
Martha Clara
Brut
Anthony Road
Dry
Treleaven
Riesling
Cayuga Lake
Jubilee
McGregor
Vineyard
2001
Late Harvest Vignoles
Manischewitz
Concord
Grape
Wagner
Finger Lakes
Chardonn
Barrel Fermented
2001
Sweet
Iris
Red Newt Cellars
Chardonnay
Captain's Choice
Millbrook
2001
Chardonnay
Niagara Landing
Wine Cellars
Dr. Konstantin
Frank
2001
Cabernet
Sauvignon
Chateau
Lafayette
Reneau
1998
Cabernet
Sauvignon
Nuit
Black Raspberry
Dessert Wine
Peconic Bay
Winery
North Fork of Long Island
Palmer
Vineyards
North Fork of Long Island
Brotherhood
America's Oldest Winery
Since 1839
Ravines
2002
Pinot Noir
Finger Lakes
2002
Corey Creek
Vineyards
Chardonnay
North Fork of Long Island
Castello
di
Borghese
Hargrave Vineyard
Fulkerson
Wölffer.
2000
Hunt
Country
Hunter's Red
Finger Lakes
Hosmer
Winery
Cayuga Lake
Chardonnay
Macari
Est.
1979
Hermann J. Wiemer
Gewürztrami
Sheldrake
Point
2000
Finger Lakes
Gamay
2001
Prejean
Jamesport
2001
Sauvignon Blanc
Cabernet Franc
2000
Unfiltered
North Fork of Long Island
Casa Larga
Fox Run
Vineyards
North Salem Vineyard

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Any underlined text in this book a link. Clicking on this text with the Hand Tool will take you to the indicated destination.

Flying over the north end of Cayuga Lake with Seneca Lake in the distance.

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(Click on words to go to that page)

The New York Wine Course and Reference

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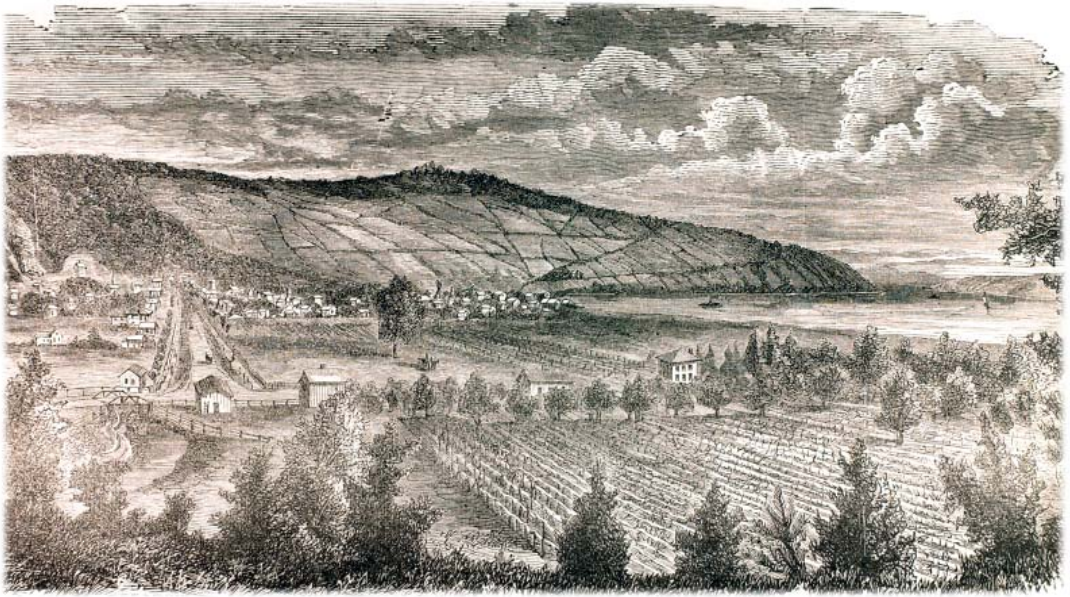
New York Wine Industry–

The Renaissance

The New York wine industry is experiencing a dramatic and exciting renaissance. Several of the nation's oldest and most historic wineries are launching new product lines. New "farm" wineries are opening in every region of the state. Decades of scientific experimentation are yielding a broader mix of wine-grape varieties and improved wine making techniques. And New York is fast earning the reputation it deserves as one of the world's premier wine producing regions.

The New York Tradition

New York was among the first states to grow grapes and produce wine – a centuries–old tradition which serves as a foundation for today's strong growth. Brotherhood Winery in the Hudson River Region, established in 1839, is the nation's oldest continuously operating winery. Great Western Winery, which began in 1860 as the Hammondsport and Pleasant Valley Wine Company, became U.S. Bonded Winery No. 1 and quickly established an international reputation for sparkling wines made in the Finger Lakes. Today the Great Western brand is owned and marketed by Canandaigua Wine Company, and the Pleasant Valley Wine Company has been re-established.



The first grape vines were planted in the Finger Lakes region in 1829 by the Rev. William Warner Bostwick. Using a few cuttings of Isabella and Catawba vines from the Hudson River valley, he planted them in his garden behind the Episcopal rectory. Image: Courtesy of the Glenn Curtis Museum.

In the following years, several other wineries opened in the Finger Lakes: Gold Seal Vineyards in 1865, Eagle Crest Vineyards in 1872, The Taylor Wine Company in 1880, and Widmer's Wine Cellars in 1888. These wineries helped put New York on the world's wine making map with their production of sparkling wines, dessert wines such as ports and sherries, and table wines. Canandaigua Wine Company also owns and markets the Gold Seal, Taylor and Widmer brands, accounting for a large share of New York's total production.

New York's Hudson River region is the oldest wine-growing district in the US, and this site at Benmarl Winery and Vineyard is home to one of the oldest vineyards in the area.

The Farm Winery Boom

In the 1960's and early 1970's, several wineries began operations—such as Benmarl Wine Company and Cascade Mountain Vineyard in the Hudson River Region, and Bully Hill Vineyards and Dr. Konstantin Frank's Vinifera Wine Cellars in the Finger Lakes. But the real boom in New York wineries started with the Farm Winery Act of 1976, which essentially made it more economically feasible to own and operate a winery producing fewer than 50,000 gallons per year. Today, farm wineries may produce up to 150,000 gallons per year.

In the last 28 years (from 1976 to 2004), the number of wineries in New York has increased more than tenfold to 203 in New York State with 156 in Federally recognized viticultural

regions (8 in the Lake Erie district, 88 in the Finger Lakes, 24 in the Hudson River Region, 36 on Long Island) and 47 others scattered in other areas of the state. Of New York's 203 wineries, 184 have been established since 1976.

Most of the new wineries are small, family–operated businesses which concentrate on limited production of premium varietal table wines. Typically, the owners of farm wineries oversee the entire process from the planting of vines to the marketing of wines. And most offer tours and wine tastings, which helps explain why over 3 million tourists visit New York wineries each year.

The Increasing Options

Another key factor explaining the farm winery boom is the ability of grape growers and wine makers to select their own market niche. Traditionally, New York wines were made with Native American grapes, which remain very popular among consumers. But in the past two decades, farm wineries in particular have concentrated on making wines from French–American and traditional European grape varieties.

The French–American varieties, developed by French scientists in the 19th century, combine the hardiness of American vines with the flavor characteristics of European wines. Among the best known are Seyval, Aurora, Baco Noir and Chancellor. The Cornell University affiliated New York State Agricultural Experiment Station in Geneva, New York, has also developed several popular new wine grape varieties such as Cayuga, Chardonnel, Melody, Traminette and Rubiana.

Two European immigrants, Charles Fournier and Dr. Konstantin Frank, pioneered the trend toward classic European (Vitis vinifera, abbreviated here as V. Vinifera or vinifera) grapes and wine. The two men, both deceased in the mid 1980's, proved that the delicate vinifera vines could be successfully cultivated in New York's climates. Their vision and determination has spread from the Finger Lakes to the rest of New York and throughout the eastern United States. Vinifera wines account for an ever–increasing portion of New York's total production, and their impact in improving the state's wine growing reputation has been enormous. In addition, plantings of the vinifera varieties have increased nearly 400% since 1980.

Dr. Konstantin Frank (left) and Charles Fournier (right). Photo: Courtesy of the Glen Curtis Museum

The New York Renaissance

The new wines, new wineries and renewed commitment to quality have sparked New York's wine growing renaissance. The nation's third largest wine producing state with average annual production of about 20 million gallons, New York and its distinct regions are earning increased recognition for innovation and quality.

New York now has eight officially recognized viticultural areas similar to the "appellations of origin" in France—Lake Erie; Finger Lakes; Seneca Lake; Cayuga Lake; Hudson River Region; Long Island; The Hamptons, Long Island; and North Fork of Long Island. Each region has distinct combinations of soil, topography, and climate that make the regional wines unique.

In all of New York's viticultural areas, the presence of large bodies of water are crucial elements in creating ideal "mesoclimates" for growing premium grapes. And New York's geographical latitude—similar to that of Europe's finest grape growing regions — makes the Empire State a great place to produce world–class wines.

New York Wine & Grape Foundation

The New York Wine & Grape Foundation is a unique partnership between the public and private sectors, charged with the responsibility of conducting comprehensive promotion and research programs to support the State's grape and wine industry.

Headquartered in the famous Finger Lakes region, the Foundation was created by the State of New York in 1985 as a private, non–profit organization. The enabling legislation was sponsored by Assemblyman Richard Keane, Senator William Smith (retired), and 24 of their colleagues — and received unanimous support from the State legislature.

Mark Miller recalls efforts involved in the passage of the 1976 Farm Winery Act signed into law by Governor Hugh Carey.

The law established a financing mechanism for promotion and research—providing the industry with both short–term assistance

and the potential for long–term viability. The Foundation's programs are developed by a 17–member Board of Directors in consultation with other representatives from industry and State government. The 15 Directors from private industry include grape growers and processors, restaurateurs, retailers, wholesalers, researchers and representatives from other industry segments throughout the State. The Commissioners of Agriculture & Markets, and Empire State Development Corporation, are also represented on the Board of Directors.

The Foundation has sponsored numerous research projects involving vineyard productivity, grape processing, table grape production and marketing, and product development and market research. The promotion program involves grape juice, wine and table grapes, with most activities normally beginning in May and reaching a peak from September through December in tandem with the fall grape harvest and peak sales season for the various grape products.

The Wine Lab and Data Bank stored at the New York State Agricultural Experiment Station has been instrumental in the development of our wine industry.

The Foundation's activities are designed to support all uses of New York–grown grapes from all regions of the state.

New York is the nation's third largest producer of grapes and wine. The State's 1,000 vineyards cover about 32,000 acres of land and produce an average annual grape crop of 175,000 tons worth $40 million. About 60% of the crop is used for grape juice, 35% for wine, and 5% for table consumption. There are currently over 200 wineries, 10 juice manufacturers, and 25 table grape marketers throughout the State's four major grape growing regions—Western New York (includes Chautauqua, Cattaraugus, Erie & Niagara Counties), the Finger Lakes region, the Hudson Valley, and on the east end of Long Island. Within these regions there are now eight "viticultural areas" (or appellations of origin) established by the Federal Government: Lake Erie, Finger Lakes, Seneca Lake, Cayuga Lake, Hudson River Region, Long Island, North Fork of Long Island, and The Hamptons, Long Island.

More information about the Foundation and the industry is available from: New York Wine & Grape Foundation, 350 Elm St., Penn Yan, NY 14527, or by visiting our web site at http://www.newyorkwines.org

The New York Wine Course and Reference

The New York Wine Course and Reference was developed by the New York Wine & Grape Foundation as a resource for wine educators and other wine professionals to educate themselves and others about the wines and wine industry of New York State. The enclosed curriculum includes two courses: a single class, two-hour version; and a three class, six-hour curriculum. Accompanying the wine courses is the New York Wine Reference, the first work of its kind to assemble all pertinent data on the New York wine industry. Detailed information on the soils, climate, grape varieties, viticultural areas, wineries, viticulture, and wine making technology have been assembled from numerous sources and are presented here in an accessible format. We encourage you to share the link to the Reference, but If you print the book out, it may not be reproduced for unauthorized sale.

The wine industry of New York is particularly dynamic and any information regarding wineries or vineyard acreage may quickly become outdated. Please note that the New York Wine & Grape Foundation periodically updates the Reference and posts it to the web site as possible, but some surveys that supply our data are not done on an annual basis. For the most current statistical reports available, please feel free to e-mail the Foundation at: ***info@newyorkwines.org*** or visit the website of the National Agricultural Statistics Service at http://www.nass.usda.gov

Two reports in particular may be of interest:

The Annual Fruit Report and the Winery and Grape Processing Plants report can be found at - http://www.nass.usda.gov/ny/fruit.htm

The more detailed Winery Report (under Special Surveys) can be found at - http://www.nass.usda.gov/ny/special_surveys.htm

Special terms – their use in the United States and in this resource

"Champagne" – The US Government allows for some of our wines to be called Champagne if the label also indicates the viticultural region that produced the wine - such as "Finger Lakes Champagne". Many of our producers utilize the term Sparkling Wine even though they have produced the product via methode champenoise.

"Sherries and Ports" – The US Government allows producers of wine to use terms which are restricted in some regions of the world. For this reason you will see us refer to sherries and ports - which refer to particular styles of wine in the US rather than wine produced in a particular region or fashion.

"Viticultural Areas" – The Federal Government (US Department of the Treasury – Alcohol and Tobacco Tax and Trade Bureau) considers and approves "viticultural areas" similar to

the “appellations of origin” in France, which may be used on wine labels and in advertisements.

Curriculum of the New York State Wine Short Course

Section A: History of the New York Wine Industry Past Success and Future Trends

1) Notes for the Instructor:

The purpose of this section is to give the student:

a) An historical perspective of the New York wine industry

b) an overview of New York's four wine growing regions

c) An understanding of the three distinct types of wine grape varieties grown in New York

Subject matter to cover:

a) Review the location and geography of New York's four major wine regions

b) Provide an overview of the origins of winegrowing in each region and highlights of their history to the present

c) Discuss the nature of native, hybrid and vinifera grape varieties

2) Tasting for Section 1:

Note for those conducting this course in markets where New York wines have limited distribution: The easiest way of finding what wines might be in your neighborhood could be the Wine Locator section of our web site: http://www.newyorkwines.org/winelocator/index.asp

If you don't find anything for your market, then please feel free to contact the Foundation and we will see what we can do to advise you on access to New York wines. The best thing might be to send an e-mail to ***info@newyorkwines.org*** being sure to indicate that you are planning to give the New York Wine Course, the number of students, and the date of the course and we'll see what we can do to help you locate an adequate supply of wine.

Purpose of the Tasting:

To familiarize students with wines produced from the three main types of grape varieties grown in New York.

Wines to be tasted:

1) A dry, native variety based sparkling wine

Some sparkling wines from the larger New York wineries are made from native varieties

2) A dry or off-dry French-American hybrid, varietal wine, red or white.

Recommended Varieties:

White: Seyval Blanc, Vidal Blanc, Cayuga, Traminette

Red: Marechal Foch, Baco Noir, DeChaunac

3) A dry, vinifera wine, red or white.

Recommended Varieties:

White: Chardonnay, Riesling, Gewürztraminer

Red: Cabernet Sauvignon, Merlot, Pinot Noir

Section B: Introduction to Winegrowing In New York State

1) Notes for the Instructor:

The purpose of this section is two-fold:

a) To give the students an introduction to viticulture and winemaking as it is practiced in New York

b) To show how a region's climate and soil conditions affect the flavor of a wine, to the point of distinguishing it from a wine of the same variety from a different region

2) The Tasting:

Wines to be tasted in this section:

a) A Chardonnay or Riesling from the Lake Erie Region and the Hudson River Region of New York

b) A Chardonnay and Riesling from the Finger Lakes Region of New York

c) A Chardonnay and Riesling from Long Island

Both Chardonnay and Riesling are widely planted in all four of New York's wine regions, and have wider availability in most markets than other varietal wines

Section C: Evaluating Wine and Reading the Wine Label

1) Notes to the Instructor:

The purpose of this section is to familiarize the student with the organoleptic evaluation of wine based on a twenty-point score sheet. Emphasis should be placed on distinguishing wines that are flawed from wines that the student merely may not like.

Students will be instructed on deciphering the important information found on the New York Wine Label. Terms to be reviewed:

a) Vintage Dating

b) Generic, Varietal and Proprietary Wines

c) The words "Estate Bottled", "Produced and Bottled by", "Cellared by", "Made by"

d) New York Viticultural Areas

e) New York vs. American designation

f) Alcohol levels

2) The Tasting:

Students will be asked to taste and evaluate three wines and record their results on a 20 point scorecard

Recommended wines for this section:

a) An off-dry vinifera wine such as a Riesling or Gewürztraminer

b) An off-dry, white hybrid wine such as Vidal, Cayuga or Traminette

c) An off-dry to sweet native grape wine, either white or rosé, such as Catawba, Delaware or Niagara

Curriculum of the New York State Comprehensive Wine Course

This course consists of 3, two-hour classes designed to give students an in-depth appreciation for and knowledge of New York Wines

1. Class One:

The History of the New York Wine Industry, Past Success and Future Trends

Notes to the Instructor:

The purpose of this class is to provide the student with an overview of the New York Wine Industry with a historical perspective. Subject matter to cover will include:

A) Review of the location and geography of New York's 4 major wine regions and 8 appellations:

1) Long Island

a. The Hamptons

b. The North Fork

2) Hudson Valley

3) Finger Lakes

a. Seneca Lake

b. Cayuga Lake

4) Lake Erie

An overview of the origins of winegrowing in each region and highlights of their history to the present

B) The Tasting:

The tasting should consist of 4 wines, one from each wine region. We recommend:

1) A dry white or red hybrid from the Hudson Valley
2) A Chardonnay or Riesling from the Finger Lakes
3) A Cabernet Sauvignon or Merlot from Long Island
4) An off-dry or sweet Labrusca wine from Western New York

2. Class Two:

A Study of the Climate, Soils and Grape Varieties of New York, plus a review of Grape Growing and Winemaking Practices

A) Discussion of the Native, Hybrid and Vinifera varieties used in New York wines

This section will serve to introduce the student to the wine varieties of New York, how and when they were developed and introduced to each region, as well as defining their flavor and aroma characteristics.

B) Climate, Soil, Viticulture and Winemaking - The Four Factors Influencing the Transition from Grape to Wine

In this section the student will be introduced to factors influencing the flavor and aroma of wine. Consult the sections of the Wine Reference on viticulture and winemaking in preparation for this part of the course. The following points should be discussed.

1) How soil, meso-climate and vineyard management can influence the flavor and aroma of wine

2) How weather conditions influence a wine's acid and sugar levels, as well as flavor in grapes and the resulting wine

3) How temperature of fermentation, skin contact, barrel-aging and malolactic fermentation influence the flavor and bouquet of wine

The Tasting:

This tasting will illustrate each of the above factors contribute to differences in wines.

1) Taste two 100% Seyvals of the same variety and vintage, 1 from the Hudson Valley and 1 from the Finger Lakes, to illustrate how soil / climatic differences influence the flavor of the wine

2) Taste two wines of the same varietal and of identical viticultural areas (ideally these wines should be from the same vineyard), but of different vintages to illustrate how changes in seasonal weather patterns influence wine quality

3) Taste two Chardonnays from identical vintages and regions. One should have undergone barrel fermentation and/or barrel aging and have undergone

a malolactic fermentation. The other wine should have been fermented in stainless steel and have received little or no barrel aging and no malolactic fermentation.

3. Class Three: Organoleptic Analysis of New York Wines, Reading the New York Wine Label

A) Organoleptic Analysis of Wine Discussed in the section will be:

1) Description of standard terminology to describe wine flavor and aroma characteristics. Discuss varietal characteristics of New York wines and mention how they may differ from wines of other regions

2) Use of the 20 point scorecard to analyze wine quality

3) Identifying wine flaws, discuss the distinction between a flawed wine and one that is simply unappealing to individual consumers

B) Reading the New York Wine Label

Consult the section in the Reference on reading the New York State wine label in preparation for this class. Discussion should include:

1) Wine label terminology

2) Importance of vintage dates

3) Making a decision based on label information

The Tasting:

Taste 6-8 varietal wines from the 4 different regions of New York. Rate each on the 20-point scorecard and discuss the results. Discuss the varietal characteristics of varietal wines produced in New York State versus those produced in other regions, for example California or Burgundy. If desired, include a varietal wine from another region and taste it blind with the New York wine of the same variety. Recommended varietals for this tasting are Chardonnay, Riesling, Merlot, Seyval Blanc, Gewürztraminer, Cabernet Sauvignon, Pinot Noir, Vignoles, Vidal, and Niagara.

The New York Wine Reference Timeline

New York Wine Industry Timeline of New York State's History of Winemaking and Viticulture

1647–1664 Grapes planted on Manhattan Island by the Dutch.

