INTERNATIONAL ORGANIZATION OF CITRUS VIROLOGISTS

NEWSLETTER September 2012

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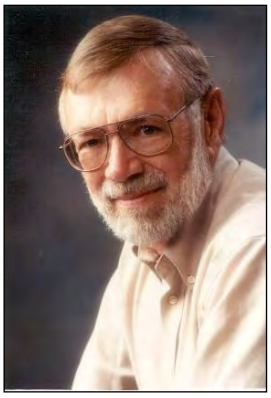
From The Current and New Chairperson

Message from Pete Timmer, Chairperson

As you should know by now, Juliana Freitas-Astua of Embrapa Cassava and Fruits and Centro de Citricultura Sylvio Moreira in Cordeirópolis, São Paulo, Brazil was selected as the Chair-Elect of IOCV in the recent election. The situation on the IOCV Board was complicated prior to the meeting in Brazil by the resignation of Mark Hilf as Chair-Elect. He would have become Chair for the period 2010-13. Thus, a special election was conducted and I was selected to fill that post. Thus, I am serving as Chair for the period 2010-13.



However, then we were without a Chair-Elect for the current period. Thus, another election was held in which Juliana was selected. She will replace me as Chair at the meeting of IOCV in South Africa next year. Sometime before the next meeting we will conduct another election so that we have a Chair-Elect to serve on the Board after she assumes the Chair position. The Board is currently composed of the current Chair (Pete Timmer, Univ. Florida), Past Chair (Nuria Duran-Vila, IVIA, Spain), Chair-Elect (Juliana Freitas-Astua, Embrapa, Brazil), Secretary (Gergios Vidalakis, Univ. California, Riverside), Treasurer (Robert Krueger, USDA, Riverside) and Maria Laura Garcia (Universidad Nacional, La Plata, Argentina). So, we now have a full board. After we conduct the next election, there will be a Chair-Elect to serve with Juliana and we will finally be back to the normal progression.

It is time for a switch from the old guard to a new era for IOCV – biological indexing to the

molecular and computer age. Looking forward to seeing everyone in South Africa.

Message from Juliana Freitas-Astúa, Chairperson-elect
Dear IOCV colleagues and friends,
I thank you all for the support I received during the election process as Chairperson-elect. As a relatively new IOCV member, many of you may not be very familiar with me and my work. Hence, Pete Timmer asked me to write a short bio, so we will get acquainted before the 19th IOCV meeting in South Africa, when I shall become the Chairperson of our Organization.

I graduated in Agronomy from the University of São Paulo, Brazil, in 1993, and got my Master´s degree in Plant Pathology (Virology) from the same University in 1996. In 2001, I got my Ph.D. in Plant Virology from the University of Florida and, after a short post-doctoral position working on citrus leprosis, I was hired in 2002 by the Brazilian Agricultural Research Corporation (Embrapa) to work on citrus leprosis and, more recently, on HLB. Currently, I work for Embrapa Cassava and Fruits, in collaboration with Centro de Citricultura Sylvio Moreira, in Cordeirópolis, SP, Brazil.

Being part of the IOCV Board is a great pleasure, and also responsibility, for me. I acknowledge those who came before me as main contributors to what we currently know on citrus viral and bacterial diseases, playing relevant role in the development and improvement of the worldwide citrus industry. While serving with the current Chair, Pete Timmer, I will try to participate and learn as much as I can in order to become a good Chair after next year´s meeting.

I hope to see you all in South Africa!!

Warmest regards,
Juliana

IOCV
2013 IXX IOCV Conference

Gerhard Pietersen & Organizing Committee
The dates finalized for the 2013 IOCV meeting to be held in South Africa are

Sunday evening 28 July, 2013 until Friday, 2 August, 2013

In order to ensure the conference venue booking in the popular Kruger National Park we have finalized these dates for the conference well in advance. This also enables potential delegates to diarize the dates early. In selecting the dates we took a number of factors into account including 1) local school and public holidays, 2) climate, 3) visibility of symptoms of local citrus diseases (eg. Greening and blackspot), 4) avoidance of other important relevant international meetings, for example the APS, and 5) cost of air-travel at that time.

We will therefore be unable to change dates and hope this arrangement will make it easier for all of you to attend the meeting.

IOCV Website

Georgios Vidalakis & Robert Krueger
The IOCV Website is currently hosted at the Instituto Valenciana de Inestigaciones Agrarias http://www.ivia.es/iocv. The website contains these newsletters, all published Proceedings, and various other resources concerning graft-transmissible diseases of citrus. Due to various factors, it became apparent that there would be some constraints on long-term maintenance of the IOCV website at IVIA. In addition, the URL address is difficult to find via search engines.

We have arranged to host the website at the University of California, Riverside. We are currently arranging to migrate the content from the IVIA servers to UCR servers. In addition, IOCV has purchased the domain name http://www.iocv.org. The website, currently "under construction" (or migration) can be accessed at http://www.iocv.org.

We thank IVIA and our colleagues there for their cooperation in maintaining the site over the years.

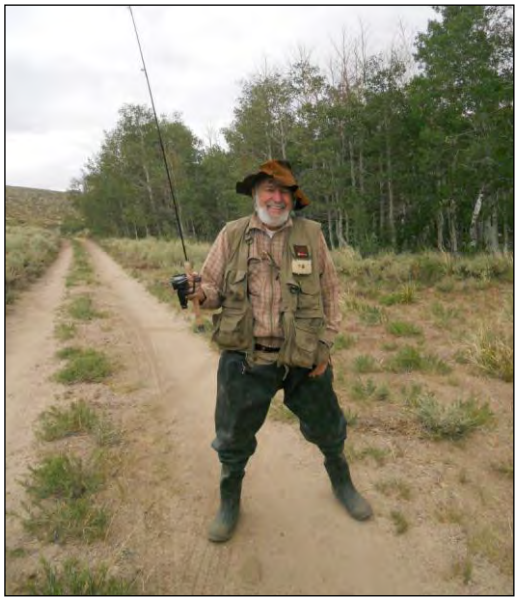
We also working on a project to make the papers in the Proceedings more easily indexed and revealed by search engines.

