

Viticulture of Eastern North America

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The Literature Sources

The history of viticulture in the East has been the subject of numerous writings. The major ones cited below have been drawn on heavily.

One of the first comprehensive accounts is included in Liberty Hyde Bailey's Sketch of the Evolution of our Native Fruits published in 1898. At the time Bailey was in his fortieth year and in his tenth year as Professor of Horticulture at Cornell. Although trained ^{as a botanist} with Asa Gray at Harvard University, Bailey published extensively on horticultural topics. In the five year period from 1895 when the Macmillan Company became his publisher he submitted eleven books including the Sketch. The first chapter comprising 126 pages is entitled The Rise of the American Grape. It contains a synopsis of the American species of grapes as well as accounts of the attempts to grow the European grape from the 16th through the 19th centuries and the development of the hybrid American grapes in the New World. Bailey looked on the American grape as essentially a table fruit, whereas the European grape is described as a wine fruit. He writes: "European writings treat of the vine, but American writings speak of grapes. This difference in names records a true unlikeness between the fruits, for a fruit which is eaten from the hand leaves the impress of itself upon the mind, but one which is crushed and passed into wine leaves only the impress of the vine and the vineyard." (Bailey, 1898, p.1)

Another very useful contribution to the understanding of the American

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grapes was published 36 years later by L. H. Bailey in *Gentes Herbarum* (Vol. III, Fasc. IV, 1934) and entitled The Species of Grapes Peculiar to North America. The reason for this paper was to complete the work begun nearly fifty years earlier on the botanical and horticultural identities of North American grapes.

Some ten years after Bailey's first contribution a monumental work was published as a Report of the New York State Agricultural Experiment Station (Geneva) for the year 1907, Part II. The title of the 10 by 12 inch volume of 564 pages was The Grapes of New York. The work was written by Ulysses P. Hedrick, then Horticulturist at the Station, with the able assistance of N. O. Booth, O. M. Taylor, Richard Wellington and M. J. Dorsey. The purpose of The Grapes of New York as noted in the preface was to record the state of development of American grapes. Included are historical narrative^Δ of the Old World and New World grapes, a description of species, and full descriptions of the varieties of American grapes important at the time. The one hundred odd color plates are outstanding in quality for the period.

T. V. Munson's Foundations of American Grape Culture was first published in 1909. Bailey (1934) describes Munson as "a nurseryman, vineyardist, and student." In 1886 Munson moved to Denison, Texas, on the bluffs of the Red River, where he engaged in notable experiments over many years in the amelioration of grapes. He traveled extensively to study and collect native species. His Foundations summarizes the work of a lifetime with wild species and derived cultivated sorts.

An interesting but more condensed account that may be more readily available to the reader is Grape Development and Improvement by Elmer Snyder, Pomologist, the United States Department of Agriculture 1937 Yearbook of Agriculture. This review deals with early history and improvements and

summarizes grape breeding program objectives in the United States and elsewhere at that time.

The standard modern reference to the American rootstocks and so-called French hybrid direct producers is Cépages et Vignobles de France, Volume I, Les Vignes Américaines by Pierre Galet (1956). This is the first of a series of 4 volumes. Volume II (1958) and volume III (1962) deal with the European (vinifera) wine varieties and volume IV (1964) with table grapes and statistics of the French viticultural industry. Galet, Head of Viticulture at the École Nationale Supérieure Agronomique at Montpellier, France, has been a very prolific writer. His condensed account, Précis d'Ampelographie Pratique, 2^e Edition, 1968, includes treatments of the major American species and the important rootstocks and hybrid direct producers. Galet's doctoral thesis presented to the Faculté des Sciences at Montpellier in 1967 is entitled Recherches sur les methodes d'identification et de classification des Vitacées des zones tempérées.

The most recent work and one of special value to those interested in wine (as well as vines) is Leon D. Adams' The Wines of America which appeared in 1973. This volume tells the story of North American wines and wine makers from the 16th century to the present. It defines the effects of the many years of prohibition of alcoholic beverages on the development of the grape industry in the various regions in the United States and the advances made since the repeal of prohibition.

The Wild Grapes of Eastern North America

The very early records of the discovery by Europeans of North America refers to vines. Snorre Sturlasen, one of the leading Icelandic historians wrote his Kongesogur about 1220. He relates that Leiv Eiriksson was sent by Olav Tryggvesson, the king of Norway, to Greenland to ^Christianize the settlers. He undertook the trip in the summer of the year 1000 and on this voyage he found Vinland the good (Vinland his^t goda) and came to Greenland in the fall.

In another source, the Saga of Eirik the Red (Islandske Aettesagaer, Gyldendal Norsk Forlag, Norway, 1973) it is recorded that one of Leiv's men called Tyrker found grape vines with fruit, that they loaded a small boat with grapes and that Leiv named the newly discovered land after the fruit and called it Vinland.

No doubt wild grapes grew in the greatest profusion in the wooded parts of North America, from the Great Lakes to the Gulf of Mexico and from Ocean to Ocean. L. H. Bailey (1898) and U. P. Hedrick (1908) cite numerous details of the presence and use of grapes by the early arrivals on the shores of North America.

The English colonists found along the coast of New England an abundance of wild vines. The Massachusetts colonists made wine of the native grapes during their first summer. The Spanish in Florida were attracted by the wild grapes. John Hawkins, an English captain on a visit to these settlements in 1565, reported that 20 hogsheads of wine had been made in a single season.

French travelers and colonists were attracted by the abundance of grapes. In 1769, French settlers at Kaskaskia in southern Illinois made 110 hogsheads of wine from wild grapes. In the Middle Atlantic States wild vines were found in abundance. Captain John Smith reported that 20 gallons of wine were made from the many wild grapes growing about the settlement at Jamestown about the year 1607-1609. In 1698 Beauchamp Plantagenet described four sorts of grapes growing wild on the Delaware River and wines made from these. Jean Pierre Purry in a description of South Carolina written in 1731 speaks of an abundance of wild grapes but that imported "Madera" was "so cheap that apparantly little if any wine was made of the native grapes."

Botanical Classification of the American Grapes

We shall attempt to present a taxonomic discussion as simply as possible without^π doing injustice to the complexity of the subject. Bailey (1934) states that the literature concerned with North American grapes and viticulture is extensive, perhaps the richest in American horticulture.

The grape belongs to the botanical family Vitaceae. The family is made up of 11 genera and about 600 species widely distributed in the tropics and sub-tropics and extending into the temperate regions. The genus of greatest economic importance, the only one containing food plants, is *Vitis*. This genus is subdivided into two subgenera, *Muscadinia* Planch. whose members have the somatic chromosome number 40 and *Eu vitis* Planch., the bunch grapes, all of whose species have 38 somatic chromosomes. The difference in chromosome numbers in the two subgenera generally results in sterile offspring when a member of one is crossed with that of the other, while within the subgen^{ne}era crosses between species are readily obtained in nature and by intention.

The botanical naming of North American Vites began with Linnaeus in his Species Plantarum, (1753), when he published two specific names Vitis Labrusca (the wild vine) of North America and Vitis vulpina (of the fox) of Virginia. Michaux, whom Bailey calls the founder of the flora of North America, in Flora Boreali-Americana, (1803), recognized Vitis Labrusca of Linnaeus and described four new species:

Vitis aestivalis (pertaining to summer) of the woodlands of Virginia and Carolina,

Vitis cordifolia, the (heart-leaved) grape found from Pennsylvania to Florida,
Vitis riparia (of river banks) in Ohio, Mississippi, etc.,
Vitis rotundifolia, the (round-leaved) grape found from Virginia to Florida.

Vitis riparia of Michaux is considered by Bailey to be the same as Linnaeus' Vitis vulpina. Both names are commonly used to refer to the same species and will be used interchangeable here.

Bailey (1934) states that these five species are acknowledged to that day as the principal forms found in the regions between the Atlantic and the Mississippi. But even in their native haunts they vary to such a degree that both scientific and nonscientific observers have never felt satisfied about identifying them.

To these five species a few forms found west of the Mississippi, in Arkansas, Oklahoma, Texas, etc., would have to be added in order to include the species that have played an important part in the origin of our cultivated grapes and grape rootstocks.

The botanists have failed to agree in their treatments. DeLattin (1939) includes 18 species of North American Euvtis in his groups. Bailey (1934) includes 28 American species. Galet (1956) states that about 20 species can be found in the United States and Mexico. Some of the confusion is due to the lack of agreement among systematic botanists and ampelographers as to what constitutes a good species, extreme variants, and hybrid forms. The species of Euvtis are fertile among themselves, intercross readily and are separated only by geographic, phenologic and ecologic barriers.

Morphological Differences Separating Species

The species involved in many of the commonly grown varieties is largely based on speculation or opinion. The nature of the foliage, habit of growth, flower and fruit characteristics and appearance of their seedlings have been used for these judgements.

The grape flower

One of the distinguishing features of the genus *Vitis* is the nature of the flower (Fig. 1). Three types of flowers are found among species, root-stocks and cultivated varieties: (1) the perfect or hermaphrodite flower with five erect stamens and a single pistil, (2) the imperfect hermaphrodite where the stamens are short, bent or reflexed, the pollen usually aborted or incapable of functioning, the pistil normal - the flower functionally female, (3) the sterile or staminate flower with normal stamens but only a rudimentary, nonfunctioning pistil, the flower functionally male. Individual plants normally have one flower type only. Perfect flowers are found on the vineyard varieties of the European grape with only rare exceptions, as 'Almeria' which is functionally female. The pure wild species of American grapes appear to consist only of staminate plants and imperfect hermaphrodites, with reflex stamens, except for rare cases, according to A. B. Stout (1921).

One of the strongest arguments for the generally accepted conclusion that 'Concord' is not pure *V. ^Llabrusca* but a hybrid with some *vinifera* background is the fact that it has perfect flowers, presumably from its *vinifera*

progenitor. Other less easily defined characteristics of the plant and fruit tend to reinforce this conclusion.

Seeds

Ripe seeds have been considered useful for identification by a number of writers. However, they may be quite variable even on the same plant, according to Hedrick (1908), who also states that "the ability to use the seed characters, however, can not readily be acquired except by the use of an illustrated manual and some experience in selecting the seeds." Bailey (1934) also points out that seeds are not invariable in a given species and that their importance in diagnosis may have been overestimated. (Fig. 2.) In some instances seeds may be very useful to separate varieties that are similar in other fruit characteristics. For example the seeds of 'Catawba' and 'Agawam', which has on occasion been labeled 'Canadian Catawba', are very different even to the eye of an untrained observer.

Diaphragm

In most *Vitis* the pith in canes is interrupted at the nodes by a partition or diaphragm. The thickness of the diaphragm may vary between plants of a species but falls into three categories according to Bailey (1934):

(1) very thin, not more than $\frac{1}{20}$ inch, in vulpina; (2) very thick, about $\frac{1}{8}$ inch in cinerea, cordifolia, coriacea, palmata, ^Ssmalliana, sola; (3) medium, between $\frac{1}{16}$ and about $\frac{1}{8}$ inch, in most of the remaining species. In the muscadines the center is more or less woody and is continuous through the nodes. (Fig. 3)

Other characters that are largely self explanatory are used in the simplified key that follows. The leaf shape and lobing may be characteristic.

(M.S. Fig. 6, 8, 9, 12, 14, 15, 16, 18, 20) Tendrils may be present or absent, small and weak or well developed, forked or not forked. (M.S. Fig. 5) Clusters may vary in size and shape. (M.S. Fig. 7, 10, 11, 13, 17, 22.) Berries vary in size and in adherence. ^{Hairiness} Hairiness of leaves, stem tips, and the length and color of the hair are also characters used.

The Species

An appreciation of the wild forms that have contributed to the plants we find in our vineyards today may help us to a better understanding of these varieties.

Different workers have grouped the North American grapes in different ways. The following grouping is that of Bailey as published in Gentes Herbarum Vol. III, Fasc. IV, 1934., The Species of Grapes Peculiar to North America. In devising a key to use in identifying species botanists ordinarily hesitate to base primary divisions on the hairiness of plant parts. However, the types of hairiness are characteristic in the genus and according to Bailey are correlated with other characters that are more difficult to express in words.

The following schema is adapted from Bailey and classifies his 28 species of North American Euvitis, the true grapes, into 5 groups. Two cultigens or cultivated forms of presumably hybrid origin but with dominant characteristics of the group are included namely, V. labruscana and V. ^Bbourquina. Common names and ranges are indicated.

Subgenus I. *Euvitis* The True Grapes, Bunch Grapes

Group	Common Name	Distribution
I. <u>Labruscoideae</u> The plush-leaved grapes		
*1. <i>Labrusca</i> L.	Fox Grape	Northeast
1a. <i>labruscana</i> Bailey	(related cultivated forms)	
2. <i>candicans</i> Engelm.	Mustang Grape	South-Central
3. <i>Shuttleworthii</i> House	Calloosa Grape	Florida
II. <u>Aestivalis</u> The colored-leaved grapes		
*4. <i>Lincecumii</i> Buckley	Post Oak Grape	Texas
*5. <i>argentifolia</i> Munson	Silver leaf Grape	Northeast
*6. <i>aestivalis</i> Michx.	Summer Grape	East-Central
6a. <i>Bourquina</i> Munson	(related cultivated forms)	
7. <i>rufotomentosa</i> Small	Redshank Grape	Florida-Louisiana
8. <i>sola</i> Bailey	Curtiss Grape	Florida
*9. <i>Simpsoni</i> Munson	Currant Grape	Florida
*10. <i>Smalliana</i> Bailey	Figleaf Grape	Florida
III. <u>Arachnoideae</u> The gray or floccose-leaved grapes		
11. <i>Champini</i> Planch.	Calcaire Grape	Texas
12. <i>californica</i> Benthham	Pacific Grape	West Coast
13. <i>Girdiana</i> Munson	Valley Grape	Southern California
14. <i>Doaniana</i> Munson	Panhandle Grape	Southwest
15. <i>arizonica</i> Engelm	Canyon Grape	Southwest
*16. <i>cinerea</i> Engelm	Grayback Grape	Central & South

IV. Cordifoliae The green or non-floccose leaved grapes with characteristically cordate-ovate leaf

17. illex Bailey	Manatee Grape	Florida
*18. cordifolia Michx.	Winter Grape	Central-Southwest
19. Baileyana Munson	Possum Grape	South-Central
*20. Berlandieri Planch.	Spanish Grape	Southwest
21. Helleri Small	Round-leaf Grape	Texas
22. palmata Vahl.	Cat Grape	Central & Southwest

V. Vulpinae The green or non-floccose leaved grapes with leaf blade not characteristically as above

*23. rupestris Scheele	Sand Grape	Central & Southwest
24. Longii Prince	Bush Grape	Southwest
25. monticola Buckley	Sweet Mountain Grape	Texas
26. Treleasei Munson	Gulch Grape	Southwest
*27. vulpina L.	Frost Grape	Northern U.S. & Canada
28. riparia Michx.		
28. novae-angliae Fernald	Pilgrim Grape	New England

Subgenus II - Muscadinia - Muscadine, Scuppernong, Bullace Grape

29. rotundifolia Michx.	Muscadine Grape	South
30. Munsoniana Simpson	Little Muscadine Grape	Florida

One or more members of each of Bailey's groups have contributed to our present variety assortment, ^{that is} to fruiting varieties, rootstock varieties, or both. The American species that have made major contributions are indicated in the ¹Schema by * and included in the ²Key. Many of the species were named to honor individuals who first called attention to the form. Where the species name is descriptive the meaning of the Latin word is indicated.

Capitalization of species is according to Bailey (1934)

Key to eastern wild grape species regarded as parents of many cultivated root-stock and cion varieties. Modified from Bailey (1934)

I. Subgenus Euvitis Planch, TRUE or BUNCH GRAPES. Bark of one-year-old cane shed as stripe^S. Pith interrupted at nodes by diaphragm. Tendrils forked. Flower clusters mostly elongated. Berries usually adhere to cluster at maturity (except sometimes in V. ^Llabrusca). Seeds pear-shaped with more or less elongated base.

Group 1. Labruscoideae, PLUSH- LEAVED GRAPES. Under surface of mature leaves entirely covered with reddish, dense, short hairs. Berries usually 15-25mm. in diameter, few (usually less than 20) in cluster.

Eastern U.S.....V. ^Llabrusca L., FOX GRAPE

Group 2. Aestivales, COLORED-LEAVED GRAPES. Under surface of mature leaves whitish or partially covered with reddish short hairs. Shoot tips red-hairy (except V. argentifolia). Berries various.

A. Berries mostly 10-25mm. in diameter on very thick pedicels, in usually large clusters. Under surface of mature leaves various, but not with prominent tufted or reddish hairs. Mississippi River and westward.....

V. ^Lincecumii Buckley, POST-OAK GRAPE

AA. Berries usually less than 10 mm. in diameter, in slender, more or less open clusters. Under surface of leaves whitish or with tufts of reddish hairs.

B. Mature leaves not deeply 3-lobed. Clusters various.

C. Upper surface of young leaves without grayish hairs.

Berries 5-12 mm. in diameter. Clusters more or less branched. Massachusetts

to Georgia (in south especially in mountains) and midwest.

D. Young stems of early growing season hairless, becoming more or less red, with conspicuous bloom on nodes. Young tendrils hairless. Under surface of leaves in early growing season whitish, usually with hairs about 1 mm. long along veins. Petiole more or less hairless, usually red and often whitish. Bunches cylindrical, not conspicuously branched...V. argentifolia Munson, SILVERLEAF GRAPE

DD. Young stems of early ^{growing} season hairy, with little or no bloom at nodes. Young tendrils mostly hairy. Under surface of leaves in growing season with prominent tufts of reddish hairs. Petiole hairy. Bunches branches...V. aestivalis Michx., SUMMER GRAPE

CC. Upper surface of young and some mature leaves with gray, webby hairs becoming mostly hairless at maturity. Berries mostly 5-6mm. in diameter, typically in long, loose clusters. Florida, Georgia, perhaps Arkansas...V. ^S simpsonii Munson, CURRANT GRAPE

BB. Mature leaves deeply 3-5lobed (sinuses often extending half-way or more into blade). Berries 7-8 mm. in diameter, in rather compact but not elongated narrow clusters. Florida...V. ^S smalliana Bailey, FIGLEAF GRAPE

Group 3. Arachnoideae. GRAY-LEAVED GRAPES. Shoot tips white-hairy. Undersurface of leaves with gray, thin, webby hairs. Western Georgia, central and lower Mississippi valley and westward...V. cinerea Engelm., GRAY-BACK GRAPE

Group 4. ^{Cordifoliae} GREEN-LEAVED GRAPES. Leaves green, mostly hairless at maturity. Atlantic coast and Rocky Mountains..

→ A. ^{Cordifoliae} (Leaves mostly heart-shaped at base, tapering to apex, inconspicuously lobed.)

A.
B. Shoot tips nearly hairless. Mature leaves variable but those on main shoots usually not broader than long. Northern Pennsylvania to central Florida, west to Kansas, Oklahoma, eastern and central Texas.....

V. cordifolia Lam., WINTER GRAPE

- AA.
BB. Shoot tips white-hairy. Most leaves broader than long.

Texas, Arkansas...^BV. berlandieri Planch., SPANISH GRAPE

Green ⁵ V. vulpina L. leaves green, mostly hairless at maturity,
AA. VULPINAE. Leaves variable but not regularly as above.

AB. Leaves kidney-shaped (usually wider than long), with abrupt, narrow apex and nearly square-cut base. Plant bushy. Tendrils absent or small and weak. Midwest...V. rupestris Scheele, SAND GRAPE

AA~~BB~~. Leaves heart-shaped at base with pointed lateral lobes and long-triangular apex. Plant climbing, with well developed tendrils. New Brunswick and Quebec to Manitoba and Montana, south to Tennessee, northern Texas and Colorado...(V. riparia Michx) V. vulpina L., FROST GRAPE

II. Subgenus Muscadinia Planch., MUSCADINE GRAPES. Bark of one-year-old canes tight, with prominent lenticels. Pith continuous through nodes. Tendrils unbranched. Flower clusters very small, usually globose. Berries 12-25mm. in diameter, falling individually from cluster. Seeds oblong, pointed at base. Delaware to Florida, Texas, Kansas...V. rotundifolia Michx., MUSCADINE GRAPE

* N.B. Distinction vague in Bailey's key

cordifolia = vulpina of Fernald "short shoulder-like lobes"

?
riparia = riparia of Fernald "correct and prolonged taper-vulpina) ing lobes"

Quote Bailey's comparison p. 233 as footnote?

Figs. 102-132 also help. B's key here is poor

For botanical descriptions of the various species and more detailed keys the reader is referred to Bailey (1934), Galet (1956, 1967) and Fernald (1950). Our intention here is mainly to indicate the characteristics that have resulted in use of these selected species as parents of domesticated forms, and their contributions as parents.

In addition to the several American species, V. vinifera has played a major role as a most important component of so many of our grape varieties that it is described here.

Vitis vinifera, Linn. (1753) Wine Grape

MS. Figs. 1, 2, 20

The vineyard grape of Europe has developed through centuries from wild sources at the eastern ^e end of the Mediterranean and the near East. Botanists separate the wild vinifera into two subspecies sylvestris Gmel. and caucasia Vav. in which occur the vast range of fruit characteristics that are found in the cultivated subspecies, called Sativa D.C.

Bailey (1934) distinguishes vinifera from our American grapes by the fact that "the skin or rind of the ripe fruit is closely adherent to the pulp and is not separated in eating; it is the plumskin grape in distinction from the slipskin grapes developed from the American species." Hedrick (1908) too uses this character in his key to separate out the "Old World" grape.

Galet (1956) notes that the American grapes ^{as} are distinguished from Vitis vinifera ^{have that} by: ---rather slender wood, with long internodes and non prominent nodes
---the small buds

---leaves not orbicular, generally entire and often with
a metallic or brilliant sheen.

Labruscoideae

Vitis ^Llabrusca, Linn. (1753) Fox Grape

V. labruscana Bailey (cultigen)

MS. Figs. 1, 2, 4, 5, 6

Labrusca is the early latin name for the wild vine. This is the oldest known American species, widespread from the New England states, southward to parts of Georgia, and westward into the North-Central States. The species is the most important native grape in the development of eastern North American ^VViticulture. It has provided cold resistance, large-berried fruits, strong distinctive flavor and aroma. The fruity taste, whose basis in part, is methyl anthranilate, has been described as foxy, a term ^{at} somewhat obscure origin. Whether it originally referred to the heavy aroma or to the intoxicating quality of the wine, as maintained by Hedrick (1908), is not finally settled.

Galet (1956) refers to the 'Isabella' and 'Concord' varieties as pure ^LV. labrusca. It is, however, generally accepted that these and other similar varieties, which do approach the pure species in general appearance, are hybrids with V. vinifera and in some instances other species may be involved in their background. We will follow L. H. Bailey and refer to the American hybrid grapes of predominantly ^Llabrusca character as V. labruscana, Bailey.

'Isabella', 'Concord' and many other labruscanas differ from V. labrusca ^Lin that they have perfect flowers, a character not found in wild growing ^Llabruscas (Bailey 1934). Fruit characters that support the hybrid nature of the labruscanas is the more tender flesh, thinner skin, higher sugar, less

rank flavor and much reduced tendency of the berries to fall from the cluster or ^{shell} shatter at maturity. These are not characteristics that can be credited to domestication, nor is it conceivable that a mutation would effect so many different characters in the direction of vinifera.

V. ^Llabrusca is described as very susceptible to root damage by phylloxera, although leaf galls are not formed (Galet 1956). This together with feeble tolerance to high lime soils has precluded its use as a rootstock. It shows high resistance to powdery mildew (Uncinula necator^{Burr.}), which explains the widespread trials in Europe following the invasion of American diseases in the last century, according to Galet (1956). Resistance to downy mildew is reported as variable.

Wines made from the berries of V. ^Llabrusca and V. labruscana and many of the related forms are described as foxy, a character difficult to define but, according to Galet (1967) "due to methyl anthranilate, pronounced, and disagreeable to the French consumer but tolerated by North Americans". Labruscanas are used for wine in many other countries including Brazil, Uruguay, France, Switzerland, Italy, Central Europe, USSR, Japan, Korea, and Madagascar (Galet 1967).

Notable results of early first generation crosses using labrusca^L as a parent are as follows: crosses with vulpina (riparia) produced 'Clinton' and 'Noah'; with aestivalis produced 'Cynthiana', 'Catawba' and 'York's Madeira'; with vinifera, controlled crosses produced the Roger's hybrids, 'Agawam' and others. The above early hybrids crossed back to vinifera have yielded many direct producers that are still grown; the vulpina (riparia) cross, 'Othello';

'Baco 22A' and 'Castel 3917', the aestivalis hybrids Delaware, and Dutchess.

The labrusca-vulpina hybrids crossed with rupestris-aestivalis ^L (incecumii)
^{hybrids} produced many of the early Seibel numbers.

(The) Aestivales

Vitis aestivalis, Michx. (1803) Summer Grape or Pigeon Grape.

Vitis^B Bourquina, Munson (cultigen)

MS. Fig. 9

The Latin species name refers to summer. The species is a widespread eastern upland grape particularly common in the warmer regions from New York to Florida.

The contributions of aestivalis to vineyard grapes is not finally determined. Botanical evidence indicates that many important varieties of spontaneous origin have aestivalis blood; 'Norton' ('Norton's Virginia'), 'Cynthiana', 'York Madeira', 'Catawba', 'Dutchess', 'Delaware' and others.

V. aestivalis does carry good resistance to fungous diseases, showing little powdery mildew and black rot. The berry size is better than that of most other American species. It has played no role in rootstock breeding because it lacks sufficient phylloxera resistance for most soils, cuttings root poorly, and successful unions on grafting are few. Hybrids of aestivalis as direct producers are very numerous because the most important parent used by the first hybridizers, George Couderc and Albert Seibel, was 'Jaeger #70' a hybrid of V. lincecumii, a Southwestern form of aestivalis crossed with a male vine V. rupestris. Galet (1967) describes the fruit as having a characteristic, slightly bitter, disagreeable flavor. Other species closely related to aestivalis merit special mention, :

^B
Vitis bourquina, Munson Southern Summer Grape

It is named after G. Bourquin of Savannah, Georgia, by some being referred to as V. bourquiniana or V. aestivalis var. bourquiniana. A group of cultivated forms, cultigens or vineyard grapes of southern aestivalis origin that carry the stamp of aestivalis, according to Bailey, (1934) is represented by 'Herbemont' 'Lenoir' or 'Jacques' and others.

^L
Vitis linsecumii, Buckley (1862) Poast Oak Grape

MS. Fig. X, 21

A large-fruited form of aestivalis of central and eastern Texas and Louisiana, named for G. Linsecum. It is reported to have healthy foliage and moderate phylloxera resistance. This is the form of aestivalis used by Herman Jaeger as a ^{seed} pollen parent with a ^{male} rupestris selection to produce his famous 'Jaeger 70'.

