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favorable conditions first occur at late anthesis, *F. poae* may have a relative lead in provoking the disease.

FUSARIUM SPECIES AND SECONDARY METABOLITES ASSOCIATED WITH DURUM WHEAT GRAINS FROM THREE DIFFERENT ITALIAN CLIMATIC AREAS. **G. Beccari[1], M.T. Senatore[1,2], L. Pedini[1], F. Tini[1], A. Prodi[2], P. Nipoti[2], V. Balmas[3], M. Sulyok[4], L. Covarelli[1].** *[1]Department of Agricultural, Food and Environmental Sciences, University of Perugia, Borgo XX Giugno 74, 06121 Perugia, Italy. [2]Department of Agricultural Sciences, Alma Mater Studiorum University of Bologna, Viale G. Fanin, 44, 40127 Bologna, Italy. [3]Department of Agriculture, University of Sassari, Via E. De Nicola 9, I-07100 Sassari, Italy. [4]Department of Agrobiotechnology, University of Natural Resources and Life Sciences, Vienna, Konrad Lorenzstraße 20, A-3430 Tulln, Austria. E-mail: lorenzo.covarelli@unipg.it*

Durum wheat grain samples, collected in three different Italian climatic areas (Emilia-Romagna, Umbria and Sardinia), were analyzed to: 1) isolate the mycoflora infecting the seeds on modified potato dextrose agar and by the deep-freezing blotter method; 2) identify the composition of the *Fusarium* head blight (FHB) species complex by *TEF1-α* region sequencing; 3) quantify the *Fusarium* species associated with FHB by q-PCR directly in the kernels; 4) determine fungal secondary metabolites in the grains by LC-MS/MS. The mycoflora was mainly represented by *Alternaria* and *Fusarium* species. The highest *Fusarium* spp. incidence was found in the samples from Emilia-Romagna, followed by those harvested in Umbria and in Sardinia. The FHB complex was mainly represented by *F. poae* in all the examined areas, while *F. graminearum* showed the highest incidence in the Emilia-Romagna samples followed by those from Umbria. This species was not detected in the samples from Sardinia. q-PCR assays allowed the detection of other *Fusarium* species, such as *F. langsethiae* and *F. sporotrichioides*, which were not found by the used isolation methods, showing that this technique may give an important contribution for an exhaustive description of the FHB complex. Secondary metabolites were correlated to the fungal community detected. In fact, deoxynivalenol (DON) was mainly found in the Emilia-Romagna samples, in which the DON producing species were more frequent. Enniatins and beauvericin were detected in the samples collected in Emilia-Romagna and Umbria. This study gives a comprehensive overview on the FHB complex by different analytical techniques and on the associated secondary metabolites.

SUSCEPTIBILITY OF _PAPAVERACEAE_ SPECIES TO _FUSARIUM OXYSPORUM_ f. sp. _PAPAVERIS_. **D. Bertetti[1], M.L. Gullino[1,2], A. Garibaldi[1].** *[1]Università degli Studi di Torino, Centro AGROINNOVA, Largo Braccini 2, 10095 Grugliasco (TO), Italy. [2]Università degli Studi di Torino, DISAFA, Largo Braccini 2, 10095 Grugliasco (TO), Italy. E-mail: domenico.bertetti@unito.it*

In 2011, *Fusarium oxysporum* f. sp. *papaveris* was reported on Iceland Poppy (*Papaver nudicaule*) for the first time in Italy. Successively, the susceptibility of eleven *Papaveraceae* species was evaluated. Nine *Papaver* species commonly grown for gardens and cut flowers were artificially inoculated together with *P. rhoeas* and *Chelidonium majus* naturally diffused in Italian flora. Five single-spore strains of the pathogen were used in the tests and the roots of the plants were dipped in the conidial suspensions prepared for each of them. On the basis of the disease index (D.I.) obtained by the final evaluation of symptoms, each species was assigned to one of the following susceptibility classes: R = Resistant (D.I. 0-5); PR = Partially Resistant (D.I. 6-20); MS = Moderately Susceptible (D.I. 21-50); S = Susceptible (D.I. 51-75); HS = Highly Susceptible (D.I. 76-100). *Papaver atlanticum*, *P. dubium*, *P. glaucum*, *P. pseudocanescens*, *P. nudicaule*, *P. rupifragum* and *Papaver* "Daneborg" were susceptible or highly susceptible to the pathogen; *P. trinifolium* and *P. orientale* were moderately susceptible; *C. majus* and *P. rhoeas* showed a susceptibility ranging from moderate to high. About the origin of *F. oxysporum* f. sp. *papaveris*, the susceptibility of *C. majus* and *P. rhoeas* might indicate that the pathogen is present in the spontaneous flora in Italy and/or that wild *Papaveraceae* species are a potential source of inoculum; the high temperatures as those registered in the glasshouse cultivation where the disease first appeared in Italy might help the development of symptoms that are limited in the sub-polar areas in which *P. nudicaule* is indigenous.

LOOP-MEDIATED ISOTHERMAL AMPLIFICATION ASSAY FOR THE RAPID DETECTION OF _CURTOBACTERIUM FLACCUMFACIENS_ pv. _FLACCUMFACIENS_ FOR QUARANTINE AND FIELD APPLICATIONS. **C. Biancalani[1], S. Calamai[1], M. Cerboneschi[1], E. Osdaghi[2], S. Tegli[1].** *[1]Dipartimento di Scienze Produzioni Agroalimentari e dell'Ambiente (DISPAA), Laboratorio di Patologia Vegetale Molecolare, Università degli Studi di Firenze, Via della Lastruccia 10, 50019 Sesto Fiorentino (Firenze), Italy. [2]Department of Plant Protection, Shiraz University, Shiraz, Iran. Email: carola.biancalani@unifi.it*

Curtobacterium flaccumfaciens pv. *flaccumfaciens* (*Cff*) is a Gram-positive bacterium, and the causal agent of a systemic vascular disease known as bacterial wilt of beans (*Phaseolus vulgaris*). Bean seedlings rapidly die after infection, while older plants can survive the attack and produce mature seeds, infected by *Cff* via the vascular system. These seeds are generally asymptomatic, with rare yellow, orange, or purple pigmentation on white bean seeds, depending on the *Cff* strains/variants. Within or on infected seeds *Cff* remains viable for decades, and seeds are the main means of dissemination of *Cff* over short and long distances. This bacterium is present since the early 20th century in North America, where it still causes high economic losses, and is endemic in many bean-producing countries. Although *Cff* is a quarantine pathogen for Europe (EPPO A2 list), so far the control of imported seeds for *Cff* is not mandatory, and inspections often consist just on visual examination. Recently, the isolation of *Cff* from diseased soybean in Germany dramatically focused on the threat posed by its further spread. Therefore, it is urgently needed to implement rapid, easy and specific tests for *Cff*, having the potential to be routinely used at the ports of entry. A loop-mediated isothermal amplification (LAMP) assay for *Cff* was developed, targeting a nucleotide sequence exclusive of *Cff* strains pathogenic on bean. This LAMP test has a sensitivity of 10 pg/reaction, and the entire procedure takes only about 1.5 h.

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ORGANIC FARMING PROMOTES THE DEVELOPMENT OF BENEFICIAL SOIL MICROBIOTA THAT INCREASES _RHIZOCTONIA SOLANI_ DISEASE SUPPRESSION. **G. Bonanomi[1], G. Cesarano[1], V. Antignani[2], C. Di Maio[1], F. De Filippis[1], F. