

COST Action 0807

Integrated Management of Phytoplasma Epidemics in Different Crop systems

Working group 3
“Phytoplasma control in crop systems” Working group meeting

Neustadt/Weinstrasse, Germany, 16th of September 2011

Convenors:

Wolfgang Jarausch & Ester Torres

Local organisers:

Barbara Jarausch - Wolfgang Jarausch

AIPlanta-Institute for Plant Research, RRLP AgroScience, Neustadt an der Weinstraße, Germany

Program	
Friday, 16th September	08:30 – 10:00
8:30-8:40	Introduction Wolfgang Jarausch - Ester Torres
8:40-8:50	Breeding apple proliferation-resistant rootstocks: durability of resistance and pomological evaluation Wolfgang JARAUSCH, Claudia BISOGNIN, Bernd SCHNEIDER, Stella GRANDO, Riccardo VELASCO, Erich SEEMÜLLER
8:50-8:55	Response of apple proliferation-resistant <i>Malus sieboldii</i> hybrids to multiple infections with latent apple viruses Anna Maria CICCOTTI, Claudia BISOGNIN, Ivana BATTOCLETTI, Marco DEROMEDI, Paola BRAGAGNA, Mauro FILIPPI
8:55-9:00	Interaction of latent apple viruses with ‘ <i>Candidatus Phytoplasma mali</i> ’ in micropropagated apple Annerie Liebenberg, Wolfgang Jarausch, Thierry Wetzell
9:00-9:10	The use of <i>Spiroplasma melliferum</i> as a model organism to study the antagonistic activity of grapevine endophytes against phytoplasma Vered NAOR, David EZRA, Tirtza ZAHAVI
9:10-9:15	Effects of possible repellents on feeding and survival of <i>Cacopsylla pruni</i> (Scopoli) Monika RIEDLE-BAUER, Helmut BAUER, Judith MÖRTEL
9:15-9:20	Monitoring <i>Scaphoideus titanus</i> for IPM purposes: results of a pilot-project in Piedmont (NW Italy) Federico LESSIO, Ivan ALBERTIN, Dario M. LOMBARDO, Paola GOTTA, Alberto ALMA
9:20-9:25	‘ <i>Candidatus Phytoplasma phoenicium</i> ’-related strains infecting almond, peach and nectarine in Lebanon Marina MOLINO LOVA, Fabio QUAGLINO, Youssuf ABOU-JAWDAH, Elia CHOUËIRI, Hana SOBH, Alberto ALMA, Rosemarie TEDESCHI, Paola CASATI, Piero A. BIANCO
9:25-9:30	On the distribution of ‘ <i>Candidatus Phytoplasma pyri</i> ’ in the European Union based on a systematic literature review approach Robert STEFFEK, Swen FOLLAK, Gudrun STRAUSS, Ko VERHOEVEN, Roel POTTING, OIia KARADJOVA, Ventsyslav VENTISLAVOV, Vladimir KRUMOV, Alan MACLEOD
9:30-9:45	Presentation of results of WG3 questionnaires Tim BELIEN, Michael MAIXNER
9:45-10:00	Discussion
10:00-10:30	WG2-WG3 round table discussion (results of insect vector and disease management questionnaires)

Minutes of the meeting

Friday, 16th September 08:00-10:30

Attendance:

- chair of the COST action: Assunta Bertaccini
- WG3 coordinators: Wolfgang Jarausch and Ester Torres
 - WG3 subtask leaders (Rita Musetti, Tim Belien, Michael Maixner, Kadriye Caglayan, Piero Bianco)
- WG1, WG2 and WG4 coordinators (6)
- WG3 members (35)

Welcome by Wolfgang Jarausch

Introduction by Wolfgang Jarausch

Summary of WG3 tasks and subtasks leaders.

Announcement that Wolfgang Schweigkofler, the leader of subtask 2.1, has changed the institute and is no longer able to participate in the COST action. The WG3 coordinators propose to combine task 5 and subtask 2.1 and to appoint Piero Bianco as leader of the combined tasks 5 and 2.1. This was approved by the WG3 members.

