

FPS FRUIT AND NUT TREE ADVISORY COMMITTEE MEETING
December 12, 2018
Peter Christensen Conference Room,
Trinchero Family Estates Building, UC Davis



MINUTES

Present

Maher Al Rwahnih, Kendall Ash, Marcos Arriaga, Bill Burchell, Tom Burchell, Brent Burky, Javier Castillion, Bud Dangl, Ted DeJong, Kristen Farrar, Deborah Golino, Tom Gradziel, Dustin Hooper, Minsook Hwang, Karl Krist, Judy Lee, Lori Leong, David Marion, Denise Meade, Stephanie Syphers, Athar Tariq

AGENDA ITEMS

Welcome and Introductions

Jack Poukish, chair of the Foundation Plant Services (FPS) Fruit and Nut Tree Advisory Committee, called the meeting to order and welcomed the attendees. Jack mentioned there was a date change for this meeting due to a conflict with the Almond conference and thanked the attendees for coming.

Approve Minutes from January 9, 2018

Tia Russell moved to approve the minutes from January 9, 2018. Brent Burky seconded the motion and it was approved unanimously.

FPS Tree Collection and Virus Therapy Program Updates – Joshua Puckett, Production Manager, Foundation Plant Services

Josh Puckett provided an overview of the tree program at FPS. There has been a significant increase in number of selections introduced, especially with the addition of *Malus* and *Pyrus* to the program. In the past there were about 30 releases per year, but releases have increased recently. In 2017 there were 90 releases and in 2018 there were 97. Most are from domestic sources. Everything that is available and in progress is listed on our website. As soon as selections are available, content is added to the website to provide very specific information. The *Prunus* encyclopedia (also available on the website) has detailed information on bloom time, fruit production, etc. Of the 2018-19 releases, 33 selections (13 proprietary, 20 public) have completed testing and are available. Of the introductions in the pipeline, 94 are undergoing testing, and 82 require treatment. Regarding virus diagnostics, HTS will be conducted on all new selections. The transition from the field index to the greenhouse index has reduced time to release. Tissue culture protocols and standard SOPs are still in development. FPS is working to improve *Prunus* tissue culture techniques. The challenges are that direct meristem establishment is usually not enough to eliminate virus in most cases, and seems to work better with heat therapy. For example, in a side-by-side comparison of flowering cherry with heat + excision vs. excision alone, we still saw CVA with direct meristem excision alone. Thus, heat therapy is helpful, and the lab is working on refining the process. We are also considering meristem grafting or micro-wedge grafting following a similar protocol to what is used in citrus industry. There are currently 11 selections undergoing thermotherapy. Regarding the inclusion of Pome fruits into the collection, a 588 permit has been obtained for pome fruits and we anticipate a 5-year process to release pome fruits with the goal to begin releases by 2022.

Goals for improving Tree Virus Detection at FPS – Maher Al Rwahnih, Foundation Plant Services

Dr Al Rwahnih discussed the goals for improving tree virus detection at FPS. Progress has been made with diagnostics and testing. FPS wants to ensure that we accommodate the greater number of introductions without compromising the results. HTS is helping with this process as the new import permit allows for provisional quarantine release with negative HTS results which allows nurseries to begin their propagative increase; final release is dependent on biological testing. Customers wishing to obtain material under provisional quarantine release, must also obtain a CIP588. There have been improvements in laboratory testing efficiency as automated processes are increasing the number of plants analyzed weekly. We are working to harmonize Pome fruit program SOPs with the Clean Plant Center Northwest regarding testing requirements. Currently, different agencies have different requirements and the programs are not harmonized. We are examining the possibility of eliminating greenhouse testing for known viruses and have proposed to APHIS that field indexing can be used for diseases of unknown etiology, and we can detect known viruses with laboratory testing. FPS is currently investigating viruses of unknown etiology by running HTS on samples with unknown etiology to reduce the list of viruses with unknown etiology. Some of these samples are pome fruits from Joseph Postman.

