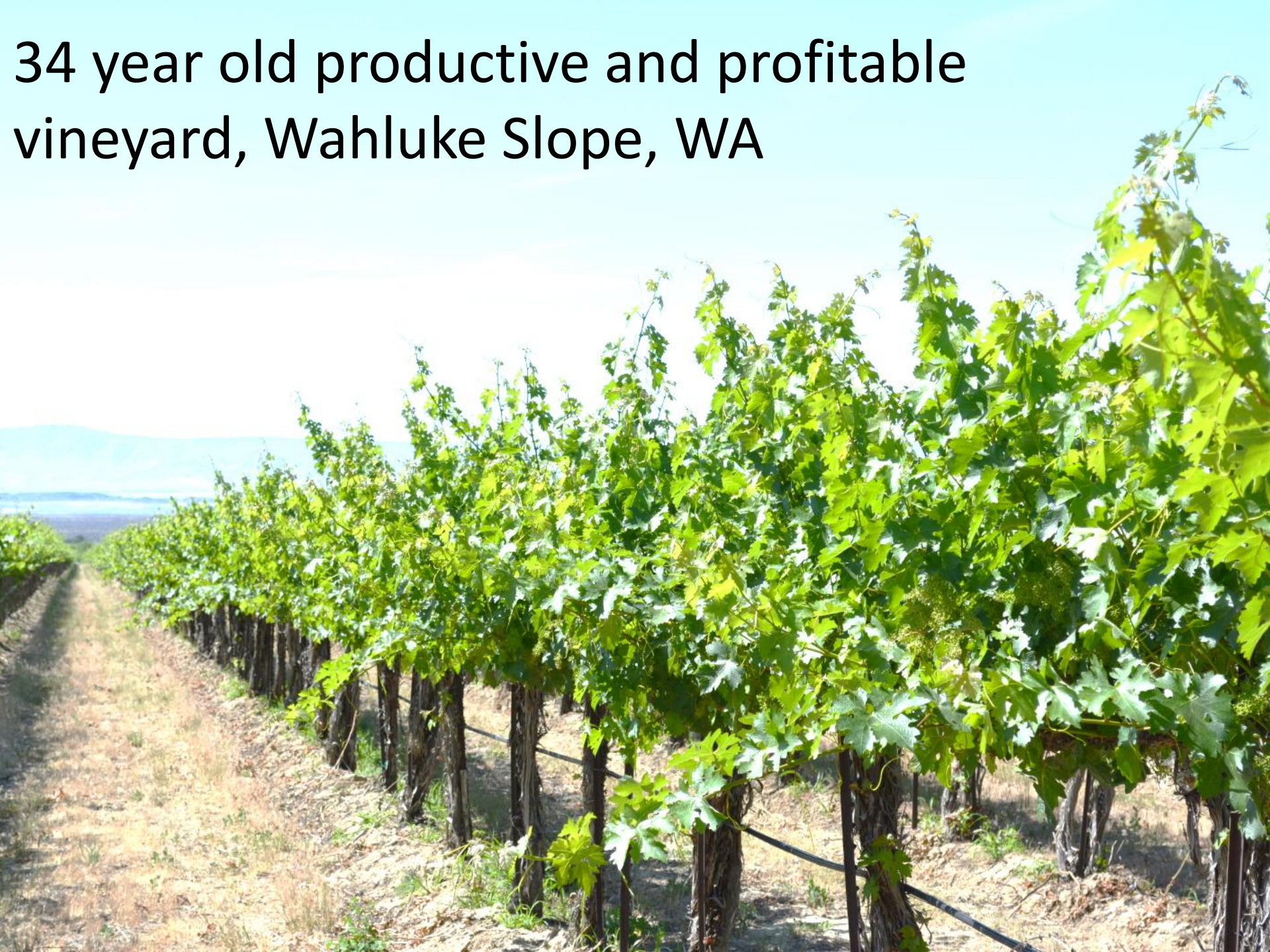
Clonal Choices – Factors and Methods

Hemant Gohil, Ph.D.
County Agent III
Rutgers University Co-operative Extension

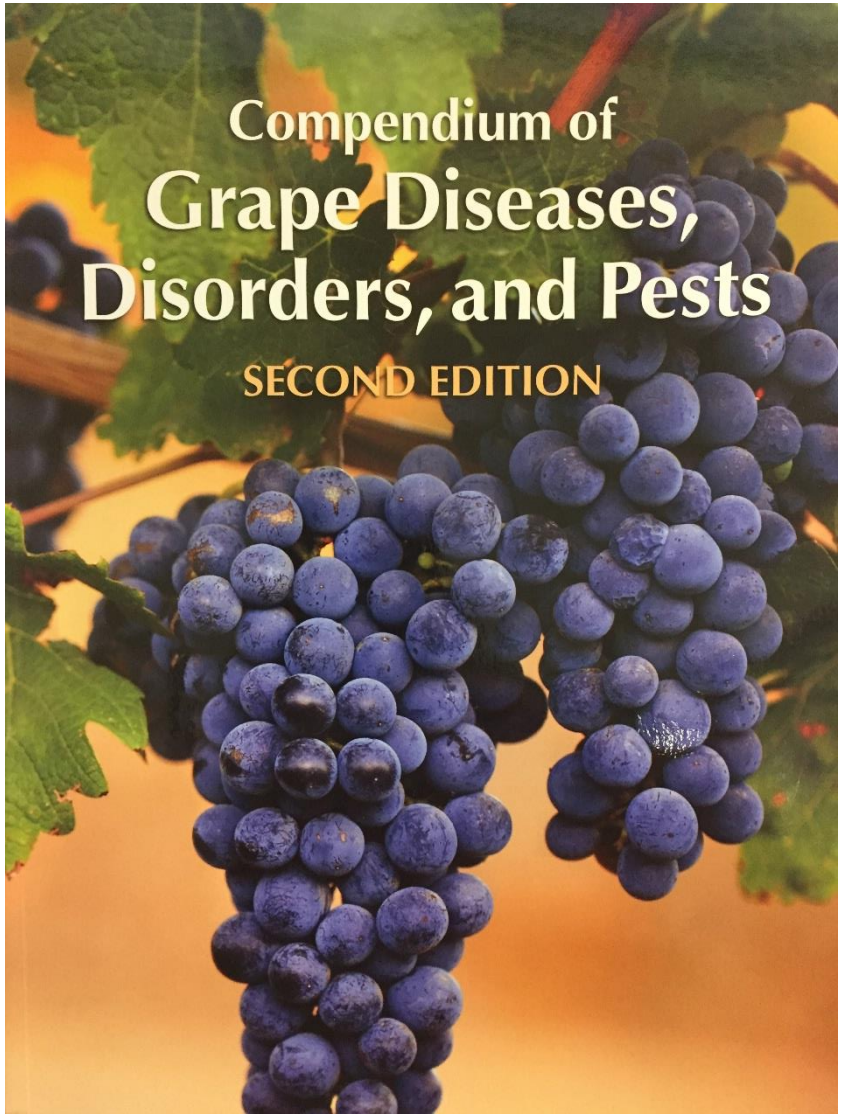
34 year old productive and profitable vineyard, Wahluke Slope, WA



