



Strawberry Varieties for Michigan

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Selecting adapted varieties is one of the most important production decisions for strawberry growers. Yields and berry quality are influenced by how plants are grown, but are limited by the inherent characteristics of the variety and how well it is adapted to local conditions.

New strawberry varieties released regularly from breeding programs throughout the United States and Canada give growers many possible choices. Nearly all strawberry varieties that have been successful in Michigan have originated from breeding programs in the Midwest, northeast- and mid-Atlantic states, where the climate is similar to that in Michigan. Varieties developed in southern states or on the west coast have generally performed poorly in Michigan.

New varieties and selections should be placed in trials for several years before they are grown widely in Michigan. Trials conducted at various locations in Michigan and surrounding states provide an opportunity to observe and compare new varieties with standard commercial varieties. Varieties that perform well in these trials are first recommended for commercial use on a limited basis. If they perform well for producers for several years, they are recommended for commercial use.

Types of Strawberries

There are three major classes of strawberries:

1) *June-bearer* or *short-day*; 2) *everbearer*; and 3) *day-neutral*. The principle differences between these types are the daylength conditions that stimulate flower bud formation. *June-bearers* initiate their flower buds in the fall when days are relatively short and bear the following spring. *Everbearers* initiate

flowers and fruits under the long days of summer. *Day-neutrals* can initiate flower buds under any daylength. In Michigan, *everbearers* and *day-neutral* plants appear to have similar fruiting habits in the field, although day-neutrals are usually more reliable producers.

Choosing Varieties

Recommended varieties are grouped by these harvest seasons: early season; midseason; late season; everbearing and day-neutral. Early varieties are harvested one to two weeks earlier than late varieties. Growing varieties that ripen at different times can provide a longer picking season. Some characteristics of most varieties currently available through nurseries are summarized in Table 1. The susceptibility of varieties to various diseases is summarized in Table 2.

Early Season

Annapolis is more productive than Earliglow, but not as high yielding as Honeoye. Berries are large and light red but somewhat soft with a mild flavor. *Annapolis* is suitable for freezing and fresh uses.

Earliglow is an older standard early variety. Berries are attractive with color throughout but small, and their size decreases rapidly as the season advances. The primary strength of Earliglow is the exceptional flavor. It makes excellent jam and freezes well. Plants are vigorous and resistant to red stele and Verticillium wilt.

Honeoye is the most productive early season variety. Berries are large with an attractive, bright red, glossy finish, moderate firmness and a good, but slightly acid

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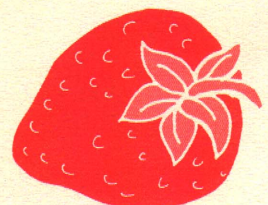


Table 1. Fruit characteristics of strawberry varieties observed in Michigan

Variety	Season	Yield	Size	Firmness	Dessert quality	Processing quality
Allstar	Midseason	Medium to high	Large	Medium	Good	Fair
Annapolis	Early	Medium to high	Medium to large	Very firm	Good	Very good
Bounty	Late	High	Large	Medium	Good	Good
Cardinal	Midseason	Low	Large	Firm	Fair	Good
Cavendish	Midseason	High	Large	Firm	Good	Fair
Chambly	Early	Medium to high	Medium	Medium	Good	Good
Chandler	Everbearer	Medium	Very large	Firm	Very good	Good
Delmarvel	Early-mid	Medium	Medium	Very Firm	Very good	Good
Earliglow	Early	Low	Medium to large	Firm	Very good	Very good
Fern	Everbearer	Medium to high	Medium	Very firm	Good	Good
Glooscap	Midseason	High	Large	Firm	Very good	Good
Governor Simcoe	Midseason	Medium	Large	Very firm	Very good	Very good
Guardian	Midseason	Medium to high	Large	Firm	Good	Fair
Hecker	Everbearer	High	Medium	Firm	Fair	Fair
Honeoye	Midseason	High	Medium	Medium	Good	Good
Jewel	Midseason	Medium to high	Large	Firm	Good	Unknown
Kent	Late	High	Large	Medium	Good	Unknown
Lateglow	Late	Medium	Medium to large	Very firm	Very good	Very good
Latestar	Late	Medium to high	Large	Firm	Good	Fair

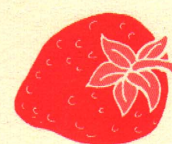


Table 1. Fruit characteristics of strawberry varieties observed in Michigan (Cont.)

