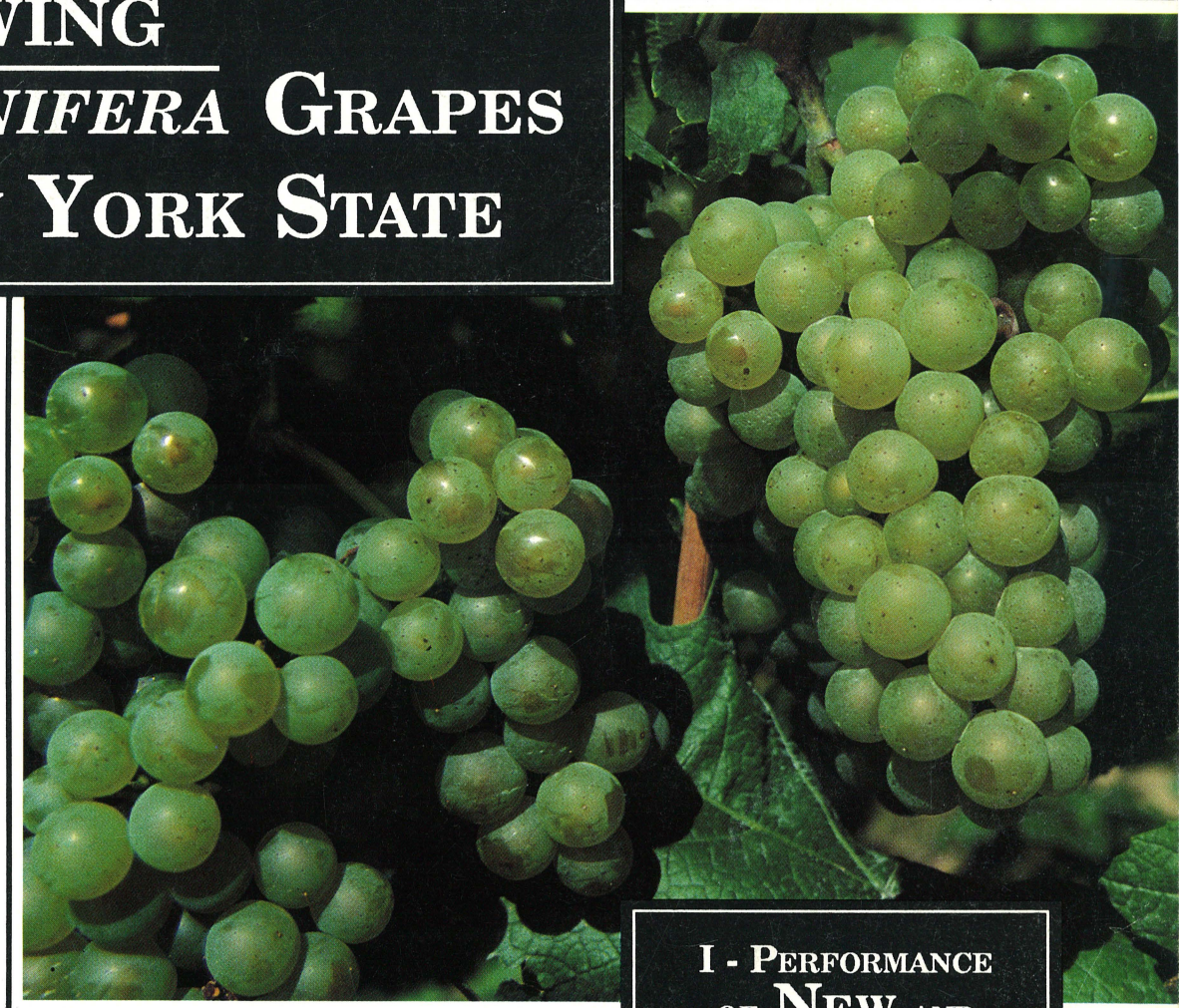
GROWING *VITIS VINIFERA* GRAPES IN NEW YORK STATE



I - PERFORMANCE OF NEW AND INTERESTING VARIETIES

Written by
Robert M. Pool, et. al.

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FOREWORD

Since the arrival of the first Europeans, viticulture in the eastern US has been a history of repeated attempts to establish the European wine grape, *Vitis vinifera*, L. (vinifera). The first three centuries of these attempts did not result in commercial success, but gradually produced a better understanding of the problems associated with this endeavor. This long effort has finally resulted in the establishment of commercial vinifera production in the east, but many problems must still be overcome, especially in New York state. The eastern summers are moist, creating a climate hospitable for fungal diseases to which the wild, local grapes are resistant, but to which vinifera easily succumb. Phylloxera, an aphid native to North America, devastates the root system of the European grape. Cold, northern winters quickly eliminate vines weakened by disease, phylloxera or which cannot fully mature fruit and vine in the short growing season. In the south, a native bacterium that causes Pierce's disease is still devastating any but naturally resistant native vines.

The initial commercial answer to these problems was to utilize the native resource, the wild grape. At first, selections of superior wild stock were the source of native grape varieties, but later the results of accidental and deliberate crossings between native and European grape produced varieties which have become the foundation of the New York grape industry. These efforts were so successful that today the flavor of grape juice and jellies is everywhere in the world equated with that of the native grape, *V. labrusca*.

Native varieties have also proven very useful for premium quality dessert wines and for sweet, aperitif-style table wines. Because of excessive astringency and bitterness which usually is masked by residual sugar, the native American varieties, which were mostly produced during the 19th century, do not make acceptable dry wines. Modern breeding programs in New York, in North America and in Europe have continued the progress of combining positive qualities of native and European grapes. New varieties have been produced which are well adapted to New York and produce very acceptable, dry table wines. The best of these for growing in New York are described in New York's Food and Life Sciences Bulletin 80. Concerns for the environment and for the needs of low input agriculture are putting a premium on the efforts of the grape breeders to introduce improved clones and new grape varieties with better resistance to pests and cold.

In spite of this, progressive wine grape growers and researchers have continued their efforts to produce vinifera grapes commercially. Despite the best efforts of modern breeding, no new grape varieties have been produced which equal or surpass the wine quality of a few select, premium varieties grown in a climate allowing expression of their full quality potential. The pioneering efforts of eastern growers have not only established vinifera culture under difficult conditions, they also shown that eastern grown vinifera grapes produce superior quality wine

Two individuals who led this quest for success in New York were Charles Fournier of the Gold Seal Wine Company and Dr. Konstantine Frank of Vinifera Wine Cellars. Mr. Fournier was influential not only for his encouragement of efforts to grow vinifera, but also for making wines that demonstrated the quality potential of European grapes. Dr. Frank brought with him his experience of growing European grapes in regions of extreme cold, his knowledge of varieties and

his dogged persistence in pursuing the task of producing vinifera in New York. He demonstrated that success was commercially feasible and smoothed the path for those who followed.

The path to the success of commercial vinifera vineyards in New York has been long, expensive, frustrating and not without controversy. The accumulation of the knowledge required for success has been gradual. The causes for failure have been identified and most have been overcome. The debilitating effect of phylloxera is avoided by growing susceptible European vines on resistant, native rootstocks. Plant pathologists have identified the organisms causing the most serious diseases. The biology and growth requirements of these organisms have been studied and fungicides developed for disease control. At the same time, viticulturists have developed knowledge of the varieties and learned to adopt and adapt cultural practices which will improve vine maturity, fruit maturity, disease resistance, winter hardiness and the ability to tolerate winter cold damage. This work is still in progress.

All of these efforts have been crucial, but none more so than the need to identify appropriate vinifera varieties to grow. The early experiments often tested vines from southern, rather than northern Europe. Later, because California - a state blessed with long, hot, dry summers and warm, short winters - became the primary source for test vines, failures resulted due to the use of inappropriate varieties or clones of potentially well adapted varieties. One major reason for the current success of the New York vinifera industry is that adapted varieties have been identified. These have been found growing in regions of Europe where the conditions are most similar to those of New York, the northern edge of viticulture. The crucial need for appropriately adapted germplasm is the foundation for the work reported in this bulletin. Europeans have also been active in the area of plant breeding. During the middle of this century, many new varieties were produced, particularly by German breeders. With the sponsorship of Mr. John Dyson of Millbrook Vineyards (Millbrook, NY) and the New York Wine and Grape Foundation, some of these varieties have been imported to test their potential for the New York grape industry. These importations would not have been possible without the cooperation of Mr. Peter Deth of the New York State Department of Agriculture and Markets and Dr. Dennis Gonsalves of the New York State Agricultural Experiment Station who performed the tests required to ensure quarantinable diseases were not present. Mr. John Nicklin of Marlboro, NY, provided land for test plantings and contributed generous assistance and encouragement. The staff of the Highland, NY research station were also generous in contributing technical support to gather data.

The results of these tests for potential adaptation to New York follow. Varieties recommended for planting are marked by an asterisk (*). In following these recommedations the grower should consider the special needs imposed by the particular region and site in question. The full need for testing has not been completely satisfied by publication of this report. This is the first of a planned series of reports relating to the culture of vinifera grapes in New York state. The progress of our industry depends on the ability to import and identify adapted and improved grape germplasm, the primary resource of the grape grower and wine maker.

Introduction

The two most important decisions a grape grower makes are the vineyard location and choice of scion and rootstock. In New York, very few varieties of *Vitis vinifera* are commercially grown. Only Chardonnay and White Riesling are planted in sufficient acreage for the State Crop Reporting Service to report separate production records. Those two varieties are from the most northerly grape growing districts of Europe, and are characterized by cold hardiness, early wood and fruit maturation and exceptional wine quality. In recent decades German grape breeders have produced several new and promising wine varieties for their northern climate. Most were selected to supplement a culture based upon White Riesling and Müller-Thurgau and as such, they offer potential to New York grape growers. Over the last 14 years, these varieties have been imported into North America and New York. This bulletin summarizes our observations on their performance across the state.

Parallel to the importation of these "new" varieties, vinifera culture began to spread in New York. The Finger Lakes production area of central New York has been the center of vinifera production since the pioneering work of Charles Fournier and Konstantine Frank. From 1977-1987, increasing interest was expressed in culture of vinifera in other production areas of the state. Notable during this time was the emergence of Long Island as a significant production area.

In order to understand the potential of these new areas and to explore the adaptation of the "newer" varieties in New York state, grape plantings were established in 1981-82 at four locations in the state: Finger Lakes (New York State Agricultural Experiment Station, Geneva), Chautauqua/Erie (Vineyard Laboratory, Fredonia), Long Island (Long Island Horticultural Research Laboratory, Riverside) and Hudson Valley (John Nicklin Orchards, Marlboro). A different mix of varieties was tested at each location. The variety list for a given region was based on assumed site limitations due to winter cold and length of growing season and upon the extent of space available. All varieties were tested at Geneva.

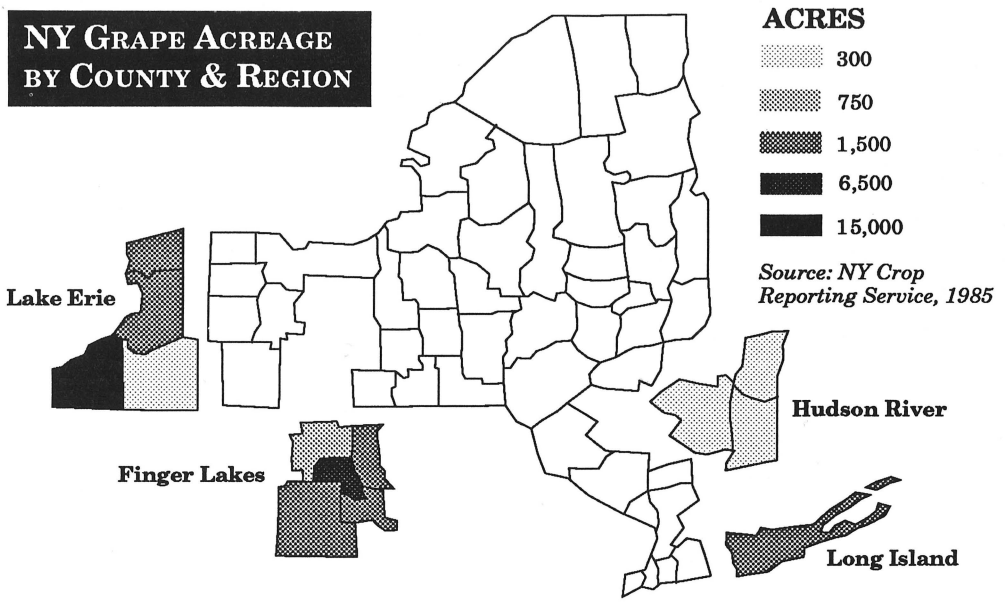
Unlike some commercial production areas, weather is a variable in New York grape production. Different growing seasons result in different levels of winter hardiness. Summers are longer or shorter, hotter or cooler. Most vineyards depend on rainfall for the moisture required for vine growth and development. In some years rain, especially at harvest, can be excessive. In other years it can be scant and vines may suffer from water stress. Weather during the test period is summarized in the appendices.

Tests resulted in yields in the range 2.5-4 tons/acre for several of the well known varieties. This indicates that, with good site selection and careful viticulture, commercial culture of vinifera varieties is a viable option for New York growers.