What are the clones?

"Clones are the result of years of selection for desired trait and are propagated vegetative, often by cuttings from 1 original mother vine….

…That trait could be fruit compactness, smaller berries, looser clusters, vigor, winter hardiness, fruit composition or timing of the ripening."



Edited by:
Wayne F Wilcox

Bunch-rot management

Management

Perhaps more than for any other major fungal disease of the grape fruit and foliage, control of Botrytis bunch rot is dependent upon a conscientious integration of feasible cultural practices with targeted chemical and/or biological treatments appropriate to climatic conditions and market demands. Although many considerations go into the initial choice of cultivar, clone, and planting site, growers in regions prone to Botrytis should remember that such choices can have a profound effect on their ability to manage this disease for the lifetime of the vineyard. Cultivars vary considerably in their susceptibility to Botrytis bunch rot because of differences in berry chemistry, active responses to attempted infection, and cluster architecture. A factor sometimes as important as cultivar, but one whose choice entails fewer commercial implications, is that of clone; loose-clustered clones of any given cultivar typically have fewer problems with Botrytis bunch rot than those with tight clusters, and such differences can be pronounced. Planting sites, row spacings, and row orientations that favor good air movement through the canopy similarly aid in the overall management of the disease. Rootstocks matched to the site to control vine vigor make necessary canopy management far easier.

In climates conducive to Botrytis development, canopy management is a critical component of a control program. Through canopy management, the microclimate around the berry clusters can be manipulated to reduce relative humidity and the duration of berry wetness by increasing airflow, light penetration, and temperature. This alteration of the berry microclimate can be done through the choice of training system and the subsequent imposition of shoot positioning, hedging, and leaf removal. Shoots should be positioned to develop an evenly spaced canopy, which should be maintained throughout the season so

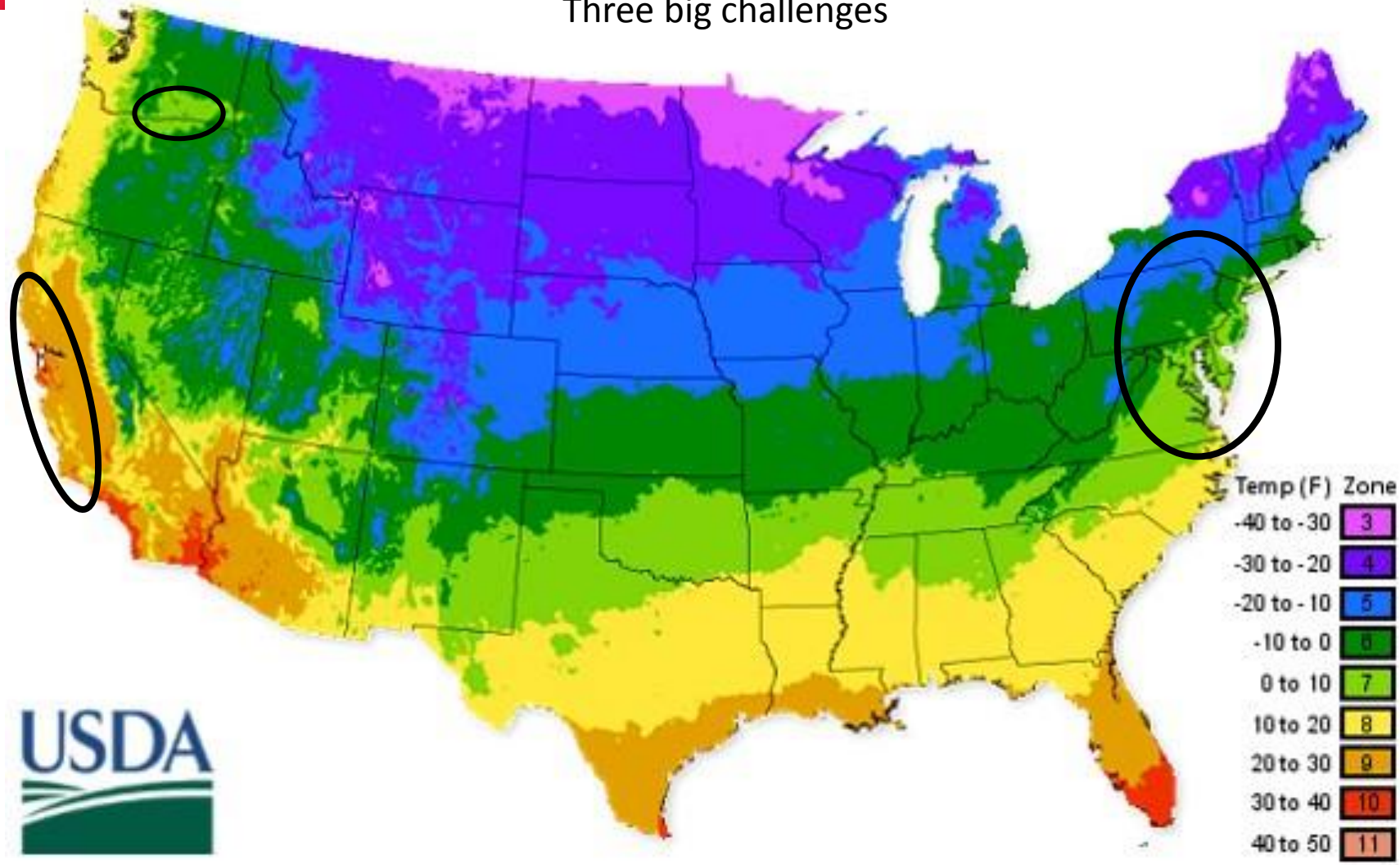
Lucie Morton -

“With canopy management, French clones and crop control, we are able to get nice fruit with ripe sugars - riper than we ever thought we could 10 years ago.”