AROUND THE WORLD

California

To My Friends and Colleagues in IOCV

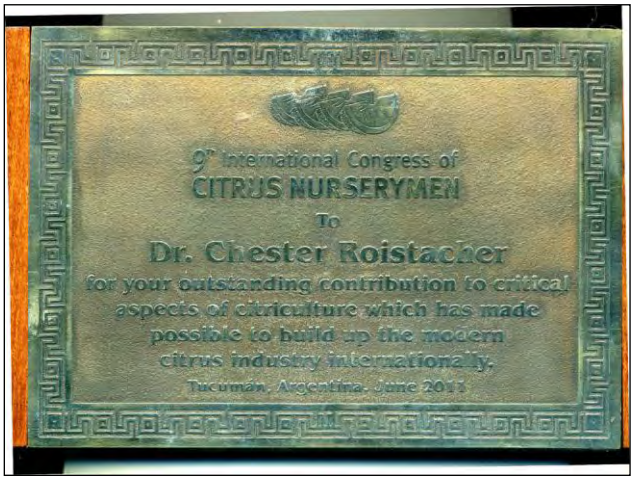
Chet Roistacher
I send you all my greetings and affection and let you know that Jean and I are well. As shown in the picture, taken in July, 2012 Chet is enjoying his retirement by fishing the streams of the Sierra Nevada mountains. He and Jean have taken a few cruises this year and enjoy their mountain cabin with friends and family. Because of the European economic crisis he was not able to teach his annual course given at IAM-Bari and he missed his 27th consecutive year of teaching.



Chet fishing in the Sierra Nevada, July 2012

Chet was honored at the 9th International Congress of Citrus Nurserymen.

Georgios Vidalakis accepts Chet's honor by ISCN from Paco Llatser and José Luís Foguet.



Chet's honor from ISCN.

Chet was also honored by an article in Citrograph written by Robert Krueger and John Bash that appeared in the November/December 2011 issue of Citrograph.

Krueger, R.R. and Bash, J. A A `Thank you' note to Chet Roistacher with a salute to his pioneering colleagues in citrus plant pathology at UC Riverside. Citrograph November/December 2011:48-51

Available online at:

http://www.citrusresearch.org/nov-dec_citrograph

In this same issue there is an article on the History of the Parent navel orange part 1 (Part 2 appeared in the next issue)

Roistacher C.N. The Parent Navel `Washington' navel orange tree. Part 1- Its first years. Citrograph November/December 2011:52-54.

Available online at:

http://www.citrusresearch.org/nov-dec_citrograph

The Parent `Washington' navel orange tree Part 2 - its decline and recovery. Citrograph January/February 2012:52-54

Available online at:

http://www.citrusresearch.org/citrograph-jan-feb-2012

Citrograph Magazine Revived

Robert Krueger
As a follow up to Chet's greeting, it may be of interest to IOCV members that *Citrograph Magazine* is again in publication. The original *California Citrograph Magazine* began publication in 1915 and ceased publication in 2001. During most of this time period, it was one of the premier journals reporting citrus related research as well as industry news. *California Citrograph Magazine* was originally published by Sunkist Growers and later ownership was transferred to other entities. Beginning in 2010, the Citrus Research Board began publishing *Citrograph* with the emphasis again on presenting solid scientific information supplemented with industry news and historical perspectives.

Citrograph is available online at (hard copies are also published):

http://www.citrusresearch.org/category/citrograph

Also of interest is an index of older *Citrograph Magazine* volumes available at:

http://citrusroots.com/calif-citrograph.html

More information is available concerning the revival of Citrograph at:

http://magissues.farmprogress.com/CLF/CF11Nov10/clf014.pdf

ACP/HLB Update from California

MaryLou Polek, Citrus Research Board
Currently California has over 50,000 yellow panel traps deployed for the detection of Asian citrus psyllids (ACP). Since the first detection of ACP in 2008, a minimum of 400 m around all detection sites were treated with both a foliar and a systemic pesticide. With the exception of 2 single insect detections, all psyllids were found in residential areas. Amazingly, we had excellent cooperation from homeowners to treat trees in their backyards. This seemed to hold the insect at bay, at least temporarily and at least long enough to protect the major production area in the San Joaquin Valley.

However, Southern California, particularly the Los Angeles, San Bernardino, Riverside and Redlands areas, is now heavily infested with ACP. The insect has turned up in production groves and on the University of California, Riverside campus. It is no longer economically feasible to continue pesticide treatments in these highly infested areas. Industry is coordinating the area-wide application of pesticides in production groves and the formation of areas similar to Florida's Citrus Health Management Areas (CHMAs). Residential treatments still occur in San Diego, Coachella Valley and Imperial County.

In March 2012, the Jerry Dimittman Laboratory (CRB-funded) detected *Ca*. Liberibacter asiaticus

in a sample of adult ACP. This was immediately reported to the California Department of Food & Agriculture (CDFA) who, in turn, collected plant tissue samples from all host plants on the property. One tree was confirmed positive by the United States Department of Agriculture (USDA). The tree was quickly removed and transported to the CDFA lab where a large amount of DNA was extracted. The USDA distributed aliquots of the extracted DNA to several research laboratories to look for possible origin, and for sequencing. A report of all results is pending.

