

FPMS GRAPE PROGRAM NEWSLETTER

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2000-2001 Grape Orders

The list entitled: "Registered Grape Selections Offered by FPMS in the 2000-2001 Dormant Season" and all other ordering information is now available from the FPMS office and on the FPMS website at <http://fpms.ucdavis.edu>. Nineteen selections were just added to this list because they were re-registered or registered for the first time this year. Among the materials registered this year for the first time are three Cabernet Sauvignon heritage selections (FPMS 29 from Neibaum-Coppola, FPMS 30 from Disney Silverado, and FPMS 31 from Mondavi). New mother vines of the popular Cabernet Sauvignon 8 selection were also just qualified for registration. If you have received provisional materials from any of the newly registered selections in the past, you may contact the FPMS office to request retroactive Foundation stock tags. Grape materials in short supply will be allocated among the orders received by November 15, 2000.

New Materials Available from FPMS

Over 60 new selections are available from FPMS for the first time this year. Two are California Heritage selections—one is from the Durell clone of Syrah and the other is from the Carneros Creek/Chambertin clone of Pinot noir. Thirty-seven of the new selections are from generic French clones of the varieties Cabernet Sauvignon, Chardonnay, Gamay noir, Malbec, Pinot Meunier, Pinot gris, Pinot noir, Sauvignon blanc and Syrah. New Italian materials include selections of the Bionde Santi clone of Sangiovese, Greciano Dorato, Grignolino, and Montepulciano. There are also new Port selections of Bastardo, Mourisco da Semente and Tinta Francisca this year. Much of the work to make these materials available was funded by the California Fruit Tree, Nut Tree, and Grapevine Improvement Advisory Board (IAB).

Disease testing for all the new materials was recently completed and at least 2 mother vines of each were planted in the Foundation blocks in the summer of 2000. All materials from these vines will have provisional Foundation status because the vines are too young to be professionally identified. New materials are only available as green potted plants on their own roots (mist propagated plants, MPP) for the next few of years because of the limited quantities of material available. Green plants ordered in the fall of 2000 will be supplied about 9 to 12 months after they are ordered depending on the total quantity ordered/ selection. Sometimes it takes up to 2 years to supply large orders for new selections because of the small amount of material available for propagation. Hardwood cuttings will be available in about 2-3 years.

New materials which were negative for all the disease tests are shown on the "New Materials Available from FPMS in the 2000-01 Season" list. Propagations from these selections will advance from provisional to Foundation stock if/when the mother vines are professionally identified.

New materials which were negative for all the disease tests, except for Rupestris stem pitting (RSP), are shown on the list entitled: "New RSP+ Materials Available from FPMS in the 2000-01 Season." Propagations from these selections will advance from provisional to Foundation stock if/when the mother vines are professionally identified and if/when the current California Grapevine Registration and Certification Program regulations are amended by the California Department of Food and Agriculture (CDFA) to exclude RSP. See the article: "RSP and the California R&C Regulations" in this newsletter. Provisional all negative and RSP+ new materials are sold strictly on an "as is" basis.

New USDA Raisin Variety

Diamond Muscat is a new white seedless raisin grape variety released by United States Department of Agriculture, Agricultural Research Service in February 2000. It is an early season variety that ripens slightly ahead of Fiesta. The flavor is sweet with a fruity muscat flavor that remains when the fruit is dried. The fruit may be dried on the vine or on trays. FPMS has finished disease testing of Diamond Muscat and provisional status mother vines were planted in the Foundation block in the summer of 2000. FPMS is now accepting orders for provisional mist propagated plants of Diamond Muscat. Hardwood cuttings will be available from FPMS in about 2-3 years.

New imports for the FPMS Public collection

This year FPMS received several large shipments of grape varieties and clones for the FPMS public collection. A shipment of 13 clones from Portugal sponsored by Jim Duarte included the varieties: Arinto, Fernao Pires, Periquita, Trincadeira Preta, and Viozinho. Carlo Masteroberardino from the famous Mastroberardino Winery generously sent 8 clones of varieties grown in southwestern Italy including Greco di Tufo, Fiano, Aglianico, Coda di Volpe, Piediroso, and Falanghina. Descriptions of these Italian varieties are given in English at a wonderful web site: <http://www.mastro.it>. This year we also received two domestic selections of Roussanne that appear to be correctly identified, as well as new selections of Marsanne, Mourvedre and Merlot. Testing of all these materials is expected to be completed by the spring of 2002. Materials that qualify to be released from quarantine without further testing or treatment will be offered for sale in the fall 2002 newsletter. Funding for the collection, treatment, and testing of these materials was provided by the California Fruit Tree, Nut Tree, and Grapevine Improvement Advisory Board (IAB).