RUTGERS
New Jersey Agricultural Experiment Station

Mid-Atlantic is not California

Three big challenges



USDA

Chardonnay tasting @ Working Dog Winey, Nov 2015

Methods of Clone Selection

1. Foundation Plant Services website
2. Nursery websites
3. Foundation Plant Service Newsletters
4. ENTA-INRA Catalog (Print and website)
5. Google
6. Discussions with growers and wine makers, educational meetings/workshops

FPS Grape Selections: 2010 Protocol Selections

Foundation Plant Services (FPS) is pleased to offer grape selections that meet our rigorous Protocol 2010 standards. To qualify as Protocol 2010 plant material, two primary qualifications must be met. First, the FPS source vines are generated using microshoot tip tissue culture techniques, i.e, cut from a piece of the meristematic dome that is 0.5 mm or smaller in size. Second, these source vines have tested negative for the extensive list of pathogens detailed on the Protocol 2010 list, using testing techniques which include PCR, ELISA, herbaceous and woody indexing. These standards ensure that this material is free from these known harmful pathogens which is critical to establishing a healthy vineyard.

Additional Information

Description of 2010 Protocol

A B C D E F G H I J K L M N O P R S T U V X Z

Now viewing *2010 Protocol Selections*. View all Selections or view all Varieties

Selections in **bold** are proprietary/patented and cannot be distributed without written permission from the owner.

Variety - Selection	Registr.	P2010	Berry Color	Uses	1st Planting
Adreuli Skelkana 01.1	P	2010	White	Wine	
Affenthaler 01.1	R	2010	Black	Wine	
Ag Aldere 01.1	P	2010	White	Wine, table grape	2017
Ag Kurdashi 01.1	P	2010	White	Table	
Agiorgitiko 01.1	P	2010	Black	Wine	
Agiorgitiko 02.1	P	2010	Black	Wine	
Aglianico 02.1	**P**	**2010**	**Black**	**Wine**	**2015**
Aglianico 03.1	**P**	**2010**	**Black**	**Wine**	**2015**
Aglianico 04.1	R	2010	Black	Wine	
Aglianico 05.1	R	2010	Black	Wine	
Albariño 01.1	R	2010	White	Wine	
Albariño 02.1	P	2010	White	Wine	2016
Albariño 03.1	P	2010	White	Wine	2016
Albillo Mayor 01.1	P	2010	White	Table,Wine	
Albillo Real 01.1	P	2010	White	Table,Wine	
Alexandrouli 01.1	P	2010	Black	Wine	2016
Alfrocheiro PLANSEL ® 01.1	R	2010	Black	Wine	2014
Alfrocheiro PLANSEL ® 02.1	R	2010	Black	Wine	
Alfrocheiro PLANSEL ® 03.1	R	2010	Black	Wine	
Alicante Bouschet 01.1	R	2010	Black	Wine	
Alicante Bouschet 03.1	R	2010	Black	Wine	2014
Alvarelhão 01.1	P	2010	Black	Wine	2017
Alvarelhão 03.1	P	2010	Black	Wine	2015
Alvarinho 01.1	R	2010	White	Wine	

GRAPES

Grape Search Go

FPS Grape Program
Material Prices / Order Form
Grape Introductions
California R & C Nursery Program
Protocol 2010
FPS Grape Registry
Available Varieties
Available Selections
New Introductions
2010 Protocol Selections
Selections In Progress
FPS Grape Glossary
User Fees
DNA Services for Grapes
Outside Resources

International Orders

Due to continually increasing phytosanitary restrictions, FPS is no longer exporting plant material outside of the United States.

Variety - Selection	Registr.	P2010	Berry Color	Uses
Cabernet Dorsa 01	P		Black	Wine
Cabernet Dorsa 01.1	P	2010	Black	Wine
Cabernet franc 01	R		Black	Wine
Cabernet franc 01.1	R	2010	Black	Wine
Cabernet franc 03	R		Black	Wine
Cabernet franc 04	R		Black	Wine
Cabernet franc 04.1	R	2010	Black	Wine
Cabernet franc 05	R		Black	Wine
Cabernet franc 09	R		Black	Wine
Cabernet franc 09.1	P	2010	Black	Wine
Cabernet franc 11	R		Black	Wine
Cabernet franc 11.1	P	2010	Black	Wine
Cabernet franc 12	R		Black	Wine
Cabernet franc 13	R		Black	Wine
Cabernet franc 13.1	R	2010	Black	Wine
Cabernet franc 14	R		Black	Wine
Cabernet franc 15	R		Black	Wine
Cabernet franc 16.1	P	2010	Black	Wine
Cabernet franc 17	P		Black	Wine
Cabernet franc 19	R		Black	Wine
Cabernet franc ENTAV-INRA ® 214	R		Black	Wine
Cabernet franc ENTAV-INRA ® 327	R		Black	Wine
Cabernet franc ENTAV-INRA ® 327.1	R	2010	Black	Wine
Cabernet franc ENTAV-INRA ® 394	R	In Progress	Black	Wine
Cabernet franc ENTAV-INRA ® 395	R		Black	Wine
Cabernet franc ENTAV-INRA ® 623	R		Black	Wine

Wonderful nurseries

Clones

The following list is updated on a regular basis. However, please call 661-758-4777 or email your sales representative before ordering as numbers change daily.