1667 First grapes planted by French Huguenot settlers in Ulster County. European varieties fail and they begin cultivation of wild grapes.

1737 Robert Prince establishes the Linnaen Gardens in Flushing.

1801 Catawba grape variety

found in woods near the Catawba River in North Carolina by a Mr. Murray.

1816 Isabella grape

introduced to the East by William Prince of Linnaen Gardens. Obtained from garden in South Carolina by a Mrs. Isabella Gibbs.

1818 Elijah Fay plants first vineyard in Chautauqua County.

1827 First commercial vineyard and winery in the Hudson Valley planted by Richard Underhill on Croton Point on the Hudson River.

1829 Reverend William Bostwick plants first vineyard in

the Finger Lakes in his rectory garden in Hammondsport, NY.

1839 First commercial

winery in the Hudson Valley opened by Jean Jacques named Blooming Grove, later to be named Brotherhood Winery.

1840 First grapes grown in the Niagara district.

1848 Edward McKay plants the first vineyard on Canandaigua Lake.

1850 Andrew Reisinger, a "vinedresser" from Germany, plants a vineyard and introduces pruning and training to the Finger Lakes.

1850 William Kniffin, a Hudson Valley stone mason from Clintondale, develops the pruning system that bears his name.

1853 Concord grape variety introduced by Ephraim

Bull of Concord, NH.; rapidly becomes the most popular wine and table grape.

1855 Delaware grape variety released by A.Thompson of Delaware, Ohio; originated in the garden of Paul Provost of Frenchtown, NJ.

1859 Elijay Fay's son, Joseph, opens the first winery in Chautauqua County in Brocton.

1860 Charles D.Champlin and several partners establish the Pleasant Valley Winery, hiring champagne makers from the Ohio Valley.

1865 Urbana Wine Company founded, later to be known as Gold Seal Vineyards.

1867 Andrew Caywood develops the Dutchess grape in Ulster County.

1872 Niagara grape developed in Lockport, NY by Hoag and Clark.

1873 Great Western Champagne takes the first gold medal ever won by an American wine in foreign competition in Vienna.

1880 Mastercooper, Walter Taylor, arrives in Hammondsport to build barrels for growing wine industry; shortly thereafter establishes a vineyard.

1882 New York Agricultural Experiment Station founded.

1882 The Taylor Wine Company established.

1888 Widmer's Wine Cellars established in Naples.

1919–1933 Prohibition – Some New York wineries survive by making sacramental wines, grape juice and by providing grapes to home winemakers.

1934 Charles Fournier joins Urbana Wine Company (Gold Seal) as winemaker from Veuve Clicquot Ponsardin.

1936 Charles Fournier introduces French–American hybrid varieties to New York.

1941 Widmer's Wine Cellars begins labeling their wines with varietal names.

1945 Canandaigua Industries Company founded by Marvin Sands.

Photo provided by Constellation Brands

1950 Gold Seal's Charles Fournier New York State Champagne Brut wins the only gold

medal awarded at the California State Fair. Fair officials subsequently bar non-Californian wines from the competition.

1953 Gold Seal hires Konstantin Frank as a consultant to begin production of vinifera varieties. Experimental plantings of numerous varieties and root-stocks begins.

1961 First commercial vinifera wines are produced at Gold Seal.

1961 Taylor Wine Company buys the Pleasant Valley Wine Co. (Great Western).

1964 Taylor subsidiary Great Western introduces the first French–American hybrid varietal wines.

1972 Canandaigua Industries changes its name to Canandaigua Wine Company.

1973 Canandaigua Wine Company goes public.

1973 Alex and Louisa Hargrave plant first commercial vinifera vineyard on Long Island.

1976 Governor Hugh Carey signs the Farm Winery Act, allowing small farm wineries to sell all their production at the winery and drastically lowering licensing

fees. Benmarl Wine Company in the Hudson Valley becomes the State's first Farm Winery, followed shortly by Glenora and Wagner in the Finger Lakes and Merritt Estate in Chautauqua.

1977 Coca–Cola buys the Taylor Wine Company.

1979 Seagram Wine Company acquires Gold Seal Vineyards.

1983 Coca–Cola sells Taylor and Great Western to the Seagram Wine Company.

1984 Governor Mario Cuomo initiates comprehensive market–oriented legislation to support the grape and wine industry.

1984 Canandaigua Wine Company buys Batavia Wine Cellars.

1985 New York Wine & Grape Foundation created by State legislation to finance promotion and research in support of grape industry.

1986 Canandaigua Wine Company buys Widmer's Wine Cellars

and the Monarch Wine Company, owner of Manischewitz Wines. Manischewitz is moved from its Brooklyn site to Naples, NY and becomes a part of the Widmer Wine complex.

1987 Widmer Wine Cellars in Naples, N.Y. and Manischewitz brand assets of the Monarch Wine Company in Brooklyn acquired by Canandaigua Wine Company.
The Manischewitz brand is currently produced at Widmer, as well as a number of wines formerly produced at the Taylor Wine Co. in Hammondsport, N.Y.

1987 Taylor, Great Western and Gold Seal are sold as part of a package to Vintners International.

1990 Governor Cuomo extends the public– private partnership with the New York Wine & Grape Foundation for three additional years.

1991 New York Wine & Grape Foundation launches new export program for New York Wine Industry.

1993 New York State enacts comprehensive legislation to ease regulatory burdens and increase marketing opportunities of wine and grape industry.

1993 Canandaigua Wine Company, already expanding through the acquisition of other companies and brands, purchases certain labels from Vintner's International Company Inc.– New York labels acquired include Taylor and Great Western.

1995 The State of New York decreased the excise tax on sparkling wines from 95 cents to 19 cents per gallon, bringing it in line with table wines. This was a major step by government to help strengthen the growing New York industry.

1995 The facilities of Pleasant Valley Wine Company/Great Western Winery were purchased and re-opened as a winemaking facility.

1996 New York wineries number in excess of 110, compared with just 19 in 1976 and 63 in 1985, with all growth in the small, premium sector and concentrated primarily in the Finger Lakes and on Long Island.

1997 Canandaigua Brands, Inc. is formed as the parent company of Canandaigua Wine Company and Barton Incorporated after a decade of acquisitions resulting in a diversified product portfolio expanding beyond the

wine business.

1998 Arbor Mist launched by Canandaigua Wine Company. This is the creation of a new category – wine with fruit – and sales expanded rapidly shipping 100 million cases in the first 100 days of distribution.

1998 Canandaigua Brands, Inc. acquires Mathew Clark, plc, a company based in the United Kingdom, leading to increased access to that market.
Name changes to Constellation Brands, Inc. – to better illustrate the scope of the companies' product base and the number of brands covered.

1998 Rieslings win Gold in Alsace – 1996 Semi-Dry Rieslings from Dr. Konstantin Frank's and Fox Run Vineyards each win a Gold medal in competition in Strasbourg's Rieslings of the World Competition.

1999 **San Diego National Wine Competition**
1997 Vidal Ice Wine
– Casa Larga Vineyards wins Best of Category

1999 **San Francisco International Wine Competition.**
Four wines from four wineries win "Best of Category" awards in this prestigious competition:
1998 Dry Riesling
Dr. Konstantin Frank's Vinifera Wine Cellars
Diamond
Goose Watch Winery
1998 Vignoles Late Harvest
Swedish Hill Winery
1998 Vignoles Ice Wine
Wagner Winery *Brewery* Restaurant

2000 Top awards given to two New York wines at the **Atlanta Wine Summit:**
1999 Select Harvest Gewurztraminer –Palmer Vineyards – Best US Unfortified Dessert Wine
Cream Sherry
Hunt Country Vineyards – Best US Fortified Wine

2000 Top awards given to New York wines at several leading national and international wine competitions:

Long Beach, California Grand Cru competition
1997 Blanc de Blanc Chateau Lafayette Reneau – Sweepstakes Winner
1999 Johannisberg Riesling, Semi-Dry – Dr. Konstantin Frank's Vinifera Wine Cellars – Chairman's Best of Class

Pacific Rim International competition
1999 Johannisberg Riesling, Semi-Dry – Dr. Konstantin Frank's Vinifera Wine Cellars –Best of Class

Riverside International Wine Competition
1999 Rkatsiteli - Dr. Konstantin Frank's Vinifera Wine Cellars – Chairman's Award

San Diego National Wine Competition

Bayside Blush – Goose Watch Winery – Triple Gold and Best of Class

1998 Late Harvest Vignoles - Prejean Winery – Best of Class

2001 Top awards at leading national and international wine competitions:

Los Angeles County Fair

2000 Johannisberg Riesling – Chateau Lafayette Reneau – Best of Class

1997 Blanc de Blanc – Pugliese Vineyards – Best of Class

Pacific Rim International Wine Competition

1998 Chardonnay – Palmer Vineyards – Best of Class

Riverside International Wine Competition

1998 Late harvest Vignoles – Anthony Road Wine Company –Chairman's Award

2000 Johannisberg Riesling – Dr. Konstantin Frank's Vinifera Wine Cellars – Chairman's Award

1998 Vidal Blanc Ice Wine – Hunt Country Vineyards – Chairman's Award

1999 Optimus – Swedish Hill Winery – Chairman's Award

San Diego National Wine Competition

2000 Salmon Run Riesling - Dr. Konstantin Frank's Vinifera Wine Cellars – Best of Class

Long Beach Grand Cru

1998 Blanc de Noir – Goose Watch Winery – Sweepstakes Award

2001 Traminette – Goose Watch Winery – Chairman's Best of Class

Los Angeles County Fair

Diamond – Goose Watch Winery – Best of Class

2001 Riesling – Standing Stone Vineyards – Best of Class

New World International Wine Competition

1998 Blanc de Blancs – Glenora Wine Cellars – Best of Class

Bartlett Pear – Goose Watch Winery – Best of Class

2000 Delaware – Swedish Hill Winery – Best of Class

Svenska White – Swedish Hill – Best of Class

Pacific Rim International

Diamond - Goose Watch Winery – Best of Class

Riverside International Wine Competition

2000 Late Harvest Vignoles – Anthony Road Wine Company – Chairman's Award

2002 May – FIVS – The Fédération Internationale des Vins et Spiritueux (FIVS), based in Paris, creates a new organizational structure under the dynamic leadership of James Finkle of Canandaigua Wine Company.

2002 June - New York Rieslings take a step out in front at the San Francisco International Wine Competition 3 - Rieslings won "Double Gold":

2001 Salmon Run Riesling – Dr. Konstantin Frank's Vinifera Wine Cellars' Lamoreaux landing Wine cellars, Swedish Hill Vineyards 2001 Riesling; and 2 won Gold medals (Dr. Frank's 2001 Dry Riesling and 2001 Semi-Dry Riesling) In addition, four New York Rieslings won silver medals and three more won bronze medals.

2002 October - Senator Hillary Rodham Clinton revives New York Farm Day as a means of celebrating New York wine and foods in the Senate Caucus room, helping colleagues in DC understand the importance of agriculture to New York State's economy.

2003 With the acquisition of BRL Hardy of Australia, Constellation becomes the largest wine company in the world.

2003 Top awards at leading national and international wine competitions:

International Eastern
2002 Riesling –Ravines Wine Cellars – Best Dry Riesling

San Francisco International
Country Concord – Swedish Hill Winery – Best of Class

2003 August – The New York Wine & Food Classic – the leading competition for New York wines – is held for the first time outside New York State at Copia, the Center for American Food, Wine & the Arts, in Napa, California. The media attention from the event creates a whole new level of awareness for the quality of New York wines.

2004 Top awards at leading national and international wine competitions:

Jerry Mead's New World International
2001 Johannisberg Riesling Ice Wine – Pindar Vineyards – Best of Class

Los Angeles Wines of the World
2001 Merlot – Peconic Bay Winery – Best of Class
2003 Cayuga White – Swedish Hill Winery – Best of Class

Pacific Rim International
2003 Rkatsiteli – Dr. Konstantin Frank's Vinifera Wine Cellars – Best of Class
Bartlett Pear – Goose Watch Winery – Best of Class

Riverside International Wine Competition
Svenska Red – Swedish Hill Winery – Chairman's Award

San Francisco International Wine Competition

Heron Hill Winery Finger Lakes 2002 Riesling (Ingle Vineyard) was voted Best of Show White Wine

New York Wine Industry Quick Facts

Ranking: Third largest wine producer in the U.S.

Products: Table wines, sparkling wines, dessert wines, flavored wines

Volume: 40 million gallons (200 million liters, 250 million bottles) average annual production (Finger Lakes 85%, Hudson River 10%, Other 5 %)

Wineries: 203 Statewide (Finger Lakes- 106, Hudson River Region- 33, Long Island- 39, Lake Erie- 8, Other- 17)

Growth: 184 wineries established since Farm Winery Act of 1976

Average Crush: 70,000 tons of grapes from about 1,000 growers

Gross Sales: Over $1 Billion

Excise Taxes: Over $40 Million to Federal and State Governments

Employees: About 3,000 at wineries; about 12,000 in vineyards

Tourists: Over 3 million annually

New York's Viticultural Areas: *American Viticultural Areas - As established by the Federal Government.*
(From west to east)

Lake Erie: characterized by the temperature-moderating effects of Lake Erie, captured by the parallel Allegheny Plateau

Finger Lakes: characterized by the "lake effect" meso-climates along several of the glacier carved Finger Lakes, the "air drainage" of sloping hillsides, and glacial soils conducive to drainage.

Seneca Lake: Located within the greater Finger Lakes AVA, characterized by the "lake effect" meso-climates along Seneca lake, the "air drainage" of sloping hillsides, and glacial soils conducive to drainage.

Cayuga Lake: Located within the greater Finger Lakes AVA characterized by temperature-moderating effects created by increased "air drainage" due to steep valley slopes, and the release of heat stored in Cayuga Lake.

Hudson River Region: characterized by the temperature-moderating flow of the Hudson River and the northward channeling of maritime breezes from the Atlantic Ocean.

Long Island: characterized by the temperature moderating

effects of the bodies of water that surround Long Island: Atlantic Ocean, Great Peconic Bay and Long Island Sound; as well as the soil which promotes rapid drainage.

The Hamptons, Long Island: (the south fork of Long Island, located within the Long Island AVA), characterized by the temperature moderating effects of the Atlantic Ocean and the prevalent sandy-loam soil.

North Fork of Long Island: Located within the Long Island AVA, characterized by the long growing season and unique meso-climate produced by Long Island Sound and Great Peconic Bay.

New York State Viticultural Areas Chart

Summary (2004)

Area	Established	Square Miles	Acres of Vineyard	Bonded* Wineries	Growing Season	Unique Attributes
LAKE ERIE	11/21/1983	3,495	18,900	8	200	Plateau Lake Effect, Soil
FINGER LAKES	10/01/1982	4,000	10,400	88 (18)	190	Topography Lake Effect, Soil
SENECA LAKE	09/03/2003	320	3,760	44 (1)	190	Topography Lake Effect, Soil
CAYUGA LAKE	04/25/1988	N/A	460	22 (1)	200/205	Topography Lake Effect, Soil
HUDSON RIVER REGION	07/06/1982	3,500	500	24 (9)	180/196	River Valley, Soil
LONG ISLAND	07/16/2001	1,170	1,930	36 (3)	204	Peninsula Ocean Effect Soil
NORTH FORK OF LONG ISLAND	10/10/1986	159	1,830	33 (3)	233	Peninsula Ocean Effect Soil
THE HAMPTONS –LONG ISLAND	06/17/1985	213	100	3	215	Peninsula Ocean Effect Soil

Continued – see notes on next page

Notes:

"Viticultural Areas"—The Federal Government (US Department of the Treasury, Alcohol and Tobacco Tax and Trade Bureau) considers and approves "viticultural areas" similar to the European "appellations of origin", such as Burgundy, in France, which may be used on wine labels and in advertisements.

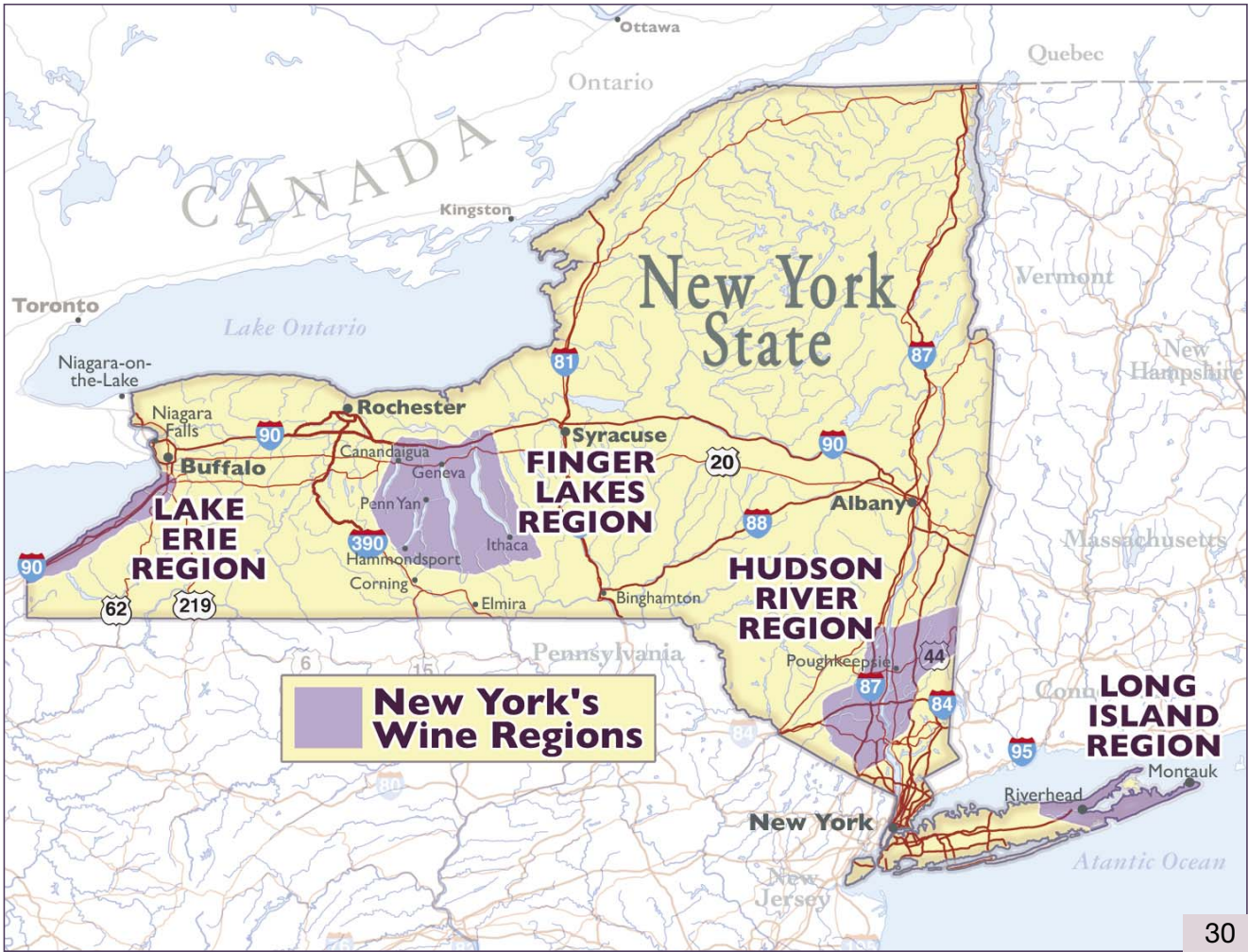
"Growing Season"—indicates the annual average of days between spring and fall freezes which could adversely affect the cultivation of grapes.

*Not all New York wineries are located within a designated viticultural area. The first number indicates the number of wineries physically located within the officially designated area. The number in parentheses indicates wineries generally categorized with this region, but not physically located within the officially designated region.

Lush vineyards along the shoreline of beautiful Seneca Lake in the Finger Lakes.

New York's Wine Regions Map

Within New York's four wine regions, there are now eight officially recognized viticultural areas similar to the "appellations of origin" (such as Burgundy) in France – Lake Erie; Finger Lakes; Seneca Lake; Cayuga Lake; Hudson River Region; Long Island; The Hamptons, Long Island; and North Fork of Long Island. Each region has distinct combinations of soil, topography, and climate that make the regional wines unique.



History and Profile of New York's Viticultural Areas

Long Island

Date established: July 16, 2001

Counties: Nassau and Suffolk

Square miles: 1,170

Acres of land: 749,146

Acres of vineyard: 1,830

Bonded wineries: 36 (2004)

Growing season: 204 days

From west to east on The North Fork: Schneider Vineyards, Le Clos Therese, Palmer Vineyards, Paumanok Vineyards, Jamesport Vineyards, Diliberto Winery, Martha Clara Vineyards, Macari Vineyards & Winery, Ltd., Laurel Lake Vineyards, Lieb Cellars, Sherwood House Vineyards, Manor Hill Vineyards, Waters Crest Winery Corp., Pellegrini Vineyards, Galluccio Family Wineries, Castello di Borghese Vineyard & Winery, Bidwell Vineyards, Peconic Bay Winery, Pugliese Vineyards, Bedell Cellars, Pindar Vineyards, The Lenz Winery, Raphael, Broadfields Wine Cellars, Osprey's Dominion Vineyards, Corey Creek Vineyards, Dzugas Vineyards, Old Fields Vineyards and Ternhaven Cellars.