Vitis argentifolia, Munson (1887) Silver leaf Grape (also called V. bi-color)

~~MS. Fig. 10~~

Widespread and common grape on dry land, found in northeastern North America from Canada to northern Georgia. It is similar to aestivalis in plant characters. The Latin specific name refers to the whitish, silvery appearance of the lower surface of the leaves. V. argentifolia has not yielded important vineyard varieties (Bailey, 1934).

^S
Vitis simpsoni, Munson (1887) Currant Grape

MS. Fig. 8, X

Named for J. H. Simpson, a botanist of Manatee, Florida, and restricted to southern Georgia and Florida, this species is included as a

source of parental material being used in the Florida grape breeding program as a source of resistance to Pierce's Disease.

Vitis^S smalliana, Bailey (1934) Fig leaf Grape

MS. Figs. 12, 13

Named for Dr. J. K. Small, a student of the flora of Florida, the species is confined to Florida. This species is included because of its use as a parent in the Florida grape breeding program. According to Stover (1960), it has good fruit characteristics as well as apparent resistance to Pierce's Disease and various fungous leaf spots.

fungous

adj. is fungous.

Arachnoideae

Vitis cinerea, Engelm, (1879) Grayback Grape or Pigeon Grape

MS. Fig. 14

The specific name refers to the "ashy" color of the underside of the leaf. It is found along river banks, bottom lands and pond margins in central and lower Mississippi Valley.

The phylloxera resistance is good but as a rootstock the species has no advantage because it is subject to chlorosis and yields a low percentage of success on grafting. According to Galet (1956) hybrids resulting from early crosses exist today only in collections. The species is involved, with aestivalis and vinifera, in the parentage of 'Jacques' ('Lenoir') and 'Herbemont', according to Galet (1956).

Cordifoliae

Vitis cordifolia Michx. (1803) Winter Grape, Frost Grape

MS. Figs. 2, 15, ~~22~~

Fernald (1950) uses the name vulpina for this species. The specific name cordifolia indicates heart leaved. According to Bailey, it is a variable species ranging widely from Pennsylvania to northern Florida and westward. The species is vigorous and phylloxera resistant but is not tolerant of high lime soils, which makes it unsuitable as a rootstock in many parts of France. Also the rooting of cuttings is poor and resistance to powdery mildew low. Its tolerance of drought is a character which can explain its use in certain crosses according to Galet (1956). The berries have a harsh, bitter, and disagreeable taste and aroma (Galet 1967).

^B
Vitis berlandieri, Planch (1880) Spanish Grape

MS. Figs. 16, ~~17~~

Named for J. L. Berlandier, Swiss plant collector and explorer, the Spanish or Winter Grape grows in Northern Mexico and Texas. It has a high phylloxera resistance and also a high degree of resistance to ^{high lime soils} (~~lime-chlorosis~~). It also carries good resistance to disease. Its major fault is the low percentage of successful graft unions and poor rooting of cuttings.

The species has been much used in rootstock breeding by several hybridizers and appears as a parent in a number of commercially significant stocks such as '41B', '99R', '110R', 'Teleki 5BB', '420A', etc. It is also a parent of some direct producers. The berries are rather lacking in juice; somewhat neutral and acid or slightly herbaceous in flavor (Galet 1967).

(21)

Vulpinae

Vitis rupestris Scheele (1848) Sand Grape

MS. Fig. 18

The name, of rocks, refers to a common habitat in sandy banks, hills and ravines, particularly along streams, according to Bailey (1934). The species is outstanding for its high vigor, phylloxera resistance, although leaf galls appear on many of its hybrid descendants, and ease of rooting of its cuttings.

A fault is its sensitivity to high lime which induces iron chlorosis of the vine.

The fruit tends to be low in sugar, high in acid and herbaceous with abundant color in the skin. The resulting wine is low in alcohol, very acid and of an unstable violet color, nonfoxy but astringent and herbaceous (Galet 1956).

Many commercially significant rootstocks have been derived from rupestris, notably 'Rupestris du Lot', 'Rupestris Saint-George' and 'Rupestris Ganzin'. As a parent rupestris crossed with riparia (vulpina) has given 'Couderc 3309' and 'Mgt 101-14', with berlandieri 'Richter 99' and '110' and with vinifera 'Couderc 1202'.

Rupestris has played a role in fruiting varieties as a parent, notably as a parent of 'Jaeger 70', probably the most important single progenitor of the direct producers.

Vitis vulpina, Linn. (1753) Frost Grape, River bank Grape, synonymous with
Vitis riparia Michx. (1803) according to Bailey (1934)

MS. Figs. 2, 3, 5, 15

Fernald (1950) uses the name riparia, as does Galet (1956). The Latin vulpina refers to fox, riparia to river banks. The species is the most widely dispersed of North American Vites, along woodsides, in fields, roadsides, covering trees along streams. It exhibits high resistance of the roots to phylloxera, although leaf galls may occur, to most fungous diseases and to winter cold. It grows vigorously, roots well, is easy to propagate but is not tolerant of high lime soils. Its wine is acid, heavy, astringent, of intense violet color, according to Galet (1956).

The role of vulpina (riparia) in Europe as a stock after the phylloxera invasion was considerable. A result was the appearance of high lime chlorosis or yellowing in many vineyards grafted on vulpina. Crossed with rupestris, the species produced rootstocks like 'Couderc 3306' and '3309'. Crossed with labrusca it appears as a parent of 'Noah', 'Taylor', 'Clinton' and others.

Muscadinia

Vitis rotundifolia Michx. (1803) Muscadine Grape

MS. Figs. 2, 3, 19

The muscadine is a species of the South, adapted to a humid, warm climate, resistant to many grape diseases and pests. Early varieties were selected directly from the wild. Unlike most other American grapes the cultivated forms are pure species rather than hybrids between species. Hybridization between Muscadinia and Euvitus species apparently occurs very infrequently, if ever in nature. If hybrids do occur they appear to be highly ster-

ile as a result of different chromosome numbers in the parents. Crossing has been attempted between V. rotundifolia and Eu vitis species for over a century in efforts to combine the pest and warm climate resistance of the former with the large cluster and the desirable fruit quality of species like V. vinifera. Commercially useful results have not yet been realized.

Members of the Muscadinia can not be successfully grafted with members of the Eu vitis according to Galet (1967) and have not therefore had any use as resistant stocks.

Early Attempts to Grow Grapes

This account draws heavily on Bailey's "Sketch" from 1898 as an admirable and concise version of the beginnings of viticulture in Eastern North America. Many of his expressions are used to add flavor to the account.

The early colonists, especially those from countries where grapes were grown, visualized ~~that~~ wine making should be a profitable enterprize in the New World. The land was inexpensive and the abundance of wild vines indicated a climate congenial to the vine. The very first plantings of Vitis vinifera in America were made by padres at old missions in New Mexico, Arizona and California, before any settlements were made in the East. Attempts to grow the Old World grape out-of-doors in Eastern America continued into the second half of the 19th century and has been revived again in the last two or three decades.

In 1616 Lord Delaware wrote to the London Company urging the culture of grapes as a possible source of revenue. About 1619 a collection of vines of France and some French vine dressers, who presumably had the skill to grow the vines, were sent to Virginia. Nothing of permanent value came of the undertaking although further efforts were made to induce the colonists to grow grapes, both by edict and by offering a premium for successful culture resulting in wine production.

Several futile attempts at vine growing were made in Georgia and the Carolinas by French Huguenots who left France between 1685 and the close of

the century. Attempts were repeated well into the 19th century with poor or indifferent success.

In Maryland a greater degree of success was attained than in the colonies to the South. Lord Charles Baltimore planted in 1662 some 300 acres of land in St. Marys to vines. Considerable quantities of wine were reported sold.

In New York, Nicolls, the first English governor, granted in 1664 to one Paul Richards the privilege of making and selling wine free of tax and also ordered that all persons setting vines pay Richards a tax of 5 shillings for every acre planted.

Attempts were also made on the Delaware River. William Penn planted a vineyard near Philadelphia in 1683 of imported French and Spanish vines.

Efforts to grow the European grape continued well into the 19th century. But east of the Rockies, only in Louisiana is European grape growing, recorded to have been successful, according to Hedrick (1908). In this instance there appears to be much doubt that the varieties grown were pure Vitis vinifera. It appears more likely that the wine made by these Louisiana Jesuits was of native grapes, either wild or cultivated.

The earliest published American treatise dealing with the vine was by Edward Antill of Monmouth, New Jersey (1769) published in the Transactions of the Philosophical Society for 1771. It was followed by one by S. W. Johnson in 1806 On the Cultivation of the Vine in his Rural Economy. These accounts were founded largely on European practice with little or no reference to American experience. Only European varieties were recommended. The American grapes were just coming on the scene.

Early history of American grapes

The names of many people, famous and not so famous, have been mentioned in accounts of the development of the American grapes.

One of the first was Peter Legaux, a Frenchman who founded a company for the cultivation of the grape at Spring Mills near Philadelphia in 1793. It is recorded that Legaux in 1801 supplied grape cuttings in quantity to customers in a number of states including Kentucky, Pennsylvania, Connecticut and in lesser quantities to New York, New Jersey, Maryland, Virginia and Ohio. These were mostly of the European grapes from the company collection at Spring Mills. However he had in the collection two distinctively American varieties 'Bland' and 'Alexander' which he distributed as 'Madeira' and 'Cape' among customers who presumably would not have bought them had they known that they were native vines. According to Hedrick (1908) 'Bland' (or 'Madeira') is V. rubra (or called V. palmata by Bailey (1934)) the Cat Grape, native from Southern Indiana, Illinois and Missouri to Louisiana, Eastern Texas and Oklahoma. 'Alexander' or 'Cape', is a V. ^Llabrusca selection with possibly some vinifera admixture, but highly labrusca in character. This was the first distinctively American variety of commercial value and marks the beginning of the development of an Eastern grape industry.

A major attempt that must be included is that of the Dufours. John James Dufour, a Swiss, landed in the New World in August 1796. He spent the next two years visiting vineyards, seeking successful vines. He reported that the

most interesting vineyard was that of Legaux. According to Bailey (1898), of all the vines that Dufour saw none sufficed "to pay for one half of their attendance save the vines planted in the gardens of New York and Philadelphia and about a dozen plants in the vineyard of Mr. Legaux". In 1798, two years after Dufour's arrival, The Kentucky Vineyard Society was established "under his inspiration" at a site on the Great Bend of the Kentucky River about 25 miles from Lexington and 13 miles from Nicholasville. The association was organized with \$10,000 capital to purchase 633 acres of land, five families of negroes, tools, victuals and other support, expenses of getting vine scions (sic) and incidental expenses. In 1799 five acres were planted to 35 varieties, many or most obtained from Legaux. Two years later, in 1801, John James Dufour was joined in the New World by a group of seventeen persons from his homeland of Switzerland, including seven other Dufours, Jean Daniel Mererod, husband of Antoinette Dufour, Francis Louis de Siebenthal, John Francis de Siebenthal and Phillip Betteus, together with women and children. Although some wine was made in the Kentucky vineyard for two or three years the colonists soon realized that a "fatal sickness" had overtaken the vines. The only vines that remained healthy were a few plants of the native 'Cape' and 'Madeira' grapes.

A new location was sought by some of the settlers as early as 1802, only a year after their arrival in Kentucky. This was a few miles above the junction of the Kentucky River and the Ohio at what is now Vevay, Indiana, about 45 miles below Cincinnati. John James Dufour petitioned Congress to authorize him and his associates to "enter upon lands" with an extended credit, for the purpose of introducing the culture of the vine into the United States.

Congress authorized the request on a credit of 12 years with the object, as stated in the grant, "to plant the vine and make their principal business its cultivation." The settlers selected 2500 acres and called the place New Switzerland. The lands at New Switzerland were divided into 13 lots for the members of the colony, nine of whom carried the name of Dufour, the two Siebenthals, Mererod and Phillip Betteus. The first settlement of the colony apparently was in 1803 and John Francis Dufour, half brother of John James, is looked upon as the real founder and leader of the colony, according to Bailey (1898). The first wine was made in 1806 or 1807. The vintage in 1808 was 800 gallons, in 1809 it was 1200 gallons. Grape growing as a business persisted for a relatively short period. "The vines took sick and would not bear; or if they bore, the fruit rotted before it was ready for harvest." (Bailey, 1898, P. 40) again it is reported that "only one variety, known as the 'Cape' grape 'Alexander' gave any important return," according to Bailey, 1898, P. 40). "On the 27th of May, 1832 or 1833, a killing frost ruined most of the remaining vineyards, and the Catawba, which was justly becoming famous, was set in the place of the old varieties. But even this took the disease, and grape-growing there soon entered into a decline from which it has never recovered" (Bailey, 1898, P.40).

John Adlum and the 'Catawba'

"The first great American grape was the 'Catawba,' and it is still one of the four leading ^{con}temporaneous varieties of the fox-grape type." This is as true as it was when Bailey wrote it in 1898 (P. 51). The other three varieties of long standing are and were 'Concord', 'Delaware' and 'Niagara'.

Major John Adlum, a soldier of the Revolution, was one of the first who was convinced that Eastern grape culture must be built upon the improvement of our native species. He planted a vineyard towards the close of the 18th century on Rock Creek, a small branch of the Potomac River in the District of Columbia. He soon discarded the foreign kinds except a few for table use and confined his attention to the best of our native species. Adlum sought support to establish "an experimental farm" for grape improvement but did not succeed in obtaining financial help. He was obliged to carry on the undertaking himself. He obtained the 'Catawba' from a Mrs. Scholl, who kept a public house at Clarksburg, Montgomery County, Maryland. Adlum pruned the vine in February of 1819 "for the sake of the cuttings." It was already then described as of "much renown" and apparently first called "Tokay" but soon renamed 'Catawba.'

The Rise of Commercial Viticulture

Nicholas Longworth, a leading citizen of Cincinnati, Ohio, a banker and a farmer, received cuttings of the 'Catawba' from John Adlum in 1825. The vineyard developments further down the Ohio River at Vevay, at New Harmony, Vincennes and elsewhere were insecure. The European grapes were not successful and an improvement on the 'Cape' ('Alexander') was needed. The 'Catawba' seemed to answer the need; Longworth was its disseminator and promotor. His vineyard and winery operation was reported as highly successful for many years. By 1859 the number of acres of vineyard within 20 miles around Cincinnati was estimated at two thousand. It was also reported that the area shipped quantities of grape plants and cuttings to the South and Southwest, to Tennessee, Georgia, Alabama and the Carolinas. In the late 1850's their sales had averaged about 200,000 plants and 400,000 cuttings annually and these were principally of the 'Catawba' grape.

Grape growing was receiving attention in many parts of the country before the middle of the century and varieties other than 'Catawba' were involved. The 'Isabella' was introduced into New York by Mrs. Isabella Gibbs of Brooklyn from whom it passed to the Long Island nurseryman William Robert Prince, who named it for her. This was the third great American grape variety of historical note, another derivative of the southern type of V. ^Llabrusca.

After the middle of the 19th century little determined effort was made to grow the European grapes in the open air. It was generally accepted that

In Ontario, Canada the first man to plant and cultivate grapes was Porter Adams, near the village of St. Davids, a short distance north of Niagara Falls, according to Percy Rowe (1970). This was about 1857 or shortly after. By the mid 1860's reports exist of wine making in the Niagara Peninsula region and commercial viticulture apparently developed rapidly.

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hope for Eastern grape culture lay in the improvement of the native species.

Various persons made definite attempts to encourage the search for superior forms from the wild. During the second half of the 19th century, according to Bailey's estimate, two to three thousand varieties, more or less, were disseminated, and most of these were offspring of our native species.

About 1830 grapes were planted at Hammondsport, New York, at the southern end of Keuka Lake, marking the beginning of the Finger Lakes grape industry. The Reverend William Bostwick planted vines of 'Catawba' and 'Isabella'. As early as 1846, fresh grapes were shipped from the Keuka Lake region to New York City.

Grape growing began in the lower Hudson Valley about the same time. One of the earliest vineyards was planted with 'Isabella' vines in 1845 by William T. Cornell. A neighbor, William Kniffin, also planted vines and is credited as the originator of the Kniffin system of vine training.

A recognized center of grape culture was established early in Gasconade County in eastern Missouri, a locality that later was associated with the names of George Husmann of Hermann and Jacob Rommel of Morrison. The first cultivated grape to fruit at Hermann, according to Husmann, was the variety 'Isabella' planted by a Mr. Fugger and which bore in 1845. The 'Catawba' first produced fruit in 1848. It attracted a great deal of interest but soon succumbed to disease and was replaced by 'Norton's Virginia'.

Husmann was perhaps the most productive writer in the field during this period and produced The Cultivation of the Native Grape and Manufacture of

American Wines in 1866 and a later version American Grape Growing and Wine Making. (1880). He also established and edited The Grape Culturist "a monthly journal devoted to grape culture and wine making" (1869-1871).

Jacob Rommel is best remembered for his efforts in the breeding of improved varieties using Vitis vulpina (riparia) as a parent. The 'Elvira' is the most notable of his introductions.

Another Missourian, Hermann Jaeger of Neosho, in Southwestern Missouri, became interested about 1870 in the potential cultural values of the wild grapes growing about him. He selected wild vines and made crosses of species with the objective of securing productive, disease resistant sorts superior to the standard varieties of the time. Jaeger was particularly impressed by the Post Oak or Summer Grape, V. lincecumii, of the neighborhood. His most notable seedling was 'Jaeger No. 70' or 'Munson' which resulted from the cross of 'Jaeger No. 43', a selection of V. lincecumii from the wild, crossed with a male V. rupestris, the local Sand Grape. This hybrid will be encountered many times as we read of the French-American hybrids that were soon to be produced by workers in the Old World.

The first recorded variety resulting from a deliberate cross, with a European grape vine as one of the parents was exhibited before the Massachusetts Horticultural Society in 1854 by John Fisk Allen, author of A Practical Treatise on the Culture and Treatment of the Grapevine (1848). 'Allen's Hybrid' came from a cross of 'Golden Chasselas' and 'Isabella'. The variety, quite European in fruit character, still exists in collections.

Three years earlier, in 1851, Edward Staniford Rogers of Salem, Massachusetts, son of an old time Salem merchant, amateur horticulturist and hybridizer, made the cross that resulted in the so-called Roger's Hybrids, which attracted considerable attention. Several are still ^{to} be found in collections and in lists of recommended varieties. The seed parent used by Rogers was, according to Hedrick (1908), a large^L-berried labrusca called 'Carter' or 'Mammoth Globe'. Pollen for the cross was obtained from greenhouse vines of the vinifera table grapes: 'Black Hamburg' and 'White Chasselas'. Forty-five resulting seedlings finally fruited, were numbered consecutively and were widely distributed as Roger's numbers, before the best ones were finally named. The first fruit was obtained in 1856. In 1867 'Salem' was named and in 1869 a dozen more were given names of either places in Massachusetts or persons of "literary or scientific" accomplishment, as follows: 'Goethe' (Rogers #1), 'Massasoit' (#3), 'Wilder' (#4), 'Lindley' (#9), 'Gaertner' (#14), 'Agawam' (#15), 'Merrimac' (#19), 'Requa' (#28), 'Aminia' (#39), 'Essex' (#41), 'Barry' (#43), 'Herbert' (#44), and 'Salem' (#52 or 22). Of all these named selections only 'Agawam' had perfect flowers. All the others had reflex stamens which results in poor berry set in the absence of a plentiful supply of pollen from adjoining vines.

In the evolution of the American grapes probably the most notable advance of all, from its strictly commercial impact, was the introduction of the 'Concord' in the early 1850's. The first mention of it is found in the Massachusetts Horticultural Society in 1853 which relates that, "E. W. Bull exhibited his new seedling grape, which under the name of 'Concord', is now generally cultivated throughout the country" (as quoted by Bailey, 1898, p. 72). The exact origin is unclear. Mr. Bull planted seed from a supposedly wild

vine growing in his yard, either grown there from chance seed or transplanted from a hedgerow. The seed was reportedly planted in 1843 and the resulting vine fruited in 1849. Bull is quoted as expressing the opinion that a 'Catawba' vine growing nearby may have acted as the pollen parent. 'Concord' was introduced in 1854 by Hovey and Co. of Boston. Its growth in popularity was phenomenal. "It was the first variety of sufficient hardiness, productiveness immunity to diseases to carry the culture of the vine into every garden in the land" (Bailey, 1898, p. 72).

The Variety Picture at the Beginning of the 20th Century

The most important of the American varieties of bunch grapes whose names appear in our recommended lists today were well established at the turn of the century. These grapes can be classified into the following groups according to certain common major characteristics which they presumably have inherited from the same parental species.

The Fox Grape Type

The labruscanas of Bailey (1934), as typified by 'Agawam', 'Catawba', 'Concord', 'Isabella', and 'Niagara', have leaf and fruit characters closely resembling their supposed labrusca parent. The labruscas provided cold hardiness, large berries and strong distinctive flavor. Improved fruit quality, cluster structure and flower type have presumably been derived from vinifera. Some of the labruscanas as 'Agawam' (Rogers #15) are of fairly certain origin, but others are so classified only on the basis of vine and fruit characters. 'Agawam' is a first generation offspring of a cross between a labrusca and vinifera. Many others are likely two or more generations away from the original pure species. As early as 1898 Bailey wrote that "the primary hybrids of the American and European species have never made a great impression upon commercial grape-culture, although many of them are much prized for their high quality in the home garden. What they gain in quality they are apt to lose in amenability (sic) to mildew and phylloxera, in lack of robustness, or in infertility of the bloom. The secondary or attenuated hybrids, however ---those born of hybrids, or of a hybrid with some other variety---give more promise; there is promise of much advantage to be gained by the gradual ad-

mixture of dilute blood of foreign grapes into our own improved types, but the results are quite as likely to come from accidental admixtures as from intending ones, for most plant^x-breeders are looking for bold and emphatic results" (Bailey, 1898, p. 70-71).

The Vulpinas

Another native grape of the North that has given valuable offspring, is the river-bank grape, Vitis vulpina of Linneaus and Bailey, or Vitis riparia of Fernald and some other botanists. Typically cold hardy and phylloxera resistant, the most common varieties of this group are 'Clinton', originated in central New York, 'Elvira' of Jacob Rommel of Missouri and 'Noah' from Illinois. These are all presumed to have also some labrusca background but they have dominant vulpina plant and fruit characteristics.

The Aestivalis

Out of the early attempts of the French to grow grapes in the Southeastern Atlantic States came by the middle of the 19th century 'Herbemont' and 'Lenoir' ('le Noir' or 'Jacques') varieties that were widely acclaimed as wine grapes. Others of similar type was 'Norton' ('Norton's Virginia') and 'Cynthiana', almost undistinguishable from 'Norton' or even identical with it. The latter grape is generally considered as representing V. aestivalis, the summer grape of the ^{mi}iddle states and the South (Bailey, 1934) or a hybrid of aestivalis by labrusca (Synder, 1937). 'Herbemont' and 'Lenoir' may be thought of as cultigens of aestivalis, named V. ^Bbourquina or V. ^Bbourquiniana, comprising vineyard grapes that were grown in the South. These are thought to be aestivalis-vinifera hybrids with possible input from other species.

The Rotundifolia

Selections made from wild growing vines of Vitis rotundifolia were being

grown in the South. The 'Scuppernong' a yellowish-fruited variety, the most noteworthy of early muscadine varieties, was reported to make excellent wine and to be a regular and abundant bearer. The fact that the muscadines do not easily intercross with other species to produce fertile hybrids would explain the fact that these grapes may be the only American cultivated grapes that have originated from one species, with no admixture of other species.

The 20th Century

Improvement of American Grapes in Europe

Hybridization of native American species assumed importance in Europe, especially France, when the devastations of phylloxera made necessary the grafting of vinifera on resistant roots. The insect (Phylloxera vitifoliae Fitch), indigenous to eastern and central United States, feeds on roots of vines and also forms galls on the leaves of some species. Phylloxera was brought to France before 1860, presumably on American vines that were imported because of their resistance to powdery mildew (Uncinula necator Burr), another American pest that had been let loose on the vineyards of Europe. The rootstock trials were conducted by official institutions, notably, in France by the Ministry of Agriculture, at the Agricultural College at Montpellier, by private institutes, by owners of estates and by the hybridizers themselves to demonstrate the superiority of their own introductions (Galet 1956).

For detailed enumerations of parental species used in crosses, introductions, their strengths, weaknesses, and eventual fate, Galet (1956, 1967) should be consulted.

Objectives of ^{The early} (European) Rootstock Breeding Programs in Europe

The roots must be resistant to phylloxera, a characteristic which is totally lacking in vinifera.

The stock must have the ability to grow in soils high in lime, a condition especially common in certain vineyard areas of France, but not a ^{major} concern ^{to} in vineyard areas of North America. The tolerance of lime is present in vinifera but only in certain American species such as monticola and ^Bberlandieri.

The stock must root readily from cuttings to permit economic propagation. Some species are rooted with great difficulty. A high percentage of success must be obtained on grafting the cion to the stock piece.

The stock vine itself must be a healthy, vigorous grower to ensure large quantities of propagating wood with the minimum of care.

Spec. of harmful insects

Rootstock Hybridizers

Georges Couderc (C.) of Aubenas (Ardèche) on the west side of the Rhone River, south of Lyon was the most celebrated of the French hybridizers. His creations were numerous and diverse, rootstocks as well as direct producers or fruiting varieties. In 1881 he made a cross between a riparia (vulpina, Bailey, 1934) selection in his collection, ('Riparia Z.') and a rupestris selection, ('Rupestris Martin'). Both parents had high phylloxera resistance. The resulting 18 seeds were grown in soil artificially high in lime in order to select the offspring that would grow in high lime soils and not show chlorosis or yellowing of the foliage. One of the resulting hybrids is especially worthy of note, commonly referred to as '3309', although the full designation is 'Riparia-Rupestris Couderc 3309' or 'Rip.-Rup. 3309 C.'

Millardet et de Grasset (Mgt.)^{Millardet} (1838-1903) a Professor of Botany at Bordeaux was charged by the French Academie des Sciences in 1874 to investigate phylloxera. From 1881 he became associated with the Marquis Ch. de Grasset (1830-1899), the owner of a property near Pézenas (Herault, south of Montpellier). They produced numerous stocks, some which are still grown, with the combined name designation Mgt., notably Mgt. '101-14', '41B', '420A'.

P. Castel (Cl.) (1850-1906) a lawyer, estate owner and President of the Agricultural Society of Aude in the Midi, France, worked for many years and produced a number of hybrid stocks. None of the stocks ~~have~~^{has} become commercially significant. Castel also introduced direct producers, the most notable being 'Castel 19637', a hybrid of 'Cinsaut', a wine grape of the Midi, crossed with a rupestris selection.

