

A Summary of

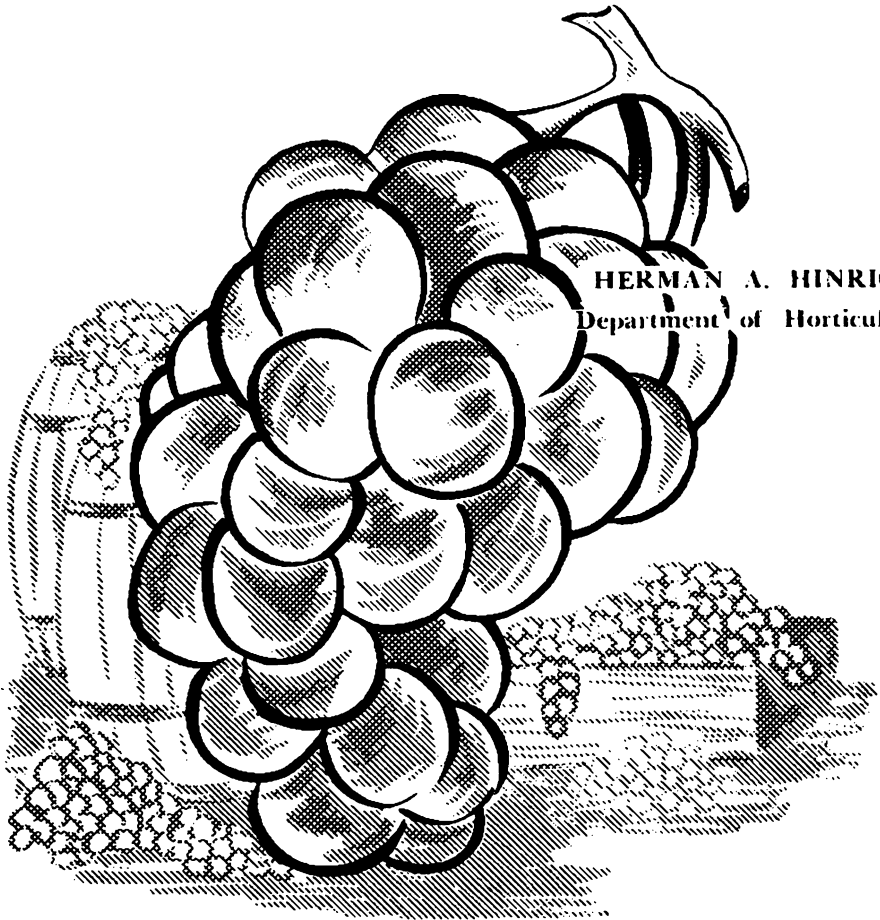
# GRAPE VARIETY TRIALS

in Oklahoma

By

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*A Summary of*  
***Grape Variety Trials***  
*in Oklahoma*

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Grapes are a dependable crop in Oklahoma. Climatic and soil conditions are favorable for the production of many varieties for home use and local markets. The main factor in yield and quality is the variety grown. In Oklahoma, Concord has been the variety most extensively planted. This variety is noted for its quality and juice properties. However, it is considered undesirable for planting because of its uneven ripening of fruit. This undesirable characteristic ruins its market value.

In recent years, grape acreage has declined rapidly because growers have failed to replace Concord with more desirable varieties. In order to determine grapes best adapted to Oklahoma and to guide growers who are interested in the best possible yield and quality, a variety testing program was conducted by the Oklahoma Agricultural Experiment Station. Results of these tests are summarized in this bulletin.

**Establishing the Experimental Vineyard**

A vineyard was established in the spring of 1933 on a sandy loam type soil at the Perkins farm, nine miles south of Stillwater. At that time, three to ten vines were planted for each of 64 varieties. The vines were spaced 12 feet apart in the row for the first 50 rows and ten feet apart in the row for rows 51 to 80. All rows were spaced ten feet apart running north and south.

New varieties were added to the planting as they became available. A total of 75 varieties have produced fruit. In 1950, several French-American hybrids were established. Forty-three hybrids have produced fruit.

All vines have been trained to the four cane kniffin system. The vines have been pruned each year to leave between 40 and 60 buds, depending upon the vigor of the plant.