From west to east on The Hamptons: Duck Walk Vineyards, Channing Daughters Winery, and Wölffer Estate.

Other wineries on Long Island - Banfi Vintners, Long Island Custom Wine LLC, and Loughlin Vineyards, Inc.– are often listed with Long Island wineries but are outside the boundaries of the approved viticultural areas known as the Hamptons and the North Fork.

Unique viticultural characteristics:

Items in quotes are taken from the Code of Federal Regulations, 27 CFR Part 9, describing the information included in the application for the Long Island AVA, which is turn was taken from the petition put forth by representatives of the region to establish the AVA.

• **Peninsula:** Long Island is relatively low profile - meaning little slope to the land, which in turn means that it is all highly influenced by the proximity to large bodies of water – the Atlantic Ocean to the south, Long Island Sound to the north,

and Great Peconic Bay in between the North Fork and The Hamptons.

"…the moderating influence of the Long Island viticultural area's surrounding water Is evident in the temperature data."

• **Ocean, Sound and Bay Effect:** "On average the Long Island viticultural area experiences 204 frost-free days during the growing season."

"On an average basis, the Long Island viticultural area has the lowest levels of precipitation of all surrounding areas with 42 inches annually."

• **Soil:** The soils of Long Island viticultural area are very low in organic matter, and contain few, if any, large mineral deposits or exposed rock formation.

"…the Long Island viticultural area is unique from its bordering regions in that it lacks any real undulations, rock outcrops or muck land areas."

• **History:** Grape growing and limited wine production dates back to the settlement of the area over 300 years ago, but most significant activity has occurred since 1979.

• **Label:** "Long Island" indicates that at least 85% of the grapes used in making the wine were grown in the designated area.

"LONG ISLAND"

In July 16, 2001 a viticultural region named "Long Island" was established to encompass the two sub-regions of The Hamptons and The North Fork. The area covers the counties of Nassau and Suffolk. It is surrounded by three very important and influential bodies of water – the Atlantic Ocean, Great Peconic Bay and Long Island Sound. The region contains 52 vineyards with approximately 2,000 acres of grapes and includes 29 bonded wineries.

"The record demonstrates that the soils of Long Island viticultural area are glacial in origin. In general, the soils of the viticultural area contain a greater percentage of sand and gravel and a lower percentage of silt, loam, and clay than in the soil associations and series found in bordering areas. Soils in the Long Island viticultural area lack any real percentage of natural limestone when compared to

surrounding regions. The soils of the viticultural area are more acidic and make an agricultural liming program indispensable to any vineyard operation. Because of this factor, the soils of the viticultural area are also slightly lower in natural fertility and water-holding capacity than neighboring areas. …this difference in soil types leads to a very unique and distinct "terroir" for the Long Island viticultural area—sandy loams will warm up faster, drain better, and allow deeper root penetration than soils in bordering areas, which contain greater amounts of silt, clay and rock."

"The soils of Long Island viticultural area are fairly uniform in that they are predominantly glacial till and glacial outwash in nature, are very low in organic matter, and contain few, if any large mineral deposits or exposed rock formation."

"One of the most distinctive features of the Long Island viticultural area is the vast quantity of sandy loam soil deposited during the Pleistocene Epoch of the Quaternary Period. This soil was deposited during the last four major glacial stages of this Epoch. Because of this, the area between surface soil and bedrock areas is several hundred feet."

Long Island is one of the earliest parts of New York State to be settled by Europeans. The eastern end of the region has retained much of its agricultural base through the centuries of development and remains a strong agricultural zone today. The emphasis on grapes versus other crops is a relatively new development, but the grape growing and wine producing industries have seen rapid growth since the most recent modern planting programs started in 1979.

The Hamptons, Long Island

Date established: June 17, 1985

Counties: Suffolk

Townships: Southampton and East Hampton

Square miles: 213.2

Acres of land: 136,448

Acres of vineyard: Approximately 100 (1997)

Bonded wineries: 3 (2003)

Growing season: 215 days

From west to east: Duck Walk Vineyards, Channing Daughters Winery, and Wölffer Estate.

Loughlin Vineyards, Inc. is often listed with Long Island wineries but is outside the boundaries of the approved viticultural area.

Unique viticultural characteristics:

• **Peninsula:** Surrounded on 3 sides by water—Atlantic Ocean to the south and east, and Peconic Bay to the north. Width from 1⁄2 to 10 miles.

• **Ocean Effect:** In winter the area receives warmed southwest winds from the Atlantic that have a buffering effect. The area is kept cooler in summer due to southern ocean breezes.

• **Soil:** Higher percentage of silt and loam than the North Fork, resulting in greater water holding capacity and less irrigation. Soils are deep, well suited to cultivation.

• **History:** Productive agricultural area for 300 years. In 1979 the area again came into focus with significant vinifera grape plantings.

• **Label:** "The Hamptons, Long Island" indicates that at least 85% of the grapes used in making the wine were grown in the designated area.

"THE HAMPTONS, LONG ISLAND"

A viticultural area known as "The Hamptons, Long Island" was established on the Southern Fork of Eastern Long Island in June of 1985. The area, unique for its topography and climatic patterns, encompasses 213 square miles of Suffolk County located within the townships of Southampton and East Hampton, and includes Gardiners Island.

The area has been a productive agricultural growing region since English settlers first arrived in 1640. Southampton was the first town to be settled, and by the late 18th century the profusion of towns bearing names with a common ending caused the area to become known as simply—"The Hamptons".

Winegrapes were introduced to the area in the early 18th century, when the wine and fruit from small, cultivated vineyards was used primarily for personal consumption. Winegrapes did not become a major focus of the area until 1979 with the installation of two vinifera grape plantings. Today there are nearly 100 acres of vinifera grapes in The Hamptons and the area is home to three wineries—Duck Walk Vineyards, Channing Daughters Winery and Wölffer Estate. Loughlin Vineyards, Inc. is located on the south shore of the island, but outside the official area designated as The Hamptons.

The 136,448 acres that comprise The Hamptons are located on a peninsula or "fork"—bounded on the south and east by the Atlantic Ocean and on the north by Peconic Bay. To the west is the remainder of Long Island where the north and south forks meet. The peninsula is 54 miles long—10 miles at its widest point and 1/2 mile at its narrowest.

The peninsula is largely responsible for the unique meso-climate of The Hamptons. In the fall, prevailing southwest winds are warmed by the Atlantic Ocean, which has accumulated heat during the summer and fall months. As these breezes pass over land, they buffer temperatures and ward off early frosts. In the spring, southern breezes coming from a cooled ocean pass over the warming land and create fog. The fog becomes trapped in the hills and rolling areas of The Hamptons, keeping average temperatures lower and preventing premature bud break.

The Hamptons growing season averages 215 days despite lower than average temperatures and sunshine in the spring. Fall temperatures are also lower than average, but abundant sunshine and normal participation during harvest are the norm rather than the exception.

The soils of The Hamptons are distinctly different from those of the surrounding areas and are well–suited to farming. The soils are rolling or hilly, deep, and well drained. The surface layer is a silt loam, with a fine sandy loam found at deeper levels. This silt and loam composition gives the soil excellent water holding capacity; so irrigation is seldom required.

The long growing season in The Hamptons makes it one of the best regions in New York for growing such classic European red wine varieties as Cabernet Sauvignon and Merlot. The majority of the region's acreage is planted with these varieties and such white wine varieties as Chardonnay, Gewürztraminer and Riesling.

North Fork Of Long Island

Date established: October 10, 1986

Counties: Suffolk

Square miles: 158.5

Acres of land: 101,440

Acres of vineyard: Approximately 1,830

Bonded wineries: 31 (2003)*

Growing season: 233 days

Townships: Riverhead, Shelter Island and Southold (including all mainland and island areas)

From west to east: Schneider Vineyards, Palmer Vineyards, Paumanok Vineyards, Jamesport Vineyards, Diliberto Winery, Martha Clara Vineyards, Macari Vineyards & Winery, Ltd., Shinn Estate Vineyards, Sherwood House Vineyards, Laurel Lake Vineyards, Comtesse Therésè, Lieb Family Cellars, Pellegrini Vineyards, Waters Crest Winery Corp., Galluccio Family Wineries, Manor Hill Vineyards, Castello di Borghese Vineyard & Winery, Bidwell Vineyards, Peconic Bay Winery, Pugliese Vineyards, Bedell Cellars, Pindar Vineyards, The Lenz Winery, Raphael, Osprey's Dominion Vineyards, The Tasting Room, Corey Creek Vineyards, Old Field Vineyards, Broadfields Wine Cellars, Ternhaven Cellars and Ackerly Pond Vinyards.

*Banfi Vintners, Long Island Meadery and Loughlin Vineyards, Inc. are often listed with North Fork wineries but are outside the boundaries of the approved viticultural area.

Unique viticultural characteristics:

• **Peninsula:** Surrounded on three sides by major bodies of water—Long Island Sound (north), Peconic Bay (south), Atlantic Ocean (east). Width from 1⁄2 to 6 miles.

• **Ocean Effect:** Breezes from surrounding waters moderate heat in summer and cold in winter; extend period of freeze–free temperatures; increase (desirable) winter precipitation

relative to summer; and create “humid continental” climate classification.

• **Soil:** Compared with South Fork (“The Hamptons”) viticultural area, contains less silt and loam (i.e. less water–holding capacity, which requires more irrigation); slightly higher in natural fertility.

• **History:** Grape growing and limited wine production dates back to the settlement of the area, but most significant activity has occurred in the past two decades.

• **Label:** “North Fork of Long Island” indicates that at least 85% of the grapes used in making the wine were grown in the designated area.

“NORTH FORK OF LONG ISLAND”

The viticultural area, “North Fork of Long Island”, was established in November 1986. Located in Suffolk County on eastern Long Island, the area consists of 158.5 square miles, which includes all of the land areas in the Townships of Riverhead, Shelter Island and Southold.

Grape growing and limited wine production on Long Island dates back to the late 1600’s. But only in recent years have there been commercial vineyards, most planted to vinifera on the North Fork. The total grape acreage on the North Fork is approximately 1830 acres, with more plantings scheduled for the future. The region is home to 31 wineries within the designated viticultural region and 2 outside the designated region.

The 101,440 acres of land on the North Fork, although attached to a larger island, comprise a peninsula. Its three boundaries are Long Island Sound on the north, Peconic Bay to the south, and the Atlantic Ocean to the east. The western boundary is the line separating Brookhaven and Riverhead Townships. The peninsula is 6 miles wide at its widest point and less than 5 miles wide at its narrowest point.

Drip irrigation system.

It is the sea surrounding the North Fork that makes it a distinct grape growing area. The surrounding waters render the viticultural area more temperate than many other interior places at the same latitude. The area is regularly fanned by a breeze coming off the surrounding waters. The air moderates the heat in the summer and the cold in the winter. These breezes also extend the periods of freeze–free temperatures,

reduce the range of daily and annual temperatures, and increase the amount of winter precipitation relative to summer precipitation. The growing season averages about 233 days at Riverhead.

The second distinctive characteristic of the North Fork is its soils. The North Fork generally has a smaller percentage of silt and loam than the soils found on the South Fork. As a result, they have less water–holding capacity than the South Fork and require more irrigation. The North Fork soils are also slightly higher in natural fertility than the soils of the South Fork.

The North Fork has within its boundaries distinct and unique grape growing conditions. Its vineyards are mainly planted with such classic European (vinifera) grape varieties such as Cabernet Franc, Cabernet Sauvignon, Chardonnay, Gewürztraminer, Merlot and Riesling. The well-drained soils, long growing season, and protection from extremely cold winters are helping the area gain international acclaim as a serious new wine region.

Hudson River Region

Date established: July 6, 1982

Square miles: 3,500

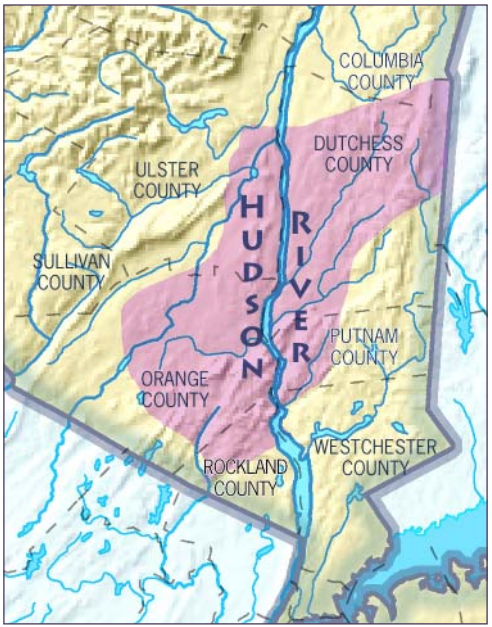
Acres of land: 1.6 million

Acres of vineyard: 500 (90% in Columbia and Ulster Counties)

Bonded wineries: 25 (2004)*

Growing season: 180–196 days

Counties: Columbia, Dutchess, Putnam; eastern portions of Ulster and Sullivan; nearly all of Orange; northern portions of Rockland and Westchester



On the West Side of the river— Adair Vineyards, Allied Wine Corporation, Baldwin Vineyards, Benmarl Winery & Vineyard, Brimstone Hill Vineyard, Brotherhood America's Oldest Winery, Ltd., Castle Spirits (Shloime's Slivovitz, Inc.), Demarest Hill Winery, El Paso Winery, Kedem (Royal Wine Corporation) Winery, Magnanini Winery, Inc., Palaia Vineyards, Pazdar Beverage Company, The Regent Champagne Cellars, Rivendell Winery, Stoutridge Vineyards, Whitecliff Vineyard & Winery, Windsor Vineyards, West Park Wine Cellars.

On the East Side of the river— Alison Wines & Vineyards, Cascade Mountain Vineyards, Clinton Vineyards, Millbrook Vineyards & Winery, Oak Summit Vineyard, and North Salem Vineyard.

*New York Harvest Cellars, Johnston's Winery, Inc., Elk Hill Winery, Larry's Vineyard & Farm Winery, Applewood Winery, Colebrook Country Wines, Warwick Valley Winery, Breezy Hill Orchard and Cider Mill, and Prospero Winery are often listed among Hudson River wineries. However, Larry's Vineyard & Farm Winery, Warwick Valley Winery and Prospero Winery are outside the boundaries of the designated viticultural area, and Johnston's Winery, Inc., Applewood Winery and Breezy Hill Orchard and Cider MIll do not produce wines from grapes.

Unique Viticultural Characteristics:

- **River Valley** Although the region gets some temperature moderating effect from the Hudson River, the steep palisades are more important as a conduit of maritime air and weather generated by the Atlantic Ocean.
- **Soil:** Glacial deposits of shale, slate, schist and limestone

form the soil throughout the region, which is in a geological division known as Taconic Province.

• **History:** Cradle of the State's wine industry. Considered to be the oldest wine-growing district in the United States; wine has been made here continuously for 300 years.

• **Label:** "Hudson River Region" indicates that at least 85% of the grapes used in making the wine were grown in the designated area.

"HUDSON RIVER REGION"

In July of 1982 a viticultural area known as the "Hudson River Region" was established in New York State. The region consists of approximately 3,500 square miles and encompasses all of Columbia, Dutchess, and Putnam Counties; the eastern portions of Ulster and Sullivan Counties; nearly all of Orange County; and the northern portions of Rockland and Westchester Counties.

The Hudson River Region is the oldest wine-growing district in the United States. Wine has been made here continuously for over 300 years, since French Huguenots first settled at New Paltz in 1677. The first commercial winery was established in 1827 on Croton Point, and the oldest continually active winery in the United States was established in 1839 at Washingtonville. Today its formal name is Brotherhood America's Oldest Winery, Ltd. Currently there are 500 acres of grapevines growing in the area (90% are in Columbia and Ulster Counties) and the region is home to 23 wineries within the defined district and several others either outside the district or which produce products other than wine made from grapes.


Goblet trellising system.

In all of the State's viticultural areas, the presence of large bodies of water is crucial in creating the ideal meso-climate for growing premium wine-grapes. And although this region gets some temperature moderating effects from the Hudson River, the steep palisaded valley is more important—as a conduit for maritime air and weather generated by the Atlantic Ocean. Not all the vineyards are near the river slopes, however, and some can be found scattered all the way to the Connecticut border. The warm ocean breezes extend the growing season

in the Hudson River Region to between 180–196 days.
The Hudson River Region has been referred to as one of the most complex geological regions in the world. The grape lands in the area are in a geological division known as the Taconic Province. Glacial deposits of shale, slate, schist and limestone form the soil throughout the region.

The mainstay wines of the region have been mostly white French–American varietals, particularly the popular Seyval Blanc. White vinifera varieties also grow well here, and in the past few years, plantings of these varieties have increased.

Finger Lakes Region

Date established: October 1, 1982

Counties: Livingston, Monroe, Wayne, Seneca, Ontario, Yates; portions of Tompkins, Schuyler, Steuben and Cayuga

Square miles: 4,000

Acres of land: Over 2.5 million

Acres of vineyard: Over 10,400 (1997)

Bonded wineries: 88 (2004)*

Casa Larga Vineyards in Monroe County and Eagle Crest Vineyards, Inc., and Deer Run Winery near Conesus Lake are within the designated region of the Finger Lakes but not associated with the larger Finger Lakes.

Generally listed by lake, the other Finger Lakes wineries are:

Canandaigua Lake—Arbor Hill Grapery, Canandaigua Wine Company, Finger Lakes Wine Center, Widmer's Wine Cellars, Inc.(also producing Manischewitz, Taylor, Gold Seal & Great Western brands).

Keuka Lake—Barrington Cellars, Bully Hill Vineyards, Inc., Chateau Frank, Chateau Renaissance Wine Cellars / Anawim Wine Cellars, Dr. Konstantin Frank's Vinifera Wine Cellars, Heron Hill Vineyards, Hunt Country Vineyards, Keuka Overlook Wine Cellars, Keuka Spring Vineyards, McGregor Vineyard Winery, Pleasant Valley Wine Company / Great Western Winery, Ravines Wine Cellars, Rooster Hill Vineyard, Yates Cellars Winery

Seneca Lake—Amberg Wine Cellars, Anthony Road Wine Company, Inc., Ashley Lynn Winery, Arcadian Estate Vineyards, Atwater Estate Vineyards, Belhurst Winery, Billsboro Winery, Bloomer Creek Vineyard, Cascata Winery at the Professor's Inn, Castel Grisch Estate Winery, Catharine Valley Winery, Caywood Vineyards, Chateau D'Esperance/NYStateWine.com, Chateau Lafayette Reneau, Domes Winery, Finger Lakes Champagne House, Four Chimneys Farm Winery, Fox Run Vineyards, Inc., Fulkerson Winery, Glenora Wine Cellars, Inc., Hazlitt 1852 Vineyards, Hermann J. Wiemer Vineyard, Inc., Hickory Hollow/Highland Cellars, Lakewood Vineyards, Inc., Lamoreaux Landing Wine Cellars, Leidenfrost Vineyards, Logan Ridge Winer Cellars, Miles Wine Cellars, Nagy's New Land Vineyard, Poplar Ridge Vineyards, Prejean Winery,

Rasta Ranch Vineyards, Red Newt Cellars, Rock Stream Vineyards, Seneca Harbor Wine Center, Seneca Shore Wine Cellars, Shalestone Vineyards LLC, Silver Thread Vineyard, Standing Stone Vineyards, Tickle Hill Winery, Torrey Ridge Winery, Villa Bellangelo, Wagner Winery and Woodbury Vineyards

Cayuga Lake—Americana Vineyards Winery, Buttonwood Grove Winery, Cayuga Ridge Estate Winery, Chateau Dusseau, CJS Vineyards, Frontenac Point Vineyard, Glenhaven Farm, Goose Watch Winery, Hosmer Winery, King Ferry Winery, Knapp Vineyards, Lakeshore Winery, Long Point Winery, Lucas Vineyards, Montezuma Winery, Sheldrake Point Vineyards, Six Mile Creek Vineyard, Swedish Hill Vineyard and Thirsty Owl Wine Company.

*Adirondack Cellars, Beak & Skiff Apple Farm, Behling's Spookhill Farm Winery, Bellwether Hard Cider, Black Bear Pond Winery, Charlotte's Vineyard, Earle Estates Meadery, Eve's Cidery, Fly Creek Cider Mill & Orchard, Giancarelli Brothers Winery, LLC, Martin's Honey Farm and Meadery, North Country Apple Winery, Onondaga Winery, Inc., Stone Age Winery, The Thousand Islands Winery and Thorpe Vineyards, Inc., are often grouped with Finger Lakes wineries for convenience, but they are not within the boundaries of the designated viticultural area or do not produce wines from grapes.

