Dip.to Scienze Agrarie, Alimentari
ed Agro-ambientali

UNIVERSITA' DI PISA

XX Convegno Nazionale
Società Italiana di Patologia Vegetale
(S.I.Pa.V.)

Environmentally loyal plant protection: from nano- to field-scale

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Società Italiana di Patologia Vegetale (S.I.Pa.V.)
Italian Phytopathological Society

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Concimi speciali

48. SURVIVAL OF ASCOSPORES OF *GIBBERELLA ZEAE* IN DRYNESS AS FUNCTION OF TIME, TEMPERATURE AND RELATIVE HUMIDITY. **V. Manstretta[1], E. Pattori[1], C. Morcia[1], V. Terzi[2], V. Rossi[1].** *[1]Istituto di Entomologia e Patologia vegetale, Università Cattolica del Sacro Cuore, Via Emilia Parmense 84, 29122 Piacenza, Italy. [2]Consiglio per la Ricerca e la Sperimentazione in Agricoltura, CRA-GPG, Genomics Research Centre, 29017 Fiorenzuola d'Arda (PC), Italy. E-mail: vittorio.rossi@unicatt.it*

Gibberella zeae, teleomorph of *Fusarium graminearum*, is one of the fungi causing Fusarium Head Blight (FHB) of small-grain cereals.

The survival of ascospores in dryness was evaluated as function of the duration of incubation in dry conditions, the temperature and the relative humidity through *in vitro* trials. Then *in planta* trials were performed for two years.

Drops of ascospores suspension were placed on a slide, dried and then incubated at 20°C, for different periods, for a maximum of 2 days. Slides where then incubated at saturation to allow germination of the survived ascospores. The percentage of germinated ascospores decreased increasing the duration of incubation in dry conditions, going from high to very low values.

A similar trial was performed to assess the effect of temperature on ascospore survival. Slides prepared as previously described were incubated at temperatures from 5 to 40°C at the same humidity level; ascospores showed higher survival at lower temperatures.

The effect of relative humidity was then assessed, preparing slides as before and testing RH from very low to high values. The lowest survival was recorded at the intermediate humidity level, increasing to saturation.

In planta trial consisted of different duration of dry conditions after inoculation, after which high humidity conditions were restored. The effect on ascospores survival was assessed through qPCR performed few days after infection. Fungal DNA amounts decreased with the increase of dryness duration.

49. LOW PESTICIDE IPM IN SUSTAINABLE AND SAFE FRUIT PRODUCTION: A LIFE+ PROJECT. **M. Mari[1], D. Spadaro[2], R. Tedeschi[2], T. Jemric[3], B. Baric[4], A. Brunelli[1].** *[1]DipSA, University of Bologna, Viale Fanin 46, 40127, Bologna (Italy). [2]DISAFA, University of Torino, Largo Braccini 2 (ex Via L. da Vinci 44), 10095 Grugliasco (TO). [3]Department of Pomology, University of Zagreb, Svetosimunska c. 25, 100000 Zagreb (Croatia). [4]Department of Agricultural Zoology, University of Zagreb, Svetosimunska c. 25, 100000 Zagreb (Croatia)*

European agricultural policy requires the implementation of integrated pest management (IPM) to promote a sustainable use of pesticides with regard to regional growing conditions. European Member States are developing National Action Plans to reduce the use of pesticides wherever possible. Due to the hazardous effects of agrochemicals both on humans and environment, there is a growing trend towards the management of ecological interactions in agro-ecosystems. IPM has become the mainstream strategy for plant protection in the EU, as it is an important tool to maintain food security, while increasing the environment protection.