Professional Varietal Identification

This year we are privileged to have Dr. Jean-Michel Boursiquot, from the Ecole Nationale Supérieure Agronomique de Montpellier, France spending a sabbatical year in Davis. Boursiquot is a world renowned expert in the field of ampelography (grape varietal identification). He currently serves as the president of the Viticulture Commission for the *Office International de la Vigne et du Vin* (OIV) and is the French delegate to the OIV Vine Selection Expert Group. He is in charge of examining new grape varieties for distinction, homogeneity and stability for the *Union de la Protection des Obtentions Végétales (UPOV)* and is a member of technical and scientific committees for the *Comité Technique Permanent de la Sélection (CTPS)* and *Etablissement National Technique pour l'Amélioration de la Viticulture (ENTAV)*. Boursiquot has also consulted for grape programs in Chile, South Korea, China, Italy, Argentina, Germany, New Zealand, Spain, Uruguay, and Tunisia.

Most of Boursiquot's time in Davis will be occupied doing research in the UCD Viticulture and Enology Department in Dr. Carole Meredith's lab. Fortunately, he has also been able to work with FPMS for about 10 days doing a comprehensive inspection and report regarding the varietal identity of all of the provisional and nonregistered vines in the Foundation and quarantine blocks.

One of Boursiquot's general recommendations is to change some of the names used to identify FPMS grape materials so that they are internally consistent and compatible with internationally accepted standards. At this time, selections at FPMS are identified by the name they were labeled with in the country of origin. This policy was originally put in place in an effort keep materials correctly identified before the resources and technology for objective varietal identification were available at FPMS. Now, thanks to the work of Carole Meredith, Andy Walker and Boursiquot, many of the synonym selections have been studied and verified to be the same variety. Name changes can be made, therefore, with a higher level of confidence than in the past.

Some of the cases in which different selections of the same variety in the FPMS collection have different names are:

Different names used at FPMS	Prime name
Syrah/Sirah/Shiraz	Syrah
Tempranillo/Valdepeñas/Tinta Roriz	Tempranillo
Touriga Brasileira/Souzão	Souzão
Bastardo/Trousseau	Trousseau noir

There are also cases in which variety names used at FPMS are synonyms for other names considered more correct in other countries:

FPMS name	Prime name
Grey Riesling	Trousseau gris
Napa Gamay	Valdigué
Sauvignon vert	Muscadelle

Although there would be advantages to using a single naming system as recommended by Boursiquot, there are many reasons for keeping the names used today. Some of these synonyms have been used by California grape growers and winemakers for years and confusion could result if changes are made. There is not always good international agreement about the prime name for a variety so there may be some reshuffling of names in the future. Any changes must be coordinated with the Bureau of Alcohol, Tobacco and Firearms (BATF) and reflected on the BATF list of recognized winegrape variety names. A panel discussion on this topic will be held at the FPMS Annual Meeting on November 1, 2000.

1999-00 DNA TESTING OF FPMS VINES

by Dr. Carole Meredith, Professor, Viticulture and Enology, UCD

We have been verifying the varietal identity of FPMS vines by comparing their DNA profiles to those of authentic references. During the growing season, we took leaf samples from each vine and extracted DNA from them. Then we generated DNA profiles by analyzing eight specific regions of the DNA with SSR DNA markers. SSR markers are now internationally accepted as the most reliable and objective way to identify grape varieties.

We compared our results with DNA profiles we had previously obtained with vines known to be correctly identified or, when possible, with samples or DNA profiles provided to us by European colleagues. One of the great advantages of using SSR markers is that researchers in different countries can easily compare their results, without the need to exchange DNA or plant material.

Although six DNA markers is generally regarded as sufficient to uniquely identify every variety, we prefer to use eight to add an extra measure of confidence. Six specific markers have been informally agreed upon for the purpose of international comparisons, and all our testing includes those six. However, not all laboratories have yet incorporated these six markers into their programs so in some cases we can obtain DNA profiles, but for a different group of markers than those that we use. This is particularly true for some of the Italian varieties.