Growing season: 190 days

Unique viticultural characteristics:

- **Topography:** Sloping hillsides result in increased "air drainage".
- **Lake Effect:** Temperature control of the Finger Lakes creates less severe extremes in winter and summer, and buffers against spring and fall frosts.
- **Soil:** Shallow layer of topsoil on sloping shale beds.
- **History:** The center of the New York wine industry since the Civil War. Grape growing and wine production date back to the 1820's. First vinifera (European) plantings in the East were in this region.
- **Label:** "Finger Lakes" indicates that at least 85% of the grapes used in making the wine were grown in the designated area.

"FINGER LAKES"

The "Finger Lakes" viticultural area was established in October of 1982. The area includes over 4,000 square miles in Livingston, Monroe, Wayne, Seneca, Ontario and Yates Counties; and portions of Tompkins, Schuyler, Steuben and Cayuga Counties. The Finger Lakes is the second largest grape-growing area in the State, with 10,000 acres of labrusca (native), French-American, and vinifera (European) grapes (95 percent of the grapes are grown in only six counties).

The general Finger Lakes region is home to over 90 wineries - most within the officially designated region, but several outside as well.

The Finger Lakes has been the center of the New York wine industry since the Civil War, but grape growing and wine production date back to the 1820's when a local minister began producing sacramental wine for his parishioners. Today, about 90% of the State's wine is made here, and the area is still home to New York's largest wineries. The Finger Lakes was also the birthplace of the "vinifera revolution" more than 30 years ago. It was in the vineyards surrounding Keuka Lake that Charles Fournier and Dr. Konstantin Frank collaborated on their first vinifera vintages, and proved to skeptics that old-world grapes could indeed thrive in the East and produce world-class wines. Since then, the vinifera revolution has spread not only to New York's other wine regions, but also throughout the eastern United States.

Ice Age glaciers carved the narrow, deep Finger Lakes, creating ideal conditions for growing grapes. The moving ice masses deposited a shallow layer of topsoil on sloping shale beds above the lakes, providing drainage crucial for grape growing.

The glaciers also provided the vineyards with protection from the extremes in weather. The deep lakes retain their summer warmth in the winter and their winter cold in the spring. On cold fall nights, the steep slopes of the shorelines offer no perch for cold, dense air to settle. Instead, it slides down to the lake, which is still holding its summer warmth. The lake heats the cold air, causing it to rise and allow more cold air to drain from the hillside. In the spring the process is reversed and the cold water delays budding until the danger of frost has passed. The growing season in the Finger Lakes

averages about 190 days, and in recent years has often exceeded 200 days.

Of all New York's viticultural areas, the Finger Lakes is probably the most diverse in terms of its wine production, producing all types of wines from all types of grapes. The area is recognized by many wine publications as having the most important vineyards for wine production in the eastern United States.

Seneca Lake

Date established: September 3, 2003

Counties: Portions of Schuyler, Yates, Ontario and Seneca

Square miles: 320

Acres of land: 204,600

Acres of vineyard: 3,756

Bonded Wineries: 44 (2004)

Bonded wineries: West side of the lake from north to south – Amberg Wine Cellars, Belhurst Winery, Billsboro Winery, Fox Run Vineyards, Inc., Seneca Shore Wine Cellars, Anthony Road Wine Company, Inc., Prejean Winery, Torrey Ridge Winery and Earle Estates Meadery, Miles Wine Cellars, Four Chimneys Farm Winery, Hermann J. Wiemer Vineyard, Inc., Woodbury Vineyards, Ashley Lynn Winery, Villa Bellangelo, Hickory Hollow/Highland Cellars, Glenora Wine Cellars, Inc., Fulkerson Winery, Rock Stream Vineyards, Arcadian Estate Vineyards, Lakewood Vineyards, Inc., Cascata Winery at the Professor's Place, Castel Grisch Estate Winery, Chateau D'Esperance / NYStateWine.com, and Seneca Harbor Wine Center.

East Side of the Lake from north to south - Nagy's New Land Vineyard, Lamoreaux Landing Wine Cellars, Wagner Winery, Caywood Vineyards, Shalestone Vineyards LLC, Silver Thread Vineyard, Poplar Ridge Vineyards, Standing Stone Vineyards, Finger Lakes Champagne House, Rasta Ranch Vineyards, Tickle Hill Winery, Logan Ridge Winery, Bloomer Creek Vineyard, Hazlitt 1852 Vineyards, Red Newt Cellars, Leidenfrost Vineyards, Chateau Lafayette Reneau, Atwater Estate Vineyards, Catherine Valley Winery, Domes Winery.


Hermann J. Wiemer

Earle Estates Meadery is often listed with Seneca Lake Wineries but they do not produce wine from grapes.

Growing season: 190 days

Unique viticultural characteristics:

• **Topography:** The valley that Seneca Lake rests in and its lake bed are key factors in the topography. The sloping hillsides also promote air drainage.

• **Lake Effect:** This is the deepest of the Finger Lakes and it covers a total area of 67.7 square miles. The lake bed extends below sea level (in some places in excess of 600 feet deep). This makes the body of water very stable, maintaining a year-round temperature of 39.5 degrees Fahrenheit at 150 feet.

• **Soil:** The bedrock underlying soils around Seneca Lake are primarily shale, with southern regions of the lake being a mixture of sandstone and shale. Soil depth and slope of the hillsides can vary dramatically.

• **History:** The heat storing capacity of Seneca Lake has made it one of the prime vineyard sites in New York State. The first winery was built in 1866, and in 2004 there are 43 wineries located within the official AVA. The move toward Vinifera varieties has spurred on much of this growth.

• **Label:** "Seneca Lake" indicates that at least 85% of the grapes used in making the wine were grown in the designated area.

"SENECA LAKE"

In September 2003 a viticultural region named "Seneca Lake" was established within the boundaries of the approved Finger Lakes region. The area is located within the counties of Schuyler, Yates, Ontario and Seneca. It surrounds and is adjacent to Seneca Lake, which lies between Keuka Lake

and Cayuga Lake. The region contains about 35 vineyards with approximately 3,756 acres of grapes and includes 43 bonded wineries.

The lake is glacially formed and moderates temperatures year round, keeping vines cooler in the spring (to avoid late frosts) and warmer in the summer (to avoid early frost). As the deepest of the Finger Lakes, Seneca can offer this protection to a vast area of land and through very difficult growing conditions. Soil conditions and sloping hillsides help the water and air drain properly from vineyards. The heat storing capacity of the lake extends the growing season in the vicinity by several days, making it possible to grow grapes in a region that might normally be too cold.

There are many waterfalls in the area that allow interested parties to view the geology of the area – revealing the shale bedrock – which can also lend mineral characteristics to some of the wines.

The first winery on Seneca Lake was opened in 1866. In 2004 there are 43 wineries open around the lake.

Cayuga Lake

Date established: April 25, 1988

Counties: Seneca, Tompkins, Cayuga

Number of vineyards: 18

Bonded wineries: 22 (2004)*

From north to south on the west side of the lake: Montezuma Winery, Swedish Hill Vineyard, Lakeshore Winery, Knapp Vineyards Winery, Goose Watch Winery, Buttonwood Grove Winery, Cayuga Ridge Estate Winery, Thirsty Owl Wine Company, Hosmer Winery, Sheldrake Point Vineyards, Lucas Vineyards, Americana Vineyards Winery, Frontenac Point Vineyard.

On the east side of the lake: CJS Vineyards, Long Point Winery, King Ferry Winery, and Chateau Dusseau

* Glenhaven Farm and Six Mile Creek Vineyard are often listed with Cayuga Lake wineries but are not located within the boundaries of the approved viticultural area. Bellwether Hard Cider and Eve's Cidery are listed with Cayuga wineries, however they do not make wine from grapes.

Growing season: 200-205 days

Unique viticultural characteristics:

- **Topography:** Sloping hillsides result in increased

"air drainage".

- **Lake Effect:** Moderating effect of Cayuga Lake creates less severe temperature extremes in winter and summer, and buffers against spring and fall frosts.
- **Soil:** Shallow layer of topsoil on sloping shale beds.
- **History:** Cayuga Lake is one of two major land formations in the Finger Lakes that resulted from glacial activity in the Pleistocene epoch. It is separated from the second major basin (Seneca Lake) by both topography and soil type. Growers and vintners became interested in Cayuga Lake in the late 1970's when it was found that Cayuga's lower altitude and its depth created a mesoclimate well suited for growing vinifera varieties. The lake's wineries have been established since 1980.

- **Label:** "Cayuga Lake" indicates that at least 85% of the grapes used in making the wine were grown in the designated area.

"CAYUGA LAKE"

In April 1988 a viticultural region named "Cayuga Lake" was established within the boundaries of the approved Finger Lakes region. The area is located within the counties of Seneca, Tompkins, and Cayuga. It surrounds and is adjacent to Cayuga Lake, which lies between Seneca Lake and Owasco Lake. The region contains 18 vineyards with approximately 460 acres of grapes and includes 16 bonded wineries.

Like the rest of the Finger Lakes, the bedrock within the Cayuga Lake Region is predominantly shale and the meso-climate is affected by both Cayuga Lake and its adjacent hills. What distinguishes the region from the rest of the Finger Lakes is its altitude. The maximum elevation within the viticultural area is no more than 800 feet above the surface of Cayuga Lake. Altitudes to the east, west, and south of the area are between 1,000–2,000 feet. This lower altitude, combined with the depth of Cayuga Lake, makes the growing season 10–15 days longer than in the rest of the Finger Lakes region and particularly well suited for the growing of vinifera varieties.

Lake Erie

Date established: November 21, 1983

Counties: Erie, Cattaraugus, Chautauqua (plus parts of Pennsylvania and Ohio bordering Lake Erie)

Square miles: 3,495 (in New York State)

Acres of land: 25,000

Acres of vineyard: 18,900 (1997)

Bonded wineries: 8 (2004)*

Growing season: 200 days

From west to east: Blueberry Sky Farm Winery, Schloss Doepken Winery, Johnson Estate Wines, Mogen David Wine Corporation, Vetter Vineyards Winery, Woodbury Vineyards, Roberian Vineyards, Merritt Estate Winery and Willow Creek Winery.

*Mayer Brothers Apple Products and Tan Childs Winery are located outside the designated viticultural area.

Unique viticultural characteristics:

• **Plateau:** Running parallel to Lake Erie, the high elevation of the Allegheny Plateau traps the temperature moderating effects of the Great Lake in a 3–mile wide band.

• **Lake Effect:** Lake Erie creates a "lacustrine climate" buffering against late spring and early fall frosts; reducing convectional thunderstorms, total rainfall and fog.

• **Soil:** Gravely loam predominant.

• **History:** Grape growing and wine production dates back to early and mid 1800's. In the past two decades a significant number of vineyard sites have been cleared and replanted to French– American and vinifera (European) wine grape varieties.

• **Label:** "Lake Erie" indicates that at least 85% of the grapes used in making the wine were grown in the designated area.

"LAKE ERIE"

The "Lake Erie" viticultural area was established in November 1983. The area encompasses 25,000 acres of land in portions of three states—New York, Pennsylvania and Ohio. In New York the 3,495 square miles includes Erie, Cattaraugus, and Chautauqua counties. There are 19,000 acres of vineyard in New York's portion of the Lake Erie region. Although winegrape varieties have been introduced in recent years, 90% of Lake Erie's vineyard plantings are of the native Concord variety. As a result, the Lake Erie region is the

State's largest grape juice producer and processor.

The Lake Erie viticultural area has a 150–year history of grape growing and winemaking. In 1818 a Baptist deacon, Elijah Fay, planted the first vineyard in western New York with wild vines he had brought from New England. Finding the wild grapes harsh and unsuitable for dry wine, Fay eventually replaced them with Isabella and Catawba. In 1859, almost thirty years after the Deacon made his first wine, his son opened the first of several wineries in the region.

In the early 1800's the temperance movement was born in New York's Saratoga County, and by 1835 the society was advocating total abstinence from alcohol. Chautauqua County, where the Fays lived, was one of the centers of the temperance crusade. Prohibitionists urged the region's farmers to grow grapes but to use them for table grapes instead of wine. Thus, the Concord grape variety was introduced to the region. It was this combination of the "Dry" influence, and the later development of the area grape juice industry by ardent Prohibitionists Charles and Thomas Welch, that caused the Lake Erie district to become a juice and fresh fruit region instead of a major wine center.

Of all the Great Lakes, Lake Erie provides the best protection against extremes in weather. Lake Erie is lower in latitude and downwind from the other Great Lakes. As a result, the great stretches of Lakes Superior and Huron considerably moderate arctic air masses moving across these lakes to

Lake Erie. This effect is then locally enhanced. In spring the cold water of the lake serves to cool the climate against early warm spells, retarding premature bud growth. In summer, the water temperature of Lake Erie is warmer than any other Great Lake. These higher temperatures are carried over into fall, warming the air and warding off early fall frosts. The lake also serves to decrease precipitation in the region during the summer, largely by reducing the occurrence of thunderstorms and devastating hail. On average, the growing season of the region is slightly over 200 days.

Elevation and physical features also play an important role in limiting the area influenced by lake effect. The high elevation Allegheny Plateau runs parallel to Lake Erie, and traps the moderating effects of the lake, limiting the greatest influence to a three–mile–wide band. Within this narrow band, soils of gravelly loam predominate.

Over half of New York's total vineyard acreage is in the Lake Erie region. While the vast majority of the grapes are still Concords, some vineyards are planted to varieties used specifically for winemaking. Labrusca (native) and French–American varietals account for the greater part of the wine grapes used by the area wineries, but an increasing number of vinifera (European) plantings, primarily Chardonnay and Riesling, are also appearing.

New York's Grape Varieties

Major Grape Varieties Grown in New York State

Please Note: The New York Wine industry is dynamic – constantly growing and changing – which requires that The New York Wine Course & Reference be updated as often as practical. These pages covering the varieties of grapes grown in New York State were written many years ago and will be updated as often as possible, but they are not intended to be an exhaustive list of types of products grown and produced.

Niagara Variety. This and similar illustrations were taken from "The Grapes of New York", a book produced in 1907 by the New York Agricultural Experiment Station in Geneva, N.Y.

It is especially important to note that in the years that have passed since the Wine Course & Reference was first published the prognosis for the survival and use of many grape varieties in New York State has changed drastically. For example, red hybrids had been on the down swing at that time while today, with the increased interest in red wine and health, they are often sought after. Plantings of viniferas such as Riesling have also increased due to the excellent reputation New York has earned for these wines. It should also be noted that some small New York wineries are experimenting with and producing new types of wines from labrusca varietals with stunning results, so there could in fact be a renaissance for these grapes in the future for New York. We have updated our acreage figures from a Vineyard survey conducted by the New York Agricultural Statistics Survey taken in 2001. This survey, as all surveys, depends upon the return rate of survey recipients, and for this reason we feel that the acreage numbers shown here are conservative.

INTRODUCTION

New York's unique role as one of America's oldest wine regions and a pioneer in winegrowing has provided a diverse legacy in its vineyards. Native varieties, French-American hybrids (also known as hybrid direct producers) and vinifera varieties all play a role in producing an array of wines more extensive than that of any other state in the U.S. In discussing the wine varieties of New York State, three distinct categories must be considered: Native American grape species; the classic, European vinifera species; and hybrids of the previous two categories.

Native Varieties

Often labeled "labrusca" varieties, these native producers are more often hybrids of labrusca varieties and another species. Forming the backbone of the early New York wine industry, the native varieties came into use when it became apparent that European vines lacked the disease resistance and winter hardiness to survive in New York's climate. Several native species found in the United States provided the raw material for the early native hybrids. Vitis labrusca, and more disease-and pest-resistant species such as V. riparia, V. rupestris, B. bourquiniana and V. aestivalis, were hybridized with V. vinifera to produce the native hybrids in the 1800's. Later, these species were used in the French hybridization program to create resistant varieties following the phylloxera and grape disease epidemics that struck France in the mid-1800's. Of

the native varieties used in commercial winemaking today, only the Concord is believed to have a 100% V. labrusca background. Niagara, Catawba and Diamond are believed to be predominantly labrusca with a small amount of V. vinifera. Delaware is a hybrid of bourquiniana-vinifera-labrusca, Elvira is a labrusca-riparia cross, and Dutchess is a result of a vinifera-labrusca-bourquiniana-aestivalis cross. With the exception of Dutchess, and a handful of others, these native varieties exhibit the "foxy" or pungent grapey quality typical of any variety with a predominantly labrusca background.

Hybrid Varieties

Most of the hybrids used in New York today were developed by French hybridizers who did the bulk of their work from 1880 to 1950. Attempting to develop new wine grape varieties by crossing vinifera varieties with the hardier, disease- and pest-resistant American species, these horticulturists made thousands of crosses and created hundreds of hybrids, of which a handful eventually became viable commercial producers. While hybrid varieties, or HDP's, were important in the first half of this century, improved rootstocks, insecticides and fungicides permitted the return of vinifera varieties to most vineyards. Simultaneously, a drive to improve the overall quality of French wine promoted the elimination of what were considered vines of marginal quality, hybrid and vinifera alike. A parallel phenomenon has occurred in New York State, with much acreage of native and hybrid varieties being abandoned in favor of higher quality hybrids or vinifera varieties. While certain hybrids, such as Seyval and Vignoles, continue to be popular and make excellent wine, other hybrids, notably many of the reds, are steadily declining in acreage. Still, the hybrids currently represent the majority of the acreage devoted to dry table wines in the State, and will continue to play a key role for some time to come.

Seven hybridizers developed the varieties most commonly used in New York today. Francois Baco (1865-1947) created 7,000 hybrids, only two of which were to become commercially important. Baco Noir or Baco #1 was one of these. Eugene Kuhlmann (1858-1932) of Alsace developed Marechal Foch and Leon Millot. A civil engineer by profession, J.F. Ravat bred vines between 1929 - 1935, and his name has been associated with one particular variety, Ravat 51 or Vignoles. For years, the name Ravat

was synonymous with Vignoles and used as a varietal name until the federal government put a stop to that in 1988. Albert Seibel was one of the most prolific and successful hybridizers, producing, among others, DeChaunac, Chelois, Chancellor, Cascade, Rosette, Rougeon and Aurora. He was active from 1886 until his death in 1936. Bertille Seyve, who married the daughter of another famous hybridizer, Villard, used the name Seyve-Villard for his hybrids. His hybrid number 5276 became the Seyval Blanc.

Vinifera Varieties

Vitis vinifera is the native species of Europe, originating in an area south of the Black Sea. From there it spread to Egypt, Greece, Italy, Spain and France. Through cultivation and selection, those varieties that established themselves were recognized and named by wine growers. By the time vineyard planting in America began in earnest, most of the major grape varieties commercially available today had been named. Early attempts to establish vinifera vineyards failed in the eastern part of the U.S., although many attempts were made. The first successful commercial plantings of vinifera grapes were made by Dr. Konstantin Frank at Gold Seal Vineyards in the 1950's, although U.P. Hedrick had success with certain vinifera varieties at the New York Agricultural Experiment Station in the 1930's and 1940's. Since 1985, the New York Wine & Grape Foundation has sponsored well over $100,000 of research at Cornell aimed at vinifera production on a statewide basis.

Cabernet Sauvignon on the vine.

Although hundreds of vinifera wine grape varieties are planted throughout the world, accounting for over 99% of all wine produced, only the finest and most adaptable of these have been transported from Europe and planted worldwide. Cabernet Sauvignon, Merlot, Pinot Noir, Chardonnay, Riesling, and Sauvignon Blanc are among the most widely accepted varieties in the world, and have all found homes in New York State. These varieties have created the most interest among winegrowers and consumers alike, and have contributed to more new acreage of vineyards in the past decade than native and hybrid varieties combined. On Long Island, New York's newest and warmest growing region, vinifera varieties account for nearly 100% of the nearly 2000 acres of vineyards present.

MAJOR NATIVE AMERICAN GRAPE VARIETIES

LINKS

WHITE AND PINK VARIETIES

Catawba Niagara Dutchess
Delaware Elvira Other

RED VARIETIES

Concord
Other

WHITE AND PINK VARIETIES

Variety:
CATAWBA

Origin: Labrusca X Vinifera, 1802, North Carolina

New York Introduction: Introduced to New York, possibly from the Ohio River Valley, in the Mid–1800's

Viticultural Characteristics: Winter hardy and vigorous, Catawba produces moderate yields of reddish–pink grapes. Vines susceptible to downy mildew and phylloxera. Late ripening, grapes can be low in sugar and high in acid if vines are not grown on favorable sites.

Acreage:
Hudson Valley: Less than 10 acres
Finger Lakes: 1,188 acres
Lake Erie: 309 acres
Long Island: Less than 10 acres
Total New York: 1,570 acres (acreage includes Catawba used for juice and table grapes.)