Besides presentations of newest results within the different tasks of WG3 the Neustadt meeting focused on the discussion of the results of the questionnaires sent out for collecting data about disease and vector incidence in grapevine and fruit trees and the applied control strategies.

Task 1. Resistance

Wolfgang Jarausch:

Presentation: *Breeding apple proliferation-resistant rootstocks: durability of resistance and pomological evaluation.*

- see abstract under www.bulletinofinsectology.org (Vol. 64, Suppl., pp. 275-276)

Anna Maria Ciccotti:

Presentation: *Response of apple proliferation-resistant Malus sieboldii hybrids to multiple infections with latent apple viruses.*

- see abstract under www.bulletinofinsectology.org (Vol. 64, Suppl., pp. 273-274)

Annerie Liebenberg:

Presentation: *Interaction of latent apple viruses with 'Candidatus Phytoplasma mali' in micropropagated apple.*

- see abstract below

Task 5. Control strategies using the interactions of endophytes with the phytoplasma

Vered Naor:

Presentation: *The use of Spiroplasma melliferum as a model organism to study the antagonistic activity of grapevine endophytes against phytoplasma.*

- see abstract under www.bulletinofinsectology.org (Vol. 64, Suppl., pp. 265-266)

Task 3. Improvement of vector control

Monika Riedle-Bauer:

Presentation: *Effects of possible repellents on feeding and survival of Cacopsylla pruni (Scopoli).*

- see abstract under www.bulletinofinsectology.org (Vol. 64, Suppl., pp. 263-264)

Federico Lessio:

Presentation: *Monitoring Scaphoideus titanus for IPM purposes: results of a pilot-project in Piedmont (NW Italy).*

- see abstract under www.bulletinofinsectology.org (Vol. 64, Suppl., pp. 269-270)

Task 4. Recommendations for best practices in disease control

Piero A. Bianco:

Presentation: *'Candidatus Phytoplasma phoenicium'-related strains infecting almond, peach and nectarine in Lebanon.*

- see abstract under www.bulletinofinsectology.org (Vol. 64, Suppl., pp. 267-268)

Invited:

Robert Steffek:

Presentation: *On the distribution of 'Candidatus Phytoplasma pyri' in the European Union based on a systematic literature review approach.*

- see abstract under www.bulletinofinsectology.org (Vol. 64, Suppl., pp. 271-272)

In addition, Robert Steffek presented the objectives of the PrimaPharcie project "Pest risk assessment for the European Community: plant health: a comparative approach with case studies" funded by EFSA (18.12.2009 - 18.05.2012, co-ordination: Alan MacLeod, FERA, UK) involving 11 partners from 7 EU countries. This project also collects data about the spread of phytoplasma diseases but on the basis of a literature approach. The objective is a pest risk assessment in view of the regulation of the phytoplasma diseases. Thus, this data collection has different objectives to those covered by the questionnaires of WG2 and WG3.

Michael Maixner:

Presentation of results of WG3 grapevine phytoplasma control questionnaire.

a) Goals:

- collection of data from as many viticultural areas as possible
- focus on Bois noir and Flavescence dorée
- information about presence and incidence of vectors
- diseases and phytoplasma strains (alternative) host plants
- information about direct and indirect control measures
- additional information about predominant cultivars, susceptibility, cultural practice
- collection of publications, empirical data and 'grey literature'

b) Questionnaire sent in May 2010. Returned until now:

5 countries: Germany, Italy, Netherlands, Spain, Switzerland
19 regions
200.000 ha

c) Control of Bois noir:

- infected vines
 - roughing of individual infected vines if systemically infected
 - no clearing of vineyards
 - pruning:
 - (summer pruning)
 - winter pruning
 - (cutting back of trunks)

- vectors
 - no insecticides
 - no weed control / green cover management during flight of vectors
 - control of *C. arvensis*
 - herbicide treatment inside vineyards (spring / autumn)
 - mechanical weeding not effective
 - competitive green cover
 - total removal almost impossible
 - control of *U. dioica*
 - herbicide treatments inside (+outside) vineyards
 - mechanical weeding effective (repeated to avoid short term effects)
 - competitive cover plants
 - often reoccurrence after control
- d) Preparation of a draft collection of management tools for BN and FD

Tim Belien:

Presentation of results of WG3 fruit tree phytoplasma control questionnaire.