Merlot 07 is Malbec

Merlot 07 was suspected to be Malbec. This was confirmed by comparing Merlot 07 to authentic Merlot and Malbec. The DNA profile of the suspect selection matched Malbec exactly.

Disease testing is in progress to attempt to qualify Merlot 07/Malbec for the Foundation block at FPMS.

Black Malvoisie = Cinsaut

Black Malvoisie 02 and 03 (different sources) were confirmed to be the same as an authentic French sample of Cinsaut at 21 DNA markers.

Black Malvoisie 02 is available from FPMS as California Foundation stock. Selection 03 is only in the Viticulture and Enology field collection.

Mataro = Mourvedre

Mataro 01, 03 and 04 (two sources) were confirmed to be the same as an authentic French sample of Mourvedre at 16 DNA markers. Our Morrastel 01 (old California vineyard) and our Monastrell S1 (1980 introduction from Spain) are both the same as a sample of Morrastel from France but are not the same as Mataro/Mourvedre.

Mataro 01, 03, and 04 are available from FPMS as California Foundation stock. Monastrell-S1 is in a quarantine holding block because it is infected with leafroll.

Refosco = Mondeuse

We confirmed that our Refosco 02 is not the Refosco of Italy. It matches an authentic sample of the French variety Mondeuse for 17 DNA markers.

Refosco 02 is available from FPMS as California Foundation stock.

Nebbiolo sub-types

There has been some question as to whether the several Nebbiolo types known in Piemonte are actually the same variety. We compared FPMS vines of Nebbiolo 01, Nebbiolo Lampia 01, Nebbiolo Michet S1 and Nebbiolo Fino. All have the same DNA profile so we can conclude that they are all the same variety. Furthermore, samples of Nebbiolo Michet, Nebbiolo Lampia and Nebbiolo Bolla that were analyzed in Italy also had identical DNA profiles. Most of the Italian data was based on different DNA markers than we use so we could not compare them to ours. However, one sample that was analyzed at many of the same markers matched our Nebbiolo selections so we can be confident that we have true Nebbiolo. However, since the different Nebbiolo types all have the same DNA profiles, we cannot at this time verify that the sub-type names are correct.

Nebbiolo 01 and Nebbiolo Lampia 01 are available from FPMS as California Foundation stock. Tissue culture is being used to eliminate disease from Nebbiolo Michet and Nebbiolo Fino.

New Sangiovese selections

Eight new selections of Sangiovese were recently obtained, seven from California vineyards and one from Italy. Anna Schneider had previously questioned one of them, Sangiovese S15, as not being true to type. We analyzed all of them and compared them to vines of Sangiovese 01, 02, 03 and 04, all of which Dr. Schneider had previously said were correct. All had the same DNA profile except for the S15 selection, which is completely different. All of our other Sangiovese selections also match the DNA profile of an authentic Sangiovese sample analyzed in Italy. Thus all of the Sangiovese selections that we analyzed are confirmed as Sangiovese except for S15, which is another variety that we have not yet identified.

One of the seven new Sangiovese selections (Sangiovese-5 from the Biondi Santi clone) is available now from FPMS as RSP+ provisional mist propagated plants. Tissue culture is being used to eliminate disease from all seven selections. Sangiovese-01 and 03 are not registered because they tested positive for leafroll. Sangiovese-02 and 04 are registered but there is a hold on the 04 selection because of poor fruit composition and high rot in San Jaquin Valley trials conducted by Pete Christensen.

Cortese S1C is correct but 01 is not

The Cortese 01 in the old foundation block has the wrong fruit color and so is clearly wrong. We compared Cortese 01, a Cortese accession in the Repository and a recent introduction of Cortese from Italy to authentic Cortese from Italy. The recent introduction (Cortese S1C) matches exactly. The Cortese 01 and the Cortese in the Repository are the same as each other but they are not Cortese.

Plants produced from Cortese S1C using tissue culture will be tested for disease to find out if they qualify to be planted in the Foundation block at FPMS.

Verdelho 02 is correct but 03 and 05 are not

We confirmed that Verdelho 02 matches an authentic sample of Verdelho from Portugal. However, Verdelho 03 and 05 are incorrect. They do not match Verdelho and they are also not Pinot noir as was suggested in some old records.