### Varietal Performance

The grapes were harvested each year when they appeared to be market ripe as indicated by color and taste. Harvest records were taken for each variety beginning with the fourth year after planting except for the French-American hybrids which began producing with the third year. The performance of 75 varieties and 43 French-American hybrids are summarized in Tables I and II.

### Yield of Promising Varieties

High yields were obtained from many of the varieties. Twenty-one varieties produced more fruit per vine than Concord. The leading variety in production was Lucile with an annual average of 20.8 pounds per vine for 18 years. The next nine leading varieties and their average yields in pounds per vine have been: Beacon, 18.5; Regal, 16.8; Extra, 15.9; Daisy, 15.7; Muench, 15.6; Catawba, 14.6; Campbell grafted on Edna rootstock, 14.6; Champion, 14.5, and Fredonia 14.4.

Average annual yield on a per acre basis for the 18-year period, 1936-1953, were as follows:

#### Vines spaced 12 feet apart in the row

Lucile*	7,372 pounds
Beacon	6,715 pounds
Regal*	6,098 pounds
Extra	5,771 pounds
Daisy*	5,699 pounds
Muench	5,506 pounds
Catawba	5,299 pounds
Fredonia	5,277 pounds
Champion*	5,263 pounds

#### Vines spaced 10 feet apart in the row

Campbell (grafted on Edna rootstock)	6,341 pounds
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\* Although high yielding, these varieties are undesirable for planting because of poor quality, off flavor, etc.

### Yield of Grafts

Grape production can be improved by grafting vines on suitable vigorous rootstock. The vines become more vigorous and survive longer. Edna, Cloeta, Manito, and Jacquez were used as rootstocks for Campbell, Moore, and President. The yield performance is shown in Table III. Best results were obtained with Campbell. Moore produced about twice as much fruit per vine when grafted on a rootstock than those on their own roots. Campbell and Moore grafted on Jacquez

rootstock did not live as long. Production of President was not improved by grafting on the various rootstocks.

**Recommended Varieties**

Selection of varieties for planting is of utmost importance. High yield, excellent quality, and large size are essentials of a good variety. Many of the high-yielding varieties are not suitable for production because of one or more undesirable factors such as poor quality, uneven ripening, small cluster or berry, lack of winter hardiness, or lack of resistance to drought, diseases, and insects.

The following varieties are recommended for planting in Oklahoma on the basis of performance during tests.

Variety	Color	Time of ripening
Seneca	white	very early
Campbell (grafted on vigorous rootstock)	black	early
Fredonia	black	early midseason
Wayne	black	
Brocton	white	
Beacon	black	
Portland	white	
Delaware	red	midseason
Bailey	black	
Mericadel	red	
Ripley	white	late midseason
Extra	black	
Muench	purple	late
Catawba	red	

**Promising French-American Hybrids**

The following French-American hybrids have shown promise for production in Oklahoma; and it is possible that some of them may later be recommended for planting in this state. However, they must undergo further testing to determine if these early results can be expected year after year.

Variety	Color	Time of ripening
Seibel 5898	black	early midseason
Seyve-Villard 18-315	black	
Seyve-Villard 12-309	white	
Seibel 9100	white	
Seibel 1000	black	midseason
Seibel 21653	white	
Seyve-Villard 12-375	white	
Seibel 14654	white	late
Seyve-Villard 11-318	white	

**Description of Promising Varieties**

A brief description of varieties of grapes having the highest yield and/or qualities are listed below. The varieties starred (\*) are recommended for growing in Oklahoma.

**AMERICA:** Black with little bloom, early midseason ripening; cluster—medium size and loose; berry—persistent, small globular; skin—thin and tender; pulp—melting and juicy; juice—dark red; vine—vigorous with fair production.

This variety is noted for its dark red, high-quality juice.

**\*BAILEY:** Black with a slight bloom, midseason ripening; cluster—medium size, conical, shouldered and compact; berry—medium to large, globular; pulp—meaty and firm; good shipping and storage qualities; vine—very vigorous and productive.

Bailey has a large attractive cluster. The new shoots are easily broken by high winds in the spring, and sometimes half the shoots are destroyed. This directly affects the yield.