Methods

Culture methods were based on those described in Cornell Special Bulletin 111, Commercial Culture for NY Vineyards. They were modified to ensure vine survival in spite of potential winter injury and to maximize assurance of data availability. Unless otherwise noted, the rootstock used was Couderc 3309. Vines were planted 8 feet apart in 9 foot rows. At each location varieties were planted in 3 vine (post length) plots using 4 plots/location/variety in a randomized complete block design.

Cultural practices were similar at the three colder locations (Fredonia, Geneva and Marlboro). At these locations the training system was Modified Keuka High Renewal. Multiple (4-6) trunks were used so those affected by crown gall or winter injury could be removed without decreasing the fruiting potential of the vine. An attempt was made to replace at least one trunk of every vine every year. Graft unions were covered during the winter to ensure survival of some scion buds. Additionally at Fredonia and sometimes at Geneva, selected renewal canes were buried for winter protection. Data for bud survival is from non-buried canes. Weed growth in the row was controlled with herbicides after removing the hill in the spring. Between row floor management usually consisted of clean cultivation from



bud break until mid-summer, when weed growth was allowed to develop or a cover crop of annual grass was sown. In Geneva in 1987, glyphosate was applied to the row middles in late May. When plant growth required it, row middles were mowed to prevent excessive competition.

Several of these practices were modified at the Long Island site. There, Hudson River Umbrella training was used, usually with two trunks per vine. Graft unions were not covered during the winter and double trunks were established and only replaced when required.

At all locations double pruning was practiced. Vines were rough pruned in late winter leaving approximately double the number of canes required. Follow-

ing bud break, when bud survival and mortality were apparent, barren nodes, base shoots and total shoot number per vine were counted. Shoot number was then adjusted using a 20+20 pruning formula (20 shoots were left for each pound of cane prunings). Vines having less than 0.5 lb cane prunings were de-fruited. No more than 60 shoots were retained/vine. Pest control spray programs followed the Cornell University recommendations. Sulfur was alternated with sterol inhibitory powdery mildew control agents (and/or benomyl on Long Island). In most years the only insecticide used was carbaryl (two applications). In order to control *Botrytis cinerea.*, Ronilan™ or Rovral™ was applied starting when the fruit reached 5% soluble solids. In Geneva and Marlboro no nitrogen fertilizer was added, but 20 lbs/acre actual N was applied in most years to the other two locations. When 2 year old vines growing at Fredonia and Long Island showed symptoms of nutrient imbalances associated with low soil pH, pH was raised by addition of dolomitic limestone (2 tons/acre at Long Island, 7 tons/acre at Fredonia). Target soil pH was 6.5 in the top 12 inches of soil.

At harvest, cluster number and weight were recorded. Random fruit samples were taken from each plot for soluble solids analysis. Wine samples were usually made from a minimum of 80 kg fruit by members of the department of Food Science and Technology. Wine quality was evaluated using a 10 point hedonic scale. Judges were commercial winemakers and were asked to describe wine character as well as evaluate overall quality. Results are only given for wines made from the 1987 Geneva crop.

Cold hardiness ratings were modified from those previously used in New York (18) which describe hardiness of the genus *Vitis* rather than cultivars of the single *Vitis* species, *Vitis vinifera*. A 5 point numeric rating is combined with a descriptive classification such as hardy or tender. The rating of 5 (hardy) is relative to the highest level of adaptation we have observed in our tests of vinifera varieties. Poorly adapted varieties which regularly suffered cold damage to buds or trunks at all locations received a rating of 1 (very cold tender). Laboratory derived estimates of the mid-winter median killing temperature of Geneva grown buds were obtained using the technique of Wolf and Pool (20).

In some cases special disease susceptibility is noted. Vinifera varieties are all susceptible to several fungal and bacterial diseases. Notes refer to incidents that occurred in spite of excellent, disease control spray programs.

Research on variety and clonal adaptation, trellis design, pruning systems, harvest criteria and other cultural variables involved in commercial cultivation of vinifera are continuing. Results and conclusions will be reported in other bulletins in this series.

Bacchus

Origin

Geiweilerhof 33-29-133
(Sylvaner x Riesling) x Müller-Thurgau

Source

Federal Research Station
Geiweilerhof, West Germany

Description

Color:	*Yellow / Green*	*Fruit Maturity:*	*Mid-Late*
Cluster:	*Medium, Conical*	*Wood Maturity:*	*Mid-season*
Berry:	*11-13 mm, Round*	*Cold Hardiness:*	*Medium - 3*
Cluster Compactness:	*Compact*	*Killing Temp:*	*-14.3°*
Disease & Disorders:	*Botrytis*	*Relative Vigor:*	*High*

Summary

The variety is relatively sensitive to phomopsis cane and leaf spot, downy and powdery mildews. Berries are reported to be easily sun-burned and botrytis sensitivity often dictates early harvest of the fruit. Although Bacchus appears to be generally well adapted to New York conditions, it does not offer unique advantages which will recommend it to the grower without reservation.

Recommendations

Plant only for trial purposes in commercial vineyards.

Bacchus

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	2.4	88	118	3.3	8 Oct	19.9
	1986	3.3	88	130	4.5	7 Oct	—
	1987	4.6	67	72	2.4	29 Sep	16.4
	Mean	3.4	81	107	3.4	4 Oct	18.2

CABERNET SAUVIGNON*

ORIGIN

Bordeaux, France

SOURCE

Old Geneva Accession

DESCRIPTION

Color:	*blue/black*	*Fruit Maturity:*	*Late*
Cluster:	*Medium, Conical, Often winged*	*Wood Maturity:*	*Moderately late*
		Cold Hardiness:	*Moderate - 4*
Berry:	*11-13 mm, Round*	*Killing Temperature:*	*-10.9° F*
Cluster Compactness:	*Loose*	*Relative Vigor:*	*High on 5BB*
Disease & Disorders:	*Eutypa die-back*		

SUMMARY

The overall performance of Cabernet Sauvignon is difficult to fault, but the variety essentially requires a longer growing season than is generally found in all but the most favored locations in New York. It has reasonable tolerance to all cold and disease stresses, but the buds do not fully mature in when fall ripening conditions are marginal.When fruit is fully mature, exceptional wines have been made.

RECOMMENDATIONS

Recommended but only for those areas with a long growing season and on sites with excellent external and internal air drainage. Avoid rootstocks which produce large vines.

* on 5BB rootstock

CABERNET SAVIGNON

Location	Year	Cane Pruning Wt. (lb)*	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Fredonia							
	1985	3.8	72	60	3.1	23 Oct	18.6
	1986	7.6	53	79	2.5	16 Oct	17.0
	1987	6.7	44	71	2.2	30 Sep	18.3
	Mean	6.0	56	70	2.6	13 Oct	17.9
Geneva							
	1985	2.6	70	57	1.6	25 Sep	18.8
	1986	4.2	86	114	5.5	30 Sep	19.6
	1987	5.0	55	84	2.5	7 Oct	20.6
	Mean	3.9	70	85	3.2	2 Oct	19.7
Hudson Valley	1985	3.4	17	55	1.6	24 Sep	18.6
	1986	4.1	58	94	3.3	13 Oct	19.5
	Mean	3.8	38	75	2.5	8 Oct	19.1
Long Isle							
	1985	4.8	16	50	1.3	30 Sep	18.3
	1986	8.7	63	79	3.0	16 Oct	18.8
	1987	9.4	74	66	2.4	8 Oct	17.8
	Mean	7.6	51	65	2.2	12 Oct	18.3

CABERNET FRANC*

ORIGIN

Bordeaux, France

SOURCE

Austin Goheen
University of California, USDA
Davis, California

DESCRIPTION

Color:	*Blue/black*	*Fruit Maturity:*	*Late*
Clusters:	*Medium, conic often winged*	*Wood Maturity:*	*Moderately late*
		Berry:	*11-13 mm, round*
Cold Hardiness:	*Hardy - 5*	*Killing Temperature:*	*-16.6°F*
Cluster Compactness:	*Loose*	*Relative Vigor:*	*Med. to high on C.3309*
Disease & Disorders:	*None*		

SUMMARY

Vine and fruit is similar to Cabernet Sauvignon, but growth is more moderate, canes ripen earlier and are more winter hardy, approaching that of White Riesling in most years. Fruit ripens with or slightly before Cabernet Sauvignon. In France the variety is recommended for situations where Cabernet Sauvignon does not consistently mature. It appears that Cabernet franc is a desirable alternative to Cabernet Sauvignon in many New York situations. Because of its late ripening, it should be planted in the most favorable areas for fruit maturation.

RECOMMENDATIONS

Recommended for areas with a long growing season.

CABERNET FRANC*

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	1.8	84	87	3.5	18 Oct	21.0
	1986	4.3	88	150	6.0	14 Oct	15.2
	1987	5.2	76	84	2.7	6 Oct	20.7
	Mean	3.8	83	107	4.1	10 Oct	19.0
Long Isle	1985	3.6	--	105	7.7	30 Sep	18.5
	1986	5.0	75	111	3.9	8 Oct	21.5
	1987	5.9	82	101	3.6	8 Oct	20.6
	Mean	4.8	52	106	5.1	5 Oct	19.4

CHARDONNAY*

ORIGIN

France

SOURCE

A clone long present in New York origin obscure, but possibly Eperney, France

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Early*
Cluster:	*Medium*	*Wood Maturity:*	*Early*
Berry:	*10-11 mm round*	*Cold Hardiness:*	*Moderate - 4*
Cluster Compactness:	*Medium*	*Killing Temperature:*	*-13.4°F*
Disease & disorders:	*Birds, botrytis*	*Relative Vigor:*	*Moderate on C. 3309*

SUMMARY

In most seasons this variety gives excellent performance in even the colder areas. Botrytis bunch rot is a problem in years with wet harvest weather. This clone has given superior performance in comparison to most available to us. Chardonnay probably is the best single white variety in overall performance. It is flexible as to wine style and produces superior sparkling wine.

RECOMMENDATIONS

Plant in all regions.

CHARDONNAY*

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Fredonia	1985	0.8	60	181	1.8	26 Sep	20.2
	1986	1.3	56	139	1.7	3 Oct	19.5
	1987	1.5	60	134	2.4	23 Sep	20.3
	Mean	1.2	59	151	1.9	27 Sep	20.0
Geneva	1985	1.0	83	124	2.3	25 Sep	20.5
	1986	3.1	91	205	4.5	25 Sep	19.9
	1987	3.6	68	117	2.8	15 Sep	19.8
	Mean	2.6	81	149	3.2	22 Sep	20.1
Hudson Valley	1985	1.7	76	--	3.6	24 Sep	17.3
	1986	2.5	90	190	5.7	17 Sep	21.0
	Mean	2.1	83	190	4.7	20 Sep	19.2
Long Isle	1985	1.5	--	120	5.7	17 Sep	18.4
	1986	2.0	71	131	2.2	2 Oct	22.0
	1987	4.2	79	141	4.4	23 Sep	20.2
	Mean	2.6	50	131	4.1	24 Sep	20.2

CLEVENER MARIAFELD* (PINOT NOIR)

ORIGIN

A clone of Pinot noir of Swiss origin

SOURCE

Eidgenössische Forschungsanstalt
für Obst-, Wein, und Gartenbau
Wädenswil SWITZERLAND

DESCRIPTION

Color:	*Blue/black*	*Fruit Maturity:*	*Mid-season*
Clusters	*Medium to large, conic, shouldered*	*Wood Maturity:*	*Mid-season*
		Cold Hardiness:	*Moderate - 3*
Berry:	*11-15 mm, round*	*Killing Temperature:*	*-10.6°F*
Cluster Compactness:	*Medium*	*Relative Vigor:*	*Moderate on C. 3309*
Disease & Disorders:	*None*		

SUMMARY

A very productive and well adapted Pinot noir clone. It was only tested at Geneva. It is the most botrytis resistant of tested clones. Wine is reported to have good color, body and tannin, but to be low in fruit aroma. It's has the best overall vineyard performance of Pinot noir clones we have tested. European experience suggests that best red wine quality is obtained with a mixture of Pinot noir clones.

RECOMMENDATIONS

Worthy of commercial planting. Growers should not plant it to the exclusion of other Pinot noir clones until there has been more winemaking experience.

CLEVENER MARIAFELD* (PINOT NOIR)

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	1.7	90	67	1.9	12 Sep	18.2
	1986	3.5	8	110	3.5	25 Sep	20.2
	1987	3.7	26	68	1.9	16 Sep	20.5
	Mean	3.0	41	82	2.4	21 Sep	19.6

COMTESSA

ORIGIN

Geiweilerhof 35-26-139
(Madelene Angevine x
Traminer) F2

SOURCE

Federal Research Station
Geiweilerhof, West Germany

DESCRIPTION

Color:	*White, pink rarely red*	*Fruit Maturity:*	*Early*
Clusters	*Small, conic, winged*	*Wood Maturity:*	*Early*
Berry:	*12-13 mm, round*	*Cold Hardiness:*	*Hardy - 4*
Cluster Compactness:	*Loose*	*Killing Temperature:*	*-12.5°F*
Disease & Disorders:	*None*	*Relative Vigor:*	*Vigorous on C.3309*

SUMMARY

An early season variety with good vigor and cold tolerance. It has good tolerance to botrytis infection, but is only moderately fruitful. When fully ripe produces a pleasant, fruity wine of good acid structure. Wines did not receive good ratings in years of inferior maturation.