The Science Committee of the HLB/ACP Task Force recommended that host trees within a 1200 m radius around the positive tree be continuously surveyed since little is known how the pathogen and disease will behave under California conditions. Three zones have been designated; Zone 1 includes 0 to 400 m where all hosts are surveyed 6 times during the year, Zone 2 includes 400 to 800 m where all hosts are surveyed 4 times during the year, and Zone 3 includes 800 to 1200 m where all hosts are surveyed 2 times during the year. In all zones, trees will be visually examined for symptoms and psyllids; tissue from suspect trees and psyllids will be collected and analyzed for HLB-associated bacteria. In Zone 1, trees will not be pooled, whereas in Zones 2 and 3 they will. This survey began in May and to date, no plant or psyllid sample have tested positive.

Now that the psyllid is fairly well established in the Los Angeles basin, the industry is shifting their efforts from a psyllid trapping program to a host plant survey for HLB. Dr. Tim Gottwald recently visited California to train associated personnel on the implementation of a "Risk-based Survey". California is a very large state and a method was necessary to target resources to survey in the areas where one would most likely find a diseased tree. Trees will be visually inspected for psyllids and suspicious symptoms. All psyllids will be collected and analyzed for HLB-associated bacteria. Tissue samples will be collected from suspect host plants and analyzed as well. Eventually this survey will be expanded statewide.

In December, 2011 California was allowed to release *Tamarixia radiata* (collected in Pakistan). University and CDFA scientists are optimizing methods for mass rearing and evaluating the establishment of this parasite in residential areas and on the UC Riverside campus. A second parasite also collected in Pakistan, *Diaphorencyrtis aligarhensis,* will soon be approved for release. Industry's current management strategy is to use biocontrol in residential areas and conventional pesticide applications in production groves.

Florida

HLB Florida - Pete's Prognostications

Pete Timmer, University of Florida
Many of you may be up-to-date on the HLB situation in Florida, but many may not be aware of the situation and the short- and long-term consequences to the production of Florida oranges. HLB was found in Florida in 2005 and was too far advanced to even consider eradication. The Asian citrus psyllid (ACP) has been here since 1998. Initially, we recommended what has now become the standard program: disease-free trees, aggressive ACP control, as well as scouting and removal of any symptomatic trees. By law, all nursery trees have been grown in screened enclosures in Florida since January, 2008. However, many growers could not or chose not to remove affected trees and followed various nutritional therapies in hopes of staying in production as long as possible without removing trees. The nutritional treatments certainly improve tree appearance, but their effect on tree longevity and yield has not been well-established.

In January, 2010, I published an article in the Citrus Industry magazine explaining my recommendations at the time and making some predictions on the future of the industry. The recommendations were to follow the standard protocol where feasible and to maintain groves as long as possible, then restructure, where it was not. Briefly, the predications were:

Five Years (January, 2015)

- South – most groves declined; some surviving with standard control
- Early attempts to replant fail
- Incidence high in Central Florida
- Production < 100 million boxes
- Nutritional control fails
- Better ACP control; management techniques improved
- Citrus Health Management Areas (CHMAs) organized; scouting more effective
- New resistant cultivars being tested, but not yet commercially available
- Prices very good

Twenty years (2030)

- Most citrus in the southern FL declined from HLB
- Large areas replanted; management is still the standard program; small growers abandoned citrus except those in local coops for HLB control or adjacent to large growers with aggressive programs.
- Central Florida groves mixed; some original plantings survive with intense management, but many now replanted.
- Resistant cultivars approved for commercial planting and widely utilized, doing well, but standard program still needed to avoid break down of resistance
- Despite freeze danger, more citrus planted in more northerly areas with lower psyllid pressure: more tangerines planted that seem to tolerate HLB better in these cooler areas.
- Most fresh fruit produced in high density plantings with windbreaks; most successful with large contiguous plantings and intense management.
- Production of sweet oranges back to 100 rnillion boxes and increasing.

Current situation Florida

Unfortunately, most of the 5-year predictions have already come true or are rapidly approaching reality. In 2011, Mike Irey estimated HLB incidence in the state at 43%. Given that HLB incidence in Florida has been doubling each year, it is likely that we will be reaching the asymptote by the end of this calendar year. A few large growers still maintain the standard control program with some success, but most have abandoned tree removal and use various nutritional programs and aggressive ACP control to try to maintain tree productivity.

Psyllid control methods have improved greatly and we now have many CHMAs for cooperative control of ACP. Those have been successful in reducing ACP populations, but are mostly too little, too late. As expected, mature trees do not decline for several years after infection. My estimate has always been that we can expect the percentage of declining trees to follow the percent infection by about 5 years. Thus, at the present time, decline due to HLB has not had a major impact on total citrus production since our infection rates were much less than 5 % in 2007. We will maintain a high production volume for at least two more years since many infected trees are still highly productive. I think we are currently "living on the latent period" between infection and decline. Many groves in the Southeast Florida and the East Coast have already reached the unproductive stage and are being removed. Southwest Florida is still doing all right, but incidence is near 100% now.

Many resistant transgenic and other HLB- or ACP-resistant or tolerant cultivars are in the process of evaluation, but none is near commercial release. It may take up to 10 years to pass through the regulatory hurdles once a likely transgenic candidate has been identified.