**\*BEACON:** Black with heavy white bloom, early midseason ripening; cluster—medium to large, moderately compact; berry—medium to large, slender, shatters easily from cluster when fully ripe; vine—vigorous, strong; yield—heavy and regular.

This variety had the highest yield of the black types. The fruit should be harvested before fully ripe to prevent the shattering of berries.

**\*BROCTON:** Golden white, midseason ripening; cluster—medium size, moderately compact; berry—medium size, oval; pulp—tender; excellent quality table grape; vine—moderately vigorous with fair yield.

Brocton would be worthy to plant for its high dessert qualities. The fruit sells well on the market.

**CAMPBELL:** Black, early ripening; cluster—medium size and usually loose; berry—large globular, good quality; vine—weak, short life with low yield.

Campbell grafted on strong vigorous rootstock bears well. It ranked among the top in yield when grafted on Edna, Manito or Cloeta rootstock.

**CARMAN:** Black with slight bloom, late midseason ripening; cluster—medium size, conical, shouldered and compact; berry—medium



size, globular; pulp—meaty and firm, good shipping and storage quality; vine—very vigorous and productive.

This variety does well in central and southwest parts of the state.

**\*CATAWBA:** Clear dark red, late season ripening; cluster—medium size, moderately compact; berry—medium to large oval; pulp—tender containing high quality juice; vine—vigorous and productive.

Catawba is one of the best late-maturing red varieties. It has ranked high in yield.

**CHAMPION:** Black with heavy white bloom, early ripening; cluster—medium size, moderately compact, shouldered; berry—medium size, globular, very poor quality; vine—healthy, vigorous and productive.

This variety is undesirable for planting. The berries often shrivel before ripening.

**DAISY:** Dull black with a heavy bloom, early ripening cluster—small and compact; berry—medium size, globular; skin—tough, fair quality; vine—vigorous and productive.

The clusters are too small to be a good variety for planting.

**DELAWARE:** Red, early midseason ripening; cluster—small, slender, compact and shouldered; berry—small globular; skin—thin; pulp—tender, excellent quality; vine—moderately vigorous with fair yields.

Delaware is one of the best quality red varieties. It is excellent for the table as fresh fruit or for juice.

**ELLEN SCOTT:** Clear violet, midseason ripening; cluster—large, very compact, shouldered; berry—very persistent, large, round but odd shaped due to compactness; skin—thin and tender; pulp—tender and very juicy; vine—vigorous with fair yields.

Ellen Scott has a very attractive appearance. The buds are not entirely winter hardy, which often results in low yields.

**\*EXTRA:** Black with moderate bloom, late midseason ripening; cluster—long medium size, moderately compact; berry—medium size, globular; pulp—tough and firm; vine—very vigorous with very high yields.

Extra is one of the better black varieties to plant. The yields have been regular and high. The fruit ripens evenly, but the quality and juice properties are only fair.

**\*FREDONIA:** Black, early midseason ripening; cluster—medium size, compact; berry—large globular, juicy and good quality, occasionally the berries do not ripen evenly; vine—vigorous and productive.

This variety is similar to Concord, but is higher yielding. The berries may have some uneven ripening but it is much better than Concord in this respect.

**GOLDEN MUSCAT:** Golden white, midseason ripening; cluster—medium to large, moderately compact; berry—very large, oval; pulp—tender and juicy; vine—moderately vigorous and productive.

Golden Muscat is a high-quality, good juice grape but does not ship or store well. It is subject to black rot. Sometimes the fruit begins to shrivel two weeks before ripening when drouth conditions prevail.

**JACQUEZ (Lenoir):** Black, late season ripening; cluster—large, long, rather compact, attractive; berry—small, round with rich, sprightly, red juice, excellent quality; vine—vigorous and productive. It is susceptible to black rot.

Jacquez is too small for a table grape.

**JESSICA:** White with a tinge of pink, early ripening; cluster—small, moderately compact; berry—small to medium size, poor keeping qualities; pulp—juicy and sweet; vine—moderately vigorous, hardy and productive.

This variety is not desirable for planting because of its small size and poor storage qualities.

**LUCILE:** Dark red, early midseason ripening; cluster—medium, compact; berry—medium to large, globular; vine—moderately vigorous and very productive.

