

AMERICAN GRAPE VARIETIES

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INTRODUCTION

The principal varieties of "bunch" or euveitis grapes that have been developed in the United States either from species native to this country or through hybridization of such species with varieties of *Vitis vinifera* L., the grape of Europe, Asia, and Africa, are described and evaluated in this circular. These so-called American grapes constitute practically the only varieties grown in the United States east of the Rocky Mountains except in the southeastern part of the country. The muscadine varieties, grown in the Coastal Plain region from southern Virginia to Texas, constitute a distinct type of grape and are not included in this circular.¹ The grape industry in California is based almost entirely on *Vitis vinifera* varieties introduced from the Old World. These varieties also represent a portion of the industry in other States west of the Rocky Mountains. The varieties described here, however, constitute those available for production throughout the remainder of the United States.

ATTEMPTS TO GROW VINIFERA VARIETIES IN EASTERN UNITED STATES

Grape growing in Asia, Africa, and Europe dates from before the dawn of recorded history. Grape growing and wine making were important industries in southern and central Europe, and many fine varieties of grapes were selected and propagated there, long before America was settled. When the early English, French, and Dutch settlers reached North America they were impressed with the great abundance of wild grapes, for in this country the grape flourishes as a native plant to a greater degree than anywhere else. They visioned the eastern part of North America as a grape-grower's paradise and imported and attempted to establish the varieties grown in Europe. From the earliest colonial days until early in the nineteenth century, practically all effort was directed toward acclimatizing the grape of Europe. Hundreds of attempts were made to establish vineyards,

¹For a discussion of muscadine grapes, see Farmers' Bulletin No. 1785.

and thousands of acres of grapes were planted at various points from Canada to the Gulf of Mexico. Experienced German and French vineyardists were brought to the new country, and shipment after shipment of vines was made.

All these attempts ended in failure. Some of the vineyards produced a few grapes, but many failed to reach fruiting age. Frequently the grapes rotted on the vines before maturing.

The causes of these failures are now understood. The European grape is adapted primarily to regions having dry summers and mild winters. Many diseases had become established on the wild grapes of America, growing in regions of warm, humid summers, but the native vines had developed at least partial resistance to these diseases. The imported vines, however, proved very susceptible. Coupled with this disease susceptibility, the vinifera vines were subject also to low-temperature injury. Few vinifera varieties today are able to withstand subzero temperatures without injury. Therefore, low winter temperatures and the weakening of the vines by disease were undoubtedly the most important factors in the failure of these early plantings. In the Southern States, where winter temperatures are not likely to be low enough to kill the healthy vines of the vinifera varieties, the long, hot, humid summers were ideal for excessive disease development. Fungus diseases in that section were so severe that they alone can easily account for the failure of these early plantings. The root louse, *Phylloxera vitifoliae* Fitch, may also have been a factor.

In colonial days, fungicides to control diseases were unknown. With the present knowledge of the cause and control of grape diseases, greater success with *Vitis vinifera* varieties in the milder parts of the East can be expected. However, the hazards of disease and winter injury are still too great to warrant the commercial planting of these varieties.

DEVELOPMENT OF AMERICAN GRAPE VARIETIES

After 200 years of failure with grapes from Europe and Asia, American horticulturists turned to the species which abound in this country for basic material upon which an industry could be founded. According to Hedrick,² Thomas Jefferson was one of the first to appreciate the possible value of American grapes. In 1809 he wrote:

I think it will be well to push the culture of that grape (the Alexander, the earliest widely distributed American variety) without losing time and efforts in search of foreign vines, which it will take centuries to adapt to our soil and climate.

Between 1810 and 1830 several varieties of grapes of American origin were named and propagated. One of these, the Catawba, is still one of our most important varieties. Another, the Isabella, is also of some importance. After the finding and dissemination of such varieties, commercial grape culture developed rapidly. Between 1830 and 1850, important wine-making centers were developed around York, Pa., and Cincinnati, Ohio, with scattered plantings in many other sections of the country. Many varieties originating as chance seedlings were named and disseminated. Nicholas Longworth, of Cincinnati, stimulated wide interest in the industry through growing grapes, making wine, and writing on the possibilities in American grape culture and wine making.

² HEDRICK, U. P., BOOTH, N. O., TAYLOR, O. M., WELLINGTON, R., and DORSEY, M. J. THE GRAPES OF NEW YORK. 564 pp., illus. Albany.

Near the middle of the nineteenth century two events of great importance to American grape culture occurred. The first was the introduction of the Concord variety, originated as a chance seedling at Concord, Mass., and exhibited before the Massachusetts Horticultural Society in 1852 by E. W. Bull. The Concord, because of its vine vigor, hardiness, good quality, wide adaptation, and suitability to a wide variety of uses, quickly became popular; and has been the dominant variety in the eastern part of the United States ever since that time. Its introduction also marked the beginning of the popularity of the grape as a dessert and culinary fruit, whereas previously it had been used almost entirely for wine manufacture.

The second event of importance was the definite hybridization of American grapes with varieties of *Vitis vinifera*. The fruit from the first of these representing Black Hamburg (*V. vinifera*) × Isabella was exhibited at the American Pomological Society meeting in 1852 by W. W. Valk, of Flushing, Long Island, N. Y. Two years later another cross, Golden Chasselas (*V. vinifera*) × Isabella, was exhibited before the Massachusetts Horticultural Society by J. F. Allen, of Salem, Mass. This latter variety, Allen Hybrid, received wide publicity and stimulated great interest in grape breeding. E. S. Rogers, of Salem, Mass., and J. H. Ricketts, of Newburgh, N. Y., soon introduced *V. vinifera* × *V. labrusca* hybrids, several of which are in the trade today. Many other grape growers planted seedlings or made crosses, and their contributions are recorded in the lists of varieties included herein. A. J. Caywood and Jacob Moore in New York, Louis Suelter in Minnesota, Jacob Rommel in Missouri, Joseph Bachman in Arkansas, N. B. White in Massachusetts, and many others have contributed varieties of value.

Toward the close of the nineteenth century, T. V. Munson began the systematic breeding of grapes at Denison, Tex. From the beginning of his work there in 1876 until his death in 1916 he collected grape species and varieties, and hybridized grapes, using particularly the native species of the South, together with *Vitis vinifera* and *V. labrusca* varieties. He introduced many varieties, some of which are today the most satisfactory bunch grapes for the South. Many of his varieties also are adapted to the central and northern sections of the United States and deserve wider trial than they have received. Munson's contribution to the development of the American grape industry has been great indeed. He was a recognized authority, not only on commercial grape growing, on breeding, and on varieties, but on the botany of the American grape species as well.

With the passing of Munson, the leadership in the production of new grape varieties in the United States has passed to the New York State Agricultural Experiment Station at Geneva, N. Y. The grape-breeding program carried on by that station at Geneva and Fredonia, N. Y., since the beginning of the present century has resulted in the introduction of a number of outstanding varieties during the last 15 years. In addition to the extensive program of work under way in New York State, grape-breeding investigations are being carried on at several other State experiment stations: The Minnesota, Maryland, South Dakota, and Texas stations are breeding American bunch grapes; the California station is breeding viniferas; and the Georgia station is working with muscadines. The United States Department of Agriculture is conducting grape-breeding work with all three groups.

There is a very real opportunity through such continued breeding for obtaining varieties of grapes better adapted to the growing conditions existing in various parts of the United States.

VARIETAL CHARACTERISTICS

Approximately 230 varieties of American grapes have been under test at the Arlington Experiment Farm, Arlington, Va., for periods ranging from 5 to 20 years. These varieties were assembled by George C. Husmann, formerly in charge of grape investigations for the Bureau of Plant Industry. The following record of variety characteristics (see tables 1, 2, and 3) is based largely on their behavior at the Arlington Farm, although records obtained elsewhere have also been considered in evaluating the varieties.³ Descriptions of the varieties are based largely on their performance at Arlington. The tables are intended to be useful in the identification and evaluation of varieties and in suggesting those especially worthy of trial for various purposes in different sections of the United States. Ratings are largely on a comparative basis; where asterisks (*) are used to indicate relative values, ***** indicates the maximum condition, *** the average, and * the minimum for the particular character indicated.

The 221 varieties described are arranged alphabetically in the tables, and the tables are grouped according to the color of the fruit—table 1 describing white or green varieties; table 2, red varieties; and table 3, blue or black varieties. Included in the descriptions, in summary form, are parentage and originator if known; comparative ratings of vine vigor, injury from spraying, and productiveness; size and compactness of cluster; size, shape, and color of berry; attractiveness, thickness, toughness, and tendency to crack of skin; tendency to shatter; dessert quality; season of ripening; apparent adaptation; sugar content and acidity of fruit; and apparent value.

The parentage listed is that given by the introducers or early describers of the varieties. Names in the parentage list in a number of cases are synonyms rather than correct variety names, but it has seemed unwise to change the designations as given by the introducers.

The following paragraphs explain the ratings given these various characteristics in the tables.

Vigor of vines.

Varieties marked ***** or ***** would be considered most satisfactory. Varieties marked *** should be planted only on strong soil and only if very outstanding in other qualities. The *** and ** varieties in most cases will probably be much more vigorous and productive if top-worked on vigorous stocks. Varieties marked * are too weak to warrant planting in any but experimental variety collections.

Resistance to spray injury.

Data on spray injury are based entirely on injury from bordeaux mixture at the Arlington vineyard. Severe injury has occurred on many varieties when sprayed with high pressure and coarse nozzles or guns. This injury has been avoided to a considerable extent by using low pressure and fine nozzles to give mist sprays. Such types of spraying are particularly important with varieties susceptible to

³ HEDRICK, U. P., BOOTH, N. O., TAYLOR, O. M., WELLINGTON, R., and DORSEY, M. J. See footnote 2. MUNSON, T. V. FOUNDATIONS OF AMERICAN GRAPE CULTURE. 252 pp., illus. Denison, Tex. [1909.]

injury. In general, injury has been severe on varieties of *Vitis vinifera*, *V. riparia*, *V. aestivalis* var. *bourquiniana*, and *V. aestivalis*. *V. labrusca* varieties have been very free from spray injury. Hybrids of *V. labrusca* with susceptible sorts have been intermediate. The thin-leaf type, characteristic of *V. vinifera*, *V. riparia*, and *V. bourquiniana*, appears very susceptible to injury, but the thick-leaf type, such as *V. labrusca*, is resistant.

By using care in spraying, all these varieties have been adequately protected from disease without excessive spray injury. The *labrusca* type varieties are much more foolproof, however, from the standpoint of spray injury than are thin-leaved types.

Under "Resistance to spray injury", ***** represents no injury, **** a trace, *** moderate but not serious, and * represents the burning off of many young leaves when high pressure and coarse nozzles are used.

Since all varieties were well sprayed and the vineyard has been kept quite free of disease, adequate comparative records on disease susceptibility of varieties have not been secured.

Stamens.

The observations of the writers completely support the findings of Beach⁴ and Einset⁵ and indicate that bees and other insects are not attracted to grape flowers if other blossoming material is available for their use. Such other material is usually abundant at the time grapes bloom. It seems necessary, therefore, that grape varieties be self-pollinating if the best sets of fruit are to be secured.

Apparently varieties with upright stamens are largely self-pollinating. Bagged clusters of such varieties will usually set satisfactory crops with no insect pollination. In these varieties the stamens are clustered about the pistil, and a high degree of self-pollination is assured.

Varieties with reflex or recurved stamens are not self-pollinating, the stamens tending to curve away from the pistil as soon as the cap is shed. Also, on the whole, such varieties do not produce as much or as good pollen. Most varieties, therefore, having recurved stamens tend to set poor crops unless hand-pollinated, even when they are interplanted with others that produce abundant pollen. In the tables, the varieties having upright stamens are indicated by "up", and those having reflex or recurved stamens by "re." A number of varieties are intermediate, having partially recurved stamens. These also have been listed as "re."

Productiveness.

In evaluating productiveness, records of the behavior of varieties at places other than Arlington have been considered, though the latter records have been given primary consideration. In general, varieties producing more than 12 pounds per vine as an average over a series of years have been marked *****; those averaging from 9 to 12 pounds per vine, ****; those averaging 6 to 9 pounds, ***; those averaging 3 to 6 pounds, **; and those averaging less than 3 pounds, *. These yields have been produced under conditions of fair soil and good culture. While varieties might vary somewhat under other growing

⁴ BEACH, S. A. SELF-FERTILITY OF THE GRAPE. N. Y. State Agr. Expt. Sta. Bull. 157, pp. 395-441, illus. 1898.

⁵ EINSET, O. OPEN POLLINATION VS. HAND POLLINATION OF POLLEN-STERILE GRAPES. N. Y. State Agr. Expt. Sta. Tech. Bull. 162, 14 pp., illus. 1930.

conditions, it is believed that the comparative rating on yields will be substantially similar.

Clusters.

The size of clusters is rated on a comparative basis, with ***** for the largest, **** for large, and *** for medium. In general, varieties having clusters smaller than those indicated as *** would be discounted. Under compactness, ***** indicates the most compact. This condition, in most cases, is undesirable. With extremely compact bunches, when black rot or other decay obtains a start, it tends to infect the whole cluster. The fruit is also more subject to injury in handling. On the other hand, clusters indicated as ** or * are loose and straggly; *** or ***** would be rated as the most desirable types for market grapes.

Berry.

Ratings under "Size" are self-explanatory. The most desirable berries for dessert or market use should have a **** or ***** rating; ***, a berry of medium size, would be about the lower limit for market; * or ** size would be useful mainly for manufacturing purposes. Shape is indicated as round, oval (grapes longer than their radial diameter), or oblate (radial diameter greater than length). The legend for color is self-explanatory.

Attractiveness.