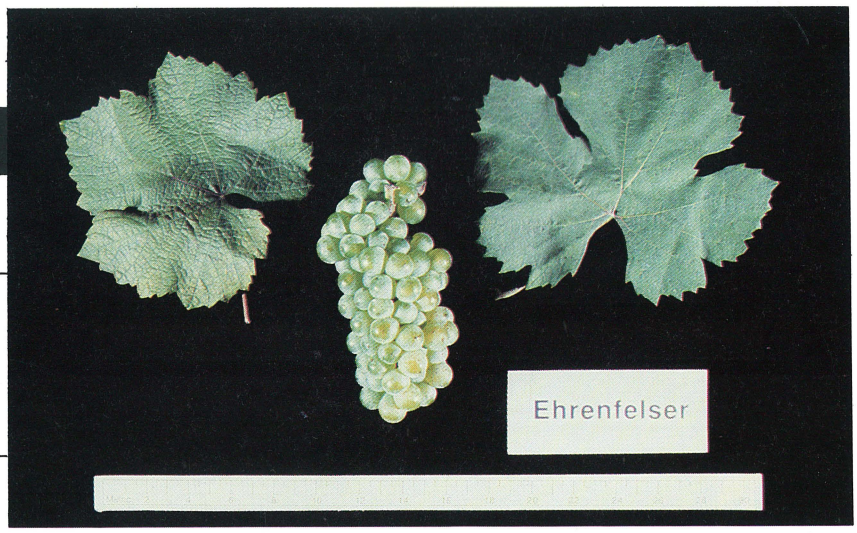
RECOMMENDATIONS

Limited commercial testing is justified.

COMTESSA

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	1.5	88	45	1.4	16 Sep	21.6
	1986	3.6	90	70	2.6	11 Sep	22.2
	1987	4.4	75	47	1.8	8 Sep	21.0
	Mean	3.2	84	54	1.9	11 Sep	21.6
LongIsle	1985	2.2		59	2.8	5 Sep	18.9
	1986	4.4	76	76	5.1	23 Sep	21.0
	1987	4.8	81	59	2.2	23 Sep	na
	Mean	3.8	52	65	3.4	17 Sep	20.0

EHRENFELSER



ORIGIN

Geisenheim 9-93
Riesling x Sylvaner
Geisenheim, West Germany

SOURCE

Saanichton Station
Sydney, B. C., Canada

DESCRIPTION

Color:	*White/green*	*Fruit Maturity:*	*Mid-late*
Clusters	*Small, cylindrical shouldered*	*Wood Maturity:*	*Mid-late*
		Cold Hardiness:	*Moderate - 3*
Berry:	*10-12 mm, ovoid*	*Killing Temperature:*	*-9.4°F*
Cluster Compactness:	*Well filled to compact*	*Relative Vigor:*	*Moderately*
Disease & Disorders:	*Botrytis, crown gall low*		

SUMMARY

Vines have had some crown gall and botrytis bunch rot is frequent. Weak growth and appearance on C. 3309 rootstock suggests questionable virus status. Full bodied and fruity, pleasant wines are generally produced. In Europe, this has been one of the more successful new introductions.

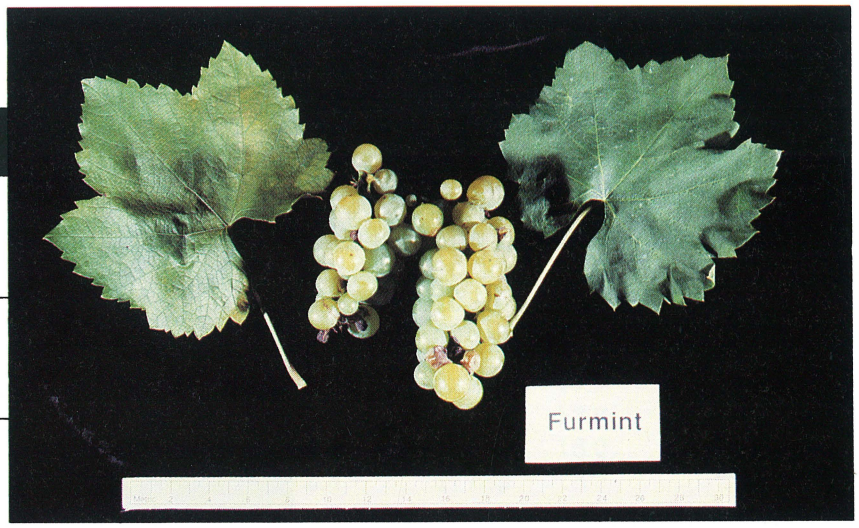
RECOMMENDATIONS

There are suggestions that the variety is slow to become established, but our experience does not support a recommendation for any except experimental planting.

EHRENFELSER

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	0.5	--	34	1.3	3 Oct	18.5
	1986	0.9	93	79	2.0	15 Oct	--
	1987	2.3	82	81	2.7	11 Sep	16.5
	Mean	1.2	88	65	2.0	29 Sep	17.5

FURMINT



ORIGIN

Hungary

SOURCE

A.C. Goheen
USDA/ARS
University of California
Davis, California

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Late*
Clusters	*Medium, cylindrical winged*	*Wood Maturity:*	*Very late*
		Cold Hardiness:	*Tender - 1*
Berry:	*12-20 mm, round*	*Killing Temperature:*	*-14.3°*
Cluster Compactness:	*Loose to straggly*	*Relative Vigor:*	*Very vigorous*
Disease & Disorders:	*Botrytis, coulure*		

SUMMARY

Very susceptible to botrytis bunch rot; excessive vigor is associated with very poor set. Late vegetative maturity leads to poor bud and wood maturation with subsequent winter injury.

RECOMMENDATIONS

Not recommended

FURMINT

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	2.4	72	--	--	--	--
	1986	6.3	75	109	3.6	15 Oct	--
	1987	2.6	34	39	1.9	11 Sep	19.4
	Mean	3.8	60	74	2.8	28 Sep	19.4

GAMAY BEAUJOLAIS* (PINOT NOIR)

ORIGIN

France

SOURCE

Foundation Plant Materials Service
Davis, California

DESCRIPTION

Color:	*Blue/Black*	*Fruit Maturity:*	*Mid-season*
Clusters	*Small, cylindrical winged*	*Wood Maturity:*	*Mid-season*
		Cold Hardiness:	*Moderate - 3*
Berry:	*12-14 mm, round*	*Killing Temperature:*	*-6.9°F*
Cluster Compactness:	*Compact*	*Relative Vigor:*	*Medium on C.3309*
Disease & Disorders:	*Birds, crown gall*		

SUMMARY

This is the "erect" clone of Pinot noir. Dr. Bruce Reisch confirms the isozyme pattern is that of Pinot noir. This is one of the better adapted Pinot noir clones to Geneva. It is less susceptible to botrytis bunch rot than most. Crown gall infections have been common, but may be eliminated in the future by current selection practices. Wine quality is reported to be average at best.

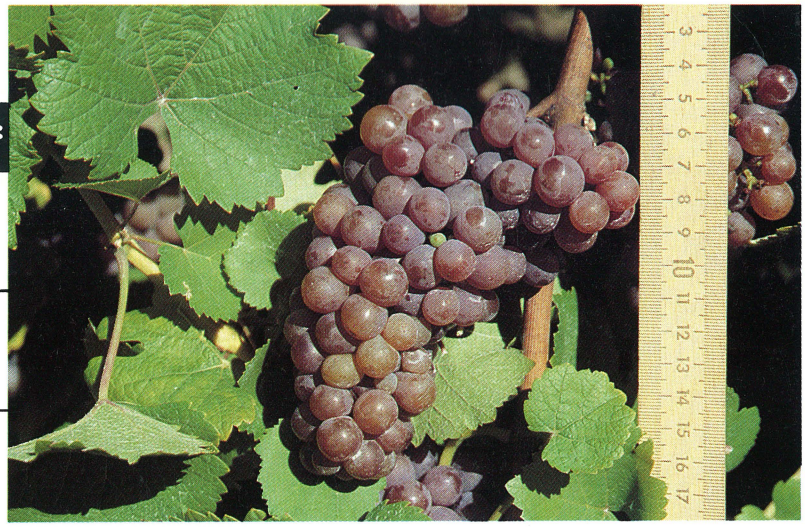
RECOMMENDATIONS

The clone can be recommended for sparkling wine and as part of a mixture of clones for red wine production.

GAMAY BEAUJOLAIS*
(PINOT NOIR)

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Fredonia	1985	1.0	72	73	1.7	2 Oct	19.5
	1986	2.2	59	56	2.1	10 Oct	21.0
	1987	2.4	62	104	3.4	10 Sep	20.5
	Mean	1.9	64	78	2.4	27 Sep	20.3
Geneva	1985	1.2	85	80	2.3	12 Sep	17.9
	1986	2.9	93	109	3.7	24 Sep	18.9
	1987	3.8	67	67	2.3	16 Sep	18.0
	Mean	2.6	82	85	2.8	17 Sep	18.3
Hudson	1985	1.7	71	--	2.6	24 Sep	17.3
Valley	1986	2.9	87	128	4.7	17 Sep	21.0
	Mean	2.3	79	128	3.7	20 Sep	19.2
LongIsle	1985	2.0		93	4.1	14 Sep	18.6
	1986	4.0	76	110	7.2	25 Sep	18.8
	1987	4.5	80	60	1.0	25 Sep	Rot
	Mean	3.5	52	88	4.1	21 Sep	18.7

GEWURZTRAMINER*



ORIGIN

Germany and Alsace, France

SOURCE

A.C. Goheen
ARS/USDA
University of California
Davis, California

DESCRIPTION

Color:	*Pink*	*Fruit Maturity:*	*Early*
Clusters	*Small, conic*	*Wood Maturity:*	*Early*
Berry:	*11-13 mm, round*	*Cold Hardiness:*	*Medium - 3*
Cluster Compactness:	*Moderately compact*	*Killing Temperature:*	*-11.9°F*
Disease & Disorders:	*Occasional botrytis*	*Relative Vigor:*	*Mod to High on C.3309*

SUMMARY

Gewurztraminer does well, but its vigor and heavy canopy result in a shaded fruiting and renewal zones leading to uneven wood and fruit maturation in many years. The variety would probably benefit from shoot positioning or a more appropriate training system than used in these tests.

RECOMMENDATIONS

Limited commercial planting is recommended. Avoid sites or cultural conditions that enhance the tendency to excessive vigor.

GEWURZTRAMINER*

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Fredonia	1985	2.7	61	75	1.9	24 Sep	19.4
	1986	4.4	36	75	1.5	22 Sep	21.1
	1987	3.5	47	89	1.8	10 Sep	20.5
	Mean	3.5	48	80	1.7	19 Sep	20.3
Geneva	1985	1.6	85	70	1.5	13 Sep	18.1
	1986	1.8	93	138	4.9	22 Sep	21.0
	1987	2.8	76	79	2.6	3 Sep	22.0
	Mean	2.1	85	96	3.0	12 Sep	20.4
Hudson Valley	1985	1.7	81	--	0.9	24 Sep	17.3
	1986	2.1	82	114	2.2	17 Sep	21.7
	Mean	1.9	82	114	1.6	20 Sep	19.5
Long Isle	1985	1.9		78	2.3	19 Sep	19.2
	1986	4.8	67	106	4.8	23 Sep	19.0
	1987	4.9	72	72	2.1	22 Sep	21.0
	Mean	3.9	46	85	3.1	21 Sep	19.7

MELON*

ORIGIN

France

SOURCE

US Plant Introduction Station
Glendale, Maryland

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Mid-season*
Clusters	*Small to medium conic, winged*	*Wood Maturity:*	*Mid-season*
		Cold Hardiness:	*Moderate - 4*
Berry:	*12-15 mm, round*	*Killing Temperature:*	*-15.2°*
Cluster Compactness:	*Compact*	*Relative Vigor:*	*Vigorous on C. 3309*
Disease & Disorders:	*None*		

SUMMARY

Good disease and botrytis tolerance, the large clusters produce large crops. Vines would probably have benefited from additional crop control or more severe pruning. There is some confusion between Melon and Pinot blanc in the literature. When properly cropped wine quality is good, but does not equal that of Chardonnay.