As importantly, we will not be able to replace declining trees with young healthy ones. No matter how good the ACP control, young trees cannot be protected in this sea of inoculum. It has already proven difficult to keep the incidence low in new plantings and young infected trees decline rapidly. Nevertheless, planting continues at a rapid rate even in situations where, in my opinion, they cannot possibly succeed. High juice prices have provided the capital needed for expensive inputs for ACP control and nutritional programs and are the stimulus for continued planting.

So, I suspect most of my 5-year predictions will probably be realized. The citrus industry is in serious jeopardy. Many in Florida do not agree with my pessimistic assessment and believe that

nutritional approaches and new planting systems will solve the problem. Hopefully, we'll find a way to adjust and continue short- and mid-term. As you can see from my 20-year predictions, I'm fairly optimistic in the long run. However, at my age, I doubt if I will be held accountable for those. Texas, California and other areas where HLB has been detected recently should learn from our experience.

Florida Budwood Program

Mike Kesinger, DPI
The Florida budwood program's Chiefland foundation greenhouses have been in operation for five years and have provided the Florida citrus industry with over one-million bud eyes. Foundation budwood cutting increased by 34% this fiscal year, to 515,007 bud eyes cut. The Chiefland greenhouses contain 1,105 trees, representing 309 varieties which includes 390 clones. An expansion is under way as four of the original bows are being extended 96 feet to the west to add 11,520 sq. ft. to the greenhouses.

The bureau laboratory in Winter Haven ran 27,819 qPCR tests for eleven different citrus pathogens. To date citrus greening has not been found in any budwood source trees. This is a testimony to the efficacy of insect proofing of industry greenhouses, stringent spray programs and detailed inspections. A new robotic system has been acquired for the lab, which will increase efficiency in qPCR set up. A second robotic handler is scheduled for purchase in the next fiscal year, which will be programmable for reconfiguring PCR plates. These were funded by a federal Clean Plant Network grant

Florida breeders entered 48 new selections into the bureau's parent tree indexing program, in Winter Haven, for testing and shoot-tip grafting. A total of 72 new introductions were received in Winter Haven in 2011-2012, sixty-one were released, and 19 were sent to Chiefland for incorporation into the foundation.

Major improvements were made to the bureau pathogen indexing greenhouses at Winter Haven this fiscal year. Five greenhouses were connected with an internal entry vestibule that allows employees access to the greenhouses without having to make multiple re-entries. Insect exclusion was also improved by changing roofs and sidewalls to polycarbonate. Cooling and heating systems were upgraded as well. All the renovation work was accomplished with a federal Clean Plant Network grant.

The largest number of Florida citrus nursery propagations was reported this year since the mandatory greenhouse growing of nursery trees began in 2007. Citrus nursery propagation figures increased 25.7% from last year to 3,941,049 trees. The actual number of trees that make it to commercial groves is considerably lower, as the propagation figures also represent trees for the homeowner market. An estimated 6 to 12% of the commercial citrus nursery stock is produced for the dooryard market. The budwood office processed 937 bud cutting reports, which amounts to an increase of 153 reports from the previous year. The average nursery made over 83 thousand propagations this fiscal year.

Texas

Citrus Greening Disease Confirmed in Texas

John daGraca, Texas A&M University Citrus Center
Friday January 13, 2012 will be a date the Texas citrus industry will remember. This is when USDA-APHIS confirmed the presence of citrus greening (HLB) in Texas.
In late December, 2011, USDA-APHIS inspectors noticed a Valencia orange tree on the southern edge of an orchard in San Juan, TX, with suspicious symptoms. They collected leaf samples and sent them to the Citrus Center's diagnostic lab. On January 7, 2012, the lab conducted a real-time PCR test on this sample, and obtained a result indicating the presence of the greening bacterium. The lab immediately conducted conventional PCR, and obtained a positive result. This was reported to USDA-APHIS, who dispatched their team back to the area to re-collect samples for testing in their lab in Beltsville MD – the confirmation was announced on January 13. Citrus Center scientists accompanied the USDA inspectors. The suspect tree was smaller than other in the orchard and had a range of greening-

like symptoms – blotchy mottle leaf symptoms, yellow veins, twig die back, lopsided fruit. An inspection of nearby trees indicated that greening was probably present in them, and samples were collected for testing.

The Texas Department of Agriculture announced a 5-mile quarantine zone around the affected orchard, which prevented the movement of nursery stock out of it, and introduced measures to prevent the transportation of infectious material on harvested fruit. USDA began a delimiting survey of all orchards in the area, sending samples to the Citrus Center for testing. The Citrus Center initiated a tree-by-tree survey in the Valencia orchard. This was extended to the grapefruit orchard across the street after the detection of HLB in trees there.
As of April, the only infected trees detected are in these two orchards. Citrus Center personnel are conducting monthly tree by tree assessments, noting trees with suspicious symptoms and sending samples to the diagnostic lab The total number of confirmed infected trees is 71; 55 Valencia and 16 grapefruit. The tree locations have been mapped, and they are clustered in each orchard.

The first find of HLB in Texas is unusual in comparison to Florida, Mexico, and recently California, where first finds were in residential properties. Also, in California and Mexico, the pathogen was first detected in psyllids. In Texas, over 35,000 psyllids were tested prior to the first tree find, without detection – there have since been six psyllids four from the quarantine zone and two outside, which have tested positive. Following the confirmation of HLB in Florida in 2005, Texas began to take proactive steps. The most effective one appears to have been the implementation of an voluntary area wide psyllid management program which has significantly reduced psyllid populations in orchards.