Under "Attractiveness" an attempt has been made to evaluate the general impression of the harvested fruit, including brightness and clearness of color, size of berry, size and general appearance of the clusters, and freedom of berries from russet, dullness, or other unattractive features. Varieties rating **** or ***** on attractiveness make an excellent appearance when packed for market. Varieties rating *** or below are of doubtful market value but suitable for manufacturing purposes if other characteristics are right.

Skin.

Thickness and toughness of skin are rated separately. For the best shipping and handling fruit, the skin should be moderately thick and should rate **** or ***** on toughness. Fruits rating ** or *** on thickness and **** or ***** on toughness should have satisfactory shipping quality. Any variety rating *** or less on toughness is likely to be unsatisfactory for handling and shipping. Toughness of skin is more important than thickness from the standpoint of handling quality. Any variety rating ** or * in toughness is likely to go to pieces even while on the vines. Varieties intended for general market purposes should rate at least **** on skin toughness, whereas those for manufacturing purposes or for home use should generally rate at least *** in this characteristic.

Toughness of flesh.

American grape varieties range all the way from an extremely tender melting type of flesh to extreme toughness. With very tough varieties, difficulty is experienced in separating the seed from the pulp. There is no particular association, however, between toughness of flesh and toughness of skin. Toughness of skin rather than of flesh determines the handling quality; * represents the most tender-fleshed varieties, whereas ***** represents the toughest.

Color of juice.

Classifications of color of juice are based on samples pressed fresh from the fruit. All white varieties give a relatively clear juice. The amount of pink or red color varies widely in the red and black grapes, and this is an important factor in variety identification. Generally the juice carries more color as the fruit becomes more mature.

Brush.

The length and color of the brush, or the fibers which adhere to the stem when it is pulled from the berry, are important characters of value in identifying varieties. Under "Length of brush", * indicates a brush of less than one-tenth of an inch in length, *** represents one about one-sixth of an inch in length, while ***** represents one one-fourth inch long or longer. The color of the brush varies somewhat with the maturity of the fruit, tending to become darker as the fruit matures.

Seeds.

Data under number and size of seeds are self-explanatory. A relatively large number of large seeds is usually associated with large berries so that the size and number of seeds should be considered in connection with the size of the berry in evaluating seediness.

The size, shape, and markings of the seeds are a valuable aid in identifying varieties. Frequently from fruit examinations, determination that a variety is one of a group of several that may be quite similar in appearance and season of ripening can be made. Examination of the seed, noting particularly the size and shape of the beak or attachment end and the markings on the upper surface, will frequently make possible final identification of the variety. To aid in such identification, representative seeds of most of the varieties herein described are reproduced in figures 1 to 4. Numbers of the seeds correspond to the numbers given to the varieties in tables 1 to 3. These reproductions are double the diameter of the seeds from which they were taken, which were air-dried before being photographed. Seeds used for purposes of comparison should be removed from the fruit and dried several hours. The careful comparison of seeds has, in the experience of the writers, been of great value in identifying varieties.

Persistence.

The quality of persistence or the adherence of the berries to the stem is extremely important. Varieties that have a marked tendency to shatter or drop from the stem as the berries ripen are of little value except for home production. A variety rated as * or ** should have other very outstanding qualities before it can be recommended for planting, **** or ***** varieties being far superior in this respect.

Resistance to insect injury and cracking.

Many varieties have a marked tendency to crack during periods of wet weather. Following such cracking, bees, wasps, and other insects are likely to begin feeding on the fruit, and in many varieties this may result in almost total loss of the crop. The tendency to crack under unfavorable conditions is an extremely serious weakness of many varieties. It is not necessarily associated with thickness or toughness of skin, because some varieties that have quite a tough skin show a tendency toward cracking. In general, the white varieties have a greater tendency to crack than the black or red ones. In selecting

varieties for any purpose, only those rating *** or ***** in resistance to cracking should be used in sections where heavy rains are likely to occur about the time of harvest.

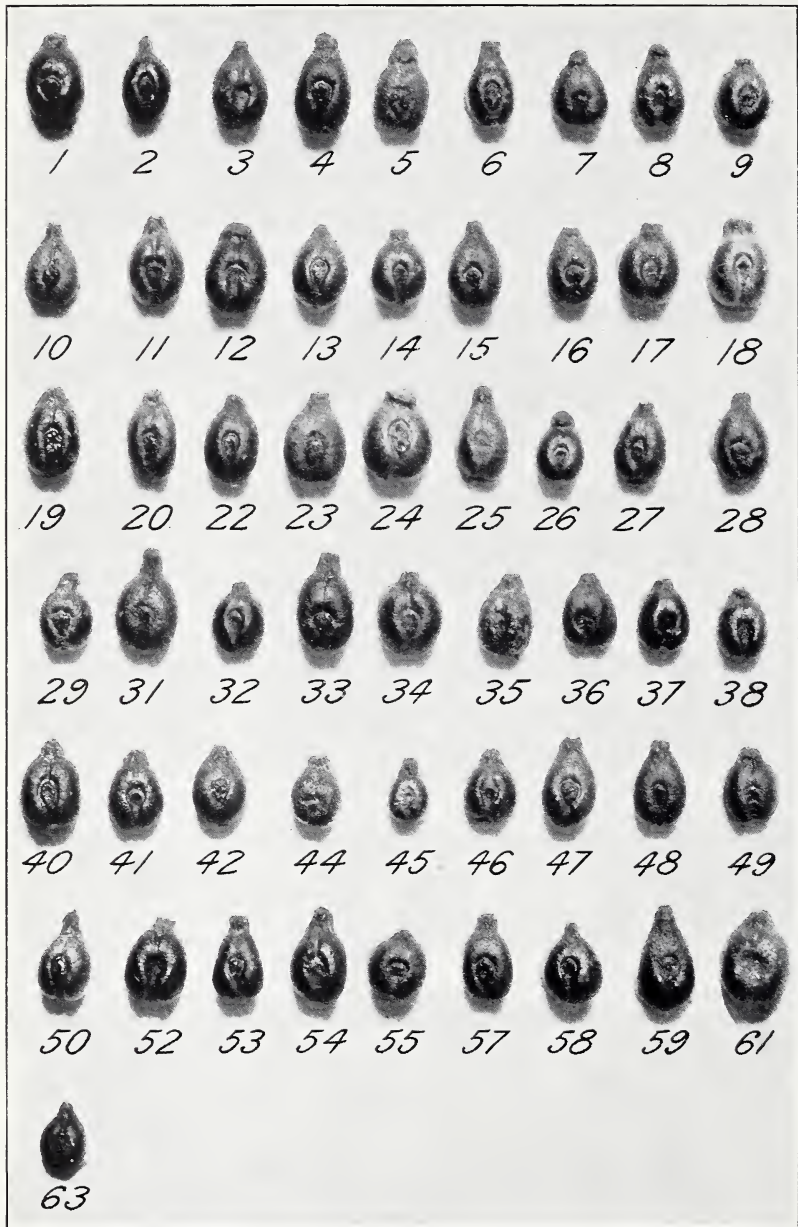


FIGURE 1.—Seeds of white or green varieties of American grapes. Numbers correspond to variety numbers in table 1. Enlarged to two diameters.

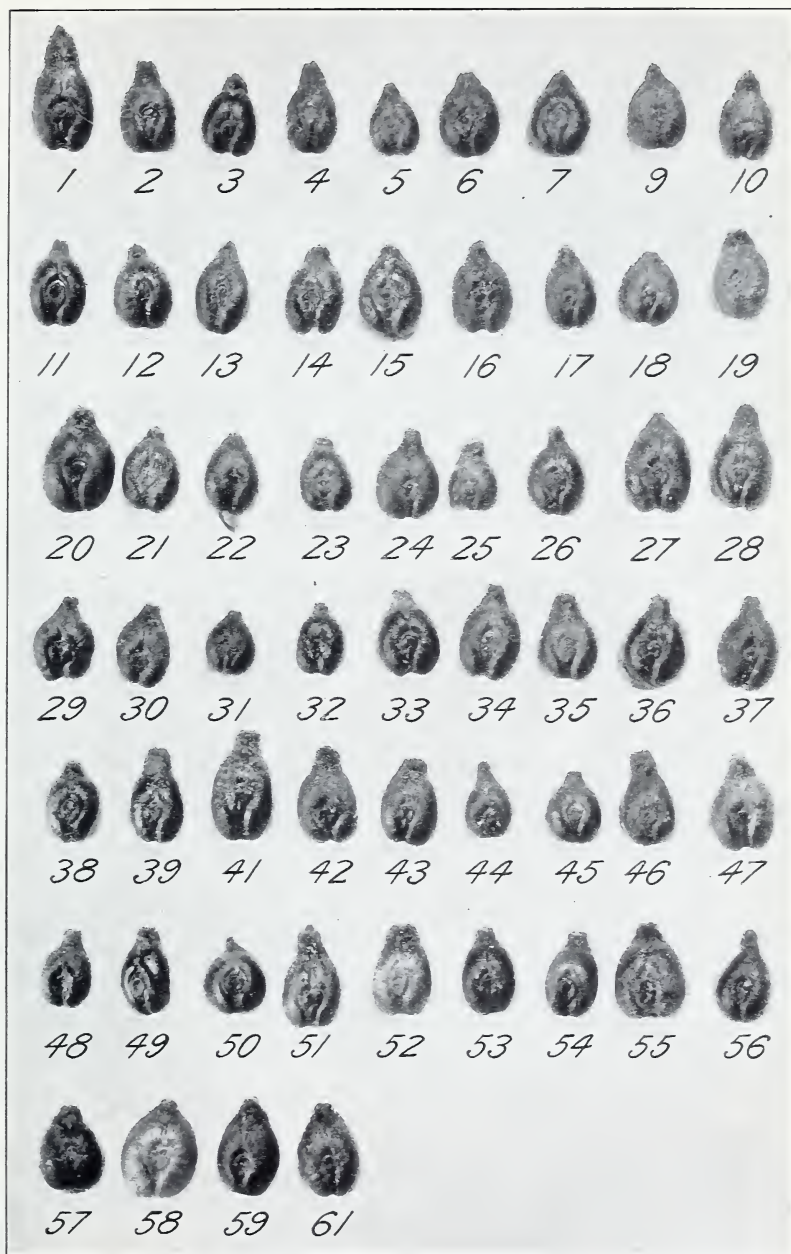


FIGURE 2.—Seeds of red varieties of American grapes. Numbers correspond to variety numbers in table 2. Enlarged to two diameters.

Flavor.

The flavor of many of these grape varieties is extremely difficult to describe. The legends used are explained under the tables. In general, grapes rated as sweet are those that are relatively low in acid so that the reaction is one of distinct sweetness. Varieties rated as acid are relatively high in acid so that the reaction is one of tartness. Some varieties are much higher in aroma than others. An attempt has been made to indicate these characteristics in the tables.

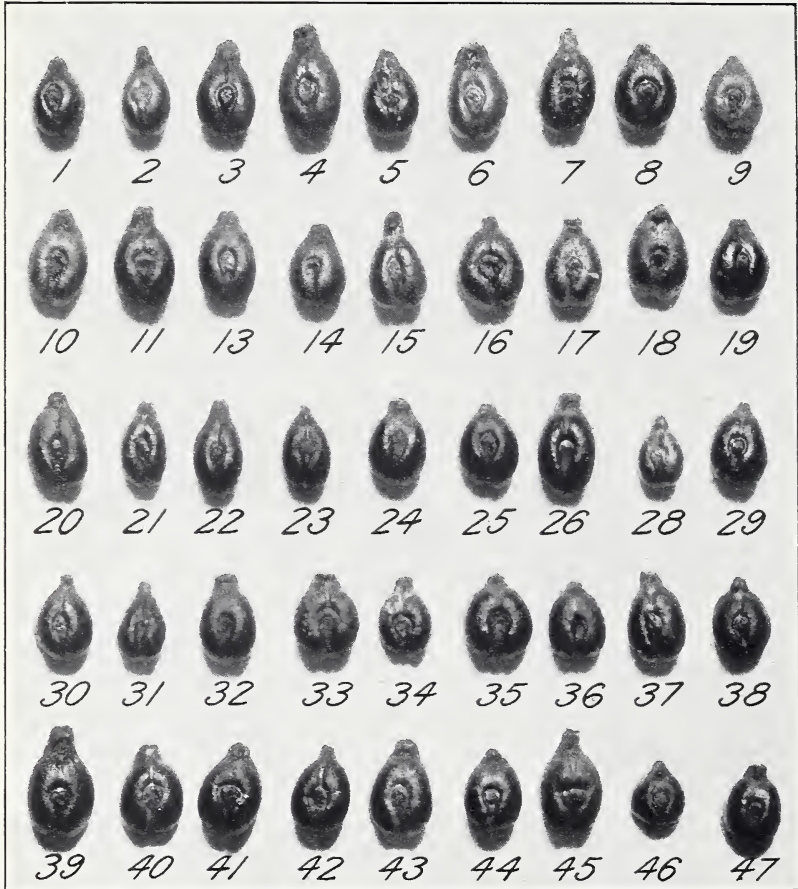


FIGURE 3.—Seeds of blue or black varieties of American grapes. Numbers correspond to variety numbers in table 3. Enlarged to two diameters.

Dessert quality.

An attempt has been made to evaluate the reaction of most people to the dessert quality of grapes. Many individuals would disagree with these ratings. In general, varieties rated as **** or ***** are those that appeal as dessert grapes. They are varieties fairly rich in flavor, with no disturbing characteristics. Varieties rated *** or below should not be considered as dessert grapes, in view of the wide selection of high-quality varieties now available.

Lateness of ripening.