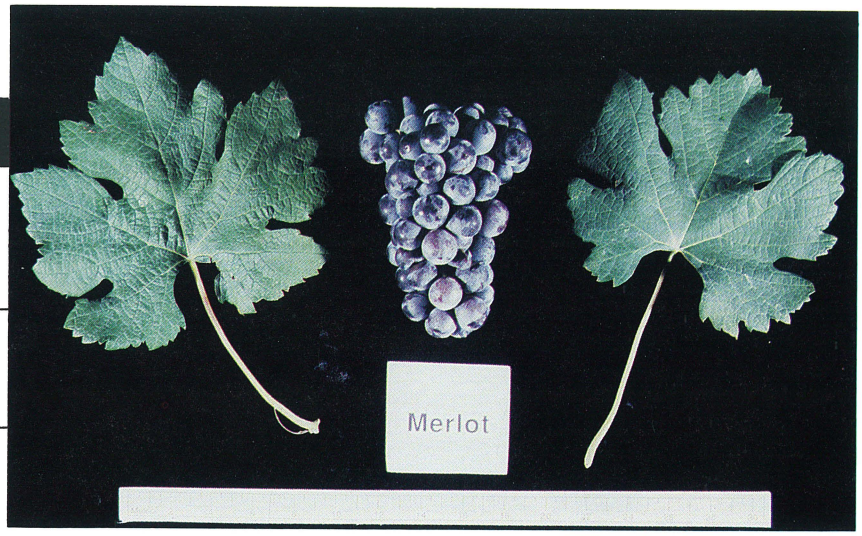
RECOMMENDATIONS

Recommended

MELON*

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	0.8	82	173	3.5	2 Oct	20.2
	1986	2.3	91	206	8.8	20 Sep	19.7
	1987	1.6	68	143	2.3	28 Sep	19.3
	Mean	1.6	80	174	4.9	26 Sep	19.7

MERLOT



ORIGIN

Bordeaux, France

SOURCE

Federal Research Station
Geiweilerhof, West Germany

DESCRIPTION

Color:	*Blue/black*	*Fruit Maturity:*	*Mid-late season*
Clusters	*Medium, cylindrical shouldered*	*Wood Maturity:*	*Moderately late*
		Cold Hardiness:	*Tender - 2*
Berry:	*12-17 mm, round*	*Killing Temperature:*	*-9.4°*
Cluster Compactness:	*Well filled*	*Relative Vigor:*	*Moderate on C. 3309*
Disease & Disorders:	*Botrytis, crown gall*		

SUMMARY

Botrytis infections are not uncommon, but not a major problem in most years. The trunks are winter tender and subject to crown gall attack. Perhaps a more restrictive rootstock would help attain wood maturation. Because it ripens before the other Bordeaux red cultivars and because of the impressive wine quality produced in some New York growing regions, a search for better clones would be worthwhile.

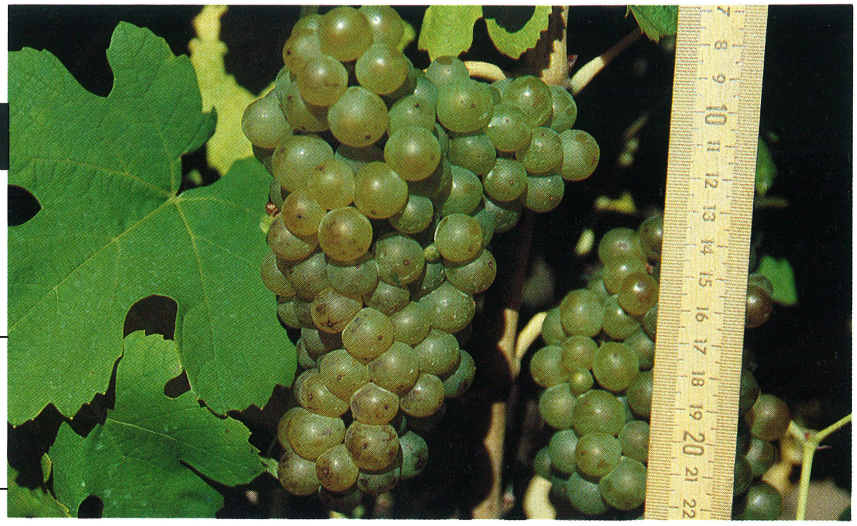
RECOMMENDATIONS

Can only be recommended for superior sites.

MERLOT

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Fredonia	1985	1.4	69	117	2.1	23 Oct	21.7
	1986	2.5	56	79	2.0	10 Oct	20.4
	1987	2.9	54	112	3.1	23 Sep	21.0
	Mean	2.3	60	103	2.4	29 Sep	21.0
Geneva	1985	0.7	78	108	2.4	18 Oct	21.0
	1986	2.1	84	136	4.5	14 Oct	--
	1987	3.1	67	98	3.3	16 Sep	18.0
	Mean	2.0	76	114	3.4	6 Oct	19.5
Hudson Valley	1985	0.8	51	--	3.6	24 Sep	17.3
	1986	0.6	63	83	0.9	17 Sep	20.3
	Mean	0.7	57	83	2.3	20 Sep	18.8
Long Isle	1985	1.9	--	76	1.2	5 Oct	17.4
	1986	3.8	56	117	2.9	8 Oct	22.8
	1987	4.9	72	83	2.9	8 Oct	Rot
	Mean	3.5	43	92	2.3	7 Oct	20.1

METTERNICH



ORIGIN

A French variety derived from White Riesling

SOURCE

INRA, France

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Late*
Clusters	*Medium, conic*	*Wood Maturity:*	*Late*
Berry:	*11-14 mm, round*	*Cold Hardiness:*	*Tender - 2*
Cluster Compactness:	*Moderately loose*	*Temperature:*	*-13.0°F*
Disease & Disorders:	*Downy mildew*	*Relative Vigor:*	*Mod.large on C. 3309*

SUMMARY

Very susceptible to downy mildew, good resistance to botrytis bunch rot. It is a productive vine, but is too winter tender and matures too late for Geneva.

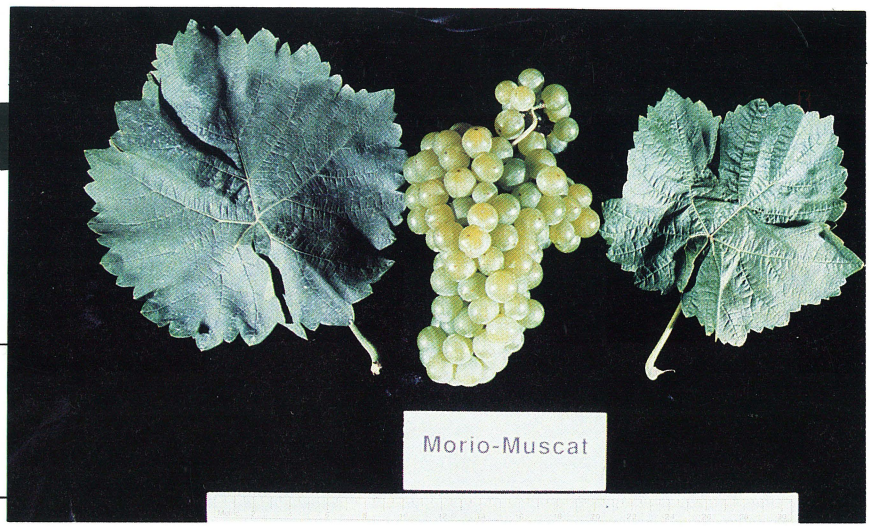
RECOMMENDATIONS

Not recommended

METTERNICH

Location	Year	Cane Pruning Wt. (lb)*	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	1.6	80	132	2.5	10 Oct	22.0
	1986	3.0	69	184	5.1	13 Oct	14.6
	1987	3.4	47	130	2.6	29 Sep	20.1
	Mean	2.7	65	149	3.4	7 Oct	18.9

MORIO MUSCAT



ORIGIN

Geiweilerhof I 28-30
Sylvaner x Pinot blanc

SOURCE

Federal Research Station
Geiweilerhof, West Germany

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Mid-season*
Clusters	*Medium, conic*	*Wood Maturity:*	*Midseason*
Berry:	*12-15 mm, round*	*Cold Hardiness:*	*Medium - 3*
Cluster Compactness:	*Compact*	*Killing Temperature:*	*-15.3°F*
Disease & Disorders:	*Fruit cracks*	*Relative Vigor:*	*Vigorous on C. 3309*

SUMMARY

Vines produce good crops with a pronounced muscat flavor. However, the berries are very thin skinned and prone to cracking. This causes considerable fruit spoilage. Literature suggests that clusters should be cylindrical rather than conic in shape. Vine does not appear to be as well adapted to New York growing conditions as is the alternate muscat flavored variety, Muscat Ottonel.

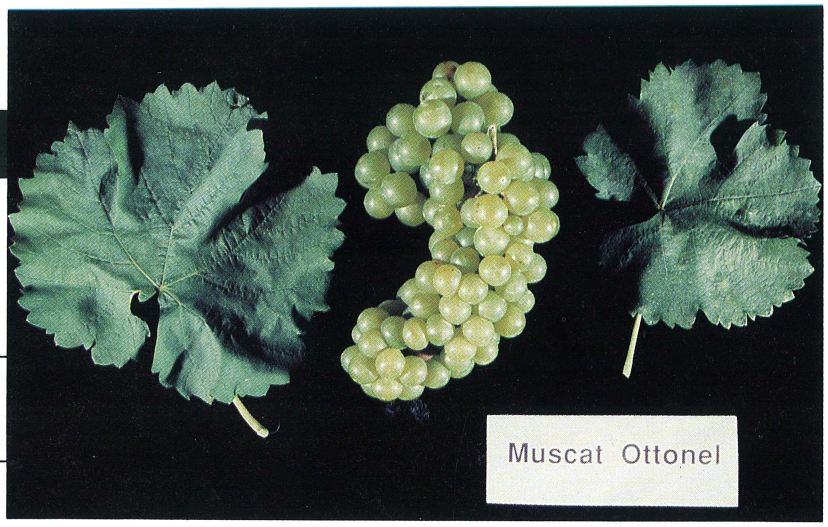
RECOMMENDATIONS

Recommended for commercial trial when muscat flavor is desired.

MORIO MUSCAT

Location	Year	Cane Pruning Wt. (lb)*	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	0.9	81	137	4.7	16 Sep	17.4
	1986	2.7	66	142	6.1	24 Sep	18.2
	1987	3.5	47	96	2.7	11 Sep	17.9
	Mean	2.4	65	125	4.5	17 Sep	17.8

MUSCAT OTTONEL



ORIGIN
France (Alsace, Loire)

SOURCE
A.C. Goheen
ARS/USDA
University of California
Davis, California

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Late Mid-season*
Clusters	*Small, conic, winged*	*Wood Maturity:*	*Late*
Berry:	*14-16 mm, round*	*Cold Hardiness:*	*Moderate - 3*
Cluster Compactness:	*Loose*	*Killing Temperature:*	*-6.3°F*
Disease & Disorders:	*None*	*Relative Vigor:*	*High on C. 3309*

SUMMARY

A productive variety which performs well in most years. Short seasons or exceptionally cold winters will result in cold injury. Has good botrytis bunch rot resistance. Fruit develops a full muscat flavor.

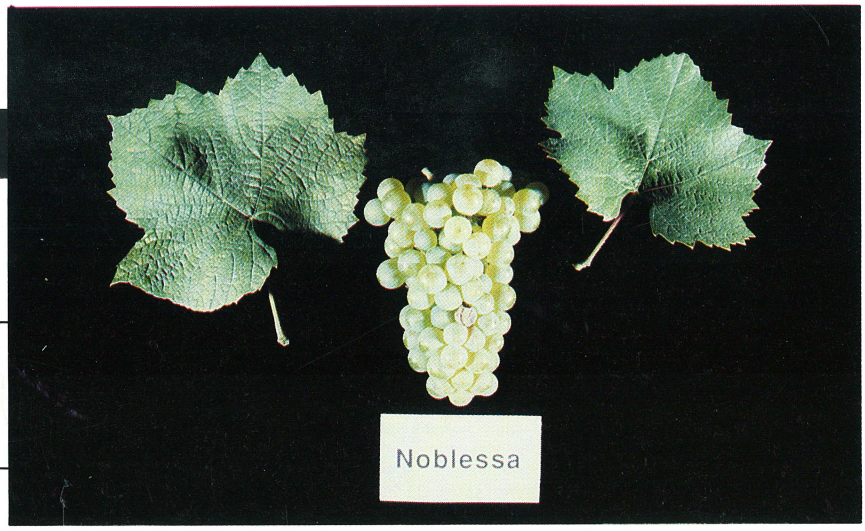
RECOMMENDATIONS

Plant whenever muscat flavored wine is required.

MUSCAT OTTONEL

Location	Year	Cane Pruning Wt. (lb)*	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	1.1	84	76	2.2	3 Oct	19.6
	1986	3.3	87	150	5.3	14 Oct	--
	1987	4.0	68	92	3.2	11 Sep	19.1
	Mean	2.8	80	106	3.6	29 Sep	19.4
Long Isle	1985	0.7		96	3.9	5 Oct	19.4
	1986	1.8	81	108	3.2	18 Sep	20.4
	1987	3.1	80	94	1.8	8 Sep	19.5
	Mean	1.9	54	99	3.0	30 Sep	19.8

NOBLESSA



ORIGIN

Geiweilerhof 32-16-17
Madeleine Angevine x Sylvaner

SOURCE

Federal Research Station
Geiweilerhof, West Germany

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Early*
Clusters	*Small, conic*	*Wood Maturity:*	*Early*
Berry:	*11-13 mm, round*	*Cold Hardiness:*	*Moderate - 3*
Cluster Compactness:	*Compact*	*Killing Temperature:*	*-12.1°F*
Disease & Disorders:	*Occasional botrytis*	*Relative Vigor:*	*Low on C. 3309*

SUMMARY

Botrytis and crown gall have occurred, but are not great problems. The primary problem with the variety is its low vigor. At standard spacing the vines do not fill the trellis and are unproductive. Closer in-the-row spacing is indicated. Wine evaluations indicate superior quality.