Lucile is the leading variety in production in the Perkins experimental vineyard. The grapes are quite attractive, but it has an objectionable foxy taste and odor.

**\*MERICADEL:** Purplish red, midseason ripening; cluster—medium size, moderately compact, handsome; berry—medium size, globular; pulp—high-quality, tender, meaty; vine—vigorous and productive.

This variety is worthy for planting as a table grape.

**\*MUENCH:** Purplish black, late midseason ripening; cluster—medium to large, compact; berry—small to medium size; pulp—high-quality and tender; vine—vigorous and productive.

Muench is a good variety to extend the season. It ripens after Extra and before Catawba.

**NIAGARA:** White, midseason ripening; cluster—medium to large, moderately compact to compact; berry—medium to large, globular; skin—thin, tender; pulp—juicy and good quality; vine—vigorous, producing only fair crops.

This is the old standard white or green variety for table use. The yields have been too low to be desirable for planting.

**\*PORTLAND:** White, early midseason ripening; cluster—medium size, compact; berry—large, globular and juicy; vine—moderately vigorous with high yields.

Portland is very similar to Niagara. The bunches and berries are larger than those of any early white grape. Yields have been very high. Occasionally the vines have produced more than 50 pounds per plant. The last few years the vigor and production of the vines have decreased.

**REGAL:** Purplish red with faint bloom, early midseason ripening; cluster—small, borne close to the wood which makes it difficult to harvest; berry—medium to large, globular with high quality; vine—vigorous and very productive.

Small size clusters and difficult harvesting make it undesirable for planting.

**\*RIPLEY:** White, midseason ripening; cluster—medium size, long, moderately compact; berry—medium size, round, quality good; vine—vigorous and very productive.

This variety is good for home use, but is not satisfactory as a market grape.

**\*SENECA:** Golden white, very early ripening; cluster—medium size, tapering, compact; berry—medium size, oval; texture—firm, melting and tender, sweet flavor, dessert grape; vine—vigorous but lacks winter hardiness; yields—low and irregular.

Seneca is a good market and excellent table grape. It has good storage production. The fruit is a favorite food for birds.

**VERGENNES:** Pale dull red, late midseason ripening; cluster—medium size, loose; berry—medium size, oval, quality good; vine—vigorous and productive. It is susceptible to black rot, mildew and birds-eye rot (Anthracnose).

This variety is not worthy for planting. It ripens just ahead of Catawba.

**\*WAYNE:** Black, early midseason ripening; cluster—medium size, moderately compact; berry—large, globular, quality good; vine—vigorous and productive.

This variety should be worthy for planting. It ripens just ahead of Beacon and after Fredonia.

### **Description of French-American Hybrids**

The 31 French-American hybrids described below have shown enough promise either in yields or quality of fruit to warrant further testing. Those starred have shown most promise.

**SEIBEL IXX:** Black, early midseason ripening; cluster—large, shouldered, loose; berry—small, round; vine—moderately vigorous and productive.

**\*SEIBEL 1000:** Black, early midseason ripening; cluster—medium size; berry—medium size, round; pulp—tender and juicy; vine—very vigorous; canes strong and hardy; yield—good, bears regularly.

**SEIBEL 2056:** Black, very late ripening; cluster—loose medium size; berry—medium to large size; vine—very vigorous; production—heavy but irregular, subject to late spring freezes.

**SEIBEL 4643:** Black, midseason ripening; cluster—small, compact; berry—medium size; vine—vigorous, very heavy producer, begins to bear early; soluble solids 16.5 percent.

**SEIBEL 5279:** White, very early ripening; cluster—medium size, long, cylindrical, loose; berry—small; pulp—juicy, sweet; soluble solids 22 percent; vine—moderately vigorous; yield—fair and irregular.

**SEIBEL 5437:** Black, midseason ripening; cluster—medium size; berry—medium size, round, uneven ripening; juice—highly colored; vine—vigorous, hardy and very productive, overbear.

**\*SEIBEL 5898:** Black with bloom, early midseason ripening; cluster—medium size, shouldered, compact; berry—medium size, storage quality good; juice—deep color, sweet; vine—vigorous, hardy and very productive. Good crop was produced in 1953 when most others failed because of late spring freeze.