Vinification: Often hot–pressed or given limited skin contact to yield pink juice, Catawba was used in the 1970's to create "pop" wines. Today it is used to produce wine coolers and bulk process "champagne." In fact, Catawba has been the workhorse grape in the New York sparkling wine industry for over a century. It is believed that a Catawba–based sparkling wine from Great Western won medals in European wine competitions in the late 19th century.

Taste and Aroma Characteristics: "Foxy", but not pungently so. Produces clean crisp wines. Early harvesting diminishes the grapiness of aroma.

Future of Variety in New York State: Good as long as there is a solid demand for this type of sparkling wine, and a revival by Bully Hill Vineyards and other wineries. Increasingly, Catawba is used in grape juice and fruit juice blends.

Variety: DELAWARE

Origin: Bourquiniana-vinifera-labrusca hybrid, P. H. Provost, New Jersey, 1850

New York Introduction: Probably sometime in the 1860's.

Viticultural Characteristics: Winter hardy, vigorous, but susceptible to fungus diseases and phylloxera, Delaware produces moderate yields of red grapes in small, compact clusters. Sugars are higher and acidity is lower than Catawba.

Acreage:
Hudson Valley: Less than 10 acres
Finger Lakes: 178 acres
Lake Erie: 54 acres
Long Island: Less than 10 acres
Total New York: 242 acres (includes acreage for table grapes.)

Vinification: Cold tank fermentation. Variety is prized for its use in sparkling wine, therefore hot–pressing and skin contact are avoided.

Taste and Aroma Characteristics: Less pungent and foxy than Catawba, Delaware can make a pleasant, fruity table wine. Wines still have a pronounced labrusca character; from a consumer acceptance stand–point this variety is best used in production of sparkling wines where the foxy nature of the grape is not as apparent.

Future of Variety in New York State: Good, still a favorite for upstate sparkling wine production.

Variety: NIAGARA

Origin: Concord X Cassady, Hoag and Park in New York, 1872

New York Introduction: Almost immediately introduced in Niagara County after its discovery.

Viticultural Characteristics: Very vigorous, winter hardy, and productive, Niagara is moderately susceptible to major grape diseases. Produces large, compact clusters of white grapes that are both low in acidity and sugar.

Acreage:
Hudson Valley: Less than 10 acres
Finger Lakes: 820 acres
Lake Erie & Niagara County: 2,511 acres
Long Island: Less than 10 acres

Total New York: 3,352 acres (includes acreage used in juice and table grape production.)

Vinification: Cold fermentation in stainless steel. Finished with appreciable amounts of residual sugar in most cases.

Taste and Aroma Characteristics: The most pungent and foxiest of the commercially grown native varieties, the resulting wines appeal to ardent fans of this grapey flavor.

Future of Variety in New York State: Good. Has a bright future in white grape juice production and the table grape market as supplements to a large wine audience.

Variety:
ELVIRA

Origin: Labrusca X Vulpina, J. Rommel, Missouri in 1870

New York Introduction: Probably introduced in the Finger Lakes region in the late 1800's.

Viticultural Characteristics: Winter hardy with normal vigor, Elvira produces moderate yields of small, tight clusters of white grapes. While disease resistant, the tight clusters are subject to cracking and rot at harvest time. Grapes are low in sugar with moderate acidity.

Acreage:
Hudson Valley: Less than 10 acres
Finger Lakes: 431 acres
Lake Erie: 247 acres
Long Island: Less than 10 acres
Total New York: 679 acres

Vinification: Standard cool fermentation. Wine is almost always used for blending – not as a varietal wine.

Taste and Aroma Characteristics: Undistinguished labrusca aroma and flavor with a clean crisp finish.

Future of Variety in New York State: Good. This is a particularly promising variety for value-priced sparkling wines.

Variety:
DUTCHESS

Origin: A vinifera- labrusca-bourquiniana-aestivalis hybrid developed by Andrew Caywood in Marlboro, NY in 1868.

New York Introduction: Shortly after its discovery in the Hudson Valley.

Viticultural Characteristics: Vigorous, productive vine with low winter hardiness and disease resistance, Dutchess produces small, compact clusters of white grapes. Late–ripening, it is suited to only the most favorable sites in upstate New York.

Acreage:
Hudson Valley: Less than 10 acres
Finger Lakes: Less than 10 acres
Lake Erie: Less than 10 acres
Long Island: Less than 10 acres
Total New York: 27 acres

Vinification: Cool fermentation. No oak aging employed. Best when finished with 1% or more residual sugar.

Taste and Aroma Characteristics: Makes a clean, neutral white wine without foxy aroma or flavor.

Future of Variety in New York State: Poor. Given its low tolerance to cold temperatures and disease, it is likely that the variety will eventually be replaced with hardier varieties more suited to making high quality wine.

OTHER WHITE NATIVE VARIETIES

Variety:
MOORE'S DIAMOND

A labrusca–vinifera hybrid developed by J. Moore in New York in 1870. Diamond, as it is often called, resembles Niagara in the quality and taste of its fruit while the vine characteristics resemble those of Concord. At one time used in the production of varietal wine, this variety is declining in use. Between 1996 and 2001 reported acreage has increased from 30 to 47 in New York, mainly in the Finger Lakes region.

RED VARIETIES

Variety:
CONCORD

Origin: Developed by Ephraim Bull in Concord, Mass. in 1849.

New York Introduction: Uncertain

Viticultural Characteristics: Winter hardy, disease resistant and productive, Concord ripens in late mid-season, producing medium clusters of blue-black grapes. Sugar level in grapes tends to be low and acidity high.

Acreage:
Hudson Valley: 239 acres
Finger Lakes: 2,703 acres
Lake Erie: 17,624 acres
Long Island: Less than 10 acres

Total New York: 20,584 acres (includes acreage devoted to juice and table grapes.)

Vinification: Hot-pressed to extract color for sweet, red wines or pressed without skin contact to produce juice for sparkling wine production. Always finished with more than 1% residual sugar, often as much as 10% for sweet dessert wines.

Taste and Aroma Characteristics: Very grapey, identical to the flavors of Concord grape jelly.

Future of Variety in New York State: Good. The vast majority of Concords are used for grape juice and other unfermented products. Continues to be used in the production of some value-priced sparkling wine, and dessert wines, with some small wineries making stunningly good table wines. Future as table and juice grape seems especially bright.

OTHER RED NATIVE VARIETIES

Variety:
FREDONIA

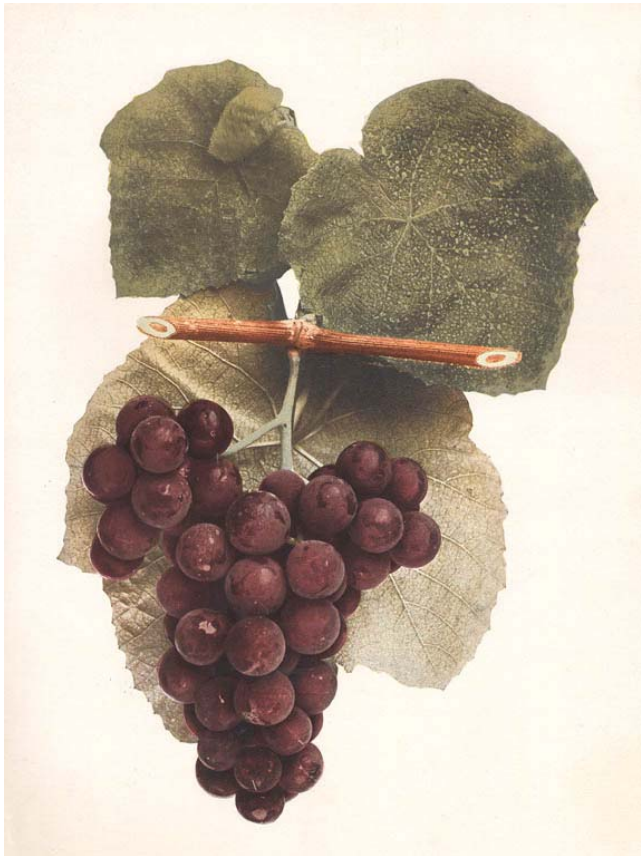
Developed in Geneva, New York as a cross of Champion and Lucile in 1927. Variety is similar to Concord in appearance, but ripens two weeks earlier and may exceed the yields of Concord with proper management. Fruit is susceptible to downy mildew and lacks the intensity of Concord's foxy aroma and flavor. As of 2001, New York had a total of 32 acres of Fredonia, mostly planted in the Lake Erie region. It is now primarily used for table grapes and in juice production.

Variety:
IVES

A labrusca variety developed by H. Ives of Ohio in 1844, Ives is a winter hardy vine of weak vigor and productivity, unless grafted to a vigorous rootstock or grown in a favorable site. Small, loose clusters of black grapes ripen in mid-season and are utilized in the same manner as Concord. There are about 56 acres of Ives planted in New York State, most of it in the Finger Lakes region.

Variety:
ISABELLA

One of the first successful native wine grapes, Isabella was discovered in South Carolina prior to 1816. This variety was once more widely planted, but had been largely replaced by other varieties. From 1996 to 2001, however, acreage increased form 27 acres to 39, almost all likely to be found in the Finger Lakes region.



Agwam variety, as illustrated in *The Grapes of New York.* Cultivated around 1860 – no longer commercially grown.

MAJOR FRENCH–AMERICAN AND NEW YORK GRAPE VARIETIES

WHITE WINE GRAPES

RED WINE GRAPES

NEW YORK VARIETIES

(Developed at the New York State Agricultural Experiment Station)

WHITE WINE GRAPES

Variety:

AURORA (Seibel 5279)

Origin: Developed in France early in this century by the grape breeder Albert Seibel, it is a hybrid of Vitis lincecumii, Vitis rupestris and Vitis vinifera.

New York Introduction: Introduced to commercial winegrowers by Philip Wagner of Maryland who imported some of the first French-American hybrid grapes to this country.

Viticultural Characteristics: Moderately hardy, vigorous vine with medium to large compact clusters. Early budding and early ripening, vine and grapes are susceptible to black rot and powdery mildew. Can produce excellent yields and can be harvested early with moderate acid levels.

Acreage:
Hudson Valley: Less than 10 acres
Finger Lakes: 724 acres
Lake Erie: Less than 10 acres
Long Island: 0 acres
Total New York: 738 acres

Vinification: Cold fermentation in stainless steel. Normally finished with at least 1% residual sugar. No barrel aging

employed. Wine released early in the year after harvest; does not benefit from aging.

Characteristics: Aroma and flavor characteristics are very simple; wines vary from neutral to fruity. At its very best, Aurora can have a fresh fruity aroma reminiscent of melons with good mouth-feel and a clean crisp finish. It is frequently used to make simple jug wines.

Future of Variety in New York State: Poor. Although once the most widely planted white hybrid grape in New York State, it lacks the character of many other hybrids that make superior varietal wine. Due to the acreage planted to this variety, it seems its role will continue, but mostly to produce blended wines.

Variety:
SEYVAL BLANC (Seyve-Villard 5-276)

Origin: A hybrid developed by the firm Seyve-Villard started by Bertille Seyve and Victor Villard in 1919 in France. A hybrid crossing Vitis vinifera, Vitis rupestris and Vitis lincecumii.

New York Introduction: Probably introduced through Philip Wagner or released through the New York State Agricultural Experiment Station at Geneva.

Viticultural Characteristics: A hardy, low to moderately vigorous vine with excellent disease resistance. Produces moderate to high yields and frequently requires cluster thinning to prevent over cropping. Buds and ripens early, producing medium to often very large compact clusters of grapes.

Acreage:
Hudson Valley: 82 acres
Finger Lakes: 235 acres
Lake Erie: Less than 10 acres
Long Island: Less than 10 acres
Total New York: 331 acres

Vinification: This versatile grape can be vinified like a fine Chardonnay or a Riesling. Responds well to both barrel fermentation and malolactic fermentation treatment as well as cool, tank fermentation finished with some residual sweetness.

Taste and Aroma Characteristics: Hints of citrus, melon, and green apple often present. Medium to light bodied, well balanced with a crisp finish, Seyval is certainly the equal of all but the finest vinifera wine grapes. When barrel fermented, takes on the qualities of a light Chardonnay.

Future in New York State: Good. An excellent, consistent producer of high quality grapes. Can produce fine wines in several different styles. However, the big problem with this varietal is precisely the wide ranges of styles currently produced by New York wineries. This has confused

consumers, who would otherwise snap it up if they realized how good a dry wine it can make.

Variety:
VIDAL (Vidal 256)

Origin: Developed by J.L. Vidal in Bordeaux. The grape is a cross of Ugni Blanc and Seibel 4986.

New York Introduction: Probably introduced to New York through the New York State Agricultural Experiment Station at Geneva.

Viticultural Characteristics: Hardy, vigorous and disease resistant, Vidal is a moderate yielding producer of large, compact clusters.

Acreage:
Hudson Valley: Less than 10 acres
Finger Lakes: 103 acres
Lake Erie: Less than 10 acres
Long Island: 10 acres or less
Total New York: 132 acres

Vinification: Generally given a cool fermentation in stainless steel with no malolactic fermentation or no barrel aging. Usually finished with some residual sweetness. Capable of making excellent late harvest wines.

Taste and Aroma Characteristics: Tends to be fruitier and more Riesling-like than Seyval; also higher in acid and more aromatic, but lighter in body. Probably the finest white hybrid grape for wine production after Seyval Blanc.

Future of Variety in New York State: Good. The New York industry has made good progress in their ability to work with this grape. Several good dry and semi-dry Vidals have been developed in the last few years, and the grape is also very well suited to late harvest and ice wines. Culturally, the grape is ideally suited to the cooler climates of New York State.

Variety:
VIGNOLES (Ravat 51)

Origin: Developed by J.F. Ravat, a French hybridizer who began his work in 1929. It is a cross between Pinot Noir and a Seibel hybrid.

New York Introduction: Possibly through Philip Wagner in Maryland.

Viticultural Characteristics: Hardy, late ripening and moderately vigorous vine. Moderate yielding with small, compact clusters. Susceptible to powdery mildew and bunch rot but also capable of acquiring "noble rot" and producing excellent late harvest wines.

Acreage:
Hudson Valley: Less than 10 acres
Finger Lakes: 73 acres
Lake Erie: Less than 10 acres
Long Island: approximately 10 acres
Total New York: 83 acres

Vinification: Cool, tank fermentation. No malolactic fermentation, no barrel aging. Always finished with at least 1% residual sugar. Frequently used to make sweet, late harvest wines.

Taste and Aroma Characteristics: Aromatic, tropical fruit nose, somewhat one-dimensional. Fruit carries through to flavor. Natural high acidity must be balanced with sweetness. Late harvest wines have a strong aroma of apricot.

Future of Variety in New York State: Very Good. As a fruity wine that is almost always produced in a sweet style, the demand for Vignoles is growing due to numerous awards in major competitions of late harvest and ice wines. It can, however, make high-quality table wines and consumers are learning that it pairs very well with a broad range of foods - especially spicier versions of Mexican and Oriental cuisine. Culturally, it is ideally suited to the cooler growing regions of New York.

OTHER WHITE FRENCH HYBRIDS

Variety:
VERDELET (Seibel 9110)

Developed by crossing S.5455 and S.4938, this hybrid was named by the Finger Lakes Winegrowers Association in 1970. Vine is of medium vigor, producing low to moderate yields. Ripens in early mid-season producing loose clusters of oval grapes. Small seeds and thin skin make them suitable as table grapes. Sensitive to downy mildew, this variety also has low winter hardiness. Produces a neutral wine of medium acidity.

Variety:
VILLARD BLANC (Seyve-Villard 12.375)

Hardy, very vigorous and moderate yielding vine, it is the most widely grown white hybrid grape in France. Vine is considered disease resistant, though susceptible to powdery mildew. Produces a medium bodied wine with a relatively neutral flavor and aroma. Wine frequently has clarification problems due to high natural iron content.

RED WINE GRAPES

Variety:
DECHAUNAC (Seibel 9549)

Origin: Developed by Albert Seibel in France. Named for Canadian enologist, Adhemar DeChaunac.

New York Introduction: Possibly introduced by the New York State Agricultural Experiment Station in Geneva in the 1950's.

Viticultural Characteristics: High yielding, hardy, moderately vigorous and disease resistant, DeChaunac is ideally suited to the upstate New York growing conditions. Ripens early, producing medium loose clusters of small blue-black grapes.

Acreage:
Hudson Valley: less than 15 acres
Finger Lakes: 143 acres
Lake Erie: Less than 10 acres
Long Island: 0 acres
Total New York: 165 acres

Vinification: Standard vat fermentation; care must be taken not to permit extensive skin contact during fermentation as resulting wine can be inky and dense.

Taste and Aroma Characteristics: Neutral, mediocre aroma and flavor characterizes this variety. Oak aging advised to add some element of complexity to wine.

Future of Variety in New York State: Fair. While acreage of this variety has declined steadily since the mid–1970's, the consumer interest in red wines has increased demand and prices for this and other red hybrid varieties.

Variety:
BACO NOIR (Baco #1)

Origin: Cross of Folle Blanche and a Vitis riparia. Made by Francois Baco in 1902.

New York Introduction: Uncertain

Viticultural Characteristics: Very vigorous, hardy, early budding and ripening, Baco Noir provides moderate to low yields of small, compact clusters of small, black grapes.

Acreage:
Hudson Valley: Less than 10 acres
Finger Lakes: 262 acres
Lake Erie: 0 acres
Long Island: 0 acres
Total New York: 276 acres

Vinification: Baco Noir benefits from prolonged skin contact during fermentation to intensify the wine's color. A versatile

grape, Baco can be used to make Nouveau-style wines as well as elegant, barrel-aged examples. Best examples of these wines are blends with other red hybrids. The naturally high acidity of Baco Noir grapes dictate that the wines be given a full malolactic fermentation.

Taste and Aroma Characteristics: The best examples of this variety are medium-bodied wines with fruity, black pepper aroma.

Future of Variety in New York State: Good. Dry red wines are increasing in popularity with the wine-drinking public due to positive health benefits. In addition, some wineries have produced fine, award-winning Baco Noir.

Variety: CHANCELLOR (Seibel 7053)

Origin: Developed by crossing S. 5163 and S. 800. Named in 1970 by the Finger Lakes Wine Grower's Association.

New York Introduction: Uncertain

Viticultural Characteristics: Moderately vigorous and high-yielding, Chancellor was at one time the most widely planted hybrid variety in France. With an early bud break, the variety is susceptible to late spring frosts; it is also susceptible to both downy mildew and powdery mildew. Chancellor is moderately winter hardy and ripens in early mid-season, producing medium, compact clusters of black grapes.

Acreage:
Hudson Valley: 0 acres
Finger Lakes: 25 acres
Lake Erie: 44 acres
Long Island: 0 acres
Total New York: 69 acres

Vinification: Standard vat fermentation. Care must be taken not to extract too much color from the skins. Wine benefits from brief aging in oak barrels.

Taste and Aroma Characteristics: Can produce a light to medium-bodied pleasant red wine. Often used in a blend to produce "Nouveau" wines.

Future of Variety in New York State: Good. Like most red hybrids, Chancellor's popularity is increasing due to the health benefits of red wine.

Variety: CHELOIS (Seibel 10878)

Origin: Cross of two other Seibel hybrids, S.5163 and S.5593

New York Introduction: Uncertain, possibly released from the New York State Agricultural Experiment Station in Geneva.

Viticultural Characteristics: Chelois is an early-ripening, moderately vigorous vine that produces average yields of purple grapes in long, narrow compact clusters. Resistant to most diseases, it is moderately winter hardy and well suited to the upstate New York growing conditions.
This grape was not reported as a varietal in 2001. We know that some acreage still exists as it is used in red hybrid blends.

Acreage:
Hudson Valley: Less than 10 acres
Finger Lakes: 20 acres
Lake Erie: Less than 10 acres
Long Island: 0 acres
Total New York: 38 acres

Vinification: Standard vat fermentation. Wine benefits from a brief period in oak barrels.

Taste and Aroma Characteristics: Wines are medium bodied with a berry-like fruit and earthy overtones. Variety is at its best when blended with another red hybrid.

Future of Variety in New York State: Fair. Similar to that of other red hybrids, interest is increasing in these varieties due to the health benefits of red wine.

Variety:
MARECHAL FOCH (Kuhlmann 188-2)

Origin: Cross of Gold Riesling and riparia/rupestris hybrid.
Made by: Eugene Kuhlmann of Alsace.

New York Introduction: Uncertain

Viticultural Characteristics: Vigorous and early-ripening, Marechal Foch produces small to moderate yields of small, loose clusters of blue-black grapes. Disease resistant and winter hardy, its early bud break can result in damage to shoots by late spring frosts.

Acreage:
Hudson Valley: Less than 20 acres
Finger Lakes: 57 acres
Lake Erie: 30 acres
Long Island: 0 acres
Total New York: 102 acres

Vinification: Can use standard vat fermentation but makes an especially good Nouveau-style of wine when carbonic maceration is employed.