Variety	Season	Yield	Size	Firmness	Dessert quality	Processing quality
Lester	Midseason	Medium	Medium	Firm	Very good	Good
Midway	Midseason	Medium to high	Medium	Firm	Fair	Very good
Micmac	Midseason	Medium	Large	Firm	Good	Good
Mohawk	Early	Medium	Small to medium	Firm	Good	Fair
Northeast	Early	Low to medium	Large	Firm	Fair	Fair
Ozark Beauty	Everbearer	Low to medium	Medium	Medium	Very good	Good
Primetime	Midseason	Medium to high	Large	Medium	Good	Fair
Raritan	Midseason	Medium	Medium	Firm	Fair	Fair
Redchief	Midseason	Medium	Medium	Firm	Good	Very good
Scott	Midseason	Medium	Medium to large	Medium	Fair	Unknown
Selva	Everbearer	Low to medium	Very large	Very firm	Fair	Fair
Seneca	Late	High	Medium	Very Firm	Good	Good
Startyme	Late	Medium	Medium	Medium	Fair	Good
Surecrop	Midseason	Low	Medium	Firm	Good	Good
Tribute	Everbearer	High	Medium to large	Firm	Good	Good
Tristar	Everbearer	Medium	Small to medium	Firm	Very good	Good
Winona	Late	Medium	Large	Firm	Good	

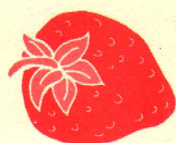
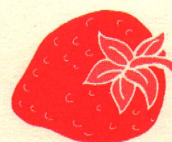


Table 2. Relative disease tolerances of strawberry varieties

Variety	Red stele	Vert. wilt	Gray mold	Leaf blight	Leaf scorch	Leaf spot	Powdery -mildew	Other
Allstar	R	T - R	T		S - T	R	S - T	Black root rot: S
Annapolis	T - R	S - T	S		S - R	S - R	S	
Bounty	S	VS			T	T		
Cavandish	R	T - R	S		R	R	S - T	
Chambly			T	T	S - R	S - R	T	
Delmarvel	R			T	T	T		Anthracnose: R Fruit rots: T
Earliglow	R	T - R	R	R	T - R	S - R	T	Black root rot: R
Glooscap	S	S		S - T	S - T	S - T	S - T	
Gov. Simcoe	S	T			T		VS	
Guardian	R	T - R			R	S		
Honeoye	S	S	T		R	S - R	S - R	Black root rot: S
Idea	T							Anthracnose: T
Jewel	S	S	T		T - R	T - R	T	
Kent	S	S	S		S - T	S - T	T	
Lateglow	R	R	T	S	S - T	S - T	T	Anthracnose: S
Latestar	R	R		S	S - R	S - R	T	Fruit rots: T
Lester	R	S - R		T	S - R	S - R	T - R	Anthracnose: S Fruit rots: T
Midway	R	S - T	T		S	VS	T	Black root rot: R
Mohawk	R	R		T	T	T	T	
North-easter	R	R			S - R	S - R	S	
Oka					T	S	T	
Primetime	R	R			T	T	T	Fruit rots: T
Redchief	R	T - R	S		R	S - R	S - R	
Scotland		T			R	T	S	
Scott	R	T - R			R	S - R	R	
Selkirk		S			S	T	VS	
Seneca	S	S			R	R		Black root rot: VS
Settler	S	T			T		T	
St. Williams		T			R	R	T - R	
Startyme	S	S		T	T	T		
Winona	R			T	T	T		Black root rot: T

Codes: VR= very resistant, R=resistant, T=tolerant, S=susceptible, VS=very susceptible. Information Sources: Fruit Berry and Nut Inventory (K. Whealy, ed.) 1989; Compendium of Strawberry Diseases (J. Maas, ed.) 1984; IPM for Strawberries in the Northeastern U.S. (D. Cooley and S. Schloemann, eds.); U. of Massachusetts Extension Bull. C211; Field Resistance of 20 Strawberry Cultivars to Black Root Rot, Fruit Varieties Journal 49:94-98; Midwest Small Fruit Pest Management Handbook. 1997 (R. C. Funt, M.A. Ellis and C. Welty, eds.); Ohio State Univ. Extension Bull. 861. Cultivar release notices.



flavor. Harvest is usually 1 to 2 days later than Earlighlow. Fruit ship and freeze well. Plants are very hardy but susceptible to red stele and Verticillium wilt. An off-flavor can develop under high temperatures.

One early variety recommended for trial is *Chambly*. *Chambly* is a productive variety that produced attractive, medium-sized berries in preliminary tests. The berry has a darker red exterior. The cap pulls off easily, so *Chambly* may be suitable for processing.

Two other varieties worth trial are *Mohawk* and *Northeast*. Both varieties have high quality, large, firm fruit with good to excellent flavor. They have not yielded well in preliminary trials in Michigan, but their fruit quality probably warrants further examination.

Midseason

Redchief is an important all-purpose variety in Michigan. Advantages include very attractive medium-to-large fruit that are firm, uniformly shaped and bright red. Berries are very attractive and flavorful as a fresh or frozen product. However, plants are only moderately vigorous and do not produce many runners. Berries are also difficult to cap and some berries occasionally split.