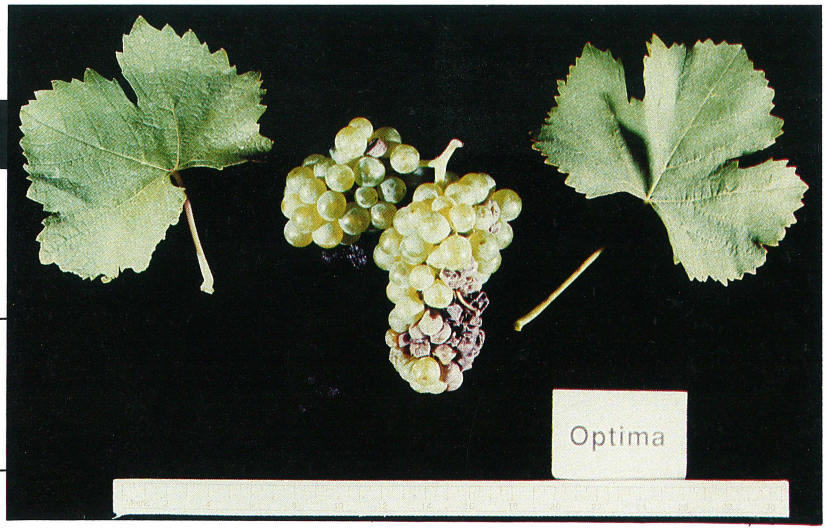
RECOMMENDATIONS

Worthy of commercial trial.

NOBLESSA

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	0.4	76	55	0.9	--	--
	1986	0.9	95	85	1.7	8 Sep	24.6
	1987	1.9	74	94	1.6	26 Aug	19.0
	Mean	1.1	82	78	1.4	1 Sep	21.8

OPTIMA



ORIGIN

Geiweilerhof 33-13-113
(Sylvaner x Riesling) x Müller-Thurgau

SOURCE

Federal Research Station
Geiweilerhof, West Germany

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Early*
Clusters	*Small, conic, winged*	*Wood Maturity:*	*Early*
Berry:	*12-15 mm, round*	*Cold Hardiness:*	*Tender - 2*
Cluster Compactness:	*Compact*	*Killing Temperature:*	*-13.5*
Disease & Disorders:	*Botrytis*	*Relative Vigor:*	*High on 5BB; Moderate on C. 3309*

SUMMARY

High vigor and late growth results in poor wood and bud maturation and related low winter hardiness. This limits potential for cold growing regions, but extreme botrytis susceptablility combined with rapid fruit deterioration is a greater limit to the variety's usefullness to New York grape growers.

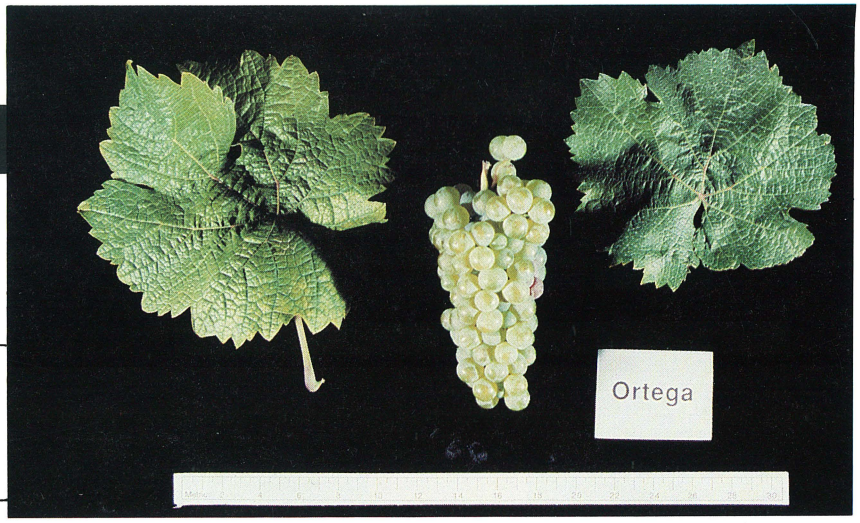
RECOMMENDATIONS

Not recommended

OPTIMA

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	2.0	88	75	2.7	16 Sep	19.0
	1986	4.6	84	206	4.5	11 Sep	19.2
	1987	5.6	69	99	2.4	11 Sep	16.0
	Mean	4.1	80	127	3.2	12 Sep	18.1

ORTEGA



ORIGIN

Würzburg 48-21-4

SOURCE

Saanichton Research Station
Sydney, BC Canada

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Mid-season*
Clusters	*Small, conic*	*Wood Maturity:*	*Mid-season*
Berry:	*11-13 mm, round*	*Cold Hardiness:*	*Moderate - 3*
Cluster Compactness:	*Compact*	*Killing Temperature:*	*-12.8°F*
Disease & Disorder	*Botrytis*	*Relative Vigor:*	*Vigorous on C. 3309*

SUMMARY

A mid-season White Riesling-type with large vine size and only moderate cold hardiness. The fruit is very susceptible to botrytis infection forcing early harvest and limiting the usefulness of the variety.

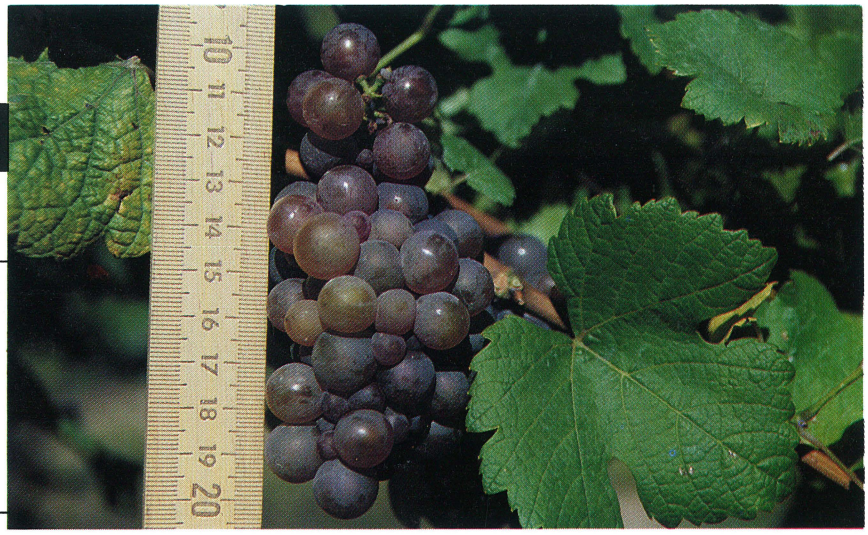
RECOMMENDATIONS

Not recommended.

ORTEGA

Location	Year	Cane Pruning Wt. (lb)*	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	3.5	81	--	--	--	--
	1986	4.5	76	92	2.7	10 Oct	18.1
	1987	4.3	51	62	2.9	29 Sep	17.0
	Mean	4.1	69	77	2.8	4 Oct	17.6

PERLE



ORIGIN

Alzey 39-51
(Gewurztraminer x Müller-Thurgau) Selected and released at Würzburg,West Germany

SOURCE

USDA Plant Introduction Station
Glenn Dale, Maryland

DESCRIPTION

Color:	*White to pink*	*Fruit Maturity:*	*Early mid-season*
Clusters	*Small cylindrical, winged*	*Wood Maturity:*	*Mid-season*
		Cold Hardiness:	*Tender - 2*
Berry:	*12-16 mm, round*	*Killing Temperature:*	*-14.8°F*
Cluster Compactness:	*Very compact*	*Relative Vigor:*	*Low on C. 3309*
Disease & Disorders:	*Botrytis*		

SUMMARY

Low vigor and winter hardiness limit usefullness of variety, but degree of botrytis and subsequent bunch rot infection more seriously limit the variety.

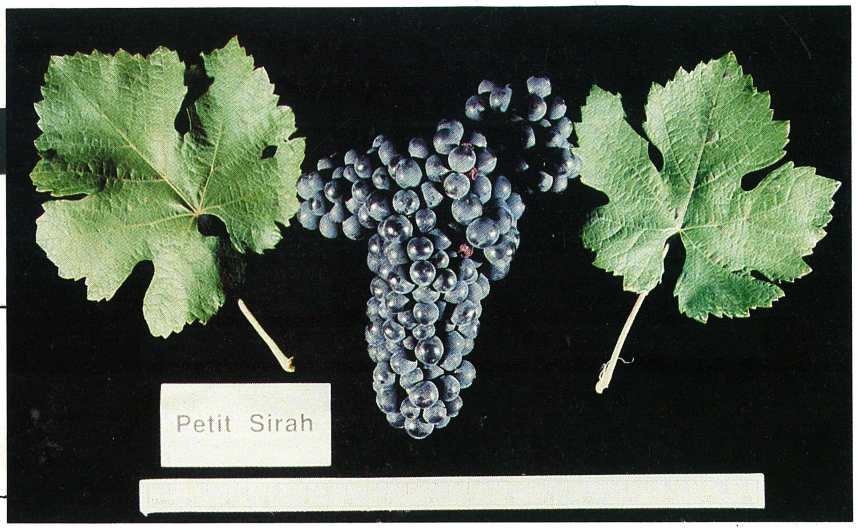
RECOMMENDATIONS

Not recommended

PERLE

Location	Year	Cane Pruning Wt. (lb)*	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	1.2	83	73	2.4	2 Oct	18.9
	1986	2.8	91	124	4.4	10 Sep	18.0
	1987	3.0	68	73	2.7	4 Sep	18.1
	Mean	2.3	81	90	3.2	15 Sep	18.3

PETITE SIRAH



ORIGIN

France (Rhone)
Is not Syrah, probably is the
French variety, Dr. Duriff

SOURCE

Sonoma Grapevines
Santa Rosa, California

DESCRIPTION

Color:	*Blue/Black*	*Fruit Maturity:*	*Very late*
Clusters	*Large, conic, winged*	*Wood Maturity:*	*Very late*
Berry:	*11-15 mm, round*	*Cold Hardiness:*	*Very tender - 1*
Cluster Compactness:	*Very compact*	*Killing Temperature:*	*NA*
Disease & Disorders:	*Berries crack*	*Relative Vigor:*	*Moderate on C. 3309*

SUMMARY

The variety ripens its fruit and wood much too late for success in New York. Berries split on excessively compact clusters leading to bunch rot. Berries tend to raisin before they are mature. Literature suggests oval berries.

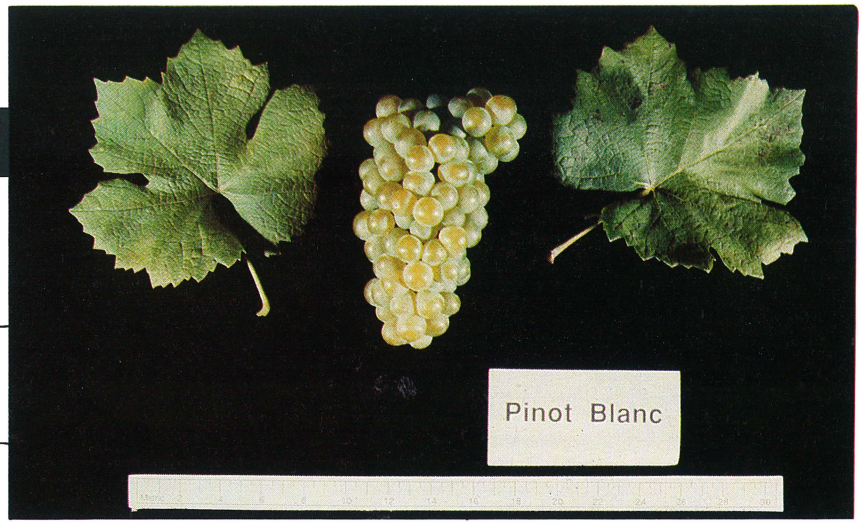
RECOMMENDATIONS

Not recommended

PETITE SIRAH

Location	Year	Cane Pruning Wt. (lb)*	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	0.6	86	159	4.8	18 Oct	16.8
	1986	1.4	53	300	7.2	14 Oct	--
	1987	1.4	30	98	0.5	30 Sep	19.0
	Mean	1.1	56	186	4.2	10 Oct	17.9
Long Isle	1985	1.5		106	6.3	5 Oct	17.4
	1986	2.1	44	182	0.2	10 Oct	19.0
	1987	2.8	46	177	4.8	8 Oct	Rot
	Mean	2.1	30	155	3.8	8 Oct	18.2

PINOT BLANC*



ORIGIN

France

SOURCE

A.C. Goheen
ARS/USDA
University of California
Davis, California

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Mid-season*
Clusters	*Medium, conic, winged*	*Wood Maturity:*	*Mid-season*
		Cold Hardiness:	*Moderate - 4*
Berry:	*10-12 mm, round*	*Killing Temperature:*	*-11.6°F*
Cluster Compactness:	*Compact*	*Relative Vigor:*	*Moderate on C. 3309*
Disease & Disorders:	*None*		

SUMMARY

Vine is nearly as hardy as Chardonnay. Its large compact clusters resist botrytis and splitting. Vines are very productive. Pinot blanc appears to be an attractive clone for blanc de blanc sparkling wine production. It also makes good quality still, table wine.

