XXI Convegno Nazionale Società Italiana di Patologia Vegetale (SIPaV)

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Società Italiana di Patologia Vegetale
(SIPaV)

Difesa delle piante per l'alimentazione e l'energia

BOOK OF ABSTRACTS

Edited by: Giordano L., Spadaro D., Gonthier P.

Torino, 21-22-23 Settembre 2015

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Book of abstracts

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XXI CONVEGNO NAZIONALE SOCIETÀ ITALIANA PATOLOGIA VEGETALE CENTRO CONGRESSI TORINO INCONTRA TORINO, 21-22-23 SETTEMBRE 2015

PROGRAMMA

Lunedì 21 Settembre 2015

12.00 Registrazione dei partecipanti e affissione Posters (n. da 1 a 68)

14.30 Apertura dei lavori e saluti delle Autorità

15.00 - 15.30 *Relazione su invito.* EUROPE ON ITS WAY INTO A BIOBASED ECONOMY – PERSPECTIVES FOR PLANT AND AGRO-RESEACH. C. Patermann

Prima sessione – Eziologia ed epidemiologia. Moderatori: P. Capretti e N. Luchi

15.30 - 15.50 DETECTION, HOST PREFERENCE AND ROLE ON TREE STABILITY OF WOOD DECAY FUNGI IN URBAN ENVIRONMENT. L. Giordano, F. Sillo, P. Gonthier

15.50 - 16.10 PATHOGENICITY OF ETIOLOGICAL AGENTS OF CROWN ROT DISEASE ON ORGANIC BANANA IN DOMINICAN REPUBLIC. M.A.M. Kamel, P. Cortesi, M. Saracchi

16.10 - 16.30 RACE TYPING AND MOLECULAR CHARACTERIZATION OF *XANTHOMONAS CAMPESTRIS* pv. *CAMPESTRIS* STRAINS OCCURRING IN ITALY. P. Bella, C. Moretti, C.P. Strano, M. Zaccardelli, F. Branca, R. Buonaurio, J.G. Vicente, V. Catara

16.30 - 16.50 *'CANDIDATUS* PHYTOPLASMA PHOENICIUM' ASSOCIATED WITH ALMOND WITCHES'-BROOM DISEASE: INSIGHTS INTO THE STRAIN POPULATION STRUCTURE AND THE INTERACTIONS WITH HOSTS. F. Quaglino, M. Kube, M. Jawhari, Y. Abou-Jawdah, C. Siewert, E. Choueiri, H. Sobh, P. Casati, R. Tedeschi, M. Molino Lova, A. Alma, P.A. Bianco

16.50 - 17.10 THE NEW DEAL IN VIRUS DISCOVERY: A MAJOR CONCERN FOR "MINOR" CROPS. M. Morelli, M. Chiumenti, P. Saldarelli, A. Giampetruzzi, A. Minafra

17.10 - 17.30 SYNTHETIC CLONES OF *GRAPEVINE ALGERIAN LATENT VIRUS* (GALV) DEVELOP A TYPICAL *TOMBUSVIRUS* INFECTION IN *NICOTIANA BENTHAMIANA* INFECTED CELLS. A. Lovato, A. Polverari, D. Maffi, F. Faoro

17.30 - 18.00 Conferimento del Premio "G. Scaramuzzi" 2015

18.00 - 20.00 *"Apericena" di benvenuto*

Sessione serale *Opificio delle idee.* Moderatori: I. Baccelli e B. Scanu

20.00 - 20.15 *DIPLODIA SAPINEA* AND CLIMATE CHANGE: SPECIES DISTRIBUTION MODELS OF THE MOST IMPORTANT PINE SHOOT PATHOGEN IN ITALY. L. Bosso, H. Rebelo, N. Luchi, G. Maresi, D. Russo, G. Cristinzio

20.15 - 20.30 RAPID SPREAD AND GENETIC DIVERSITY OF *PEPINO MOSAIC VIRUS* IN TOMATO CROP IN SICILY. S. Panno, S. Davino, G. Iacono, M. Davino

