

**REPORT ON THE 2ND JOINT CONFERENCE OF THE INTERNATIONAL WORKING  
GROUPS ON LEGUME AND VEGETABLE VIRUSES, FORT LAUDERDALE, FLORIDA,  
10-14<sup>TH</sup> APRIL 2005**

This stimulating international conference was held on April 10-14<sup>th</sup> in the Riverside Hotel in Fort Lauderdale, Florida. It was the Second Joint Conference of the International Working Groups on Legume and Vegetable Viruses. It marked the last stage in the merger of the two groups to form the new International Working Group on Legume and Vegetable Viruses (IWGLVV), this merger being ratified by a vote at the conference. The conference was attended by 45 participants from 15 different countries from five continents. There were 17 talks on vegetable viruses, nine on legume viruses and one that addressed both. There were also 17 posters on legume or vegetable virus topics. Presentations ranged from basic and molecular to ecological and applied, and there was a major emphasis on new and emerging plant viruses.

The programme commenced on Sunday 10<sup>th</sup> April with registration and a welcoming reception in the poolside area of the hotel, and on Monday 4<sup>th</sup> April with introductory comments by the principal symposium organiser, Gail Wisler, Chairperson of the Plant Pathology Department, University of Florida, Gainesville. Scientific papers were presented on Monday 4<sup>th</sup> April, Tuesday 5<sup>th</sup> April and Thursday 7<sup>th</sup> April, with sessions on virus detection, molecular genomics, new and emerging viruses, and virus resistance. Wednesday 6<sup>th</sup> April was devoted to a full day excursion.

There were three general presentations. Piero Caciagli (Italy) provided a short history of the International Working Group on Vegetable Viruses, and Roger Jones (Australia) did the same for the International Working Group on Legume Viruses. The third general talk by Andrew Schuerger (USA) reflected the proximity to the Cape Canaveral Space Centre! He spoke on “Cross contamination of microbes between earth and Mars – is there a risk?”. Highlights of the conference included the following contributions:

- 1) Two papers from Joe Vettens’ group at Braunschweig (Germany) on emerging legume viruses in Africa. Using monoclonal antibodies and sequencing to differentiate them from *Faba bean necrotic yellows virus*, two new Nanovirus species tentatively named *Faba bean necrotic stunt virus* and *Faba bean yellows virus* were reported. Both new viruses occur in Ethiopia and the first of them also in Morocco. A new Polerovirus, *Chickpea stunt virus*, was found infecting cool season legume crops. It was transmitted by *Aphis craccivora*, distantly related serologically to *Beet western yellows virus* (BWYV) and had 70-78% sequence homology with BWYV and *Groundnut assistor virus*. It existed in two clades, clade I found so far in Ethiopia and Sudan, and clade II in Syria, Egypt and Morocco. These findings are undoubtedly just the ‘tip of the iceberg’ as regards presence of additional nanoviruses and luteoviruses in Africa and elsewhere.
- 2) Papers by Rene Van Der Vlugt (The Netherlands) and Kai-shu Ling (USA) comparing the sequences of numerous *Pepino mosaic virus isolates* from Europe and the Americas. This damaging virus on tomato spread recently throughout the Americas and Europe through movement of contamination of tomato seed between different countries, becoming a significant concern for quarantine authorities worldwide. Two groups of isolates from Chile and the USA have CP sequences that are most divergent not only from each other but also from the European ones which are all very similar.
- 3) Two papers on emerging Begomoviruses of cucurbits by Judith Brown (USA) and Yeheskel Antignus (Israel). Antignus described the diseases caused by two Begomoviruses from cucurbits, *Squash leaf curl virus* (SLCV) and *Watermelon necrotic stunt virus*. Both are damaging new world (bipartite) Begomoviruses that have now spread outside the Americas. Brown described the properties of four new world Begomoviruses in the SLCV clade, SLCV itself, *Squash mild leaf curl virus*, *Cucurbit leaf curl virus* and *Melon chlorotic leaf curl virus*. They all infect Cucurbitaceae and *Phaseolus vulgaris*. SLCV seems to be the ancestor of the clade.
- 4) An interesting study on cucurbit viruses in the Sudan, the centre of origin of melon and watermelon presented by Herve Lecoq (France). Ten years of surveys revealed five viruses to be common, *Watermelon chlorotic stunt virus* (a Begomovirus), *Cucurbit aphid-borne yellows virus* (a Polerovirus), *Squash mosaic virus* (a Comovirus), and the Potyviruses *Zucchini yellow mosaic virus* and *Moroccan watermelon mosaic virus*. Four other viruses that often infect cucurbits elsewhere were found at lower incidences. In addition, an ancestral melon species contained a new Sobemovirus, *Snake melon*