Taste and Aroma Characteristics: Fruity aroma reminiscent of strawberries and raspberries. Light to medium-bodied with a soft, pleasant finish. Marechal Foch's lower acidity, fruity aroma and flavor make it an ideal blending wine for other more herbaceous and acidic hybrid varieties.

Future of Variety in New York State: Good. Similar to that of other red hybrids, interest is increasing in these varieties due to the health benefits of red wine.

OTHER RED FRENCH HYBRIDS

Variety:
CASCADE (Seibel 13053)

A vigorous, disease resistant, and winter hardy variety but prone to virus infection. Early ripening and prone to bird damage, Cascade produces moderate yields of large, loose clusters of blue grapes. As of 1990, there were 32 acres of this variety planted primarily in the Finger Lakes; this varietal was not reported as a category in 1996 or 2001. Wine is undistinguished.

Variety:
COLOBEL (Seibel 8357)

Used as a teinturier to add color to weakly pigmented wine, Colobel is moderately vigorous and produces medium yields of compact clusters of blue grapes. It has moderate winter-hardiness and disease resistance. In 1996 there were 68 acres of Colobel planted in New York. It was not reported as a variety in 2001.

Variety:
LEON MILLOT (Kuhlmann 194-2)

Same background as Marechal Foch, (Gold Riesling x (rupestris x riparia). Like Foch it is vigorous, winter hardy, disease resistant and early ripening. Its wines tend to be more herbaceous than Foch, with deeper pigment. Thirty acres are reported in the 2001 survey.

Variety:
ROSETTE (Seibel 1000)

A variety brought to New York by Charles Fournier in the late 1930's, Rosette is a vigorous, low yielding variety that is winter hardy but susceptible to a number of diseases. In 1996 there were 35 acres of this variety planted in New York. It was not reported on in 2001.

Variety:
ROUGEON (Seibel 5898)

A vigorous, hardy, moderate yielding variety with only fair disease resistance, Rougeon makes a fruity wine with an excellent color. New York had 90 acres of this variety planted in 2001.

NEW YORK VARIETIES

Developed at the New York State Agricultural Experiment Station

Variety:
CAYUGA

Origin: A hybrid of Seyval Blanc X Schuyler, it was developed at the New York State Agricultural Experiment Station in Geneva, New York starting in the 1950's.

New York Introduction: Released for commercial planting in 1972.

Viticultural Characteristics: Vigorous, moderately hardy vine with good disease resistance, Cayuga produces high yields of large, well-filled clusters.

Acreage:
Hudson Valley: Less than 10 acres
Finger Lakes: 239 acres
Lake Erie: Less than 10 acres
Long Island: 0 acres
Total New York: 266 acres

Vinification: Fermented in stainless steel at cool temperatures. Wine is not aged in oak nor is malolactic fermentation used. Normally finished with some residual sugar and released the spring following harvest. Many wineries bottle as a varietal.

Taste and Aroma Characteristics: Medium bodied and pleasantly fruity.

Future of Variety in New York State: Good. Since it is best suited to making an off-dry wine, Cayuga may not be as much in demand as those hybrids suited to making drier wine. However, the quality of the wine is much better than Aurora, for instance, and the vine has better disease resistance.

OTHER WHITE NEW YORK VARIETIES

Variety:
MELODY

Developed by the New York State Agricultural Experiment Station at Geneva, New York, from a cross of Seyval Blanc and a cross of Pinot Blanc and Ontario, Melody was released for commercial planting in 1982. Vigorous and productive, it is moderately winter hardy and has good disease resistance. It ripens in late mid-season producing medium, well-filled clusters with excellent sugar and acid levels. The wine is reminiscent of a fruity Pinot Blanc, and is best when finished in an off-dry style.

Variety:
CHARDONNEL

According to New York's Food and Life Sciences Bulletin,

"Chardonnel is a late ripening white grape which can produce a high quality wine with varietal character. Chardonnel is distinguished by its superior wine quality combined with high productivity and cold hardiness superior to its acclaimed parent, Chardonnay. It is the fourth wine grape cultivar to be named by the New York State Agricultural Experiment Station" in Geneva, New York, and is the result of a cross of Seyval and Chardonnay done in 1953. (In its developmental stages the grape was known as GW-9 or NY 45010.)

The vines tend to be productive, moderately vigorous, and moderately winter hardy. Clusters are shouldered and medium-large, very little crop is borne on lateral shoots and cluster thinning is required only infrequently. Wine quality has been rated as good to excellent producing a wine "described as pleasant and delicate with light fruitiness".

Variety:
TRAMINETTE

According to New York's Food and Life Sciences Bulletin, "Traminette is a late mid-season white wine grape which produces wine with pronounced varietal character likened to one of its parents, Gewürztraminer. Traminette is distinguished by its superior wine quality combined with good productivity, partial resistance to several fungal diseases, and cold hardiness superior to its acclaimed parent."

Formerly known as NY65.533.13, Traminette was first officially introduced at the 4th International Symposium on Cool Climate Viticulture and Enology held in Rochester, NY in July, 1996, and is described as " much more winter hardy and disease resistant than Gewürztraminer with a better balance of sugar, acid and pH levels, " according to Dr. Bruce Reisch who provided leadership for the development program.

The result of cross of Joannes Seyve 23.146 X Gewürztraminer by H.C. Barrett in 1965 at the University of Illinois, the grape was originally intended to be a table grape with Gewürztraminer flavor characteristics. It is felt that Traminette will "offer further proof that wines made from hybrid grapes need not be inferior to vinifera" (Dr. Reisch, as quoted in the American Wine Society Journal, Fall 1996)

NEW YORK RED VARIETIES

Variety:
RUBIANA

Origin: A hybrid of Buffalo and Baco Noir, it was developed at the New York State Agricultural Experiment Station in Geneva, New York. The cross was first made in 1947 and has been tested extensively as GR7 and NY 34791.

Items in quotes are according to Bruce Reisch and

Steve Luce in an article: Recent Releases and Numbered Selections from the Geneva Grape Breeding Program

New York Introduction: Released for commercial planting in 1980's.

Viticultural Characteristics: "Highly vigorous, highly productive and winter hardy, with moderate resistance to disease."

Acreage: (Data still to be reported)

Vinification: "Use hot pressing, short skin contact time or some carbonic maceration." It is used in several red blends.

Taste and Aroma Characteristics: Rubiana "makes dark red wines with a classical hybrid aroma. It has better tannin structure than Baco Noir and De Chaunac. It is best made as a light (not heavily extracted) wine." According to Dr. Thomas Henick-Kling, it makes a good quality wine with attractive cherry flavors.

Future of Variety in New York State: Good to excellent. Since it is best suited to making an easy drinking red wine, Rubiana should experience success.

Early spring in the vineyard.

LINKS

MAJOR VINIFERA WINE VARIETIES

WHITE VINIFERA

Chardonnay
Riesling
Gewürztraminer
Other

RED VINIFERA

Cabernet Sauvignon
Merlot
Pinot Noir
Cabernet Franc

WHITE VINIFERA

Variety:
CHARDONNAY

Origin: Variety believed to have been developed in the Burgundy region of France, where it has been grown for centuries.

NY Introduction: Successfully cultivated by Charles Fournier and Konstantin Frank in the late 1950's at Gold Seal Vineyards in the Finger Lakes region.

Where grown: Cultivated in all four regions.

Acreage:
Hudson Valley: 32 acres
Finger Lakes: 418 acres
Lake Erie: 84 acres
Long Island: 569 acres
Total New York: 1,103 acres

Vinification: Cool fermentation in stainless steel tanks, or barrel fermented. Often aged in small oak cooperage for months at a time.

Taste Characteristics: Produces medium to full-bodied wines, frequently with rich, complex bouquet and flavor. Aroma not grapey, has hints of pineapple, apple, honey, pear, melon and citrus. Depending on manner of vinification may have nutty, buttery, toasty, herbal and / or oaky flavors as well.

Future of Variety in New York: Excellent. Capable of producing world class wines. Strong consumer demand.

Variety:
RIESLING

Origin: All indications point to an origin in the Rhine River Valley of Germany.

New York Introduction: First cultivated successfully by Charles Fournier and Konstantin Frank at Gold Seal Vineyards in the 1950's.

Where grown: Cultivated in all four regions.

Acreage:
Hudson Valley: Less than 10 acres
Finger Lakes: 340 acres
Lake Erie: Less than 10 acres
Long Island: 119 acres
Total New York: 461 acres

Vinification: Long, cool to cold fermentation in stainless steel tanks. No small barrel aging is used. Wines are normally released in the spring or summer after harvest.

Taste and Aroma Characteristics: Produces aromatic light to medium-bodied wines. Rieslings can have exceedingly complex aromas with floral, herbal and spicy aromas combined with honey and fruit. Excellent sweet wines are made from this grape when it is attacked by the "noble rot"(botrytis cinerea).

Future of Varietal: Excellent. New York is capable of producing excellent Riesling on a consistent basis, and the popularity of this fruity, quaffable wine has increased modestly for a number of years. Extremely food compatible and lower in alcohol than most Chardonnays, more and more wine consumers have embraced this varietal. Several wineries are urging increased plantings of Riesling in New York.

Variety:
GEWÜRZTRAMINER

Origin: The Italian Tyrol (northernmost part of Italy)

New York Introduction: First grown commercially by Konstantin Frank at Gold Seal in the mid-1950's.

Viticultural Characteristics: Moderate vigor, low to moderate yield, does well in loamy, deep fertile soils. Heavy soils with some clay can yield aromatic wines. Grapes and clusters are small. Thick skinned and pink, the grapes are resistant to most disease; but the vine is prone to viruses and susceptible to late spring frosts.

Acreage:
Hudson Valley: Less than 10 acres
Finger Lakes: 46 acres
Lake Erie: Less than 10 acres
Long Island: 68 acres
Total New York: 104 acres

Vinification: Generally given a cool or cold fermentation in stainless steel to accentuate aromatic character of the fruit. Not aged extensively, generally released the year after harvest. Generally finished with at least 1-% residual sugar, much more in late harvest wines. Skin contact often used to get maximum aroma from the grapes.

Taste and Aroma Characteristics: Perfumy, spicy nose that resembles tropical fruit or highly aromatic flowers. Components of aroma carry into flavor, creating rich flavorful wines with a spicy finish. Light to medium bodied in weight, the wines tend to be refreshing and crisp.

Future of Variety in New York State: Good. Certainly New York has the proper climate for Gewürztraminer and many excellent examples have been produced here. However, the variety is low yielding and suffers from late spring frosts, making it less profitable to grow than other varieties. Also, fruity wines tend to be out of favor among wine drinkers making this a hard wine to market, not to mention the off-putting name. Once consumers learn how beautifully Gewürztraminer can match with the right food, such as spicy Szechwan, they get over that pronunciation problem!

OTHER WHITE VINIFERA VARIETIES

Variety:
SAUVIGNON BLANC

Related to Cabernet Sauvignon, this variety shares its high vigor and low to moderate yields, but tends to be more susceptible to disease. Long Island is the only one of the State's wine regions with a season long enough for it to ripen adequately on a consistent basis from year to year. There it produces a grassy, lean, crisp wine that can frequently be acidic. Acreage of this variety is small, but commercial wines of this variety have been well accepted and wider planting is expected.

RED VINIFERA

Variety:
CABERNET SAUVIGNON

Origin: Probably Bordeaux, but has been linked to the Roman variety Biturica. Recent research shows that it has Cabernet Franc and Sauvignon Blanc in its heritage.
New York Introduction: Probably first planted commercially by Konstantin Frank at Gold Seal in the 1950's.

Viticultural Characteristics: Vigorous, low yielding vine that does particularly well in well-drained soils of low fertility. Heavy, fertile soils create too much foliage and depress yields. Late budding and late ripening, the vine produces small, thick-skinned grapes in loose clusters that are very resistant to disease.

Acreage:
Hudson Valley: Less than 20 acres
Finger Lakes: 61 acres
Lake Erie: Less than 20 acres
Long Island: 249 acres
Total New York: 341 acres

Vinification: Fermented on the skins at ambient temperatures for a few days to several weeks. Extensive aging in small oak cooperage is almost always employed. Wines are released at least a year and a half after harvest.

Taste and Aroma Characteristics: Black currant, bell pepper, eucalyptus, mint, black pepper, green olives, tar, cedar, are some of the descriptive terms used when mentioning the flavor and aroma characteristics of Cabernet Sauvignon. Because of the small grape size and high skin-to-pulp ratio, the wine is normally tannic and full-bodied. Capable of aging extremely well and producing wines of immense complexity.

Future of Variety in New York State: Very Good to Excellent. Long Island is particularly suited for Cabernet Sauvignon with a growing season long enough to ripen the grapes on a consistent basis. While some examples exhibit an herbaceous character, this will probably diminish as vines get older and cultural practices improve. The North Fork of Long Island has a maritime climate similar to Bordeaux's; it is reasonable to expect similar success. In recent years, several Finger Lakes and Hudson River Region wineries have also produced some fine Cabernet Sauvignon wines.

Variety:
MERLOT

Origin: Bordeaux, perhaps on the St. Emilion side of the Gironde River.

New York Introduction: Probably grown experimentally by Konstantin Frank in the Finger Lakes in the 1950's, but permanent plantings first made my Alex Hargrave on Long Island in 1970's.

Viticultural Characteristics: Moderate vigor with moderate to high yields. Early budding increases danger of late spring frosts, but its early ripening avoids losses due to inclement late autumn weather. Has the ability to withstand wet, heavier soils than Cabernet Sauvignon.

Acreage:
Hudson Valley: Less than 10 acres
Finger Lakes: 52 acres
Lake Erie: Less than 10 acres
Long Island: 615 acres
Total New York: 671 acres

Vinification: Fermented on the skins much like Cabernet Sauvignon. Generally not given as extensive aging as Cabernet, wines tend to have much less tannin and are usually released earlier.

Taste and Aroma Characteristics: Fruitier, softer and sweeter than Cabernet Sauvignon, the wine will frequently have a strawberry or raspberry aroma. Lower in tannins and acid than Cabernet, it is drinkable at a much earlier age, but still is able to age gracefully. Like Cabernet on Long Island, Merlot frequently has herbal elements in nose and taste; this will diminish with time and improved vine management.

Future of Variety in New York State: Excellent. Earlier ripening and greater yielding than Cabernet Sauvignon, Merlot may become the premier red variety on Long Island. Demand and consumer acceptance of this varietal are growing quickly. This variety has a bright future in New York, including in the Finger Lakes where new plantings have occurred.

Variety:
PINOT NOIR

Origin: Burgundy region of France

New York Introduction: First planted commercially by Konstantin Frank at Gold Seal in the 1950's.

Viticultural Characteristics: Moderately vigorous and low yielding, Pinot Noir is susceptible to viruses, mildew and bunch rot. Thin-skinned grapes in small, tightly packed clusters can rot easily if rainy or humid conditions persist close to harvest. Ripens early but often unevenly.

Acreage:
Hudson Valley: 7 acres
Finger Lakes: 137 acres
Lake Erie: Less than 10 acres
Long Island: 69 acres
Total New York: 235 acres

Vinification: Because of low pigment and tannin levels in the skin of Pinot Noir, long fermentation on the skins is often performed with stems added to boost tannin levels. Almost always given extensive time in small oak cooperage, except when lighter, "vin gris" style of wine is being made. Usually aged at least one and half years before release since nose improves remarkably with age.

Taste and Aroma Characteristics: Hints of strawberries, plums, and violets often present as well as a "barnyard" or "wet sock" odor that is not unpleasant in this context. Odor and flavor can appear sweet without necessarily having any residual sugar. Older wines tend to have a velvety finish. Bouquet can become exceedingly rich, powerful and complex with age.

Future of Variety in New York State: Good to Excellent. The future of this variety appears to be in the warmer areas of the upstate wine regions, although Long Island's maritime climate may also be conducive to production of quality Pinot Noir. Recent efforts from wineries in both regions have yielded excellent examples, but low yields and demanding cultural requirement do not make this variety a favorite among grape growers. Consumer demand for Pinot Noir is increasing due to health benefits. New York and especially Finger Lakes Pinot Noir have higher levels of resveratrol (which fights heart disease and cancer) than those from other parts of the world.

Variety:
CABERNET FRANC

Origin: Long felt to be related to Cabernet Sauvignon, it is now considered possible that it is actually in the heritage of Cabernet Sauvignon.

New York Introduction: Probably first planted commercially by Konstantin Frank in the 1950's.

Viticultural Characteristics: According to Jancis Robinson, Cabernet Franc looks very much like Cabernet Sauvignon in the vineyard, but it is well adapted to cooler and damper conditions, "it buds and matures more than a week earlier than Cabernet Sauvignon... but it is easier to ripen fully and less susceptible to poor weather during harvest." Cabernet Franc also provides greater yields and can adapt to a wider range of soil conditions than Cabernet Sauvignon.

Acreage:
Hudson Valley: 7 acres
Finger Lakes: 136 acres
Lake Erie: Less than 10 acres
Long Island: 188 acres
Total New York: 341 acres

Vinification: Vintners like to accentuate the fruit characteristics of this grape, and therefore it often goes through a shorter period of fermentation on the skins than Cabernet Sauvignon. Some aging in oak cooperage, but not so much as to overpower the fruit characteristics - older barrels might be used as opposed to new barrels which can have a stronger impact on the wine. Bottling generally takes place about a year and a half after harvest and the wine develops quickly and nicely, drinking beautifully without extensive bottle aging.

Taste and Aroma Characteristics: Soft berry-plum-fruit characterizes Cabernet Franc. According to Robinson, "Cabernet Franc tends to be rather lighter in colour and tannins, and therefore earlier maturing than Cabernet Sauvignon". It " is light to medium bodied with more immediate fruit than Cabernet Sauvignon and some of the herbaceous aromas evident in unripe Cabernet Sauvignon."

Future of Variety in New York State: Very Good to Excellent. This grape has a bright future in all of New York's regions. Often used as a blending grape with Merlot or Cabernet Sauvignon in the past. In recent years, however, several wineries have produced fine Cabernet Franc varietal wines. The changing consumer patterns which show an increased interest in red wines and New York's climatic

conditions make this grape a natural choice for the New York grape grower.

Soils of New York State

Introduction

Any discussion of the soils of New York State would be incomplete without mention of the unique geological history of the region. The periods of continental glaciation covering much of North America thousands of years ago created most of the topography that makes New York State so ideal for grape growing today. The Great Lakes of Erie and Ontario, all of the Finger Lakes as well as most of Long Island were formed by the action of these continental glaciers. Topography, along with the parent material from which a soil is derived, determine to a great degree a soil's characteristics and its suitability to agriculture.

New York State can be divided into 9 distinct physiographic provinces, or areas having similar parent material and geologic structure. They are the Long Island Province, the Archean Highland Province, the Taconic Province, the Catskill Province, the New York-Penn Province, the Lake Shore Plains Province, the Mohawk Valley Province and the Adirondack Province. Each of New York's grape growing regions is encompassed in a single one of these provinces with the exception of the Hudson River Region that encompasses or crosses five of these provinces. A discussion of the soil and physiographic characteristics of these regions follows.

Regional Soil and Physiographic Characteristics

Long Island Region

Long Island is encompassed in the physiographic province of the same name and is the result of a large moraine or hill of glacial deposits, or till, left by a receding continental glacier. Because of the depth of this debris and the absence of bedrock as a source of parent material for soil, Long Island soils are unconsolidated, without a distinct structure. The north and south forks of eastern Long Island, the locale of nearly all the region's vineyards, are the results of outwash or gradual erosion of the moraine. These sandy, level soils are moist, well drained and deep, with a naturally high acidity and good physical structure. Years of agricultural use have elevated the soil pH and eliminated most strong acidic conditions. These soils qualify among the finest agricultural soils in the state, and are especially well suited to viticulture.

Hudson River Region

This region crosses five physiographic provinces and is composed of more distinct soil types than any other region. Moving north from Manhattan, the first province encountered is that of the Gneissic Highland Province, a hilly, complex region of highly metamorphosed ancient gneiss. This region encompasses the northern end of Manhattan Island and southern Rockland County, where it forms the Ramapo Mountains. The region continues across the Hudson, and the structure underlies Westchester, Putnam and a small part of southern Dutchess County. The hardness of the bedrock in this area and glacial action have resulted in shallow, rocky soils largely unsuitable for agriculture. Bordering the Gneissic Highland Province to the north is the Taconic Province, an area of lower elevation that extends from Orange County northward through southeastern Ulster County and across the Hudson River, encompassing Dutchess, Columbia, Rensselaer and Washington counties. The rocks in this province are largely shales, slates, schists and limestones, although the northern and eastern areas of Dutchess, Columbia and Rensselaer are underlain with hard metamorphic quartzite and gneiss.