Brazil

March, 2012. "Fundecitrus" reports that, for the first time in São Paulo State, huanglongbing disease of citrus is under control on an acreage as large as 200,000 hectares. The perspectives of the Paulista citrus industry are brightening up.

Josy Bove
Symptoms of Huanglongbing (HLB) were first reported in São Paulo State (SPS) near Araraquara in 2004. However, the insect vector, the Asian citrus psyllid, *Diaphorina citri*, has been present in SPS as early as 1940 and is responsible for the spread of HLB to most regions of SPS.

Immediately after HLB was identified in March 2004, Fundecitrus recommended HLB-management in all the citrus farms of SPS as an attempt to control the disease and save the industry from destruction. The management involved three classic measures: (i) insecticide sprays of all trees, several times a year, to decrease the insect-vector population, (ii) identification and immediate removal of symptomatic trees, several times a year, to rid orchards of sources of inoculum, and (iii) replacement of removed trees by young, HLB-free trees from covered, insect-proof nurseries. HLB-management was evaluated by determining the total number of symptomatic trees removed each year in the various blocks. Indeed, **successful** management would result in **decrease** of the total number of symptomatic trees removed per year, while *unsuccessful* management would lead to an *increase* of such trees.

Since 2004, crucial factors for HLB-control were identified. In particular, when a farm with good HLB-management was located close to a farm with poor management, HLB-control in the "good" farm became much more difficult because the psyllids from the "poor" farm invaded the "good" farm and contaminated its trees. However, HLB-control was found to be easier when applied to large orchard surfaces (≥1000ha) rather than to smaller ones. Young orchards were more susceptible than mature ones and required

systemic insecticides to achieve better control of the psyllid-vectors. The use of tractor-pulled platforms with two or four inspectors for identification of symptomatic trees made surveys more efficient and less strenuous. Last but not least, an important point was the fact that HLB-management had to be applied on an area-wide scale, *i.e.* management was regional, including either many growers with small/middle size farms or only a few growers with large farms.

The surveys conducted by Fundecitrus in 2011 on the incidence of HLB in SPS have confirmed that the efforts of the Citrus Industry to control HLB since 2004, when HLB was first identified in SPS, have met with success. The results of these surveys show that more than 200,000ha of citrus orchards, i.e. more than one third of the total citrus acreage, have an HLB-incidence as low as 1%. This level might even become lower as many citrus orchards with poor management and high HLB-incidence had to be removed or turned into fields of sugar cane: they are no more a serious danger for the well-managed neighboring farms. These 200,000ha of well-managed citrus farms with low HLB incidence prove that HLB–management has been successful in many parts of SPS and that a large part of he Paulista citrus industry has survived HLB. Furthermore, in the years to come, more farms with low HLB-incidence might be seen because HLB-management will probably become easier.

All these farms with low HLB incidence represent the "**hard-core-orchards**" on which the future of the citrus industry will be constructed. Research is under way in SPS to produce "new generation" citrus trees resistant to HLB or protected from infection by the psyllid-vectors. When these trees will become available, in five to ten years, the hard-core-orchards with low-HLB-incidence, will offer the proper conditions for rapid growth and development of the young, new-generation trees. Hence, the hard-core-orchards represent the "*sine qua non*" condition for the success of the new generation citrus industry. Furthermore and provided that HLB-management be maintained, the hard-core orchards will be able to also produce regular, non-transgenic trees. Thus, SPS has two options for the future: regular citrus trees and genetically modified ones.

At this moment, Brazil is the only country in the world where HLB control is effective on a large scale. In other parts of the world, HLB has not been met with proper management. Worse, methods have been recommended and/or adopted, which go against HLB-control and result undoubtedly in a dramatic increase of HLB-incidence. Such methods should not be used in SPS as a substitute for the successful HLB-management developed in the region.

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Long-Term Experience With Cross Protection

Gerd Müller

Some two weeks ago, I went to Maringá city in the Paraná state that borders the state of São Paulo to the South to ministrate my annual course of virus and viroids. During the event, I had the opportunity to visit a citrus farm in which an experiment (in fact a comparison with great number of replications) of several Pêra sweet orange clones on different rootstocks had been established. The two pictures show the ´Pêra` IAC clone, three years old. Thats the one I preimmunized (cross protected) against severe CTV isolates, more than 40 years ago. Still today after so many years, it stands among the best indicating that the protecting isolate is very stable!

Argentina

Centennial of the Concordia Experimental Station

Guillermo Marco, INTA
A century ago, on March 9, 1912, a Presidential Decree published in the Official Gazette of the Republic and Argentina under President Roque Saenz Pena, established the creation of a "Enological Station" in Concordia, currently Concordia Agricultural Experimental Station of INTA .

Some history

In those early years, the station was oriented towards viticulture and enology, later becoming Argentina´s citrus industry technical referent center .

By 1940 this center, which was exclusively oriented to fruit crops, merged with the Experimental Yeruá Cologne and spanned into other research areas, including livestock, dairy, peanuts, corn and oilseeds.

In the mid-sixties started research in forest trees, mainly pines and Eucalyptus, given their importance for making boxes for packing citrus fruit. This led to the development of different lines of research.

In 1962 the Station was moved to a 200 ha field located at Yuquerí, its current location, and a short time later was expanded to the actual 610 ha property.

Concordia Agricultural Experimental Station

Currently, the station is linked to tradition and the testimony of the region in agricultural, social, political, economic, technological and industrial matters.
The Unit works in research and extension on fruit crops, forestry, horticulture, beekeeping, livestock, dairy and floriculture.

The station in involved in the local development through programs, projects and agreements, providing training, promoting exchange visits, conducting experiments and technical advice and organization of growers groups.