**SEIBEL 6905:** Black, midseason ripening; cluster—medium size, shouldered; berry—medium size, good quality; vine—moderately vigorous, fair yield.

- SEIBEL 7053:** Black with bloom, early midseason ripening; cluster—medium size, somewhat loose; berry—small to medium size, crisp and tender; vine—somewhat weak; yield—regular, fair.
- SEIBEL 7157:** Black, midseason ripening; cluster—medium size; berry—medium size; seeds—small; pulp—meaty, crisp, sweet table grape; vine—weak; yield—fair.
- SEIBEL 8357:** Black with bloom, early midseason ripening; cluster—medium size, loose; berry—medium size; vine—vigorous, long canes; yield—regular, fair.
- \*SEIBEL 9110:** Golden white, early midseason ripening; cluster—medium size, loose well formed; berry—oval, pointed, medium size; pulp—crisp, tender, delicious; soluble solids 20 percent, excellent table grape; vine—vigorous, but difficult to get established. The yields were low during the only year it has borne fruit.
- SEIBEL 10076:** White, early ripening; cluster—long cylindrical; berry—small to medium size, round; skin—tough; pulp—sweet; vine—vigorous, few canes good wood; yield—fair.
- SEIBEL 10173:** White, early midseason ripening; cluster—medium size; berry—small to medium, round, attractive table grape; vine—vigorous, few canes good wood, disease resistant; yield—fair.
- SEIBEL 13053:** Black, early midseason ripening; cluster—medium to large size, rather loose; berry—small to medium size; pulp—tender; vine—vigorous, hardy, drought and disease resistant; yield—good.
- SEIBEL 14189:** Black, early ripening; cluster—large; berry—medium size, round, soluble solids 15 percent; vine—very vigorous, drought and disease resistant; yield—good (no crop produced in 1953 due to late spring freeze).
- \*SEIBEL 14654:** Golden white, midseason ripening; cluster—medium size; berry—large ovoid; quality—good, table type; vine—vigorous; yield—low but improving.
- \*SEIBEL 21653:** Golden white, midseason ripening; cluster—large, loose; berry—large ovoid; pulp—crisp, tender, sweet, soluble solids 19 percent; excellent table grape; vine—vigorous; yield—undetermined to date.
- SEYVE-VILLARD 3-160:** Black, early midseason ripening; cluster—medium size, slender compact; berry—medium size, slightly ovoid;

pulp—juicy, soluble solids 13 percent; vine—moderately vigorous, poor under drought conditions, erect carriage; foliage—deep green; yield—regular, fair.

**SEYVE-VILLARD 5-247:** Black, early midseason ripening; cluster—long and loose; berry—medium size and round, soluble solids 18 percent; vine—very vigorous, drought and disease resistant; production—regular but low.

**\*SEYVE-VILLARD 11-318:** White gold with slight marking or netting, midseason ripening; cluster—medium size, medium compact, attractive; berry—medium ovoid; pulp—crisp, juicy, good flavor, excellent table grape; seed—separate readily from pulp; vine—moderately vigorous, drought resistant, bears while young; yield—high, excellent crop of high quality under drought conditions.

**\*SEYVE-VILLARD 12-309:** Pinkish white, early midseason ripening; cluster—very large, loose; berry—medium size, ovoid, persistent; quality—excellent, soluble solids 17.5 percent, good table grape; vine—vigorous, drought and disease resistant; yield—heavy, regular.

**\*SEYVE-VILLARD 12-375:** Golden white, midseason ripening; cluster—very large, compound, very loose; berry—medium size, ovoid; skin—tender; pulp—crisp, sweet, delicious, soluble solids 17 percent, good table grape; vine—healthy, vigorous with few strong canes; production—heavy.

**SEYVE-VILLARD 12-734:** Black, midseason ripening; cluster—long, conical, compact; berry—small, round; vine—moderately vigorous; production—heavy.

**\*SEYVE-VILLARD 18-315:** Black with bloom early midseason ripening; cluster—large, loose; berry—medium size, round; vine—vigorous, disease resistant; yield—heavy.

**JOANNES-SEYVE 12-462:** White, late midseason ripening; cluster—large, medium, compact; berry—medium size, round; vine—vigorous; yield—extremely heavy.

