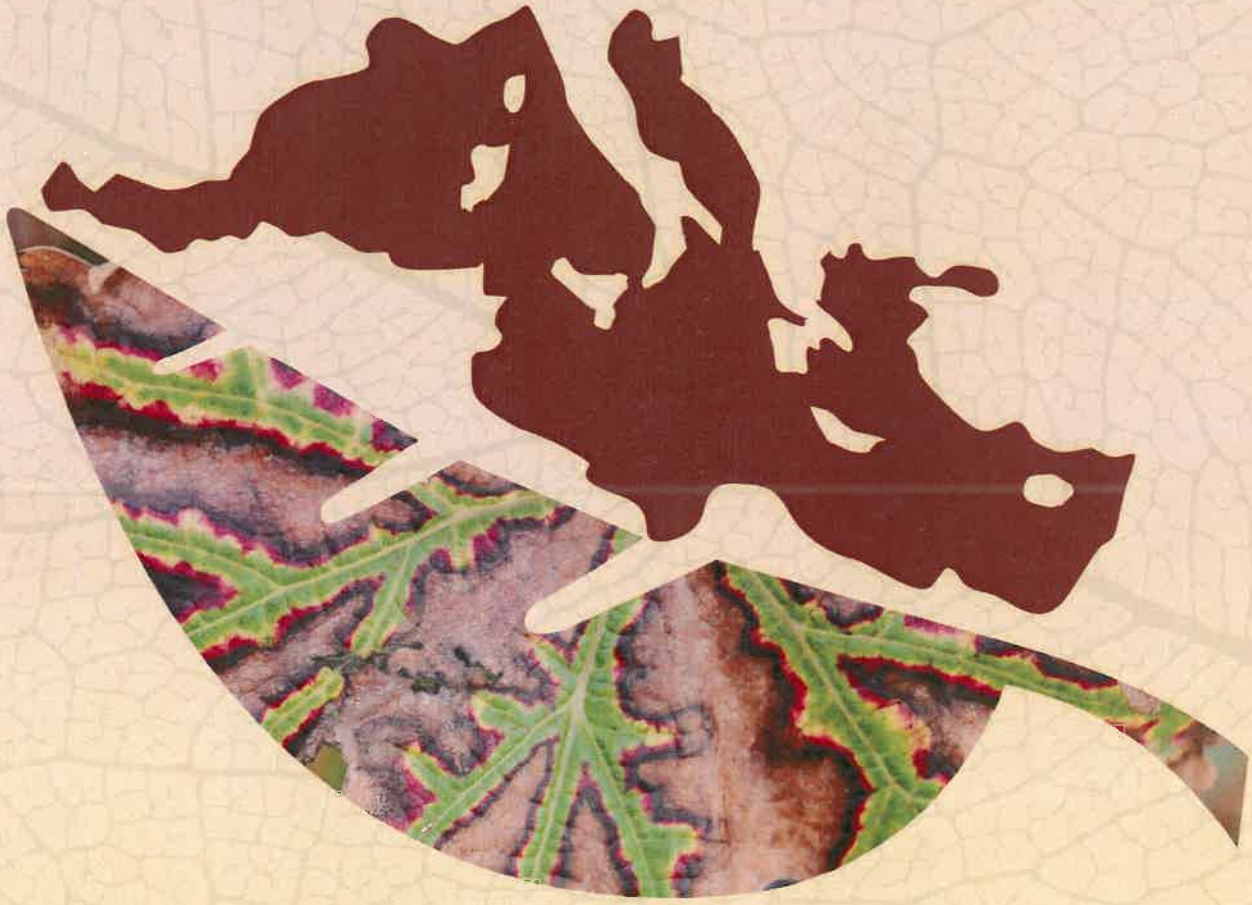
15TH CONGRESS OF
THE MEDITERRANEAN
PHYTOPATHOLOGICAL UNION

# PLANT HEALTH SUSTAINING MEDITERRANEAN ECOSYSTEMS

# ABSTRACTS BOOK



20,21,22,23 JUNE 2017
CORDOBA, SPAIN
MPUCORDOBA.MPUNION.EU

ORGANIZERS

**Título:** 15th Congress of the Mediterranean Phytopathological Union

**Textos:** Autores

**Deposito Legal:** **CO 1213-2017**

**Impresión:** Diputación de Córdoba
Departamento de Ediciones y Publicaciones

**P.132 Fungal endophyte communities in olive fruits: effect of maturation index and anthracnose incidence.** F. MARTINS[1,2], J.A. PEREIRA[1] and P. BAPTISTA[1]. [1]*CIMO / School of Agriculture, Polytechnic Institute of Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal. Email: pbaptista@ipb.pt.* [2] *University of Léon, Department of Engineering and Agricultural Sciences, Av. Portugal, nº 41, 24071 Léon, Spain*

