International Union of Forest Research Organizations

Union Internationale des Instituts de Recherches Forestières

Unión Internacional de Organizaciones de Investigación Forestal

Internationaler Verband Forstlicher Forschungsanstalten

IUFRO Meeting Report Form

Organizers of IUFRO meetings and IUFRO focal persons at IUFRO co-sponsored meetings, respectively, are kindly requested to **fill in and return this form within two weeks after the meeting** by email (wolfrum@iufro.org), fax (+43-1-877 01 51-50) or mail (IUFRO Headquarters, c/o BFW, Hauptstrasse 7, 1140 Vienna, Austria). This information will be posted at the relevant IUFRO web pages and may be used for IUFRO News and the IUFRO Annual Report.

(Note: Save this file under a new name and write directly into the form.)

1) IUFRO focal person/meeting organizer:

Name: Prof. Carmen Büttner, Dr. Dr. Risto Jalkanen

Function in IUFRO: *Prof. C. Büttner, Chair of IUFRO unit 7.02.04 viruses and phytoplasma*
Dr. Dr. Risto Jalkanen, deputy of IUFRO unit 7.0204 viruses and phytoplasma

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2) Meeting report *(max. 100 words per paragraph)*

Viruses and Phytoplasma of forest and urban trees

The research workshop of IUFRO *Unit 7.02.04 focused* on " *Viruses and Phytoplasma of forest and urban trees* " and was held in Berlin, Germany, on 29th May 2013 organized/hosted by the Humboldt-Universität zu Berlin (HU), the German Phytopathological Society (DPG) and the Julius Kühn-Institut, Federal Research Centre for Cultivated Plants (JKI) and the Austrian Workinggroup of nutrtion, veterinarity and agriculture (ALVA). It was conceived to allow participants to exchange information and experiences on the status quo of this topic.It was attended by researchers from Finland, USA, Greece, Columbia and Germany.

Thank you very much for your kind cooperation!

Key issues discussed/latest findings in the field:

a) Viruses affecting broad leafed urban and forest trees

Characterization of European mountain ash ringspot-associated virus as the type-species of the newly described virus genus Emaravirus. Description of the genus and members of the genus. Tools to investigate and characterize unknown viruses in diseased Ulmus and other woody plants.

b) Nepoviruses

The situation of the birch leaf roll disease in Finland which is associated with an infection of Cherry leaf roll nepovirus (CLRV). Genome organization of CLRV and functional characterization of virus encoded products. Epidemiological studies and investigation of vector transmission of CLRV. Characterization of symptom determinants on the Arabis mosaic nepovirus (ArMV) genomic RNA2.

c) Phytoplasma diseases

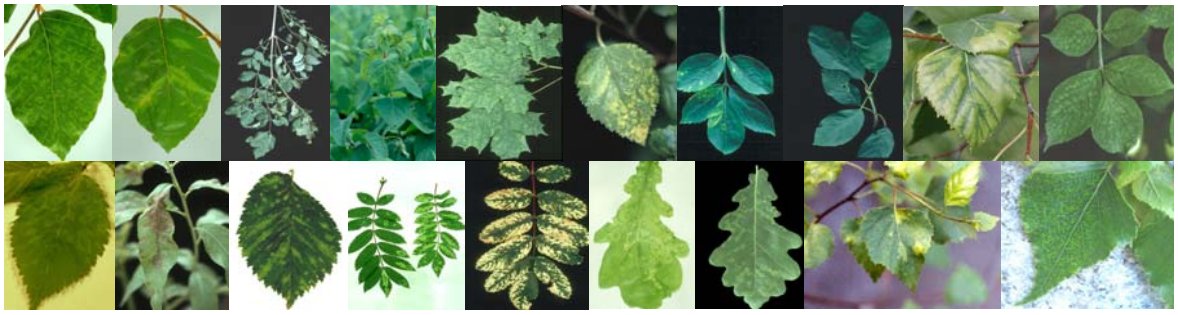
Impact of Genome Analyses on Phytoplasma research and comparative studies regarding the *Sec*-dependent protein export in Phytoplasmas and *Acholeplasma.* Promising approaches to control apple proliferation disease by cross-protection and plant resistance.

d) Poster

Description of symptoms and investigations on distribution and dissimination of viruses infecting forest trees. Molecular analyses and genetic diversity of viruses affecting woody hosts. Diagnostic tools for viruses of forest trees. Investigations addressing the alteration of allergen potential by *Cherry leaf roll virus* (CLRV) in infected birch pollen.

Conclusions *(if possible, summarize key conclusions across presentations):*

Investigations on virus and phytoplasma diseases in the forest ecosystem are extremely rare as compared to those of agricultural environment. The ability to identify pathogens in forest and urban trees may be compromised when novel or unsuspected viruses and phytoplasmas are causing infection since traditional virus detection methods target specific known pathogens. Therefore, more detailed diagnostic trails for the determination of individual known and unknown viruses have to be established referring to the presence of visible symptoms. The successful application of viral and phytoplasma metagenomics should be one of the future concerns.



Outlook to future activities *(proceedings, future meetings, other):*

Abstracts of the oral and poster presentation are available in the proceedings of the 5th International Symposium on Plant Protection and Plant Health in Europe (Section 9: page 295-333; ISBN 978-3-941261-11-2 or free download: http://dpg.phytomedizin.org/fileadmin/daten/04_Verlag/02_SP/11_PPPHE_2013/0294-sp-2013-ppphe-2.pdf).