039-16
161-49
777, R170, LB 9, Mt. Eden, Swan
Aglianico 01
Aleatico 01
Alicante Bouschet 01
Ancellota R2
Autumn Black 01
Autumn Royal
Barbera 02
Barbera 84, 171, R4
Black Beauty Seedless
Black Corinth 02
Black Emerald
Burger 01
Cabernet Franc 01, 03, 04, 05
Cabernet Franc ISV 1, ISV 5, 312, 332
Cabernet Sauvignon 02, 04, 06, 07,
Cabernet Sauvignon 15, R5
Calmeria 04
Cardinal 01
Carignane 04
Carmine
Charbono 03
Chardonnay 17, 76, 95, 96, 108, 352,
Chardonnay 4, 5, 6, 7, 10, 11, 13, 14,15,18, 20, 21, 22, 23, 37,

novavine

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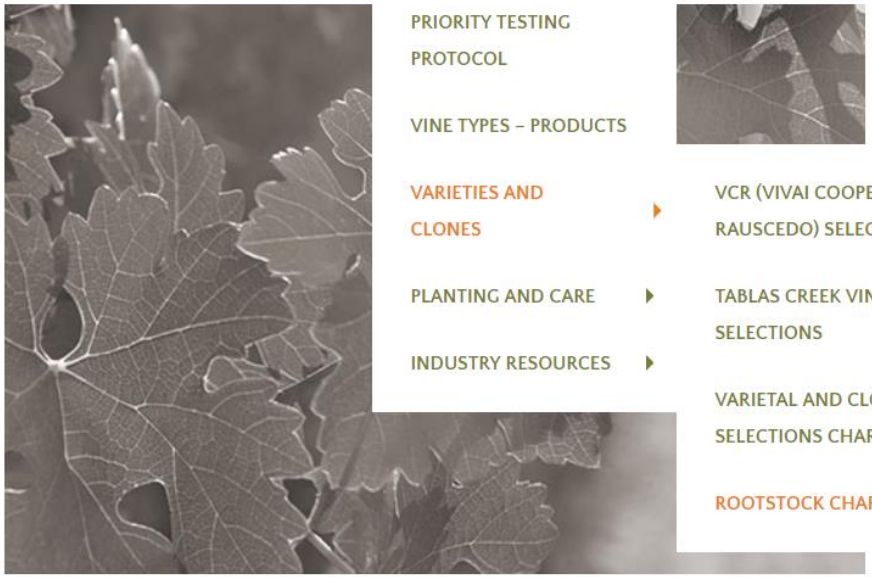
    - VCR (Vivai Cooperativi Rauscedo) Selections
    - Tablas Creek Vineyard Selections
    - Varietal and Clonal Selections Chart
    - Rootstock Chart
  - Planting and Care
    - Planting Dormants
    - Planting Green Vines
  - Industry Resources



PRIORITY TESTING PROTOCOL

VINE TYPES – PRODUCTS

VARIETIES AND CLONES

PLANTING AND CARE

INDUSTRY RESOURCES

VCR (VIVAI COOPERATIVI RAUSCEDO) SELECTIONS

TABLAS CREEK VINEYARD SELECTIONS

VARIETAL AND CLONAL SELECTIONS CHART

ROOTSTOCK CHART

varieties and clones

The choice of variety and clone can make the difference between an average vineyard and an outstanding one. Careful consideration must be given to climate, soil type, drainage and estimated harvest dates, not to mention your ultimate goal in terms of buyer or desired wine. We are pleased to offer you a broad selection to choose from and would be more than happy to help you determine the optimal choices for your vineyard projects.

Our Vine Availability List will show you what we currently have in stock or expect to be

VINE AVAILABILITY

NOVA BACKYARD

www.novavine.com/media/11730/Novavine-Varietal-Clonal-Selections.pdf

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Carignane		FPS 02	Carignane FPS 01, Dept. of Viticulture & Enology, UCD	R	H	H	C
Carignane		FPS 03	Carignane FPS 01, Dept. of Viticulture & Enology, UCD	R	H	H	C
Carménère	FPS 02.1	FPS 02	VCR 702, Vivai Cooperativi Rauscedo, Italy	R	M	H	C
Carménère	FPS 03.1		Rauscedo 9 (R9), Vivai Cooperativi Rauscedo, Italy	R	M	H	C
Carménère	FPS 07.1		Darden Vineyard, Healdsburg, CA; reported to be 'Guenoc clone', Bordeaux, France	R			C
Chardonnay	79.1		Sterling Vineyards, Napa, CA Muscat clone 1	W			C
Chardonnay	FPS 04.1	FPS 04	Martini vineyard in Carneros	W	VH	VH	C

Varietal and Clonal Selections

Variety	2010	Classic	Source	Type	Vigor	Yield	Cert.
Chardonnay	FPS 102.1		Kendall-Jackson vineyards, Sonoma Co., CA	W			C
Chardonnay	FPS 103.1	FPS 103	VCR 10, Vivai Cooperativi Rauscedo, Italy	W	H	M	C
Chardonnay	FPS 105.1		VCR 4, Vivai Cooperativi Rauscedo, Italy	W	VH	L	C
Chardonnay	FPS 106.1		Mondavi Byron Vineyards, Santa Barbara Co.	W			C
Chardonnay	FPS 112.1		Hyde clone, Hyde Vineyards, Napa, CA	W			C
Chardonnay	FPS 38.1	FPS 38	Reported to be French clone 95, Champagne Perrier-Jouet, France	W	H	H	C
Chardonnay	FPS 67.1		Robert Mondavi vineyards, Napa, CA	W			C
Chardonnay	FPS 69.1	FPS 69	Reported to be French clone 76, Dijon, France	W	H	H	C
Chardonnay	FPS 70.1	FPS 70	Reported to be French clone 96, Dijon France	W	VH	H	C
Chardonnay		FPS 15	Prosser, WA, arrived at FPS in 1969	W			C
Chardonnay		FPS 17	Robert Young vineyard, Alexander Valley	W	H	H	C
Chardonnay		FPS 28	Matanzas Creek Mt. Eden clone	W			C
Chardonnay		FPS 48	Cote d'Or, France, arrived at FPS in 1981	W			C
Chardonnay		FPS 72	Wente Vineyards, Monterey Co., block planted with FPS Chardonnay 2A	W	M	M	C
Chardonnay		FPS 86	Via Vivai Cooperativi Rauscedo, SMA clone 108, Italy	W	M	M	C
Cinsaut	FPS 02.1		California vineyard, Sonoma Co.	R	H	H	C

2010 Protocol

Merlot - Grafted

All plant material purchased now will be scheduled to ship in the Spring of 2018.

