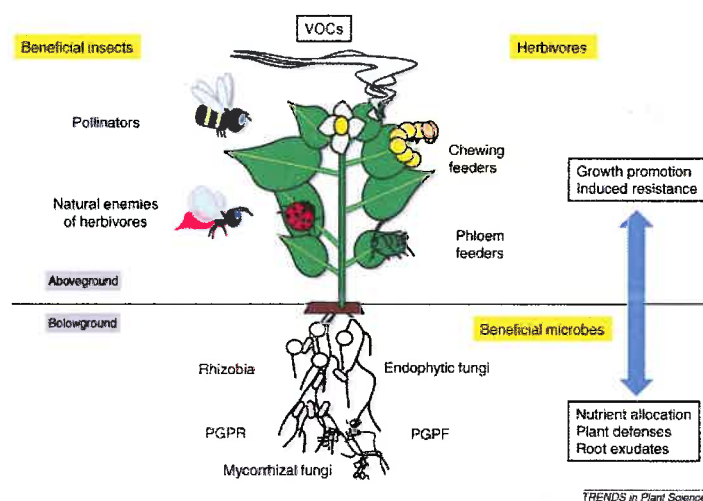


3rd Annual Meeting of the COST Action FA1405

in collaboration with

Institute of Earth Systems
University of Malta

“Three-way interactions between plants, microbes and arthropods: impacts, mechanisms and utilisation”



after Pineda *et al.* 2010 TIPS

Venues:

24th & 25th January 2018

Marina Hotel at the Corinthia Beach Resort, St Julians

26th January 2018

University of Malta Valletta Campus
Old University Building, St Paul Street, Valletta



L-Università
ta' Malta

cost
EUROPEAN COOPERATION
IN SCIENCE AND TECHNOLOGY

Conveners

PROFESSOR DAVID MIFSUD, *University of Malta*

PROFESSOR BRUNO BIAVATI, *University of Malta*

Annual Meeting Scientific Committee

ARJEN BIERE, *Netherlands Institute of Ecology*

CAROLIN SCHNEIDER, *Institute of Plant Culture, Schnega, Germany*

ALISON BENNETT, *Department of Evolution, Ecology and Organismal Biology, Ohio State University, USA*

PAULA BAPTISTA, *Polytechnic Institute of Bragança, Portugal*

MARIA POZO, *CSIC, Spain*

BENEDICTE ALBRECHTSEN, *Umeå University, Sweden*

RICHARD MEADOW, *Norwegian University of Life Sciences, Norway*

ANA PINEDA, *Netherlands Institute of Ecology*

Organising Committee

DAVID MIFSUD (OC member Scientific part)

Tel. 00356 2340 3755

BRUNO BIAVATI (OC member)

Tel. 00356 2340 2322

LUCIENNE BUGEJA (Head of Logistics)

Tel. 00356 2340 7511

LOGISTICS TEAM

Tel. 00356 2340 7513

**A three way trees-fungi-bacteria interactions
(*Olea europaea*, *Epicoccum nigrum* and
Pseudomonas savastanoi pv. *savastanoi* (Psv))
mathematical model for the “olive knot”
disease eradication**

Ezio Venturino^{1*}, C. Berardo¹, I. M. Bulai¹, P. Baptista² & T. Gomes²

¹Dipartimento di Matematica “Giuseppe Peano”, Università di Torino, via Carlo Alberto 10,
10123 Torino, Italia

²CIMO, School of Agriculture, Polytechnic Institute of Bragança, Campus Santa Apolónia,
5300-253, Bragança, Portugal

ABSTRACT: The bacterium *Pseudomonas savastanoi* pv. *savastanoi* (Psv), is responsible for the ‘olive knot’ disease producing tumorous galls mostly on stems and branches of olive trees. This endangers olive harvest, reducing tree strength and ultimately killing them. Interaction of Psv at infection sites with other microorganisms, mainly epiphytic but in the knots as well, cause disease spread. In olive knots some of the latter either depress Psv growth or increase knot sizes. Prevention strategies appear the better way to control olive knot. Naturally occurring antagonistic microorganisms able to suppress Psv constitute biological agents, that can reduce olive knot incidence. The endophytic fungal community associated to Psv in the phyllosphere of olive tree cultivars is able to antagonize Psv following experiments in vitro. This antagonistic activity against Psv was particularly displayed by the fungus *Epicoccum nigrum*, that was showed the capacity to inhibited the Psv growth/biomass on 96%, after 48 hours of interaction. A nonlinear mathematical system is introduced for understanding the action of this resident fungus (*E. nigrum*) in Psv development. It accounts for interactions between olive-Psv-*E.nigrum* and increases our knowledge on the olive knot disease spreading.

*corresponding author