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Teleki. The Teleki hybrids are numerous and have been selected by workers in different countries. Sigmund Teleki, a Hungarian, imported 10kg. of seeds of ^Bberlandieri in 1896. These were provided by Résséguir a French nurseryman of Alenya, in the Pyrénées Orientales, a department which borders on Spain and the Mediterranean Sea. This seed was a mixture of pure ^Bberlandieri, that is ^Bberlandieri x ^Bberlandieri, ^Bberlandieri x riparia (vulpina), ^Bberlandieri x rupestris, ^Bberlandieri x vinifera and even some pure vinifera mixed in. Teleki planted 40,000 seeds and sorted out the resulting highly variable seedlings into 10 types according to plant characters. The types 1-3 were pure ^Bberlandieri in appearance and were discarded. Types 4, 5, and 6 were hybrids showing dominant riparia (vulpina) characters and were separated into the three classes on the basis of difference in the degree of bronze color of the shoots. Types 7, 8 and 9 were hybrids in which ^Bberlandieri plant characters dominated. Type 10 exhibited dominant rupestris characteristics. In addition Teleki designated subgroups; A, with smooth canes and B, with hairy canes.

Teleki sold propagations from 3 different mother plants under the designation '5A', instead of maintaining his materials unmixed. Of '8A', presumably ^Bberlandieri x riparia, with ^Bberlandieri phenotype, and smooth canes, he lumped 5 different mother plant sources when he marketed his material. This mixed material that was distributed is the basis for the sorting that was done by workers in various countries in later years.

In 1904 Teleki sent ten of his best numbers to Franz Kober, l'Inspecteur de la Viticulture at Klosterneuburg near ^{Vienna}Vienna, Austria. Kober sorted

out the material according to plant characters. To plants that were particularly robust he gave double letters. The most widely spread of these selections today is '5BB' which is variously referred to as '5BB selection Kober', 'Teleki', 'Kober', 5BB, and 'Kober 5BB'.

Selection in the Teleki material in Germany was continued by W. Dummmler, Reckendorfer, Moog and Borner. Rodrian, at Oppenheim in the Rheinhessen, made a selection from 'Teleki 4' designated as 'Selection Oppenheim 4' or 'SO4'.

Ferrari in Italy made the selection 'Ferrari 8B'.

The Teleki rootstocks were introduced into France after 1930. The search for better rootstocks has been pursued by many institutions and men. Much work was done at the School of Agriculture at Montpellier, France; École Montpellier or E. M. is the stock designation. Ravaz, the Professor of Viticulture at Montpellier and Foëx were the workers involved. Franz Richter, a nurseryman, working at Las Sorres close by Montpellier, ^{gave his} to a name to valuable stocks.

The Viticultural Research Institute at Geisenheim on the Rhine in Germany has been a center of rootstock research.

Many Italian workers have been involved including Paulsen, Ruggeri, Grimaldi, V. Prosperi and Alberto Pirovano.

The following list includes those rootstocks in Galet (1968), in his ^{Practical} handbook. These are the stocks that persist in France. The supposed species makeup of the various stocks is indicated as well as the origin of the stocks

<u>Designation</u>	<u>Originator</u>	<u>Species Parentage</u>
Rupest ^u ris de Lot		V. rupestris
Riparia Gloire de Montpellier		V. riparia
Cl 4010	P. Castel	riparia-rupestris-vinifera
C 3309	Georges Couderc	riparia-rupestris
Mgt 101-14	Millardet + DeGrasset	riparia-rupestris
Cl 196-17	P. Castel	vinifera-rupestris-riparia
M 44-53	Vincent Malegue	riparia-cordifolia-rupestris
R 99	Franz Richter	berlandieri-rupestris
R 110	Franz Richter	berlandieri-rupestris
Paulsen 1103	Paulsen (Sicily)	berlandieri-rupestris
Ruggeri 140	Ruggeri (Italy)	berlandieri-rupestris
G 1	Victor Grezot	riparia-candicans-riparia-rupestris
Paulsen 1447	Paulsen (Sicily)	berlandieri-rupestris
Teleki 8B	Sigmund Teleki (Hungary)	berlandieri-riparia
E.M. 34	École Montpellier by " Foex & Viala	berlandieri-riparia
C 161-49	Georges Couderc	riparia-berlandieri

Kober sel. 5BB	S. Teleki #5, selected by Kober	berlandieri-riparia
SO4	S. Teleki #4, selected at Oppenheim	berlandieri-riparia
Mgt. 420 A	Millardet and de Grasset	berlandieri-riparia
Teleki 5C	selected by Alexander Teleki in 1922	berlandieri-riparia
R.S. B1	Resseguir selection	riparia berlandieri
C. 1616	Georges Courdeç	riparia-candicans-riparia
Cl. 216-3	P. Castel	riparia-candicans-riparia-rupestris
Mgt. 41B	Millardet and de Grasset	vinifera-berlandieri
E.M. 333	Ecole Montpellier by Foex	vinifera-berlandieri
Berlandieri-Colombard No. 2	Blanchard	berlandieri-vinifera
Vialla	Botanical Garden at Bordeaux	labrusca-riparia

A study of the listing indicates that relatively few species have been successful parents, of the many that have been used in crosses.

The earliest stocks were selected individuals within a pure species, like 'Rupestris du Lot' (Lot being a Department of Southern France) and 'Riparia Gloire de Montpellier' followed by hybrids between these species. In certain high lime soils yellowing of vines appeared as a result of the utilization of these non lime-tolerant stocks.

P. Viala, Inspector General of Viticulture at the National Agricultural Institute in Paris was sent on a collecting trip to America in 1887. Here he met Herman Jaeger who supplied him with the first riparia-rupestris hybrids introduced into France. Viala called attention to the possible use of ^Bberlandieri, the Spanish Grape, as a source of phylloxera resistance and also tolerance of high lime. Because of difficulties of rooting ^Bberlandieri, hybrids with riparia and with rupestris were made. Such combinations are common in the list. Vinifera too is a source of tolerance to high lime and Millardet showed the superiority of the hybrid on "^Rcalcaire" in the cross of 'Le Chasselas', a widespread vinifera table and wine grape, by ^Bberlandieri to produce 'Mgt 41B'.

Of the many hundreds of stocks that have been created and tested many have been discarded for such major faults as insufficient phylloxera resistance, susceptibility to high lime and poor multiplication.

As a measure of the commercial use of the stocks in France as related to their botanical origin the following (~~list~~) from Galet (1968) is of interest.

% of the total mother vines grown

	<u>in 1953</u>	<u>in 1968</u>
Riparia	4.14	1.79
Rupestis	21.54	18.89
Riparia - rupestris	15.82	9.16
Berlandieri - riparia	16.77	21.60
Berlandieri - rupestris	6.87	16.38
Vinifera - ^B erlandieri	8.25	15.37
Miscellaneous	<u>26.61</u>	<u>16.81</u>
	100.00	100.00

Originators of the French Hybrid Direct Producers

The direct producers are ^{inter specific crosses} (hybrids) that produce fruit of some value while many of the rootstock varieties are non-fruiting male plants or produce fruit without value for wine or other uses. The designation, direct producer presumably indicates that the hybrid need not be grafted but can be grown on its own roots on phylloxerated soil. This is not always true.

Victor Ganzin (1838-1900), Doctor of Law, Pradet Var, a department in the extreme South-east of France was the first in Europe to make crosses between American species and European varieties, according to Galet (1956). Three of these crosses made him famous. He crossed 'Aramon' a red wine grape of the South of France with rupestris selections in his collection, designated as 'Rupestris Ganzin' nos. 1, 2, 4, 9 and 60. Rootstock varieties resulted from these crosses. Ganzin then made a cross of one of the ^{se} ~~re~~ stocks, 'Aramon' x 'Rupestris Ganzin no. 4', by 'Alicante Bouschet', a vinifera wine variety with colored juice. This cross, made in 1886, resulted in 'Alicante Ganzin', ancestor of the "teinturiers" or colored juice varieties 'Seibel 5437' and 'Seibel 8357' ('Colobel') as well as other significant numbers such as 'Seibel 7053' ('Chancellor') and 'Seibel 8745'. These in turn were used as parents by Landot, Burdin, Seyve-Villard and Joannes Seyve.

Ganzin's third notable cross between 'Aramon' x 'Rupestris Ganzin no. 60' and 'Grosse Clairette', a vinifera wine grape, gave 'Clairette doree Ganzin'. This hybrid as a parent produced 'Seibel 5279' ('Aurore') and also

'Seibel 572', in turn a parent of 'Seibel 6468', much used by later breeders, Seyve-Villard, Galibert and Landot.

Francois Baco (1865-1947), at Belus in the Department of Landes on the south-west coast of France, began hybridizing in 1898 with a major objective of obtaining black rot resistance and to improve on 'Noah', an American variety that was being grown in his area. His notable introduction 'Baco Noir', designated originally as '24-23' or 'No. 1', is a vinifera-riparia (vulpina) hybrid, a cross of 'Folle Blanche' by a riparia, made in 1902. Galet (1956) notes that this is the only commercialized hybrid of this species combination. Another notable Baco introduction, '22A', named 'Maurice Baco' a cross of 'Folle Blanche' x 'Noah', and quite similar to 'Noah', is used for brandy production.

Gaillard from Brignais, near Lyons, with his nephew Girerd, introduced several species hybrids, ^{Two} ~~too~~ of which were used by later hybridizers, Bertille Seyve, Chambeaudiere, Seibel and Humbert. 'Gaillard #157' is a 1891 cross of the American varieties ('Triumph' x 'Eumelan') by 'Seibel 1' (labrusca, aestivalis, vinifera, rupestris). 'Gaillard #2', obtained in 1885, resulted from a cross of ('Othello' x rupestris) by 'Noah' (labrusca, aestivalis, vinifera, rupestris).

In 1882 M. Contassot of Aubenas in the Ardeche, a department on the west side of the Rhone below Lyons, obtained cuttings of 'Jaeger 70' (lincecumii - rupestris) from the United States. Contassot, a pastry cook but with interests in viticulture, grafted these in his garden. As the grafts grew and produced fruit he collected the seeds. Because 'Jaeger 70' is female and does not produce viable pollen the seeds can be assumed to result from cross pollination with foreign pollen. In this case varieties growing nearby were the viniferas 'Raisaine', 'Cinsaut' and 'Gamay'. The seeds of open-pollinated

'Jaeger 70' that were harvested by M. Contassot were given to his neighbors, Georges Couderc and Albert Seibel. These seeds were planted by them and resulted in the early Seibel and Couderc numbers. The most notable was perhaps 'Couderc 7120', sometimes called 'Contassot #20' or 'Couderc Noir'. This has been a commercially significant variety and has been used in later breeding. Couderc's role as a rootstock hybridizer has already been mentioned.

Bertille Seyve (1864-1944) began hybridization at his estate in the Isère on the east side of the Rhone below Lyon in 1895. Nearly 200 of his selections were introduced commercially after 1905. Because of the choice of parents, 'Othello' and especially 'Noah', many have been discarded in France as excessively foxy in flavor.

Christian Oberlin (1831-1915), the Alsatian hybridizer, made selections of riparia (vulpina) seedlings in order to obtain short season hybrids for the Alsace. Crosses with 'Gamay' produced his most notable hybrids, numbers '595' and '604'. 'Goldriesling', a hybrid of 'Riesling' by 'Muscat précose de Courtiller' or 'Courtiller musqué', is one of the number of pure vinifera crosses, designated 'metis' by the French, that were introduced by Oberlin.

Eugène Kuhlmann, as Director of the Institut d'Oberlin, continued efforts defined by Ch. Oberlin. The varieties 'Maréchal Foch' (Kuhlmann 188.2) and 'Léon Millot' (Kuhlmann 194-2) resulted, according to Kuhlmann, from seed of the rootstock ~~and a~~ 'Mgt. 101-14' (riparia x rupestris), the pollen parent being Oberlin's 'Goldriesling'. Other authors have reported the parentage as 'Oberlin 595' x 'Pinot précose', or (vinifera x riparia) x vinifera.

Vincent Malegue (1830-1915) produced many species hybrids of complex background. Nearly all have been discarded because of their lack of resistance to disease and the foxy flavor of the fruit, according to Galet (1956).

Albert Seibel (1844-1936) like Georges Couderc was given seed of 'Jaeger 70' by his neighbor M. Contassot to launch him on his career as a grape hybridizer. His first seedlings dated from 1886 and his work continued until his death 50 years later. He listed commercially over two thousand numbers, a fact that has made their evaluation a cumbersome task. Galet (1956) describes about sixty of the Seibel numbers, presumably those that have had some value as fruiting varieties and/or as parents in further breeding.

The firm of Seyve-Villard was founded about 1919 by Victor Villard and his son-in-law Bertille Seyve, whose names identify their creations. Since 1930 the Seyve-Villard introductions have been among the most commercially successful of the French hybrids. Although the parentages of their introductions were not originally released by the firm, one can assume that the most valuable hybrids of Seibel, Couderc and Malegue in cultivation at the time were used as parents, according to Galet (1956). Galibert (1946) includes in his descriptions the presumed parents of many of the Seyve-Villard introductions.

Joannes Seyve, brother of Bertille Seyve, introduced a series of hybrids of which '26-205' and '23-416' have received most attention in North America.

A. Galibert from 1936 onward produced a group of hybrids by intercrosses between existing hybrids or crosses of hybrid by vinifera. Many of the introductions were given names. Because many were grown and selected on properties

belonging to a M. Coulondre the selections were given Galibert or Galibert--- Coulondre numbers.

J. F. Ravat, a mining engineer, began a program in 1929 and made crosses of 'Chardonnay' and 'Pinot' with various hybrids as well as crosses between available hybrids. Certain crosses resulted in introductions of interest to us. 'Ravat 6' ('Ravat Blanc') a 'Chardonnay' seedling, has been rather widely tested, as have 'Ravat 262' ('Ravat Noir') on the basis of plant characters. and 'Ravat 51', both assumed to be of 'Pinot' parentage. Ravat's introductions are generally very susceptible to powdery mildew (oidium), according to Galet (1956).

Pierre Landot (1900-1942), like Ravat, began making crosses about 1929. He intercrossed some of the more successful Seibel and Seyve-Villard numbers to create complex species hybrids. He also outcrossed to viniferas like 'Pinot', 'Gamay', 'Fendant', 'Chaouch', 'Malvoisie' and 'Muscat Hamburg'. His selections are characteristically susceptible to downy mildew, according to Galet (1956). The Landot introductions that have made the most impression in North America are 'Landot 244' and 'Landot 4511'.

The very first Burdin hybrids appeared in 1929 but the best known ones came after 1940. Some resulted from crosses between hybrids, mostly Seibel numbers. Most have one vinifera parent, much as 'Gamay', 'Gros Lot', 'Pinot', or others. Many are susceptible to powdery mildew and above all to downy mildew.

How is hybrid
selected?

J. L. Vidal, Director of the Fondation Fougerat at ~~(at)~~ Bois-Charentes, a department north of Bordeaux, made crosses to produce rootstocks as well as direct producers and also made vinifera by vinifera crosses to produce intra-specific hybrids. A cross of 'St. Emilion' ('Ugni Blanc', 'Blanc Girondin') x 'Seibel 4986' produced a series, Nos. '236' to '258'. 'Vidal 256' of this series has attracted considerable attention in North America.

Several other French hybridizers have introduced their creations for trial. Among them is Amedée Jurie, secretary of the Section Regionale of Viticulture at Lyons. Rudelin introduced a large number of hybrids after 1910, of which only two '#3' and '#18-1' have persisted. Perraton, a grower of Chaintre (Saône-et-Loire) north of Lyons, produced some white-fruited hybrids of 'Char-donnay' and ^Bberlandieri. M. Perbos, a former Editor of the Revue des Hybrides and of the Vigne Moderne, and later his son, Maurice Perbos, contributed hybrids that were field tested. Meynieu, a hybridizer of Girondin, made some hybrids of little lasting value. Other names that may be encountered are Beyer, Roy-Chevrier, Rouget, Joussely, Chevallier, Chazalon and Chambeaudiere.

Accomplishments of the French Programs

The programs had as a general objective the production of hybrid vines that could be grown on their own roots, show high resistance to foliage diseases and produce wines with vinifera character.

In regions where vinifera can be grown commercially without high risk of cold injury, devastating pest attacks or environmental excesses, the hybrids may be less desirable than the old established well recognized standards. Galet (1956) indicates that for France the hybrids are of questionable value because most of them are lacking in phylloxera resistance and tolerance of high lime and must be grafted. To this may be added that many are also quite susceptible to certain foliage diseases. Wine quality has generally improved in more recent hybrids as more and more vinifera blood has been introduced. ^{they have been crossed back to vinifera} At the same time resistance to pests and to cold has generally decreased.

For those areas of eastern North America where vinifera is not well adapted the hybrids may be highly valuable. The species involved have contributed in the various hybrids a range of tolerance or resistance to temperature extremes, soil pests, disease and even, apparently to Pierce's disease in Seyve-Villard 12-309.

Many of the more commonly grown hybrids in France require a longer season to mature for optimum wine quality than that which is normal in ^{the grape districts of} Ontario or New York. These are the regions where they have been most widely tested in the

East. This fact plus the greater importance for us of winter cold hardiness would largely explain the selection of certain hybrids for the Northeast that have little place in French viticulture.

Breeding Programs in North America

The New York State Agricultural Experiment Station at Geneva

Introductions from the Geneva Station have received wider distribution and recognition than any other group of American introductions. The program was started in 1888. The major broad objective as ^{earlier} (early) defined was to combine vinifera fruit quality with cold hardiness, vigor, productiveness and disease resistance in dessert, juice and wine types. More specific objectives were to develop a more vigorous, larger clustered 'Delaware', and earlier ripening 'Concord' and an earlier 'Catawba'. Crosses were made to incorporate desirable characters found only in vinifera varieties into adapted varieties, as seedlessness, muscat flavor and the crisp texture and non slip-skin character. Since 1960 these objectives have been defined in even more specific terms and are today most concerned with juice and wine quality and disease resistance. American, vinifera and French hybrid varieties have been used extensively as parents.

One of [^] The latest introduction, 'Cayuga White', was originated from a cross of one of the best quality French hybrid white wine grapes and an advanced generation American labyrscana largely vinifera in fruit character. This is the first Geneva variety introduced specifically for wine, and an example of a variety with a complex species background including ^L labrusca but with no foxy character in the wine.

(62)

In addition to the varieties ^{described} (listed {here}) the Geneva Station has introduced another dozen and a half varieties that have been discarded or are no longer available or recommended. These may be found in New York State Agr. Exp. Sta. Bul. No. 794, 1962.

Brief descriptions of the persisting and newer New York introductions are included in the listing of varieties as most of these are recommended for trial by one to many states. These are listed here in chronological order:

Intro. to Name

Parentage

1908	Ontario	N.Y. 95	^L Winchell (lab., vin., aest.) J. A. Clough, 1850, Vt.	x	^L Diamond (lab., vin.) J. Moore, 1870, N.Y.
1912	Portland	4393	^L Champion (lab.) 1870, N.Y.	x	^L Lutie (lab.) L.C. Chisholm, 1885, Tenn.
1912	Urbana	3518	^L Governor Ross (lab., vin.) Munson, 1894	x	^L Mills (lab., vin.) W.H. Mills, 1870, Hamilton, Ontario
1921	Sheridan	4272	^L Herbert (lab., vin.) E.S. Rogers, 1855, Mass.	x	^L Worden (lab., vin.) S. Worden, 1863, N.Y.
1923	Keuka	9936	Chasselas Rose (vin.)	x	Mills (see above)
1927	Fredonia	Gladwin 15	Champion (see above)	x	^L Lucile (lab.) J. A. Putnam, 1890, N.Y.
1927	Golden Muscat	10303	Muscat Hamburg (vin.)	x	Diamond (see above)
1930	Seneca	10513	Lignan Blanc (vin.)	x	Ontario (see above) Geneva, 1908
1935	Van Buren	Gladwin 3000	Fredonia (see above) Geneva, 1927	x	Worden (see above)
1937	Yates	11683	Mills (see above)	x	Ontario (see above) Geneva, 1908
1938	Athens	12046	^L Hubbard (lab., vin.) J. Bachmann, 1903, Ark.	x	Portland (see above) Geneva, 1912
1938	Buffalo	10830	^L Herbert (lab., vin.) E.S. Rogers, 1855, Mass.	x	^L Watkins (lab., vin., aest.) Geneva, 1930
1939	Kendaia	12341	Portland (see above) Geneva, 1912	x	Hubbard (see above)
1947	Interlaken Seedless	15292	Ontario (see above) Geneva, 1908	x	Sultanina (vin.) (Thompson Seedless)
1947	Schuyler	13920	Zinfandel (vin.)	x	Ontario (see above) Geneva, 1908

1947	Steuben	12696	Wayne (Lab., vin., aest.) Geneva, 1927	x	Sheridan (see above) Geneva, 1921
1952	Alden	13035	Ontario (see above) Geneva, 1908	x	Grosse Guillaume (vin.)
1952	Bath	18149	Fredonia (see above) Geneva, 1927	x	Chass. Rose Violet (vin.) x Mills (see above)
1952	Himrod	15310	Ontario (sib of Inter- laken Seedless) → (center)	x	Sultanina
1952	Naples	17594	Delaware (Lab., vin., aest.) A. Thompson, 1881, Ohio	x	Mills x Iona (Lab., vin.) (see above) C. W. Grant, 1885, N.Y. 1885, N.Y.
1952	Romulus	15291	Ontario (sib of Inter- laken Seedless) sib of Interlaken Seedless	x	Sultanina
1961	Canada Muscat	17806	Muscat Hamburg (vin.)	x	Hubbard (see above)
1961	New York Muscat	12997	Muscat Hamburg (vin.)	x	Ontario (see above) Geneva, 1908
1972	Lakemont	15305	Ontario (sib of Inter- laken Seedless) sib of Dutch laken Seedless	x	Sultanina
1972	Suffolk Red	21572	Fredonia (see above) Geneva, 1927	x	Russian Seedless (vin.)
1972	Cayuga White	33403	Seyval (Vinc., rup., vin.)	x	Schuyler (see above) Geneva, 1947

Horticultural Research Institute of Ontario, Vineland, Ontario, Canada

The program at Vineland was initiated in 1913 with the general objective of producing improved fresh fruit varieties for shipping and storage. As more of the grape crop was used by wineries, more emphasis was placed on wine types. Dessert wine and table wine selections have been introduced and are being accepted by the Canadian wine industry. American and French hybrids are involved as parents. The following have been named:

- 1961 Veeport V. 29143 Wilder (^LTab.,vin.) x Winchell (^LTab.,vin.,aest.)
(E.S. Rogers, 1869, Mass.) (J.A. Clough, 1850, Vt.)
- 1964 Vinered V. 29186 Brocton (^LTab.,vin.,aest.) x self
Geneva, 1919
- 1967 Vincent V. 49431 [^LLomanto (^Lchamp.,^LTab.,vin., x Seneca] x S10878
bourg.) T.V. Munson, 1902, Geneva (Chelois)
Texas 1930
- 1974 Ventura V. 51061 Seibel 10878 (Chelois) x Elvira (^LTab.,vulp.)
J. Rommel, 1874, Mo.

Descriptions of these introductions are included in the listing of varieties since all are in commercial production in Ontario.

✓ Add. Festive
Veeblau.

Virginia Polytechnic Institute, Blacksburg, Virginia

The Virginia program started in 1930 at Blacksburg with well defined objectives as reported in V.P.I. and S. V. Extension Publication 5, 1973:

(1) lessened susceptibility to the infection of the fruit and foliage by black rot, downy mildew and powdery mildew; (2) uniform coloring and ripening of the berries, which may be a problem on Concord and some other varieties when they are grown in the warmer areas of Virginia; (3) ability of the berries to escape cracking or splitting of the skin if showers occur as the fruit is ripening; (4) a range of berry textures and flavors ranging from typical eastern slipskin labrusca bunch grapes to vinifera-like types having adherent skin, meaty flesh and crisp texture, and flavor lacking the foxiness of labrusca types.

These objectives, especially the first three, define the major problems in bunch grape production as we move south to the Carolinas.

The first four introductions are typical American type labruscana grapes, in season from very early to 2 weeks before 'Concord', and adapted to Blacksburg, Virginia conditions. The last introduction, a high quality vinifera type was introduced for the grape fancier willing to provide the necessary extra care.

Virginia Introductions

1967	Alwood	VPI 5-2	Fredonia Geneva, 1927	x	Athens Geneva, 1938
1969	Moored	VPI 26	Fredonia	x	Athens
				↑	sib of Alwood
1973	Price	VPI 30	(Hector x Seibel 13053) Geneva, 1937	x	(Fredonia x Athens) sib of Alwood
1973	Monticello	VPI 31	USDA 4606-5 Fredonia x Niagara	x	(Fredonia x Athens) sib of Alwood
1973	Century 1	VPI 32	Seyve-Villard 20-347	x	Dunstan #3

'Alwood'. --- Fruit: blue black with heavy bloom; clusters medium, compact; ripening uniformly in Virginia, 2 to 3 weeks before 'Concord'; typical labruscana, sweet, moderately foxy; not subject to cracking; quality good; resembles 'Worden' or 'Concord'. Vine: of medium vigor, reported hardy and tolerant to black rot, anthracnose, downy mildew and powdery mildew at Blacksburg.

'Moored'. --- Fruit: red; clusters above average, well filled, ripens with 'Fredonia', 3 weeks before 'Concord'; has Labrusca fruit quality, foxy. Vine: good vigor, hardiness; black rot, downy mildew, powdery mildew and anthracnose readily controlled.

'Price'. --- Fruit: blue black with heavy bloom; clusters medium, well filled; ripening very early, with 'Van Buren' or 4 weeks before 'Concord'; labruscana type, moderately foxy, quality comparable to 'Worden' or 'Concord'. Vine: of average vigor and productivity.

'Monticello'. --- Fruit: blue black, heavy waxy bloom; clusters above average, compact; uniform ripening, 2 weeks before 'Concord'; sweet, fruity, quality very good; resembles 'Steuben'. Vine: above average vigor and productivity; tolerant to black rot, mildew and anthracnose with spray program.

'Century 1'. --- Fruit: reddish black; clusters large, ripening with 'Concord'; vinifera texture, adherent skin; flavor sweet, fruity; quality excellent. Vine: medium hardy, mildew, requires good care.

Missouri State Fruit Experiment Station, Mountain Grove, Missouri

The Missouri Program was initiated in 1933 at Mountain Grove with the general aim of improving the quality, vigor and disease resistance of American grapes.

Parents used included the T. V. Munson varieties 'America', 'Ellen Scott', 'Captain', 'Muench' and 'Dr. Collier'. All these had V. ^Lvinifera, the Post Oak Grape in their background, in combination with other American species and vinifera. The vinifera table grape varieties, 'Terrett Monstre' (French), 'Prune de Cazouls' (Eastern Mediterranean) and 'Gros Guillaume' (Spanish) appear as parents and also several labruscanas. Twelve introductions were released in 1947:

NameParentage

Beaver

Triumph (lab., vin.)

(G.W. Campbell, 1883, Mo.)

Blue Eye

Ellen Scott (linc., lab., vin.) x America (linc., rup.)

(T.V. Munson, 1902, Texas)

(T.V. Munson, 1885, Texas)

Bokay

Captain (linc., rup., lab.) x Terret Monstre (vin.)

(T.V. Munson, 1896, Texas)

(French wine, dessert var.)