The latest ripening varieties are rated as *****, midseason varieties as ***, and very early varieties as *. Varieties rated as ***** or ***** are not generally adapted to the northern sections, as they fail to ripen. Those rated *** will generally ripen in all except the northernmost parts of the United States. Only varieties rated ** or * should be planted in the far North, such as north of Massachusetts in New

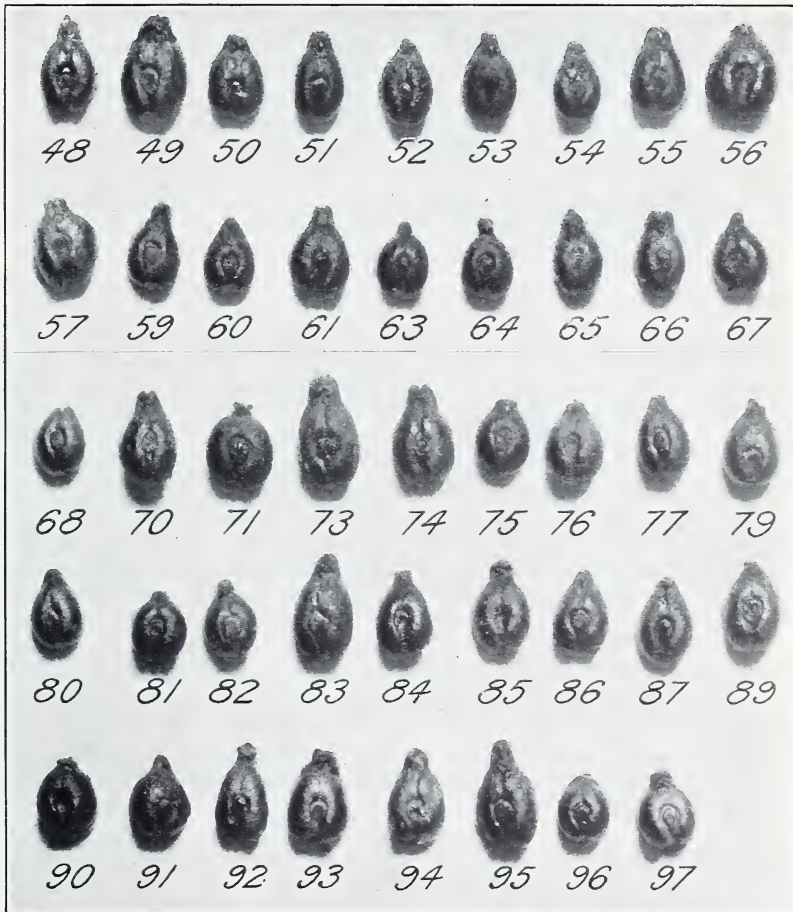


FIGURE 4.—Seeds of blue or black varieties of American grapes. Numbers correspond to variety numbers in table 3. Enlarged to two diameters.

England, northern New York, northern Michigan, and Minnesota. Practically all the varieties here listed will mature during most seasons in the central part of the United States and southward. The statements in regard to comparative season of ripening make it possible to select varieties suitable for any section of the country and which ripen from early until late in the season.

Apparent region of adaptation.

The adaptation of many of the varieties is not definitely known. In determining the region of adaptation, such reports as are available on the varieties have been consulted. The season of ripening has also been considered. The United States has been divided into five regions. The northern region represents the northern half of New England, northern New York, northern Michigan, Wisconsin, and Minnesota. The north-central region includes southern New England, most of New York, northern Pennsylvania, northern Ohio, northern Indiana, northern Illinois, and Iowa. The central region ranges from this belt southward to northern North Carolina, northern Tennessee, Arkansas, and westward. The south-central region represents territory from that area southward to within about 150 miles of the Gulf coast. The southern region includes territory within 150 miles of the Gulf coast. In many cases the varieties have not been tested sufficiently to show just how they will thrive in these regions, but varieties indicated as being promising are at least worthy of trial in the regions indicated.

Sugar content and acidity.

Data on sugar content and acidity are available for only a portion of the varieties. As has been pointed out by Caldwell,⁶ the sugar and acid vary widely in grapes from year to year. In seasons of an abundance of sunshine and not excessive moisture, the sugar content is high; whereas in years with a minimum amount of sunshine and much cloudy, rainy, or foggy weather there will be a low sugar content and high acidity. Therefore the ratings for sugar content and acidity are also on a comparative basis. Certain varieties are consistently high in sugar as compared with other varieties, and some are low. Under the conditions of these ratings, sugar content as measured by Balling scale readings on the juice have been rated as ***** if the fruit has averaged over 18.5 percent for a period of several years, **** for 17 to 18.5 percent, *** for 15.5 to 17 percent, ** for 14 to 15.5 percent, and * for 14 percent or under. These data have been taken in part from those published by Caldwell and in part from unpublished data obtained by C. A. Magoon and the writers. The acidity content is also based on comparative readings taken over a period of several years; ***** represents highest acidity, 1.2 percent or more of titratable acid calculated as tartaric, **** 1 to 1.2 percent, *** 0.8 to 1 percent, ** 0.6 to 0.8 percent, and * 0.6 percent or less.

These figures are primarily of value and interest from the standpoint of manufacturing industries rather than from that of determining dessert quality. A variety may be relatively low in sugar and acid and still rate as very good in dessert quality. For wine manufacture, varieties should rate high in sugar. Most of the varieties that have been widely used for wine making also rate fairly high in acidity.

Apparent value.

Any variety having serious inherent weakness has been rated as of no apparent value even though it might produce a few grapes of excellent quality. If the vine is weak, if it tends to be unproductive, or if the fruit has a marked tendency to shatter or crack, it is rated as of no

⁶ CALDWELL, J. S. SOME EFFECTS OF SEASONAL CONDITIONS UPON THE CHEMICAL COMPOSITION OF AMERICAN GRAPE JUICES. *Jour. Agr. Research* 30: 1133-1176, illus. 1925.

value. If there are other similar varieties that ripen at the same season and are of about the same quality but are outstandingly superior in certain respects, other competing varieties are rated as of no value. Varieties have been rated as of value only when they can be definitely recommended for planting or for trial planting in some section of the United States and for some particular purpose.

A number of varieties are listed as suitable for use as home dessert when they are not rated as market grapes. Some of these are not sufficiently productive for market purposes; others may have skins too tender for market handling but are otherwise very satisfactory. Such varieties, of course, could be used for local or roadside markets where a minimum of handling is required.

Dessert grapes for market must rate high in attractiveness, have a sufficiently tough skin to stand handling, and be rated as at least fairly good in quality, and the vine must be a good producer.

To be recommended for wine, a variety must first of all be productive. Varieties that do not average at least 10 pounds per vine are of doubtful value unless they have other very outstanding characteristics. Growers of American-type wine grapes must have high production per acre to compete with vinifera varieties grown in California. In addition, wine grapes should have a fairly tough skin, although they do not necessarily need the handling quality of market grapes. They should rate fairly high in sugar content. If not high in acidity, they may be blended with more acid grapes to supply the acidity needed. It is also very important that the vines be vigorous. If the varieties are vigorous and are heavy producers and if the grapes have the characteristics that appear to be desirable for wine making, they have been listed as wine grapes. Some of these are relatively untried, and the recommendation in many cases is based on the desirability of trying these grapes for wine rather than on the definite information that they are highly suitable for wine-making purposes.

Remarks.

For many of the varieties a further explanation is given under remarks as to why they are or are not recommended as of apparent value.

Of the 221 varieties described, 89 are rated as having apparent value for some purpose in some section of the United States. After a careful study of the other varieties, it is the opinion of the writers that they cannot be recommended for planting for home dessert grapes, market grapes, or for manufacturing purposes. Some of them may have local adaptation or may be of some value in certain sections, but because of certain inherent weaknesses it seems unwise to recommend them.

TABLE 1.—*Descriptions of American white grape varieties*

[Ratings are largely on a comparative basis. Where asterisks (*) are used to indicate relative values, ***** indicates the maximum condition, *** the average, and * the minimum for the particular character indicated]

No.	Variety	Probable species percentage 1	Varietal percentage	Originator	State and date of origin	Characteristics										
						Vigor of vine	Resistance to spray injury	Stamens ?	Productiveness	Size	Compactness	Size 2	Shape 3	Color 4	Attractiveness	Thickness
1	Ambrosia	La. V.	Seedling of Salem.	Alfred Rose.	N. Y., 1884.	***	****	up	**	***	***	***	g.am	**	***	**
2	Armalaga	Li. La. V.	Armlong X Malaga.	T. V. Munson.	Tex., 1902.	****	****	up	***	****	****	***	ov.r	****	***	****
3	Bell	Ri. La. V.	Elvira X Delaware	do.	Tex., 1883.	**	**	dn	*	***	***	***	rob	**	**	**
4	Blondin	Li. A. Ba.	Ten-Dollar-Prize, Norton, Herbbemont.	do.	Tex., 1896.	**	***	up	***	****	****	***	r	****	**	****
5	Brocton	La. V. A.	Brighton-Winchell-Diamond.	New York Expt. Sta.	N. Y., 1919.	***	***	up	***	****	****	***	ov	****	**	****
6	Christine	La. V. A.	Hubbard X Banner.	Joseph Bachman	Ark.	***	***	up	***	****	****	***	r	****	**	****
7	Colerain 9	La. V. A.	Seedling of Concord.	David Bundy	Ohio, 1880.	***	****	up	***	****	****	***	lg	****	**	****
8	Croton	La. V. Ba.	Delaware X Chasselas de Fontainebleau.	S. W. Underhill.	N. Y., 1865.	***	****	up	****	****	****	***	r	****	*	****
9	Diamond	La. V.	Concord X Iona.	Jacob Moore.	N. Y., 1870.	****	****	up	****	****	****	****	ov.r	****	**	****
10	Dutchess.	La. V. Ba. A.	White seedling of Concord X Delaware or Walter.	A. J. Caywood.	N. Y., 1868.	****	****	up	****	****	****	****	ov.r	****	*	****
11	Edna	Li. La. V.	America X Malaga	T. V. Munson.	Tex.	****	****	re	***	****	****	****	lg	****	***	****
12	Eldorado.	Li. La. V.	Concord X Allen Hybrid.	J. H. Ricketts.	N. Y., 1870.	****	****	re	**	****	****	****	r	****	***	****
13	Elvira.	Ri. La. V.	Taylor X Martha.	Jacob Rommel.	Mo., 1863.	****	****	up	****	****	****	****	ov.r	****	**	****
14	Empire State.	La. Ri. V.	Hartford X Clinton.	J. H. Ricketts.	N. Y., 1874.	****	****	up	****	****	****	****	r	****	**	****
15	Etta.	La. Ri.	Seedling of Elvira.	Jacob Rommel.	Mo., 1879.	****	****	up	****	****	****	****	r	****	*	****
16	Faith.	Ri. La.	do.	do.	Mo., 1881.	****	****	up	****	****	****	****	r	****	*	****
17	Geneva.	La. V.	[V. labrusca X Muscat (9) of Alexander] X Iona.	Jacob Moore.	N. Y., 1874.	****	****	up	****	****	****	****	ov	****	**	****
18	Glenfield.	La.	Norton or Cynthia X Martha.	Geo. J. Magee.	N. Y., 1887.	****	****	up	****	****	****	****	r	****	*	****
19	Gold Coin.	A. La.	do.	T. V. Munson.	Tex., 1883.	****	****	up	****	****	****	****	r	****	**	****

No.	Variety	Characteristics—Continued										Remarks				
		Toughness of flesh	Color of juice	Brush		Seeds		Persistence	Resistance to insect injury and cracking	Flavor	Dessert quality		Lateness of ripening	Apparent region of adaptation	Sugar content	Acidity
				Length	Color	Number	Size									
1	Ambrosia	Clear	**	**	y	1-3	****	*	**	m.s	**	***	nc	---	n	Lacks productiveness; shatters; cracks.
2	Armalaga	do	*	**	---	2-4	****	****	***	m.s	***	c-s	---	h.m.d	n	Variable in the South.
3	Bell	do	***	**	y	2-3	****	****	**	S.a	***	sc-s	---	n	Unproductive; small.	
4	Blondin	do	***	**	---	1-3	****	****	*	S.sp	***	nc	---	h.d	n	Vine weak; fruit cracks.
5	Brocton	do	*	**	g	2-4	****	****	***	S.ar,Sp	****	nc-c	---	n	n	Good quality, but value is rather weak.
6	Christine	do	*	**	g	1-3	****	****	***	S.ar	***	nc-c	---	n	n	Very weak vine; quality only fairly good.
7	Coleman	do	*	**	g	1-3	****	****	***	f.s,Sp	****	nc	---	w	n	Only fairly productive; cracks.
8	Croton	do	*	**	y	1-3	****	****	***	S.sp	****	nc-c	---	w	n	Too small except on Mt. Pinetop.
9	Diamond	do	*	**	g	2-4	****	****	***	S.a,ar	****	nc-c	---	h.m.d w	n	Tendency to crack at manufacture.
10	Dutchess	do	*	**	y	1-2	****	****	***	S.sp	****	nc-c	---	h.w	n	Too small for market as dessert.
11	Edna	do	**	**	y	2-4	****	****	*	S.a	***	nc-c	---	n	n	Very subject to cracking; below average production and quality.
12	Eldorado	do	**	**	y	2-4	****	****	***	m.f.s	***	nc-c	---	n	n	Excellent for wine, but cracks seriously.
13	Elyria	do	***	**	g	3-4	****	****	*	S.a	****	nc-sc	---	w	n	Fruit too tender for market as dessert.
14	Empire State	do	***	**	g	3-4	****	****	***	S.sp	****	nc	---	h.d,w	n	Used for wine, but too light yield.
15	Etta	do	***	**	g	3-4	****	****	***	S	****	nc-sc	---	n	n	Too small fruit and not outstanding.
16	Faith	do	***	**	y	3-4	****	****	***	S.a	****	nc-sc	---	n	n	Quality only fair; not attractive.
17	Geneva	do	***	**	y	2-3	****	****	***	S.sp	****	nc	---	n	n	Quality fairly good, but fruit unattractive.
18	Glendale	do	***	**	---	2-3	****	****	***	S.f.a	****	nc	---	n	n	Promising for wine; of no other value.
19	Gold Coin	do	***	**	---	3-4	****	****	***	m.s	****	c-sc	---	w	n	

See footnotes at end of table.