Verdelho 02 is available from FPMS as California Foundation stock.

Tinta Barocca S1 and S2 are probably correct but 01 is not

The identity of Tinta Barocca 01 in the Foundation vineyard has been questioned. We compared that selection to two other Tinta Barocca selections (S1 and S2) and confirmed that 01 is not the same variety as the other two. Tinta Barocca S1 and S2 match a DNA sample of Tinta Barocca obtained from Portugal, so they are likely to be correct. However we have not yet verified that the Portuguese sample came from a reliable collection.

Tissue culture will be used at FPMS to attempt to eliminate disease from Tinta Barocca S1 and S2.

Vernaccia is probably correct

We have two selections of Vernaccia, Vernaccia 01, which was imported from Italy, and Vernaccia blanc, which came from the old Jackson vineyard. Both Schneider and Boursiquot noted that Vernaccia 01 (they did not look at the other one) is more correctly called Bianchetta trevigiana. Although Vernaccia is a synonym for Bianchetta trevigiana, there are several other varieties called 'Vernaccia something' in Italy so it would be less confusing if we used the Bianchetta trevigiana name. We found that both of our Vernaccias are the same variety. We do not have an authentic reference for Bianchetta trevigiana, but we were able to compare our results to those of four Vernaccias analyzed in San Michele all'Adige, Italy. The four Italian Vernaccias all had the same DNA profile. One of them is called Vernaccia Trentina, which is a known synonym for Bianchetta trevigiana. We have only three DNA markers in common with the Italian results, but our Vernaccia matches the Italian results at all three. It is likely then that our Vernaccia really is Bianchetta trevigiana, but we must obtain results for more DNA markers.

Vernaccia 01 is available from FPMS as California Foundation stock.

Ughetta is probably correct (syn. Vespolina)

Ughetta is a synonym for Vespolina. We compared the DNA profile of our Ughetta S1 to that of Vespolina. They match at the six DNA markers for which we have data for both, but there are two ambiguities that prevent us from confirming the identity. We will analyze two more markers.

Ughetta S1 is currently planted in a diseased holding block at FPMS. It has been released from quarantine, but it tested RSP+.

Lagrein is probably correct

Both our Lagrein selections have been questioned. We compared two vines of Lagrein 01 and five vines of Lagrein 02 to each other. All are the same. We have only limited data from an authentic Lagrein source in Italy, a sample from San Michele all'Adige. It matches our Lagrein at all five markers in common, but five is not enough for a conclusive identification. We will try to add more markers.

Lagrein 02 is currently planted in the foundation block at FPMS. It will be advanced to California Foundation status when the identity is confirmed. Tissue culture plants produced from Lagrein-01 will be tested for disease starting in 2001.

Malvasia bianca is still unknown

Anna Schneider says that our Malvasia bianca does not correspond to any of the Malvasia varieties that she knows well. She thinks that it might be a variety she called Moscato Greco. We do know that the DNA profile of our Malvasia bianca does not match several Malvasia types for which we have been able to obtain data, but we have not yet been able to find a positive match. Dr. Schneider is sending us samples of several Malvasia types from Piemonte as well as the Moscato greco that she thinks is our Malvasia. As soon as we receive those samples we will be able to further pursue this issue.

Lambrusco type is still unknown

There are many different Lambruscos in Italy, all with different names. In an effort to determine what our Lambrusco 01 is, we compared it to nine Lambrusco types from the Emilia Romagna region of Italy and to Lambrusca di Alessandria from Piemonte. None of them match our Lambrusco, so we still do not know what it is.

Bonarda is still unknown

Schneider has questioned the identity of our Bonarda 01 and 02, suggesting that they might be Croatina or Vespolina. We compared the DNA profiles of our Bonarda selections to those of Bonarda Piemontese, Croatina and Vespolina obtained in Italy. Our Bonarda does not match any of them. So for the moment we know that it is not any of those three varieties, but we do not know what it is.

IAB-funded retesting of selected mother vines

The IAB has been providing funding each year for the ongoing re-indexing of individual vines of important selections. We are also generating a DNA profile for each of these vines each year and confirming their identity when we can obtain an authentic reference sample. In 1999-00 we tested 20 rootstock vines. We have not been able to confirm the identity of most of them by DNA typing because independent reference samples are not available. Few research groups in other countries have been analyzing rootstock varieties.