We cannot ship vines outside the United States or to the following states: California, Idaho, Washington or Oregon

$10.50

Buy 25 for $8.50 each and **save 20%**
Buy 50 for $4.00 each and **save 62%**

Merlot is Bourdeaux's most planted grape variety, known for its smooth texture and outstanding varietal wines, but often blended with Cabernet Sauvignon. Earlier ripening than Cabernet Sauvignon, but not as winter hardy.

ROOT STOCK *

-- Please Select --

- 0 +

ADD TO CART

ADDITIONAL INFORMATION | DISEASE SUSCEPTIBILITY | TRAINING SYSTEM

Grape Color	Blue, Black
Primary Use	Wine
Wine Color	Red
Variety Origin	French Origin
Parents	Magdeleine Noire des Charentes x Cabernet Franc
Pseudonym (Tested As)	Not Applicable
Year Released	Unknown
Harvest Season	Mid Season
USDA Hardiness Zone	7
Sulfur Sensitivity	Not susceptible
Vine Vigor	Vigorous
Growth Habit	Semi-Upright
Suggested Distance Between Vines	4 ft - 6 ft
Vine Training System	Vertical Shoot Positioning
Bud Break	Data Unavailable

Publications and Resources

Grape

Grape NewsLetters

Oct 2012 Oct 2011 Oct 2010 Oct 2009
Oct 2008 Nov 2007 Nov 2006 Nov 2005 Oct 2004 Oct 2003 Oct 2002
Oct 2001 Oct 2000 Oct 1999 Oct 1998 Oct 1997 Nov 1996 Jan 1996

Articles

- Laboratory Testing for Grapevine diseases, Practical Winery & Vineyard, Jan./Feb. 2002
- California mealybug can spread grapevine leafroll disease, California Agriculture, Nov./Dec 2002
- Pathogen testing & certification of *Vitis* and *Prunus Species, Phytopathology*, Feb. 23 2005
- Syrah in California–decline or disorder?, *Practical Winery & Vineyard, May/June 2004.*
- Trade in grapevine plant materials, *ASEV Proceedings*, June 19–23,2000.

Fruit & Nut Tree

Fruit & Nut Tree Newsletters

- Oct 05 July 2003 June 2000

Articles

- A Practical Method for Almond Identification

International Orders

Due to continually increasing phytosanitary restrictions, FPS is no longer exporting plant material outside of the United States.

Riesling Selections

by Nancy Sweet, Foundation Plant Services

THIRTY-ONE ENTRIES APPEAR when a cultivar search is performed on the name 'Riesling' on the *Vitis* International Variety Catalogue (*VIVC*) website *www.vivc.bafz.de*. The 'true Riesling' alone shows 120 synonyms on that website. White wines made in the German style with cultivars other than Riesling were often given the Riesling name. Name ambiguity has interfered with a clear identity for the true Riesling.

Riesling is versatile in terms of viticultural and enological traits. The cultivar is sensitive to the climate and soil in which it is grown, resulting in distinctly different flavors in the wines. Riesling can produce wines that are dry, medium dry, medium sweet or sweet. Shifting wine preferences have prevented the cultivar from forming a clear impression on wine consumers, particularly in California.

The Riesling grape's popularity in California has taken an uneven course. Recent trends suggest that interest is again rising. The Riesling collection at Foundation Plant Services (FPS) offers some of the best clones from the old world as well as selections that originated in California vineyards over one hundred years ago.

THE IDENTITY PROBLEM

The noble Riesling grape has a long and rich history in Germany, where it is grown along the Rhine River and its tributaries. Most authorities believe that the white wine cultivar originated in that cool temperate area around the Middle Ages. In the interim, other grape cultivars, Riesling imposters and distant relatives of the true Riesling have adopted its name to gain marketing advantage and cause confusion over the identity of the true Riesling.

In 1998, scientists in Austria used DNA technology to create a partial identity for the 'true Riesling'. They were able to determine that one of its parents is Heunisch weiss, which is known in France as Gouais blanc, the sire of other important wine cultivars such as Chardonnay, Sémillon, Gamay noir, Melon and Aligoté. Riesling and Heunisch weiss share one allele at all loci. *Regner et al., 2000-Genetic; Regner et al., 1998a.*

Heunisch weiss is a late ripening cultivar that was able to flourish in northern Europe in the Middle Ages because of a 700 year warm climate phase at that time. *Jung and Maul, 2004; Regner et al.,1998a.* The grape was supposedly imported to Europe by the Huns and was called *vinum hunicum* in the literature of the Middle Ages. Although the Heunisch vines produced wine of poor quality, that cultivar was an important crossing partner for wild vines

Riesling FPS 09 in the FPS Foundation Vineyard came from Germany in 1952 and was first named 'White Riesling.' *Photo by Bev Ferguson*

and other grapevines in the cooler climates during that era. *Regner et al., 2000-Considerations; Regner et al., 2000-Genetic.*

The Austrian scientists were unable to identify Riesling's second parent. But they concluded that Riesling originated by a probable cross of the Heunisch variety with the other main gene pool mentioned in viticulture during the Middle Ages, the Fränkisch pool (*vinum francicum*). *Regner et al., 1998a.*