TABLE 1.—*Descriptions of American white grape varieties*—Continued

[Ratings are largely on a comparative basis. Where asterisks (*) are used to indicate relative values, **** indicates the maximum condition, *** the average, and * the minimum for the particular character indicated]

No.	Variety	Probable species parentage 1	Varietal parentage	Originator	State and date of origin	Characteristics									
						Vigor of vine	Resistance to spray	Stamens 2	Productiveness	Size	Compactness	Size	Shape 3	Color 4	Attractiveness
20	Gold Dust	La. V. Ba.	Lindley X Delaware	T. V. Munson	Tex., 1880	****	*	up	****	*	***	*	g.am	*	****
21	Golden Drop	La. V. Ba.	Adirondack X Delaware	G. C. Pringle	N. Y., 1869	****	*	up	****	*	***	*	g	*	****
22	Golden Grain	La. V. Ba.	Lindley X Delaware	T. V. Munson	Tex.	****	**	up	****	**	****	*	g	*	****
23	Golden Muscat	V. La.	Muscat Hamburg X Diamond	New York Expt. Sta.	N. Y., 1916	****	***	up	****	***	****	ov	am	*	****
24	Governor Ross	La. V.	Seedling of Triumph	T. V. Munson	Tex., 1894	****	***	up	****	***	****	ov.r	g.am	**	****
25	Green Golden	Ri. La.	Seedling of Taylor	Nicholas Grein	Mo., 1881	****	***	re	****	***	****	r	am	**	****
26	Charles A. Green	La.		F. W. Linton	Wis.	****	***	up	****	***	****	ov.r	lg.am	****	****
27	Green Early	La.		O. J. Green	N. Y., 1887	****	***	up	****	***	****	ov.r	g	****	****
28	Hidalgo	La. V. Ba.	Delago X Brilliant	T. V. Munson	Tex., 1889	****	***	up	****	***	****	ov	am	****	****
29	Jessie	La. V.		Wm. H. Reed	Ontario, 1870	****	**	up	****	***	****	r	g.am	****	****
30	Kensington 9	V. Ri. La.	Clinton X Buckland	Wm. Saunders	Ontario, 1870 (?)	****	*	up	****	**	****	r	g	****	****
31	Krause	Ba. La. V.	Sweetwater	E. W. Krause	Tex., 1893	****	***	up	****	***	****	r	lg	****	****
32	Lady 9	La. V.	Herbmont X Niagara	Mr. Inlay (?)	Ohio, 1863 (?)	****	***	up	****	***	****	r	lg	****	****
33	Lady Washington	La. V.	Concord Seedling	J. H. Ricketts	N. Y., 1878	****	***	up	****	***	****	r	am	****	****
34	Lightfoot	La. V.	Seedling of Niagara	W. H. Lightfoot	Ill.	****	***	up	****	***	****	rob	g.am	****	****
35	Lindmar	La. V.	Lindley X Martha	T. V. Munson	Tex.	****	***	up	****	***	****	ov	v	****	****
36	Linn	La. V.	Lindley X Martha	P. B. Crandall	N. Y., 1890	****	***	up	****	***	****	r	g.am	****	****
37	Mario Louise	La. V. ?	Seedling of Concord ?	Theophile Huber	Ill., 1880	****	***	up	****	***	****	ov.r	g	****	****
38	Martha	La. V. ?	Seedling of Concord	S. Miller	Mo., 1864	****	***	up	****	***	****	r	g.am	****	****
39	Maxatawny 9	La. V.	Seedling of Concord		Pa., 1843	****	***	re	****	***	****	ov.r	am	****	****
40	Missouri Riesling	Ri. La.	Seedling of Taylor	Nicholas Grein	Mo., 1870	****	***	up	****	***	****	ov.r	g.am	****	****
41	Niagara	La. V.	Concord X Cassady	Hoag and Clarke	N. Y., 1872	****	***	up	****	***	****	ov.r	am	****	****
42	Noad	Ri. La.	Seedling of Taylor	Ohio W.asser	Ill., 1873	****	***	up	****	***	****	ov.r	am	****	****
43	Old Gold	Ri. La. V.	Elvira X Brighton	T. V. Munson	Tex.	****	*	re	****	*	****	r	am	**	****
44	Oliva	La. V. Ba.	Delaware X Irving		Tex., 1898	****	***	up	****	***	****	r	g.am	**	****
45	Ollatoo	La. V. Li	Arimlong X Excelsior		Tex., 1896	****	*	up	****	*	****	r	g	**	****

Characteristics—Continued

Variety	Toughness of flesh	Color of juice	Brush		Seeds		Persistence	Resistance to insect injury and cracking	Flavor ⁶	Dessert quality	Lateness of ripening	Apparent region of adaptation ⁷	Sugar content	Acidity	Apparent value ⁸	Remarks
			Length	Color ⁵	Number	Size										
20 Gold Dust	*	Clear	*	Y	2-4	***	****	s	**	**	c-sc	---	---	n	Small and unattractive.	
21 Golden Drop	*	do	*	Y	1-2	***	****	s	****	***	nc-s	---	---	n	Too small in cluster and berry.	
22 Golden Grain	**	do	*	Y	2-3	**	***	m.s.a	**	***	c-s	---	---	n	Poor color; small; seedy.	
23 Golden Muscat	*	do	****	Y	2-3	**	****	s.sp	****	***	c-nc	---	---	h,m,d	Promising for trial. A new variety.	
24 Governor Ross	*	do	***	Y	1-2	**	***	f.s.a	***	***	nc-sc	---	---	n	Not attractive; handles poorly.	
25 Green Golden	***	do	****	Y	2-4	***	****	s.a	***	***	nc-sc	---	---	n	Poor producer; shatters.	
26 Charles A. Green	**	do	***	Y	2-4	***	****	s.sp	***	***	nc-sc	---	---	h,m,d	Similar to Niagara, but not quite so good.	
27 Green Early	**	do	**	Y	2-4	***	****	s.ar	***	***	nc-c	---	---	n	Inferior to Ontario and Portland.	
28 Hidalgo	*	do	**	Y	1-3	***	****	s.ar	***	***	sc-s	---	---	h,m,d,w	A good variety; worthy of wider trial.	
29 Jessica	*	do	**	Y,r	2-3	***	****	s.sp	***	***	nc-c	---	---	n	Small; unattractive.	
30 Kensington ⁹	**	do	***	g	2-3	***	****	s.ar	***	***	nc-c	---	---	n	Do.	
31 Krause	**	do	***	g	2-3	***	****	s.sp	***	***	c-s	---	---	h,w	Excellent producer; tends to shatter and crack.	
32 Lady ⁹	**	do	***	Y,r	2-3	***	****	s.ar	***	***	nc-c	---	---	n	Good quality, but vine is weak; fruit cracks.	
33 Lady Washington	**	do	*	g	2-3	**	***	m.s.a	***	***	nc-c	---	---	n	Productive; quality only fair; cracks.	
34 Lightfoot	**	do	**	Y	2-4	***	****	s.sp	***	***	nc	---	---	n	Fairly good, but not outstanding.	
35 Lindmar	***	do	*	Y	1-2	***	****	s.sp	***	***	nc-c	---	---	n	Unattractive; quality rather poor.	
36 Linn	***	do	*	g	2-5	***	****	f.s.a	*	---	nc	---	---	n	Do.	
37 Marie Louise	***	do	*	g	2-5	***	****	s.sp	***	---	nc-sc	---	---	n	Unattractive; quality only fair.	
38 Martha	****	do	**	Y	1-4	***	****	f.s.a	***	***	nc-sc	---	---	n	Makes good wine, but lacks productiveness.	
39 Maxatawny ⁹	****	do	**	Y	1-4	***	****	f.s.a	***	***	nc-sc	---	---	n	Lacks productiveness and attractiveness.	
40 Missouri Riesling	**	do	***	Y	1-3	***	****	s.a.sp	**	***	nc-sc	---	---	n	Good for wine, but lacks productiveness.	
41 Niagara	****	do	***	Y	1-4	***	****	f.s.a	****	***	nc-sc	---	---	h,m,d	The standard midseason white dessert grape.	
42 Noh	****	do	**	Y	1-3	***	****	m.a.sp	***	***	nc-c	---	---	w	A good wine variety; tart for dessert.	
43 Old Gold	**	do	***	Y	2-5	***	****	s.a.sp	*	---	nc-sc	---	---	n	Poor producer; of poor quality.	
44 Ollata	**	do	*	Y	2-5	***	****	s.ar	***	***	c-sc	---	---	n	Possibly of value for wine.	
45 Ollataoo	***	do	***	Y	2-5	***	****	s.a	**	***	c-sc	---	---	n	No apparent value.	

TABLE 1.—*Descriptions of American white grape varieties—Continued*

[Headings are largely on a comparative basis. Where asterisks (*) are used to indicate relative values, ***** indicates the maximum condition, *** the average, and * the minimum for the particular character indicated.]

No.	Variety	Probable species percentage ¹	Varietal percentage	Originator	State and date of origin	Vigor of vine	Resistance to spray injury	Stamens ²	Productiveness	Clusters				Berry			Skin	
										Size	Compactness	Size	Shape ³	Color ⁴	Attractiveness	Thickness	Toughness	
46	Ontario	La. V.	Winchell × Diamond	N. Y. Expt. Sta.	N. Y., 1908	***	***	up	****	***	***	r	g.am	***	***	***	***	
47	Pearl	Ri. La.	Seedling of Taylor	J. Rommel	Mo.	****	***	up	****	***	***	r	g.am	***	***	***	***	
48	Pocklington *	La.	Seedling of Concord	John Pocklington	N. Y., 1870	***	---	up	***	---	---	r	g.am	****	****	****	****	
49	Portland	La. V.	Champion × Latic	N. Y. Expt. Sta.	N. Y., 1912	***	***	up	***	***	***	r	g.am	****	****	****	****	
50	Rebecca	La. V.	Accidental seedling	E. M. Peak	N. Y., 1896	***	***	up	****	***	***	r	g.am	****	****	****	****	
51	Ripley	La. V. A.	Winchell × Diamond	N. Y. Expt. Sta.	N. Y., 1912	****	****	up	****	****	****	ov.r	g.am	****	****	****	****	
52	Rommel	Ri. La. V.	Elvira × Triumph	N. Y. Expt. Sta.	N. Y., 1912	****	***	up	****	****	****	r	g	****	****	****	****	
53	Ronaldo	Ri. La. V.	Arluino × Mahaga	T. V. Munson	Tex., 1885	****	***	up	****	****	****	r	g	****	****	****	****	
54	Rustler	La. V.	Lindley × Martha	do	do	****	***	up	****	****	****	r	g	****	****	****	****	
55	Shelby	La. Ri.	(1)	D. S. Marvin	Tex., 1888	****	****	re	***	***	***	r	g	****	****	****	****	
56	Taylor ⁹	Ri. La.	(1)	N. Y., 1880	N. Y., 1880	****	---	re	*	*	*	r	g.am	****	****	****	****	
57	Triumph	Ri. La.	Concord × Chasselas Musque	Mr. Cobb	N. Y., 1840	****	---	re	*	*	*	ov	g.am	****	****	****	****	
58	Uhlend	Ri. La.	Seedling of Taylor	G. W. Campbell	Ky., 1853	****	---	up	****	****	****	ov.r	g	****	****	****	****	
59	Vesta	La. V.	Seedling of Salem	Wm. Weidmeyer	Mo.	****	---	up	***	***	***	ov.r	g	****	****	****	****	
60	Wapanuka	Ri. La. V.	Rommel × Brilliant	C. Engle	Mich.	****	---	re	***	***	***	r.ob	g	****	****	****	****	
61	Wetumka	Ba. La. V. Ri.	Elvira-Herbemont-Gold Coin	T. V. Munson	Tex., 1893	****	---	up	***	***	***	r	g.am	****	****	****	****	
62	Wilding	Ba. Ri. La.	(2)	do	do	****	*	up	****	****	****	r.ob	g	****	****	****	****	
63	Winchell	La. V. A.	(2)	J. Rommel	Mo.	****	---	re	***	***	***	r.ob	g	****	****	****	****	
				J. M. Cough	Vt., 1885	****	---	up	****	****	****	r	g.am	****	****	****	****	

Characteristics—Continued

No.	Variety	Toughness of flesh	Color of juice	Brush		Seeds		Persistence	Resistance to insect injury and cracking	Flavor ⁶	Dessert quality	Lateness of ripening	Apparent region of adaptation ⁷	Sugar content	Acidity	Apparent value ⁸	Remarks
				Length	Color ³	Number	Size										
46	Ontario	**	do	*	A	**	1-3	***	****	s.ar	****	*	nc-sc	*****	*	h,m,d,w	A valuable early general-purpose and wine variety.
47	Pearl	**	do	***	A	**	1-3	**	*	s.sp	**	***	nc-sc	**	**	n	A heavy producer, but shatters and cracks badly.
48	Pocklington ⁹	****	do	*	A	***	4-6	***	***	f,s.ar	***	***	nc-c	**	**	n	A fairly good grape, but is now surpassed by others.
49	Portland	***	do	****	V	***	3-4	****	****	f,s.a	****	*	nc-c	***	**	h,m,d	An excellent early dessert variety.
50	Rebecca	***	do	****	V	***	3-4	****	****	m,f,s	****	***	nc	*	*	n	Small; vine weak; quality good.
51	Ripley	**	do	***	V	***	3-4	****	****	s.ar	****	***	nc-sc	***	*	n	A new variety that deserves wide testing.
52	Rommel	**	do	***	V	***	1-3	*	***	s.a	***	***	c-sc	*	*	n	Productive, but cracks and shatters badly.
53	Romaldo	***	do	**	g,y	***	2-4	****	****	s,a,sp	**	***	c-sc	***	***	w	Promising for trial for wine.
54	Rusler	****	do	do	do	***	2-4	****	****	m,s	*	***	nc	***	**	n	Poor producer; unattractive.
55	Shelby	****	do	*	g,y	***	**	****	****	m,s	***	***	nc-sc	---	---	n	No outstanding merit.
56	Taylor ¹⁰	***	do	***	do	***	**	****	***	s.sp	***	***	nc	---	---	n	Used for wine, but lacks productiveness.
57	Triumph	***	do	***	g	***	1-5	****	***	s.ar	***	***	nc	---	---	n	A fairly good grape; not outstanding.
58	Upland	***	do	*	y	***	1-2	***	*	m,s	***	***	nc	---	---	n	Cracks very badly.
59	Vespa	***	do	do	y	***	1-2	***	**	f,f,sp	***	***	nc-sc	---	---	n	Poor producer; shatters.
60	Wapanauka	***	do	*	y	***	2-4	**	*	s.sp	***	***	c-sc	---	---	h,d	Recommended for dry sections only, on account of cracking.
61	Wetuka	***	do	do	do	***	2-4	***	**	m,s	**	***	c-sc	---	---	n	Quality too poor to recommend.
62	Wilding	***	do	*	g	***	1-4	***	***	m,s	**	***	nc	---	---	n	Do.
63	Winchell	***	do	do	do	***	1-4	***	***	s.sp	***	***	c-sc	---	---	w	Too small for dessert; old wine variety.