RSP and the CA Grapevine R & C Regulations

Rupestris stem pitting disease (RSP) was first recognized in California in 1976 according to Dr. Austin Goheen. He showed that RSP is caused by a graft transmissible agent and suspected that it caused a slow decline in infected grapevines. Goheen tested for RSP by grafting a bud from a candidate grapevine into the indicator variety St. George. If pits developed in the woody cylinder of St. George after growing in the field for about 18 months, the candidate was considered RSP+. As of 1984, selections that test RSP positive do not qualify to be included in the California Grapevine Registration and Certification Program. At the same time, as a matter of policy, the USDA, Animal and Plant Health Inspection Service (APHIS) and California Department of Food and Agriculture (CDFA) began to require freedom from RSP before foreign grape selections could be released from federal or state quarantine.

By the early 1990s, the grape quarantine collection at FPMS was swamped with RSP+ selections imported, mostly, from Europe. Since there was no good scientific evidence of serious deleterious effects caused by RSP in grapevines, it seemed pointless to tie up the limited quarantine resources because of RSP. APHIS and CDFA were consequently petitioned successfully by the California grape industry and University to drop RSP from the list of quarantineable grape diseases. Selections that tested positive for RSP, but negative for all the other important virus diseases (leafroll, corky bark, fanleaf, tomato ring spot, etc), were released from quarantine and distributed to the public as nonregistered-RSP+ material. Selections that tested RSP+, however, were not included in the California Grapevine Registration and Certification Program.

In 1998, Dr. Adib Rowhani developed a new type of PCR test that reliably detects a virus associated with RSP (see the October 1998 FPMS Grape Program Newsletter, "A New Test for Grapevine Rupestris Stem Pitting") as part of his

ongoing program at FPMS to develop and implement better, faster, and cheaper testing methods for all the important grape diseases. His research has shown that all of the St. George mother vines and 25- 30% of the first group of selections sampled in the Foundation block are positive for the RSP-associated virus by PCR. In addition, field tests conducted in 1997-98 and 1998-99 to recheck 37 Foundation mother vines showed that 13 were RSP+ by St. George index. This data suggests that a significant amount of CA certified grape material may have been RSP+ for years. More testing of vines in the Foundation mother block using St. George and PCR methods is still underway. However, by January 5, 1999 there was enough data to cause FPMS Director, Dr. Deborah Golino, to write to CDFA asking that RSP be dropped from the list of diseases targeted by the California Grapevine Registration and Certification Program. She made this request to allow for the uninterrupted sale of California certified grape stock while research to develop a better understanding of the effects, distribution and spread of RSP is in progress. She pointed out that it is impractical to include RSP in the Program in a meaningful way without more information. She also noted that many other grape clean stock programs worldwide do not certify against RSP.

Thanks to the efforts of Kathleen Harvey, CDFA Program Supervisor for Nursery, Seed and Cotton, and Barbara Hass, CDFA Special Assistant for Permits and Regulations, draft regulations for the California Grapevine Registration and Certification Program which omit all reference to RSP, along with justification for deleting RSP, were sent to the State Office of Administrative Law on 8/29/00. The Administrative Law Office approved the change and sent out notices to interested parties asking for comment before 10/23/00. If requested, a public hearing will be held to discuss the proposed change. If there is public support for dropping RSP from the Regulations, the Office of Administrative Law will take final action on the proposed change by the end of December. The change will become effective by the end of January 2001 if the regular course is followed. However, if the final action is expedited, it may become effective as soon as January 1.

Currently there are more than 2,600 registered and provisional mother vines in the Foundation block at FPMS which represent the accumulation of 50 years of work on the California Grapevine Registration and Certification Program. All of these vines were propagated from sources that tested negative in the past on the field and herbaceous indicators prescribed by State regulation. In addition, since 1993, each of these vines has been ELISA tested for leafroll-associated viruses, grapevine fanleaf virus and Tomato ring spot virus at least every 3 years. Since 1997, about 20 vines/year are retested using 20 field, herbaceous and ELISA tests (See article "Retesting Foundation Mother Vines" in this newsletter). Visual inspections of each vine are conducted by CDFA and Dr. Rowhani twice each year. Vines with disease-like symptoms are placed on hold and/or retested. Vines confirmed to be diseased are removed from the block. To date, 537 mother vines have been checked for RSP by PCR. PCR tests on about 800-1000 additional vines are expected to be completed by the end of December 2000. Meticulous testing records for each vine are maintained in a database, and reports showing tests and results are provided with all grape materials distributed by FPMS. The mission of the FPMS Grape Program continues to be to make California Foundation and Certified grape stock the best that is available.