**JOANNES-SEYVE 16-104:** Purplish red, early midseason ripening; cluster—long medium compact; berry—large, ovoid; skin—tender; pulp—meaty, good quality; seeds—separate from pulp, soluble solids 15 percent, good table grape; vine—very vigorous, few canes, subject of black rot; yield—very heavy.

**JOANNES-SEYVE 16-150:** White, early midseason ripening; cluster—large shoulder; berry—medium size, slightly ovoid; vine—vigorous; yield—very heavy.

**COUDERC 13:** White, late midseason ripening; cluster—cylindrical, compact; berry—medium size, round; vine—moderately vigorous, erect and productive.

**COUDERC 17:** Dark blue-black, midseason ripening; cluster—medium size; berry—small to medium round; vine—very vigorous; yield—heavy.

**COUDERC 4401:** Black, early midseason ripening; cluster—small to medium in size; berry—small, round; juice—intense color; vine—vigorous, small wood; yield—heavy.

Table I—Performance of 75 Grape Varieties during an 18-year Period (1936-1953) at Perkins, Oklahoma.

Variety	Color	Avg. ripening date	Avg. yield per vine (pounds)	Rank by yield
America	black	Aug. 12	8.6	43
Armalaga	white	Aug. 21	7.6	57
Bachman	black	Aug. 2	5.7	68
Bailey	black	Aug. 19	13.1	16
Beacon	black	Aug. 14	18.5	2
Brighton	red	Aug. 15	10.3 (5 yr. avg.)	35
Brilliant	red	Aug. 20	8.1	50
Brocton	white	Aug. 13	10.2	36
Caco	red	Aug. 23	8.1	51
Campbell	black	Aug. 4	5.6 (11 yr. avg.)	69
Captivator	red	Aug. 22	8.4	47
Carman	black	Aug. 22	13.2	15
Catawba	red	Sept. 1	14.6	7
Champanel	black	Aug. 20	12.2	23
Champion	black	July 30	14.5	8
Cloeta	black	Aug. 10	7.2	60
Concord	black	Aug. 20	12.2	22
Daisy	black	July 30	15.7	5
Delaware	red	Aug. 15	12.2	21
Diamond	white	Aug. 11	10.7	29
Dunkirk	red	Aug. 10	7.4 (12 yr. avg.)	59
Eaton	black	Aug. 18	7.9	54
Edna	white	Aug. 25	11.9	25
Ellen Scott	clear violet	Aug. 19	12.4	20
Extra	black	Aug. 24	15.9	4
Fern Munson	dark purple	Sept. 9	3.8	75
Fredonia	black	Aug. 8	14.4	9
Gaertner	red	Aug. 21	8.1	52
Goethe	pinkish red	Sept. 15	7.5	58
Golden Muscat	white	Aug. 16	13.3	14
Green	greenish white	Aug. 2	8.2	49
Hanover	red	Aug. 15	7.8	55
Henryetta	red	Aug. 10	6.9 (15 yr. avg.)	61
Herbemont	black	Sept. 7	9.6	38
Hernito	black	Aug. 15	7.7	56
Hubbard	black	Aug. 9	6.3	65
Jacquez (Lenoir)	black	Sept. 6	13.8 (12 yr. avg.)	11
Jefferson	pinkish white	Aug. 21	8.3	48



Table I—Continued.