Thank you very much for your kind cooperation!

Background information *(meeting context):*

There are not many studies on plant viruses and phytoplasmas of forest trees. But many diverse deciduous trees of any age do get infected by viruses or phytoplasmas which may cause degeneration and loss of vitality. Over many years continuing surveys of forested areas, public greens and of young seedlings in nurseries confirm the dispersal of viruses and phytoplasmas in many plants with pathogen associated symptoms. They induce alterations in a tree's metabolism and alter plants predisposition.
A lack of knowledge of the presence and frequency of occurrence of viral diseases in forest trees leads to the impression that they are rare and therefore not important. The opposite is true. Viruses are responsible for far greater economic losses than generally recognized.
Plant viruses play a central role in the plant health status of forest trees because the high degree of disease that they cause leads to extensive tissue damage.
There is an urgent need for reliable methods for virus detection and identification in forest trees – as well as a need for tools for disease management. Knowledge on virus characteristics followed by knowledge of their epidemiology are the first steps in developing appropriate phytosanitary strategies to produce virus-free plants and to keep tree seedlings free of plant viruses. The mode of transmission has to be considered as an important factor affecting the spread and impact of a virus infection within a forest.

3) Other information:

To date, viruses from 17 different plant genera have been identified. The latest *European mountain ash ringspot associated virus* (EMARaV) has recently been classified by the ICTV (International Committee on Taxonomy of Viruses). Interestingly some plant genera, such as *Carpinus* and *Robinia,* are susceptible to only one or two virus species while others such as *Betula* and *Fraxinus* are a host for multiple virus species. Thus at least 18 genera of broad-leafed trees and shrubs as well as a variety of herbaceous plants have been recorded to be affected by *Cherry leaf roll virus* (CLRV).
One should be aware that virus and phytoplasma diseased plants may increase production costs because of the possibly decreased growth of infected stock plants and undesired subsequent field performance. The economic and ecologic importance of forest trees for industry, fuel and in the future to offset the impact of climate change requires an increased research on plant viruses and phytoplasmas.

Meeting data:

Full title of the meeting: Virus and phytoplasma diseases of forest and urban trees

Date and venue: 29 May 2013, Julius Kühn-Institut, Federal Research Centre for Cultivated Plants, Königin-Luise-Straße 19, 14195 Berlin, Germany

Meeting website: http://dpg.phytomedizin.org/de/virus2013/

Number of participants: 42

Countries represented: Columbia, Finland, Germany, Greece, USA

Organization of the meeting:

All IUFRO Units involved: 7.02.04

Thank you very much for your kind cooperation!

Host organization(s) and sponsor(s):
Humboldt-Universität zu Berlin (HU), the German Phytopathological Society (DPG) and the Julius Kühn-Institut, Federal Research Centre for Cultivated Plants (JKI) and the Austrian Workinggroup of Nutrtion, Veterinarity and Agriculture (ALVA).

Study tour(s) to: excursion to the experimental field of the Humboldt-Universität zu Berlin in Dahlem, Lentzeallee 55/57

Communication activities (dissemination of information about the meeting; promotion of IUFRO):
Detailed information is available in the proceedings of the 5th International Symposium on Plant Protection and Plant Health in Europe (Section 9: page 295-333; ISBN 978-3-941261-11-2 or free download: http://dpg.phytomedizin.org/fileadmin/daten/04_Verlag/02_SP/11_PPPHE_2013/0294-sp-2013-ppphe-2.pdf).

Related publications /websites:
http://dpg.phytomedizin.org/de/plant-protection-and-plant-health-in-europe/
http://dpg.phytomedizin.org/fileadmin/daten/04_Verlag/02_SP/11_PPPHE_2013/0294-sp-2013-ppphe-2.pdf

Büttner, C., von Bargen, S., Bandte, M., Mühlbach, H.-P. (2013) Forest diseases caused by viruses. Chap. 3. In: Infectious forest diseases. Gonthier P., Nicolotti G. (eds), CABI, pp. 50-75..

Robel J, Dieckmann L, von Bargen S, Büttner C, (2013): First detection of European mountain ash ringspot associated virus in rowan trees in Scotland. New Disease Reports 27, 13. [http://dx.doi.org/10.5197/j.2044-0588.2013.027.013]

von Bargen S, Arndt N, Robel J, Jalkanen R, Büttner C, (2013): Detection and genetic variability of European mountain ash ringspot-associated virus (EMARaV) in Sweden. Forest Pathology. doi: 10.1111/efp.12046

von Bargen, S., Langer, J., Robel, J., Rumbou, A., Büttner, C. (2012): Complete nucleotide sequence of Cherry leaf roll virus (CLRV), a subgroup C nepovirus. Virus Research 163, 678-683.

Büttner, C., von Bargen, S., Bandte, M, Myrta.(2011): Cherry leaf roll virus. In: Virus and Virus-Like Diseases of Pome and Stone Fruits (Eds. Hadidi, A., Barba, M., Candresse, T. & Jelkmann, W.). APS PRESS, St. Paul, USA, 2011, 119-125.

*von Bargen, S., Grubits, E., Jalkanen, R., **Büttner, C.**, 2009: Cherry leaf roll virus – an emerging virus in Finland? Silva Fennica 43 (5), 727-738*

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