The topography of this province varies widely, starting as a valley in southern Orange County and progressing to rolling hills and valleys in the western portions of those counties on the east side of the Hudson, finally culminating in the rugged highlands of the Berkshire Mountains in the easternmost section of the province. Given the wide variety of parent material and topography in this province, soil types and suitability to viticulture are extremely varied. Soils in the western portion of this province generally tend to have moisture problems and be low in fertility, although many good sites of limited acreage are under cultivation as orchards and vineyards. Soil conditions improve on the western side of the Hudson, with eastern Dutchess and Columbia Counties possessing the finest sites and consequently the greatest acreage of vineyards. Deep, well-drained soils with adequate moisture holding capacity and low to moderate fertility are present and available in large tracts of land, and offer the opportunity for the expansion of viticulture in the Hudson Valley.

Two other physiographic provinces can be included in the Hudson River Region: the Catskill Province which borders the Taconic Province along the dramatic Shawangunk Ridge; and the Mohawk Valley Province which enters the

region north of Albany. Neither area has significant acreage in grapes, and discussion of the soils of these areas is not relevant to this subject.

Finger Lakes Region

The Finger Lakes viticultural region is encompassed in the New York-Penn Province, or what is known as the Allegheny Plateau. This plateau, which has hilltops in the range of 1500 to 2000 feet, has been eroded and cut by streams and rivers over thousands of years and now resembles mountainous country with valleys and stream beds often 1000 to 1200 feet below the hilltops. The bedrock underlying the southern end of the Finger Lakes region is composed of alternating layers of sandstone and shale. In the northern end of the region the parent material is predominantly calcareous shale, which, being softer than the sandstone / shale combination, resulted in different soils and a slightly lower elevation. The agricultural suitability of the soils in this region follows this boundary precisely. Soils north of it, formed from calcareous shale, are deep, well drained, moist, fertile and are among the finest agricultural soils in the state. Soils south of the boundary are normally wet, poorly drained, highly acid and characterized by an impervious subsurface layer that impedes movement of water and root development. Thus agricultural lands bordering Lakes Seneca, Cayuga, Owasco and the northern end of Canandaigua Lake are generally better suited to viticulture than soils to the south such as those surrounding Keuka Lake.

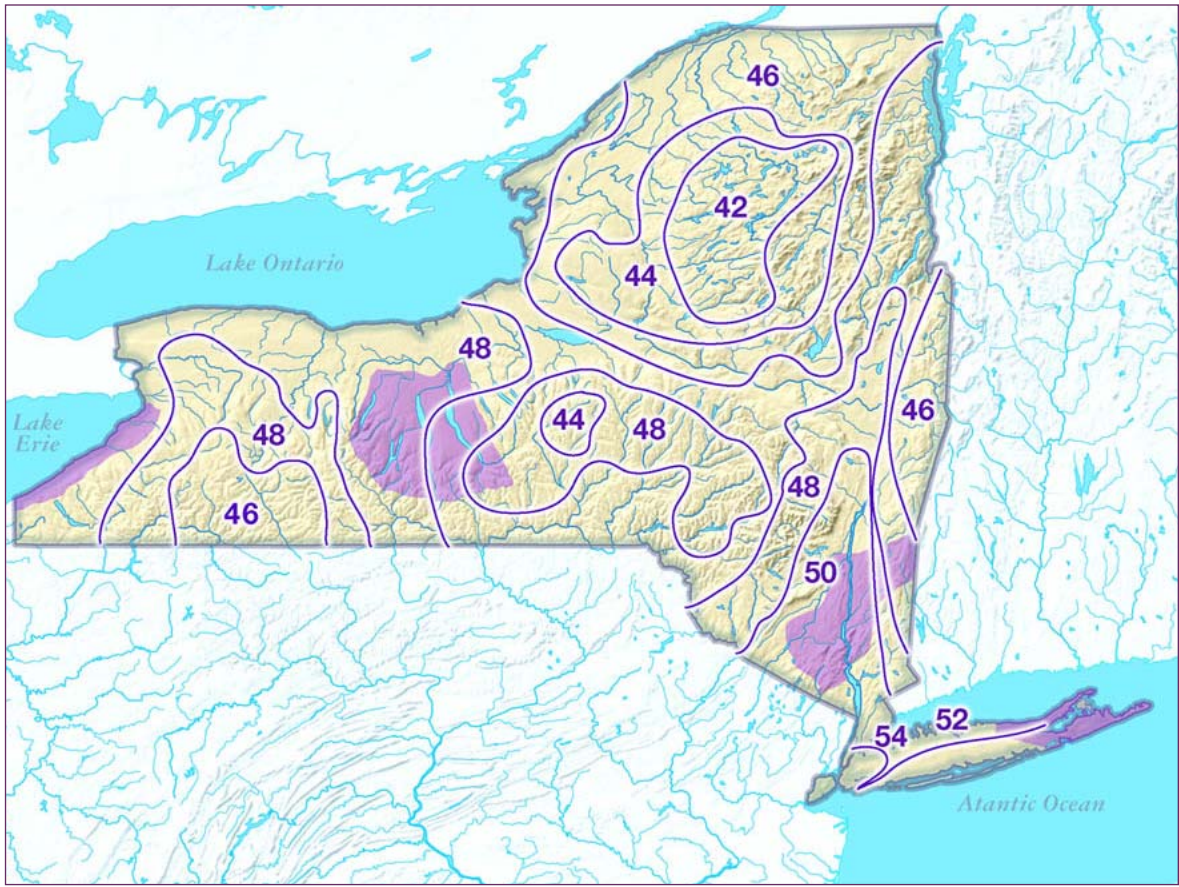
One of the Finger Lakes' most beautiful waterfalls displays the shale found in the soil and demonstrates the steep hillsides found in this region.

Lake Erie Region

While grape growing in western New York is conducted in all three western-most counties (Chautauqua, Erie and Niagara), wine grape production takes place predominantly in Chautauqua county and is concentrated in a narrow band of land parallel to the shore of Lake Erie. Located on what was probably a glacial outwash terrace about a mile inland from the Lake, this series of loamy, deep, well-drained soils are also some of the best agricultural soils in New York State.

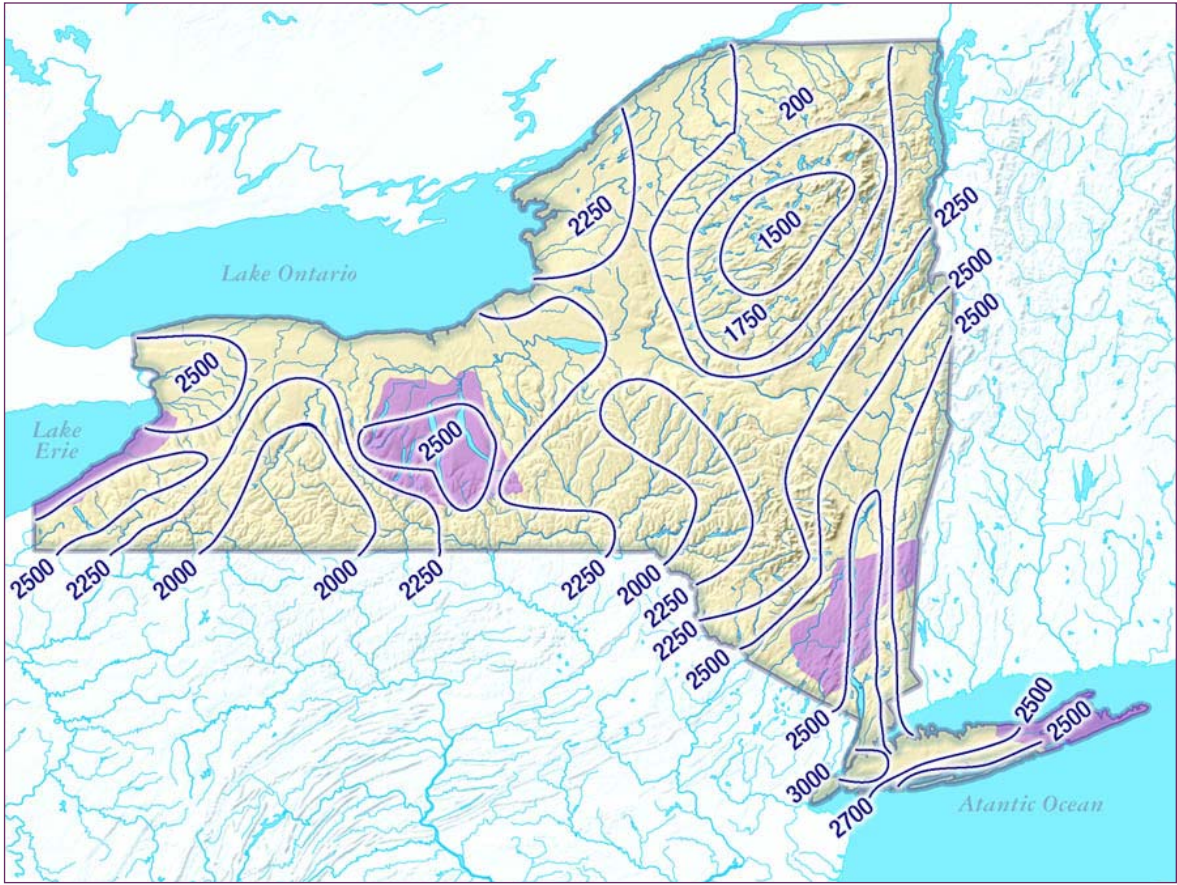
New York State Mean Annual Temperature Map

In all of New York's viticultural areas, the presence of large bodies of water are crucial elements in creating the ideal "mesoclimates" for growing premium grapes.



New York State Growing Degree Days Map

According to the Cornell Cooperative Extension: “Growing degree days are an average of maximum and minimum temperatures for each day, minus a ‘base temperature’. We use 50 degrees F for the ‘base’ (10 degrees C). The base temperature is based on the idea that growth, photosynthesis and respiration are temperature-dependent, and below the base temperature there is little physiological activity. These daily degree-days are then summed over the growing season to come up with cumulative growing degree days. Phenological (developmental) stages of growth then are tied to growing degree-days, rather than calendar date. This compensates for temperature-related differences in growth. For grapes in New York State, we measure the growing degree days between April 1 through October 30.”



Soil map: Lake Erie and Niagara Regions

Soil Map Legend

Areas where more than 60% of the soils are suitable for agriculture with no more than moderate limiting factors.

Areas where more than 60% of the soils are suitable for agriculture but most have severe problems of wetness, droughtiness, stoniness, depth or slope.

Most soils in these areas have severe problems of depth, slope, wetness, stoniness or droughtiness that greatly limit or prevent conventional agriculture.

Soil map: Finger Lakes Region

Soil Map Legend

Areas where more than 60% of the soils are suitable for agriculture with no more than moderate limiting factors.

Areas where more than 60% of the soils are suitable for agriculture but most have severe problems of wetness, droughtiness, stoniness, depth or slope.

Most soils in these areas have severe problems of depth, slope, wetness, stoniness or droughtiness that greatly limit or prevent conventional agriculture.

Soil map:
Hudson River Region

Soil Map Legend

Areas where more than 60% of the soils are suitable for agriculture with no more than moderate limiting factors.

Areas where more than 60% of the soils are suitable for agriculture but most have severe problems of wetness, droughtiness, stoniness, depth or slope.

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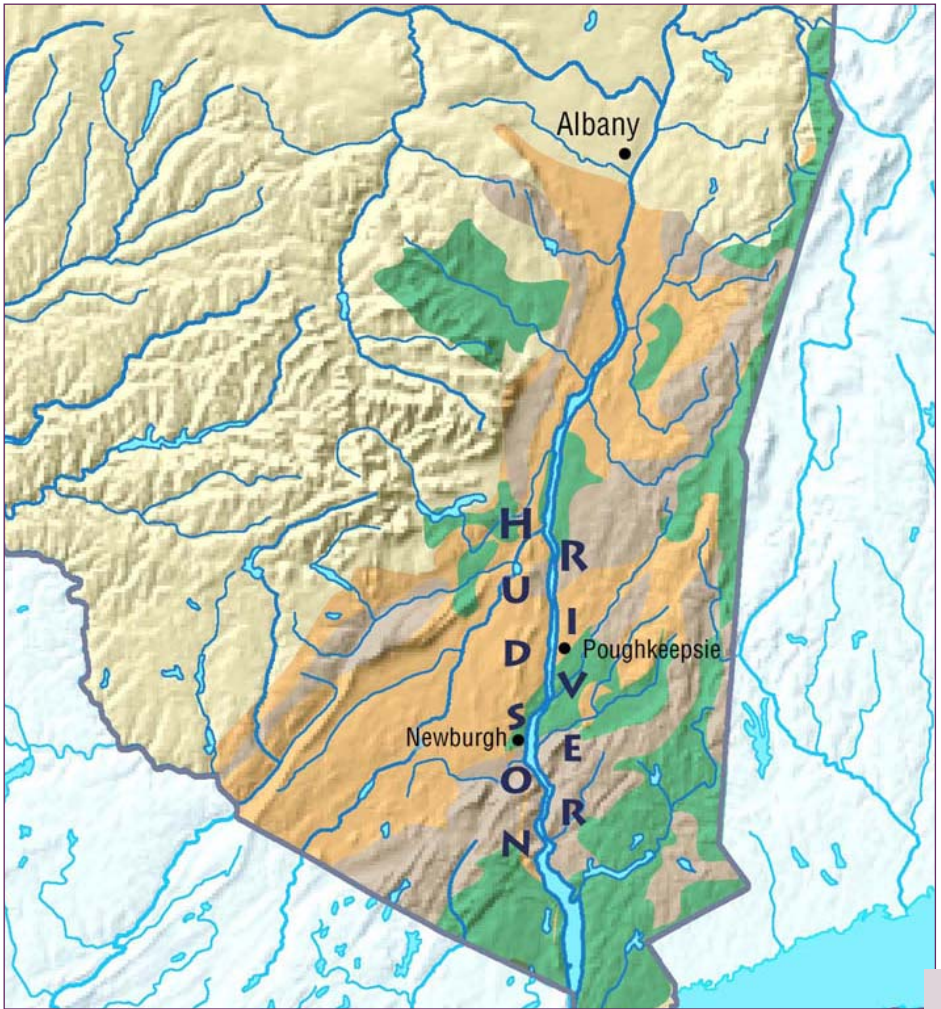


Soil map: Long Island Region

Soil Map Legend

Areas where more than 60% of the soils are suitable for agriculture with no more than moderate limiting factors.

Most soils in these areas have severe problems of depth, slope, wetness, stoniness or droughtiness that greatly limit or prevent conventional agriculture.

New York Viticulture

Introduction

New graft in the nursery leafing out

Viticulture in New York State has been blessed by a series of circumstances and natural phenomena. Its unique glacier-altered topography with strategic bodies of water and deep, well-drained soils give New York a predisposition for viticulture that few other eastern states can claim. Its northern position, moderate rainfall and generally low humidity create a very favorable environment for grapevines. In spite of the frequent low winter temperatures that at times threaten the survival of cold-sensitive varieties, the climate of New York is generally more favorable to vine growth than the warmer, more humid states to the south. Likewise, it is the northernmost eastern state capable of growing and ripening grape crops on a wide range of varieties. The following discussion of viticultural methods is by no means unique to New York; many eastern states and cool-climate wine regions can and do employ some, and perhaps all, of these methods.

Field graft on Long Island

All vineyards in New York are established in a manner that has become a standard worldwide. Grafted or ungrafted one-year rooted cuttings are used to establish new vineyards. Native varieties, and New York and French hybrids, are generally grown on their own roots. Vinifera varieties are almost always grafted to hardy, pest-resistant rootstocks. Soil borne pests, primarily phylloxera, a root louse, and nematodes, a destructive microscopic root worm, quickly debilitate the root systems of vinifera vines grown on their own roots. Native varieties with a natural resistance to these pests, and hybrid varieties, bred to repel these invaders, do not require the costly grafting procedure.

Rootstocks that the vinifera varieties are grafted to were not only developed to resist these pests but also to be compatible with budwood, to provide an appropriate level of vigor to the mature vine, and to be compatible with specific or a wide range of soil characteristics.

Vineyard Establishment

Vineyards in New York State are planted in the spring of the year, either with a grape-vine planter on level, smooth ground or with an auger on hilly ground. One-year rooted vines are planted in parallel rows across slopes to limit the effects of water erosion. Traditionally, vineyards in New York have been laid out in a 9' X 8' pattern: 8' spacing between vines and 9' between rows. This pattern was established when native varieties were grown exclusively in New York; wide spacing allowed ease of movement between rows with horses and equipment, as well as allowing air circulation to control the onset of disease. The vigorous nature of many of the native varieties also dictated this wide spacing. As hybrid and vinifera varieties gradually replace native varieties, traditional spacing has come under scrutiny. In Europe where vinifera is grown almost exclusively, much narrower spacing has been used. In fact, 2 to 3 times the number of vines may be planted in a European vineyard in the same amount of space. With more and more acreage of vinifera vines being planted in New York, narrower spacing is being attempted, although

Laser equipment is now used for optimum alignment in the planting of rows.

The same vineyard – one year after planting.

row width is constrained by the need to move equipment through the vineyard, spacing within rows in new plantings is commonly 6' and as close as 4' between vines. The advent of more effective chemicals to control disease and equipment designated for use in narrow rows has allowed close spacing, sometimes as close as 3' X 5'.

Pruning and Training Vines in New York State

Pruning is the removal of most of last year's growth and sometimes portions of the older vine wood, in order to regulate the annual growth of the vine to produce the optimum amount of crop without compromising the vigor of the vine. Removing too much of the previous year's growth or "budwood" results in excessive cane growth and too small a crop. Light pruning often results in too much fruit set, which the vine either may not be able to ripen, or which may deplete its reserves, reducing the vine's vigor and resulting in poor yields in subsequent years.

There are several main pruning systems: cane pruning, spur pruning and mixed pruning. Cane pruning is very useful when varieties have unfruitful basal buds or experience low winter minimum temperatures, which are more apt to dam-

age spurs than longer canes. Cane pruning also allows the vine to be spread over a greater area of trellis, increasing sunlight interception and fruit exposure. For this reason, cane pruning is normally used in New York State in most areas for most varieties. Spur pruning (leaving short 2 or 3 bud segments) is generally used to supply the vine with renewal canes. It can be said that mixed pruning is the operative method in New York. In recent years, mechanical pruning or "hedging" with or without hand follow has been used extensively in some varieties.

Grapevines in New York State are trained on trellis, post and wire systems that support the vine, improve its sunlight interception, and increase fruit exposure. Common to most systems are two or three parallel wires to which the vine is secured. Wires are supported by wooden or steel posts, with 3 or 4 vines between posts. Several training systems, all cane pruned with renewal spurs, have been developed for each varietal type of grapevine. Commonly used with native varieties is the Umbrella Kniffen system where the head of the vine is positioned between the top and middle wires of the trellis and two long canes are draped over the top wire and secured on the middle or lower wire. Also commonly found with native varieties is a top-wire cordon training system in which a permanent cordon is established on the top-wire and vines are spur-pruned. This system saves labor and increases production. The Four-Cane Kniffen system positions the head of the vine's single trunk just below the top wire; two canes on opposite sides of the vine extend along the top and middle wires. A variation on this system (and one often employed in areas where winter damage is often a problem) is the Two Trunk Kniffen or Double Kniffen. Each vine possesses two trunks, and each trunk has two canes, extending along the top and middle wires in opposite directions. The advantage with this system is that it allows nearly normal production even if one trunk is destroyed or damaged by winter injury.

Vinifera vines, being somewhat more sensitive to low winter temperatures, are frequently trained in a multi-trunk fan system in colder regions and sites, particularly in the Finger Lakes. The system has numerous advantages in cold climates. The head of the vine is very low, often only inches from the ground, permitting the sensitive graft union to be buried and protected during the vine's dormant period. The multiple trunks (canes) provide adequate budwood when severe winters result in high bud mortality. In warmer areas such as Long Island, a High Renewal Training system is often employed using 3 or 4 wires. The head of the vine is positioned just below the bottom wire, and 1 or 2 canes are trained along this wire. The upright shoots of vinifera vines are then either threaded between the middle and top wires, or two wires are placed in tandem position on either side of the post. Shoots are placed between these two wires and either secured with ties or left to be secured by the vines tendrils.

Growers of vinifera grapes are increasingly using summer canopy management to improve wine quality and improve bunch rot. Summer shoot tipping (pruning) removal of leaves around the fruiting zone, and vertical shoot positioning with moveable trellis 'catch wires' are all practices with one goal: to increase the exposure of leaves and fruit to sunlight. Many growers have found that these practices enhance production of flavor-producing compounds not found in fruit grown in excessively shaded vineyards. The additional air circulation also dramatically reduces the incidence of botrytis bunch rot.

Care of Grafted Vines

Grafted grapevines require extra care to protect the somewhat fragile union between the rootstock and budwood. Especially sensitive to low winter temperatures that can freeze it and kill the vine, the graft is normally covered with soil from late fall to spring. Soil is hilled up over the graft once the vine has become dormant by means of a hydraulic grape hoe. In the spring the soil is taken away from the graft with the same implement, but usually some soil remains on the graft that must be removed with a hand hoe. Removal of the soil is essential, along with any shoots from the rootstock. Should the soil not be removed, there is a good possibility that the rootstock will push its own shoots, depriving the vine above the graft of nutrients. Continued growth of rootstock shoots will result in the decline and eventual death of the vine above the graft.