20.30 - 20.45 COMPARATIVE GENOMICS BETWEEN THE INVASIVE FOREST PATHOGEN *HETEROBASIDION IRREGULARE* AND THE NATIVE SIBLING SPECIES *H. ANNOSUM* PROVIDE A GLIMPSE INTO THEIR DIVERGENT ADAPTIVE EVOLUTION. F. Sillo, M. Garbelotto, P. Gonthier

20.45 - 21.00 LASER MICRODISSECTION OF GRAPEVINE LEAVES HIGHLIGHTS SITE-SPECIFIC TRANSCRIPTIONAL CHANGES AT THE EARLY STAGES OF DOWNY MILDEW INFECTION. L. Lenzi, C. Caruso, P.L. Bianchedi, I. Pertot, M. Perazzolli

21.00 - 21.15 GENOME PERTURBATION CONSEQUENT TO GENE DELETION BY HOMOLOGOUS RECOMBINATION. A. Grottoli, M. Beccaccioli, W. Sanseverino, C. Fanelli, M. Reverberi, V. Scala

21.15 - 21.30 UNRAVELLING PLANT-MICROBE INTERACTIONS: SUCCESSFUL COLONIZATION OF LETTUCE BY TAGGED BIOCONTROL *STREPTOMYCES*. X. Chen, M. Bonaldi, C. Pizzatti, A. Kunova, M. Saracchi, A. Erlacher, G. Berg, P. Cortesi

21.30 - 21.45 *HOPA1'* A NEW PUTATIVE T3SS EFFECTOR OF *PSEUDOMONAS SAVASTANOI* pv. *SAVASTANOI* STRAIN DAPP-PG722, THE CASUAL AGENT OF OLIVE KNOT DISEASE. C. Cortese, M.P. Castañeda-Ojeda, C. Ramos, R. Buonaurio, C. Moretti

21.45 - 22.00 DOWNY MILDEW CONTROL AND VEGETATIVE GROWTH OF GRAPEVINES UNDER ALTERNATIVE TREATMENTS TO SYNTHETIC FUNGICIDES. V. Mancini, E. Feliziani, A. Servili, G. Romanazzi

Martedì 22 Settembre 2015

9.00 - 9.30 *Relazione su invito.* NETWORK EPIDEMIOLOGY AND PLANT TRADE. M.J. Jeger, G. Stancanelli, M. Pautasso

Seconda sessione – Genomica e interazione pianta-patogeno. Moderatori: M. Lorito e R. Marcato

9.30 - 9.50 GENOME PLASTICITY MEDIATED BY TRANSPOSABLE ELEMENTS DRIVES THE EVOLUTION OF VIRULENCE IN THE VASCULAR WILT PATHOGEN *VERTICILLIUM DAHLIAE*. L. Faino, M.F. Seidl, B.P.H.J. Thomma

9.50 - 10.10 FUNGAL β-GLUCANS PROTECT THE FUNGAL CELL FROM PLANT THAUMATIN-LIKE PROTEINS AND CHITINASE. R. Marcato, L. Sella, S. Vincenzi, M. Sturlese, S. Moro, F. Favaron

10.10 - 10.30 ANALYSIS OF *PHYTOPHTHORA* DIVERSITY IN ORNAMENTAL NURSERIES USING METABARCODING APPROACHES BASED ON CLONING/SANGER SEQUENCING AND 454 PYROSEQUENCING. M.I. Prigigallo, A. Abdelfattah, A. Biasi, S. Mosca, M.G. Li Destri Nicosia, S.O. Cacciola, G. Magnano di San Lio, L. Schena

10.30 - 10.50 CA^{2+} TRANSPORT IN *PSEUDOMONAS SAVASTANOI* pv. *SAVASTANOI*-OLIVE PATHOSYSTEM. C. Moretti, L. Granieri, C. Cortese, M. Mazzoni, A.M. Del Pino, R. Buonaurio, C.A. Palmerini

10.50 - 11.10 THE MAPK CASCADE IN PLANT INNATE IMMUNITY IS REGULATED BY PEROXYNITRITE-MEDIATED TYROSINE NITRATION. B. Sottocornola, D. Bellin, L. Tengfang, A. Amoresano, M. Delledonne, E. Vandelle

