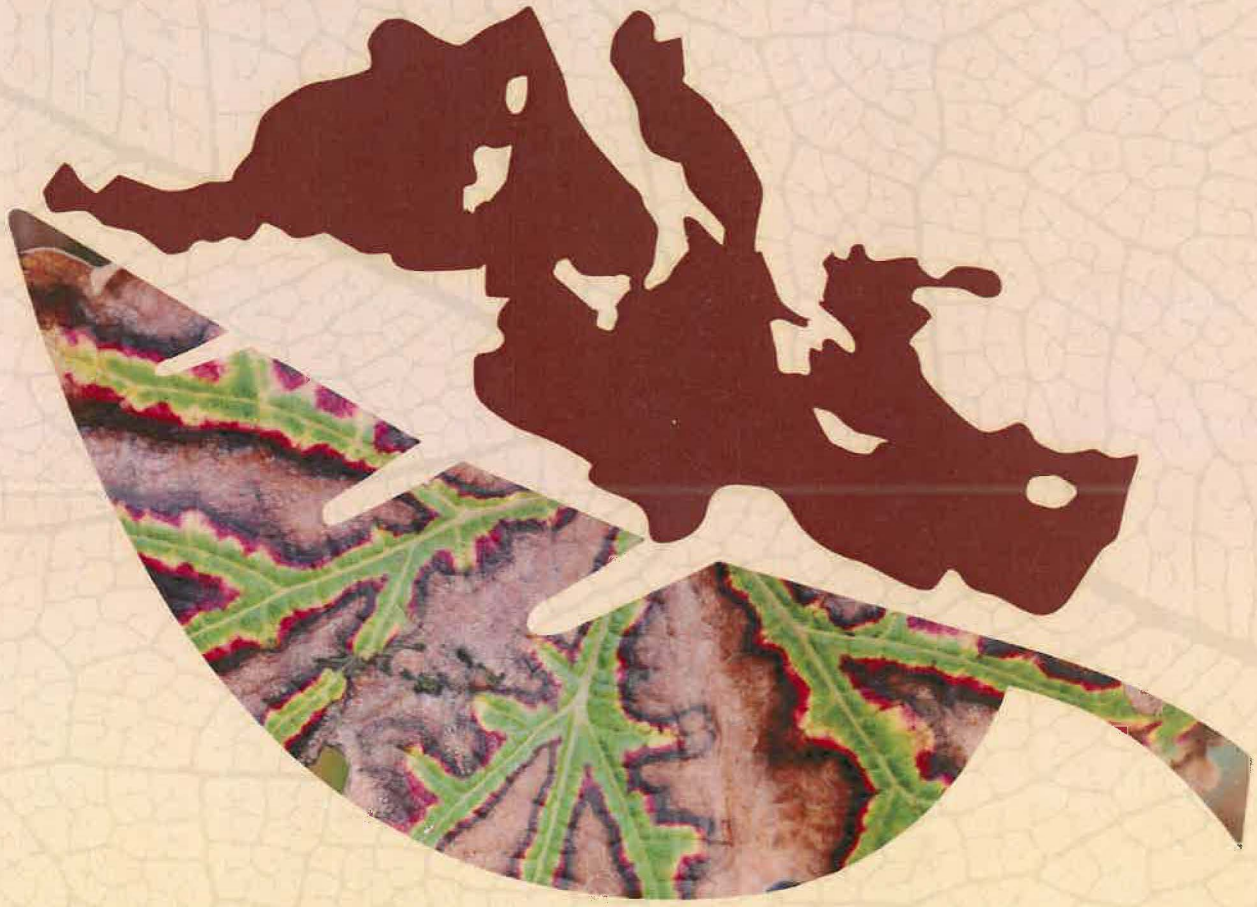
15TH CONGRESS OF
THE MEDITERRANEAN
PHYTOPATHOLOGICAL UNION

PLANT HEALTH SUSTAINING MEDITERRANEAN ECOSYSTEMS

ABSTRACTS BOOK



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Milano,Italy) in Petri dishes (10-cm diameter) for preliminary morphological identification on the basis of macroscopic and microscopic features.

A total of 15 fungal taxa, mainly belonging to *Ascomycota*, were identified by macro and microscopic methods. The most represented family were *Pleosporales*. The results show that antagonistic capacity of *Gliomastix* sp., *Papulaspora* sp. *Cladosporium sphaerospermum* had the higher antagonistic activity against *P. aphanidermatum* than the other fungi isolated from the roots of *P. oceanica.*

P.112 Screening of potential biocontrol bacterial against *Pseudomonas savastanoi* pv. *savastanoi* and elucidation of their mode of action. D. MINA[1], J. PEREIRA[1], T. LINO-NETO[2] and P. BAPTISTA[1]. [1]*CIMO / School of Agriculture, Polytechnic Institute of Bragança,* Campus de Santa Apolónia, 5300-253 Bragança, Portugal. [2]*BioSystems & Integrative Sciences Institute (BioISI), Plant Functional Biology Centre*, University of Minho, *Campus* de Gualtar, 4710-057 Braga, Portugal. Email: pbaptista@ipb.pt