Concordia Exp. Sta. is a national and international technical referent for citrus research and management aimed to maximize production with environmentally friendly technologies.

In forestry, research is oriented to Eucalyptus trees, mainly. However, there are important projects on indigenous species and pines for the industry.

In the last decades, other research projects were initiated in bees-keeping, veg crops and commercial flowers.

Wine contest
To the ritght, the first Director Enology Station, Ing. Alazraqui

Meeting about pastures and fattening of steers at Colonia Yeruá

Rural youth group

Field day at Experiment Station Yuquerí

News from Tucuman, Argentina

Beatriz Stein

Our work at the Citrus Sanitation Center, in Tucuman Province, Argentina continues its efforts to meet the demand of the industry of the northwestern citrus region for virus-free and true-to-type citrus propagating material. At present, most of the main citrus varieties and rootstocks of commercial interest have been recovered through the standard procedure of shoot-tip grafting *in vitro*. Virus-free cultivars (mother trees and increase blocks) are maintained in insect-proof greenhouses for budwood supply for rapid nursery multiplication. Indexing (biological, serological and molecular) is carried out frequently to ensure the sanitary status of the material. Since 2009, certified budwood of the main lemon varieties are being released. In order to respond to the increasing demand for certified seed, our collection of rootstock source plants has been enlarged with the aim of supplying good quality disease-free citrus seeds.

With regard to research work, diagnosis and characterization of isolates of *Citrus tristeza virus*, and citrus viroids are accomplished with biological, serological and molecular methodologies. Field trials to evaluate the susceptibility of different rootstocks to exocortis viroids are underway. This knowledge contributes to a better understanding of graft-transmissible diseases present in our region and is the basis for generating strategies to avoid pathogen in citrus propagating material. The Center has been

officially authorized to perform post entry quarantine of imported varieties.

Italy

News from Sicily

Antonio Catara, University of Catania
After the remarkable IOCV Conference in Brazil, I retired definitely from the University of Catania but had the chance to remain deeply involved in some citrus researches going on at Science and Technology Park of Sicily, a public private joint consortium engaged in agrofood sector, mostly agroindusrty. Thanks to a strong network with many groups in plant pathology, horticulture, genetics and bioinformatics in Italy we succeeded to have funded a project on **Functional genomics, genetic improvement and innovation for the valorization of Citrus industry (IT Citrus genomics).**

The project aims, through functional genomics approaches and innovative technologies, to obtain valuable information about the performance of citrus varieties as concern the adaptation to different soil and climatic conditions and uses. Genetic basis of morphological characters, productivity and adaptability of different species will be investigated in order to analyze the complex regulatory systems, the interaction factors and their modulation in response to environmental stimuli.

Special care is devoted to the understanding of the mechanism of resistance to biotic and abiotic stresses, (particularly citrus "tristeza" and malsecco), to iron chlorosis and low temperature, as well as to flowers biology of citrus, apomixy and sexual auto-incompatibility, physiological processes connected to fruits ripening and biosynthetic pathways of its healthy and hedonistic components. Among the envisaged products, the development of diagnostic chips and analytical tools useful for the operators of *Citrus* agro-industry and rootstock selection resistant to CTV.

A long list of IOCV and ISC members and citrus friends working in Sicily and some from abroad are contributing to the project, among which I have to thank Moshe Bar-Joseph who has helped in the proposal.

On the international side, thanks to an agreement signed with the National Center for Citrus Improvement , Hunan Agricultural University, Changsha, P.R. of China and the Department of Agricultural and Food Science, University of Catania, Italy, the S&TP is contributing to a technologies transfer cooperation project on **"Research and development of essential technologies for ensuring citrus fruit quality and safety "** with the aim to exchange researchers and graduated students between the partners, and to hold seminars and short period of training courses. Thanks to our very active colleague and friend, prof. Deng Ziniu, I and Vittoria Catara last April had the chance to enjoy some wonderful citrus sites of Hunan and Guangdong provinces and to be informed about researches going on locally on huanglongbing, tatter leaf, bacterial canker and tristeza stem pitting. The exchange program in some area of mutual interest will start next September.

Some recent publications:

- M. Bar-Joseph & A. Catara, 2010. Endemic and emerging vector –borne Mediterranean citrus diseases and their epidemiological consequences. *In* V. Vacante (ed.), Integrated Control of Citrus Pests in the Mediterranean Region.Bentham Science Publishers Ltd.
- D. Raspagliesi, G.Licciardello,S.Rizza, A.Lombardo & A.Catara,2011.Quick characterization of Citrus tristeza isolates by capillary electrophoresis –single-strand conformation polymorphism. Acta Hort.892, 189-193.
- G.Licciardello, D.Raspagliesi,, M. Bar-Joseph & A.Catara, 2012.Characterization of isolates of Citrus tristeza virus by sequential analyses of immunoassays and capillary electrophoresis-single- strand conformation polymorphisms. Journal of Virological Methods 181,139-147.

So, now days many things are going on in Sicily and I'm very pleased to invite all IOCV members

planning to come to Italy to include Sicily and to send me a message (acatara@pstsicilia.it; antoninocatara@virgilio.it). I'll be very pleased to guide them to the best places.

China

Changyong Zhou, Southwest China University
I have been visiting the Plant Industry, CSIRO, Canberra as a senior visiting scholar for a month since the 16th July. During this period, I shall visit the Univ. of West Sydney, the Univ. of Sydney, EMAI, Dareton Agr. Exp. Station of NSW DPI.