11.10 - 11.30 NUCLEOLAR LOCALIZATION, PATHOGENIC EFFECTS AND SILENCING SUPPRESSOR ACTIVITY OF THE P15 PROTEIN FROM GRAPEVINE VIRUS B. S. Davino, S. Ruiz-Ruiz, P. Serra, R. Flores

11.30 - 11.45 *Pausa caffè*

11.45 - 13.00 Sessione poster – Eziologia ed epidemiologia/Genomica e interazione pianta-patogeno. Moderatori: M. Ruocco e L. Schena

13.00 - 14.00 *Pranzo di lavoro*

14.00 - 14.30 *Relazione su invito.* THE GOOD AND BAD SCIENTIFIC COMMUNICATION. P. Bianucci

Terza sessione – Malattie post-raccolta e micotossine. Moderatori: M. Reverberi e S.M. Sanzani

14.30 - 14.50 BIOLOGICAL CONTROL OF POST-HARVEST FUNGAL PATHOGENS BY *AUREOBASIDIUM PULLULANS*: COMPETITION ASPECTS. A. Di Francesco, L. Righetti, S. D'Aquino, M. Mari

14.50 - 15.10 *FUSARIUM INCARNATUM-EQUISETI* SPECIES COMPLEX FROM CEREALS: PHYLOGENY AND VARIABILITY OF TRICHOTHECENE BIOSYNTHETIC GENE CLUSTER. A. Villani, R.H. Proctor, D.W. Brown, T.J. Ward, A.F. Logrieco, A. Moretti, A. Susca

15.10 - 15.30 EFFICACY OF COLD PLASMA IN THE REDUCTION OF AFLATOXINS ON HAZELNUTS. D. Spadaro, A. Prelle, I. Siciliano, M.C. Cavallero, D. Vallauri, A. Garibaldi, M.L. Gullino

15.30 - 15.50 CHARACTERIZATION OF *MONILINIA* spp. POPULATIONS IN SOUTH ITALY AND DETERMINATION OF THEIR SEXUAL BEHAVIOR. D. Abate, C. Pastore, S. Pollastro, D. Gerin, R.M. De Miccolis Angelini, C. Rotolo, A. Spadoni, F. Faretra

15.50 - 16.00 *Pausa caffè*

16.00 - 16.15 Affissione Posters (n. da 69 a 116)

16.15 - 18.00 Assemblea sociale

20.30 *Cena sociale*

Mercoledì 23 Settembre 2015

9.00 - 9.30 *Relazione su invito.* FUNGICIDE DEVELOPMENT FOR THE 21ST CENTURY. G.M. Kemmitt

Quarta sessione – Difesa. Moderatori: M.L. Gullino e S. Sarrocco

9.30 - 9.50 COMPETITIVE MULTITROPHIC INTERACTIONS IN THE BIOCONTROL OF FUSARIUM HEAD BLIGHT. S. Sarrocco, F. Valenti, R. Baroncelli, G. Piaggeschi, G. Vannacci

9.50 - 10.10 CONTROL OF SOIL-BORNE PATHOGENS ON POTTED VEGETABLES WITH MICROORGANISMS ISOLATED FROM SUPPRESSIVE COMPOST. M. Pugliese, G. Castella, L. Battisti, M.L. Gullino, A. Garibaldi

10.10 - 10.30 INFLUENCE OF THINNING TREATMENT ON THE OCCURRENCE OF TREE DECLINE IN DECIDUOUS OAK FORESTS. N. Anselmi, A. Saraceni

10.30 - 10.50 CONTROL OF GRAPEVINE DOWNY MILDEW BY PROTEIN HYDROLYSATES. N. Lachhab, S.M. Sanzani, M. Adrian, A. Chiltz, S. Balacey, M. Boselli, A. Ippolito, B. Poinssot