An evaluation of the 2017-18 biological index in the screenhouse for 60 *Prunus* selections revealed that only one selection showed positive for symptoms in biological indexing, and we already knew it was positive. This demonstrates a failing system of indicators. PCR testing showed that not all viruses were transmitted. In addition, trees used as positive controls were infected, but the indicators were not showing symptoms. FPS would like to get a new *Prunus* permit with ability to plant anything negative via HTS in the field and remove Canindex and Kwanzan from the indexing requirements. GF 305 and Bing are still good indicators for testing. On-going research projects that will enhance the testing ability at FPS include looking at LChV1 and LChV2 effects of combination in different rootstocks. There is a lethal combination. This work is currently in progress and testing will be updated with new validated assays. FPS is working on constructing new improved pome fruit assays which are currently out of date. FPS is also working to remove little cherry virus A (CVA) from CDFAs pest rating system (currently a C-rated pest). To do so, we surveyed for CVA by collecting random samples from the best producing orchards. Of 204 samples, 43% were positive for CVA, and 39% of CVA-positive samples were co-infected with PDV and/or PNRSV. Co-infection rate of CVA-negative samples was 24%.

There was a modification to order of the agenda. John Preece and Tom Gradziel traded time slots.

News from the USDA Clonal Repository – John Preece, Research Leader, USDA-ARS Clonal Repository

John Preece stated that his report for the current fiscal year is more optimistic than last year. This year the repository was given \$63,000 for contractual labor services to fix some problems at Wolfskill, i.e. woody weeds. He is optimistic that the Germplasm system is finally in the Farm Bill which includes a plan to develop and implement a national plan for characterization and maintenance of the existing collection. It's significant news to be in the Farm Bill as it will funnel money to the national plant germplasm system. The National Grape Research Alliance is lobbying for money for the germplasm collection of grapes which has the potential to bring \$1 million to the repository. Collections of wild relatives of *Prunus* are increasing and they are not all in Germplasm Resources Information Network. They possess interesting genetics, especially for rootstock development and there is a lot of potential for resistance in the wild species. Some clonal rootstocks are in the pipeline and new genetics are available in *Prunus*, walnut, and pistachio. Wild relatives are being used to breed *Armillaria*-resistant cherry for

Michigan and peach for South Carolina. *In vitro* assays will be used to test resistance in lab and those with good indication of resistance in the lab will be tested in the field.

Updates from the Peach/Almond breeding program – Dr. Tom Gradziel, UCD Department of Plant Sciences

Dr Gradziel provided an update on the patent and release of Kester almond. Kester is at its 20-year mark and looks very promising. It flowers just after Non-pareil and is very efficient at capturing sunlight which results in high yields. Tom welcomes feedback from growers on how to get information out about Kester. UCD self-fruitful almond selections are in regional variety trials. Kader and Vilmos clingstone peaches are undergoing grower testing. There is a gap between Dee-six and Bowen that needs to be filled, but there is a small germplasm base to work with. Trees need to have uniform ripening for machine harvest. Ones that can hang on the tree for a few weeks to allow for others on the tree to ripen is desirable; Kader has that quality. Early #6 also fills in at that gap and will hold on the tree. In 2019, Ogawa is an unpatented candidate for release, and it ripens two weeks before Lovell. The peach industry is under duress and it needs solutions such as compact trees that have short internode length and suppressed water-sprout growth which means reduced pruning; Tom is hoping to get these into grower test plots. In the rootstock breeding program for *Prunus* root-knot nematode screening, the 2017 interspecific hybrids will be tested for resistance to *M. floridensis*. Tom also provided an update on bud-failure issues. It isn't a genetic mutation and they are working on narrowing down what's causing the problem.

Progress Report on the Activities of the National Clean Plant Network – Deborah Golino, Foundation Plant Services

Dr Golino provided an update of the activities of the National Clean Plant Network. The Farm Bill is still being approved by congress and the funding for next five years is in the system. FPS has applied for FY 2019-20 and the proposal has been evaluated by the guiding committee. NCPN continues to be a popular program and was funded with an increase in budget in the new farm bill. We applied for FY 19-20 funding, asking for an additional \$100K to expand our tree program. We expect to hear more about funding in January or February. FPS is grateful to the support of the nursery industry in California. FPS' financial status is sound. In addition to NCPN funds, pistachio rootstock seed sales, IAB support, and user fees are all supporting the program well.

Respectfully submitted,

Kristen Farrar