¹ La = *V. labrusca*, V = *V. vinifera*, A = *V. aestivalis*, Ri = *V. riparia (ulmifolia)*, Ba = *V. aestivalis* var. *haurquiniana*, Li = *V. tinicola*, and Ru = *V. rupestris*.
² up = upright, and re = reflex.
³ r = round, ov = oval, ob = oblate, ov-r = oval to round, and r-ob = round to oblate.
⁴ am = amber, g = green, lg = light green, g-am = green to amber, and y = yellow.
⁵ y = yellow, g = green, g-b = green and brown, y-r = yellow and red, and g-y = green and yellow.
⁶ a = acid, ar = aromatic, f = foxy, m = mild, s = sweet, and sp = sprightly.
⁷ nc = north, central, c = central, sc = south, central, and s = south.
⁸ b = home, d = dessert, m = market, w = wine, and n = none.
⁹ Not fully tested at Arlington Experiment Farm; the information was obtained from other sources.
¹⁰ Found on place of George J. Magee.
¹¹ Wild seedling found by G. Mr. Cobb.
¹² Chance seedling found by J. Kimmel.

TABLE 2.—*Descriptions of American red grape varieties*

[Ratings are largely on a comparative basis. Where asterisks (*) are used to indicate relative values; +++++ indicates the maximum condition, *** the average, and * the minimum for the particular character indicated.]

No.	Variety	Probable species parentage 1	Originator	State and date of origin	Characteristics										
					Vigor of vine	Resistance to spray injury	Stamens 2	Productiveness	Size	Compactness	Shape 3	Color 4	Attractiveness	Thickness	Toughness
1	Agawam	La. V.	Chicot × Black Hamburg.	Mass., 1885.	++++	++++	up	+++	+++	+++	+++	ov.r	ml.r	+++	+++
2	Alexander Winter.	La. V.	R. S. Alexander	Ohio, 1884.	+++	++++	re	*	+++	+++	+++	ov.r	ml.r	++	+++
3	Alice	La. A. V. (?) La. R. V.	W. D. Gunn	N. Y., 1884.	+++	++++	up	+++	+++	++++	+++	r	p	+++	++++
4	Amber Queen	La. R. V.	N. B. White	Mass., 1870.	+++	++++	re	+	+++	+++	+++	ov.r	ml.r	++	++++
5	Amerhonte	Ba. L. R.	America × Herbeumont	Tex.	+++	*	up	+++	+++	+++	+++	r	m	+++	+++
6	Arkansaw	La. V.	Unknown	Ark., 1863	++++	++++	up	+++	+++	+++	+++	r	ml.r	+++	+++
7	Atoka	La. R. V. La. R. L.	America × Delaware.	Tex., 1863	++++	++++	up	++++	++++	++++	++++	r	m	++++	++++
8	Berekmans	Ri. La. Ba.	Delaware × Clinton	S. C., 1871	+++	+++	up	+++	+++	+++	+++	r	ml.r	+++	+++
9	Bride	La. V. Ba.	Brighton × Delaware	Ark.	+++	+++	up	+++	+++	+++	+++	r	ml.r	+++	+++
10	Brighton	La. V.	Diana Hamburg × Concord.	N. Y., 1872.	+++	+++	re	+++	+++	+++	+++	ov.r	m	+++	+++
11	Brilliant	La. V. Ba.	Lindley × Delaware	Tex., 1883	**	+++	up	+++	+++	+++	+++	ov.r	ml.r	+++	+++
12	Brilliant Seedling.	La. V. Ba.	Seedling of Brilliant.	Mo., 1863.	++++	*	up	++++	+++	+++	+++	r.ob	m	+++	*
13	Caco	La. V.	Catawba × Concord 10	N. J.	++++	++++	up	+++	+++	+++	+++	r	ml.r	+++	+++
14	Captivator	La. V. Ba.	Herbert × Meladel	Tex., 1902	++++	++++	up	+++	+++	+++	+++	r	ml.r	++++	+++
15	Catawba	La. V.	Unknown 11	D. C., 1823	+++	++++	up	+++	+++	+++	+++	ov.r	m	+++	+++
16	Cayuga	La. V.	Seedling of Adirondac	N. Y., 1886	+++	++++	up	+++	+++	+++	+++	r	m	+++	+++
17	Challenge	La. V.	Concord × Royal Muscadine.	N. J., 1860	++++	+++	up	*	+++	+++	+++	r	r	+	+++
18	Chicago	La.	Chance seedling 12	Ill.	+++	++++	up	+++	+++	++++	+++	ov.r	m	+++	+++
19	Cochee	La. Ba.	John Burr	Kans., 1887	++++	++++	up	+++	+++	+++	+++	ov.r	ml.r	+++	+++
20	Columbian Imperial.	La. R.	J. S. McKinley	Ohio, 1885	++++	++++	up	+++	+++	+++	+++	r	ml.r	+++	+++
21	Delaware	La. V. Ba.	A. Thompson	Ohio, 1849	**	*	up	+++	+++	++++	+++	r	ml.r	+++	+++

Characteristics—Continued

No.	Variety	Toughness of flesh		Color of juice	Brush		Seeds		Persistence	Resistance to insect injury and cracking	Flavor ⁶	Dessert quality	Lateness of ripening	Apparent region of adaptation ⁷	Sugar content	Acidity	Apparent value ⁸	Remarks
		Length	Color ⁵		Number	Size												
1	Agawam	***	Clear	**	y	2-5	****	****	****	****	s.a.r.f	****	***	nc-sc	***	***	h.d.m.d	Excellent except uncertainty in production. Poor producer; not attractive.
2	Alexander	***	do	**	r	2-3	****	****	****	****	s.a.r	***	***	nc-sc	***	***	n	Good quality and productive; may not color well. Poor producer; not attractive.
3	Winter	***	do	***	y	2-3	****	****	****	****	s.m.f	****	***	nc-sc	**	**	h.d	Promising for wine; too small for other use. Attractive; extremely foxy in flavor.
4	Amber Queen	**	do	***	y	1-2	****	****	****	****	s.a.r	****	***	nc-sc	*	*	w	Very promising wine type. Less attractive, more tart than Delaware.
5	Amerbonite	**	do	*	r	1-3	****	*	****	****	s.a.r.f	**	***	c-sc	*	*	h.d	A promising variety; tends to overbear. Excellent quality but lacks productiveness.
6	Arkansaw	**	do	***	r	1-3	****	****	****	****	s.a.r	****	***	nc-sc	***	***	w	Very good quality; vine not strong; loses foliage. Productive; good quality; fruit very tender.
7	Atlanta	**	do	***	r	3-4	****	****	****	****	s.a.r.sp	****	***	nc-sc	***	***	h.w	Very promising; does not always color well. Promising; early; does not always color well. The standard champagne wine variety.
8	Berkmans	**	do	***	r	1-4	****	****	****	****	s.a.r.sp	****	***	nc-sc	***	***	w	Very variable in yield and attractiveness. Poor producer; unattractive.
9	Bride	**	do	***	r	2-3	****	****	****	****	s.a.sp	****	***	nc-sc	***	***	n	Extremely foxy in flavor.
10	Brighton	**	do	***	r	1-5	****	****	****	****	s.a.r	****	***	nc-sc	***	***	n	Very productive; of good quality.
11	Brilliant	**	do	***	r	1-5	****	****	****	****	s.s	****	***	nc-sc	***	***	h.d	Extremely large berries, but of poor quality.
12	Brilliant Seedling	**	do	**	r	2-4	****	****	****	****	s.sp	***	***	nc-sc	*	*	h.d.w	The standard of quality; fruit small; vine not strong.
13	Caco	***	do	***	y	2-3	****	****	****	****	s.a.r	****	***	nc-sc	**	**	h.d.m.d	
14	Capivator	**	do	***	g	1-4	****	****	****	****	s.a.sp	****	***	nc-sc	***	***	h.d.m.d	
15	Catawba	**	do	***	g	1-3	****	****	****	****	s.a.r.sp	****	***	nc-c	***	***	w	
16	Cayuga	**	do	****	y	1-3	****	****	****	****	a.s.a.r	***	**	nc-c	---	---	n	
17	Challenge	***	do	***	r	**	****	****	****	****	s.a.sp	**	***	nc-sc	---	---	n	
18	Chicago	***	do	***	y	3-4	****	****	****	****	f.s	**	***	nc-sc	---	---	n	
19	Cochee	***	do	***	g	**	****	****	****	****	s.a.r	**	***	nc-sc	---	---	h.d.w	
20	Columbian Imperial	***	do	***	g	****	****	****	****	****	s.a	*	***	nc-sc	---	---	w	
21	Delaware	**	do	**	y	1-4	****	****	****	****	s.a.r.sp	****	***	nc-s	****	**	h.d.m.d	

TABLE 2.—*Descriptions of American red grape varieties—Continued*

[Ratings are largely on a comparative basis. Where asterisks (*) are used to indicate relative values, **** indicates the maximum condition, *** the average, and * the minimum. Resistance to spray is indicated by the number of asterisks, and vigor of vine by the number of dots.]

No.	Variety	Probable species parentage 1	Varietal parentage	Originator	State and date of origin	Characteristics									
						Vigor of vine	Resistance to spray	Stamens 2	Productiveness	Size	Compactness	Size	Shape 3	Color 4	Attractiveness
22	Delawba	La. V. Ba.	Delaware X Catawba	Dr. Chisholm	Tenn., 1890	****	****	up	**	***	***	ov.r	p	**	****
23	Diana	La. V.	Seedling of Catawba	Mrs. Diana Crehore	Mass., 1844	****	****	up	****	****	****	ov.r	p	***	****
24	Dracut Amber	La.	Brighton X Jefferson	A. Clement	Mass., 1855	****	****	up	**	***	***	ov	m	***	***
25	Dunkirk	La. V.	Armlong X Malaga	N. Y. Expt. Sta.	N. Y., 1920	****	****	up	****	****	****	ov.r	r	***	***
26	Ellen Scott	Lj. La. V.	Carter X White Chasse-las	T. V. Munson	Tex., 1902	****	****	up	****	****	****	ov.r	r	****	****
27	Gaertner	La. V.	Carter X White Chasse-las	E. S. Rogers	Mass., 1855	****	****	re	****	****	****	ov.r	p	****	****
28	Goethe	La. V.	Carter X Black Hamburg	do	do	****	****	up	****	****	****	ov.r	p	****	****
29	Golf	La. V. A. (?)	do	do	do	****	****	up	****	****	****	ov.r	p	****	****
30	Headlight	V. La. Ba.	Moyer X Brilliant	N. Y. Expt. Sta.	N. Y., 1898	****	****	up	****	****	****	rob	r	****	****
31	Herbmont	Ba	Unknown	T. V. Munson	Tex., 1895	****	****	re	****	****	****	r	m	****	****
32	Iona	La. V.	Seedling of Diana	C. W. Grant	1798	****	****	up	****	****	****	ov.r	r	****	****
33	Jefferson	La. V.	Concord X Iona	N. Y., 1855	N. Y., 1879	****	****	up	****	****	****	ov.r	p.r	****	****
34	Lindley	La. V.	Carter X White Chasse-las	E. S. Rogers	Mass., 1855	****	****	re	****	****	****	ov.r	m.r	****	****
35	Lucile	La.	do	J. A. Putnam	N. Y., 1890	****	****	up	****	****	****	ov.r	r	**	**
36	Lutie	La.	do	L. C. Chisholm	Tenn., 1885	****	****	up	****	****	****	rob	m	****	****
37	Massasoit	La. V.	Carter X Black Hamburg	E. S. Rogers	Mass., 1855	****	****	re	****	****	****	ov.r	r	****	****
38	Moyer	V. La. Ba.	Delaware X Miller Burgundy	W. H. Reed	Ontario, 1880	****	****	re	****	****	****	r	m.r	****	****
39	Norfolk	La. V.	V. labrusca X Black Hamburg	N. B. White	Mass., 1872	****	****	up	****	****	****	ov.r	m	****	****
40	Oneida	La. V.	Seedling of Merrimac	H. Thatcher	N. Y., 1875	****	****	up	*	****	****	r	m	****	****
41	Oriental	La. V.	V. labrusca (red fruited) X Black Hamburg	N. B. White	Mass., 1883	****	****	up	****	****	****	ov.r	m	****	****
42	Palmyra	La. V. (?)	do	do	do	****	****	up	****	****	****	r	r	****	****
43	Perkins	La. V.	do	J. Perkins	Mass., 1830	****	****	up	****	****	****	ov	p	*	**