Bryant

Muench (linc., bourq.) x Terret Monstre (vin.)

(T.V. Munson, 1887, Texas)

Eleven Point

~~Captain~~~~x Terret Monstre~~

sib of Bokay

Gasconade

~~Captain~~~~x Terret Monstre~~

sib of Bokay

North Fork

Agawam (lab., vin.)

x Early Daisy (lab.)

(E.S. Rogers, 1856, Mass.)

(1874, Penna.)

Ozark Prize

Dr. Collier (linc. x Concord) x Sheridan (lab., vin.)

(T.V. Munson, 1885, Texas)

(Geneva, 1921)

Piney

Merrimac (lab., vin.) open pollinated

(E.S. Rogers, 1869, Mass.)

Roubidoux

Prune de Cazouls (vin.) open pollinated

St. Francis

Muench (linc., bourq.) x Gros Guillaume (vin.)

(T.V. Munson, 1887, Texas)

Tetra

Herbert (lab., vin.) x Worden

(E.S. Rogers, 1885, Mass.) (S. Worden, 1863, N.Y.)

7'

'Beaver'. --- Fruit: black; clusters medium; ripens a week before 'Moore's Early'; flesh firm; quality high. Vine: productive.

'Blue Eye'. --- Fruit: black; clusters larger than 'Concord', compact; ripens about 10 days after 'Concord'; produces attractive red juice. Vine: vigorous

'Bokay'. --- Fruit: yellow; clusters large, compact; ripens with 'Concord'; flesh meaty; resembles 'Malaga'; stores well. Vine: vigorous, hardy.

'Bryant'. --- Fruit: black; clusters, large, loose; ripens late, 4 weeks after 'Concord'; flesh firm; sweet. Vine: very vigorous.

'Eleven Point'. --- Fruit: black; clusters long; flesh firm; introduced for table use or for red wine; resembles its parent 'Captain'. Vine: vigorous; flowers imperfect, stamens reflex.

'Gasconade'. --- Fruit: black; clusters large, compact; ripens 2 weeks after 'Concord'; introduced as suitable for juice, wine or table use. Vine: very productive.

'North Fork'. --- Fruit: black; clusters large, compact; ripens 10 days before 'Concord'; pulp firm, sweet. Vine: very productive.

'Ozark Prize'. --- Fruit: black; cluster medium to large, compact; ripens with 'Concord', resembles 'Sheridan', keeps well.

'Piney'. --- Fruit: black; cluster larger than 'Concord'; ripens with 'Concord'; resembles 'Merrimac', typical labruscana.

'Roubidoux'. --- Fruit: blue; cluster medium, loose; ripens late, with 'Catawba'; vinifera type. Vine: ^Llabrusca type, hardy very vigorous.

'St. Francis'. --- Fruit: black; cluster large, compact; ripens 2 weeks after 'Concord'; flesh firm, sweet.

'Tetra'. --- Fruit: ; cluster medium to large, loose; berry large; ripens with 'Concord'; sweet, very fine flavor, "considered to be a tetraploid". Vine: growth fair, flowers imperfect, stamens reflex.

University of Minnesota Fruit Breeding Farm, Excelsior, Minn.

Grape breeding was started in 1908. Many of the early crosses included 'Beta' as a source of winter hardiness and other American grapes of higher quality. In 1944 the following varieties were named, all of uncertain parental origin:

Bluebell	Beta (vulpina x Concord) x unknown (L. Suelter, 1870, Minn.)
Blue Jay	of unknown origin
Moonbeam	- " -
Red Amber	- " -

'Bluebell'. --- Fruit: black, resembles 'Concord' in size and color; ripens in mid September in Minnesota; high quality for juice, jelly and dessert; Vine: productive, hardy.

'Blue Jay'. --- Fruit: dark blue, nearly size of 'Concord'; ripens in mid September in Minnesota; for juice and jelly. Vine: hardy; flowers imperfect, reflex stamens.

'Moonbeam' and 'Red Amber' are included in the master list of varieties.

South Dakota Agr. Exp. Station, Brookings

The wild grape of the Dakotas, Vitis vulpina (riparia), was crossed with some of the choicer Roger's varieties and other American grapes to incorporate the cold hardiness of vulpina. In 1925 a total of 32 selections that appeared to be hardy and to have superior fruit qualities for the more northern regions were named and introduced. Of these the following have been listed by Brooks and Olmo (1972, 1973) and are therefore presumably still available and of interest:

Atkan Lady (from seed of Concord) x North Dakota Wild (presumably vulpina)
1874
(J. Inlay, 1974-75, Ohio)

Mandan Wilder (lab., vin.) x North Dakota Wild
E.S. Rogers, 1869, Mass.

Napka Salem (lab., vin.) x Beta (lab., vulpina)
E.S. Rogers, 1867, Mass. L. Suelter, 1870, Minn.

Shakoka ~~Lady~~ x ~~North Dakota Wild~~
↑
sib of Atkan

Sonona (Sanoma, Sonoma) ~~Lady~~ x ~~North Dakota Wild~~
↑
sib of Atkan

Toscha ~~Lady~~ x ~~North Dakota Wild~~
↑
sib of Atkan

'Atkan'. --- Fruit: white, tinged pink; cluster long; flesh sweet.

'Mandan'. --- Fruit: black; ripens early; quality fair. Vine: heavy producer, vigorous

'Napka'. --- Fruit: black; cluster compact; berry small; quality fair. Vine: not reliably hardy.

'Shakoka'. --- Fruit: black; quality fair;

'Sonona'. --- Fruit: white to light red at maturity; sweet.

'Toscha'. --- Fruit: white; cluster compact; flesh firm, sweet, meaty; quality fair. Vine: moderately hardy.

to what

University of Florida, Agricultural Research Center, Leesburg, Florida

A breeding program was begun in the mid 1940's to combine the ^{disease} resistance and longevity of native Florida species (Vitis ^S shuttleworthi House, Vitis ^S simpsoni Munson and Vitis ^S smalliana Bailey) the Calloosa, Currant and Figleaf grapes with the acceptable flavors and desirable fruit qualities of vinifera and its hybrids (Stover and Mortensen, 1963). The following introductions from this program have been named by L. H. Stover and J. A. Mortensen:

- | | |
|-------------------|---|
| 1954 Lake Emerald | ^S Pixiola (<u>simpsoni</u>) x Golden Muscat
K. Loucks, Fla., 1942 (Geneva, 1927) |
| 1960 Blue Lake | ^S <u>smalliana</u> x Caco |
| 1967 Norris | ^S [^S (<u>smalliana</u> x <u>Kincecumii</u>) x Cardinal (vin.)] x Lake
Emerald (see above) |
| 1968 Stover | ^S Mantey (likely <u>shuttleworthi</u> o.p.) x Seyve-Villard
(K. Mantey, 1951, Florida) 12-309 |

The following descriptions are based on those of the introducers and refer to behavior in place of origin. These varieties have not been grown at Geneva.

'Lake Emerald'. --- Fruit: berries somewhat small, to 16mm., skin emerald green to light golden, fairly tough; flesh soft, sweet, with unique aroma; ripens during July at Leesburg, Florida; primarily for home gardens and local

markets. Vine: tends to overcrop, no symptoms of degeneration due to Pierce's disease, more resistant to black rot and downy mildew than post-oak (*Vincecumii*) grape hybrids.

'Blue Lake'. --- Fruit: Cluster loose; skin blue with light bloom; flesh spicy, slightly tart; ripens during July at Leesburg; for juice, jellies and preserves when fully mature, limited value for fresh market, a home garden variety. Vine: resistant to Pierce's disease.

'Norris'. --- Fruit: cluster moderately large; berry medium, to 19mm.; skin deep purple; ripens late July at Leesburg, for fresh use. Vine: resistant to Pierce's disease and downy mildew requires a pollinator.

'Stover'. --- Fruit: cluster medium, often shouldered; berry about 14mm.; skin light green to golden, translucent; sugar content at maturity averages 17-18%, a dessert variety; ripens late June-early July at Leesburg. Vine: vigor significantly improved when grafted on 'Lake Emerald' and 'Dog Ridge'; tolerant to Pierce's disease and downy mildew, susceptible to anthracnose and powdery mildew.

Oklahoma State University, Stillwater

A program to breed juice and dessert grapes adapted to local conditions resulted in the 1958 release by Herman A. Hinricks of the 'Cimarron' variety, from a cross of Vitis cinerea, the Grayback grape of that area by 'Seneca'. The variety is described as follows:

'Cimarron'. --- Fruit: cluster medium to large; moderately compact; berry medium to large; skin blue-black with heavy bloom; ripens evenly about one week before 'Concord'; similar to 'Concord' in shape, color, but somewhat smaller, for fresh, juice and jelly. Vine: healthy, drought resistant, very hardy, resistant to black rot.

The University of Illinois, Urbana

The Illinois program of H. C. Barrett resulted in the 1968 introduction of 'Lady Patricia'. This program is no longer active. 'Lady Patricia'. --- resulted from a cross of 'Seibel 14664' by 'Seyve-Villard 20-365', both parents being table type, rather than wine grapes. Fruit: cluster large, loose; berry large, elongate, "lady finger" shape; best adapted for areas from central Illinois and southward. At Vineland ripens late, not every year and is moderately hardy. At Geneva, the variety does not ripen in an average year and has winter killed to the ground most years.

University of California, Davis

H. P. Olmo's program at Davis, although heavily vinifera oriented, has produced the following labruscana introductions:

1946	Scarlet	Golden Muscat x Teinturier
		(Geneva, 1927) (of South of France)
1958	Early Niabell	Campbell Early (tetraploid) x Niagara (tetraploid)
1958	Niabell	Campbell Early (tetraploid) x Niagara (tetraploid)

The descriptions are from California observations:

'Scarlet'. --- Fruit: cluster small, compact; berry medium; skin black; juice abundant, dark red, high in sugar and acid, mild 'Concord'-type flavor.

Vine: resistant to powdery mildew, introduced for home and commercial production of grape juice in California. The variety is too late to ripen properly at Geneva; it has persisted for over 20 years but shows considerable cold injury.

'Niabell' and 'Early Niabell' both resulted from crossing a tetraploid sport or mutation of 'Campbell Early' by a similar double chromosome form of 'Niagara'. These varieties have 76 chromosomes in each body cell instead of the usual diploid number of 38. They were obtained at Geneva in 1957 but never successfully established in the vineyard. The descriptions are from California publications.

'Early Niabell'. --- Fruit: cluster medium, well filled; berry large; skin purplish black; ripens in early mid season, useful for table fruit, fresh

juice, semi-sweet wines. Vine: vigor medium to poor; tolerant to powdery mildew; difficult to propagate by rooting of cuttings, suggested that they be grafted on diploid rootstocks.

'Niabell'. --- Fruit: cluster short, well filled; berry very large; skin jet black, ripens in midseason, adapted for table fruit, fresh juice, semi-sweet wines. Vine: vigorous, tolerant to powdery mildew. Same problems in propagating as with 'Early Niabell'.

Programs of the U.S. Department of Agriculture

The USDA programs concerned with native bunch grapes have been designed to improve the quality and adaptability of these types by crossing parents of various species origin. Needs of the southern and central regions, which involves above all resistance to pests and diseases have been primary objectives. The Beltsville, Md. Station has introduced three varieties, the first jointly with the New Jersey Agr. Expt. Station, the others with the Maryland Agr.

Expt. Station:

1954 Dix L L L
 America (Linc., rup.) x Bailey (Linc., Lab., vin.)

 T.V. Munson, 1885, Texas T.V. Munson, 1886

1967 Bluestar L L
 Fredonia (Lab.,) x Niagara (Lab., vin.)

 Geneva, 1927 Hoag and Clark, 1872, N.Y.

1967 Rosebelle Fredonia x Niagara

'Dix'. --- Fruit: berry medium; skin black; juice intensely colored, of value as a juice grape rather than for dessert; ripens with 'Concord'.

'Bluestar'. --- Fruit: cluster medium to large, tight; berry medium; skin blue; american, foxy, for roadside and home garden; ripens between 'Fredonia' and 'Concord'. Vine: introduced as adapted for central area of the U.S.; more consistently productive than 'Fredonia'.

'Rosebelle'. --- Fruit: cluster large, compact; berry medium; skin red; foxy; ripens before 'Concord' and more evenly than 'Fredonia' and 'Concord', for roadside and home garden. Vine: more consistently productive than 'Fredonia'.

The Southern Plains Field Station of the Department, at Woodward, Oklahoma released three new varieties in 1959. The official release described them as all very drouth resistant in western Oklahoma, adapted best to the southwest because they are somewhat lacking in winter hardiness. These varieties have not been grown at Geneva; the descriptions are from the USDA release, dated Dec. 7, 1959:

Chilcott open-pollinated Volney ('Volney' not listed by Munson 1909), but obtained at Geneva from Munson Nursery, Denison, Texas in 1917

Keating open-pollinated Last Rose (^Linc., ^Lab., vin.)

T.V. Munson, 1902, Texas

Osborn open-pollinated Armalaga (^Linc., ^Lab., vin.)

T.V. Munson, 1902, Texas

'Chilcott'. --- Fruit: cluster medium to large, compact; berry medium to large; skin dark red to nearly black; flavor muscat; quality good to excellent; ripens in mid-August at Woodward.

'Keating'. --- Fruit: cluster medium to large, compact; berry medium to large; skin yellowish green, quality good to excellent; ripens early August at Woodward; does keep well.

'Osborn'. --- Fruit: cluster medium; berry medium; skin black; ripens mid-August at Woodward, stores well.

The Muscadines-Origin and Recommended Varieties

The problem of growing bunch grapes in the southeastern and Gulf States are so formidable that the muscadines appear at the present time to be the best answer to commercially competitive grape plantings. The most serious limiting factors are soil pests like phylloxera, nematodes and root borers and the fungous diseases, black rot, powdery mildew, downy mildew and anthracnose attacking both fruit and vine. ^{In} Florida Pierce's Disease kills most standard varieties in a matter of time. The high summer temperatures with frequent rains and high humidity can not be controlled and result in catastrophe to the crop.

do you mean to include fungus?

The muscadines are ^a native to the region; they show sufficient resistance to disease and insect injury to grow and persist. Selections of wild growing vines and of chance seedlings of Vitis rotundifolia were the sources of such varieties as 'Eden', 'James', 'Mish', 'Thomas' and 'Scuppernong' (Snyder 1937). The last two are still leading commercial varieties in the Carolinas (Farmers Bulletin 2157) although introductions from USDA and state breeding programs are replacing the old varieties. The most ambitious programs of the past were those in Georgia and cooperative effort of the USDA with North Carolina and at Meridian, Mississippi.

The state program at the Georgia Station, Experiment Georgia to improve vine and fruit qualities of muscadines yielded the first introductions in 1919. The program is still an active one.

The USDA's cooperative program with the North Carolina State Department of Agriculture at its Test Farm at Willard began in 1907 with a major goal, the production of perfect flowered clones. A number of varieties ^{many perfect flowered} were released in 1946. Introductions from North Carolina in 1957 and 1962 were joint, by the USDA and the North Carolina Agricultural Experiment Station, Raleigh. The most recent introductions, in 1970 and 1973, have been from a revived State program at the University of North Carolina at Raleigh.

The USDA also carried on a muscadine breeding program at the U.S. Horticultural Field Station, Meridian, Mississippi from 1941 through 1965.

^{accomplishments or releases} A list of introductions from these programs by year gives a picture of activity and accomplishments:

<u>Year</u>	<u>Source</u>	<u>Varieties</u>
1919	Georgia Station, Experiment, Georgia	Hunt, Irene, November Qualitas, Spalding, Stuckey
1933	---- " ----	Brownie, Lucida
1934	---- " ----	Dulcet, Yuga
1938	---- " ----	Creek, Dawn
1946	USDA with the N.C. State Dept. of Agr., Willard	Willard, Wallace, Pender, Burgaw, Tarheel, Duplin, Topsail, Orton, New River, Cape Fear, Morrison, Onslow, Stanford, Kilgore, Creswell
1955	Georgia Station	Higgins
1957	USDA with Raleigh, N.C.	Dearing
1959	USDA at Meridian, Miss.	Magoon

1962	USDA with Raleigh, N.C.	Albemarle, Chowan, Magnolia Roanoke, Pamlico
1967	USDA at Meridian, Miss.	Southland, Bountiful, Chief
1968	Georgia Station	Cowart
1970	N.C. Expt. Station Raleigh	Carlos
1971	Georgia Station	Fry, Jumbo
1973	N.C. Expt. Station Raleigh	Noble

A survey of the states where muscadines are grown was done by questionnaire and by consultation of published varietal recommendations. The following varieties were listed by the States as indicated:

VARIETY	ORIGIN		FRUIT COLOR	FLOWER	LISTED
Albemarle	USDA---N.C.	1962	Black	Perfect	Fla., N.C.
Bountiful	USDA---Miss.	1967	Black	Perfect	
Burgaw	USDA---N.C.	1946	Black	Perfect	USDA, Ia.
Carlos	N.C.	1970	Bronze	Perfect	Ark., Fla., Ga., N.C., S.C.
Chief	USDA---Miss.	1967	Black	Perfect	Fla.
Chowan	USDA---N.C.	1962	Bronze	Perfect	N.C.
Cowart	Ga. Expt. Sta.	1968	Black	Perfect	Fla., Ga., S. Car.
Creek	Ga. Expt. Sta.	1938	Black	Pistillate	USDA, Fla., Okla.
Dearing	USDA---N.C.	1957	Bronze	Perfect	USDA, Fla., Ia., Va.
Dulcet	Ga. Expt. Sta.	1934	Black	Pistillate	USDA, Okla.
Duplin	USDA---N.C.	1946	Black	Perfect	Ark.
Fry	Ga. Expt. Sta.	1970	Bronze	Pistillate	Fla., Ga., S.C.
Higgins	Ga. Expt. Sta.	1955	Bronze	Pistillate	Ark., USDA, Fla., Ga., Ia., N.C., S.C.
Hunt	Ga. Expt. Sta.	1919	Black	Pistillate	USDA, Ark., Fla., Ga., Ia., N.C., Okla., Va.

Recommended (?)

(48)

James	Wild Selection	1866	Black	Pistillate	Ark.
	N.C.				
Jumbo	Ga. Expt. Sta.	1970	Black	Pistillate	Fla., Ga.
Magnolia	USDA---N.C.	1962	Bronze	Perfect	Fla., Ga., N.C., S.C., Va.
Magoon	USDA---Miss.	1959	Black	Perfect	USDA, Fla., Ga.
Noble	N.C.	1973	Black	Perfect	Fla., Ga., N.C.
Pamlico	USDA---N.C.	1962	Bronze	Perfect	
Pride	Old selection---	----	Black	Pistillate	
Roanoke	USDA---N.C.	1962	Bronze	Perfect	Ark., N.C.
Scuppernong	Old selection	before 1790-1760	Bronze	Pistillate	USDA, La., N.C., Okla., Va.
Southland	USDA---Miss.	1967	Black	Perfect	Fla.
Tarheel	USDA---N.C.	1946	Black	Perfect	Fla., N.C.
Thomas	Old selection		Black	Pistillate	USDA, La., Okla., Va.
Topsail	USDA---N.C.	1946	Bronze	Pistillate	USDA, La., Va.
Wallace	USDA---N.C.	1946	Bronze	Perfect	Ark.
Welder	H.M. Welder---	1972	Bronze	Perfect	Fla.
	Fla.				
Willard	USDA---N.C.	1946	Bronze	Perfect	Okla.
Yuga	Ga. Expt. Sta.	1934	Bronze	Pistillate	USDA, La.

Evitus Varieties Currently Listed in State Recommendations

The varieties here listed and described in some detail are those that are being grown generally or in parts of the East, that are listed in official recommendations for sizeable areas or that have major historical significance although perhaps of little commercial importance today. The list compiled from State and Federal publications and from answers to a questionnaire that was sent in 1974 to involved institutions in the East. In all, 36^{Sources} were consulted. In addition a small number of the viniferas most likely to have some commercial impact in the East are included:

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as per
David

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The descriptions and observations are based unless otherwise indicated on the behavior of these varieties in the Geneva collection over a period of years.

The Status indicates by whom the variety is listed plus our best estimate of present interest and whether any substantial commercial production occurs.

The Origins include historical references with special attention to the species background of the varieties. This background is useful in predicting regional adaptability, cold hardiness and pest resistance, factors so important in determining whether the variety will persist under given conditions.

The Fruit is briefly described. Representative values are presented for Season and composition of major varieties. Where data are available from areas of the northern limits to more southern climates a picture emerges of the variations in sugar and acid of these varieties as they are grown under different temperature conditions. These comparisons may also be useful in predicting the behavior of other varieties for whom such data are not available. The "cellar" data are not all strictly comparable in that some indicate the total acid in the must or juice and others in the finished wine. Where this is not clear the designation (M) indicates expressed juice or must, (W) indicates wine. Also, the wine samples may be from an unameliorated juice or from a juice ameliorated with sugar syrup to some standardized percentage.

The Geneva samples are uniformly adjusted to 21 percent soluble solids by adding sugar and all musts are ameliorated 15 percent by volume with a 21 percent sugar syrup immediately after pressing. The total acid figures are all of the wine.

The Vineland figures are from Reports from the Ontario Horticultural Experiment Station and Products Laboratory from 1957-58, 1961, 1963, 1966 and 1970. Total acid figures reported were determined in the juice samples. The wine samples were made from musts to which sugar was added to bring the final alcohol within a given range, and without the addition of any sugar syrup.

The Ohio data are from fruit samples from the Southern Branch of the Agric. Research and Development Center at Ripley below 39° north latitude as compared to Geneva and Vineland at approximately 43° . The total acid data are of juice samples. These data are from mimeographed annual reports kindly supplied by J.F. Gallander of the Ohio Agricultural Research and Development Center at Wooster and from the Proceedings of the Ohio Grape-Wine Short Courses for 1973 and 1974.

The Virginia data are of expressed juice of fruit grown at Virginia Polytechnic Institute at Blacksburg, for the season 1949, unpublished data kindly supplied by G.D. Oberle.

The Arkansas data are of expressed juice of fruit grown at the Clarksville Fruit Substation at approximately $35^{\circ}30'$ north in 1964, reported in Arkansas Farm Research 130 (6) : 5, 1964.

The Kentville, Nova Scotia were supplied by the Research Branch, Canada Department of Agriculture, Research Station, Kentville, N.S. through the courtesy of D. Craig.

'Adams' ('Champagne')

Status: Listed in New Jersey

Origin: In Hammonton, New Jersey by Alvin Adams. Introduced in 1920 by Hugo Kind, nurseryman, a chance seedling of Vitis^L Labrusca; discovered in 1888 according to Brooks and Olmo (1972).

Fruit: Cluster small, compact; berry large; skin green, tinged with red, reddish brown; flesh tough, acid, very foxy, low quality.

Vine: Similar to the wild ^LLabrusca

Use: Apparently some commercial use in southern New Jersey.

'Agawam'

Status: Grown commercially in quantity only in Ontario, Canada.

Origin: By E.S. Rogers of Salem, Mass. about 1856, his Number 15, the only self-fertile of the Rogers' Hybrids, named in 1869 after the Indian name of a town in Hampden Co., Mass. Derived from a cross of a wild L. labrusca by 'Black Hamburg', a vinifera hot house table grape.

Fruit: Cluster variable, to 20cm. long, loose; berry large; skin purplish red; ripens following 'Concord'.

Season and composition: range and (average)

	Harvest date	Brix	Total acid %	Tannin mg/100ml.
Vineland, 8 yrs. Oct.1-Oct.17 Ontario (Oct.7)	12.2-19.3 (17.0)	0.53-1.02(M) (0.90)	26-100 (M) (47)	
Blacksburg Va. V.P.I. 1949	Sept.8	16.8	0.61 (M)	

Vine: Of standard size, drooping; reported susceptible to mildew and black rot at Vineland, in New York and elsewhere; in severe winters hardiness questionable in New York and reported medium hardy in Ontario, and shoots subject to late spring frosts.

Use: In Ontario rated most highly as a sweet dessert wine and for sherry production.

'Alden'

Status: Included in lists from Ohio and Ontario

Origin: Named in 1952 by the Geneva Station, from a cross of 'Ontario' by 'Gros Guillaume', or 'Ribier', a large berried, vinifera dessert variety.

Fruit: Cluster medium to large to 23cm., rather loose; berry large, oval, to 21 by 24 mm.; skin reddish black with heavy bloom; ripens a few days after 'Concord'.

Season and composition:

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
Vineland 8 yrs. O-tlano	Sept.29-Oct.17	13.0-16.2 (15.0)	0.59-0.76(M) ()	17-150(M) (151)
Ripley, Ohio 8yrs.	Sept.9	14.9	0.52(M)	

Vine: Standard size; tends to overcrop, moderately hardy to winter cold.

Use: 'Alden' is a vinifera type, large berried seeded variety resembling 'Ribier' ('Alphonse Lavallée'). It requires careful crop control and cluster thinning to achieve maximum dessert quality. The variety has some use in Ontario for wine.

'Athens'

Status: Listed in South Carolina, a 'Concord' type about three weeks earlier than 'Concord' of no special value. It may ripen more uniformly than 'Concord' in the South.

Origin: Introduced in 1938 by the Geneva Station, a cross of 'Hubbard' x 'Portland', the former a black labruscana, the latter an early white.

Fruit: Clusters medium to large, to 23cm., loose; berries oval, large, 17-19 mm. by 20 to 22 mm. long; skin reddish black with heavy bloom; ripens at Geneva three weeks before 'Concord'.

Vine: Standard; hardy.

Use: An earlier ripening 'Concord' type dessert grape of questionable value. The fruit loses quality rapidly after maturity and also cracks readily.

'Aurore' ('Seibel 5279')
~~'Seibel 5279' ('Aurore')~~

Status: Listed by Arkansas, Illinois, Michigan, Missouri, New Hampshire, New York, Ohio, Oklahoma, Pennsylvania, Virginia and Ontario, the most widely planted white French hybrid in New York. Galibert () describes it as a good table grape, although somewhat small and too tender to ship.

Origin: From a cross of 'Seibel 788', (vinifera-rupestris) by 'Seibel 29' (Aincecunii, rupestris, vinifera). It was obtained at Geneva in 1938 from the Central Exp. Farm. Ottawa, Canada.

Fruit: Cluster medium, to over 20cm., loose to compact; berry medium, 14 to 16mm.; skin white to pinkish, thin; ripens early.

