ab	SI US 220	50 ab	Md-US 3364	64 b
Jerseybelle	53 bc	<i>Guardian</i>	52 b	<i>Guardian</i>	65 bc
Armored	56 cd	Jerseybelle	53 b	Raritan	68 bcd
Raritan	58 cd	Md-US 3184	54 b	Jerseybelle	68 bcd
Md-US 3297	60 de	NC 2788	54 b	Md-US 2915	72 cde
Redchief	61 de	SI US 170	58 c	Md-US 3575	73 cde
Surecrop	61 de	Armored	60 cd	Md-US 3184	73 cde
Catskill	62 de	Surecrop	62 cd	Md-US 3297	74 cde
Md-US 2856	62 de	Sunrise	62 cd	Md-US 3573	74 cde
Md-US 3278	63 def	Catskill	64 de	Md-US 3694	75 cde
Earludawn	69 fg	Raritan	64 de	NC 2788	77 def
NJ 357	69 fg	Redchief	70 ef	Catskill	79 ef
Midway	70 fg	Earludawn	70 ef	Surecrop	84 efg
Sunrise	72 g	Redcoat	70 ef	Earludawn	84 efg
Md-US 2921	76 g	Md-US 2915	70 ef	Redchief	88 fg
Pocahontas	77 g	Md-US 3413	71 efg	Sunrise	88 fg
Dixieland	81 g	Dixieland	75 fg	Md-US 3451	90 fg
Citation	81 g	Pocahontas	79 g	Pocahontas	97 g

¹Size expressed in Mean number of fruits per quart (1½ lbs. per quart) for all pickings.

²Duncan's Multiple range test at 5 percent level. Values followed by same letter are not significantly different within years.

sistance to A-3. Plants are also highly resistant to verticillium wilt, as indicated by the data in Table 4. Strawberry growers and gardeners who have a serious problem with soil infested with verticillium wilt as a result of growing tomatoes and other solanaceous crops may wish to try Guardian because of its wilt resistance. Its leaves are resistant to leaf scorch and mildew, but moderately susceptible to leaf spot.

Fruit yields have been satisfactory at Beltsville (Table 2) and in central eastern United States from Massachusetts westward to Missouri and south to North Carolina and Arkansas⁵. However, the fruits have been rough and unattractive in Arkansas and North Carolina. Guardian appears to

be well adapted for commercial and home garden use in Maryland, New Jersey, Pennsylvania, Ohio, and Indiana.

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Table 4. Disease index ratings of strawberry varieties and selections for Verticillium wilt in 1962, 1966, and 1969 at New Brunswick, N. J.

1962		1966		1969	
Kind	Rating ¹	Kind	Rating ¹	Kind	Rating ¹
Northwest		Guardian	2.2	Md-US 3364	11.5 a
Wiltguard		Md-US 3084	10.5	<i>Guardian</i>	12.0 a
Md-US 2766		Redgauntlet	13.8	Surecrop	13.5 a
Md-US 2832		Md-US 3211	34.5	Md-US 3701	17.5 a
Md-US 2929		Md-US 3204	45.1	NC 3089	19.3 a
<i>Guardian</i>		Md-US 2856	45.2	Md-US 3666	24.5 ab
Md-US 2883		Fortune	49.5	Md-US 3413	25.0 ab
Md-US 2927		Redcoat	70.0	Md-US 3573	25.0 ab
Redchief		Md-US 3413	72.5	Md-US 3293	26.5 abc
Md-US 2830		Md-US 2915	72.7	Md-US 3489	27.0 abc
Md-US 2760		Citation	86.4	Md-US 3816	28.0 abc
Md-US 2819		Md-US 2996	87.3	Md-US 3451	30.8 abcd
Md-US 2992		Fulton	93.9	Md-US 3773	37.5 abcd
Md-US 2787		Fletcher	100.0	Md-US 3575	49.0 bcd
NC 2480		Senga Sengana	100.0	Md-US 3694	51.5 cd
Md-US 2910		US 4384	100.0	Md-US 3700	51.5 cd
Md-US 3082		Vesper	100.0	US 4419	53.5 cd
Md-US 2905				Md-US 3699	57.8 d
Md-US 3107				Dixieland	93.8 e
NC 2360					
Md-US 2844					
NC 2872					
Md-US 2813					
NC 2493					
Fla 90					
Earlildawn					
Earlibelle					

¹Mean value of 4 replications. The highest values indicate the greatest susceptibility

Ornablue, an Ornamental Blueberry

The 'Ornablue' blueberry was developed by W. H. Childs and introduced by the West Virginia Agr. Exp. Station at Morgantown in 1969.

'Ornablue' is the product of a breeding program initiated in 1938 to improve the native species blueberry of West Virginia by crossing them with high bush cultivars. In 1941, about 160 selections were made from the wild, and these were crossed with cultivars. Of the 42 selections made from these crosses, 'Ornablue' was the only one considered promising enough to introduce.

'Ornablue' is a cross between the high bush cultivar, 'Concord' (female parent), and *Vaccinium pallidum* Ait. (a tetraploid lowbush species), selected by Childs in 1949. It was about three feet tall in its 12th season. The plant is very attractive when in bloom in early spring, and during the fall with its red leaves. It is productive. The berries are relatively small, the largest measuring 20.2 mm by 15.5 mm, dark blue, with an appealing flavor similar to that of the low bush parent. Harvest of the fruit begins during the first week of July at Morgantown.