Olive anthracnose, caused by different species of *Colletotrichum* genus, is considered as one of the most economically harmful fruit disease of olive crop worldwide. In Trás-os-Montes region (Northeast of Portugal), although the presence of the pathogen has been reported on olive orchards in almost all areas, lower levels of incidence were observed in specific areas. This work evaluated the diversity of endophytic fungi inhabiting fruits of the susceptible-anthracnose cultivar Madural, in olive groves from areas of high and low anthracnose incidence, in order to evaluate differences in the endophytic community composition. For this, fungi were isolated from symptomless olive fruits at three different maturation index (MI). The isolates were identified by rDNA sequencing. Overall, the frequency of colonization and abundance of endophytes was higher in areas with high anthracnose incidence (12.4%; 78) when compared to areas with low incidence (7.3%; 46). Despite this, the composition of fungal communities in both areas was very similar, being the genera with the greatest abundance *Trametes* (33%), *Alternaria* (43%) and *Neofabraea* (26%). Over fruit maturation, the frequency of colonization, abundance and diversity of endophytes increased significantly and progressively up to 16.0-, 6.0- and 8.0-fold, respectively. Although endophytic community of the three MI was found to overlapped, several fungal genera preferred either olives from MI2 (e.g. *Apodospora*, *Hyalodendriella*, *Pyrenochaeta*), or from MI3 (e.g. *Mollisia*, *Ulocladium*) or MI4 (*Colletotrichum*, *Epicoccum*). In addition to providing insights into fungal endophyte community structure, our survey provides candidates for further evaluation as potential management tools against olive anthracnose disease.

The authors are grateful to the Foundation for Science and Technology (FCT, Portugal) and FEDER under Programme PT2020 for financial support to CIMO (UID/AGR/00690/2013). The first author also thanks the award of a PhD Scholarship (ref. SFRH / BD / 112234/2015) by FCT

**P.133 Endophytic and epiphytic fungal community associated to olive tree differ in antagonistic activity against *Pseudomonas savastanoi pv. savastanoi* .** T. GOMES[1,2], J. A. PEREIRA[1], T. LINO-NETO[2], P. BAPTISTA[1]. [1]CIMO/ *Polytechnic Institute of Bragança, School of Agriculture, Campus de Santa Apolónia, 5300-253 Bragança, Portugal. pbaptista@ipb.pt.* [2]*Biosystems & Integrative Sciences Institute (BioISI), Plant Functional Biology Center (CBFP), University of Minho, Campus de Gualtar, 4710-057 Braga, Portugal*

The Olive knot (OK) caused by the *Pseudomonas savastanoi* pv. savastanoi (Psv) is an important disease, causing severe damages and yield losses in olive trees worldwide (*Olea europaea* L.). In a previous study we have isolated this bacterium from the phyllosphere of olive tree, together with many fungal species. In these complex communities, microorganisms compete with each other for space and resources, promoting survival of the best-adapted individuals. This has prompted interest in the exploitation of these microorganisms for OK control. In this study, 48 fungal species from the endo- and epiphytic communities of olive twigs were screened for the growth inhibition of the phytopathogen Psv under in vitro conditions. The time course of interspecific interactions (24, 48, 72 and 144h) was studied in potato

dextrose agar and olive leaf + twig extract (OLTE), by assessing a clear zone of growth inhibition around fungal colony. Results showed that epiphytic community was the main reservoirs for antagonistic fungi. Almost 70% of the tested epiphytes inhibited Psv growth, being *Dothiorella iberica, Aspergillus felis* and *Aspergillus brasiliensis* the most prominent species. The proportion of antagonists within endophytic community was lower (46%), being the most efficient *Epicoccum nigrum* and *Rhinocladiella similis*. The antibacterial activity was observed to be significantly ($p<0.01$) affected by growth medium and time of interaction. Higher growth inhibition was found in the OLTE culture media, showing that inhibition of these endophytic and epiphytic fungi was specifically enhanced by the host plant extract. Most of the fungi tested (up to 64%) from both microenvironment showed higher antibacterial activity in the first 24 hours of interaction, whereas only 16% and 19% strongly inhibited Psv after 48 and 144 hours of interaction, respectively. Altogether, the results indicate that *D. iberica*, *E. nigrum* and *A. felis*, are the best candidates for the biocontrol of olive knot. These potential biological agents should be considered and further evaluated under natural conditions.

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. T. Gomes thanks FCT, POPH-QREN and FSE for PhD SFRH/BD/98127/2013 Grant.

**P.134 New bacterial antagonists for the Biocontrol of Fire Blight Disease Caused by *Erwinia amylovora.***

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The biocontrol effectiveness of antagonistic bacteria against fire blight (Erwinia amylovora was evaluated under in vitro and field conditions. Among 61 bacteria isolated from soil and flowers of fire blight host plants of different Moroccan areas, 20 isolates showed higher antagonistic activity against the pathogen during agar-diffusion-test, attached blossoms assay and in a bioassay on immature pear fruits. Effective isolates were identified by using biochemical tests and 16S rDNA genes sequencing. These isolates were grouped into the following genera: *Alcaligenes (ACBC1), Bacillus (CPa12, CPa2, HF6, JB2, LMR2, SF14, SF16, SP10, SP13, SP18) Brevibacterium (SF3, SF4, SF7, SF15), Pantoea (ACBC2, ACBP1, ACBP2), Pseudomonas (SP9), and Serratia (HC4).* Furthermore, isolates were reported in the NCBI nucleotide sequence database (GenBank) under the accession numbers from KY357285 to KY357304. In a field assay with the susceptible varieties of apple, spray treatments were carried out with different genus of bacterial antagonists. Their efficacies were evaluated 15th days post-inoculation on blossoms and were ranged from 54.6 to 95.0% for 11 strains, most of them were slightly better or better than that obtained with commercial bacterial strains P10c (66%) and QST713 (63%). Accordingly, the strains showed no pathogenicity towards plant tissue (pear fruitlets, pear and apple blossoms, and tobacco leaves) are, therefore, considered as potential candidates to be integrated in actives ingredients of microbial formulation for fire blight control.