*asteroid mosaic virus*, which had 71% amino acid sequence identity with *Rice yellow mottle virus*. This virus infected melon and watermelon but did not systemically infect pumpkin, squash and zucchini, which originated elsewhere in the world. Interestingly, another common cucurbit virus, *Watermelon mosaic virus*, was not found in the centre of origin of watermelon (the Sudan). In another paper, Lecoq provide evidence that this cucurbit Potyvirus actually arose by recombination between two legume-infecting Potyviruses, *Bean common mosaic virus* and *Soybean mosaic virus*.

5) Several papers and posters by John Walsh (UK), Christian Obermeier (UK) and Rainer Kramer (Germany) that described recent progress with virus diseases of Brassicas. Obermeier described investigations on the genomics of plant virus co-evolution in wild *Brassica oleracea* and *B. rapa* populations. Competition experiments suggested that local *Turnip mosaic virus* isolates have greater fitness in their original wild hosts than non-local ones. Walsh discussed mapping resistance genes to TuMV in the *Brassica* genome and identifying viral determinants of virulence. To date, eight TuMV resistance genes have been mapped and determinants of virulence for six *Brassica* resistance genes identified. Cross protection was being investigated as a TuMV control strategy in cabbage. Effects of TuMV, BWYV and *Cauliflower mosaic virus* (CaMV) on stored cabbage were described. BWYV induced leaf tip burn and TuMV induced cigar burn (internal necrosis). Mixed infection with CaMV and storage both exacerbated the symptoms caused by the other two viruses. Kramer used intergeneric somatic hybridization between *B. oleraceus* and *B. sativus* to transfer TuMV resistance into *Raphanobrassica* hybrids to show that it was possible to generate new donors with durable resistance to different TuMV pathotypes in vegetable Brassicas.

The Scientific Excursion on Wednesday 13<sup>th</sup> April was very informative. It included visits to commercial fields of tomato devastated by multiple infection with different Begomoviruses, seeing naturally-infected weed hosts with bright yellow symptoms caused by Begomoviruses, inspection of an impressive field trial on control of Begomoviruses in *Phaseolus vulgaris* using host resistance, and a guided tour demonstrating virus research underway at a cyclone-damaged field station. The research station improves tropical crops grown in the southernmost part of Florida. Its research included impressive plantations of papaya with transgenic resistance to *Papaya ringspot virus*. Picnic lunch even included delicious transgenic papaya! The excursion passed by pristine areas of the Florida everglades, and finished with a tour of an extensive botanical garden full of tropical plants from around the world.

On Tuesday 12<sup>th</sup> April, participants enjoyed a “Jungle Queen Dinner Cruise” along the Fort Lauderdale canal system, which is lined by some of the most opulent mansions and seagoing pleasure cruisers and yachts to be seen anywhere in the world.

At the end of the final oral session, it was announced that the next conference, the first of the newly combined Working group, would be in Ljubljana, Slovenia in September 2008 at the time of the next International Congress of Plant Pathology in Italy. Membership of the five-person transitional steering committee of the merged Group was also agreed, with Piero Caciagli (Italy) as the president and Ko Verhoeven (the Netherlands) the secretary. Presentations were made to Gail Wisler to thank her for all her hard work in organising such a successful symposium.

Roger Jones, 30/6/05