No.	Variety	Characteristics—Continued											Remarks				
		Toughness of flesh	Color of juice	Brush		Seeds		Persistence	Resistance to insect injury and cracking	Flavor	Dessert quality	Lateness of ripening		Apparent region of adaptation	Sugar content	Acidity	Apparent value
				Length	Color	Number	Size										
22	Delawba	*	Clear	***	y	1-3	***	*****	*****	s	**	****	e-sc	**	*	n	Not equal to either of its parents.
23	Diana	****	do	***	g	1-3	**	****	****	s.a.sp	***	****	ne-sc	***	***	w	A productive variety; excellent for wine.
24	Dracut Amber	****	do	****	y	2-5	***	*****	*****	f.s.a	**	****	ne-sc	**	***	n	Irregular producer; very foxy.
25	Dunkirk	**	do	****	g	2-4	***	****	**	m.s.ar	****	****	ne-sc	****	***	h.d	A new variety; of some promise.
26	Ellen Scott	*	do	****	g	2-4	****	*****	*****	m.s	****	****	e-s	****	***	h.d.w.j	Productive; showy; possibly a wine type.
27	Gaertner	***	do	****	g,r	2-4	****	*****	*****	f.s.ar	****	****	ne-sc	****	***	n	Not productive; quality good.
28	Goethe	**	do	**	y	1-3	****	****	****	s.ar	****	****	ne-sc	****	**	h.d	Production only medium; color poor.
29	Gothe	**	do	**	g	1-5	****	****	****	s.ar	****	****	ne-sc	****	**	n	Very productive; quality good; berries irregular.
30	Headlight	**	do	**	r	1-3	****	****	****	s.ar	****	****	ne-sc	****	**	w	Very early, but irregular in production.
31	Herbmont	**	do	*	g,r	2-3	*	****	****	s.a.r	****	****	e-sc	****	***	w	Productive; good wine type for the South.
32	Iona	**	do	****	g	1-4	****	****	****	s.ar	****	****	ne-c	****	**	n	Vine too weak for any but best soils.
33	Jelerson	**	do	****	y	1-4	****	****	****	s.a.r	****	****	c	****	**	n	Good quality, but vine not strong.
34	Lindley	****	do	****	g,y	2-5	****	****	****	f.s.ar	****	****	ne-sc	****	**	h.d	Good quality; quality good; color poor.
35	Lindley	****	do	****	y	1-4	****	****	**	f.s.ar	****	****	ne-c	****	**	h.d	Very productive; quality good; berries irregular.
36	Latie	****	do	****	y	1-4	****	****	****	s.a.f	****	****	ne-c	****	**	h.d	Good quality; productive, but cracks badly.
37	Massasoit	****	do	****	y,r	2-4	****	****	****	s.a.f	****	****	ne-sc	****	**	n	Not attractive; strong foxy flavor.
38	Moyer	****	do	****	y,r	1-4	****	****	****	s.ar	****	****	ne-c	****	**	n	Do.
39	Norfolk	****	do	****	y,r	1-4	****	****	****	s.a.ar	****	****	nc	****	**	n	Possibly valuable for wine.
40	Onetda	****	do	****	y	1-3	****	****	****	s.ar	****	****	ne-sc	****	***	n	Vine weak; lacks productiveness.
41	Oriental	****	do	****	y,r	3-4	****	****	****	s.a.r.sp	****	****	e-sc	****	***	h.d.m.d.	Outstanding at Arlington; worthy of wider trial.
42	Palmyra	****	do	**	y	3-6	****	****	****	s.a.ar	***	***	ne-sc	*	w	n	Good quality, but lacks productiveness.
43	Perkins	**	do	*****	y	3-4	***	***	***	f.s	*	***	ne-sc	*	**	n	Low in quality; unattractive.

TABLE 2.—*Descriptions of American red grape varieties*—Continued

[Ratings are largely on a comparative basis. Where asterisks (*) are used to indicate relative values, ***** indicates the maximum condition, *** the average, and * the minimum for the particular character indicated]

No.	Variety	Probable species parentage	Varietal parentage	Originator	State and date of origin	Characteristics											
						Vigor of vine	Resistance to spray injury	Stamens	Productiveness	Size	Compactness	Size	Shape	Color	Attractiveness	Thickness	Toughness
44	Poughkeepsie.....	Ba. La. V.....	Iona X Delaware or Walter.	A. J. Caywood.....	N. Y., 1880.....	*	*****	up	***	*	****	*	r	p.r	**	**	***
45	Presly.....	Ri. La.....	Elvira X Champion	T. V. Munson.....	Tex., 1888.....	****	***	up	***	*	**	*	r	m	**	**	****
46	Red Eagle.....	La. V.....	Seedling of Black Eagle.	do.....	Tex., 1888.....	****	***	re	*	***	***	***	r	r	**	**	***
47	Requa.....	La. V.....	Carter X Black Ham- burg.	E. S. Rogers.....	Mass., 1855.....	****	****	re	**	***	***	***	r	r	***	***	***
48	Rochester ¹⁶	La. V.....	(?)	Ellwanger & Barry.	N. Y., 1867.....	****	***	up	***	****	****	***	ov	r	***	***	***
49	Ruby.....	Ri. La. V.....	Elvira X Brighton	T. V. Munson.....	Tex., 1890.....	****	***	up	***	**	***	**	r	m	***	**	***
50	Rupert.....	Li. Ru. La. V. Ba.	America X Brilliant	do.....	do.....	****	*	up	**	***	***	***	r	r	***	**	***
51	Salem.....	La. V.....	Carter X Black Ham- burg.	E. S. Rogers.....	Mass., 1855.....	***	***	re	**	****	***	****	r	m.r	****	****	****
52	Shauman.....	La. V. (?).....	Unknown	J. F. Wittel.....	Ind.....	***	****	re	**	***	**	***	r	r	***	**	***
53	St. John.....	La. V. Ba.....	Brighton X Delaware	H. B. Spencer.....	Ohio, 1890.....	**	***	re	**	***	**	***	r	r	**	**	*
54	Sunrise.....	La. V. Ba.....	Seedling of Brilliant	J. Bachman.....	Ark.....	**	***	up	***	**	**	**	r	m.r	**	*	*
55	Tonkawa.....	La. V. Ba.....	Delago X Brilliant	T. V. Munson.....	Tex., 1899.....	****	****	up	***	***	***	***	ov	m	***	***	***
56	Ulster.....	La. V. A. (?).....	Catawba X V. aesti- nalis?	A. J. Caywood.....	N. Y., 1885.....	**	****	up	***	****	****	****	ov.r	m.r	****	****	****
57	Urbana.....	La. V.....	Ross X Mills	N. Y. Expt. Sta. T. V. Munson.....	N. Y., 1912.....	***	***	up	***	****	**	****	ov.r	p.r	****	****	****
58	Valhalla.....	Ri. La. V. Ba. Ca.	Elvicaud X Brilliant	do.....	Tex., 1893.....	****	****	up	****	****	**	****	r	m.r	****	****	****
59	Vergennes.....	La. V.....	(5)	W. C. Green.....	Vt., 1874.....	****	****	up	****	****	****	****	ov.r	p	****	****	****
60	Wayne.....	La. V.....	Mills X Ontario	N. Y. Expt. Sta. S. J. Parker.....	N. Y., 1901.....	****	****	up	****	****	****	****	ov	m.r	****	****	****
61	Wyoming.....	La. V.....	(5)	do.....	N. Y., 1861.....	***	**	re	**	**	**	**	r	r	***	***	***

No.	Variety	Characteristics—Continued										Remarks					
		Toughness of flesh ¹	Color of juice	Length	Brush	Seeds	Persistence	Resistance to insect injury and cracking	Flavor ⁶	Dessert quality	Lateness of ripening		Apparent region of adaptation ⁷	Sugar content	Acidity	Apparent value ⁸	
		Clear				Number	Size										
44	Poughkeepsie	**	do	***	gr	3-4	**	****	****	s.ar	****	***	n-c-se	***	n	Vine weak; fruit not attractive. Possibly of some value for wine.	
45	Presly	do	do	***	gr	1-5	**	****	****	s.ar	****	**	n-c-se	n	Lacks productiveness; fruit not outstanding.		
46	Red Eagle	do	do	****	gr	1-5	****	****	****	f.s.ar	****	***	n-c-se	n	Quality fairly good, but lacks productiveness.		
47	Requa	do	do	****	gr	1-2	****	****	****	s.s.p.	****	****	nc	n	Fruit quality only fair.		
48	Rochester ¹⁰	do	do	*	gr	1-2	****	****	****	m.s.ar	****	****	c-se	n	Fruit definitely inferior to Delaware.		
49	Ruby	do	do	**	gr	1-2	****	****	****	s.ar	****	****	n-c-se	n	Vine weak; crop poor.		
50	Rupert	do	do	**	gr	1-6	****	****	****	s.ar	****	****	n-c-se	h,d	Quality very good, but production uncertain.		
51	Salem	do	do	**	gr	1-2	****	****	****	f.s.ar	****	****	n-c-se	n	Lacks productiveness; quality not outstanding.		
52	Shamman	do	do	**	gr	1-2	****	****	****	s.s.p.	****	****	n-c-se	n	Vine weak; production poor.		
53	St. John	do	do	**	gr	1-2	****	****	****	s	****	****	c-se	n	Fruit too tender; quality only fair.		
54	Sunrise	do	do	**	gr	2-4	****	****	****	s.ar	****	****	n-c-se	h,d,w	Heavy producer; vigorous; quality fairly good.		
55	Tunkawa	do	do	**	gr	1-6	****	****	****	f.s.ar	****	****	n-c-se	n	Vine rather weak; crop uncertain.		
56	Uster	do	do	****	gr	1-6	****	****	****	s.ar	****	****	c-se	h,d	Good quality; late; new variety; merits wide trial.		
57	Urbana	do	do	****	gr	1-2	****	****	****	s.ar	****	****	n-c-se	h,d	Quality not high enough for general usage.		
58	Vallhall	do	do	****	gr	2-3	****	****	****	s.a.s.p.	****	****	n-c-se	h,d,m,d	Vigorous; productive; late variety.		
59	Verreham	do	do	****	gr	1-5	****	****	****	f.s.ar	****	****	n-c-se	h,d	Quality very good; vines not vigorous.		
60	Wayne	do	do	****	gr	1-2	****	****	****	s.ar	****	****	n-c-se	n	An old variety of little present value.		
61	Wyoming	do	do	****	gr	1-2	****	****	****	f.s	****	****	n-c-se	n			

¹ La = *V. labrusca*, V = *V. vinifera*, A = *V. aestivalis*, Ri = *V. riparia (californica)*, Ba = *V. aestivalis* var. *bourquiniana*, Li = *V. tinctoria*, Ru = *V. rupestris*, and Ca = *V. californica*.
² up = upright, and re = reflex.
³ r = round, ov = oval, ob = oblate, ov-r = oval to round, and r-ob = round to oblate.
⁴ m = maroon, r = red, p = pink, m-r = maroon to red, and p-r = pink to red.
⁵ y = yellow, g = green, gy = green and yellow, gr = green and red, and y-r = yellow and red.
⁶ a = acid, ar = aromatic, f = foxy, m = mild, s = sweet, and sp = sprightly.
⁷ n = north central, c = central, so = south central, and s = south.
⁸ h = home, d = dessert, m = market, w = wine, n = none, and j = unfermented juice.
⁹ Chance seedling found by W. D. Gunn.
¹⁰ Introduced by J. Lovett.
¹¹ Introduced by Major Adlum.
¹² Chance seedling found by F. L. Rautenberg.
¹³ Introduced by A. Thompson.
¹⁴ Chance seedling found by L. C. Chisholm.
¹⁵ Accidental seedling found by J. Perkins.
¹⁶ Not fully tested at Arlington Experiment Farm; the information was obtained from other sources.
¹⁷ From a lot of mixed seedlings from Ellwanger & Barry.
¹⁸ Chance seedling found by W. C. Green.