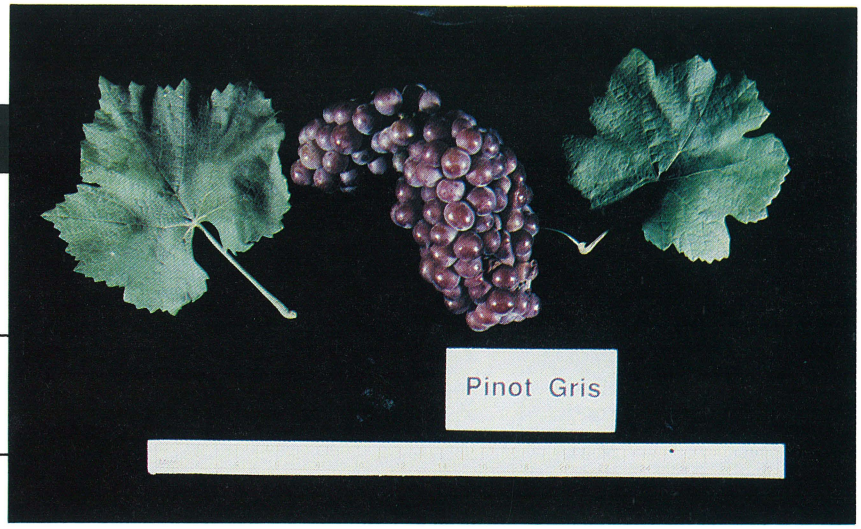
RECOMMENDATIONS

Recommended

PINOT BLANC*

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Fredonia	1985	1.0	73	121	2.0	2 Oct	18.5
	1986	1.6	51	143	2.5	3 Oct	18.1
	1987	1.5	47	163	2.6	23 Sep	18.4
	Mean	1.4	57	142	2.4	29 Sep	18.3
Geneva	1985	0.9	84	123	3.5	25 Sep	18.7
	1986	2.2	90	196	7.4	25 Sep	20.2
	1987	2.3	72	118	2.7	16 Sep	18.7
	Mean	1.8	82	146	4.5	22 Sep	19.2
Hudson	1985	1.1	78	--	2.6	24 Sep	17.5
Valley	1986	2.1	77	135	3.7	17 Sep	--
	Mean	1.6	78	135	3.2	20 Sep	17.5
LongIsle	1985	1.2	--	106	4.1	5 Oct	17.4
	1986	2.0	70	--	--	--	--
	1987	4.4	81	157	5.9	8 Oct	20.3
	Mean	2.5	50	146	4.5	6 Oct	17.4

PINOT GRIS*



ORIGIN

France

SOURCE

A.C. Goheen
USDA/ARS
University of California
Davis, California

DESCRIPTION

Color:	*White to pink (grey)*	*Fruit Maturity:*	*Early Mid-season*
Clusters	*Small-medium, conic, winged*	*Wood Maturity:*	*Mid-season*
		Cold Hardiness:	*Moderate - 3*
Berry:	*10-12 mm, round*	*Killing Temperature:*	*-10.1°F*
Cluster Compactness:	*Compact*	*Relative Vigor:*	*Medium on C. 3309*
Disease & Disorders:	*None*		

SUMMARY

In spite of compact clusters, bunch rot is rare. The variety is consistantly productive demonstrating cold hardiness similar to Pinot noir. Wine quality suggests that the variety may be recommened for sparkling and still white wine production.

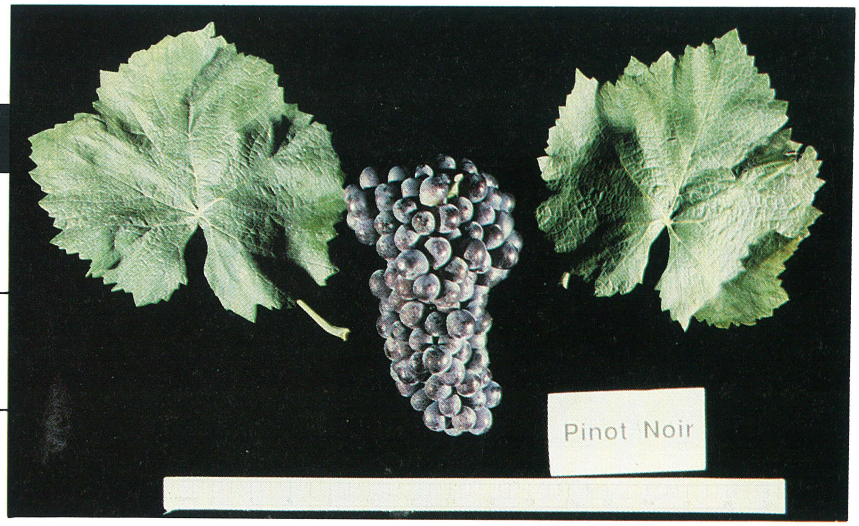
RECOMMENDATIONS

Recommended

PINOT GRIS*

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Fredonia	1985	2.1	74	92	2.2	25 Sep	19.2
	1986	2.9	50	68	2.1	10 Oct	21.0
	1987	2.6	54	101	3.6	10 Sep	20.2
	Mean	2.5	59	87	2.6	25 Sep	20.1
Geneva	1985	1.7	89	72	2.1	25 Sep	20.9
	1986	4.1	89	113	5.1	24 Sep	20.1
	1987	4.5	63	117	2.9	10 Sep	19.4
	Mean	2.1	81	153	4.9	21 Sep	19.4
Hudson	1985	1.8	42	--	1.9	24 Sep	17.3
Valley	1986	3.3	91	121	4.6	17 Sep	22.3
	Mean	2.6	67	121	3.3	20 Sep	19.8
Long Isle	1985	2.5	--	94	5.1	13 Sep	19.6
	1986	5.3	80	113	5.0	25 Sep	21.0
	1987	6.0	70	67	2.9	16 Sep	20.0
	Mean	4.6	50	91	4.3	18 Sep	20.2

PINOT NOIR*



ORIGIN

France

SOURCE

Old Geneva Accession

DESCRIPTION

Color:	*Blue/Black*	*Fruit Maturity:*	*Mid-season*
Clusters	*Small-medium, Cylindrical,winged*	*Wood Maturity:*	*Mid-season*
		Cold Hardiness:	*Moderate - 3*
Berry:	*10-12 mm, round*	*Killing Temperature:*	*-10.1°F*
Cluster Compactness:	*Compact*	*Relative Vigor*	*Moderate on C. 3309; Vigorous on 5BB*
Disease & Disorders:	*Birds, botrytis*		

SUMMARY

Very compact clusters and thin skins ensures this clone will suffer botrytis bunch rot. Hence fruit must often be harvested before fully ripe. Winter hardiness and wine quality of this clone are good when fruit reaches maturity in sound condition. Vines seem to tolerate the common crown gall attacks on the trunks. Alternate training methods, summer pruning and leaf removal reduce bunch rot incidence. A mixture of clones is desirable for the most complex red Pinot noir wines. The addition of this or other members of the Pinot family can enrich and add depth to blended sparkling wine.

RECOMMENDATIONS

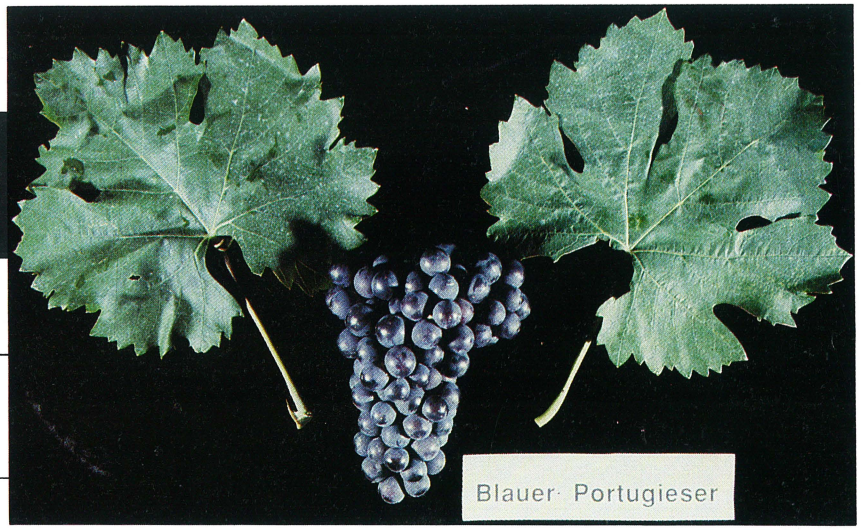
Plant as one of a number of Pinot noir clones. Discontinue planting when better clones have been identified.

* on 5BB rootstock

PINOT NOIR*

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Fredonia	1985	1.1	70	60	1.9	2 Oct	19.2
	1986	3.4	56	67	2.5	10 Oct	20.6
	1987	3.3	54	91	2.6	11 Sep	20.7
	Mean	2.6	60	73	2.3	28 Sep	20.2
Geneva	1985	1.2	85	69	1.4	24 Sep	18.1
	1986	2.7	93	101	5.0	21 Sep	20.4
	1987	2.6	60	50	1.9	18 Sep	19.0
	Mean	2.2	79	73	2.8	21 Sep	19.2
Hudson Valley	1985	0.7	78	65	2.3	24 Sep	19.2
	1986	1.7	84	91	2.6	8 Oct	20.0
	Mean	1.2	81	78	2.5	2 Oct	19.6
Long Isle	1985	1.3	74	79	4.2	11 Sep	18.9
	1986	3.7	84	96	5.0	30 Sep	17.2
	1987	4.2	86	57	3.0	24 Sep	18.8
	Mean	3.1	81	77	4.1	27 Sep	18.3

PORTUGIESER
BLAU(ER)



ORIGIN

Austria

SOURCE

Saanichton Research Station
Sydney, BC Canada

DESCRIPTION

Color:	*Blue/Black*	*Fruit Maturity:*	*Mid-season*
Clusters	*Medium, conic, winged*	*Wood Maturity:*	*Late mid-season*
		Cold Hardiness:	*Tender - 2*
Berry:	*15-17 mm, ovoid*	*Killing temperature:*	*-9.0*
Cluster Compactness:	*Compact*	*Relative Vigor:*	*Moderate on C. 3309*
Disease and Disorders:	*Botrytis, berries crack*		

SUMMARY

Highly sensistive to botrytis, large compact clusters lead to overcropping with our standard methods of cultivation. Maturity, hardiness and quality suffer as a consequence. Literature describes as having cylindrical clusters and round berries.

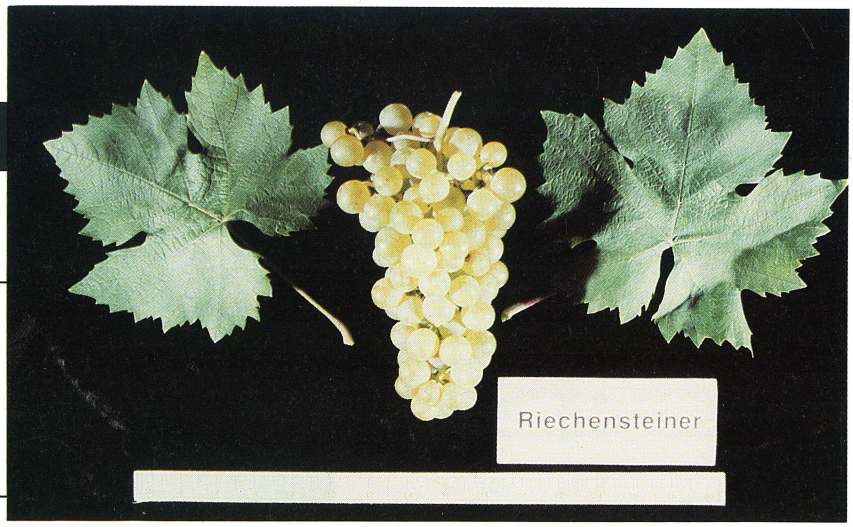
RECOMMENDATIONS

Not recommended

PORTUGIESER BLAU

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	1.4	68	114	3.4	25 Sep	18.4
	1986	3.6	90	161	7.0	30 Sep	18.9
	1987	2.9	86	92	2.2	28 Sep	21.0
	Mean	2.6	81	122	4.2	27 Sep	19.4

REICHENSTEINER



ORIGIN

Geisenheim C/D 18-92
Müller-Thurgau x (Madeleine Angevine x Calabria Frölich)
Geisenheim, West Germany

SOURCE

Horticultural Research Institute of Ontario Vineland Station, Ontario, Canada

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Mid-season*
Clusters	*Medium, conic*	*Wood Maturity:*	*Mid-season*
Berry:	*13-17 mm, round*	*Cold Hardiness:*	*Tender - 2*
Cluster Compactness:	*Well filled to loose*	*Killing Temperature:*	*-9.0°F*
Disease & Disorders:	*Botrytis*	*Relative Vigor:*	*Low to Mod. on C. 3309*

SUMMARY

Variety is too botrytis susceptible and winter tender for culture at Geneva.

RECOMMENDATIONS

Not recommended

REICHENSTEINER

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	0.5	88	104	1.9	--	--
	1986	0.6	87	--	1.8	15 Oct	--
	1987	1.5	23	128	1.0	11 Sep	19.5
	Mean	0.9	66	116	1.6	28 Sep	19.5

RIESLANER

ORIGIN

State Viticultural Institute
Würzburg, Bavaria, West Germany

SOURCE

Ontario, Canada

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Mid-late season*
Clusters	*Medium conic, shouldered*	*Wood Maturity:*	*Mid-late season*
		Cold Hardiness:	*Moderate - 4*
Berry:	*9-13 mm, round*	*Killing Temperature:*	*-15.0°F*
Cluster Compactness:	*Well filled*	*Relative Vigor:*	*Moderate on C. 3309*
Disease & Disorders:	*None*		

SUMMARY

Vine has good resistance to bunch rot, moderate vigor and fruitfullness; it appears worthy of commercial trial.

RECOMMENDATIONS

Worthy of commercial trial.