Season and composition: range and ^{median} (average)

	Harvest date	Brix	Total acid %	Tannin mg/100ml
Geneva ¹⁶ yrs. _{New York}	Aug. ³¹ 13 - Sept. 25 (Sept. 9)	14.5-21.0 (17.0)	0.61-1.16(W) (0.80)	18-26(W) (20)
Vineland 8 yrs. _{Ontario}	Sept. 12 - Sept. 20	15.1-19.5 (19.1)	0.90-1.8 (M) (1.02)	
Ripley, Ohio 1970-1975	Aug. 19 - Aug. 31 (Aug. 25)	13.0-19.0 (16.0)	0.74-1.05(M) (0.92)	
Kentville 1974 N.S.	Oct. 15	15.1	1.36(M)	

Vine: Standard size; occasional powdery mildew, and bird damage at Geneva; according to Smith (1972) in the Finger Lakes of New York it is susceptible to ^{bunch} (brown) rot, powdery mildew and phylloxera leaf galls, sulfur tolerant, the thin skin is prone to cracking and Botrytis rot may appear prior to harvest; rated moderately hardy.

what is brown rot?
(sic)

Use: Wine samples at Geneva have been described as neutral, pleasant, lacking distinctive character, not outstanding in aroma or flavor but very useful as blending wine. Samples have rated mostly good to very good.

'Baco Noir' ('Baco 24-23', Baco #1)
~~'Baco #1' ('Baco 24-23', 'Baco Noir')~~

Status: Listed in Kansas, Michigan, Missouri, New York, Ohio, Pennsylvania, Virginia. It is being used commercially in red table wines in some of these states.

Origin: By Francois Baco (1865-1947) in 1902, 'Folle Blanche', vinifera, by a riparia; designated 24-23, later #1 and 'Baco Noir', obtained at Geneva in 1939 from the Maclet-Botton Nursery of Villefranche, Rhône, France. Only commercialized vinifera-riparia (vulpina) French hybrid according to Galet (1956).

Fruit: Cluster medium to long, to 18cm., loose to compact; berry small; skin black, occasional fruit cracking and poor condition; ripens early.

Season and composition: range and ^{median}(average)

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
Geneva ⁸ yrs.	Sept. 10-Oct. 12	19.0-21.8	0.88-1.36(W)	47-147(W)
New York	(Sept. 28)	(20.2)	(1.03)(0.92)	(105)
Vineland 4 yrs.	Sept. 3-Sept. 14	17.3-21.7	1.52-2.48(M)	
Olmo				
Ripley, Ohio 8 yrs.	Sept. 5	18.9	1.68(M)	

Vine: Large, canes long, resembles riparia; somewhat susceptible to powdery mildew; moderately winter hardy; buds force early and are subject to spring frost hazard.

Use: Wine samples at Geneva have been thin, acid, and herbaceous, to pleasant, with good body and tannin, rating from fair to very good. Brooks and Olmo (1972) describe the wine as highly colored, heavy, bitter and herbaceous, requiring long aging to improve.

'Bailey'

Status: Listed only by Oklahoma, Munson (1909) described it as a valuable market grape, superior to 'Concord' especially in south-central and ~~South~~ Southwest Texas. Hedrick (1908) reported that 'Bailey' did not ripen properly at Geneva and that it was liable to winter injury in cold years.

Origin: By T.V. Munson, Denison, Texas in 1909, of Post Oak (^L~~Vincecumii~~), Labrusca, vinifera background, from a cross of 'Big Berry' by 'Triumph'.

Fruit: Cluster large; compact; berry medium to large; skin black; ripens with 'Catawba'.

Season and composition: range and average

	Harvest date	Brix	Total acid %
Ripley, Ohio 1972-1975	Sept. 15-24 (Sept. 20)	13.5-17.0 (15.6)	0.46-0.62(M) (0.53)

'Bath'

Status: Listed only in New York, it has not gained favor as fresh fruit or for wine. Commercial interest has been shown in British Columbia because of high production attained with the variety.

Origin: Named by the Geneva, N.Y. Station in 1952, from a cross of 'Fredonia' by a 'Chasselas Rose-Violet' by 'Mills' seedling.

Fruit: Cluster medium, 12 to 15cm. long, well filled; berry medium, 15 to 17mm.; skin black with heavy bloom; ripens about one week before 'Concord'.

Season and composition: range and average

Geneva 2 yrs. <i>New York</i>	Oct.10-Oct.17	16.4-19.0 (17.7)	0.72-0.82(W) (0.77)
Vineland, 4 yrs. <i>Ontario</i>	Sept.14-Oct.1	15.0-19.0 (17.4)	0.53-1.20(M) (0.83)
Ripley, Ohio 8 yrs.	Sept.12	16.9	0.37

Vine: Of standard size; occasional powdery and downy mildew observed at Geneva, susceptible to mite attack and over-cropping common; hardy.

Use: Wine samples at Geneva have been low in color, fruity, ^Aamerican in character, rated fair to good. Vineland samples have been described as fruity, not ^Llabrusca.

'Beacon'

- Status: Presently a recommended variety in Texas and Louisiana, adapted South and North, from North Texas to Missouri, according to Munson (1909).
Not-well adapted to New York, may lack hardiness, has low fruit quality, shells badly and does not compete with 'Concord' (Hedrick 1908).
- Origin: By T.V. Munson of Denison, Texas in 1886, from a cross of a Post Oak ^L (Linsecumii) selection called 'Big Berry' by 'Concord'.
- Fruit: Clusters large, moderately compact; berry as large or larger than 'Concord'; skin black with heavy white bloom; ripens after 'Concord', at V.P.I. in 1949, on Sept. 12, Brix = 16.0, Acid = 1.58
- Use: Possibly as a 'Concord' type in warmer areas where 'Concord' does not ripen uniformly.

'Beta'

Status: A recommended variety in most areas where winter cold prohibits the growing of varieties of higher quality. May be the hardiest of cultivated grapes and is included in recommendations from Kansas, Minnesota, North Dakota, Vermont and Wisconsin.

Origin: By Louis Suelter of Carver, Minnesota from a cross made about 1870 between a white fruited wild vulpina (riparia) and 'Concord'.

Fruit: Cluster typically 15cm long, compact; berry small; skin black with blue bloom; ripens before Concord.

Vine: Most closely resembles vulpina; large; very cold hardy, various accounts ^{that it will withstand} ~~figures of~~ from -30°F to -50°F.

107
'Brighton'

Status: Listed by Delaware, Massachusetts, Tennessee, the USDA, West Virginia and Wisconsin, probably because of its quality, appearance and the fact that it survives.

Origin: By Jacob Moore, a nurseryman of Brighton, New York, first fruited in 1870, a cross of ('Diana' x 'Black Hamburg') x 'Concord'. 'Diana' was grown from a seed of 'Catawba', 'Black Hamburg' is a vinifera table grape.

Fruit: Cluster medium to long, very loose to well filled; berry medium; skin dark red with lilac bloom; ripens with or before 'Concord'.

Vine: Of standard size; often subject to mildew; hardy.

Use: Although 'Brighton' has reflex stamens which result in poor fruit set and erratic cropping it still persists in the home garden.

'Buffalo'

Status: Included in recommendations from Illinois, Kansas, Kentucky, Massachusetts, Michigan, New York, Ohio and Ontario, a first class grape for the home fruit garden and local market.

Origin: Named by the Geneva, N.Y. Station in 1938, from a cross of 'Herbert' by 'Watkins', made in 1921. See diagram for 'Steuben' for genealogy; 'Watkins' has the same parents as 'Wayne'.

Fruit: Cluster medium to large, to 20cm., usually loose; berry medium, 18 to 19mm.; skin reddish black with heavy bloom; ripens with 'Fredonia', two weeks before 'Concord'.

Season and composition: range and average

	Harvest date	Brix	Total acid %	Tannin mg/100ml.
Geneva, 2 yrs. New York	Oct.5-Oct.16	18.8-23.0 (20.9)	0.61-0.76(W) (0.68)	144-173(W) (159)
Vineland, 8 yrs. Ontario	Sept.12-Sept.25	17.0-21.0 (18.6)	0.90-1.01(M) (0.91)	
Ripley, Ohio 8 yrs.	Aug.21	16.2	0.66(M)	
Blacksburg Va. V.P.I. 1949	Aug.29	17.7	0.83(M)	

Vine: Large to very large; occasional downy and powdery mildew observed at Geneva; moderately cold hardy in grape areas in New York and Ontario, subject to injury in most severe winters.

Use: Wine samples at Geneva have been described as light colored, mild fruity ^L/labrusca and rated good to excellent.

'Caco'

Status: Listed by New York and West Virginia and in nursery catalogs, one of few red grapes available.

Origin: Supposedly from a cross of 'Concord' by 'Catawba'.

Fruit: Cluster small, well filled; berry variable, 16 to 22mm., medium; skin red with bloom, ripens near 'Concord'.

Vine: Moderate size, hardy.

Use: Typical Zabrusca quality, for home use.

'Cabernet Sauvignon'

Status: One of the two most notable red wine varieties of the ^{World}. The claret wines of the ^{Médoc} Uuedoc and St. Emilion regions of France are made from this and related varieties. Some of the finest red wines of California carry the name. Because of its reputation it has been included whenever vinifera has been tried in the East. It may be more difficult to maintain than the white viniferas, 'Chardonnay' and White Riesling in the cold Northeast, and the wine may fail to reach the varieties' potential highest quality.

Origin:

Fruit: Cluster small to medium, variable to compact; berry small; skin black with grey bloom; ripens late midseason in California.

Season and composition: range and median

Harvest date	Brix	Total acid % Acid	Tannin
Geneva, Sept. 30-Oct. 21 N.Y. 8 yrs. (Oct. 12)	17.3 - 19.0 (18.0)	0.65-0.90 (0.76)	67 - 114 (102)
Ripley, Sept. 8 -Sept. 19 Ohio 3 yrs.	16.6 - 17.8 (17.6)	0.82-0.94(M) (0.86)	

Vine: Standard to very vigorous, powdery mildew observed frequently at Geneva, tender to winter cold.

Use: Wine samples at Geneva have been medium red, with strong varietal flavor; young wines ^{harsh} hangle, coarse herbacious, high in tannin, rated only fair to excellent, mostly good.

(111)

'Campbell Early'

Status: Listed by USDA, Arkansas and Delaware, a commercial variety in the Pacific Northwest (synonym 'Island Belle'), an early, good quality 'Concord' type when well matured.

Origin: By G.W. Campbell, Delaware, Ohio in 1892 from a cross of 'Moore Early' by a seedling of 'Belvidere' (^Llab.) by 'Muscat Hamburg' (vin.).

Fruit: Cluster large to medium, loose to compact; berry variable, usually large; skin black; ripens about two weeks before 'Concord'.

Vine: Variable in vigor, inferior to 'Concord' in cropping.

'Canada Muscat'

Status: Some production for wine in Ontario.

Origin: From a cross of 'Muscat Hamburg', a vinifera, dessert grape by 'Hubbard' (see genealogy of 'Athens' for 'Hubbard'). Introduced by the Geneva, New York Station in 1961.

Fruit: Cluster small to medium, 12 to 15cm., well filled; berry variable, mostly 17 to 18mm.; skin white; ripens after 'Concord'.

Season and composition: range and average?

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
Geneva, 9 yrs.	Oct.7-Oct.26	16.1-19.8	0.60-1.24(W)	21-44(W)
New York		(17.1)	(0.88)	(32)
Vineland, 8 yrs.	Oct.3-Oct.31	13.7-16.8	0.99-1.52(M)	27-215(M)
Ontario		(16.6)	(0.94)	(62)

Vine: Large; at Geneva powdery mildew frequent and slight sulfur sensitivity observed, Vineland reports susceptibility to powdery mildew, late ripening and only medium-sized crops.

Use: Wine samples at Geneva have been fruity, flowery, perfumy muscat, at poorest, thin, and slightly bitter, and have been rated fair to very good, most useful for a dessert wine.

'Cascade' ('Seibel 13053')

~~'Seibel 13053' ('Cascade')~~

Status: Listed by Arkansas, Illinois, Michigan, Missouri, New York, Pennsylvania, Virginia, and Ontario. A very early, hardy red hybrid for area of short growing season.

Origin: From a cross of 'Seibel 7042' by 'Seibel 5409', aestivalis, cinerea, L. labrusca, L. tinccumii, riparia, rupestris, vinifera. Obtained in 1942 at Geneva from J.R. Brooks, Candor, North Carolina. Named in 1972 by the Great Lakes Grape Nomenclature Committee.

Fruit: Cluster large, to 23cm., loose; berry medium; skin black; ripens early, a month before 'Concord'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva, ¹⁰ 8 yrs.	Sept. 2-Oct. 3	14.2-19.8	0.60-0.92(W)	66-187(W)
New York	(Sept. 15)	(18.0)	(0.70)	(111)(95)
Vineland, 5 yrs.	Sept. 9-Sept. 17	17.5-20.4	0.69-1.58(M)	
Ontario		()		
Michigan 1972	Sept. 26	16.3	0.99(M)	
Kentsville 1974	Oct. 15	17.5	1.68(M)	
N.S.				

Vine: Large, occasional powdery mildew, frequent bird injury observed at Geneva.

Use: Wine samples at Geneva have been medium red a little low in color, light, fruity to bitter, slightly herbaceous, thin and flat, rated mostly good.

? susceptibility to
insects wing spot virus

114
'Catwba'

Status: A standard wine variety, listed by Arkansas, Delaware, Indiana, Kentucky, Missouri, New Jersey, New York, Oklahoma, Pennsylvania, South Carolina, the USDA and Vineland, Ontario.

Origin: Of somewhat uncertain origin, reportedly found growing wild in the extreme western North Carolina in 1802 but plant and fruit characters of the variety and characteristics of its seedlings are evidence for its supposed ^LLabrusca-vinifera parentage.

Fruit: Cluster medium to large, 15 to ¹⁶26cm., loose to compact; berry medium 16 to 18mm.; skin dull purplish red; ripens two weeks after 'Concord'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
Geneva 8 yrs. New York	Oct.8-Oct.26 (Oct.17)	16.4-20.0 (18.0)(17.4)	0.82-1.25(W) (1.01)	24-32(25) (W)
Vineland 8 yrs. Ontario	Oct.9-Oct.13	16.7-18.8 (17.1)	0.70-1.39(M) (0.98)	21-65(50) (M)
Ripley, Ohio 8 yrs.	Sept.18	18.9	0.58 (M)	
Arkansas 1964	Aug.25	16.3	0.86 (M)	

Vine: Large, occasional downy mildew at Geneva, reported mildly susceptible to mildew at Vineland, reported sensitive to Anthracnose and Black Rot by Munson (1909), winter hardy in New York and Ontario grape areas.

Use: Wine samples at Geneva described as fruity, acid, thin and rated fair to excellent, at Vineland as flowery-fruity, fair⁺ to good. Brailow (1952) reported that the high acid added freshness to blends and that when the fruit was very ripe the ^LLabrusca flavor was unmistakable.

'Cayuga White'

Status: Introduced by the Geneva, New York Station in 1972, the first introduction from this station intended specifically for table wine production.

Origin: From a cross of a French hybrid with high wine quality by a labruscana with dominant vinifera characters (see genealogy below).

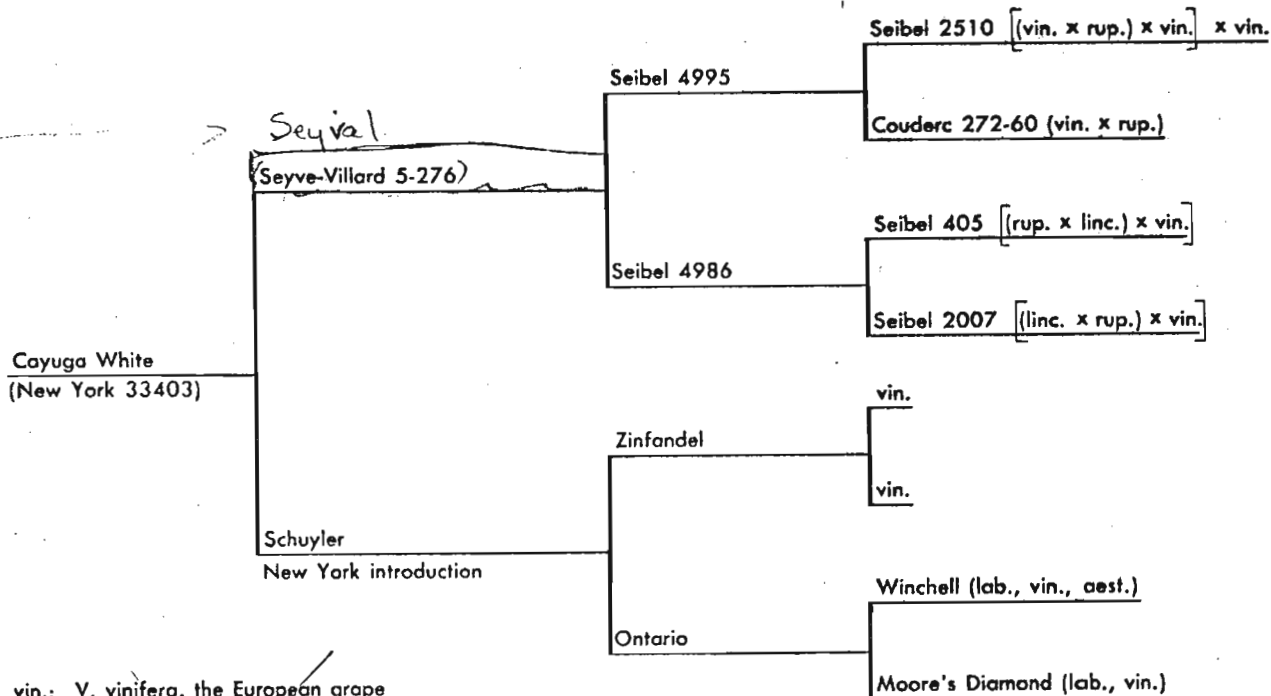
Fruit: Cluster medium to large, to 20cm., well filled; berry medium, 16 to 18mm.; skin white; ripens 'Concord' season.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
Geneva ¹⁷ yrs.	Sept. 28-Oct. 17	15.2-21.8	0.63-1.02(W)	14-31(22) (W)
New York	(Sept. 28)	(17.8)	(0.81)	

Vine: Standard size; occasional powdery mildew observed at Geneva; moderately winter hardy.

Use: Wine samples at Geneva have been described fruity, vinifera type, delicate, clean after taste and consistently rated good to excellent.



vin.: V. vinifera, the European grape
 rup.: V. rupestris, sand grape of South-Central U.S.
 linc.: V. linsecumini, post oak grape of Southwestern U.S.
 lab.: V. labrusca, fox grape of Northeastern U.S.
 aest.: V. aestivalis, summer grape of Northeastern U.S.

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'Chambourcin' ('Joannes Seyve 26-205')
~~'Joannes Seyve 26-205' ('Chambourcin')~~

Status: Included in the Missouri list, rather widely tested as a promising red wine grape.

Origin: The parentage is obscure.

Fruit: Cluster medium to large, to 25cm.. loose to compact; berry medium, 15 to 16mm.; skin blue; ripens after 'Concord'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin
				mg/100 ml.
Geneva ^{to} 7 yrs.	Sept. 23 Oct. 8-Oct. 18	15.4-19.7	c. 8% 0.84-1.12(W)	66-120(W)
New York	(Oct. 13)	(17.3)	(1.04)	(80)

Vine: Standard size; powdery mildew frequent, occasional downy mildew and extreme sulfur sensitivity at Geneva; somewhat tender to winter cold.

Use: Geneva wine samples mostly thin, acid and lacking character to pleasant, vinous, rated poor to very good, mostly good.

(107)

'Champanel'

Status: Listed by the USDA and Louisiana, a 'Concord' type that tolerates hot, dry conditions.

Origin: In 1893 by T.V. Munson of Denison, Texas, a cross of Vitis champini, the calcaire grape of limy soils of Southcentral Texas by 'Worden'.

Fruit: Cluster and berry resembles 'Concord'; ripens evenly and resists cracking and dropping, major problems with 'Concord' in the South. The fruit is low in sugar and high in acid.

'Chancellor' ('Seibel 7053')

~~'Seibel 7053'~~ ('Chancellor')

Status: Listed by Arkansas, New York, Ohio, Pennsylvania, and Ontario, an important commercial variety in France. With control of early downy mildew the variety could be a/or the leading red hybrid.

Origin: From a cross of 'Seibel 5163' x 'Seibel 880' (see chart which is included because of the value of this hybrid in itself and also as a parent). The variety was first obtained at Geneva in 1939 from the Maclet-Botton Nursery, Villefranche, France. It was named in 1972 by the Great Lakes Grape Nomenclature Committee.

Fruit: Cluster medium to large, to 23cm., well filled; berry small, 13 to 14mm.; skin black; ripens slightly ahead of 'Concord'.

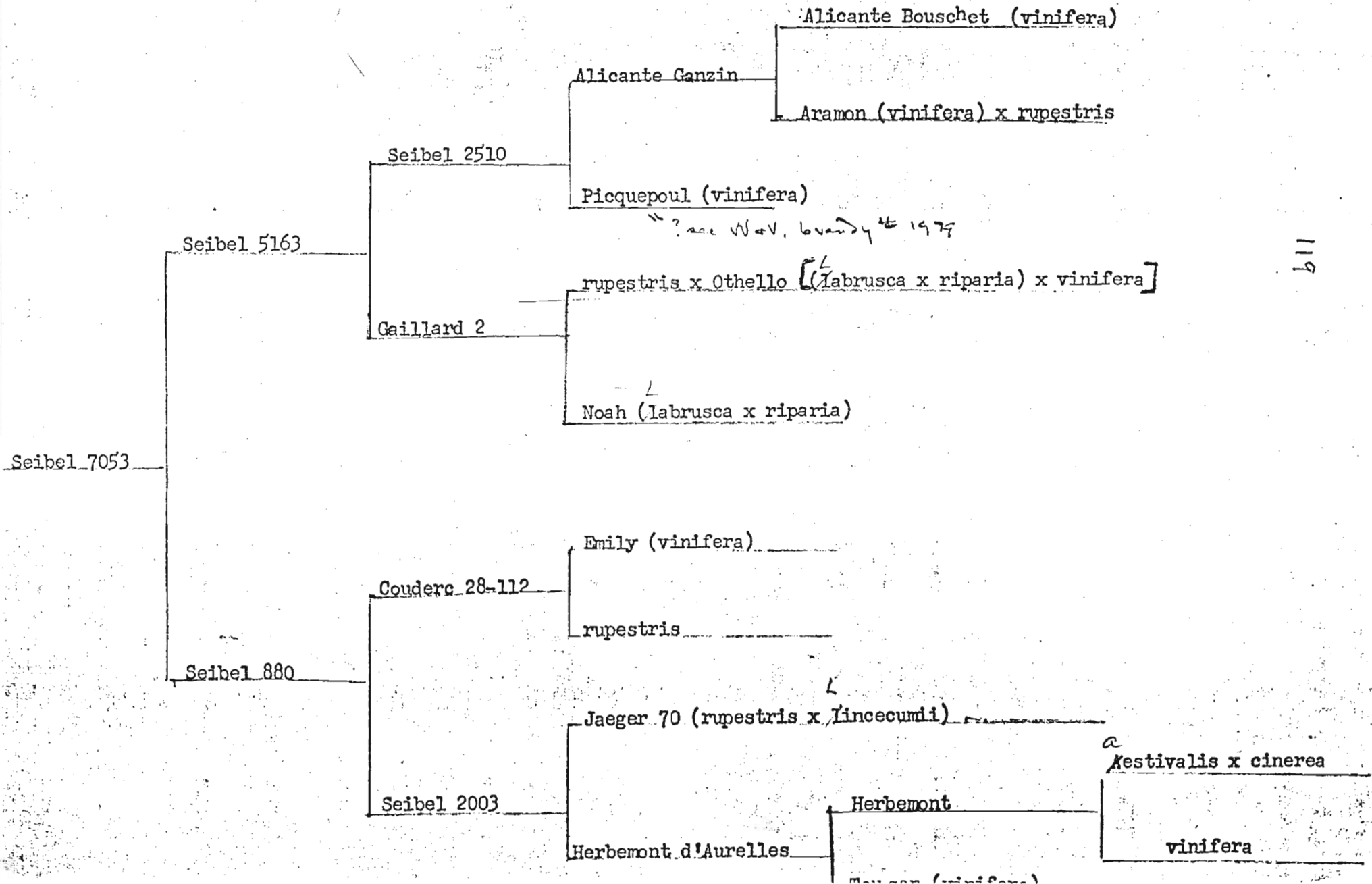
Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin
			-1.09	mg/100 ml
Geneva ¹⁰ yrs. New York	Sept.29-Oct.18 (Oct.7)	16.2-20.7 (18.9)(19.0)	0.70-0.87(W) (0.80)	90-360(W) (166)
Vineland 8 yrs. Maine	Sept.12-Sept.29	14.2-16.8 (16.6)	1.57-1.61(M)	
" " 4 yrs.	Sept.25-Oct.28	17.5-20.4 ()	1.16-1.78	
Ripley, Ohio 8 yrs.	Sept.11	17.6	0.73	

Vine: Large; at Geneva frequent downy mildew, powdery mildew and slight sulfur sensitivity observed, the susceptibility to downy mildew commonly reported, when the variety has been tried, can be controlled by proper spray schedule; vine is cold hardy.

Use: Wine samples at Geneva have been neutral with good aroma and body, with dark color and high tannin, rated very good to excellent, one of the best of the red French hybrids.

Origin of Seibel 7053 ('Chancellor')
(after Galet, 1956)



Chardonnay (Pinot Chardonnay)

Status: The variety from which the white Burgundy wines of France are made. When grown under suitable conditions produces excellent wines with highly characteristic aroma or bouquet. Planted heavily in the coastal valleys of California in the early 1970ties. In the Northeast one of the hardiest of the cold tender varieties and of consistently high wine quality.

Origin:

Fruit: Cluster small, loose to well filled; berry small; skin green.

Season and Composition: range and median

	Harvest Date	Brix	Total Acid %	Tannin
Geneva, 7 yrs.	Sept.20-Oct.19	19.0-21.0	0.74-0.94	18-24
New York	(Oct.4)	(20.0)	(0.86)	(20)

Vine: Small, occasional downy and powdery mildew at Geneva; at Vineland mildew and very susceptible reported susceptible to root phylloxera, tender to winter cold.

Use: Wine samples at Geneva have been described as fruity, aromatic, delicate, with good body and reated very good to excellent.

Vineland has rated the wine as fair plus.

'Chelois' ('Seibel 10878')

~~'Seibel 10878' ('Chelois')~~

Status: Listed by Michigan, Missouri, New Hampshire, New York, Ohio, Pennsylvania, Ontario, the leading red hybrid in Ontario for 20 years, now being replaced by 'Seibel 9549'.

Origin: Derived from the same cross as 'Seibel 10868', obtained at Geneva in 1949, P.I. 163528, from the Plant Introduction Station at Glenn Dale, Md.

Fruit: Cluster small, to 15cm., compact; berry oval, 14 to 15mm. to 20mm. long; skin blue; ripens a week before 'Concord.'

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
14 Geneva, 11 yrs.	19 Sept. 22 - Oct. 21	14.1-19.6	0.66-1.12(W)	47-92(W)
New York	(Sept. 25)	(17.3)	(0.86)	(68)
Vineland, 8 yrs.	Sept. 16 - Sept. 30	17.2-19.5	1.49-1.55(M)	19-110(M)
Ontario	(Sept. 28)	(17.6)	(1.52)	(49)
Ripley, Ohio 8 yrs.	Aug. 30	17.8	1.09(M)	

Vine: Large, occasional powdery mildew and occasional fruit cracking and poor condition observed at Geneva, Vineland reports that it is susceptible to mildew and very susceptible to deadarm, cold hardiness only fair, somewhat tender.