Variety	Color	Avg. ripening date	Avg. yield per vine (pounds)	Rank by yield
Jessica	white	Aug. 9	13.0	17
Kruka	red	Aug. 19	8.5 (15 yr. avg.)	44
King	black	Aug. 14	9.4	41
Lomanto	black	Aug. 22	10.4	32
Last Rose	light rose	Oct. 17	9.4	40
Lucile	red	Aug. 14	20.8	1
Manito	dark purple	Aug. 16	10.8 (6 yr. avg.)	28
Martha	greenish white	Aug. 29	5.3	71
Mathilda	purplish red	Aug. 22	5.8	67
Mericadel	purplish red	Aug. 19	12.7	19
Minnic	white	Aug. 24	10.4	34
Moore	black	Aug. 5	4.7	73
Moyer	red	Aug. 10	6.8	62
Muench	purple	Aug. 26	15.6	6
Niagara	white	Aug. 20	9.7	37
Ontario	white	July 29	10.4	33
Pockington	yellowish green	Aug. 30	4.9	72
Pontiac	purple	Aug. 12	8.1 (16 yr. avg.)	53
Portland	white	Aug. 14	13.8	10
President	black	Aug. 8	9.1	42
R. W. Munson	black	Aug. 15	5.4	70
Regal	purplish red	Aug. 17	16.8	3
Ripley	white	Aug. 19	13.7	12
Rommel	white	Aug. 21	8.5	46
Ronaldo	white	Aug. 11	10.5	31
Salem (Agawam)	red	Aug. 25	9.5	39
Seneca	white	July 29	6.4	64
Sheridan	black	Aug. 25	11.1	27
Urbana	light red	Aug. 27	6.0	66
Vergennes	dull red	Aug. 28	12.9	18
Wapanuka	yellowish white	Aug. 17	11.6	26
Watkins	black	Aug. 8	3.8	74
Wayne	black	Aug. 10	13.4	13
Westfield	black	Aug. 13	6.7 (6 yr. avg.)	63
Winchell	white	Aug. 3	8.5	45
Wine King	black	Aug. 13	10.6	30
Worden	black	Aug. 14	12.1	24

Table II—Performance of 43 French-American Hybrids During a 3-Year Period (1952-1954) at Perkins, Oklahoma.

Variety	Color	Avg. ripening date	Avg. yield per vine (pounds)	Rank
Seibel IXX	black	8-16	11.0	15
" 1000	black	8-16	10.0	18
" 2056	black	9-23	12.6	12
" 4643	black	8-27	10.7*	17
" 5279	white	8-1	8.5	24
" 5437	black	8-20	14.9	5
" 5760	red	8-12	8.1	26
" 5898	black	8-10	19.2	2
" 6905	black	8-20	6.5	30
" 7053	black	8-17	13.9	7
" 7157	black	8-22	8.0	28
" 8355	black	8-18	1.7†	42
" 8357	black	8-17	9.5	20
" 8365	black	8-12	3.3*	38
" 8745	black	8-19	5.8*	31
" 9110	white	8-12	2.5†	40
" 10076	white	8-7	9.0	22
" 10096	black	8-11	8.1	27
" 10146	black	8-10	8.4	25
" 10173	white	8-11	5.5	34
" 10417	white	8-10	5.1	35
Seibel 10878	black	8-20	2.3	41
" 11342	white	8-12	2.7*	39
" 13053	black	8-10	13.7	8
" 13846	black	8-27	4.2*	37
" 14189	black	8-1	9.2	21
" 14654	white	8-22	4.8*	36
" 21653	white	8-18	.4†	43
Scyve-Villard 3-160	black	8-11	9.0	23
" " 5-247	black	8-11	5.8	33
" " 11-318	white	8-27	13.6*	9
" " 12-309	white	8-15	11.7	14
" " 12-375	white	8-18	10.7	16
" " 12-426	black	8-16	7.6	29
" " 12-734	black	8-20	12.2	13
" " 18-283	black	8-11	5.8	32
" " 18-315	black	8-10	14.9	6
Joannes-Seyve 12-462	white	8-26	26.6	1
" " 16-104	red	8-11	9.7	19
" " 16-150	white	8-14	16.8	4
Couderc 13	white	8-26	12.7	10
" 17	black	8-22	18.3	3
" 4401	black	8-10	12.6	11

\* Two-year average.

† First crop in 1954.

Table III—Comparison of Rootstock on Yield of Campbell, Moore, and President.

Variety	Rootstock	18-year average yield in pounds per vine		Remarks
Campbell	own roots	5.6	11 yr. average	Vines died after 1946 crop.
	on Cloeta	14.2		
	on Edna	14.6		
	on Manito	14.4		
Moore	on Jacquez	10.6	10 yr. average	Below grafts after 1945 crop.
	own roots	4.7		
	Cloeta	7.0		
	Jacquez	4.6		
President	Manito	10.8	10 yr. average	Below graft after 1945 crop.
	own roots	9.1		
	Jacquez	10.9		
	Manito	10.6		