The Fränkisch pool shows close genetic ties to some wild *Vitis sylvestris* genotypes, which are the wild type *vinifera* of the region. *Forneck et al., 2003; Regner et al., 2001.* *Vitis sylvestris* existed and spread throughout western Europe for a very long time before cultivated grape varieties were imported to the region. It is not clear whether western European grape cultivars evolved from the local wild type or originated from imported cultivars. *Walker, 2009.* One group of scientists concluded that Riesling did not directly originate from a native wild grapevine. *Perret et al., 2000.*

The Austrian scientists mention one of the representative grape cultivars of the Fränkisch gene pool, the grapevine known as Traminer, as a candidate for Riesling's second parent. Traminer shares enough alleles with the *Vitis sylvestris* population to indicate at least a close relationship between the two, if not parentage. *Regner et al, 2000-Considerations.* Traminer was distributed throughout northern Europe by the Romans and provided a higher quality wine in terms of better sugar, higher extract values and more complex aroma. *Regner et al., 2001.*

When a pedigree search is performed on Riesling weiss in the *Vitis* International Variety catalogue (*VIVC*) at Geilweilerhof, Germany, the second parent for Riesling is shown to be *Vitis sylvestris* or (*Vitis sylvestris* x *Traminer*). However, the second parent for Riesling has not yet been definitively qualified by reported DNA findings.

The two Martini Riesling clones were entered together sequentially in the indexing binder and both underwent preliminary index testing at FPS in 1964-65. After preliminary index testing, **Riesling FPS 10** underwent heat treatment for 105 days and was first planted in the foundation vineyard in 1967. The selection first appeared on the list of registered vines in the California Grapevine Registration & Certification Program (R & C Program) in 1970. The name was changed to Riesling FPS 10 in 2003.

Riesling FPS 28 proceeded in a more circuitous route to the foundation vineyard at FPS. Upon its arrival at FPS from the Martini Stanly Lane vineyard around 1965, this selection was assigned the name White Riesling FPS 15. After preliminary index testing, the selection underwent heat treatment for 154 days and was planted in the foundation vineyard in May of 1972. White Riesling FPS 15 first appeared on the list of registered vines in the R&C Program in 1991.

Although this selection never tested positive for virus, White Riesling FPS 15 underwent micro shoot tip tissue culture therapy in 1999. The reason for the therapy is unclear, except that this selection was removed from the list of registered vines after virus was discovered in the foundation vineyard in 1992-1993. In 2008, the tissue culture version of this selection was released as **Riesling FPS 28**, which at this time has Provisional status in the R&C Program.

Riesling FPS 04 came to FPS before 1963 from an unknown source. The initial entry for the selection in the Goheen indexing binder states 'No record of source.' Nothing in the historical library documents or other FPS records contradicts that statement. There is no indication in USDA files that the selection was imported from abroad, so it is most likely a local donation. The plant material was originally given the name White Riesling FPS 04 and received no treatment. The selection first appeared on the list of registered vines in 1971. Its name was changed to **Riesling FPS 04** in 2003.

GERMAN CLONES

FPS has numerous Riesling clones from Germany, the presumed home of the cultivar. The clones come from three areas: the Rheingau, the Mosel region and the Pfalz (Palatinate).

Clonal selection in Germany began in the 19th century. *Rühl et al., 2004.* Called 'systematic preservation breeding of vine varieties', the process included careful initial individual selection followed by observations and repeated testing on successive clonal descendants. Eventually the method evolved so that the successive A, B and C clone levels were all subjected to progeny testing. Research stations and private breeders adopted the concept of repetitive selection for high performance in the 1920's. *Rühl et al., 2004; Schöffling and Stellmach, 1996.*

By 2003, 99 grapevine cultivars were officially registered at the federal office Bundessortenamt. Seventy-five of those cultivars were bred during the 20th century. The 99 cultivars included 530 registered clones, of which 86 belong to one cultivar, Riesling. *Jung and Maul, 2004.*

The Institute at Geisenheim

The Rheingau region of Germany is thought of as Riesling's historical and traditional home. Some say the Golden Age of Rheingau Riesling was from 1870 to 1930. The region is a small region (forty miles long by three miles wide) and runs along the Rhine River near Wiesbaden. *Price, 2004.* Today 80% of the vineyards in the Rheingau region are planted with Riesling grapes. *Robinson, 2006.* The International Riesling Foundation reports that many Rheingau Rieslings are made in the dry style and are rich and full-bodied, usually with a pronounced acidity and spiciness to the wines.

In 1872, Prussia established a horticulture and viticulture research institute at Geisenheim (Forschungsanstalt Geisenheim—Geisenheim Research Center) in the heart of what is now the Rhinegau region. *Robinson, 2006.* The Prussian government also initiated grafting improvement measures and clonal selection to improve the health status of grapevines. The institute for grapevine breeding and grafting was later established in 1950 as part of the Geisenheim Research Center. *Rühl, September 2009.*

Clonal selection focusing on White Riesling commenced at Geisenheim in 1921. Selection criteria were based on healthy growth, absence of virus symptoms and performance measures such as consistent yields and high wine quality. One of the goals of the program was to preserve the wide genetic base of the Riesling cultivar. By the end of the 1950's, seven clones were available to growers, including 110Gm (Geisenheim), 198Gm and 239Gm. *Bettiga, 2003; Schmid et al., 1995.* The original clones were tested further and subclones were created and tested, including 239-25Gm.