RIESLANER

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	1.2	87	75	1.9	2 Oct	23.0
	1986	2.3	94	118	5.1	7 Oct	22.0
	1987	1.7	60	120	2.1	11 Sep	21.6
	Mean	1.7	80	104	3.0	26 Sep	22.2

SAUVIGNON BLANC

ORIGIN

France

SOURCE

H.C. Barrett
University of Illinois,
Urbana, Ill.

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Mid-season*
Clusters	*Medium, conic, winged*	*Wood Maturity:*	*Late*
		Cold Hardiness:	*Tender - 2*
Berry:	*11-14 mm, round*	*Killing Temperature:*	*-9.9°F*
Cluster Compactness:	*Compact*	*Relative Vigor:*	*Mod. to high on C. 3309*
Disease & Disorders:	*Botrytis*		

SUMMARY

Fruit is very susceptible to botrytis. Vine is prone to extended period of growth, late cane maturity and poor winter survival of trunks and buds. Wood is very intolerant of shade. Wine quality is often superior. Vines should be planted in sites with a long, warm growing season and which do not induce vigorous growth.

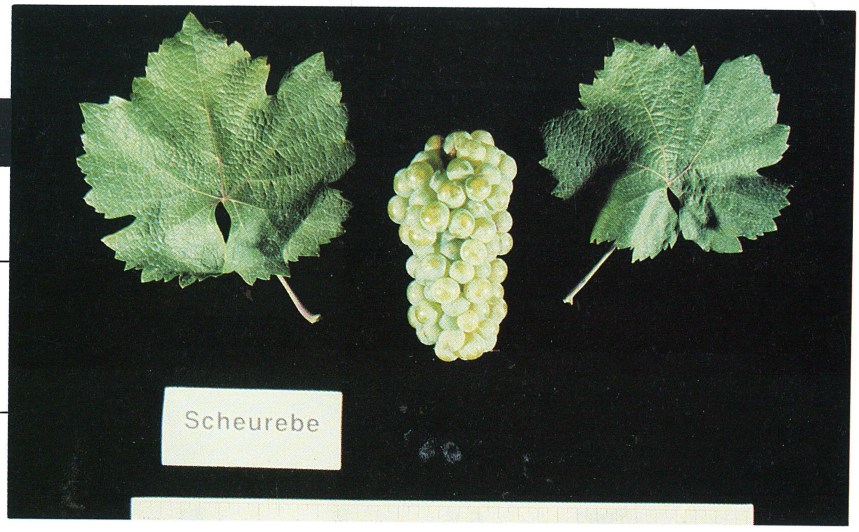
RECOMMENDATIONS

Our results do not warrant a recommendation to grow this variety commercially. However, commercial wines of exceptional quality have been produced. Separate experience with the variety suggests that by planting on sites which somewhat restrict vine size and which have a long growing season, and by using more restrictive rootstocks than tested in this study, commercial yields are possible. Tests of a broader range of clones would be useful.

SAUVIGNON BLANC

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Fredonia	1985	1.9	65	112	1.8	2 Oct	20.0
	1986	3.2	37	93	1.5	6 Oct	19.6
	1987	3.2	26	107	1.6	23 Sep	20.0
	Mean	2.8	43	104	1.6	30 Sep	19.9
Geneva	1985	1.2	88	93	1.3	25 Sep	20.6
	1986	3.0	85	106	1.6	25 Sep	20.5
	1987	3.7	65	74	1.8	16 Sep	19.7
	Mean	2.6	79	91	1.6	22 Sep	20.3
Long Isle	1985	1.9		94	2.0	17 Sep	19.4
	1986	4.8	78	124	2.7	2 Oct	20.2
	1987	6.6	81	89	3.0	23 Sep	20.9
	Mean	4.4	53	102	2.6	24 Sep	20.2

SCHEUREBE



ORIGIN

Alzey S88
Sylvaner x Riesling

SOURCE

Jordan-St. Michelle Wines
Ontario, Canada

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Mid-late Season*
Clusters	*Medium, conic*	*Wood Maturity:*	*Mid-late Season*
Berry:	*10-14 mm, round*	*Cold Hardiness:*	*Moderate - 2 to 3*
Cluster Compactness:	*Compact*	*Killing Temperature:*	*-9.9°F*
Disease & Disorders:	*Botrytis*	*Relative Vigor:*	*Mod. to high on 5BB*

SUMMARY

Similar to White Riesling in many ways, but it is not as cold hardy. In some years botrytis infection requires that fruit be harvested before fruit is fully mature.

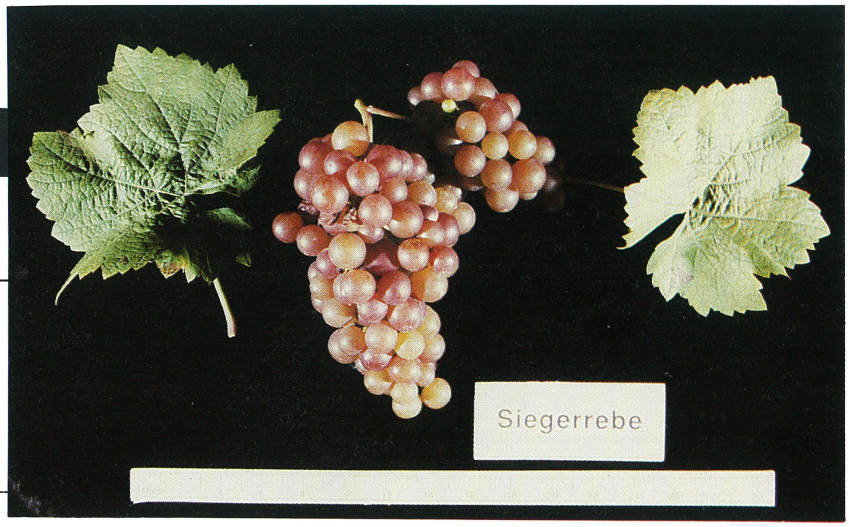
RECOMMENDATIONS

Only plant on a limited trial basis.

SCHEUREBE

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	2.9	81	111	2.6	3 Oct	17.8
	1986	4.1	77	212	6.6	7 Oct	18.0
	1987	2.9	48	125	3.3	29 Sep	16.5
	Mean	3.3	69	149	4.2	3 Oct	17.4

SIEGERREBE



ORIGIN

Alzey 7957
Madeleine Angevine x
Gewürztraminer

SOURCE

Saanichton Station
Sydney, B. C. Canada

DESCRIPTION

Color:	*Pink*	*Fruit Maturity:*	*Very early*
Clusters	*Medium, conic winged*	*Wood Maturity:*	*Early*
		Cold Hardiness:	*Moderate - 3 to 4*
Berry:	*15-20 mm, round*	*Killing Temperature:*	*-14.4*
Cluster Compactness:	*Well filled*	*Relative Vigor:*	*Low to Moderate*
Disease & Disorders:	*Birds*		

SUMMARY

This variety ripens its fruit very early. Fruit is slightly susceptible to botrytis infection. Because of season of ripening, bird depredation is serious. Vines are fruitful and vigor is low. In-row vine spacing should be reduced. Fruit has distinct flavor reminiscent of Gewurztraminer.

RECOMMENDATIONS

Worthy of trial in regions with shorter growing seasons. Closer vine spacing would help production. Avoid planting near bird habitats.

SIEGERREBE

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	1.8	81	119	1.8	11 Sep	--
	1986	2.0	90	137	4.8	8 Sep	17.0
	1987	1.2	69	160	2.5	21 Aug	18.0
	Mean	1.7	80	139	3.0	3 Sep	17.5

SPÄTBURGUNDER
BLAU(ER) (PINOT NOIR)

ORIGIN

a German Clone of Pinot noir

SOURCE

Federal Research Station
Geiweilerhof, West Germany

DESCRIPTION

Color:	*Blue*	*Fruit Maturity:*	*Mid-season*
Cluster:	*Medium, cylindrical*	*Wood Maturity:*	*Mid-season*
Berry:	*10-15 mm, round*	*Cold Hardiness:*	*Tender - 2*
Cluster Compactness:	*Compact*	*Killing Temperature:*	*-7.6°F*
Disease & Disorders:	*Botrytis, crown gall*	*Relative Vigor:*	*Medium on C. 3309*

SUMMARY

Dr. Bruce Reisch reports isozyme pattern is identical with Pinot noir. German evaluations report good cold hardiness and large yields. For a Pinot noir clone, these vines are low in vigor and yield and lack cold hardiness. Vegetative growth suggests a possible virus infection. Wood is currently being tested for presence of tobacco ringspot which has on rare occasion infected vines grafted to C. 3309 in New York. The variety has been included in expanded trials of Pinot noir clones currently under way.

RECOMMENDATIONS

Not recommended

SPÄTBURGUNDER (BLAUER)
(PINOT NOIR)

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	0.2	62	96	1.5	--	--
	1986	0.9	94	116	3.7	30 Sep	19.9
	1987	1.4	56	96	2.2	28 Sep	18.0
	Mean	0.8	70	103	2.5	29 Sep	19.0

SYLVANER

ORIGIN

Germany and Austria

SOURCE

A.C. Goheen
ARS/USDA
University of California
Davis, California

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Mid-season*
Clusters	*Medium, conic, winged*	*Wood Maturity:*	*Late mid-season*
		Cold Hardiness:	*Tender - 2*
Berry:	*12-14 mm, round*	*Killing Temperature:*	*-14.8°F*
Cluster Compactness:	*Compact*	*Relative Vigor:*	*Moderate on C. 3309*
Disease & Disorders:	*Botrytis*		

SUMMARY

A heavy cropper with moderate sensitivity to bunch rot and crown gall. Wood does not mature well giving only moderate winter hardiness at best.

RECOMMENDATIONS

Not recommended

SYLVANER

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	2.4	88	117	3.6	2 Oct	18.8
	1986	4.5	93	137	5.6	30 Sep	19.8
	1987	2.5	80	75	2.3	28 Sep	18.0
	Mean	3.1	87	110	3.8	30 Sep	18.9

WHITE RIESLING*

ORIGIN

Germany

SOURCE

Geisenheim
Clone 239
Geisenheim, Germany

DESCRIPTION

Color:	*White*	*Fruit Maturity:*	*Late mid-season*
Clusters	*Small to medium, conic*	*Wood Maturity:*	*Late mid-season*
		Cold Hardiness:	*Hardy - 5*
Berry:	*11-12 mm, round*	*Killing Temperature:*	*-14.4°F*
Cluster Compactness:	*Compact*	*Relative Vigor:*	*Vigorous on C. 3309*
Disease & Disorders:	*Botrytis*		

SUMMARY

This is a standard variety included for comparative purposes. The vine has excellent winter hardiness. Fruit ripens relatively late in the season, but produced good quality wines in all but the worst of growing seasons. Its botrytis susceptability is its most serious fault except when conditions favor the sole development of *Botrytis cinerea* and not secondary invading pathogens associated with bunch rot.

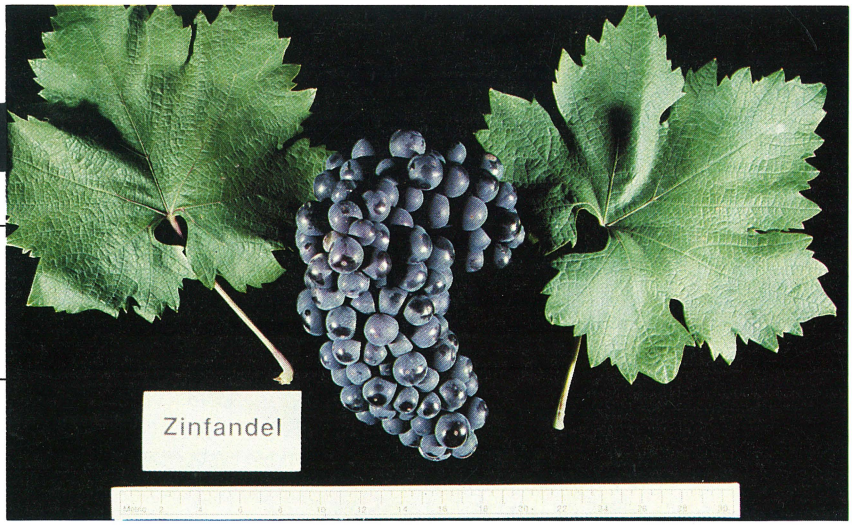
RECOMMENDATIONS

Recommended for all production areas.

WHITE RIESLING*

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Fredonia	1985	1.0	80	53	1.0	16 Oct	19.9
	1986	2.4	61	93	2.5	17 Oct	17.7
	1987	2.3	54	67	1.9	23 Sep	17.3
	Mean	1.9	65	71	1.8	5 Oct	18.3
Geneva	1985	2.5	87	99	3.4	8 Oct	20.0
	1986	4.2	90	103	4.5	8 Oct	19.0
	1987	3.3	64	84	2.8	23 Sep	16.7
	Mean	3.3	80	95	3.6	3 Oct	18.6
Hudson Valley	1985	2.7	38	74	2.2	24 Sep	19.0
	1986	3.4	72	101	2.5	8 Oct	20.5
	Mean	3.1	55	88	2.4	1 Oct	19.8
Long Isle	1985	2.4	74	77	2.5	23 Sep	19.0
	1986	3.8	65	91	4.4	10 Oct	16.9
	1987	4.3	64	70	1.3	24 Sep	19.0
	Mean	3.5	68	79	2.7	29 Sep	18.3

ZINFANDEL



ORIGIN

Probably Italy where
it is known as Primitivo

SOURCE

Carl F. Luhn,
Department of Plant Pathology
University of California
Davis, California

DESCRIPTION

Color:	*Dark red*	*Fruit Maturity:*	*Late*
Clusters	*Medium to large, conic, winged*	*Wood Maturity:*	*Very late*
		Cold Hardiness:	*Very Tender - 1*
Berry:	*15-16 mm, round*	*Killing Temperature:*	*-10.8°F*
Cluster Compactness:	*Very compact*	*Relative Vigor:*	*Vigorous*
Disease & Disorders:	*Berries crack, botrytis*		

SUMMARY

A large berried, vigorous variety with very compact, bunch rot susceptible fruit. Neither the fruit nor the vine ripen satisfactorily in New York leading to excessive winter injury to buds and trunks.