10.50 - 11.10 NEW FUNGAL HYBRIDS THAT COMBINE IN A SINGLE STRAIN THE PRODUCTION OF DIFFERENT BIOACTIVE SECONDARY METABOLITES AND ENHANCED BENEFICIAL EFFECTS ON PLANTS. G. Manganiello, S. Lanzuise, M. Ruocco, F. Vinale, R. Marra, N. Lombardi, A. Pascale, F. Lacatena, A. Djella, L. De Vitto, S.L. Woo, M. Lorito

11.10 - 11.30 ROLE OF SINGLE SITE-SPECIFIC ALLELE REPLACEMENT INTO SVHK1 LOCUS IN THE STUDY OF *STEMPHYLIUM VESICARIUM* DICARBOXIMIDE AND PHENYLPYRROLE FUNGICIDES RESISTANCE. K. Gazzetti, A. Ciriani, A. Brunelli, M. Collina

11.30 - 11.45 *Pausa caffè*

11.45 - 13.00 Sessione poster – Malattie post-raccolta e micotossine/Difesa. Moderatori: P. Cortesi e C. Fanelli

13.00 - 13.15 Chiusura lavori

PREMIO SCARAMUZZI

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UNRAVELING THE TRITROPHIC INTERACTIONS BETWEEN FRUIT HOST-PATHOGEN-ANTAGONIST IN THE POST-HARVEST ENVIRONMENT

H. Banani[1,2]

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Fruits and vegetables post-harvest losses due to the attack of several fungal pathogens can reach levels of up to 50% depending on the commodity. Besides the economic losses, some of these fungi may represent a potential health risk because of mycotoxin production. To control post-harvest diseases of fruits, synthetic fungicides, when permitted, are the primary means used. However, the emergence of fungicide-resistant strains and the willingness to use safer and eco-friendly treatments, have generated interest in the development of alternative non-chemical methods to reduce post-harvest losses. Biological control using microbial antagonists has emerged as one of the most promising alternatives to fungicides, either alone or as part of an integrated pest management. The antagonistic activity of biocontrol agents has been widely demonstrated, however the mechanisms of action of most biocontrol agents of post-harvest diseases has not yet been fully understood which is important to know for a successful implementation of post-harvest biocontrol technology. Therefore a part of my PhD focused on this aspect; we have successfully cloned, expressed in *P. pastoris* and confirmed the involvement of a novel endochitinase gene *MfChi* and the protease gene *ALP5* in the biocontrol activity of the antagonistic yeasts *Metschnikowia fructicola* AP47 and *Aureobasidium pullulans* PL5 successively. Our work proved that the alkaline serine protease ALP5 and the endochitinase MfChi could be developed as post-harvest treatments with antimicrobial activity for fruits undergoing a short shelf life to control *Botrytis cinerea*, *Monilinia fructicola* and *Monilinia laxa* on pome and stone fruits. Moreover, besides developing biocontrol agents as alternative approaches to chemicals to control the pathogens, we should also be familiar with the decaying agents, such as their nature and the molecular basis of the infection. Due to recent technological advances, sequencing has revolutionized biological research and has become the forefront of biological experimentation in the last decade. Therefore, we have sequenced for the first time *Penicillium griseofulvum* PG3 which is associated with blue mould decay, the most important post-harvest disease of pome fruit worldwide. The fungal pathogen has the ability to simultaneously produce both detrimental and beneficial Secondary Metabolites (SM). Our work aimed to analyse some important SM clusters present in the studied strain in order to gain insight into SM synthesis in *P. griseofulvum*. Genome-wide analysis of PG3 genes revealed a complete putative gene cluster for patulin biosynthesis, and partial griseofulvin and roquefortine C clusters. Besides the bioinformatics analysis of these gene clusters, we quantified the SM production *in vitro* and during disease development on apple. Furthermore, the SM detected in infected apple were examined by studying the expression kinetics of their key genes under controlled conditions. In addition, we found additional SM clusters in PG3, including those potentially responsible for the synthesis of penicillin and cyclopiazonic acid. These findings provide relevant information to understand the molecular basis of SM biosynthesis in *P. griseofulvum* and this resource will allow further research directed to the overexpression or blocking of specific SM synthesis, to assess its potential in terms of biotechnological applications for beneficial SM, such as griseofulvin.