Have to separate
out the trunk
effects from the
shoot cluster
effects

Use: Wine samples at Geneva described as having berry like fruitiness and

Phomopsis vit.
v.d.
Eutypa amara

aroma, light, well balanced, at worst thin, slightly stemmy, bitter, herbaceous and ordinary, rated fair to good or very good, Vineland reports that the variety is quite acceptable to the wineries, making a well balanced red table wine, rated good.

now

Eutypa dieback

call it



122
'Clinton'

Status: Listed by New Jersey and New York, very little acreage left.

Origin: A wild vine planted by Hugh White at College Hill, New York in 1821.

The vine closely resembles V. vulpina (riparia) but seedlings of 'Clinton' show labrusca characters, clearly indicating it to be a vulpina-^Llabrusca hybrid.

Fruit: Clusters small, well filled; berry small; skin blue; ripens _____

Season and composition: range and average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
Geneva, 1966-67	Oct.10-Oct.12	18.6-19.2	1.31-1.47(W)	0.74-1.29(W)

^{New York}
Vine: Very large; resistant to phylloxera, has been used as rootstock.

Use: Wine described by Brailow (1952) as free of foxiness, herbaceous, skin rickⁿ in red pigment, acid much too high if harvested early, high sugar. Geneva samples acid, stemmy, strong herbaceous aroma and flavor.

Origin?
Canada

'Colobel' ('Seibel 8357')

~~'Seibel-8357' ('Colobel')~~

Status: Listed by Arkansas, New York and Ontario, the most widely distributed hybrid with colored juice, used in blending in France.

Origin: From a cross of 'Seibel 6150' by 'Seibel 5455', cinerea, Labrusca, lincecumii, riparia, rupestris, vinifera. Obtained at Geneva in 1939 from R.T. Dunstan, Greensboro, North Carolina.

Fruit: Cluster medium to large, to 23cm., compact; berry medium, 13 to 15mm.; skin blue; ripens after 'Concord'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva 9 yrs. New York	Oct.1-Oct.19 (Oct.13)	16.0-20.4 (17.4)	0.94- 1.20-1.48(W) (1.39)	250-382(W) (290)
Vineland 8 yrs. Ontario	Oct.1-Oct.16	17.0-19.0 (17.6)	2.16-2.84(M) (2.71)	
Ripley, Ohio 1971-1975	Sept.8-Sept.24 (Sept.15)	16.1-18.1 (17.1)	1.32-1.64(M) (1.48)	

Vine: Standard to large; somewhat tender at Geneva.

Use: Wine samples at Geneva have been intensely colored, tart, heavy, in tannin, neutral and vinous, at worst herbaceous, bitter and flat, have had variable ratings, from poor to excellent, mostly very good as a blending wine.

124
 'Concord'

Status: The all-purpose grape of the Americans, used extensively for juice, wine and dessert. It is listed by a host of states, Arkansas, Delaware, Georgia, Illinois, Indiana, Iowa, Kentucky, Massachusetts, Minnesota, Michigan, Missouri, New Jersey, New York, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia, Vermont, West Virginia, Wisconsin, and the USDA and ^{the province of} Ontario, ~~Canada~~

Origin: A discussion of the origin of the 'Concord' may be found in the historical section (pp.).

Fruit: Cluster medium, to 15cm., loose to well filled; berry medium, 18 to 20mm.; skin blue, ripens in late midseason, early October in New York.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
Geneva 9 yrs.	Sept.28-Oct.27	13.4-18.0	0.75-1.06(W)	64-138(W)
New York	(Oct.6)	(16.6)	(0.88)	(103)-(98)
Vineland 8 yrs.	Oct.9-Oct.19	11.8-18.5	0.43-0.85(M)	32-180(M)
Ontario		(16.1)	(0.47)	(79)
Blackburn Va. V.P.F. 1949	Sept.8	14.4	0.36(M)	
Ripley, Ohio 8 yrs.	Sept.11	15.1	0.64(M)	
Arkansas 1964	Aug.11	14.4	0.82(M)	

Vine: Large; occasional powdery mildew, moderate sulfur sensitivity observed at Geneva, Vineland reports resistance to downy mildew, susceptible to powdery mildew and deadarm; Munson (1909) reports that the fruit ripens very unevenly in the South and that Black Rot may attack it severely.

Use: The only important variety for sweet juice, jelly and preserves, it is also used extensively for wine. Wine samples at Geneva have been

*Michigan as well
 by which it
 white grape juice
 2700 tons in 1975*

described as strong labrusca, with pronounced 'Concord' flavor.

Vineland notes that the wine is very fragrant, labrusca, bright red in color and that when made up as a port and aged it has received a high rating. Brailow (1952) reported that 'Concord' was mostly used in sweet, fortified or unfortified wines and when sufficiently aged, in sparkling burgundy.

see
R. Nelson
Thom's

'Concord Seedless'

Status: Listed by Illinois, New Hampshire and New York, possibly a seedless mutation of 'Concord', desirable for the homemaker for pie and preserve.

Origin: Not well documented, very similar to 'Concord' but the fact that the variety is lacking in methyl anthranilate which is present in 'Concord' in relatively high concentration casts doubt on its supposed origin as a bud mutation or sport of 'Concord'. The original source of the Geneva accession in 1913 was an odd vine in a vineyard on the east shore of Canandaigua Lake.

Fruit: Cluster small, mostly loose; berry small; normally seedless; skin black with heavy bloom, ripens a week or more before 'Concord'.

Vine: Like 'Concord' but production per vine is much less, making it of questionable commercial value.

'Couderc Noir' ('Couderc 7120')
 —'Couderc 7120' ('Couderc Noir')—

Status: Included in the Illinois list, perhaps because of historical interest, one of the first French hybrids commercialized.

Origin: From a seed of 'Jaeger 70' that M. Contassot gave Couderc, the pollen parent an unknown vinifera, possibly 'Grenache', therefore lincecumii, rupestris, vinifera. Received at Geneva in 1965 from H.C. Barrett of the University of Illinois.

Fruit: Cluster small to medium, compact; berry small, 13 to 15mm.; skin blue; ripens too late for Geneva, grown in the South of France.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
Geneva ³ 2 yrs.	Sept.25-Oct.17	15.5-17.8	0.86- ^{1.04} 0.92(W)	86-100(W)
New York		(17.0)	(0.92)	
Ripley, Ohio 8 yrs.	Sept.20	15.5	0.81(M)	

Vine: Very small at Geneva; very late maturation; somewhat winter tender.

Use: Geneva samples have been thin, bitter and rated only fair.

'Cynthiana' - ('Norton')

Status: Listed by Arkansas as 'Cynthiana' and by New Jersey and the USDA as 'Norton', of historical interest as the leading red wine grape of Eastern North America at the turn of the century. Hedrick (1908) reported that it is not suited to New York, requiring a longer season than 'Catawba' and being questionably winter hardy.

Origin: Believed to be of V. labrusca-aestivalis parentage, found as a chance seedling on Cedar Island in the James Rives near Richmond, Virginia in 1835 and promoted by a Dr. D.N. Norton of Richmond.

Fruit: Cluster medium to small; berry medium to small; skin black, heavy blue bloom

Season and composition: range and average

	Harvest date	Brix	Total acid mg/100 ml
Vineland 4 yrs. Ontario	Sept.28-Oct.10	14.8-20.1	1.60-2.80(M)
V.P.I. 1949 Blacksburg, Va.	Sept.15	17.9	2.30 (M)

'De Chaumac' (Seibel 9549)

—'Seibel 9549'—('De Chaumac')

Status: Listed in New Hampshire, New York, Ohio, Pennsylvania, Ontario, the leading commercial red French hybrid in Ontario.

Origin: From a cross of 'Seibel 5163' by 'Seibel 793', for the genealogy of the seed parent see the chart for 'Seibel 7053'. 'Seibel 793' according to J.F. Ravat (Vol. 1) resulted from a cross of Mgt 41 (vinifera x Berlandieri) by S. Geant (Lincecumii, rupestris, vinifera). The variety was named by the Great Lakes Grape Nomenclature Committee in 1972. Obtained at Geneva in 1955 from the H.R.I.O. at Vineland, Ontario, Canada.

Fruit: Cluster medium to long, to 28cm., medium loose; berry medium; skin black; ripens week before 'Concord'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
14 Geneva, 10 yrs. New York	Sept. 17-Oct. 25 (Sept. 29)	14.5-21.0 (17.9)	0.69-0.89(W) (0.79)	67-219(W) (127)
Vineland, 8 yrs. Ontario	Sept. 14-Oct. 13 (Sept. 24)	13.8-19.7 (17.4)	1.4-1.9(M) (1.4)	38-100(M) (52)
Ripley, Ohio 1970-1975	Aug. 29-Sept. 11 (Sept. 5)	16.2-19.4 (17.8)	0.86-0.95(M) (0.98)	
Kentville 1974 N.S.	Oct. 15	14.6	2.25(M)	

Vine: Standard size, tendency to overcropping and slight sulfur sensitivity observed at Geneva, some resistance to mildew and deadarm reported by Vineland, an excellent variety for most locations.

Use: Wine samples at Geneva have been described as deep red, with good body and tannin, at worst slightly herbaceous, slightly bitter and harsh,

have consistently rated very good to excellent. Vineland notes that it makes an excellent red table wine, deep ruby red, some tannin and fruitiness, ages well and that it is the best of the blue French hybrids, rated very good to excellent.

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'Delaware'

Status: A standard component of many Eastern wines and prized by the winemaker.

It is listed by Arkansas, Delaware, Georgia, Indiana, Illinois, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Minnesota, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia, Vermont, West Virginia, Wisconsin, Vineland and the USDA.

Origin: Of obscure origin, botany of the variety and its seedlings indicate the supposed ^Lvinifera-^Blabrusca-bourquina background. The variety was found in the garden of P.H. Provost, a Swiss vineyardist of Frenchtown, New Jersey about 1850. It was called to public attention by A. Thompson of Delaware, Ohio and generally disseminated from about 1865.

Fruit: Cluster small to medium, 10 to 15cm., compact; berry small, 13 to 15mm., skin light red; ripens 10 days before 'Concord'.

Season and composition: range and ^{medium} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
Geneva 10 yrs. New York	Sept. 12-Oct. 7 (Sept. 21)	16.4-23.0 (19.5)	0.68-0.96(W) (0.75)	17-28(W) (24)
Vineland 8 yrs. Ontario	Sept. 21-Oct. 6	15.8-20.1 (18.2)	0.45-1.08(M) (0.58)	24-31(M) (27)
Ripley, Ohio 8 yrs.	Sept. 12	21.0	0.43(M)	
Blackburns Va. V.P.I. 1949	Sept. 5	17.8	0.91(M)	
Arkansas 1964	Aug. 11	20.6	0.58(M)	

Vine: Generally described as having moderate vigor, very susceptible to phylloxera, grafting on resistant stocks commonly recommended; occasional downy and powdery mildew observed at Geneva, reported susceptible to what? mildew at Vineland and in earlier accounts, rated hardy.

Use: Wine samples at Geneva have been fruity and rated from fair to excellent, mostly very good. Vineland notes that the wine is good and useful in champagne production. Brailow (1952) reports the highest sugar of eastern grapes and most delicate flavor. It gives body and bouquet to champagne blends, and may have too much body.

'Diamond' ('Moore's Diamond')

Status: Listed in Georgia, New Hampshire and New York. Limited commercial production in the Finger Lakes; it is also grown in British Columbia.

Origin: About 1870 by the same Jacob Moore of Brighton, New York who introduced the 'Brighton', from a cross made in 1873 of 'Concord' by 'Iona'. The latter is a seedling of 'Diana', in turn a seedling of 'Catawba'.

Fruit: Cluster large, well filled to compact; berry medium; skin white; ripens about with 'Niagara'.

Season and composition: range and ^{median} ~~average~~

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
Geneva 5 yrs.	Sept.26-Oct.18	14.2-18.8	0.64-0.93(W)	19-26(W)
Niagara	(02.1)	(16.5)	(.75)	(23)
		(17.0)		

Vine: Of standard size; occasional powdery mildew observed at Geneva; hardy.

By Munson (1909) described as very subject to black rot and vine short lived in the South.

Use: Described by Brailow (1952) as having typical labrusca flavor, sometimes almost as strong as 'Niagara'. Geneva samples strong labrusca or typical American.

'Dutchess'

Status: Listed in New York, Pennsylvania and Ontario where it is in commercial production for wine, perhaps closest to the vinifera of all the American grapes.

Origin: Planted by A.S. Caywood, nurseryman of Marlboro, New York, a seed of a white seedling of 'Concord', the male parent being 'Delaware', the species background Labrusca-aestivalis (Bourquiniana) - vinifera.

Fruit: Cluster small to medium 10 to 18cm., compact; berry 15 to 16mm.; skin pale yellowish green with distinct spots; ripens a few days before 'Concord.'

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin 16 mg/100 ml.
Geneva 7 yrs. New York	Sept. 26-Oct. 20 (Oct. 12)	15.8-20.0 (17.0)	0.59-0.80 (0.66)(0.70)	14-28(W) (20)
Vineland 8 yrs. Ontario	Sept. 18-Oct. 10 (Oct. 1)	11.4-18.5 (16.0)	0.73-0.98 (0.)	13-38(M) (24)

Vine: Standard to large; frequent downy mildew and powdery mildew at Geneva, reported susceptible to mildew at Vineland; rated in winter hardiness as somewhat tender to tender; unfruitful when primary buds are winter killed.

Use: Brailow (1952) reported that the wine has no foxiness, sometimes lacks distinctive flavor, has low acidity, fair sugar, is the closest to vinifera of all the eastern grapes and is valuable in Champagne blends. Vineland (1974) describes the wine as neutral, well balanced, making a fair⁺ to good table wine and an excellent sherry base. Geneva wine samples have generally been described as relatively neutral, well balanced, with good body and clean aroma, rated good to very good.

'Ellen Scott'

Status: Listed by the USDA as a late variety of excellent quality, highly susceptible to anthracnose, recommended only for comparatively dry regions.

Origin: By T.V. Munson in 1902 from a cross of 'Armlong' by 'Malaga', a Vince-
cumii, Labrusca, vinifera hybrid, named by Munson for his wife.

Fruit: Cluster very large; berry large; skin red-violet; ripens late, after 'Catawba', too late for Geneva.

'Elvira'

Status: Recommended in New Hampshire, New York and Ontario where it is the leading white grape.

Origin: By Jacob Rommel of Morrison, Missouri, first fruited 1869, from a seed of 'Taylor', a ^Llabrusca-vulpina hybrid.

Fruit: Cluster small, tight; berry medium; skin green, cracking badly at maturity, leading to rapid spoilage in wet, hot weather, Munson (1909) describes it as almost worthless in the South because of cracking.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
Geneva 4 yrs.	^{Sept 15} Oct. 6-Oct. 20	12.8-16.0	0.75-0.88(W)	20-27(W)
^{New York}	(Oct. 8)	(14.0)	(0.86)	(23)
Vineland 8 yrs.	Sept. 11-Oct. 5	12.9-15.0	1.09-1.42(M)	24-60(M)
^{Ontario}		(13.8)	(1.16)	(41)

Vine: Of standard size to large; susceptible to powdery mildew, resistant to phylloxera and deadarm, hardy.

Use: Brailow (1952) reported wine as not very foxy, especially if properly aged, low in sugar but giving lightness and freshness in a champagne blend. Vineland (1974) describes the wine as interesting, with practically no ^Llabrusca when grapes are fully mature. When grapes are harvested early to avoid berry cracking, wine is described as a bit thin, acid and having ^Llabrusca character rating fair to fair⁺. Geneva samples have had medium ^Llabrusca or American character and have rated fair to good.

'Extra'

Status: Listed by USDA as grown throughout the Southeastern States. Munson (1909) reported that it did well in South Texas.

Origin: By T.V. Munson, 1886 from a cross of 'Big Berry' (Vincecumii) by 'Triumph' (Labrusca, vinifera).

Fruit: Cluster large, compact; berry medium to large; skin black; ripens late, too late for Geneva.

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'Flot d'Or' ('Seibel 2653')

~~'Seibel 2653' ('Flot d'Or')~~

Status: Listed in Oklahoma, Galibert () describes it as a table grape of the 'Chasselas' type, of no interest for wine and being replaced by 'Seibel 9110', Seibel 14514' and 'Seyve-Villard 12-364'.

Origin: From a cross of 'Couderc 28-112', (vinifera-rupestris) by 'Dattier de Beyrouth' a vinifera table grape. Obtained in 1949 as P.1. 175498 at Geneva, through the U.S. Plant Introduction Station, Glenn Dale, Md.

Fruit: Cluster medium to large, loose; imperfect flowers, reflex stamens; berry large; skin white; ripens midseason.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva, ⁹ 8 yrs. New York	Sept. 30-Oct. 18 (Oct. 8)	11.2-23.0 (18.8)	0.59-1.06(W) (0.84)	19-26(W) (23)

Vine: Large, at Geneva severe powdery mildew and occasional downy mildew; moderately hardy.

Use: A table grape; wine rated poor to very good, neutral, good body and balance to thin, somewhat harsh and bitter.

'Foch' ('Maréchal Foch', 'Kuhlmann 188-2')

'Kuhlmann 188-2' ('Maréchal Foch')

Status: Established as one of the highest quality red hybrids, recommended by Michigan, Missouri, New Hampshire, New York, Pennsylvania, Virginia and Ontario.

Origin: At the Oberlin Institute, Colmar, Alsace, France by Eugene Kuhlmann, a cross of 'Millardet 101-14' (riparia-rupestris) by 'Goldriesling' (vini-fera). Others maintain that it is a cross of 'Oberlin 595' ('Gamay' x riparia) x 'Pinot'.

Fruit: Cluster small, medium to compact; berry small, skin blue; ripens a month before 'Concord'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
Geneva, ¹⁵ 14 yrs. New York	Aug. 31 - Sept. 24 (Sept. 19)	17.9 - 18.5-22.0 (19.8)(20.4)	0.41 - 0.53-1.06(W) (0.81)	70-248(W) (113)(99)
Vineland 8 yrs. Ontario	Sept. 9 - Sept. 30	18.2-22.1 (17.9)	1.27-1.44(M) (1.36)	31-120(M). (75)
Kentville, N.S. 1974	Oct. 15	21.2	1.99(M)	

Vine: Small to standard; occasional powdery mildew at Geneva, moderate sulfur sensitivity, frequent bird damage; at Vineland reported susceptible to powdery mildew and deadarm, highly susceptible to phylloxera and subject to leaf galls, rated winter hardy. Vineland recommends that it be grown on good soils, grafted and protected against birds.

Use: Wine samples at Geneva have been mostly good in body, color, aroma and flavor, at worst they have been thin and slightly herbaceous, rated fair to excellent mostly very good to excellent. Vineland (1974) describes the wine as ruby-red with slight brown, rates high as a young red table wine of the burgundy type, but tends to oxidize when aged, rated as good.

'Fredonia'

Status: Included in lists from Arkansas, Delaware, Indiana, Iowa, Kansas, Kentucky, Massachusetts, New Jersey, New York, North Dakota, Oklahoma, Tennessee, the USDA, Virginia, Vermont, West Virginia, Wisconsin, and Ontario as one of the best 'Concord' type grapes. It appears to be losing favor because it has not enough 'Concord' flavor characteristics and can be erratic in cropping. It does appear to ripen more evenly in southern areas where 'Concord' can be very uneven.

Vineyard

Origin: From a cross of 'Champion' by 'Lucille' made by Fred Gladwin at the Fredonia Grape Laboratory of the Geneva Station. The seedling, Gladwin 15 was named in 1927. The parents are both definitely Labrusca in character.

Some say
Concord?

Fruit: Cluster medium 12 to 15cm., loose to well filled; berry medium to large, 18 to 20mm.; skin blue; ripens 2 to 3 weeks before 'Concord'.

Season and composition: range and average

	Harvest date	Brix	Total acid %
Geneva, 1964 New York	Sept. 17	15.8	0.98 (W)
Vineland, 8 yrs. Ontario	Sept. 23-Oct. 7	14.3-16.7 (15.8)	0.91-1.00 (M) (0.92)
Ripley, Ohio 8 yrs.	Sept. 2	15.5	0.75 (M)
Blacksburg Va. V.P.I. 1949	Aug. 22	14.6	0.75 (M)
Arkansas 1964	July 28	13.0	1.15 (M)

Vine: Large, frequent downy mildew, occasional powdery mildew at Geneva; hardy.

Use: A standard labruscana dessert variety, it has only fair quality, is an erratic cropper and does not handle well. It lacks the distinctive, pronounced grapy flavor of 'Concord' that is so desirable in juice, jelly and preserves.

'Golden Muscat'

Status: Listed by the USDA, Kentucky, New York and West Virginia, a late ripening sort for the home garden.

Origin: From a cross of 'Muscat Hamburg', a vinifera table grape, by 'Diamond', named in 1927 by the Geneva, New York Station.

Fruit: Cluster large, to 22cm., compact; berry large, 19 to 23mm.; skin white; ripens late, with 'Catawba'.

Season and composition: range and average

	Harvest date	Brix	Total acid %
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Ripley, Ohio 8 yrs.	Sept.10	16.4	0.64
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Vine: Standard size; moderately hardy.

'Himrod'

Status: Included in lists from Kentucky, Massachusetts, New Jersey, New York, Ohio, Pennsylvania, and Ontario. Reports from Japan and India indicate commercial production. 'Himrod' is an early white seedless with high dessert quality that requires ^{gibberellin} special treatment to insure berry set and full clusters.

Origin: Introduced by the Geneva Station in 1952, resulting from a cross of 'Ontario' by 'Sultanina' ('Thompson Seedless') a vinifera seedless, widely grown and used fresh, as raisins, canned and for wine. For pedigree of 'Ontario' see chart for 'Steuben'.

Fruit: Cluster large, to 30cm., loose; berry medium to large, oval, to 17 by 19mm. (untreated); skin white; ripens very early, a month before 'Concord'.

Season and composition: range and average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
Geneva 1966 New York	Sept. 22	17.6	0.56(W)	13(W)
Vineland 5 yrs. Ontario	Sept. 12-Sept. 30	17.8-21.0 (19.1)	0.52-0.90(M) (0.66)	
Ripley, Ohio 8 yrs.	Aug. 16	18.0	0.47(M)	

Vine: Large, drooping; moderately hardy.

Use: Superior quality seedless dessert grape.

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'Interlaken Seedless'

Status: A very early white seedless, only moderately hardy and of lower quality than its sibs 'Himrod' and 'Lakemont'.

Origin: First named at Geneva in 1947, of the seedless offspring of the cross 'Ontario' by 'Sultanina' ('Thompson Seedless').

Fruit: Cluster small to medium, well filled; berry small; skin yellow; ripens very early, a month or more before 'Concord'.

Vine: Standard, only moderately hardy

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'Isabella'

Status: Listed only in New York and little grown, of major historical interest and still found in many European vineyards, in France, Italy, Switzerland, Yugoslavia, Hungary, Portugal and elsewhere, and also a prominent variety in Brazil and found in other South American countries.

Origin: Assumed to be a ^Llabrusca-vinifera hybrid on basis of botanical characteristics of the variety and its seedlings. Found as a chance seedling in the vicinity of Dorchester, South Carolina before 1816. About this time it was brought to Brooklyn by a Mrs. Isabella Gibbs from whom E.R. Prince, the famous nurseryman of Long Island obtained and named it in honor of Mrs. Gibbs.

Fruit: Cluster medium, 12 to 15cm., loose; berry medium, 17 to 19mm.; skin black; ripens with Catawba.

Season and composition: range and average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
Geneva 1966	Oct.13	16.4	1.02	82

New York

Vine: Standard size, occasional powdery mildew at Geneva, subject to mildew and black rot (Munson 1909).

Use: Brailow (1952) describes wine as strawberry like, low in red color, with some use in champagne and sparkling burgundy. The one Geneva sample was described as good, strong ^Llabrusca.

'Ives'

Status: A commercial variety in New Jersey and New York, not listed elsewhere but prized by winemakers for its stable color and for certain red blends.

Origin: A ^LV. labrusca grown from a seed of uncertain source by H. Ives of Cincinnati about 1844. Munson (1909) thought it likely a seedling of 'Alexander'.

Fruit: Clusters small, loose; berry medium; skin black; ripens about 'Concord' season.

Season and composition: range and ^{median} average—

	Harvest date	Brix	Total acid %	Tannin
Geneva 8 yrs.	Sept.29-Oct.13	14.0-20.5	0.74-0.94(W)	129-235(W)
New York	(Oct.7)	(16.2)	(0.84)	(176) (160)
		(15.6)		

Vine: Small; occasional downy mildew, frequent oxidant stipple, extremely 2-4D sensitive.

Use: A blending wine, Brailow (1952) reported the skin rich in pigment, but with some purple in it, typical ^LV. labrusca flavor, although less than 'Concord'. Geneva samples have been described as very fruity American or ^LV. labrusca with strong color, good balance and body, to stemmy, ~~to stemmy~~ astringent and bitter and have rated fair to very good.

'Joannes Seyve 23-416'

Status: Some interest in Ontario, New York, and elsewhere as worthy of trial for its handsome appearance and high wine quality.

Origin: Galet (1956) gives the parentage as 'Bertille Seyve 4825' by 'Seibel 7053', the species involved being cinerea, ^L/labrusca, ^L/incecumii, riparia, rupestris, vinifera. Geneva obtained the variety in 1958 from H.C. Barrett of the University of Illinois.

Fruit: Cluster large, to over 30cm., medium compact; berry small to medium; skin pink to light red; ripens a week before 'Concord'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva 10 yrs. New York	Oct 5 - Sept. 30-Oct. 18 (Oct. 11)	16.0-20.2 (19.4)	0.60-0.77 0.55-0.76(W) (0.66)	16-25(W) (20)(19)
Vineland 5 yrs. Ontario	Oct. 1-Oct. 17 (Sept. 28)	16.5-20.0 (18.5)	0.62-1.14(M) (0.86)	

Vine: Large; moderately hardy.

Use: Wine described at Vineland as well balanced, slightly fruity, good. Geneva samples delicate, pleasant, vinous, at worst slightly thin, stemmy, bitter, ordinary, samples rated fair to very good.

'Lakemont'

Status: A white seedless named at Geneva in 1972, listed by New Jersey and New York but not yet well evaluated.

Origin: Sister seedling of 'Himrod', 'Interlaken Seedless' and 'Romulus', from a cross of 'Ontario' by 'Sultanina' ('Thompson Seedless').

Fruit: Cluster large, to 22 to 25cm.; compact; berry oval, 14 to 17mm. by 18 to 20mm.; skin golden.

Vine: Standard, tends to overcrop, moderately cold hardy.