- a) Goals:
- information about presence and incidence of the disease
 - information about presence and incidence of vectors
 - collection of published and 'grey-literature', e.g. information leaflets, brochures etc. for growers
- > questionnaire sent to members of WG3
-> questionnaire sent to national phytosanitary services of EU countries
- b) Thus far feedback from 16 people. Information of 10 countries, 16 regions.
- c) Control measures:
- the answers range from obligate control of vectors to vector control, but not mandatory and control restricted to nurseries
 - infected trees are removed, but no complete uprooting of entire orchards
- d) Problems/discussion:
- lack of information of a lot of countries/fruit growing regions. We need more feedback
 - questionnaire too detailed?
 - how to get involved "field men" (extension services, advisors in practice)?
 - focus questions on disease management (actions in practice when symptoms are observed).

WG2-WG3 round table discussion (results of insect vector and disease management questionnaires)

Discussion about the outcome and the objectives of the different questionnaires distributed by WG2 and WG3.

W. Jarausch discusses that there is a lack of information from some countries. He suggests simplifying the questionnaires, and to coordinate and merge the questionnaires of WG2 and WG3. About the recommendations to growers there is a need of collecting more information; it could be interesting to create a specific group working on this item. Barbara Jarausch agrees with a common questionnaire simplifying the questions for both activities (WG2 and WG3). She pointed out that different countries should be motivated. There is a general agreement about developing a joint questionnaire. W. Jarausch remembered that WG3 is focused in grapevine and fruit tree phytoplasmas, but the questionnaire could be sent to everybody. After all interventions W. Jarausch proposes to create a new working group to design the new questionnaire and to decide how to distribute it. He remarks that this goal should be completed before the end of the Action. This working group should consist of the responsables for the questionnaires in WG2 and 3.

Outlook

The next WG3 meeting will be held in 2012, probably attached to the ICFV meeting in Rome (3-8 June 2012). The focus on this meeting will be on results of task 2 and 5 regarding the discussion of the effectiveness of bioactive compounds including endophytes as control measures.

The planned meeting for plant health inspectors etc. is now scheduled for the beginning of the last year of the action (January, February 2013). The next WG3 meeting has also the objective to prepare this meeting in terms of discussions about the recommendations for disease control which can be given on the basis of the results of this COST action.

Abstract not available in the abstract book of the meeting:

Interaction of latent apple viruses with '*Candidatus Phytoplasma mali*' in micropropagated apple

Annerie Liebenberg, Wolfgang Jarasch, Thierry Wetzell

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Apple proliferation (AP) is one of the most devastating apple diseases in Europe. It is caused by '*Candidatus Phytoplasma mali*', a psyllid-transmitted plant pathogenic prokaryote causing serious symptoms, including "witches brooms", enlarged stipules, undersized fruit, flower budding in autumn, growth reduction and premature reddening. During an AP-resistance breeding program, crossing the resistant wildtype *Malus sieboldii* and genotypes of *M. x domestica* and *M. x purpurea*, unsuspected decline was observed. The decline was associated with three latent viruses, *Apple stem grooving virus* (ASGV), *Apple stem pitting virus* (ASPV) and *Apple chlorotic leaf spot virus* (ACLSV). Similar results were also observed in micropropagated plantlets when the phytoplasma inoculum was associated with ASGV.

The objective of this study is to analyse the effect of the latent viruses on the phytoplasma titre and symptom severity in infected micropropagated susceptible *M. x domestica* plantlets. To analyse the effect of ASGV and ASPV presence on the concentration of the different phytoplasma strains, homogenous single virus infected culture lines were successfully established and maintained as well as transmitted to phytoplasma rootstocks. Although the presence of additional viral pathogens does enhance the phytoplasma concentration, the increase in concentration is much more noticeable when virulent and less virulent strains were compared. In addition, the severity of phytoplasma symptoms is predominantly linked to the '*Ca. P. mali*' strain rather than to the co-infecting apple virus. This signifies for the AP resistance screening that the virulence of the phytoplasma strain has to be considered most.