Over the last decades, the olive knot disease, caused by the bacterium *Pseudomonas savastanoi pv. savastanoi* (Psv), has been responsible for irreversible damages on olive orchards. Reduced vigor and stem dryness caused by this phytopathogen lead to a decrease in olive fruit production, conducting to countless losses for farmers. In this work, bacterial endophytes and epiphytes of olive tree phyllosphere were screened for the suppression of Psv, and several mechanisms behind this activity was also studied by evaluating indoleacetic acid (IAA), siderophore and lytic enzymes production. Interspecific interaction was assessed on solid media with agar overlays. IAA was estimated spectrophotometrically, whereas siderophores and lytic enzymes were evaluated qualitatively. Several bacterial species tested showed to reduce Psv growth up to 70%, as well as its viability. The highest inhibition was observed for *Frondihabitans* sp. and *Paenibacillus* sp. A reduction on production of both IAA and siderophore, which are associated with knot development, by Psv was noticed in the presence of the most efficient bacterial. Production of lytic enzymes by antagonists such as lipase, chitinase, protease and amylase was also identified. Altogether the results indicate that some of the bacterial tested have great potential as biocontrol agents due to their capacity to produce metabolites/lytic enzymes that can interfere with Psv growth and/or development of knots. These potential biological agents should be further evaluated under natural conditions.

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P.113 Biological control of *Pseudomonas savastanoi* pv. *savastanoi* by two bacterial isolated from olive tree phyllosphere D. MINA[1], A. SANTOS[1], J. PEREIRA[1], T. LINO-NETO[2] and P. BAPTISTA[1]. [1]*CIMO / School of Agriculture, Polytechnic Institute of Bragança,* Campus de Santa Apolónia, 5300-253 Bragança, Portugal. [2]*BioSystems & Integrative Sciences Institute (BioISI), Plant Functional Biology Centre*, University of Minho, *Campus* de Gualtar, 4710-057 Braga, Portugal. Email: pbaptista@ipb.pt

Olive knot disease, caused by the bacterium *Pseudomonas savastanoi* pv. *savastanoi* (Psv), has been responsible for high economical crop losses in olive orchards, especially in Mediterranean countries. Olive

knot cannot be eradicated once it is established in an orchard, and therefore its control is based on preventive measures. Laboratory experiments previously performed by us have showed the capacity of some bacterial species, isolated from olive tree phyllosphere, to inhibited Psv growth. In the present work, the two most promising bacterial isolates (i.e. *Frondihabitans* sp. and *Paenibacillus* sp.) were evaluated for the control of Psv in olive plantlets (*Olea europaea* L.) under greenhouse conditions, to predict their effect in a more natural condition. In pot experiments, two-year-old olive plants cv. Cobrançosa were inoculated with the antagonistic bacteria and Psv individually or in combination. Inoculations were performed in wounds previously made in three different sites of the main stem. Thirty replicate plants were used per strain. The plants were observed for symptom development and the number of bacteria on the inoculation sites was periodically evaluated, for up to 120 days after inoculation. To quantify the reduction of symptom expression, knots were excised from stems and their weights were compared between treatments. Inoculation with Psv resulted in the formation of knots with higher weight values compared to plants inoculated simultaneously with Psv and antagonistic bacteria. Both tested bacterial also showed to reduce the amount of Psv in the inoculation sites, suggesting their effectiveness in controlling the multiplication of the pathogen. Data presented here demonstrate for the first time this bacterial potential in supressing olive knot, and these two species should be considered in the future as potential biocontrol agents against *Psv.*

This work is funded by FEDER funds through COMPETE (Programa Operacional Factores de Competitividade) and by national funds by FCT (Fundação para a Ciência e a Tecnologia) in the framework of the project EXCL/AGR-PRO/0591/2012. D. MINA thanks the Fundação para a Ciência e Tecnologia (FCT), Portugal for the Ph.D. grant SFRH/BD/105341/2014.

P.114 Antimicrobial activity of plant natural compounds against phytopathogenic bacteria and interference with *quorum sensing*. A. CARUSO[1], A. ANZALONE[1], L. GURRIERI[1], S. PROVENZANO[1], P. BELLA [2], R. PALMERI[1], V. CATARA [1], G. LICCIARDELLO[1]. [1]*Dipartimento di Agricoltura Alimentazione e Ambiente, Università degli Studi di Catania, Via Santa Sofia 100, 95130 Catania, Italy.* [2]*Dipartimento di Scienze Agrarie e Forestali, Università degli Studi di Palermo, Viale delle Scienze Ed. 4, 90128 Palermo, Italy. gralicci@unict.it.*

Natural plant products have received a great deal of attention as sustainable alternative for management of plant diseases caused by bacteria. In this study, we evaluated the antimicrobial activity of citrus peel components and phenols with relevant antioxidant activity, namely cathecol, citronellol, esperidin, limonene, quercitin and rutin, against nine phytopathogenic bacteria in the genera *Clavibacter, Erwinia, Pectobacterium, Pseudomonas* and *Xanthomonas*. The highest inhibitory activity was induced by cathecol against *Xanthomonas* species and *P. syringae* pv. *tomato* and by citronellol against *C. michiganensis* subsp. *michiganensis* and *E. amylovora*. Cathecol and citronellol Minimal Inhibitory Concentration (MIC) ranged from 0.5 to 0.0625 mg mL^{-1} and 1 to 0.125 mg mL^{-1}, respectively. In addition, the ability to inhibit the quorum sensing (QS) cell-to-cell signaling system, that controls the virulence behavior of a broad spectrum of bacterial pathogens, was evaluated. Using *Chromobacterium violaceum* as biosensor system, citronellol was active against medium chain N-acyl-homoserine lactones preventing the production of violacein as indicated by the lack of pigmentation of the indicator organism in vicinity of the treated disks. To determine if this suppression was linked to anti-virulence activity, the effect of citronellol was tested in the QS active phytopathogen *Pseudomonas corrugata* strain CFBP 5454, causal agent of tomato pith