TABLE 3.—*Descriptions of American black grape varieties*

[Ratings are largely on a comparative basis. Where asterisks (*) are used to indicate relative values, **** indicates the maximum condition, *** the average, and * the minimum for the particular character indicated]

No.	Variety	Probable species percentage 1	Varietal parentage	Originator	State and date of origin	Characteristics									
						Vigor of vine	Resistance to spray injury	Stamens 2	Productiveness	Size	Compactness	Size	Shape 3	Color 4	Attractiveness
1	Alvey	A. V.	Jaeger X Male Rupes- taris	Dr. Harvey	Md., 1885	*	***	re	*	***	**	ov	q	***	**
2	America	Li, Ru	Carler X Black Hamburg	T. V. Munson	Tex., 1885	*	***	re	*	***	***	r	b	***	**
3	Aminia 10	La, V	V. labrusca (red fruited) X Black Hamburg	E. S. Rogers	Mass., 1855	*	***	re	*	***	***	ov, r	b	***	**
4	August Giant	La, V	Black Hamburg	N. B. White	Mass., 1861	*	***	re	*	***	***	ov, r	b	***	****
5	Bacchus	Ri, La	Seedling of Clinton	J. H. Ricketts	N. Y., 1879	****	***	up	****	****	*	r	b	***	****
6	Balley	Li, La, V	Big Berry X Triumph	T. V. Munson	Tex., 1886	****	***	up	****	****	****	r	b	***	****
7	Barry 16	La, V	Carler X Black Hamburg	T. V. Munson	Mass., 1855	****	***	re	****	****	****	ov, r	b	***	****
8	Beacon	Li, La	Big Berry X Concord	E. S. Rogers	Tex., 1886	****	***	up	****	****	****	r	b	***	****
9	Beta	Ri, La, V	Carver X Concord	Louis Steller	Minn., 1881	****	***	up	****	****	****	r	b	***	****
10	Big Hope	Ri, La, V	Big Berry X Triumph	T. V. Munson	Tex., 1886	****	***	up	****	****	****	r	b	***	****
11	Black Eagle	La, V	Concord X Black Prince	S. W. Underhill	N. Y., 1866	****	***	re	*	***	****	ov, r	b	***	****
12	Black Pearl	Ri, La	Seedling of Isabella	C. Schraidt	Ohio, 1875	****	***	re	*	***	****	ov	b	***	****
13	Brown	La, V	Moore X Belvidere X Mus- cat Hamburg	G. B. Brown	N. Y., 1889	****	***	up	****	****	****	r, ob	bl	****	****
14	Campbell Early	La, V	Clinton X Black St. Peters	W. W. Campbell	Ohio, 1892	****	***	up	****	****	****	r, ob	bl	****	****
15	Canada	Ri, La, V	America X R. W. Munson	Charles Arnold	Ontario, 1860	****	***	re	****	****	****	ov, r	b	***	****
16	Captain	Li, Ru, La	Premier X Triumph	T. V. Munson	Tex., 1886	****	***	up	****	****	****	ov	b	***	****
17	Carman	Li, V, La	Unknown	do	Tex., 1883	****	***	up	****	****	****	r, ob	b	***	****
18	Caywood 50	La, V	V. champini X Worden	A. J. Caywood	N. Y., 1888	****	***	up	****	****	****	r, ob	bl	***	****
19	Champanel	Ci, La	Unknown	T. V. Munson	Tex., 1893	****	***	up	****	****	****	r	b	***	****
20	Champion	La, Ri, A	Unknown	(11)	N. Y., 1870	****	***	up	****	****	****	r	b	***	****
21	Chevener	La, Ri, A	Unknown	(11)	N. J.	****	***	up	****	****	****	ov	b	***	****
22	Clinton	Ri, La	America X R. W. Munson	T. V. Munson	N. Y., 1835	****	***	up	****	****	****	r	b	***	****
23	Cloeta	Ri, Ru, La	Seedling of wild V. labrusca	Ephraim Bull	Tex., 1902	****	***	up	****	****	****	r	b	***	****
24	Concord	La, Ru, La	Seedling of Concord	do	Mass., 1849	****	***	up	****	****	****	r	bl	****	****
25	Cottage	La	Seedling of Concord	do	Mass.	****	***	up	****	****	****	r	bl	****	****
26	Crevelling	La, V	Seedling of Concord	do	Pa., 1857	****	***	re	****	****	****	ov, r	b	***	****
27	Cunningham 16	Ba	Seedling of Concord	Jacob Cum- mings	Va., 1812	****	***	re	****	****	****	r	b	***	****

No.	Variety	Characteristics—Continued											Remarks				
		Toughness of flesh	Color of juice ⁵	Brush		Seeds		Persistence	Resistance to cracking	Flavor ⁷	Dessert quality	Lateness of ripening		Apparent region of adaptation ⁸	Sugar content	Aclidity	Apparent value ⁹
				Length	Color ⁶	Number	Size										
1	Alvey	*	d		r	3-1	***	***	***	s.a.r.sp	***	***	nc-sc		n	High quality, but vine weak and unproductive. Used for red wine, but lacks productiveness.	
2	America	**	r	*	r	2-5	***	***	***	s.a.r.sp	***	***	nc		n	Quality fairly good, but lacks productiveness.	
3	Ambria ¹⁰	**	r	*	r	2-5	***	***	***	s.a.r.sp	***	***	nc		n	High quality, but does not set good crop.	
4	August Giant	**	r	*	r	2-5	***	***	***	s.a.r.sp	***	***	nc-sc		w	Widely used for wine; severe bird damage.	
5	Bacchus	**	d	*	r	3-4	***	***	***	s.a	***	***	sc-s		h.m.d	Attractive grape; productive; quality fairly good.	
6	Bailey	**	d	*	r	3-4	***	***	***	s.a	***	***	sc-s		n	Good quality, but fails to set well.	
7	Barry ¹⁰	**	d	*	r	1-4	***	***	***	s.a.r.sp	***	***	nc		h.m	Does well in the extreme South.	
8	Beacon	**	d	*	r	2-3	***	***	***	s.a.r.sp	***	***	nc-sc		h.w	Early; productive; hardy; one of best for the far North.	
9	Beta	**	d	*	r	2-3	***	***	***	s.a	***	***	nc		n	Quality too poor to recommend.	
10	Big Hope	**	d	*	r	2-5	***	***	***	s.a	***	***	nc		n	Lacks productiveness.	
11	Black Eagle	**	d	*	r	2-3	***	***	***	s.a.r.sp	***	***	nc		n	Do.	
12	Black Pearl	**	d	*	r	2-3	***	***	***	s.a.r.sp	***	***	nc		n	Vigorous; fairly productive, but shatters.	
13	Brown	***	d	*	r	2-4	***	***	***	l.s	***	***	nc-sc		h	An excellent variety, rather variable in productiveness.	
14	Campbell Early	***	d	*	r	1-4	***	***	***	l.s	***	***	nc-c		h.m.d		
15	Canada	***	d	*	r	3	***	***	***	a.a.r.sp	***	***	nc		w	An old wine variety.	
16	Capeau	**	d	*	r	2-3	***	***	***	s.a.r	***	***	c-sc		w	Productive; vigorous; promising for wine.	
17	Carnian	***	d	*	r	2-3	***	***	***	s.a.r.sp	***	***	c-sc		h.m.d	Well adapted to the far South.	
18	Caywood 50	***	d	*	r	2-3	***	***	***	f.s.a	***	***	nc-sc		n	Productive and vigorous, but shatters badly.	
19	Champanel	**	d	*	r	2-3	***	***	***	f.s.a	***	***	nc-sc		n	Productive, disease resistant, but of poor quality.	
20	Champion	**	d	*	r	2-1	***	***	***	f.s.a	***	***	nc-c		n	Productive; vigorous; early, but of poor quality.	
21	Clevenor	**	d	*	r	1-1	***	***	***	f.s.a	***	***	nc-sc		n	Weak; unproductive. Used for wine.	
22	Clinton	**	d	*	r	1-3	***	***	***	s.a.r.sp	***	***	nc-sc		w	Widely used for red wine.	
23	Choctaw	**	d	*	r	3-4	***	***	***	s.a.r.sp	***	***	nc-sc		h.m.d	Productive; vigorous; valuable in the South.	
24	Concord	***	d	*	r	2-4	***	***	***	s.a.r.sp	***	***	nc-sc		h.m.d.w	The standard all-purpose American variety.	
25	Cottage	***	d	*	r	1-4	***	***	***	s.a.r	***	***	nc		n	Lacks vigor and productiveness.	
26	Creveling	***	d	*	r	1-3	***	***	***	f.s.a.r	***	***	nc-sc		n	Lacks productiveness; quality fairly good	
27	Cunningham ¹⁰	**	d	*	r	2-5	***	***	***	f.s.a.r.sp	***	***	c-sc		n	Wine type, but lacks productiveness.	

No.	Variety	Characteristics—Continued											Remarks					
		Toughness of flesh		Color of juice ⁹	Brush		Seeds		Persistence	Resistance to cracking	Flavor ⁷	Dessert quality		Lateness of ripening	Apparent region of adaptation ⁵	Sugar content	Acidity	Apparent value ⁸
		***	**		***	**	***	**										
28	Cynthiana	***	1	1	1	1	1	1	***	S,ar,SP	*	***	nc	***	w	Widely used for red wine.		
29	Dakota	***	1	1	1	1	1	***	***	S,ar,SP	*	**	nc	h,w	Heavy producer; adapted in far North.			
30	Diogenes (trouthead)	**	1	1	1	1	1	***	***	S,ar,SP	*	**	nc-sc	n	Wine type, but lacks in productiveness.			
31	Downing	*	1	1	1	1	1	***	***	S,ar,SP	***	***	c	h	Quality very good; lacks productiveness.			
32	Early Concord	***	1	1	1	1	1	***	***	S,a,ar	***	***	nc-sc	h,n,d,w	Heavy producer; adapted in far North.			
33	Early Dawn	***	1	1	1	1	1	***	***	S,a,ar	***	***	nc-sc	n	Wine type, but lacks in productiveness.			
34	Early Victor	***	1	1	1	1	1	***	***	S,ar	***	***	nc-sc	n	Little if any earlier than Concord.			
35	Fallon	***	1	1	1	1	1	***	***	f,s,ar	***	***	nc-sc	h,d	Lacking in quality and productiveness.			
36	Edelrebe	**	1	1	1	1	1	***	***	S,ar	***	***	nc-sc	n	Good; moderately early.			
37	Elvibach	**	1	1	1	1	1	***	***	S,ar	***	***	nc-sc	n	Large, showy; lacks productiveness.			
38	Emerald	*	1	1	1	1	1	***	***	S,ar,SP	***	***	nc-sc	n	Lacks productiveness and attractiveness.			
39	Essex	***	1	1	1	1	1	***	***	S,ar,SP	***	***	nc-sc	n	Poor producer; vine vigorous.			
40	Fumelan	***	1	1	1	1	1	***	***	S,ar,SP	***	***	nc-sc	n	Poor producer; weak vine.			
41	Fern Munson ¹⁰	***	1	1	1	1	1	***	***	S,ar,SP	***	***	nc-sc	h,d,w	Do.			
42	Franklin	***	1	1	1	1	1	***	***	S,a	***	***	c-s	h,d	A good general-purpose variety.			
43	Frederick	***	1	1	1	1	1	***	***	S,a,f	***	***	nc-sc	h,m,d	Good quality; not a heavy producer.			
44	Harford	***	1	1	1	1	1	***	***	S,f	***	***	nc-sc	n	Used for wine, but lacks productiveness.			
45	Hartford	***	1	1	1	1	1	***	***	S,f	***	***	nc-sc	n	The most promising very early black variety.			
46	Herrmann	***	1	1	1	1	1	***	***	S,ar,SP	***	***	nc-sc	n	Shatters very badly; quality not high.			
47	Hicks	***	1	1	1	1	1	***	***	ar,SP	*	***	c-s	n	Very good quality, but uncertain producer.			
48	Highland	**	1	1	1	1	1	***	***	f,s,ar	***	***	nc-sc	h	Makes excellent wine, but lacks productiveness.			
49	Isabella	**	1	1	1	1	1	***	***	S,a,SP	***	***	nc-sc	h,d	Ripens more evenly than Concord in the South.			
50	Ives	***	1	1	1	1	1	***	***	S,a,SP	***	***	nc-sc	h,d	Vine weak; lacks productiveness; very late.			
51	Jaeger ¹⁰	***	1	1	1	1	1	***	***	S,a	*	***	nc-sc	w	One of the oldest varieties; does not ripen evenly in the South.			
52	Janeville ¹⁰	***	1	1	1	1	1	***	***	S,a,SP	***	***	nc-sc	n	An old wine variety; not productive at Arlington.			
53	Jewel ¹⁰	***	1	1	1	1	1	***	***	S,a	***	***	nc	n	Quality and attractiveness poor.			
54	Judge Miller	***	1	1	1	1	1	***	***	S,ar,SP	***	***	nc-sc	n	Possibly valuable for the far North.			
55	Kentucky	***	1	1	1	1	1	***	***	S,a,SP	*	***	nc	n	Small size; lacks productiveness.			
		***	1	1	1	1	1	***	***	h,s	*	***	c-sc	n	Weak vine, unproductive.			
		***	1	1	1	1	1	***	***		*	***		n	Lacks quality.			

