

TROPICSAFE TRAINING SESSION

PRACTICES AND TECHNIQUES TO MANAGE GRAPEVINE YELLOWS

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5th & 12th AUGUST 2021

Grapevine Yellows (GY) is present in grapevine growing regions all over the world, leading to grapevine and wine losses of up to 60%. This disease is associated with several phytoplasmas and its epidemiological cycles show regional variation due to phytoplasma and insect vector diversity. The most commonly detected phytoplasmas associated with severe GY epidemics are '*Candidatus Phytoplasma solani*', '*Candidatus Phytoplasma pruni*'-related, '*Candidatus Phytoplasma asteris*'-related and the "flavescence dorée".

The TROPICSAFE training session will allow you to get a better understanding of this disease, recognize the disease in the field and which techniques and practices are being used and/or developed within the project to manage it in the different countries of the project.

OBJECTIVES

- » Provide information for the identification of grapevine yellows symptoms, alternative host plants, and insect vectors.
- » Provide information on biological and genetic characteristics of aster yellows infecting grapevine in South Africa.
- » Improve the knowledge on management strategies to reduce grapevine yellows economic impact.
- » Get a perspective on how this disease is affecting the vineyards in areas with Chile and Italy as examples.

TARGET

- » Professors and students.
- » Technical advisers, consultants and farmers.
- » Plant protection organizations.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101019150.

Opening. Assunta Bertaccini (TROPICSAFE project coordinator)

1) History of detection and symptoms in South Africa. Jeff Joubert

2) Method of sampling and collection (D-VAC, sweeping, monitoring of sticky traps, collection of material, mapping). Gerhard Pietersen and Kerstin Krüger

3) Methods of phytoplasma detection. Gerhard Pietersen and Gert Pietersen

4) Insect vectors, alternate host plant species. Kerstin Krüger

5) Biological and genetic characteristics of aster yellows infecting grapevine in South Africa. Johan Burger

6) Grapevine yellows under diverse agroecological conditions in Italy. Nicoletta Contaldo and Assunta Bertaccini

7) Grapevine yellows situation in Chile. Nicola Fiore

TRAINERS



Assunta Bertaccini is a plant pathology professor at the **Alma Mater Studiorum - University of Bologna (UNIBO), Italy**. In more than 40 years of research her major studies have been devoted to plant diseases associated with phytoplasmas and bacteria, focusing on their biology and epidemiology. She has received numerous awards, including the Emmy Klienenberger-Nobel Award for distinguished research in mycoplasmaology. She is Editor-in-Chief of *Phytopathogenic Mollicutes*, Senior Editor of *Phytopathologia Mediterranea*, reviewer of international scientific journals and founder and head of the International Phytoplasmaologist Working Group (IPWG). Chair of COST action FA0807 "Integrated management of phytoplasma epidemics in different crop systems", and she is the coordinator of the TROPICSAFE project.



Jeff Joubert is a retired viticulturist who was with **Vinpro** for 19 years as a consultant in the Olifants River area. During this period his role was advise producers on all aspects of grapevine cultivation. He was also responsible for initiating and implementing a training programme for farm workers on vineyard pests and diseases, which was later expanded to include all aspects of viticulture. Since his retirement he has continued the training of farm workers for Vinpro until it was suspended due to COVID-19. In 2019 he also took on the role of substitute lecturer in the subject of viticulture at CPUT in Wellington.



Gerhard Pietersen is a Professor in the Department of Genetics at **Stellenbosch University**. He has 40 years' experience in plant virus research. His main research focus in the last ten years has been on control of viruses of grapevine most notably grapevine leafroll disease, characterisation of local citrus tristeza virus sources, and also on *Candidatus Liberibacter africanus* (Laf) in South Africa. In Tropisafe he has been involved in aspect involving the alternate hosts of Laf, the variability of Laf and the development of LAMP and PCR tests to Laf.



Kerstin Krüger is an Extraordinary Professor in the Department of Zoology and Entomology and a member of Forestry and Agricultural Biotechnology Institute (FABI) at the **University of Pretoria**. She has more than 20 years' experience in the study of agriculturally important insect vectors of plant diseases. Her studies have led to advanced knowledge on the relationship between plant diseases, insect herbivores and their host plants. Her work highlights novel options for improved and sustainable management of insect-transmitted plant diseases.



Gert Pietersen is the founder of **Patho Solutions**, a company conducting agricultural plant pathology research and development, mainly to viruses of the grapevine and deciduous fruit industries. Patho Solutions also provides routine virus tests and disease control services. Gert has a Microbiology BSc. honours degree with distinction from the University of Pretoria and manages a team of four graduates at Patho Solutions. He has collaborated on various student research projects and

ancillary programs such as the iGEM, an international biotechnology competition. In Tropisafe Patho Solutions have collaborate on studies to determine if Aster Yellows phytoplasma (AY) and *Candidatus Liberibacter africanus* (Laf) alternate host studies, AY epidemiological studies, and development of a LAMP to Laf.



Johan Burger is a Professor of Molecular Genetics at **Stellenbosch University**. His current research is focussed on the molecular characterisation of plant-pathogen interactions, and his research group is internationally recognised for their work on the aetiology of virus and virus-like diseases of grapevine and fruit crops, high-throughput sequencing of grapevine and fruit tree viromes, the development of PCR-based diagnostics of plant virus and virus-like pathogens, genome sequencing of grapevine cultivars, and the application of genome editing technologies in grapevine and other crop plants.



Nicoletta Contaldo is a plant pathology researcher at the **Alma Mater Studiorum - University of Bologna (UNIBO), Italy**. She started her academic career working with plant viruses, studying the molecular mechanisms involved in plant-virus interactions and in the last 15 years she has been working with phytoplasma and phytoplasmas-associated diseases, focusing on their biology and epidemiology. Her research activity is aimed to phytoplasma taxonomy and their molecular characterization, using all the available molecular techniques and she eventually succeeded in phytoplasma *in vitro* cultivation, depositing also a patent about this topic. She collaborated with several international scientific groups, in the framework of different European projects and she is currently one of the three curators of the phytoplasma database within the project EPPO-QBANK.



Nicola Fiore holds a degree in Agricultural Engineering from the *Alma Mater Studiorum* - University of Bologna (UNIBO), Italy, and a degree in Agricultural Engineering revalidated by the Universidad de Chile, Facultad de Ciencias Agronómicas. He holds a PhD degree in Forestry, Agriculture and Veterinary Sciences from the University of Chile. He is currently Associate Professor and Director of the Department of Plant Health, Faculty of Agronomic Sciences, **University of Chile**. He is also coordinator of the Doctoral Programme in Forestry and Veterinary Sciences at the University of Chile. He is particularly interested in developing transversal competences favouring a holistic view of agriculture in problem solving. He has published more than 50 scientific articles in indexed journals and advises nurseries and growers. His line of research is "detection, characterisation, epidemiology and control of viruses, viroids and bacteria in fruit, horticultural and ornamental crops.