The virus-tested Geisenheim White Riesling clones and subclones were tested from 1978 to 1993, and regular crops with good sugar and acid levels were produced each year. At that time, virus tests were conducted in the institute's laboratories as well as at INRA's Colmar facility. The researchers concluded that no significant differences could be detected between them in regard to yield, sugar, acid levels and pH, and attributed that result to a generally high selection level. *Schmid et al., 1995.*

ENTAV-INRA-ENSA-M-OIVINS

CATALOGUE OF SELECTED WINE GRAPE VARIETIES AND CLONES CULTIVATED IN FRANCE

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD

CTPS

Clone Number	IDENTITY AND AVAILABILITY		POTENTIAL PRODUCTION	POTENTIAL TECHNOLOGICAL	COMPLEMENTARY OBSERVATIONS / REFERENCE ORIGIN
	■ Selection ● Origin ▲ Year of Certification	■ Initial Material Site Location ● Propagated Area (ha) ▲ ONIVINS Offices	■ Fertility ● Cluster Weight ▲ Production Potential Group	■ Sugar Content ● Enological Aptitudes	
Cabernet franc N					
210	■ ENTAV 55 ● Maine-et-Loire ▲ 1973	■ Espiguette ● 9,7325 ▲ Angers, Toulouse	■ medium or superior ● medium ▲ C	■ medium or inferior ● generally supple and fruity wines	sometimes irregular production more sensitive to grey rot Val de Loire
211	■ ENTAV 68 ● Maine-et-Loire ▲ 1973	■ Espiguette ● 1,2406 ▲ Toulouse	■ superior ● medium ▲ C	■ medium	Val-de-Loire
212	■ ENTAV 80 ● Maine-et-Loire ▲ 1973	■ Espiguette ● 3,4222 ▲ Angers	■ medium or superior ● medium ▲ C	■ medium ● well balanced and fruity wines	Val-de-Loire
214	■ ENTAV 183 ● Maine-et-Loire ▲ 1973	■ Espiguette ● 9,2487 ▲ Angers	■ medium or inferior ● medium ▲ A	■ superior ● bodied wines with strength and finesse	Val-de-Loire
215	■ ENTAV 186 ● Maine-et-Loire ▲ 1973	■ Espiguette ● 0,8257 ▲ Montpellier, Angers	■ medium ● medium or superior ▲ B	■ medium or inferior	Val-de-Loire
312	■ INRA-Bx 1446 ● Pyrénées-Atlantiques ▲ 1973	■ G. Parc / Espiguette ● 12,1557 ▲ Angers	■ medium or superior ● medium ▲ B	■ medium ● wines within the type of the variety	later maturing Bordeaux Area - Val-de-Loire
326	■ INRA-Bx 0815 ● Gironde ▲ 1975	■ G. Parc / Espiguette ● 0,3609 ▲ Bordeaux, Lyon	■ inferior ● medium ▲ A	■ superior ● rich and well bodied wines	inferior vigor Bordeaux Area
327	■ INRA-Bx 1336 ● Gironde ▲ 1975	■ G. Parc / Espiguette ● 2,8031 ▲ Angers	■ inferior ● medium ▲ A	■ superior ● rich and well bodied wines with keeping qualities	inferior vigor Bordeaux Area - Val-de-Loire
330	■ INRA-Bx 1534 ● Pyrénées-Atlantiques ▲ 1975	■ G. Parc / Espiguette ● 1,7173 ▲ Bordeaux, Avignon	■ superior ● superior ▲ C	■ medium or superior ● balanced wines	Bordeaux Area

Clone 326

Group A: clones are lower yielding, higher sugar and more preferred for wine making – wine makers clone.

Group B: Fairly high to high production potential. Productive and Vigorous. Control of yields gives particularly high quality wines.

Group C: Highly to very highly productive. If yields is insufficiently controlled, hence these clones produce neutral and common wines.

Group D: Production and behavior often change. These clones are recommended when their behavior is well known under these special conditions.

Plantgrape.plantnet-project.org/en

plantgrape.plantnet-project.org/en/clones

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Pl@ntGrape

Catalogue of vines grown in France

Home Catalogues Identification assistance External links New

Vine varieties Rootstock Clones

Presentation of clonal selection

List of approved clones in France

ENTAV INRA

Clone number	Variety	Origin	Year of accreditation	Selection	Agronomic references
603	Abouriou	Lot-et-Garonne	1979	ENTAV	Tarn-et-Garonne
604	Abouriou	Lot-et-Garonne	1979	ENTAV	Tarn-et-Garonne
1252	Agiorgitiko	Grèce	2016	VNB - IFV	
5001	Aladin		1987	INRA	
802	Aléatico	Corse-du-Sud	1985	ENTAV	Corse-du-Sud
859	Aléatico	Corse-du-Sud	1986	ENTAV	Corse-du-Sud
860	Aléatico	Corse-du-Sud	1986	ENTAV	Corse-du-Sud
861	Aléatico	Corse-du-Sud	1986	ENTAV	Corse-du-Sud
892	Aléatico	Corse-du-Sud	1987	ENTAV	Corse-du-Sud
893	Aléatico	Corse-du-Sud	1987	ENTAV	Corse-du-Sud

75	Chardonnay	Côte-d'Or	1971	ENTAV	Bourgogne;Champagne;Languedoc
76	Chardonnay	Saône-et-Loire	1971	ENTAV	Bourgogne;Champagne;Languedoc;Val-de-Loire
77	Chardonnay	Saône-et-Loire	1971	ENTAV	
78	Chardonnay	Côte-d'Or	1971	ENTAV	Bourgogne;Champagne;Val-de-Loire
95	Chardonnay	Côte-d'Or	1971	ENTAV	Bourgogne;Champagne;Languedoc
96	Chardonnay	Côte-d'Or	1971	ENTAV	Bourgogne;Champagne;Languedoc;Val-de-Loire
116	Chardonnay	Côte-d'Or	1971	ENTAV	
117	Chardonnay	Côte-d'Or	1971	ENTAV	
118	Chardonnay	Côte-d'Or	1971	INRA	Bourgogne;Champagne
119	Chardonnay	Côte-d'Or	1971	INRA	Bourgogne
121	Chardonnay	Côte-d'Or	1971	INRA	Bourgogne;Champagne
122	Chardonnay	Côte-d'Or	1971	INRA	Bourgogne;Languedoc
124	Chardonnay	Côte-d'Or	1971	INRA	Bourgogne;Champagne
125	Chardonnay	Côte-d'Or	1971	INRA	Bourgogne
128	Chardonnay	Côte-d'Or	1971	INRA	Bourgogne
130	Chardonnay	Côte-d'Or	1971	INRA	Bourgogne;Champagne;Languedoc
131	Chardonnay	Côte-d'Or	1971	INRA	Bourgogne;Champagne
132	Chardonnay	Côte-d'Or	1971	INRA	Bourgogne;Champagne
277	Chardonnay	Côte-d'Or	1973	ENTAV	Bourgogne;Val-de-Loire
352	Chardonnay	Côte-d'Or	1975	ENTAV	
414	Chardonnay	Côte-d'Or	1976	ENTAV	
415	Chardonnay	Côte-d'Or	1976	ENTAV	
548	Chardonnay	Saône-et-Loire	1978	ENTAV	Bourgogne
549	Chardonnay	Non précisée	1978	ENTAV	Bourgogne
809	Chardonnay	Saône-et-Loire	1985	ENTAV	Bourgogne
1066	Chardonnay	Côte-d'Or	2003	ATVB - ENTAV	Bourgogne
1067	Chardonnay	Côte-d'Or	2003	ATVB - ENTAV	Bourgogne
1068	Chardonnay	Côte-d'Or	2003	ATVB - ENTAV	Bourgogne
[illegible]	Chardonnay	Saône-et-Loire	2010	CAZ1 - JEV	Bourgogne

