NCPN-Grapes Tier II
Committee Meeting
Trinchero Family Estates Building
501 Hopkins Road
Foundation Plant Services
UC Davis
January 31 - February 1, 2019

Attendees: Maher Al Rwahnih, Kamyar Aram, Bud Dangl, Alfredo Diaz Lara, Kristen Farrar, Marc Fuchs, Deborah Golino, Minsook Hwang, David Johnson, Kevin Judkins, Joshua Kress, Karl Krist, Lori Leong, David Marion, Bob Martin, Mike Means, Guillaume Mercier, Stephen Mudd, Tom Nemcik, Tivonne Nguyen, Joshua Puckett, Wenping Qiu, Dennis Rak, Tia Russell, Sue Sim, Rhonda Smith, James Stamp, Keith Striegler, Nancy Sweet, Athar Tariq, Violeta Tsolova, Alan Wei. Via remote: Eric Amberg, Scott Harper, Margaret Kelly, Erich Rudyj

Minutes – Deborah Golino
The December 10, 2108 minutes were approved after a motion by Dennis Rak and a second by Marc Fuchs.

Charter Revision and Education and Outreach Update – Kristen Farrar and Sue Sim
The NCPN-Grapes Tier II charter was revised in 2018 to accommodate the addition of two new industry members. We welcomed Keith Striegler from E&J Gallo to represent industry from the West and Rachel Lipman to represent industry from the East. A revision of the charter was provided which highlighted the recent changes.

Education and Outreach was productive in 2018. Notable publications and resources include new hops and fruit trees tri-fold brochures, factsheets (blackberry yellow vein, citrus HLB in English and Spanish, Citrus Clonal Protection Program, and Grapevine red blotch virus revision), website updates, booth display materials, and online resource library, coordinators handbook and PowerPoint presentation template.

A Network Communications meeting to strategize about the future direction of NCPN-Education and Outreach was held June 12-13 in Portland, Oregon. After the meeting, a Coordinator’s Handbook (on a Google Team Drive) and Resource Library (on the NCPN website) were developed to support the coordinator role and made available to all coordinators. As an additional outcome for the meeting a proposal was developed and funded to hold two additional communications planning meetings in 2019. This special initiative is being facilitated by Vicky Scharlau (NCPN-Grapes Tier II).

Center Updates

Eastern NCPN-Grapes Center, Cornell University - Marc Fuchs
In 2018, the Cornell University clean plant program introduced four hybrid selections from Germany and one rootstock from France. Disease indexing was performed by bioassays, ELISA, RT-PCR, and qPCR and Traminer N23, Pinot blanc N81, and Chenibec were released. The program also performed virus/Agrobacterium vitis elimination therapy on Marechal Foch (GLRaV-3), Oberlin (GLRaV-1), Zweigelt (GLRaV-1), Concord (GLRaV-3), Pinot noir (GRBV), Chardonnay (GRBV), and Riesling (A. vitis). More research is needed to ensure the vines that test negative with this assay are free of A. vitis. The estimated economic value of NCPN clean plant centers was calculated for the case of grapevines at FPS. Returns to public investments per dollar ranged from $18.1 ($270 million return for a cumulative $14.9 million expenses from 2006 to 2015) for a 5% leafroll disease prevalence, to a projected $134.5 ($4.099 billion by 2025) for a 20% leafroll disease prevalence. The beneficiaries of this investment are growers and nurseries.
Foundation Plant Services, University of California Davis - Deborah Golino
Nancy Sweet has assembled a wealth of information with interesting stories behind introductions in an online book *Winegrapes of UC Davis* linked to on the FPS website. Deborah provided an overview of the new releases. In 2018, 150 selections were treated by tissue culture and planted in Russell Ranch and 163 selections were new to FPS. The FPS grape program has 779 active cultivars which makes it one of the largest collections in the world and with the highest phytosanitary standards. Russell Ranch and Classic Foundation vineyards contain over 4,000 plants each. There was a significant number of PCR tests and extra effort from the lab to test for red blotch and leafroll. A new improved GLRaV-3 assay was developed with non-NCPN funds that can detect GLRaV-3 variants. This assay has improved laboratory efficiency and was shared with other clean plant centers. FPS holds an import permit PPQ588 and has worked with PPQ to do prereleases based on HTS data. While two years of biological indexing data is required to release from quarantine, if another institution also gets a P588, we can pre-release material to the institution to begin its propagative increase while the biological indexing is completed.

Clean Plant Center Northwest, Washington State University - Scott Harper
Scott provided an overview of the retention testing at CPCNW. They have a newly renovated tissue culture laboratory with support from the WSDA an WHC. CPCNW is planning on refitting the grape screenhouse for better winter protections. They are wondering what criteria are used for determining which selections should be maintained in the screenhouse vs. which should be field planted and are working with FBAG to determine the material that will stay in screenhouses. They have a capacity to hold 400 cultivars in their screenhouses. Washington growers have a higher level of confidence of material grown in screenhouses.