Vineyard Management: Soil Management and Disease Control

Grapevines are particularly hearty plants requiring a limited diet of nutrients and water. In most New York soils well suited to agriculture, vineyards require only about 30 pounds of added nitrogen per year, and rare applications of potassium and phosphate. Soil fertility or plant-available nutrients are best measured by petiole analysis, sampling which is done in late August or early September. Analysis of this plant tissue yields a far better estimate of a vineyard's nutrient needs than a simple soil test. Grapevines are particularly conservative in their use of water; on deep, well-drained soils they can withstand several seasons of below average rainfall without a significant decrease in yield.

Viticulturlists on Long Island experiment with the benefits of composting.

Soil management practices in New York State vineyards vary depending on the soil types (texture, fertility), slopes, rainfall and drainage. Although nearly all vineyards in the state use pre-emergent herbicides to control weeds under the trellis, methods vary in soil in the interrow. Steep sloped vineyards as found in the Hudson Valley and the Finger

Lakes are often terraced with a permanent sod in the row middles. In sloping vineyards where drainage problems or skeletal soils restrict the establishment of sod, cover crops are sometimes planted. In other areas where erosion is not a problem, clean cultivation is sometimes practiced, although its use is declining due to the availability of effective "burn-down" herbicides and concerns about soil compaction.

Disease control practices in New York State vineyards are similar to those in other moist, cool climates throughout the world. Black rot, downy mildew, powdery mildew, botrytis cinera, and brown rot all threaten the vine and its grapes depending on the time of the year and weather conditions. Modern agricultural chemicals can control all these ailments except under weather conditions that prevent the effective spray applications. Low-volume air blast sprayers are most commonly used for spray applications that deliver small amounts of spray materials delivered by a high velocity air blast that insures total coverage of the grape canopy. The number of times that spraying is required depends primarily on the moisture, the grape variety, the time of the year, and to some extent the temperature. Warm weather with frequent rainfall can mean a weekly spray schedule. Insect pests can pose problems but are normally controlled with one or two insecticide applications when they represent an economic risk. Pest monitoring prior to spraying has allowed grape farmers in New York State to greatly reduce the cost of pest control.

The application of nutrients after harvest helps to protect the the vines.

Bird damage of grapes is a problem that plagues many New York vineyards not only because of their proximity to hedgerows and forests that provide nesting areas and cover, but also because of their location near migratory bird routes. Since there is no approved chemical means of preventing bird depredation, and since most migratory birds are federally protected, grape growers must resort to netting and/or alarms to prevent birds from consuming their crop. Although labor intensive, netting vineyards is the only sure way of protecting a grape crop. Bird "cannons" and electric alarms have only limited effectiveness in keeping birds out of vineyards.

Harvesting Winegrapes in New York

Much of the harvest in New York is now accomplished by mechanical harvesters. Rising labor costs and a shrinking labor pool, coupled with improved harvester technology, have made it far more cost effective to harvest mechanically. These self-propelled machines straddle the vineyard row and remove the grapes from the vine by either vibrating the vine trunks and posts or by beating the vine with light plastic arms or paddles. The grapes are literally torn from the rachis and caught on spring loaded catch plates which guide them on to conveyor belts and eventually to one-ton bins drawn by tractors in an adjoining vineyard row. Because the skins of the grapes are sometimes broken during harvest, most bins are treated with a solution of sulfur dioxide or are quickly removed from the vineyard and processed immediately. Results have shown that wine resulting from promptly processed mechanically harvested grapes in no way suffers in comparison to wine made from hand-harvested grapes.

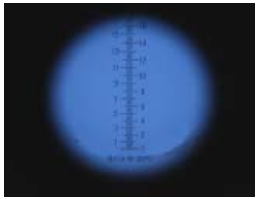
Hand harvesting is still essential in vineyards too steep or otherwise incompatible with mechanical harvesters. Select bunch harvesting, whether to make a late harvest wine or to insure the quality of the variety that is subject to uneven ripening, still must be done by hand. Here the higher bottle price more than makes up for the added labor costs of hand picking.

For a few small wineries, picking by hand remains the method of choice for a number of reasons. Some wineries do not have access to harvesting machines and may not have the ability to handle one-ton bins of grapes. Others find that in hiring a mechanical harvester, the grower is committed to harvesting his grapes no matter what the conditions. It is also possible, although unlikely, that a grower may have a trellis or training system that is incompatible with machine harvesting, resulting in damage to the trellis or vines. These conditions make it unlikely that hand harvesting of grapes will be completely abandoned but, at this point in time, approximately 95% of the crop is machine picked.

Winemaking In New York State

The wine-growing regions of New York State have climates similar to those in northern Europe, with seasonal heat summation (expressed in growing degree-days) of 2000 to 2700. These values compare favorably with Burgundy (Beune, Fr. At 2300) and Bordeaux (at 2390) as well as some cooler regions in California (Gonzales, Monterey County). These cooler regions are ideal for most native and hybrid varieties as well as some of the best vinifera varieties. Chardonnay, Riesling, Pinot Noir, Merlot and Cabernet Franc are suited to nearly every region; and even Sauvignon Blanc and Cabernet Sauvignon, both requiring long, warm growing seasons, ripen successfully on Long Island. The cool moist New York climate produces grapes with moderate sugar levels and moderate to high acid levels. Other than in exceptionally warm years or in grapes used in making late harvest wines, sugar levels in hybrid and vinifera varieties are harvested in a range of 16 to 23 Brix. Acid levels generally fall in the range of .6 grams to 1.2 grams per 100 milliliters. Native varieties generally have lower sugar levels, but a similar range of acidity at harvest.

Grapes ready to be crushed.



Winemaker tests for Brix with a refractometer.

Fresh grapes are started on the path to becoming wine by being removed from their stems. The machinery is so specialized that it removes the berries without breaking down the stem.

Making Wine from Native Grapes

Native varieties are used to make a wide array of wines. Dessert wines, sherries, ports, sparkling wines, and some table wines are made from native grapes. Often characterized by a tough skin and dense pulp, these varieties are often treated with pectic enzymes to release juice held in the pulp and to facilitate pressing. Red native varieties used in


Grape press.

producing red table or dessert wines are often "hot-pressed" to extract pigments from the grape skins. Crushed grapes are heated to a temperature of about 160° F and held at that temperature for a period of 30 minutes to an hour prior to pressing. Must is then transferred to batch or continuous presses to extract the juice.

Continuous pressing is an extremely efficient manner of juice extraction, enabling almost all the juice and moisture of the must to be extracted. Must enters one end of the press, and all free-run juice is extracted. A bladder inside the press gently pushes against the must until almost all of the moisture is extracted. Generally the free-run and juice extracted by light pressure is superior to the rest of the press juice and is used to make finer wines and champagne.


Extracted juices captured in the pan under the press.

Catawba and Delaware, both pink grapes used mostly for sparkling wine, are not usually hot-pressed unless a pink color is desired for the wine. Concord grapes used in dessert wines and table wines are almost always hot-pressed to extract color.


A sample of Catawba juice ferments in a glass carboy. The fermentation lock allows carbon dioxide to escape without letting oxygen into the container.

Fermentation of the juice of native varieties is nearly always done in temperature-controlled stainless steel tanks. Cool fermentations are desired to retain the fruity aroma and flavors of these grapes. Hot-pressing eliminates the need to ferment on the skins to obtain color, and since most of these wines are finished with substantial residual sugar, tannin levels are purposely kept low. Aging in oak barrels, therefore, is rarely if ever employed when making table wine with these varieties. The exception occurs when making dessert wines. Extensive oak aging is used by producers of New York sherries and ports; one producer actually employs an outdoor solera to age these wines.

Production of Wine from Hybrid Varieties

Most hybrid varieties are used in the production of table wines, varying in sweetness from very sweet to bone dry. Most of the hybrid acreage in New York is in white wine varieties, primarily Cayuga White and Seyval Blanc. The dominant red varieties are DeChaunac and Baco Noir. None of the hybrids are made in what can be considered a consistent style; the styles for all range from full or medium-bodied dry wines, to light-bodied sweet ones. Some general rules apply, however: Cayuga is almost always finished in an off-dry to sweet style, Seyval Blanc tends to be dry to off-dry, Vignoles (Ravat 51) is usually produced in a slightly sweet to very sweet style. Vidal may have the widest range with it being finished dry, semi-dry or all the way to a luscious late harvest style. Most of the reds are finished with little or no residual sweetness when labeled as a varietal, but can be very sweet when bottled as a proprietary blend.

White hybrid varieties are nearly always given a cool fermentation in stainless steel tanks, the notable exception being Seyval Blanc, which responds very well to barrel fermentation, producing a complex, medium-bodied wine. This is one of the few instances where a hybrid white wine is permitted to undergo a malolactic fermentation. This bacterial fermentation converts the malic acid component of the wine to lactic acid and carbon dioxide, lowering the acidity of the must. White hybrid varieties tend to be bottled as varietals, although many wineries produce premium wines from blends. While some vintners have specific ideas about which white hybrids are the most compatible in blends, there is little consensus on the subject. Seyval, with a small percentage of Vidal, seems to be the most widely used of the white hybrid blends.

pH of the wine is critical.

Aging hybrid whites in oak barrels is rarely done. Again, the exception is Seyval Blanc that appears to be the only variety that benefits from aging in oak barrels. Normally this is only done with Seyval Blanc that is dry.

Fermentation of red hybrids follows a more traditional path than the whites. Although many larger wineries hot-press hybrids, most ferment in contact with the skins to extract color.

Prolonged skin contact with most varieties is not necessary to obtain the proper color intensity; fermentation on the skins for several days is the standard procedure. The must is then pressed in a batch press and fermentation is completed in stainless steel tanks. In most cases, hybrid reds are encouraged to complete a malolactic fermentation, which may happen spontaneously but can also be initiated through the use of commercial culture. Many red hybrids receive oak barrel aging after fermentation, which adds complexity to the flavor and aroma of these wines.

Many New York wineries also ferment a portion of their reds in a manner developed in the Beaujolais region of France. The popular “Nouveau Beaujolais” of France has an American counterpart in the new, red wines of New York. The carbonic maceration method used in Beaujolais calls for loading a tank with whole clusters of grapes, then purging the tank with carbon dioxide. These “smothered” grapes begin to undergo an intracellular enzymatic fermentation, and 10 days or two weeks later when the grapes are removed from the tank and pressed, they are well on their way to completing a yeast and malolactic fermentation. The resulting wines rival the French; fruity and light with hints of raspberries and strawberries, these quaffable wines are worthy of much more attention then they are currently receiving.

Unlike the white hybrids, blending the red varieties is more the rule than the exception. While many of the varieties have charming qualities, they represent a synergy when blended together. Two combinations— Baco Noir and Chelois, and Marechal Foch and Leon Millot— have been used by a number of vintners in the state to create excellent wines. Other combinations involving 3 and 4 varieties have also been successful. Like the white hybrids, many of the multiple blends are used to create high quality wines.

Making Vinifera Wines in New York State

Yeast converts the sugar in the juice to alcohol and carbon dioxide.

White vinifera varieties, notably Chardonnay and Riesling, have been successfully grown in all four wine-growing regions. And while the quantity of production is somewhat low compared to that of California, the quality is high and continues to improve. Both New York Chardonnay and Riesling have their own styles. New York Chardonnay lacks the weight and alcohol of its typical Californian counterpart, and tends to be less smoky and complex than most White Burgundy, but most New York wines exhibit finesse – a good balance of fruit, oak and

A lees filter helps the winery capture every luscious drop of juice. (see pg. 107)

acid. Rieslings from New York may be some of the finest produced in the country. These off-dry to sweet wines are probably closest to German in style, although the combination of floral, citrus and apricot aromas found in many New York Rieslings are unique unto themselves.

Most New York Rieslings are made in a manner standard throughout the world. Harvested grapes are de-stemmed, crushed, and pressed, with the free-run juice separated from the press juice. Juice is inoculated with a slow fermenting, cold-sensitive yeast culture and is slowly fermented in stainless steel tanks at very cool temperatures. The fermentation is halted to retain some amount of residual sugar by chilling the must below 40° F. These wines do not require extensive aging, and are normally bottled the spring or summer after harvest.

Production methods of Chardonnay vary more than Riesling, and range from cool fermentation in stainless steel without malolactic fermentation or oak barrel aging, to barrel fermentation at ambient temperatures with a full malolactic fermentation and extensive aging in oak barrels. Thus the Chardonnays of New York can vary in style from light-bodied, simple fruity wines to rich, full-bodied, complex wines with ample amounts of oak and fruit with toasty and buttery overtones. The majority of them fall somewhere in the middle and represent excellent values to wine consumers.

Other white vinifera varieties are also produced. Gewürztraminer, Pinot Blanc and Sauvignon Blanc are grown primarily on Long Island but have only been grown by a handful of producers. The resulting wines thus far have been excellent, indicating a bright future for those varieties.

Red vinifera varieties are grown primarily on Long Island with the exception of Pinot Noir and Cabernet Franc, whose acreage is divided among Long Island, the Hudson Valley and the Finger Lakes. The other varieties, Cabernet Sauvignon, Merlot, Cabernet Franc are grown predominantly on Long Island and are the basis for the Bordeaux-style reds that have attracted so much attention for this relatively new wine region. All the vinifera reds are fermented at ambient temperature in contact with the skins, often in open wooden fermenters. Extended skin contact is used with the Bordeaux style varieties, often extended beyond the end of fermentation. A full malolactic fermentation is normally the rule here, and all of these wines receive some time in small oak barrels, often more than a year. One of the main differences is that Pinot Noir, being somewhat weak in tannin, often has stems added to the fermenting must to increase the tannin levels. Whole clusters of Pinot Noir fruit are sometimes added to the fermenting must to increase the complexity and fruitiness of the wine.

(Left) “Pushing down the cap”: Grape skins are periodically mixed with the juice to enhance color and increase complexity.
(Right) A hydrometer is used to check the progress of fermentation.

Final Steps

This lab sample illustrates filtering.

Bottling.

Enjoy!

Special Steps for Sparkling Wine

(Left) Sparkling wines in tirage. The wines rest here for several months and sometimes years while the yeast works its magic, taking the wine through a second fermentation and thereby creating the bubbles which make sparkling wines so special.

After tirage, the sparkling wine bottles are moved into riddling racks (or a mechanized system). The goal is to progressively increase the angle on the bottle over an extended period of time, allowing the sediment that results from the yeast creating the second fermentation to settle in the neck of the bottle. Then the wine moves on to disgorgement and then dosage.

Three steps in disgorging:
1. The bottle neck is frozen. 2. The frozen plug. 3. Disgorged yeast plug.

Dosage: A carefully measured sweetening mixture is added.

The addition of special corks and a wire hood to maintain pressure in the bottle.

Marketing of the Wine

New York State wines are available in restaurants, winery tasting rooms and liquor stores.

Tools of Winemaking

Winemaking is often said to be the blending of art and science.

For making sparkling wines: The crown cap (the gold cap) and bidule (little white piece) protect the sparkling wine while it is developing in tirage (bottles stored for aging) Once the winemaker feels that the sparkling wine is ready to release, the crown cap and bidule are replaced with a cork. A very large cork is used to withstand the pressure created by the bubbles of the sparkling wine.

Commonly called a "thief" because it allows the removal of wine from a barrel, this tool lets the winemaker check on the development of the wine as it ages.

The modern winemaker has many interesting little "tools" to help make the science side of the process

Bungs are used to seal oak barrels as wine ferments and ages. The cream colored bung is a fermentation bung - it allows for carbon dioxide to escape as the wine ferments.

Clamps and O rings seal stainless steel tanks, attach hoses to pumps, and generally ensure safe delivery and storage of the wine through its various stages of development.

work easier, giving him freedom to experiment with the artful side a bit more.

The fermentation process results in the creation of carbon dioxide. This fermentation lock lets that carbon dioxide escape from a carboy of experimental wine without letting oxygen in to spoil the product. See the picture on page 97 for an illustration of how this works.

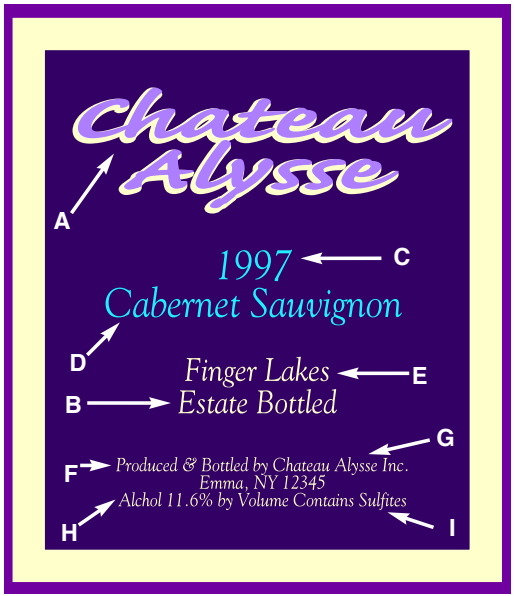
The refractometer measures the sugar level in the grapes. See the images on page 96 that illustrate the winemaker using this device to check grapes before crushing and what the display looks like.

Tools of Winemaking (continued)

The inner workings of the stemmer-crusher. They can look look a bit bizarre, but they do a great job at separating the grapes from the stems without crushing the stems and seeds (which could give an unpleasant characteristic to the wine). See page 101 for the view of the full machine and a comparison of a bunch before and after going through the process.

The winemaker continually strives for balance in the wine. This will help the wine taste delicious and extend its life.

Reading The New York Wine Label



A. Brand Name of the Wine - this may or may not be the name of the producer of the wine.

B. "Estate Bottled" - wine producer must be in the same county as the grapes and they must be grown under the vintner's control.

C. Year of the Vintage - must be at least 95% of the wine of that year.

D. Varietal - wine must have at least 75% of this grape in the wine. Wine must have the flavor and taste characteristics of the varietal.

E. Viticultural Area - must be a federally recognized wine region for the name to appear on the label. At least 85% of grapes used to make the wine must come from vineyards within this designated area.

F. "Grown, Produced, and Bottled by..." - indicates that the designated party exercised 100% control from vineyard to bottling.

"Produced and Bottled by..." may be used if named bottler fermented at least 75% of the wine.

"Made and Bottled by..." can be used if bottler has fermented a minimum of 10% of the wine.

"Cellared and Bottled by..." has done work, blending, aging, or other treatment to change or improve the character of the wine.

G. Name and address of the bottler - mandatory on all wine labels, this may or may not be the same as the winery where the wine was fermented.

H. "Table Wine" - Indicates alcohol level is between 7% and 14% by volume. If alcohol level is printed on the label, the actual level must be within 1.5%.

I. "Contains Sulfites" - As of December, 1987, any wine produced or sold in the U.S. must contain these words on the label, whether or not sulfites were actually added during production. Wine contains sulfites as a natural by-product of fermentation.

Bibliography

Adams, Leon D., **The Wines of America,** New York , McGraw Hill Book Company, 1978.

Amerine, Maynard A., **Wine Production Technology in the United States,** American Chemical Society, Washington DC 1981

Cline, M.G. and Marshall, R.L., **Soils of New York Landscapes,** Information Bulletin 119, New York State College of Agriculture, 1977

Dethier, B.E. and Vittum, M.T., **Growing Degree Days in New York State,** Bulletin 1017, New York State College of Agriculture, Ithaca November 1967

Dial, Tom, **The Wines of New York State,** Utica, NY, North Country Books, 1986

Galet, Pierre and Lucy Morton, **A Practical Ampelography,** Ithaca, NY Cornell University Press, 1979

Hedrick, U.P., **Grapes and Wine from Home Vineyards,** New York Oxford University Press, 1945

Morton, Lucy, **Winegrowing in Eastern America,** Ithaca, NY Cornell University Press, 1985

Munson, T.V., **Investigation and Improvement of American Grapes,** 1909

Pool, R.M., et al., **Vineyard and Cellar Notes,** 1958-1973, Special Report No. 22, New York State College of Agriculture, Ithaca, NY, 1976

Reisch, B.I. et al, **New York's Food and Life Sciences Bulletin,** Cornell University, NYSAES, Geneva, NY Number 132, 1990, Chardonnel Grape

Reisch, B.I. et al, **New York's Food and Life Sciences Bulletin,** Cornell University, NYSAES, Geneva, NY Number 149, 1996, Traminette Grape

Robinson, Jancis, **Vines, Grapes and Wines,** New York, Alfred A. Knopf, 1986

Wagner, Philip A., **A Winegrower's Guide,** Revised Edition, New York, Alfred A. Knopf, 1965

Weaver, Robert J., **Grape Growing,** New York, John Wiley and Sons, 1976

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