'Landal' (Landot 244)

'Landot 244' ('Landal')

Status: Has been rather widely tested, probably because of reports that it produced a good wine. Has not become commercially significant.

Origin: Reported to be a cross of 'Seibel 5455' by 'Seibel 8216'; the species involved are aestivalis, ^Bberlandieri, cinerea, ^Llabrusca, riparia, rupestris, vinifera. Obtained by Geneva in 1948 from Bright's Wines Ltd., St. Catharines, Ontario, Canada.

Fruit: Cluster small to medium, to 15cm., well filled; berry small; skin blue; ripens with 'Concord'.

Season and composition: range and average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
	23		0.61 -	
Geneva 10 yrs.	Sept. 25-Oct. 9	13.7-20.0	0.75-0.84(W)	80-126(W) 72-85(W)
Ripley	(Oct. 4)	(18.0)(17.1)	(0.80)	(93)
Ripley-Ohio	Sept. 17	13.9-18.7	0.91-1.20(M)	
1971-1975		(17.2)	(1.04)	

Vine: Small; powdery mildew and poor fruit condition frequently observed at Geneva, only moderately hardy, often winter injured.

Use: Wine samples at Geneva have been mostly thin, herbaceous and very prone to spoilage by mercaptan formation, perhaps related to fruit condition.

'Landot 4511'

Status: One of the most promising more recent red wine hybrids, based on vineyard performance and wine character.

Origin: From a cross of 'Landot 244' x 'Seyve Villard 12-375', aestivalis, Berlandieri, cinerea, L. labrusca, L. lincedumii, riparia, rupestris, vinifera (Galet, 1956). Obtained at Geneva in 1965 from George Remaily, Doylestown, Pa. and Boordy Vineyard, Riderwood, Md.

Fruit: Cluster medium to large, to 25cm., loose; berry medium; skin blue; ripens a week before 'Concord'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin
				mg/100 ml
Geneva, ¹² 8 yrs.	Sept. 20-Oct. 26	14.8 - 15.0-20.0	0.87 0.63-0.84(W)	92-153(W)
New York	(Oct. 2)	(17.7)	(0.74)	(117)-(109)

Vine: Of standard size; occasional powdery mildew at Geneva; hardy.

Use: Geneva samples have rated very good six years in a row, neutral, vinous, good tannin, body, slightly thin; slightly green.

'Le Commandant' ('Bertille Seyve 2862')

—'Bertille Seyve 2862' ('Le-Commandant')

Status: Some commercial production in Ontario.

Origin: An aestivalis, ^Llabrusca, ^Llincecumii, riparia, rupestris, vinifera hybrid from a cross of 'B.S. 822' by 'B.S. 872' (Galibert)

The labruscanas, 'Othello' and 'Noah' are found in the parentage of 'B.S. 872'. Obtained at Geneva in 1927 from the ^CMaelet-Botton Nursery, Villefranche, France.

Fruit: Cluster medium large, medium compact; berries of intermediate size, 16 to 18 mm; skin blue; color in juice; ripens a week after 'Concord'

Season and composition: range and ^{median} average -

	Harvest date	Brix	Total acid %	Tannin mg/100 mL
Geneva, 4 yrs.	Oct. 13-Oct. 23	15.0-17.0	0.86-1.02	124-237
New York	(Oct. 16)	(16.0)(15.8)	(0.97)(W)	(131)W
Vineland, 5 yrs.	Oct. 1-Oct. 20	15.0-18.8	1.24-1.84(M)	
Ontario	(Oct. 12)	(15.6)	(1.57)	

Vine: Large to very large; some late powdery mildew reported in Ontario, occasional powdery mildew, fruit cracking and poor condition at Geneva; moderately hardy with some winter injury with good recovery at Vineland.

Use: Wine samples at Geneva have been acid somewhat bitter, thin, with deep color and fair aroma, rated poor to good, mostly fair. Vineland (1974) has reported it most useful as a teinturier; when properly aged it has produced a good burgundy-type wine.

'Lenoir' ('Jacquez', 'Black Spanish')

Status: Listed by USDA as having superior quality for juice and wine, recommended for the more southern regions. Too tender and too late for even the Middle States according to Hedrick (1908). Some production in France.

Origin: Probably in the Southeast in the Eighteenth Century. Named before 1829 for a man named Lenoir who grew it near Stateburg, South Carolina according to Hedrick (1908). A southern aestivalis or a related cultivated form Bourquina ^{or} Munson according to Galet (1956) and Bailey (1934).

Fruit: Cluster large; berries small; skin purplish black; ripens late.

Vine: Vigorous, productive, highly susceptible to anthracnose and black rot; adapted only to comparatively dry regions according to USDA.

Use: Wine highly colored, high in alcohol, primarily a blending wine (Galet 1956).

'Léon Millot' (Kuhlmann 194-2)

—Kuhlmann 194-2! ('Léon Millot!')

Status: Listed in New Hampshire, New York and Pennsylvania.

Origin: Same as Maréchal Foch, first obtained at Geneva in 1963 from an amateur grape grower N.G. McElroy of Lincoln Park, Michigan.

Fruit: Cluster small 10 to 12cm., compact; berries small; skin blue; ripens very early, before 'Foch'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml.
9 Geneva 8 yrs.	Sept. 6-Oct. 4	18.6-22.0	0.49-0.74	92-173
New York	(Sept. 25)	(20.5) 21.0	(0.63)	(135)-(147)

Vine: Large, occasional powdery mildew and occasional bird damage at Geneva; hardy to winter cold.

Use: Geneva samples have had good body and color to ^hberbaceous, bitter, flat and thin, and rated poor to very good, mostly lower than 'Foch'.

'Missouri Riesling'

Status: Listed by New Jersey and New York.

Origin: Originated by Nicholas Grein of Hermann, Missouri, about 1870, probably from a seed of 'Taylor', the same parent from which 'Elvira' originated, of ^Llabrusca-vulpina parentage.

Fruit: Cluster medium, 10 to 12cm., well filled; berry 15 to 16mm; skin white, ripens after 'Elvira' and 'Concord', before 'Catawba'.

Season and composition: range and average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva, 1965 New York	Oct. 5	16.8	1.00(W)	23(W)

Vine: Very large; frequent downy mildew, powd^ery mildew, berry cracking and poor condition at Geneva.

Use: Brailow (1952) described the wine as less foxy than 'Elvira' and with more body. The Geneva sample was described as pungent, thin and acid.

'Moonbeam'

Status: Listed by Vermont and Wisconsin.

Origin: By the University of Minnesota Fruit Breeding Farm in 1944, parentage unknown.

Fruit: By Brooks and Olmo (1972) as larger than 'Concord'; skin greenish yellow; ripens early September.

Vine: Vigorous, hardy, easily propagated.

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'Moore Early'

Status: Listed by Michigan, New Hampshire, Vermont, the USDA and Wisconsin.

An early 'Concord' type.

Captain John R. Moore

Origin: By ~~J.B. Moore~~ of Concord, Massachusetts in 1872 from a seed of 'Concord'.

Fruit: Cluster small, 10cm., loose; berry medium, 18 to 19mm.; skin black,
heavy bloom; ripens two weeks before 'Concord'.

Vine: Standard to small; hardy.

'Naples'

Status: A late 'Delaware' type that has not become established.

Origin: Introduced at Geneva in 1952, from a cross of 'Delaware' by a ('Mills'.

*Is yellow pear
done in (mills & done)*
by 'Iona' selection.

Fruit: Cluster small but larger than 'Delaware', well filled; berry small to medium, skin red, tough; ripens after 'Concord'.

Vine: Small, tends to overcrop; hardy to cold.

Season and composition: range and median

Harvest date	Brix	Total acid %	Tannin mg/100ml
Geneva, New York 5 yrs. Oct. 6-Oct 16	18.3-21.0	0.65-0.84	23-29
(Oct. 10)	(19.6)	(0.79)	

subject Status also
 indicate? Commercial use?

'New York Muscat'

Status: Listed by New York and Vineland. Some commercial production in Ont.

Origin: From a cross of 'Muscat Hamburg', a vinifera dessert grape by 'Ontario' (see 'Steuben' genealogy for 'Ontario'), introduced by the Geneva, New York Station in 1961.

Fruit: Cluster typically 15 to 20cm., loose to well filled; berry 16 to 17mm.; skin dark red to reddish black; ripens 'Delaware' season.

Season and composition: range and ^{median} average-

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva, 7 yrs. New York	Sept. 23-Oct. 26 (Sept. 30)	17.3-20.2 (19.0)	0.55-0.73(W) (0.60)(0.59)	63-212(W) (111)-(94)
Vineland, 8 yrs. Ontario	Sept. 10-Oct. 13	17.1-19.5 (18.6)	0.27-0.55(M) (0.49)	

Vine: Large; occasional powdery mildew, slight sulfur sensitivity and moderate cold hardiness observed at Geneva, Vineland reports indicate that it grows best on lighter soils and that it is only moderately productive.

Use: Very good quality for dessert or wine. Wine samples at Geneva described as medium red, flowery muscat, good to heavy aroma, can be slightly harsh, bitter, slightly labrusca character, for sweet wine, rated mostly very good to excellent.

159
'Niagara'

Status: The leading American or labruscana white variety, used as fresh fruit, as a white juice and for wine. A light red or rosé mutation is an important variety in Brazil. 'Niagara' is included in lists from Arkansas, Delaware, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, New Jersey, New York, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, Wisconsin and Ontario.

Origin: Produced by Hoag and Clark of Lockport, New York in 1872, and introduced by them, a cross of 'Concord' by 'Cassidy', the latter a white labruscana with some vinifera blood.

Fruit: Cluster medium to large, compact; berry skin white; ripens a week before 'Concord'.

Season and composition: range and ^{median} average-

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva, 6 yrs.	Sept.30-Oct.16	15.1-17.3	0.62-0.69(W)	20-28(W)
New York	(Oct.3)	(16.0)	(0.66)(0.63)	(22)
Vineland, 8 yrs.	Sept.19-Oct.13	11.2-17.0	0.30-0.63(M)	19-40(M)
Ontario	(Sept.29)	(15.1)	(0.58)	(30)
Ripley, Ohio 8 yrs.	Sept.10	15.3	0.40(M)	
Arkansas 1964	Aug.11	14.2	0.81(M)	

Vine: Very large; occasional powdery mildew observed at Geneva, not much subject to mildew but very subject to ^bBlack Rot according to Munson (1909), hardy but slightly less so than 'Concord'.

'Noah'

Status: Listed only by New Jersey where it is in commercial production, still widespread in Europe, in Hungary, Romania, Bulgaria, Italy and France.

Origin: By Otto Wasserzieher of Nauvoo, Illinois in 1869, from a seed of 'Taylor' also the parent of 'Elvira' and 'Missouri Riesling', of Labrusca-vulpina background.

Fruit: Cluster medium, to 15cm., well filled; berry medium, 14 to 16mm.; skin white; ripens with 'Concord' or later.

Season and composition: range and average

	Harvest date	Brix	Total acid %	Tannin mg./100 ml
Geneva ³ yrs.	Oct. 3-Oct. 20	18.6-20.2	0.63	19-22
New York ²	(Oct 11)	(19.8)	0.75-0.94	

Vine: Medium to standard vigor; susceptible to mildew, black rot and ozone ^{oxidant stipple} injury; moderately winter hardy.

'Ontario'

Status: Listed by Illinois, Massachusetts, New Jersey, New York, the USDA, Vermont and West Virginia as the standard early white labruscana for the home garden or local market.

Origin: From a cross in 1892 at Geneva, between 'Winchell' and 'Diamond', original vine first fruited in 1897, in 1901 it was "dug out to make room for the Director's new house" according to the vineyard records. Named in 1908. Its pedigree is shown in the chart for 'Steuben'.

Fruit: Cluster medium, to 20cm., well filled; berry medium, 15 to 16mm.; skin white; ripens very early a month or more before 'Concord'.

Season and composition:

	Harvest date	Brix	Total acid %
Ripley, Ohio 8 yrs.	Aug. 20	16.3	0.48

Vine: Large; cold hardy.

Use: For home use, does not handle well.

162
Pinot Noir

Status: One of the outstanding red wine varieties of the World, the variety from which are made the fine Burgundy wines of France. Recommended in California. More erratic in production in the Northeast than some of the white viniferas.

Origin:

Fruit: Cluster small, compact to tight; berry small medium; skin black; ripens very early

Season and composition: range and median

	Harvest date	Brix	Total acid % Acid	Tannin
Geneva, 11 yrs. New York	Sept.12-Oct.12 (Oct.5)	16.7-20.2 (18.8)	0.58-0.95 (0.68)	54-180 (86)
Ripley, 3 yrs. Ohio	Aug.26-Sept.6	16.2-18.2 (17.5)	0.98-1.11 1.03	

Vine: Large on C,3309 at Geneva, frequent powdery mildew, fruit cracking and poor condition at Geneva. In California it is reported as only moderately vigorous and of low productivity.

Use: Wine samples at Geneva have been thin, lacking in body and color, pleasant, slightly herbaceous, Neutral, not outstanding, at best vinous with acceptable color and body, rated mostly acceptable to good or better.

'Portland'

Status: Listed by Illinois, Indiana, Kentucky, New Jersey, Oklahoma, Tennessee, the USDA, Virginia, Vermont, West Virginia and Wisconsin. An early white labruscana that appears to do better than 'Ontario' in more southern districts.

Origin: From a cross of 'Champion' by 'Lutie' (see genealogy of 'Athens'), named and introduced by the Geneva Station in 1912.

Fruit: Cluster small, 10 to 12cm., compact; berry large, 18 to 20mm.; skin white; ripens a month before 'Concord'.

Vine: Standard size, hardy.

Use: For home use, shells badly, does not handle well.

'President'

Status: Some commercial production in Ontario.

Origin: By T.V. Munson of Denison, Texas, about 1900, described as a pure seedling of 'Herbert', (Rogers #144) a V. labrusca-vinifera hybrid.

Fruit: Cluster small to medium, compact; berry large; skin blue; ripens a week before 'Concord'.

Season and composition: range and average

	Harvest date	Brix	Total acid %
Vineland 8 yrs. Ontario	Sept.22-Oct.10	14.0-17.0 (15.6)	0.49-0.82(M) (0.63)

Vine: Medium; very susceptible to downy mildew at Vineland; medium hardy to cold.

Use: Wine at Vineland described as bright red, fruity, some V. labrusca character, fairly heavy body, rated fair⁺, receives higher ratings as a dessert wine.

(165)

'Ravat Blanc' (Ravat 6)

'Ravat 6' ('Ravat Blanc')

Status: Has been tried in New York and Ontario and found to be too cold tender, subject to disease and very unproductive. In France described by Galet (1956) as the "battle horse" of the new viticulture, recommended in many departments.

Origin: According to Galet (1956) probably 'Seibel 5474' x 'Chardonnay', or aestivalis, cinerea, Labrusca, Lincedumii, riparia, rupestris, vinifera. Obtained at Geneva in 1948 from Bright's Wines Ltd., St. Catharines, Ontario, Canada.

Fruit: Cluster medium to 15cm., compact; berry small; skin white; ripens before Concord.

Season and composition: range and average

	Harvest date	Brix	Total acid %
Geneva, 5 yrs.	Sept. 29 ²⁹ -Oct. 7	15.0-25.3	0.88 0.78
New York		(20.5)	(0.97)

Vine: Small; powdery mildew frequent at Geneva; tender.

Use: Wine samples at Geneva have not lived up to expectations, described as having neutral to musty aroma, ordinary, harsh and bitter and rated mostly fair.

'Rayon d'Or' ('Roi des Blancs', 'Seibel 4986')

~~'Seibel 4986' ('Rayon d'Or', 'Roi des Blancs')~~

Status: Listed in Virginia.

Origin: From a cross of 'Seibel 405' by 'Seibel 2007', ^LAincecurii, rupestris,
vinifera. Obtained at Geneva in 1939 from the Maclet-Botton Nursery
of Villefranche, France.

Fruit: Cluster medium to large, compact; berry medium; skin white; ripens
midseason.

Season and composition: range and ^{median} average-

	Harvest date	Brix	Total acid %
Geneva, 8 yrs.	Sept. 26-Oct. 10	16.2-20.8	0.73 - 9.70-0.91(W)
New York	(Oct. 8)	(18.2)	(0.86)

Vine: Small to standard size; occasional powdery mildew observed at Geneva.

Use: Wine samples at Geneva described as neutral to hybrid in aroma, lacking
character and rated mostly fair. Galet (1956) describes the wine as
one of the better white hybrids.

'Red Amber'

Status: Listed by Minnesota, the USDA, Vermont and Wisconsin, one of the very hardy varieties for the North.

Origin: At the University of Minnesota Fruit Breeding Farm at Excelsior, selected in 1923, introduced in 1944, of unknown parentage.

Fruit: Cluster medium, compact; berry smaller than 'Concord'; skin reddish amber, ripens early September in Minnesota.

Vine: Hardy.

(100)
'Rocaneuf' ('Seyve-Villard 12-309')

~~'Seyve-Villard 12-309' ('Rocaneuf')~~

Status: Listed in Florida where it appears to be tolerant to Pierce's Disease.

Loomis found it useful as a parent at Meridian, Mississippi. Galibert

() describes it as an excellent table and wine grape. Grown in the Midi of France and in North Africa.

Origin: A sister seedling of '12-375', see genealogy chart, and also '12-303' and '12-364' a cross productive of valuable offspring, obtained at Geneva in 1948, P.I. 157516 from the Plant Introduction Station, Glenn Dale, Md.

Fruit: Cluster medium to large, to 20cm., compact; berry medium, to 17mm.; skin pink; ripens late, rarely at Geneva.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva, 4 yrs.	Sept.25-Oct.17	11.5-19.6	0.71-1.25(W)	14-19(W)
New York	(Oct.14)	(16.2)(17.1)	(0.98)(1.11)	(16)
Updey, Ohio 1971-1975	Sept.8-Sept.24 (Sept.19)	12.5-17.2 (15.5)	0.79-1.10(M) (0.93)	

Vine: Standard size, tends to overcrop; hardy.

Use: Too late for proper tests at Geneva, wine samples neutral, thin, hard, rated fair. Maybe of interest for dessert and wine in the South.

169
'Romulus'

Status: Included because it does appear in recommendations from Kentucky, Massachusetts, New Jersey and ~~Ontario~~.

Origin: Another 'Ontario' by 'Sultanina' seedless selection, sib of Himrod, named in 1952 by the Geneva, New York Station.

Fruit: Cluster large, to 23cm., well filled to compact; berry small, 10 to 15mm.; skin yellowish green with heavy bloom, season with Concord or later.

Season and composition: range and average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva, 2 yrs. New York	Oct. ¹⁰ 2-Oct.27	12.0-23.0	0.67-0.98(W)	21-22(W)
Vineland, 5 yrs. Ontario	Sept.22-Oct.20	16.6-22.0	0.79-1.12(M)	
Ripley, Ohio	8 yrs. Aug.31	17.4	0.89(M)	

Vine: Large, drooping; occasional downy mildew and powdery mildew at Geneva; moderately hardy.

Use: As a dessert grape it does not equal 'Himrod' in berry size and tenderness of skin. However, it is more productive and has much better formed clusters.

'Rosette' ('Seibel 1000')

-Seibel 1000- ('Rosette')

Status: Listed in New York, Ontario and Virginia, one of the first hybrids grown commercially for wine in New York, now largely replaced by later hybrids.

Origin: By Albert Seibel from a seed of 'Jaeger 70' (rupestris/lincecumii) by a vinifera. Obtained at Geneva in 1927 from the Maclet-Botton Nursery, Villefranche, France. Named by the Great Lakes Grape Nomenclature Committee in 1972.

Fruit: Cluster small to medium, loose to well filled; berry small; skin blue; ripens before 'Concord'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva, ⁸ 6 yrs.	Sept. 27-Oct. 12	14.4-19.5 ^{20.9}	0.57-0.85(W)	64-85(W)
New York	(Oct 4)	(17.4)	(0.68)	(72)
Vineland, 8 yrs.	Sept. 16-Sept. 23	17.6-20.1	0.76-? (M)	
Ontario		(18.6)		
Kentville, 1974	Oct. 15	14.8	1.29(M)	
N.S.				

Vine: Large; at Geneva frequent powdery mildew and sensitive to sulfur, moderately hardy. According to Brooks and Olmo (1972) very cold hardy, susceptible to anthracnose and only fairly tolerant to downy mildew, but commercially resistant to powdery mildew.

Use: Wine samples at Geneva described as at best fruity, sprightly, well balanced rose, at worst thin, ordinary, slightly harsh, bitter, rated from poor to very good, mostly fair.

'Rougeon' ('Seibel 5898')

~~'Seibel 5898' ('Rougeon')~~

Status: Listed in New York, Oklahoma and Virginia, some commercial acreage in New York. Not much grown in France, only listed in a table by Galet (1956).

Origin: Supposedly 'Seibel 880' by 'Seibel 4202', vinifera, rupestris, lince-cumii, aestivalis, (Remaily 1972). Obtained in 1927 at Geneva from the Maclet-Botton Nursery, Villefranche, France. Named by the Great Lakes Nomenclature Committee in 1972.

Fruit: Cluster medium, to 15cm., well filled; berry medium, 15 to 18mm.; skin blue; colored juice; ripens with 'Concord'.

Season and composition: range and ^{median} average.

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
13 Geneva 11 yrs.	23 - Sept. 26-Oct. 15	13.0-19.2	0.55 0.73-1.17(W)	34-116(W)
New York	(Oct. 5)	(16.0)	(0.85)	(86) (89)
Vineland 5 yrs. Ontario	Sept. 9-Oct. 4	15.0-17.8	0.93-1.57(M)	

Vine: Large, upright; susceptible to powdery mildew very sulfur sensitive; winter hardy; production irregular. *due to rachis abnormality and cankers.*

Use: Wine samples at Geneva have been at best light, neutral, pleasant, with good body, also ordinary, slightly stemmy and bitter, rating fair to good. The chief value may be the color for blending.

172

'Schuyler'

Status: Listed in New York and New Jersey, a very early, black vinifera type, only moderately hardy, of no proven commercial value, for the home vineyard.

Origin: Named in 1947 by the Geneva Station, from a cross between 'Zinfandel' a vinifera wine grape by 'Ontario'.

Fruit: Cluster medium to large, compact; berry medium; skin black with heavy bloom; ripens early, 3 or more weeks before 'Concord'.

Season and composition: range and average

	Harvest date	Brix	Total acid %
Ripley, Ohio 8 yrs.	Aug. 24	16.9	0.51(M)

Vine: Small to standard; tendency to overcrop usually responsible; only moderately winter hardy.

for what?

maybe omit
not today 1978

'Seibel 8229'

Status: Listed by Ontario, not listed by Galet (1956), (in commercial production in Ontario.) ^{by OAB.}

Origin: According to Brooks and Olmo (1972), from Seibel 5163 by 'Seibel 4989', aestivalis, cinerea, Labrusca, riparia, rupestris, vinifera, introduced into Canada in 1946, obtained at Geneva in 1958 from H.C. Barrett, University of Illinois.

Fruit: Cluster small to medium, compact; berry medium, 14 to 16mm.; skin yellowish-white; ripens in 'Concord' season.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva, 7 yrs.	Sept. 29-Oct. 19	14.9-18.4	0.72 0.66-1.12(W)	17-22(W)
New York	(Oct. 10)	(17.5)	(0.84)	(19)
Vineland, 4 yrs.	Oct. 1-Oct. 16	18.0-20.0	0.71-1.27(M)	
Ontario				

Vine: Standard size; reported to grow well on heavy clay soils at Vineland; moderately hardy.

Use: Wine samples at Geneva at best neutral, pleasant, medium body, others thin, bitter, flat, rated mostly fair. Vineland samples described as strong Labrusca to no Labrusca.

174
'Seibel 10868'

Status: Listed in Missouri, tried on a commercial scale in Ontario, New York and elsewhere, is not being planted.

Origin: From a cross of the same seed parent as the two previous, 'Seibel 5163' by 'Seibel 5593', ^LV. abrusca, riparia, rupestris, vinifera. Obtained at Geneva in 1948 from Bright's Wines Ltd., St. Catharines, Ontario, Canada.

Fruit: Cluster medium to large, compact; berry small; skin white to pink; ripens with 'Concord'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin
				mg/100 ml
13 Geneva 14 yrs.	10 8 Sept. 23-Oct. 13	16.2 - 16.8-21.0	0.60 - 0.71-0.92(W)	18-41(W)
New York	(Sept. 26)	(18.5)	(0.74)	(27)(24)
Vineland, 5 yrs.	Sept. 21-Sept. 29	18.9-22.7	0.92-1.32(M)	
Ontario				
Ripley, Ohio 1972-1975	Aug. 26-Sept. 15	14.7-21.8	0.69-0.95(M)	
	(Sept. 5)	(18.3)	(0.84)	

Vine: Standard to large, only moderately hardy at Geneva, subject to trunk injury, Vineland reports medium vigor with a tendency to overbear and winter killing unless ^{cluster} bunch thinning is practiced.

Use: Wine samples at Geneva have had good aroma and flavor, neutral, delicate, vinous, at worst green, stemmy, slightly herbaceous, rated poor to excellent, mostly good to excellent. Vineland describes the wine as having no to mild to medium ^LV. abrusca character.

'Seneca'

Status: Listed by Delaware, Massachusetts, New Jersey, New York and Ontario and the USDA as a high quality early white dessert grape with dominant vinifera fruit characters.

Origin: From a cross of 'Lignan Blanc' an early vinifera dessert grape by 'Ontario', named and introduced at Geneva in 1930.

Fruit: Cluster medium, to 20cm., well filled; berry medium, oval, 18 x 20mm.; skin white to golden when well ripened; ripens two to three weeks before 'Concord'.

Season and composition:

	Harvest date	Brix	Total acid %
Vineland 4 yrs.	Sept.11-Sept.20	18.0-19.3	0.68-0.84(M)
Ohio 8 yrs.	Aug.15	18.1	0.51(M)

Vine: Standard size; quite susceptible to powdery mildew, birds much attracted and only moderately cold hardy.

Use: Has outstanding dessert quality when well grown.

'Seyval' ('Seyve-Villard 5-276')

'Seyve-Villard 5-276' ('Seyval')

Status: Listed by Arkansas, Illinois, Kansas, Michigan, Missouri, New York, Ohio, Oklahoma, Pennsylvania, Virginia and Ontario; one of the most planted white hybrids in France, over 3000 acres in 1968 (Galet, 1968).

Origin: Galibert () cites the supposed origin as 'Seibel 4995' by 'Seibel 4986', of Lincecumii, rupestris, vinifera background. Galet (1968) gives the parentage as 'Seibel 5656' by 'Seibel 4986'. The species involved would be the same. Obtained at Geneva in 1937 from the Maclet-Botton Nursery, Villefranche, France.