History has shown that transitions in the California Grapevine Registration and Certification Program are never easy, but they are necessary to keep up with changing technology that can improve the quality of grape materials. Preserving the integrity of the Program while in transition must be given the highest priority so that accomplishments achieved over the last 50 years are not lost. Removing RSP from the Regulations until there is good information about its distribution and importance is the best way to continue to supply high quality grape planting materials in California.

Washington RSP Regulations

Uncertainties about Rupestris stem pitting (RSP) made shipping California Certified grape nursery stock into Washington more complicated last dormant season. After careful consideration, the Washington State Department of Agriculture (WSDA) decided to continue to allow the import of California Certified grape stock because the regulations for the California R&C Program still officially exclude RSP. However, after the action to drop RSP from the CA Grapevine Registration and Certification Program is enacted (see "RSP and the CA Grapevine R & C Regulations" article in this issue), CA certified grape stock will no longer officially meet current Washington quarantine requirements.

Washington RSP quarantine regulations were discussed at a meeting of the Plant Improvement Subcommittee of the Research and Education Committee for the Washington Wine Commission held on 9/12/00. WSDA reported that a review of the current Washington grape quarantine regulations began September 6, 2000. Currently the Washington grape quarantine regulations require that grape materials shipped into Washington from any state must be certified free of leafroll, corky bark, fan leaf and RSP.

Since much of the grape material planted in Washington originated in California, the distribution of RSP in both states is likely to be comparable. A survey testing vines in commercial Washington vineyards is now underway to determine the extent of RSP and other disease. The goal is to sample and test almost 1600 vines for RSP, leafroll and corkybark in the fall of 2000. The same number of samples will be collected and tested in the spring of 2001 for fanleaf. PCR tests for RSP, leafroll and corkybark will be conducted by Bob Martin, USDA scientist at Corvallis, Oregon. ELISA tests for fanleaf will be conducted by Ken Eastwell at WSU. Test results from 304 samples were reported at a Washington Association of Wine Grape Growers (WAWGG) meeting held October 3, 2000. 4.6% of the samples tested to date were leafroll type 3 positive and 1.3% were RSP+. Dr. Adib Rowhani attended the 10/3/00 meeting. He thinks it is possible that more vines will test RSP+ later in the year because his research has shown that RSP-associated virus concentration goes up in the late fall. At FPMS we have had difficulty detecting RSP in the summer.

A plan to remove RSP from the list of grape diseases excluded by Washington State quarantine law was discussed at the 10/3/00 WAWGG meeting. Most of the industry people in attendance were in favor of the change, but a few have reservations. A decision was made to proceed with a public hearing regarding the removal of RSP from State quarantine law. If the public hearing results are in favor of removing RSP, the action is expected to go into effect about mid-December 2000.

There seems to be good support from the WA grape industry for removing the RSP quarantine. According to Ted Wildman, past chairman of the WAWGG, the risks of introducing RSP+ materials are outweighed by the benefits of obtaining new clones and varieties available from California nurseries. Right now it looks like timing of the RSP actions in California (possibly as soon as 1/1/00) and Washington will be very good for facilitating uninterrupted trade of grape nursery stock in the upcoming dormant season.

Retesting Foundation Mother Vines

An ongoing program funded by the California Fruit Tree, Nut Tree, and Grapevine Improvement Advisory Board to retest about 20 Foundation mother vines a year is continuing at FPMS. At least 17 total field, herbaceous and ELISA tests are used to evaluate each vine. All results for the 1998-99 tests were negative except for a few vines that were RSP+ on the St. George field index. Reporting of final results from the 1998-99 tests has been delayed until the Saint George results are checked using PCR because of concerns about the reliability of the Saint George data. Vines tested in 1998-99 and in progress in 1999-00 and 2000-01 are shown below.