RECOMMENDATIONS

Not recommended

ZINFANDEL

Location	Year	Cane Pruning Wt. (lb)	Live Nodes (%)	Cluster: Weight (grams)	Crop Weight (Tons/Acre)	Harvest Date	Soluble Solids (%)
Geneva	1985	0.7	70	223	3.8	18 Oct	16.5
	1986	2.1	65	356	9.5	14 Oct	--
	1987	1.6	20	119	0.4	30 Sep	16.0
	Mean	1.5	52	233	4.6	10 Oct	16.3
Long Isle	1985	1.3		106	3.3	5 Oct	17.4
	1986	2.2	65	161	0.5	16 Oct	18.1
	1987	2.4	72	149	2.9	8 Oct	Rot
	Mean	2.0	46	139	2.2	10 Oct	17.8

Appendix 1. Results of commercial tasting of 1987 experimental wines (Geneva grown).

White Wine Varieties	Score[1]		Comments
Siegerrebe	6.4	a	Fruity, vegetal aroma; sltly disagreeable aftertaste; full, spicy, earthy, tart
Noblessa	6.1	ab	Smooth, rather neutral; wonderful taste; muscat-, vidal-, riesling-like, ravat character
Chardonnay	6.0	ab	Neutral, clean, sltly fruity-grassy; good finish; full flavor
White Riesling	5.7	abc	Neutral , sltly oxidized, Sylvaner-like, grapey/melon, flowery, sltly bitter, hot finish
Reichensteiner	5.6	abc	Asparagus, subtle, vegetative, herbaceous, mint, good finish
Ehrenfelser	5.2	abcd	Sltly dirty, Riesling/Sylvaner-like, full flavor, good palate, good finish, different
Muscat Ottonel	5.2	abcd	Muscat, terpenes, spicy, so-so palate
Pinot blanc	5.1	abcd	Somewhat vegetative, muscat, sauvignon blanc, good, sweet, clean
Morio Muscat	5.1	abcd	Gewurztraminer, good, clean, balanced
Gewurztraminer	4.6	bcde	Good, neutral wine, balanced, blender, good aftertaste
Rieslaner	4.2	cdef	Lovely, pleasant, good fruit finish, melon, Sylvaner-like, pleasant
Pearle	4.1	cdef	Delicate fruit, clean ,dirty, Semillon-like, grapey, acid, disagreeable aftertaste
Comtessa	4.1	cdef	Green vegetative, grassy, poor finish, sltly harsh, thin, blending wine
Sauvignon blanc	2.9	f	Earthy, grassy, off-nose, mercaptans, vegetable flavors,

Red Wine Varieties	Score[1]		Comments
Merlot	5.8	a	Pepper and raspberries, grassy, Cabernet, good aftertaste and color
Clevner Mariafeld	5.0	ab	Good Pinot n. aroma, strawberries, med color, spicy neutral, thin, etc
Gamay Beaujolais	4.1	bc	Strawberries, light color, slt VA, light color

[1] *Scores are a 1 (worst) to 10 (best) hedonic scale. Scores followed by the same letter do not differ significantly (p=0.05).*

Appendix 2. Precipitation (in inches) data for grape test sites.

Riverhead, Long Island

Year	Winter (Nov - Mar)	Spring (Apr - Jun)	Mid-summer (Jul - Aug)	Ripening (Sept - Oct)	Annual Total
1984-85	10.4	13.1	8.3	2.6	34.4
1985-86	18.3	6.4	8.9	3.5	42.8
1986-87	26.3	8.9	6.4	7.1	48.7
Long Term* Mean	**19.9**	**10.0**	**7.6**	**6.8**	**44.3**
(As % of Season)	**(44.9%)**	**(22.6%)**	**(17.1%)**	**(15.3%)**	

Glenham, Hudson Valley

Year	Winter (Nov - Mar)	Spring (Apr - Jun)	Mid-summer (Jul - Aug)	Ripening (Sept - Oct)	Annual Total
1984-85	9.7	11.5	7.2	8.2	40.5
1985-86	16.5	6.0	11.1	3.3	43.0
1986-87	16.4	13.2	7.6	12.9	44.8
Long Term* Mean	**16.8**	**11.1**	**7.7**	**6.9**	**42.9**
(As % of Season)	**(39.2%)**	**(25.9%)**	**(17.9%)**	**(16.1%)**	

Poughkeepsie, Hudson Valley

Year	Winter (Nov - Mar)	Spring (Apr - Jun)	Mid-summer (Jul - Aug)	Ripening (Sept - Oct)	Annual Total
1984-85	10.3	9.2	9.3	7.0	35.8
1985-86	18.3	9.7	11.8	3.0	42.8
1986-87	15.6	11.0	8.3	11.3	46.2
Long Term* Mean	**15.3**	**10.7**	**6.9**	**6.0**	**38.9**
(As % of Season)	**(39.3%)**	**(27.5%)**	**(17.7%)**	**(15.4%)**	

Geneva, Finger Lakes

Year	Winter (Nov - Mar)	Spring (Apr - Jun)	Mid-summer (Jul - Aug)	Ripening (Sept - Oct)	Annual Total
1984-85	9.2	9.7	3.5	5.6	28.0
1985-86	14.6	12.0	8.7	6.5	41.8
1986-87	9.1	9.1	9.0	8.1	35.3
Long Term* Mean	**12.3**	**9.1**	**5.8**	**5.4**	**32.6**
(As % of Season)	**(37.7%)**	**(27.9%)**	**(17.8%)**	**(16.6%)**	

Fredonia, Chautauqua/Erie

Year	Winter (Nov - Mar)	Spring (Apr - Jun)	Mid-summer (Jul - Aug)	Ripening (Sept - Oct)	Annual Total
1984-85	17.7	9.6	7.6	9.4	44.3
1985-86	23.3	14.0	12.9	12.0	62.2
1986-87	14.8	7.1	8.9	10.2	41.0
Long Term* Mean	**13.7**	**9.4**	**6.3**	**7.1**	**36.5**
(As % of Season)	**(37.5%)**	**(25.7%)**	**(17.3%)**	**(19.4%)**	

** Long term precipitation data from Dethier, 1966, and represent the period 1931-1964, except for Glenham which is based on the period 1948-1987.*

Appendix 3. Temperature data for grape test sites.

RIVERHEAD, LONG ISLAND

Year	Extreme Low Temperature	Length of Growing Season (days) (28° F base)	Degree Days May 1 - Oct 31 (50° F base)	Mean Daily Temperature Sept. & Oct.	Date of First Fall Freeze (≤28°)
1984-85	0° Jan. 21	238	3208	61.4	Dec. 4
1985-86	5° Jan. 15	234	3547	61.5	Nov. 14
1986-87	6° Feb. 15	233	3112	60.3	Nov. 21
Long Term Mean*	**-8°**	**233**	**3112**	**61.4**	**Nov. 22**

GLENHAM, HUDSON VALLEY

Year	Extreme Low Temperature	Length of Growing Season (days) (28° F base)	Degree Days May 1 - Oct 31 (50° F base)	Mean Daily Temperature Sept. & Oct.	Date of First Fall Freeze (≤28°)
1984-85	- 6° Jan. 21	202	2995	60.0	Oct. 29
1985-86	- 1 Jan. 15	200	2986	58.5	Oct. 11
1986-87	- 7° Feb. 16	194	NA	57.1	Oct. 13
Long Term Mean*	**-20°**	**196**	**2895**	**59.3**	**Oct. 23**

POUGHKEEPSIE, HUDSON VALLEY

Year	Extreme Low Temperature	Length of Growing Season (days) (28° F base)	Degree Days May 1 - Oct 31 (50° F base)	Mean Daily Temperature Sept. & Oct.	Date of First Fall Freeze (≤28°)
1984-85	-10° Feb. 2	166	2692	57.0	Oct. 22
1985-86	- 3° Jan. 15	179	2594	55.7	Oct. 10
1986-87	-12° Jan. 27	194	2594	53.1	Oct. 13
Long Term Mean*	**-30°**	**180**	**2974**	**59.9**	**Oct. 14**

GENEVA, FINGER LAKES

Year	Extreme Low Temperature	Length of Growing Season (days) (28° F base)	Degree Days May 1 - Oct 31 (50° F base)	Mean Daily Temperature Sept. & Oct.	Date of First Fall Freeze (≤28°)
1984-85	- 8° Jan. 22	195	2238	56.6	Oct. 29
1985-86	- 2° Jan. 15	170	2258	58.4	Nov. 5
1986-87	-13° Feb. 15	218	2389	56.6	Nov. 11
Long Term Mean*	**-25°**	**190**	**2629**	**57.4**	**Oct. 27**

FREDONIA, CHAUTAUQUA/ERIE

Year	Extreme Low Temperature	Length of Growing Season (days) (28° F base)	Degree Days May 1 - Oct 31 (50° F base)	Mean Daily Temperature Sept. & Oct.	Date of First Fall Freeze (≤28°)
1984-85	-15° Jan. 21	195	2820	60.2	Oct. 29
1985-86	- 6° Jan. 15	206	2909	58.4	Nov. 5
1986-87	- 6° Feb 16	224	2866	56.6	Nov. 11
Long Term Mean*	**-18°**	**198**	**2691**	**59.4**	**Nov. 4**

**Long term data for extreme low temperature, except for Glenham (years 1967-1987), is from Shaulis, N.J., J. Einset and A.B. Pack. 1968. Growing Cold Tender Grape Varieties in New York. Bulletin 821, New York State Agricultural Experiment Station, Geneva, NY, and represent period 1951-1968. Other long term data represent 1931-1964 except for Glenham which represents period 1948-1986.*

Bibliography

1. Anon. 1985. Evaluation of German Grape Cultivars and German Viticultural Techniques in the Okanagan Valley, British Columbia. Viticulture Committee of the British Columbia Grape Growers. 23 pp.

2. Anthony, R.D. 1915. Vinifera grapes in New York. NY State Agricultural Exp. Stat. 432; 81-105

3. Cornell Coop. Extension. 1988. Cenet Weather Data Base.

4. Dethier, B. 1966. Precipitation in New York State. Bull. 1009. Cornell University Agric. Exper. Stat., Ithaca, NY.

5. Dethier, B.E. and M.T. Vittum. 1967. Growing Degree Days in New York State. Bull. 1017. Cornell University Agric. Expt. Stat., Ithaca, NY.

6. Eggenberger, W., et al. 1975. Weinbau. Verlag Huber, Frauenfeld, Switzerland. 187 pp.

7. Galet, P. 1957. Cépages et Vignobles de France, Tomes II, III & IV. Paul Dehan, Montpéllier, France

8. Galet, Pierre. 1979. A Practical Ampelography - Grapevine Identification. Cornell University Press., Ithaca, 248 pp.

9. Hilldebrand, W. 1978. Taschenbuch der Rebsorten. Zeitschriften Verlag, Dr. Bilz & Dr. Fraund, KG, Wiesbaden, West Germany. 342 pp.

10. Huber, H. 1965. "Clevener Mariafeld" - eine neue Blauburgunder - (Pinot noir) Selektion. Schweizerische Zeitshrift für Obst- und Weinbau. 101: 160-164.

11. Jordan, T.D., R.M. Pool, T.J. Zabadal and J.P. Tomkins. 1980. Cultural practices for commercial vineyards. Misc. Bull. 111. NY State College of Agric. & Life Sci., Cornell University, Ithaca, NY. 69 pp.

12. Meinhard, H. 1976. The Wines of Germany. Stein & Day. 276 pp.

13. NOAA. 1984-1987. Climatological Data. Monthly reports and the Annual Summaries for New York. U.S. Dept. of Commerce, NOAA, Asheville, NC.

14. NOAAA. 1973. Monthly normals of temperaure, precipitation, and heating & cooling degree days 1941-70. U.S. Dept. of Commerce, NOAA, Asheville, NC.

15. Pack, A.B. 1972. Climate of New York. Climatography of the United States No. 60-30. U.S. Dept. of Commerce, NOAA, Silver Springs, MD.

16. Pool, R.M., K. Kimball, J. Watson and J. Einset. 1979. Grape Varieties for NY State. New York's Food and LIfe Sci. Bull. 80. 6pp.

17. Robinson, J. 1986. Vines, Grapes & Wines. Alfred A. Knopf. 280 pp.

18. Shaulis, M.J., J. Einset and A.B. Pack. 1968. Growing Cold Tender Grape Varieties in New York. Bull. 821. NY State Agric. Exper. Stat., Geneva, NY.

19. Winkler, A.J. 1974. General Viticulture. University of California Press, Berkeley 710 pp.

20. Wolf, T.K. and R. M. Pool. 1986. Microcomputer-based differential thermal analysis of grapevine dormant buds. HortScience 21:1447-1448.