

**WCC-20 Annual Meeting Report**  
May 16-20, 2002, Honolulu/Hilo, Hawaii

The meeting was called to order by John Hu. Information on the meeting and field trip itineraries were presented and discussed.

**Catherine Chan-Haldebrendt** (U. of HI) provided an overview of Hawaiian agriculture. Farm revenues were estimated at about \$570,000,000 with pineapple, sugarcane, and seed being the top three industries. She urged us to come back to Hawaii and spend money to help offset the recent drop in tourism!

**Ralph Cavalieri**, the WCC-20 Advisor, addressed the gathering via phone link from Pullman, WA. He informed us that the Committee has been renewed for 5 more years. He mentioned that moneys may become available for “agri-security” programs, and that this is something the members should consider.

The site for next years meeting was discussed and debated. No firm plans were decided upon. Suggested sites included and University of Guelph, Colorado, and UC Davis. **(After the meeting, John Hu discussed with Dr. Baozhong Meng, plant virologist at University of Guelph. Dr. Meng was interested in hosting the 2003 annual meeting.)**

The minutes of last years meeting in Kearneysville, WV were distributed by Gary Kinard and accepted by the members. Jim Crosslin was selected as secretary of this year’s meeting.

Roberto Michelutti had photos from the last year’s meeting.

**State Reports**

**Steve Ferreira, U. of HI.** Steve provided history of the work which produced transgenic papaya with resistance to papaya ringspot virus (PRSV). This work has allowed the continued production of papaya in areas where the virus made papaya production nearly impossible. The major cultivar now grown is “Rainbow” and it has been well received by growers and consumers alike. He also mentioned ongoing work to identify delayed ripening genes for use in papaya and the use of consensus “synthetic” genes in order to broaden the anti-PRSV activity.

**Maureen Fitch, Pacific Basin Ag. Res. Center, HI.** Maureen discussed the breeding and clonal propagation of PRSV resistant papayas other than “Rainbow” to meet the needs of other growing areas and markets. They are working on tissue culture procedures for clonal propagation of the desirable types.

**Susan Schenk, Hawaii Ag. Res. Center, HI.** Susan presented information on sugarcane yellow leaf luteovirus, which can produce significant yield reductions. A tissue blot immunoassay procedure works well for detection of the virus in canes. Micropropagation of virus-free stocks is underway. There are breeding efforts for virus resistance as well.

**Doug Gaskill, U. of HI.** Doug discussed banana bunchy top virus (BBTV), which is vectored by the banana aphid in a persistent manner. The virus is widespread on Oahu, but not around Hilo on the island of Hawaii yet. Work is continuing on tissue culture systems, transformation, and regeneration of transgenic plants with resistance. Currently there are two lines that have remained symptom-free for 2 years. These were produced with a mutated REP gene of BBTV.

**Diane Sether, U. of HI.** Diane discussed the dreaded pineapple mealy bug wilt and the associated viruses (PMWaV) and the impact of this disease on the pineapple industry in Hawaii. Two closteroviruses have been associated with this disorder, which also requires the presence of the vector mealy bug for development of severe symptoms. Axillary and apical buds could be a source of virus-free plants for in vitro propagation and establishment of clean pineapple fields.

**Eden Perez, U. of HI.** Eden's research focus is on the production of transgenic pineapple with resistance to PMWaV. *Agrobacterium* and gene gun-mediated approaches have been used. She also works on the evaluation of nematode resistance.

**Mike Melzer, U. of HI.** Mike presented information on the molecular characterization of PMWaV 1 and 2. Double-stranded RNA served as source material for RT-PCR amplifications and cloning. The viruses show some sequence similarities to other mealybug-transmitted closteroviruses, such as grapevine leafroll associated virus 3.

**Wayne Borth, U. of HI.** Wayne discussed his work on phytoplasma diseases of *Dodonea* and watercress. The *Dodonea* phytoplasma is related to Western X and the watercress yellows agent to aster yellows. The watercress agent is transmitted by the aster leafhopper, a recent introduction to Hawaii. Phytoplasma-infected plantain has been detected near some of the infected watercress.

**Jim Crosslin, Washington State Univ.-Prosser.** Jim discussed the work in Washington on peach latent mosaic viroid, grapevine viruses, and virus diseases of sweet cherry. Cherry leafroll virus and little cherry viruses 1, 2, and 3 are of increasing importance. The testing and therapy services of NRSP-5 for phytoplasmas and viroids were discussed.

**Joseph Postman, USDA-ARS, Corvallis OR.** The research Joseph discussed included evaluation of pear as a host of apple mosaic virus. The virus was not detected. Medlar was also tested as a host of apple chlorotic leafspot virus (ACLSV). Symptoms were produced on graft inoculated indicators. Other plants tested for viruses included Hawaiian strawberries, raspberries, and blueberries. Genetic resources of the collection being maintained at Corvallis were discussed.

**Annemiek Schilder, Michigan State Univ.** Anne's research has included screening of table grapes for tomato ringspot (TomRSV) and other viruses. Also, a large-scale indexing program aimed at early detection of plum pox virus (PPV) is underway, with an estimated 70,000 samples to be tested this year. Blueberry nursery stock is also being tested for TomRSV, tobacco ringspot (TRSV), blueberry shock, and blueberry scorch viruses. Also, a transcriptional promoter from blueberry red ringspot virus, a DNA virus, is being studied.