Kent originated in Nova Scotia, and is a popular, late midseason variety. *Kent* produces very high yields of large fruit with a mild flavor. Berries are somewhat soft and do not cap easily. Exterior color is deep red and berries can become too dark if picking is delayed. *Kent* has some resistance to leaf scorch, but is susceptible to root disease.

Glooscap is recommended because it is extremely productive and hardy. Berries are a darker red, and may appear overripe if picking is delayed. They have moderate firmness and a mild flavor. Caps are relatively easy to remove.

Two new varieties that show enough promise to recommend for trial are *Cavandish* and *Delmarvel*. *Cavandish* appears to be very productive and hardy, with very large, firm and flavorful fruit. *Cavandish* fruit may bruise easily and ripen or color irregularly. *Delmarvel* appears to be moderately productive, with moderate-sized, very firm fruit with excellent flavor. Both varieties are resistant to red stele root rot.

Late Season

Allstar is popular in Michigan because it produces high yields and very large fruit. Berries are an elongated cone- or wedge-shape and firm. Some growers complain about the light red exterior and light pink-to-white interior color. Plants are vigorous and resistant to red stele, but are only partly resistant to leaf diseases and Verticillium wilt.

Jewel is a productive late variety that has outstanding fruit quality. Berries are large, firm, attractive and flavorful. *Jewel* berries freeze well and also have a relatively long shelflife. Plants are vigorous but susceptible to red stele and verticillium root diseases.

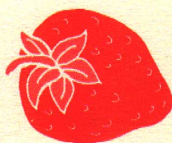
Bounty has some potential as a late-season variety and is relatively high yielding in Michigan. Berries are medium-to-large, relatively firm and dark red. Flavor is mild. Plants are vigorous and hardy, but are susceptible to red stele and Verticillium wilt.

Two additional late varieties worthy of trial are *Seneca* and *Latestar*. *Latestar* appears productive, with very large, attractive berries. *Latestar* plants are hardy, vigorous, and red stele resistant. *Seneca* produced high yields of medium-to-large berries in an East Lansing trial. Fruit were attractive and flavorful. *Seneca* is susceptible to red stele.

Another new release, *Winona*, may also be worthy of trial based on extreme cold hardiness, very late fruiting season and good fruit quality, but data in Michigan is limited.

Everbearers

A number of day-neutrals have been released in the last few years, mostly out of California. Information on their performance in Michigan is sparse but research in Minnesota, New York and Ontario, Canada, has provided some indication of how they might perform in Michigan. Overall, the USDA-Beltsville varieties *Tribute* and *Tristar* have been the most popular among growers, but many of the California varieties, including *Hecker*, *Fern* and *Selva* have performed well in research trials. A newly released variety, *Evita* from Scotland, is also worthy of trial, although very little information exists on its performance in the Midwest. In general, *Tribute* and *Tristar* are the most flavorful of the available day-neutrals, but they produce only modest yields of medium-to-large fruit. In fact, all of the day-neutral varieties are sensitive to high temperatures, and produce limited numbers of small, soft fruit in the hot months of summer.



Obtaining Strawberry Plants

Always purchase plants from a reliable nursery that is state-licensed. Most states regularly inspect the nursery stock from licensed nurseries for visible evidence of diseases. Some nurseries offer virus-test plants that are tested for specific virus diseases. Virus-tested plants are more desirable, but may be more expensive than non-tested plants.

Nurseries may offer conventionally propagated plants or plants derived from tissue culture. Tissue-cultured plants are sometimes more vigorous when placed in the field and may be preferred if prices are comparable.

Order plants early—popular varieties are often sold out. When ordering, specify when plants should be shipped so that you have them on hand for early planting.

If plants arrive too early to plant, you may store them for several days in a refrigerated area at 30° to 40° F. Wrap the roots loosely in plastic to prevent them from drying out while in storage. Do not store plants with apples or other potential sources of ethylene gas.

If a refrigerated area is not available for storage, plants may be heeled-in the ground in a well drained area protected from direct sun and wind. Dig a V-shaped trench deep enough to accommodate the roots and space the bundles of plants in the trench. Spread the roots and pack soil firmly around the roots up to the level of the crown (do not cover the crown).

Determining Plants per Acre

Strawberries are commonly planted 18 to 24 inches apart in rows 3 to 4 feet apart. The number of plants required per acre at this spacing is given in Table 3.

Table 3. Number of plants needed to plant an acre at various spacings

Plant spacing (feet)		Plants per acre*
In row	Between rows	
1 1/2	3	9,680
1 1/2	3 1/2	8,296
1 1/2	4	7,260
2	3	7,260
2	3 1/2	6,223
2	4	5,445
2 1/2	3	5,808
2 1/2	3 1/2	4,980
2 1/2	4	4,356

*Can be calculated by multiplying plant spacing in the row by spacing between the row and dividing into 43,560 (square feet per acre).



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