TABLE 3.—*Descriptions of American black grape varieties*—Continued

[Ratings are largely on a comparative basis. Where asterisks (*) are used to indicate relative values, **** indicates the maximum condition, *** the average, and * the minimum for the particular character indicated]

Variety	Probable species percentage ¹	Varietal percentage	Originator	State and date of origin	Characteristics										
					Vigor of vine	Resistance to spray injury	Stamens ²	Productiveness	Size	Compactness	Size	Shape ³	Color ⁴	Attractiveness	Thickness
56 King ¹⁰	La. ?	Bud sport or variety of Concord.	W. K. Munson	Mich., 1892	****	---	dn	****	****	****	r	bl	****	****	**
57 King Philip	La. V. Ri		N. B. White	Mass., 1900 (?)	****	***	re	*	****	****	ov	b	**	****	****
58 Kiowa	La. Ba	Jaeger 43 X Herbermont	T. V. Minson	Tex., 1893	****	---	re	***	****	****	r	bl	**	****	****
59 Kline	La. Ba		A. C. Thompson	N. J.	****	*	up	***	****	****	r	bl	**	****	****
60 Lenoir	Ba				****	---	up	***	****	****	r	bl	****	****	****
61 Little Blue	La. V. A		A. J. Caywood	N. Y., 1888	****	****	re	***	****	****	r	bl	**	****	****
62 Livingston	La. V. Ba	Seedling of Wilder or Ammia	C. J. Wheaton	N. Y.	****	****	up	***	****	****	r	bl	**	****	****
63 Lomanto	Ch. La. V. Ba	Sahado X Pense	T. V. Minson	Tex., 1902	****	****	up	****	****	****	r	b	****	****	****
64 Loreda	La. La	Seedling of Neosho	Max Zallner	Kans.	****	****	up	****	****	****	r	bl	****	****	****
65 Louisiana	Ba		M. Tyeard	La.	****	****	up	****	****	****	r	bl	**	****	****
66 Mahel	La. V. Ba	Seedling of Walker	A. J. Caywood	N. Y.	****	****	up	****	****	****	r	bl	****	****	****
67 Mantio	La. Ru. La. Ba	America X Brilliant	T. V. Minson	Tex.	****	****	up	****	****	****	r	bl	**	****	****
68 Marguerite	La. Ba	Secund X Herbermont	do	Tex.	****	*	up	****	****	****	r	b	****	****	****
69 Marion	Ri. La		Mr. Shephard	Ohio	****	****	re	****	****	****	r	b	****	****	****
70 Mary Favorite	La. V. Ba			Ind., 1889	****	****	up	****	****	****	r	b	****	****	****
71 McPike ¹⁰	La. (?)	Seedling of Warden	H. G. McPike	Ill., 1890	****	---	up	***	****	****	r	b	****	****	****
72 Mercedel	La. Ru. La. Ba	America X Delaware	T. V. Minson	Tex., 1898	****	---	up	****	****	****	r	b	****	****	****
73 Merrimac	La. V. Ba	Cartier X White Chasselas	E. S. Rogers	Mass., 1855	****	---	re	****	****	****	ov	b	****	****	****
74 Mills	V. La	Muscat Hamburg X Creveling	Wm. H. Mills	Ontario, 1870	****	---	up	****	****	****	r	b	****	****	****
75 Montefiore	Ri. La. V	Taylor X Ives	Jacob Rommel	Mo.	****	---	up	****	****	****	ov	b	****	****	****
76 Moore Early	La. Ba	Seedling of Concord	J. B. Moore	Mass., 1871	****	---	up	****	****	****	r	b	****	****	****
77 Mouch	La. Ba	Neosho X Herbermont	T. V. Minson	Tex., 1886	****	---	up	****	****	****	r	b	****	****	****
78 Nectar	La. V. Ba	Concord X Delaware	A. J. Caywood	N. Y., 1880	****	---	up	****	****	****	r	b	****	****	****
79 Never Minson	La. Ba	Neosho X Herbermont	T. V. Minson	Tex., 1886	****	*	up	****	****	****	r	b	****	****	****

Characteristics—Continued

No.	Variety	Toughness of flesh		Color of juice		Brush		Seeds		Persistence	Resistance to cracking	Flavor	Dessert quality	Lateness of ripening	Apparent region of adaptation	Sugar content	Acidity	Apparent value	Remarks
		Color	Length	Color	Number	Size	Length	Number											
56	King ¹⁰	***	***	l ²	1-3	****	***	s.a.f	****	***	ne-c	***	h,m,d					Large showy variety; quality fairly good. A large excellent quality grape; lacks productive-ness.	
57	King Philip	*	***	l ²	1-3	****	y	s.a.r	****	****	ne-c	****	n					Lacks size, attractiveness, and productiveness. No apparent value.	
58	Kiowa	*	***	l ²	3-4	****	r,g	s.a.r	****	****	c-sc	**	n					Widely used for red wine; tender in the North.	
59	Kline	**	***	l ²	2-3	****	r	s.a.s	****	****	c-sc	***	w					Tendency to crack and shatter.	
60	Lenoir	*	***	r	2-3	****	r	s.a	****	****	c-sc	***	w					Fruit small; production rather poor.	
61	Little Blue	*	***	r	1-2	****	r	s.a.r	****	****	ne-sc	***	n					Promising for red wine.	
62	Livingston	***	***	r	2-5	****	r	s.a.r	****	****	ne-sc	***	w					Heavy wine grape; not hardy in the North.	
63	Lomanto	****	***	l ²	1-3	****	y	s.p	****	****	ne-sc	***	w					Of no apparent value.	
64	Loretto	****	***	l ²	2-5	****	r	s.p	****	****	c-sc	***	w					Vigorous; productive; fruit highly aromatic.	
65	Louisiana	**	***	l ²	2-5	****	r	s.a.r	****	****	ne-c	***	w					Productive white wine type; subject to diseases.	
66	Mabel	**	***	l ²	1-3	****	y,r	m,s	****	****	ne-c	***	h,w					Lacks productiveness.	
67	Manito	****	***	l ²	2-4	****	r	s.a.r	****	****	ne-c	***	n					Productive; promising for wine.	
68	Marguerite	****	***	l ²	1-3	****	r	s.a.s	****	****	ne-sc	***	w					Very large, but shatters and cracks.	
69	Marion	****	***	l ²	1-5	****	y	s.a.s	****	****	ne-sc	***	n					Promising for trial for wine.	
70	Mary Favorite	****	***	l ²	2-5	****	r	s.a.s	****	****	ne-sc	***	w					Good quality; not a heavy producer.	
71	McPike	****	***	l ²	1-4	****	r	s	****	****	ne-c	***	h,d					Probably good wine type, but lacks productive-ness.	
72	Mercedel	****	***	l ²	3-4	****	r	s.p	****	****	ne-sc	***	n					An old standard variety, but others now surpass it.	
73	Merrimac	****	***	l ²	2-5	****	r	s.a.r	****	****	ne-sc	***	w					Vigorous; disease resistant; adapted to the South.	
74	Mills	****	***	l ²	1-3	****	r	s.p	****	****	ne-c	***	n					Not equal to Concord; in same season.	
75	Montefiore	**	***	l ²	3-4	****	r,g	s.a.r	****	****	ne-sc	***	h,d					A vigorous, productive wine variety; too late for the North.	
76	Moore Early	****	***	l ²	2-4	****	r,g	f.s.a.r	****	****	ne-sc	**	n						
77	Muendi	****	***	l ²	1-3	****	r,g	s.a.r	****	****	ne-c	**	n						
78	Nectar	****	***	l ²	2-4	****	y	s.p	****	****	ne-c	***	w						
79	Neva Munson	**	***	l ²	2-4	****	r	s.a.s	****	****	c-s	*	w						

TABLE 3.—*Descriptions of American black grape varieties*—Continued

[Ratings are largely on a comparative basis. Where asterisks (*) are used to indicate relative values, ***** indicates the maximum condition, *** the average, and * the minimum for the particular character indicated.]

Variety	Probable species percentage ¹	Varietal parentage	Originator	State and date of origin	Vigor of vine	Resistance to spray injury	Stamens ²	Productiveness	Characteristics							
									Clusters	Berry		Skin				
									Size	Compactness	Size	Shape ³	Color ⁴	Attractiveness	Thickness	Toughness
80 Nitotal	Ci. La. V.	Salado X Pense	T. V. Munson	Tex., 1902	*****	*****	th	*****	***	***	***	r.ob	b	***	***	***
81 Norton	A. La.	Concord X Black Hamburg	Dr. Norton	Va., 1830	*****	*	up	*****	**	**	**	r.ob	b	***	***	***
82 Norwood	La. V.	Clinton X Black Hamburg	N. B. White	Mass., 1880	*****	*****	re	*****	***	***	***	ov.t	b	***	***	***
83 Othello ¹⁰	Ri. V. La	Clinton X Black Hamburg	Chas. Arnold	Ontario, 1859	*****	*****	up	*****	***	***	***	ov.t	b	***	***	***
84 Paradox	La. V.	Hartford X Iona	J. H. Ricketts	N. Y.	*	*****	up	*****	***	***	***	ov	b	***	***	***
85 Peabody	La.	Seedling of Clinton	John Burr	Kans.	*****	*****	up	*****	***	***	***	r	b	***	***	***
86 Pierce	Ri. La	Sport of Isabella	J. H. Ricketts	N. Y., 1870	*****	*****	up	*****	***	***	***	ov.t	b	***	***	***
87 President	La. V.	Seedling of Herbert	J. P. Pierce	Calif., 1882	*****	*****	up	*****	***	***	***	ov	b	***	***	***
88 R. W. Munson	La. V.	Big Berry X Post Oak	T. V. Munson	Tex., 1900	*****	*****	up	*****	***	***	***	r.ob	bl	***	***	***
89 Roekwood	Li. La. V	Seedling of Concord	do	Tex., 1886	*****	*****	up	*****	***	***	***	r	bl	***	***	***
90 Secretary	Ri. La. V	Clinton X Muscat Hamburg	F. Bull	Mass., 1889	*****	*****	up	*****	**	**	**	ov	b	***	***	***
91 Sheridan	La. V	Herbert X Worden	J. H. Ricketts	N. Y., 1867	*****	*****	up	*****	***	***	***	r	bl	***	***	***
92 Snelton	Ri. La.	Carver X Concord	N. Y. Expt. Sta	N. Y., 1921	*****	*****	up	*****	**	**	**	r	bl	***	***	***
93 Wadtel	La. V	Clinton X Concord	Louis Suelter	Mich., 1881	*****	*****	re	*****	***	***	***	ov	b	***	***	***
94 Wilder	La. V	Carver X Black Hamburg	F. S. Rogers	Ohio, 1893	*****	*****	up	*****	***	***	***	ov.t	b	***	***	***
95 Wine King	A. Li. Ri	Winona X America	T. V. Munson	Mass., 1855	*****	*****	up	*****	***	***	***	ov.t	b	***	***	***
96 Worden	La	Seedling of Concord	Schuyler Worden	Tex., 1868	*****	*****	up	*****	***	***	***	r	bl	***	***	***
97				N. Y., 1863	*****	*****	up	*****	***	***	***	r	bl	***	***	***

Characteristics—Continued

No.	Variety	Toughness of flesh		Color of juice		Brush		Seeds		Persistence	Resistance to cracking	Flavor	Dessert quality	Lateness of ripening	Apparent region of adaptation	Sugar content	Acidity	Apparent value	Remarks
		1	2	Length	Color	Number	Size												
80	Niotal	**	**	l	l	**	**	**	**	****	****	a	*	****	nc-sc	**	****	w	Very highly pigmented for red wine. Widely used for red wine; does not ripen in the North.
81	Norton	**	**	l	l	**	**	**	**	****	****	s.a.sp	*	****	cs	**	****	w	Slowly; good quality, but does not set well. Of no apparent value.
82	Norwood	**	**	l	l	****	****	****	****	****	****	s.a.sp	****	****	nc-sc	---	---	h	Weak wine; quality good.
83	Orchard	**	**	l	l	**	**	**	**	****	****	s.a.sp	****	****	nc-sc	---	---	h	Weak wine; shatters; cracks.
84	Paradox	**	**	l	l	**	**	**	**	****	****	m.l.s	****	****	nc	---	---	h	Productive; good quality; early; but cracks and shatters.
85	Paragon	**	**	l	l	**	**	**	**	****	****	s.a.sp	****	****	nc	---	---	h	Vine weak; lacks productivity.
86	Peabody	**	**	l	l	**	**	**	**	****	****	s	**	****	nc-sc	---	---	h	Vigorous; productive; quality fairly good.
87	Pierce	**	**	l	l	****	****	****	****	****	****	s	**	****	nc-sc	---	---	h.m.d	Not very productive; shatters.
88	President	**	**	l	l	****	****	****	****	****	****	s.f	**	****	nc-sc	---	---	h	Vine not strong; crop light.
89	R. W. Munson	**	**	l	l	****	****	****	****	****	****	s.f	**	****	nc-sc	---	---	h	Quality excellent, but vine weak.
90	Rockwood	**	**	l	l	**	**	**	**	****	****	s.f	****	****	nc-sc	---	---	h.m.d	Lacks productiveness; small; barely.
91	Secretary	**	**	l	l	**	**	**	**	****	****	s.a.sp	****	****	nc	---	---	h	Quality only fair; of no apparent value.
92	Shortkin	**	**	l	l	**	**	**	**	****	****	s.a.r	****	****	nc	---	---	h	Productive wine; typeworthy of trial.
93	Stucler	**	**	l	l	**	**	**	**	****	****	m.s.n	****	****	nc	---	---	h	Slowly; good quality; shatters and cracks.
94	Wadler	**	**	l	l	**	**	**	**	****	****	l.s.a	****	****	nc	---	---	h	
95	Wilder	**	**	l	l	****	****	****	****	****	****	s.a.sp	****	****	nc-sc	---	---	w	
96	Wine King	**	**	l	l	****	****	****	****	****	****	s.a.sp	****	****	nc-sc	---	---	h	
97	Worden	**	**	l	l	****	****	****	****	****	****	s.a.f	****	****	nc-sc	---	---	h.d	

1 Li = *V. labrusca*, V = *V. vulpina*, A = *V. aestivalis*, Ri = *V. riparia (vulpina)*, Ba = *V. bourquiniana*, Li = *V. tinctoria*, Ri = *V. rotundifolia*, and Cl = *V. californica*.

2 sp = upright, and r = reflex.

3 r = round, ov = oval, ob = oblate, ov.r = oval to round, and r.ob = round to oblate.

4 b = black, and bl = blue.

5 cl = clear, p = pink, and r = red.

6 r = green, F = red, y = yellow, r.g = red and green, and y.r = yellow and red.

7 a = acid, ar = aromatic, f = fox, m = mild, s = sweet, and sp = sprightly.

8 n = north, nc = north central, c = central, sc = south central, and s = south.

9 n = north, d = dessert, m = market, w = wine, and n = none.

10 Not fully tested at Arlington Experiment Farm; the information was obtained from other sources.

11 Grown at Egg Harbor, N. J.
 12 Found by H. L. Howell.
 13 Introduced by F. F. Arcaron.
 14 Found in the woods in Arkansas.
 15 Found by Colonel Scott.
 16 Chance seedling found by Mr. Thorp.
 17 Found on an island in French Creek, Pa.
 18 Introduced by Henry Walls.
 19 Introduced by W. F. Wadler.
 20 Chance seedling found by J. T. Coffin.
 21 Wild seedling found by T. F. Waddell.

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