Foundation mother vines retested in 1998-99

<u>Variety/selection#</u>	<u>Source Plant Location</u>
Cabernet Sauvignon 04	BKN B2 V6
Cabernet Sauvignon 06	BKN B2 V10
Cabernet Sauvignon 07	BKN C2 V1
Cabernet Sauvignon 15	BKN A3 V11
Grenache 03	BKN A11 V4
Malbec 04	BKS G3 V9
Malbec 06	BKN B12 V9
Petit Verdot 01	BKN B15 V2
Petit Verdot 02	BKN B15 V8
Pinot noir 32	BKS H2 V3
Pinot noir 39	BKS G13 V7
Sangiovese 02	BKS G16 V3
Sangiovese 04	BKS H9 V10
Semillon 05	BKN A18V10
Shiraz 01	BKN B18 V7
Tempranillo 02	BKS H10 V7
Tinto Cao 01A	BKN B19 V1
White Riesling 09	BKS H14 V1
White Riesling 12	BKN C19 V8
Zinfandel 06	BKS H13 V1

Foundation mother vines being retested in 1999-00:

<u>Variety/selection#</u>	<u>Source Plant Location</u>
Couderc 3309 02	BKS N3 V2
Freedom 01	BKS C3 V7
Harmony 05	BKS C5 V9
Kober 5BB 06	BKS C7 V7
LN33 01	BKN AA3 V6
M.G. 101-14 01	BKS N2.5 V1
M.G. 420A 04	BKS N2 V31
Malegue 44-53 01	BKS N .25 V7
Malegue 44-53 01	BKS N .25 V3
Oppenheim 4 (SO4) 09	BKS M1 V5
Paulsen 1103 02	BKS M3 V2
Richter 110 01	BKS L8 V9
Richter 110 01	BKS M8 V2
Richter 99 01	BKS D2 V7
Riparia Gloire 03	BKS N1 V3
Riparia Gloire 04	BKS N1 V6
Ruggeri 140 02	BKS C1.5 V5
Schwarzmann 01	BKS N1 V25
Saint George 15	BKS D2.5 V7
Teleki 5C 08	BKS E1 V1

Foundation mother vines being retested in 2000-01:

<u>Variety/selection#</u>	<u>Source Plant Location</u>
Couderc 1202-2	BKS C1 V2
Couderc 1613-5A	BKS C1 V4
Couderc 1616-02	BKS N2 V5

Couderc 1616-3	BKS C2 V2
Couderc 3306-01	BKS M9 V7
Couderc 3309-05	BKS C6.5 V11
Dogridge-04	BKS C4 V7
Foex 333 EM-01	BKS C4 V10
Kober 125AA-01	BKS I17 V7
LN33-01	BKS D2 V2
MGT 41B-02	BKS D1 V1
MGT 420A-05	BKS D2 V4
039-16-01	BKS I13 V1
Paulsen 1045-01	BKS C8 V4
Paulsen 1103-01	BKS C8 V10
Paulsen 779-01	BKS M5 V1
Ruggeri 140-01	BKS M3 V11
Ruggeri 225-01	BKS D4 V8
Salt Creek-08	BKS D5 V1
V Rup Constantia-01	BKS N3 V31

NAPPO News

The Grape Panel for the North American Plant Protection Organization (NAPPO) is continuing to work to develop standards to recommend for moving grape nursery stock between Canada, the United States and Mexico. Over the last year, the NAPPO grape panel met two times.

In October 1999, the grape panel members met at the NAPPO Annual Meeting held in Cancun, Mexico. The main topic of the meeting was "The World Trade Organization Dispute Settlement Process." Several cases were discussed in which standards developed by the International Plant Protection Convention (IPPC) were used by the Sanitary and Phytosanitary (SPS) committee of the World Trade Organization (WTO) to resolve disputes that involved plant health issues. The NAPPO grape panel is also required to use IPPC standards to develop grape standards for North America. The WTO aims to ultimately harmonize plant health standards worldwide based on the IPPC after regional harmonization is completed.

The Cancun meeting was attended by John Duarte, President of Duarte Nursery, Chris Lindelof representing Sonoma Grapevine, James Strickland, Director of Intellectual Property Management and Regulatory Affairs for AgriVitis, and Deborah Golino, Director of FPMS. They presented industry concerns from the U.S. about the NAPPO grape standards currently being drafted by the grape panel. They explained that the U.S. needs time to create and implement national program(s) in compliance with IPPC guidelines to provide adequate protection for the grape industry in place of the current U.S. grape quarantine laws. They also said that the current U.S. grape quarantine laws need to remain in place to protect the industry until national programs are successfully implemented.