Midwest Center of NCPN-Grapes - Wenping Qiu
Wenping shared that the Midwest Center maintains a foundation block of regionally needed and adapted clean grapevines: Norton, Chambourcin, Vidal blanc, Traminette, Vignoles, Cayuga white, Chardonel, and Vivant. Last year they delivered 200 cuttings. Over the last nine years, they delivered 7295 cuttings. Norton and Chardonel are most popular. The 2017-18 objectives were to continue auditing the status of GVCV in Foundation vineyards, audit the virus status of the mother vines by NGS, manage and sustain the second generation, and conduct NCPN outreach. The second-generation foundation vineyard has 90 vines per cultivar each derived from a single mother vine. GVCV was found in native wild plants; symptoms appear to be like those on cultivated grapes. A survey of GVCV in *Ampelopsis cordata* (heartleaf peppervine) showed a 33% infection. Research determined that aphids can transmit GVCV, and symptoms appear 45 days post transmission. RNA sequence data shows strong evidence for aphid transmission. In 2018, red blotch was found in a commercial vineyard of Crimson Cabernet in Missouri. In 2019-20, the Foundation Vineyard will be surveyed for red blotch.

Center for Viticulture & Small Fruit Research, FAMU - Violeta Tsolova
Violeta stated that the mission of the Southwestern NCPN Regional Clean Center for Grape is serving the region of Florida and the gulf states which has high disease pressure from Pierce’s Disease. The Foundation Vineyard is planted with 25 muscadine and Florida native hybrid varieties. The Program produces high quality disease free muscadine and Florida hybrid grape varieties by meristem shoot tip culture, conducts research and develops diagnostics, maintains the Foundation block (under screen), and conduct outreach. Industry demand is increasing. The program has a PPQ526 for handling viruses for diagnostics. Viruses identified in cultivated and wild muscadines are grapevine leafroll-associated virus 1 and 2, grapevine virus B, grapevine Syrah virus 1 and blackberry virus S. A major goal of the program is diagnostics, as such six samples of different varieties were submitted for HTS analysis. Ongoing projects include bringing in new varieties, conducting disease elimination, and auditing the health status of the Foundation vineyard in harmonization with other states.

Red Blotch Research - Marc Fuchs, Cornell University
Marc provided some background on red blotch. It’s graft-transmissible, present where grapes are grown, and transmitted by three-cornered alfalfa hopper (TCAH) in greenhouse conditions. The ecology of red blotch was studied in a 2008-planted Cabernet franc vineyard in California. The virus was confirmed in 2013 and infected vines were monitored over time. Disease prevalence in the entire vineyard was 4% initially and spread to 14% in 5 years. In a sub-section of the vineyard, 32% of the vines were infected initially which increased to 92% in 5 years. In an insect survey, more than 1500 specimens (43 species/taxa) were tested for red blotch; more than 30% ingested the virus. Vector candidates are all are phloem feeders and not are pests of grapevine. Wild *Vitis* virus 1 (WVV1; genus *Grablovirus*), with about 58% sequence identity to GRBV, has been found only in free-living grapevines. In California the proximity of red blotch infected wild vines and commercial vineyards suggests movement from commercial vineyards to wild grape populations. There has been no virus found in free-living *Vitis* in New York, and red blotch does not seem to move vine to vine or from vineyard to vineyard. Management recommendations are to remove red blotch inoculum sources, rogue infected vines when disease is less than 30%, and remove the entire vineyard when disease is greater than 30%. LAMP red blotch diagnosis has potential to be used on-site. It has been compared with qPCR in terms of its robustness. The next steps in research are to investigate other vector candidates, validate the LAMP assay, investigate wild grapes as a reservoir, determine the host range and transmissibility of WVV1. Sourcing clean planting material remains of utmost importance.

**Updates on Red Blotch and the Foundation - Maher Al Rwahnih, FPS, UC Davis**

Maher provided an update on the inspection and testing of foundation vineyards. In 2017 a total of five vines were positive for red blotch in Russell Ranch Vineyard (RRV) and removed. FPS obtained 27 insects from the field which were tested negative for the presence of GRBV. One-fifth of the classic vineyard was tested and only one vine was positive for GRBV. Looking at the distribution history of all these positive vines, either there was no previous material distribution, or the material was distributed prior to the last negative test. FPS conducted at time point study to investigate the titer and distribution of the virus, and found the titer is time and vine dependent. The greatest variability between tissue type occurs in June (44% false negative) and the least variation occurs in October. In 2018, FPS tested every vine in both foundation vineyards for both GLRaV-3 and GRBV. No vines were positive for GLRaV-3. RRV had 24 (of 4406) red blotch positive vines. Due to our zero-tolerance policy of infected material, we have implemented a “test to order” policy, which means all material will be tested before distribution. For the 2018-2019 orders, we tested 2095 vines and none were positive for red blotch. We are encouraging all growers to place orders early to allow time for testing before distribution. Moving forward we will test foundation vineyards annually for GRBV and GLRaV-3, test selections individually prior to distribution, and increase the frequency of visual inspections and subsequent testing as needed.

**Updating Grape Virus Regulations – Addressing the Knowledge Gaps, Discussion led by Marc Fuchs and Josh Kress**

The group discussed the importance of a coordinated effort between regulators, scientists and industry to address regulatory issues and gaps in the current system. Regulations need to advance with the latest science and be harmonized between states while also being practical and enforceable.

**Other Business**

It was agreed that holding the meeting in Davis the Friday after the Unified Wine and Grape Symposium was good for out-of-towners and we would do the same next year.

*Marc Fuchs moved to adjourn the meeting. The motion was approved after a second by Bob Martin.*

Respectfully submitted,

Kristen Farrar