The overall objective of the LIFE.SU.SA.FRUIT project is to develop, apply and demonstrate an economically viable strategic plan to implement IPM, by promoting the use of low chemical field and post-harvest fruit production practices, in typical Croatian and Italian agro-ecosystems. The project aims to create an environmentally friendly management system for fruit production and storage by making more efficient use of resources, while ensuring food safety. Innovative field (i.e. insect exclusion nets; autoconfusion; biocontrol agents) and post-harvest (i.e. hot water treatments) fruit production practices aim at reducing pesticides, leading to lower the environmental impact and the risk of worker exposures. The project will be performed in Croatia and Italy. The partners involved are Zagreb, Torino and Bologna Universities, two producer associations (Agra and Apofruit), and a private company (XEDA International). The target pests are codling moth and peach moth while the target pathogens are apple scab, brown rot and the other apple, peach and nectarine postharvest pathogens.

50. RESISTANCE TO THIOPHANATE METHYL IN ITALIAN ISOLATES OF *MONILINIA FRUCTICOLA* BY ALAMAR BLUE ASSAY. **C. Martini[1], M. Guidarelli[1], A. Di Francesco[1], M. Taioli[1], G. Ceredi[2], M. Mari[1].** *[1]Criof, University of Bologna, Via Gandolfi, 19, 40057 Cadriano, Bologna (Italy). [2]Apofruit, Viale della Cooperazione, 400, 47522 Pievesistina di Cesena, Forlì Cesena, Italy. E mail: camilla.martini2@unibo.it*

Brown rot caused by *Monilinia fructicola* is responsible of considerable damages to cultivated fruits trees, particularly stone fruits in the world's temperate regions. Fruits are infected in the field and during the postharvest phase develop rots producing important economic losses. The control of *M. fructicola* is achieved by preharvest chemical treatments increasing the risk of resistance in pathogen strains. The main objectives of this work were to study the thiophanate methyl resistance in a *M. fructicola* Italian population and verify the presence of different resistance levels for an adequate disease management strategy in stone fruit orchards. In total, 63 *Monilinia* spp. isolates were randomly collected from stone fruit and tested with thiophanate methyl using a new, rapid and reliable method: Alamar Blue (AB) assay. In the studied population prevailed the low resistant isolates (EC_{50}>1mg ml^{-1}) 65.8%, the high resistant isolates (EC_{50}>50mg ml^{-1}) were the 4.6%, while the 29.6% was represented by sensitive isolates. Our results showed, for the first time, the presence of resistant *M. fructicola* isolates to thiophanate methyl in Italy not correlated with a single point mutation in the b-tubulin gene as reported in literature. However, both type of resistance levels presented a single point mutation at codons 83 and 198, showing the importance of the phenotypic investigations. In conclusion, using the AB assay, the phenotype characterization for benzimidazole fungicide resistance can be quickly performed (within 12 h compared with 5-7 days for mycelial growth assay) allowing the screening of several samples during the surveys.

51. IDENTIFICATION OF VEGETATIVE COMPATIBILITY TYPES OF *CRYPHONECTRIA PARASITICA* AND HYPOVIRULENCE OCCURRENCE IN *CASTANEA SATIVA* IN TOSCO-ROMAGNOLO APENNINE. **C. Martini[1], C. Ratti[2], A. Prodi[2], N. Cavicchi[1], N. Sangiorgi[1], C. Lanzoni[2], M. Mari[1].** *[1]Criof, DiPSA, University of Bologna, Via Gandolfi, 19, 40057, Cadriano, Bologna (Italy). [2]DiPSA, University of Bologna, Viale Fanin, 44, 40127, Bologna (Italy). E mail: marta.mari@unibo.it*

Castanea sativa, one of the most precious forest trees in Apennines, is affected by chestnut blight caused by *Cryphonectria parasitica*. Since 1938, when the pathogen was observed for the first time in Italy, several field surveys have been carried out in chestnut stands. This work reports the results obtained during a recent survey of 9 chestnut populations distributed in three Tosco-Romagnolo Apennine valleys. Two hundred and seventeen isolates of *C. parasitica* were obtained from trees showing different stages of decline and three morphotypes: orange, intermediate and white, were detected. Sixteen isolates (7%) showed orange pigmentation suggesting virulence, while 201 isolates (93%) showed intermediate and white morphology. Identification and mapping of the vegetative