**Dennis Gonsalves, USDA, Pacific Basin Ag. Res. Center, HI.** Dennis discussed the PPV survey currently underway in New York state, and evaluations of grape accessions for resistance to grapevine fanleaf virus (GFLV) and grapevine leafroll associated virus 3. Dennis has recently received a large grant for making transgenic papaya available to Third-world countries, such as Bangladesh, as a way of improving nutrition.

**Gary Kinard, USDA, Beltsville, MD.** Gary discussed the work of the Plant Germplasm Quarantine Office. In the last year the facility has intercepted numerous pathogens including several apple viruses and phytoplasmas. Some *Prunus* samples were also infected with peach latent mosaic viroid (PLMVd) and *Prunus* necrotic ringspot (PNRSV) and prune dwarf (PDV) viruses. Numerous *Prunus*, *Malus*, and *Pyrus* samples are currently undergoing therapy at the facility.

**Dan Thompson, CFIA, Sydney, B.C.** Dan's presentation included information on host range studies of Canadian isolates of PPV. *Prunus grandulosa* was found to be a host. Tests were conducted to determine the best method of sampling for PPV detection in orchards. Distribution of PPV in infected trees was found to be erratic in some plum and peach trees. The national survey for PPV involved testing approximately 142,000 samples.

**Roberto Michelutti, Ag. Canada, Harrow, Ont.** Roberto discussed the detection of numerous viruses of strawberries and raspberries. Raspberry bushy dwarf (RBDV) and tobacco streak (TSV) viruses were found. Several latent viruses were detected in apples, including ACLSV, apple stem grooving (ASGV), and apple stem pitting (ASPV) viruses. Biological and serological detection methodologies were compared. The survey for viruses infecting soybeans was discussed. Bean pod mottle virus (BPMV) was found for the first time.

**Deborah Golino, UC Davis.** Deborah discussed the National Grapevine Importation Program and other activities of the Foundation Plant Materials Service (FPMS). The program includes stocks of grape, strawberry, pistachio, sweet potato, roses, and some *Prunus*. Grapes are tested and certified for GVFLV, TomRSV, GVLR, and corky bark, among other viruses. Custom PCR testing for several grape viruses are available. Tested and certified materials are available on a fee basis to nurseries, etc.

**Adib Rowhani, UC Davis.** Adib presented information on the detection of a new grapevine leafroll associated virus (GVLRAV-9). The presence of new graft-

transmissible agents (GTAs) in the grape collection was discussed. Information on almond union mild etch (AUME), a genetic disorder, was presented.

**Bruce Kirkpatrick, UC Davis.** Bruce discussed a wide range of research efforts on phytoplasmas and phytoplasma-induced diseases. Included were the genomic sequencing efforts on phytoplasmas and the Pierce's disease organism, *Xylella*. The biology of vector species of leafhoppers was discussed.

**John Hu, U. of HI.** John thanked all the presenters and made some closing remarks. An ensuing discussion focused on the scientific and market success of transgenic papaya in combating PRSV. Prospects for transgenic resistance to provide resistance to other pathogens and improve storage or nutritional characteristics of other crops was also discussed, as were marketing considerations.

### **Field Trip, May 17, 2002, Oahu**

The sites we visited included the Waimanalo Experiment Station where we observed banana bunch top virus (BBTV) symptoms. PRSV was also observed on nontransgenic papaya as compared to the excellent control of PRSV observed in transgenic "Rainbow". We also visited the Hawaiian Ag. Research Center, Kunia, where we saw sugarcane, kava, papaya, coffee, and taro. We also visited a watercress operation not far from Pearl Harbor, where a phytoplasma disease is a problem. The next stop was a Dole pineapple production field near the north shore of Oahu where we saw the symptoms of pineapple mealybug wilt. All of us were impressed with the time and effort which is required to produce a pineapple crop.

### **Field Trip, May 20, 2002, Hawaii**

We first visited the Pacific Basin Tropical Plant Genetic Resource Unit of USDA near Hilo. The research leader, Dr. Zee, showed us some of the collection of palm, guava, mountain apple, coffee, tea, papaya, breadfruit, ginger, and other crops. There was some "beautiful" citrus tristeza virus too. Next stop was Mauna Kea banana plantation (no cameras allowed!!) where we saw a commercial banana operation. For a lunch stop, we went to over 6,000 feet on Mauna Kea and saw symptoms of a phytoplasma disease of the native *Dodonea viscosa*. A trip to Orchid Isle Dendrobiums followed where we saw a commercial orchid operation and the spotting caused by *Cymbidium mosaic virus*. Last stop was Volcani Isle Fruit Company, Kapoho (visit them at [papayas.net](http://papayas.net)) to see papaya and apple banana production fields.

Information compiled by Jim Crosslin and modified by John Hu.

List of attendees at the WCC-20 meeting, Honolulu, Hawaii, Thursday, May 16, 2002.

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