On the 26th June, President Ji Zhou of the Academy of Engineering, P.R.China (former Minister of MOE) had led a team to visit CRIC. Also Minister Changfu Han of MOA, P.R.China had led a team to visit CRIC on the 10th July. They encourage CRIC to continuously make efforts on technically supporting the Chinese Citrus Industry, especially on the Three Gorges Area, where is one of the most important superior belts for citrus.

CONFERENCES / MEETINGS / PUBLICATIONS / ANNOUNCEMENTS

12th International Citrus Congress 2012-International Society of Citriculture

Luis Navarro
On behalf of the International Society of Citriculture (ISC) and the Organizing Committee of the 12th International Citrus Congress (ICC 2012) I am very pleased to invite citrus scientists, especially those from IOCV, and producers worldwide to attend the ICC 2012 that will be held in Valencia, Spain, from November 18th-23th, 2012, under the theme "Citrus and Health".

The Congress is being organized by the "Instituto Valenciano de Investigaciones Agrarias" (IVIA), with the collaboration of the "Universidad Politécnica de Valencia" (UPV), the "Universidad Jaime I de Castellón" (UJI), the "Instituto de Agroquímica y Tecnología de Alimentos" (IATA-CSC), the "Fundación de la Comunidad Valenciana para la Investigación Agroalimentaria" (AGROALIMED) and the active involvement of citrus private industries.

Being the third largest city of Spain, with a population of 800.000 thousand inhabitants and over 2.000 years of history. Valencia is a city for encounters and contrasts. The legacy left by cultures and civilizations having reached these shores in the past still remains alive in the city's monuments and streets, not to mention in its people's hearts.
Business and trade coexist with leisure and culture. Valencia is a city that never sleeps, with an extensive cultural line-up star-studded at any time of year with festivals, concerts, shows and exhibitions. Thanks to the excellent climate and the attractive cityscape, outdoor activities include enjoying the cafe terraces, parks and gardens, strolling complacently by the seaside and through the city, combining both urban life and outings to the surrounding nature areas.

When visitors arrive in Valencia, the city seems to be decked out to greet them. Discovering Valencia is a true pleasure for the senses. And reaching the city from any part of the globe is easy and comfortable, thanks to a modern network of links with world business centers, including air communications, high-speed trains and freeways. We are sure that participants will enjoy the experience of Valencia.

Citrus has a long history in Spain. Citron was introduced in the Vth century, sour orange and lemons in the Xth century, pummelos in the XIIIth century, sweet oranges in the XV century and mandarins in the XIX century. Today Spain has 330.000 hectares of citrus, with a production of 6.3 million tons, with sweet orange representing 48%, mandarins 35% and lemons 16%. Spain is the first exporting country of fresh fruit, with more than 50% of the production being commercialized abroad. Citrus plantings are located along the Mediterranean coast in the provinces of Tarragona, Castellón, Valencia, Murcia, Almeria and Málaga, in the Guadalquivir river valley in the provinces of Córdoba and Sevilla and in the Atlantic coast in the province of Huelva. One important characteristic of the Spanish citrus industry is that it has been

completely renewed in the last 30 years with healthy certified nursery trees originally recovered by shoot-tip grafting in vitro, and today graft and vector transmitted diseases do not pose significant problems.

The congress will have plenary and ordinary sessions, workshops and poster display, addressing every issue and specialization of citrus and will be an excellent forum to establish new links and collaborations among participants. In addition, those attending pre, post and mid Congress tours will have the opportunity to see both the traditional and the modern Spanish citrus industries, including nursery operations, cultural practices, varieties, packing houses, juice factories, and research institutes.

We are waiting to see you at the ICC 2012. You may find further details at:

http://www.citruscongress2012.org/

Workshop: Outlook of Citrus Integrated Management to Control Huanglongbing

Lochy Batista
It is a pleasure for us to inform you that, within the "XVIII International Scientific Congress of the National Institute of Agricultural Sciences" (INCA) that will session from November 6 to 9 this year at the Main Campus of INCA in San José de las Lajas, province of Mayabeque, Cuba, the Inter-American Citrus Network (IACNET) is organizing the Workshop:

"Outlook of Citrus Integrated Management to Control Huanglongbing"

This event, aimed at researchers, growers and technicians related to citrus growing, will focus on reviewing:
citrus integrated management to control HLB
its epidemiology
results of studies on damages to fruit quality
current trends
in order to face the challenges currently posed by this disease in the American continent.

Prestigious researchers and experts from Brazil, the United States of America and Cuba, among others, will offer the main lectures of the Workshop. The Program includes a visit to a citrus enterprise.

Through this announcement we are inviting those colleagues interested in attending the Workshop to address to the Secretariat of Information and Communication of IACNET at riac@iift.cu and horacio@imporvg.cu (with copy to congreso@inca.edu.cu) to communicate such interest. You can also visit the INCA website at: http://www.inca.edu.cu
in which you will find more information on the XVIII Congress and the "Registration form" that participants should fill and send. If interested, participants in this Workshop –with a special registration fee– will have the right to attend other sessions of the XVIII Congress.

We will feel very pleased to have participants of the different IACNET member countries, whose attendance, for sure, will enrich the exchange of experiences and the Workshop will be most useful for all.

3rd International Research Conference on Huanglongbing

Robert Krueger
The 3rd International Research Conference on Huangblongbing (IRCHLB III) will be held at the Caribe Royale Hotel in Orlando, Florida, February 4 – 7, 2013.