Fruit: Cluster medium to large, to 18cm., compact; berry small 13 to 15mm.; skin white; ripens week before 'Concord'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin
			0.94	mg/100 ml
12 Geneva, 10 yrs.	Sept. 11-Sept. 29	14.5-20.5	0.68-0.98(W)	17-21(W)
New York	(Sept. 23)	(18.6)	(0.82)	(19)(20)
Vineland, 4 yrs.	Sept. 21-Oct. 4	17.0-20.4	0.80-1.48(M)	
Ontario	(Sept. 26)	(18.0)	(1.21)	
Ripley, Ohio 1971-1975	Sept. 9	14.8-18.8(M)	0.69-1.02(M)	
		(16.8)	(.85)	

Vine: Small to standard, occasional powdery mildew, overcropping observed at

vigor → vine size

Geneva, only moderately hardy, at Vineland vigor fair, susceptible to powdery mildew and only medium hardy, tends to overcrop. Thinning is required

Use: Wine samples at Geneva have been neutral to fruity, delicate, well balanced, at worst thin and lacking character, rated mostly good, very good to excellent. Vineland reports that the wine is fruity and useful as a sparkling wine.

'Sheridan'

Status: Listed by the USDA, Delaware, Kentucky, New Jersey, New York, Tennessee and West Virginia as a late 'Concord' type for home and roadside.

Origin: Originally New York 4272, named in 1921, from a cross of 'Herbert' by 'Worden', for genealogy see chart for 'Steuben'.

Fruit: Clusters medium to 15cm., compact; berry large, 19 to 22mm.; skin black; ripens a week after 'Concord', Ohio data indicate less than a week.

Season and composition:

	Harvest date	Brix
Ripley, Ohio 8 yrs.	Sept. 14	16.8

Vine: Standard size; hardy.

Use: A late ripening typical labruscana.

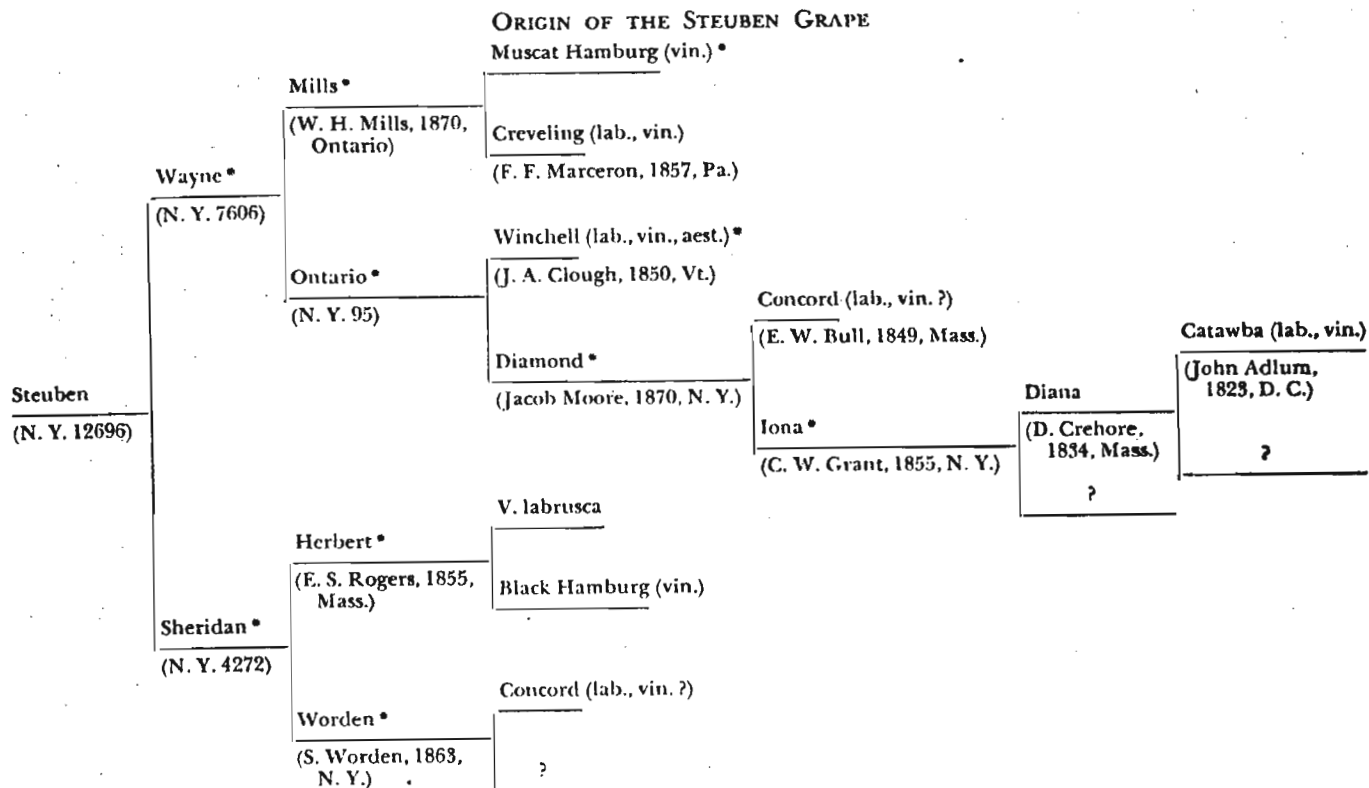
'Steuben'

Status: Listed by Illinois, New Jersey, New York and Ontario, one of the better Geneva introductions, for home, local market and wine.

Origin: From a cross made at Geneva, New York in 1925 between Wayne and Sheridan named and introduced in 1947.

N.Y. AES.

Chart (from Bul. 794)



*=varieties used directly as parents in grape breeding program.

Fruit: Cluster medium to large, to 22cm., compact; berry medium, 17 to 19mm.; skin black with heavy bloom; ripens shortly after 'Concord'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva, 3 yrs. New York	Oct. 8-Oct. 20 (Oct 10)	16.4-21.0 (18.9)	0.68-0.82(W) (0.75)	92-119(W)
Vineland, 5 yrs. Ontario	Oct. 1-Oct. 22	15.7-18.7	0.77-0.97	
Ripley, Ohio 8 yrs.	Sept. 11	17.9		
Arkansas 1964	Aug. 4	15.8	0.90	

Vine: Standard to large; tends to overcrop which retards maturity; moderately hardy.

Use: Wine samples at Geneva have been light in color, distinctive, pleasant, fruity, rated good to excellent. Cold press samples have shown an American character.

7 Table grape use

180

'Suffolk Red'

Status: New seedless listed by Ontario, New Jersey and New York.

Origin: Introduced by the Geneva, New York Station in 1972, from a cross of 'Fredonia' by a 'Russian Seedless 136' which was apparently 'Black Monukka' under another name.

Fruit: Cluster medium to large, to 23cm., loose; berry medium, mostly 16 to 18mm.; skin red; ripens early, before 'Delaware'.

Vine: Standard size, only moderately winter hardy.

Use: High dessert quality, for home or roadside, (~~cane ringing or~~) gibberellin treatments essential to consistently good clusters and yield.

has cane ringing been done in ENA?

'Traminer' ('Gewurztraminer')

Status: An old variety of the Alsace region of Germany, prized for its spicy, aromatic white wines. Plantings have increased in California in the 1970ties.

Origin:

Fruit: Cluster small, compact; berry small; skin pink to brownish; ripens

Season and composition: range and median

	Harvest date	Brix	Total acid % -Acid-	Tannin
Geneva, 6 yrs.	Sept.12-Oct.19	18.2-21.0	0.50-0.98	18-19
New York	(Oct.5)	(20.1)	(0.73)	

Vine: Large at Geneva grafted on C.3309, frequent downy mildew, powdery mildew, fruit cracking and poor condition

Use: Wine samples at Geneva have had distinctive and desirable aroma but have tended to be somewhat flat and lacking in character.

'Urbana'

Status: An old, late-ripening and long-keeping red of excellent dessert quality.

Listed by Illinois, New York and West Virginia.

Origin: Introduced by the Geneva, New York Station in 1912, from a cross of 'Governor Ross', a labrusca-vinifera hybrid introduced by T.V. Munson in 1894, crossed by 'Mills' (see 'Steuben' genealogy).

Fruit: Cluster medium, 12 to 18cm., often shouldered, well filled; berry large, 19 to 20mm.; skin dull red, thick; ripens late, after 'Catawba'.

Vine: Small to standard size; moderately cold hardy.

Use: Dessert use, keeps its quality on storing.

'Van Buren'

Status: Listed by the USDA, Massachusetts, New Hampshire, New York, Wisconsin and Ontario, very early black 'Concord' type for home or local market.

Origin: By F.E. Galadwin at the Vineyard Laboratory of the Geneva, New York Station in 1935, a cross of 'Fredonia' by 'Worden'.

Fruit: Cluster small to medium, 12 to 15cm., compact; berry medium, 16 to 17mm.; skin black; ripens a month before 'Concord'.

Season and composition:

	Harvest date	Brix	Total acid %
Ripley, Ohio 8 yrs.	Aug. 25	14.2	0.44(M)
Kentville 1974 N.S.	Oct. 15	12.1	1.34(M)

Vine: Standard; ^dsonny mildew frequently observed at Geneva; hardy.

Use: Only for home use and roadside stand tender skin cracks, quality falls off rapidly after maturity.

868 tons utilized by the wineries
in 1974

'Veeport'

Status: Named by the Vineland, Ontario Station in 1961, X acres already planted in 1975 in the Niagara fruit belt for wine.

Origin: From a cross of 'Wilder' by 'Winchell', the former 'Rogers #4', ^LLabrusca by 'Black Hamburg' (vinifera), the latter of ^LLabrusca, vinifera, aestivalis background by J.H. Clough, 1850, Vermont.

Fruit: Cluster medium, to 15cm., medium compact; berry medium, 15 to 16mm.; skin blue; ripens a few days before 'Concord'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
⁶ Geneva, 5 yrs. New York	Sept. 28-Oct. 25 (Oct. 19)	13.5-18.0 (15.2)	0.74-0.92(W) (0.80)	82-218(W) (150)
Vineland, 8 yrs. Ontario	Sept. 18-Oct. 25 (Oct. 1)	12.2-16.2 (15.1)	0.81-1.46(M) (1.12)	20-165(M) (44)
Ripley, Ohio 1970-1972	Sept. 9-Sept. 26 (Sept. 19)	14.0-17.3 (15.8)	0.59-0.85(M) (0.70)	

Vine: Standard size, sprawly, shoots tend to break in the wind; occasional powdery mildew at Geneva; moderately hardy, less so than 'Concord'.

Use: Vineland recommends highly as a superior dessert wine; has slight muscat character. Geneva samples have rated very good as a ^{claret} charet type, also described as muscat.

'Ventura'

Status: A 1975 introduction from the Horticultural Research Institute of Ontario, Vineland Station, Ontario, Canada, an 'Elvira' type without its weaknesses.

Origin: From a cross of 'Seibel 10878' ('Chelois') by 'Elvira'.

Fruit: Cluster medium, to 15cm., medium compact; berry small, 12 to 13mm.; skin white; does not crack like 'Elvira', ripens a few days before 'Concord'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %
Geneva, 6	13	15.0 -	0.84 - 1.26 (W)
New York 3 yrs.	Oct. 1-Oct. 11 (Oct 11)	17.0-19.6 (18.5)	1.26(W) (1.10)
Vineland, 3 yrs. Ontario	Sept. 28-Oct. 8	16.8-21.3	0.98-1.71(M)
Ripley, Ohio 3 yrs.	Sept. 22	16.9	0.94(M)

Vine: Described by Vineland (1975) as vigorous, productive; resistant to downy and powdery mildew, somewhat susceptible to deadarm disease; as hardy as 'Concord'.

Deadarm for
means what?
in 1977

Use: Wine samples at Geneva described as resembling 'Elvira' but more neutral, a sound American wine; Vineland reports that the wine has averaged a good + rating; Ohio (1972) describes the wine as slightly Labrusca, fruity, good.

Eutypa trunk or
phomopsis v. tieckii (berry, leaf,
radix)

'Verdelet' ('Seibel 9110')

~~'Seibel 9110' ('Verdelet')~~

Status: Listed in Arkansas, New York, Oklahoma and Ontario. Gailbert () describes it as an excellent table grape with good appearance and shipping qualities.

Origin: From a cross of 'Seibel 5455' by 'Seibel 4938', aestivalis, cinerea, labrusca, lincecumii, riparia, rupestris, vinifera, obtained at Geneva in 1942 from J.R. Brooks, Candor, North Carolina. Named in 1972 by the Great Lakes Grape Nomenclature Committee.

Fruit: Cluster medium, to 20cm., compact; berry medium, oval; skin white to golden, very attractive; ripens midseason.

Season and composition: range and average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva 7 yrs.	Sept.23-Oct.13	17.0-21.0	0.57-1.02(W)	19-36(W)
New York (Oct.4)		(19.8)	(0.72)	(25) (27)
Vineland 8 yrs.	Oct.1-Oct.16	16.8-19.0	1.29-1.38(M)	
Ontario		(17.5)	(1.33)	

Vine: Small to standard size; overcropping and irregular maturity noted at Geneva, tender to winter cold, planted rather extensively in Ontario for its high quality it has been successfully grown only on the most favorable sites.

Use: Wine samples at Geneva have been described as having a delicate, almost neutral fruitiness, slightly thin and have mostly rated fair in quality.

'Vidal 256'

Status: Listed in Michigan, Missouri, New York, Ohio, Pennsylvania, one of the most interesting of more recent introductions.

Origin: According to Brooks and Olmo (1972), at the Foundation Fougerat, Bois-Charentes, France by J.L. Vidal, from a cross of the vinifera variously called 'St. Emilion', 'Ugni Blanc' or 'Trebiano', crossed with 'Seibel 4986'. Introduced in 1952 into the United States as P.I. 200684, to Geneva in 1964-65 from three sources, George Remaily of Doylestown, Pa., H.C. Barrett of the University of Illinois and Boordy Vineyard, Riderwood, Md.

Fruit: Clusters long, to 28cm., compact; berry small, 14 to 15mm.; skin greenish white.

Season and composition: range and ^{median} ~~average~~

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
¹⁰ Geneva, 7 yrs. New York	Sept. 26-Oct. 28 (Oct. 15)	15.1-20.6 (18.6)	0.81-1.23(W) (0.99)(1.02)	20-32(W) (24)
Ripley, Ohio 1970-1972	Sept. 2-Sept. 15 (Sept. 10)	17.0-20.0 (18.2)	0.87-1.03(M) (0.94)	

Vine: Large; occasional powdery mildew observed at Geneva, only moderately cold hardy, to tender.

Use: Wine samples at Geneva have been neutral, slightly thin and tart, rated fair to very good.

'Vignoles' ('Ravat 51')
~~'Ravat 51' ('Vignoles')~~

Status: Listed by Michigan and New York.

Origin: By J.F. Ravat, from a cross of 'Seibel 6905' by 'Pinot', ^LAincecumii,
rupestris, vinifera. Obtained at Geneva in 1964 from George Remaily,
Doylestown, Pa., first introduced in the U.S. as P.I. (Plant Intro-
duction) 178547 and 181421, according to Brooks and Olmo (1975).
Named by the Great Lakes Grape Nomenclature Committee in 1972.

Fruit: Cluster small, to 13cm., tight; berry small; skin white, tends to crack;
ripens before 'Concord'.

Season and composition: range and ^{median}~~average~~

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva, ¹⁰ 8 yrs.	Sept. 7-Oct. 16	17.5-21.0	0.77-1.19(W)	18-27(W)
New York	(Sept. 22)	(19.8)(20.6)	(0.97)	(21)
Ripley, Ohio 1971-1975	Aug. 16-Sept. 6	16.1-22.4	1.24-1.58(M)	
	(Aug. 30)	(19.2)	(1.35)	

Vine: Standard size; at Geneva powdery mildew frequent, and fruit cracking
and poor condition under wet ripening conditions; hardy.

Use: Wine samples at Geneva usually fruity, well balanced, good body, light
and pleasant, at worst slightly bitter, green, rated mostly very good
to excellent.

'Villard Blanc' (Seyve-Villard 12-375')

~~Seyve-Villard 12-375~~ ('Villard Blanc')

Status: Listed by Arkansas, Georgia, Illinois, New York, Ohio, Oklahoma and South Carolina. Considered to be perhaps the best of the white French hybrids for wine and table. Widely planted in the south of France, a little late for northern grape districts in North America. Made the Seyve-Villard reputation, according to Galet (1956).

Origin: Assumed to be from a cross of 'Seibel 6468' by 'Seibel 6905', ^{according to} see chart. ^{So}
Introduced and first cultivated in France about 1937, P.I. 157518 received in the United States in 1947 (Brooks and Olmo, 1972). Obtained at Geneva in 1959 from H.C. Barrett of the University of Illinois.

Fruit: Cluster large, to 30cm., loose but well filled; berry medium, 16 to 18mm.; skin white, golden yellow; ripens late at Geneva. ^{re Catawba?}

Season and composition: range and ^{median} average

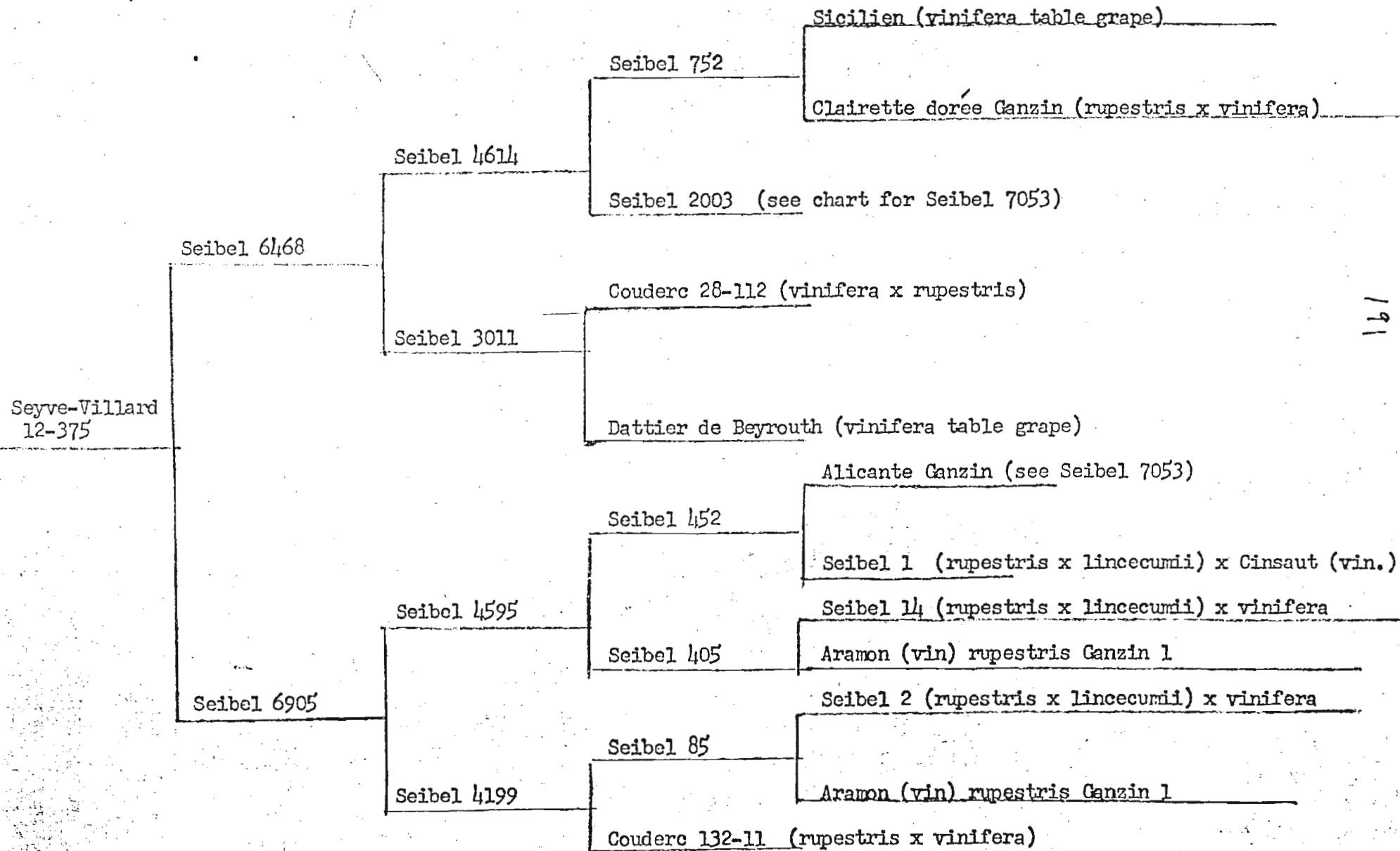
	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva ¹⁰ yrs.	Sept. 25-Oct. 24	15.6	0.70-1.21(W)	16-21(W)
New York	(Oct. 14)	(17.0)	(0.90)(1.00)	(19)
Ripley, Ohio 8 yrs.	Sept. 17	17.7	1.13(M)	

Vine: Standard size; overcropping, frequent powdery mildew, slight sulfur sensitivity observed at Geneva, appears quite winter hardy.

Use: Although late at Geneva the wine samples have had fine flavor, aroma and color, described as neutral with good body and balance, at poorest slightly herbaceous, thin and bitter, rated mostly good to excellent

Source?

Origin of Seyve-Villard 12-375 ('Villard Blanc')



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'Villard Noir' ('Seyve-Villard 18-315')

'Seyve Villard 18-315' ('Villard Noir')

Status: Listed in Oklahoma, some interest in Ontario, in France the most widespread of the red Seyve-Villard hybrids.

Origin: Very likely from a cross of 'Seibel 7053' by 'Seyve-Villard 12-375'; (see genealogy charts of these varieties). Obtained in 1937 at Geneva from the Maclet-Botton Nursery, Villefranche, France.

Fruit: Cluster medium, to 20cm., loose; berry medium, 15 to 17mm.; skin blue; ripens a little too late for best quality at Geneva.

Season and composition: range and average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva, ⁵ yrs.	⁷ Oct. 8-Oct. 14	15.0-19.6	0.89-1.06(W)	92-106(W)
New York	(Oct. 13)	(17.2)(16.6)	(0.98)(1.01)	(100)
Ripley, Ohio 1971-1975	Sept. 15	16.7-20.0 (18.0)	1.15(M) 0.82-1.50(M) (1.17)	(11)

Vine: Large size; moderately hardy.

Use: Wine samples at Geneva have been neutral, tart, slightly thin, herbaceous, purplish in color, rated fair to good.

'Vincent'

Status: Named by the Horticultural Research Institute, Vineland, Ontario in 1967; considerable commercial production in Ontario by 1975.

Origin: From a cross of 'Lomanto' (T.V. Munson, 1902, ^Cchampini, ^Labrusca, vin-
^Bifera, ^Bourquiniana) with 'Seneca', resulting in 'Vineland 370628',
in turn crossed with 'Seibel 10878' ('Chelois').

Fruit: Cluster large, to 18cm., compact to very compact; berry medium, 15 to 16mm.; skin blue; juice colored; ripens just after 'Concord'.

Season and composition: range and average

	Harvest date	Brix	Total acid %	Tannin mg/100 ml
Geneva, ⁹ 6 yrs. New York	Oct.1-Oct.26 (Oct.15)	15.0-18.0 (16.3)	0.70-0.99(W) (0.83)(0.56)	186-284(W) (237)(242)
Vineland, 8 yrs. Ontario	Sept.29-Oct.14 (Oct.7)	14.7-17.9 (15.1)	1.48-2.17(M) (1.66)	56-143(M) (111)
Ripley, Ohio 1970-1972	Sept.9-Sept.19 (Sept.14)	14.1-15.6 (14.9)	0.80-0.97(M) (0.91)	

Vine: Large, sprawling; reported susceptible to powdery mildew in Ontario and observed frequently at Geneva; moderately hardy, some cane and trunk injury at Vineland and Geneva in severe winters.

Use: Vineland describes the wine as highly colored, full bodied, well balanced and highly rated as a table wine. Geneva samples have been described to have good to fine body and balance and have rated very good to excellent.

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'Vinered'

Status: Listed by New York and Ontario, a late red for areas with a longer season.

Origin: Introduced by the Horticultural Research Institute, Vineland, Ontario, in 1964, from a seed from 'Brocton', self pollinated, 'Brocton' being a New York introduction, a cross of 'Brighton' by a ('Winchell' by 'Diamond') selection, this a sister of 'Ontario'.

Fruit: Cluster large, to 25cm., well filled; berry large, 17 to 19mm.; skin red; ripens late, with 'Catawba'.

Season and composition: range and ^{median} average

	Harvest date	Brix	Total acid %
Geneva, 4 yrs.	Oct. 6-Oct. 24	13.8-21.0	0.71-0.85(W)
New York	(Oct. 12)	(17.8)	(0.80)
Vineland, 4 yrs.	Oct. 12-Oct. 20	18.2-20.0	0.85-1.28(M)
Ontario			

Vine: Very large, hardy.

Use: For dessert use where it ripens well. Wine samples at Geneva described as fruity, American, rated fair to good.

White Riesling (Riesling, Johannisbeger Riesling)

Status: Regarded as the finest quality white wine grape of the more northern regions, producing wines with strong varietal flavor and bouquet, the premium grape of the Rhine and Moselle valleys. One of the more successful viniferas in plantings in the Northeast.

Origin:

Fruit: Cluster medium, compact; berry small to medium; skin greenish yellow with russet dots; ripens midseason.

Season and composition: range and median

	Harvest date	Brix	Total acid % Acid	Tannin
Geneva, 13 yrs. New York	Oct.2-Oct.29 (Oct.16)	16.0-22.8 (20.0)	0.53-1.14(M) (0.84)	18-32 (23)
Vineland, Ontario		18.4	1.28(M)	
Ripley, 5 yrs. Ohio	Sept.2-Sept.19	14.6-19.5 (17.6)	0.92-0.98 (0.96)	

Vine: Large on C.3309 in Geneva, downy mildew, and powdery mildew frequently observed, occasional botrytis, tender to winter cold.

Use: Wine samples at Geneva have been mostly outstanding, usually more full bodied than imports but with less flowery bouquet than the best Rhine and especially Moselle wines.

'Worden'

Status: Still listed by the USDA, Massachusetts, Minnesota, South Dakota, Virginia, Vermont and Wisconsin, a 'Concord' type that ripens two or three weeks earlier.

Origin: Grown from a 'Concord' seed from an isolated vine by S. Worden of Minetto, Oswego County, New York in the early 1880ties.

Fruit: Cluster medium, 12 to 18cm., well filled; berry large, 18 to 20mm.; skin black, tender, cracks; ripens two weeks before Concord.

Vine: Standard size; hardy.

Use: Of little value, replaced by better varieties.

'Yates'

- Status: A late red that keeps well in cold storage, of no commercial importance, desirable for the home and for roadside stand.
- Origin: Named in 1937, by the Geneva Station, from a cross of 'Mills' by 'Ontario'.
- Fruit: Cluster medium, 15 to 20cm. long, loose to well filled; berry mostly large, 18 to 20mm.; skin medium red, heavy bloom; ripens a week or more after 'Concord'.
- Vine: Standard size, hardy, tends to overcrop.