Small distribution clone

548	Saône-et-Loire	ENTAV	medium	low	high	
	1978	Bourgogne	low	medium	medium to high	
	6.06 ha		medium			concentrated, balanced wines with complex aromas

ENTAV INRA Early maturity clone, appreciated for its agronomic characteristics and the quality of wines obtained.

549	Non précisée	ENTAV	medium	medium	medium	
	1978	Bourgogne	low to medium			
	0.10 ha					distinctive wines of the vine variety

ENTAV INRA

809	Saône-et-Loire	ENTAV	medium	medium	high	
	1985	Bourgogne	low	medium	high	
	1.98 ha		low to medium			muscaté and refined wines with balanced structure

ENTAV INRA Clone appreciated for its agronomic characteristics and quality of wines produced. Use with care based on sought after muscaté character

Clone number	Identity and availability		Agronomic data		Technical data	
	Origin	*Selection*	*Fertility*	*Production level*	*Sugar content*	*Potential color*
	Year approved	*Agronomic references*	*Weight of grape clusters*	*Vigor*	*Total acidity*	*Tannic structure*
	Growing surface area		*Size of berries*	*Sensitivity to Botrytis*	*Aromatic intensity*	*Oenological aptitudes*
1066	Côte-d'Or	ATVB - ENTAV	low to medium	very lower	high	
	2003	Bourgogne	very lower		low to medium	
			low to medium			refined, distinctive, aromatic and well-balanced wines

ENTAV INRA Small grape clusters with considerable millerandage. Early maturity clone, appreciated for its low production, its high sugar content and the quality of wines obtained. Use for blending and for high added value productions due to its low yields.

1067	Côte-d'Or	ATVB - ENTAV	low	low	high	
	2003	Bourgogne	low to medium		medium	
			medium			concentrated and balanced wines wih complex aromas

ENTAV INRA Early maturity clone, appreciated for its agronomic characteristics and the quality of wines obtained.

1068	Côte-d'Or	ATVB - ENTAV	low to medium	medium	high	
	2003	Bourgogne	low to medium		medium	
			medium			muscaté aromas (more subtle following MLF), refined, balanced structure

ENTAV INRA Clone appreciated for its agronomic characteristics and quality of wines produced.

1145	Saône-et-Loire	CA71 - IFV	medium	medium to high	high	
	2010	Bourgogne	low to medium		low	
			low to medium	medium	medium to high	balanced wines with pronounced muscaté aromas

SUNRIDGE NURSERIES
Where the vintage begins

menu

01. COMPANY INFORMATION

French Clonal Selections

ENTAV INRA®

Our French clonal grapevine selections come directly from the ENTAV repository in France and carry the ENTAV-INRA® trademark - a guarantee of authenticity from the highest viticulture authority in France.

Cabernet Sauvignon 338	Yes	Black	P10 2019 & Classic
Cabernet Sauvignon 412	Yes	Black	P10
Cabernet Sauvignon 685	Yes	Black	P10
Cabernet Sauvignon 1124	Yes	Black	P10
Cabernet Sauvignon 1125	Yes	Black	P10 2019
Cabernet Sauvignon 1564	Yes	Black	Classic 2019
Caladoc Noir 724	Yes	Black	Classic
Carignan Noir 06	No	Black	Classic 2018
Carmenere 1059	Yes	Black	Classic
Chardonnay 76	Yes	White	P10
Chardonnay 95	No	White	Classic 2018
Chardonnay 95	Yes	White	P10 2019 & Classic 2018
Chardonnay 96	Yes	White	P10
Chardonnay 124	No	White	Classic 2018
Chardonnay 548	Yes	White	P10
Chardonnay 809	Yes	White	P10
Chardonnay 1066	Yes	White	Classic 2019
Chardonnay 1067	Yes	White	P10 2019
Chardonnay 1068	Yes	White	P10
Petit Verdot 400	Yes	Black	Classic
Petit Verdot 1058	Yes	Black	P10
Pinot Blanc 54	Yes	White	Classic
Pinot Gris 52	Yes	Grey	Classic
Pinot Gris 386	Yes	Black	Classic 2019
Pinot Gris 457	Yes	Grey	P10
Pinot Noir 459	No	Black	Classic 2018
Pinot Noir 521	Yes	Black	Classic
Pinot Noir 667	Yes	Black	P10
Pinot Noir 743	Yes	Black	Classic
Pinot Noir 828	Yes	Black	P10
Pinot Noir 927	Yes	Black	Classic
Pinot Noir 943	Yes	Black	P10
Piquepoul Blanc 463	Yes	White	P10
Riesling 49	Yes	White	P10
Roussanne 468	Yes	White	Classic
Sauvignon Blanc 241	Yes	White	Classic
Sauvignon Blanc 376	Yes	White	Classic
Sauvignon Blanc 530	Yes	White	P10
Sauvignon Blanc 906	Yes	White	P10

Remember that there is no such thing as perfect clone as the same clone responds differently based on site's environments which includes soil, local climate, and cultural practices.

Thank You!

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