The objective of the conference is to present current research on the biology, epidemiology, management, and economics of HLB and ACP. There will be 10 sessions:

- International and National Citrus Industries, Regulation, and Grower Experiences
- Survey, Detection, and Diagnosis
- Epidemiology
- Asian Citrus Psyllid Biology and Genomics
- Asian Citrus Psyllid Ecology and Transmission
- Asian Citrus Psyllid Management

- HLB Management, Fruit Quality, Crop Loss, and Economics
- Host-Pathogen Interactions
- Pathogen Genomics, Bioinformatics, Phylogenetics, and Culturing
- Host Tolerance and Resistance

There will be a keynote speech by Josy Bové: "The Arabian Peninsula: Where African HLB Meets Asian HLB".

There will also be a mid-Conference tour visiting HLB-affected groves and packinghouses in South/Central Florida. Management strategies, symptom development, and spread will be demonstrated and discussed. An authentic Florida barbecue lunch will be served at Sebastian Inlet State Park.

Registration fees are $400 before January 5, 2013 and $450 thereafter. The deadline for abstract submission is October 15, 2012.

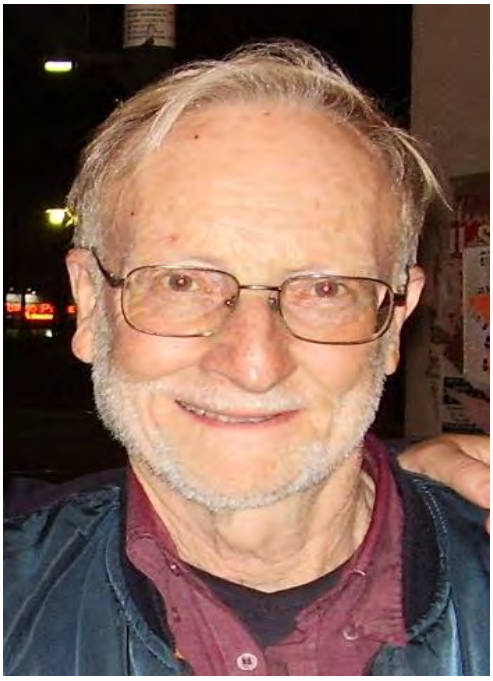
Additional information is available at http://www.irchlb.org.

ROBERT G. MILNE (1934-2010)

Note from the Secretary: Back in April 2011, Prof. Martelli sent me a beautiful piece for our dear friend a colleague Bob Milne. Since then we had not have the opportunity to communicate with another newsletter so today interestingly enough on the second anniversary of Bob's unexpected death let's remember and talk about him and his work.

G.P. Martelli

Robert G. (Bob) Milne, a plant virologist of long standing died suddenly on September 5, 2010 in Torino (Italy). He was born in Tanga (Tanzania) from British parents and educated in the UK at Cambridge University (Batchelor degree) and London University (PhD). His postgraduate career started in 1960 at the Botany School, University of Oxford and continued through time at the University of California Berkeley (USA), Rothamsted Experimental Station (UK), the MRC Clinical Research Centre, Notwhick Park (UK), the Institute of Molecular and Cell Biology of CNRS, Strasbourg, (France), until he moved to Torino in 1974 in the Institute of Plant Virology of CNR. There he settled for good and completed his career as Research Leader. Although retired in 2001, Bob continued to work relentlessly until the very last day of his life.



Robert G. Milne

Bob was an excellent electron microscopist who was "able to see what others failed to see" (e.g. particles of *Citrus psorosis virus*) as from a tribute of one of his overseas colleagues. He produced micrographs of a very high, if not outstanding quality and had a major role in developing simple and sensitive immunoelectron microscopy techniques, known as IEM and ISEM, that are still widely used in the world. His chapter on "Electron microscopy of *in vitro* preparations" in R.E.F. Matthews volume "Diagnosis of Plant Virus Diseases" is a precious guide for EM researchers and technicians.

Bob had also a keen interest in virus taxonomy and served in the Plant Virus Subcommittee of the International Committee on Taxonomy of Viruses (ICTV) for about 25 years. During his long-lasting association with ICTV, Bob coauthored the description of new genera and families (e.g. *Ophiovirus, Varicosavirus, Ourmiavirus, Mandarivirus, Flexiviridae*) and contributed to various publications, including the 9th ICVT Report, which is now being wound up.

In many years of activity, Bob carried out with significant results, studies on tosposviruses, plant reoviruses, rhabdoviruses, closteroviruses, cryptic viruses, ophioviruses (including breakthrough with *Citrus psorosis virus* and *Mirafiori lettuce virus*), *Indian citrus ringspot virus* and *Ourmia melon virus,* type species of the novel genera *Mandarivirus* and *Ourmiavirus,* respectively.

Much of Bob's research was done in collaboration with colleagues from his Institute and from abroad. In his laboratory he hosted a number of researchers and students from Italy and a wide range of foreign countries who came to learn EM techniques and with whom he often established fruitful collaborations. He also travelled extensively upon invitation of Italian and foreign Institutions.

Since the establishment (1997) of the Journal of Plant Pathology (JPP), Bob served in the Editorial Board as Associate Editor and continued a much appreciated editing of the manuscripts of non English-speaking authors after relinquishing this position in 2004.

Bob was a nice, enthusiatic and straight forward person, always willing to help colleagues and visitors to the best of his ability. He loved music and gardening, sang in a choir, the Corale Polifonica of Riva di Chieri (Torino), and was very fond of his collection of succulent plants that he grew with loving care in his country house. He used to bring proudly to the laboratory the plants that were blooming, to expose them at the Institute's entrance.

Bob will long be remembered for his scientific achievements, for the contribution to the advancement of plant virology and to the scientific growth of his laboratory in Torino. He is survived by his wife and a son.