The second meeting of the NAPPO grape panel occurred in March 2000. This was a working meeting where six charges assigned to the panel for 1999-2000 were addressed as follows:

1. A list of recommended diagnostic tests to use for national grapevine certification programs was created.
2. The panel decided they were unable to recommend methods for determining whether grape disease tests conducted in Canada, the U.S. and Mexico are equivalent because **national** grapevine certification programs don't yet exist to conduct the tests in the U.S. and Mexico.
3. The grape panel participated in combined meetings with other fruit crops to consider common elements of certification programs for the different crops.
4. The panel decided that pest free areas (PFA) as defined by NAPPO and IPPC standards may be applied to grapevines and that PFA may be used to justify quarantine laws and protect PFA.

5. The panel said that it is not possible to recommend general methods for conducting surveys for grape pests to justify PFA. Survey methods will have to be designed on a case-by-case basis for each pest according to its biology.
6. The panel reviewed the lists of quarantine pests for Canada, the U.S. and Mexico and decided to make recommendations in the future about the type of control programs needed for each pest.

The standards currently being drafted by the NAPPO grape panel are essentially instructions for creating a grape certification program which will be recommended to the National Plant Protection Organizations in Canada, the U.S. and Mexico. If all 3 countries implement the same program, then certified grape nursery stock will move freely between them. If no mandatory control program(s) are implemented by a country, then the quarantine laws may only prohibit pathogens that do not already exist in the country. According to the IPPC standards, the only acceptable way to prevent importation of grape nursery stock from other countries is to implement mandatory control program(s) that meet higher standards than the materials being excluded.

The NAPPO 24th Annual Meeting will be held in San Diego, California on October 16-20, 2000. The agenda includes in-country and commodity meetings with government and industry representatives. Craig Reggelbruge is the United States representative who will report concerns from the industry to the NAPPO business meeting. More information about the meeting and all NAPPO activities is available from the WEB at <http://www.nappo.org>.

New PCR Testing Services

Starting about January 2001, FPMS will accept grape samples for disease testing by polymerase chain reaction (PCR) on a fee-for-service basis. PCR is a nucleic acid based detection system which can be used to detect a wide range of different pathogens in plants, as well as many other applications in medicine and other biological sciences. PCR testing has been used in the FPMS lab for the last 8-10 years for a number of research applications. Dr. Adib Rowhani, the FPMS Plant Pathology Specialist, has been a leader in adapting PCR for the detection of grapevine viruses. It is an extremely sensitive method for detecting particular pathogens or strains of pathogens. Once a pathogen has been cloned, sequenced, and the necessary PCR primers developed (target sequences of the genome of the pathogen), the test can be used by laboratories all over the world. PCR has several advantages over ELISA testing: it is more sensitive than ELISA, it is not necessary to make or obtain antisera, and it is possible to use PCR to detect a large number of different pathogens from a single sample. The time required to conduct PCR tests is about the same as ELISA although the reagents for the test are significantly more expensive.

Over the last few years, FPMS has received frequent requests for PCR testing. Discussion on the possibility of FPMS custom PCR testing were held this spring with the IAB board. The IAB has provided a \$10,000 fee to licence FPMS for the commercial (non-research) PCR testing; this was necessary since this is a patented technology. FPMS has been asked by the IAB to charge fees which will cover all FPMS-UC expenses in addition to the necessary patent royalties (15% of all income derived from PCR testing). Those fees are in the process of being approved by a UC rate committee. Like all diagnostic tests, PCR testing has some limitations.

A negative result does not guarantee absence of disease. PCR detects only very specific genetic sequences so it is possible that some strains of known pathogens and/or unknown causal agents may escape detection by PCR. Although the test is extremely sensitive, some pathogens may reach very low titers at some times of the year which can result in false negative results. Multiple PCR tests, additional testing by ELISA, woody indexing and herbaceous indicators are still necessary to provide the most reliable diagnosis in critical situations.

Sampling and testing protocols have now been standardized enough to make custom testing services possible for about 13 different grapevine viruses, two phytoplasmas, and the bacterium *Xylella fastidiosa* which causes Pierce's disease. Information regarding prices, specific tests available, and instructions for submitting samples will be available soon from the FPMS office and the FPMS web site at: <http://fpms.ucdavis.edu>.

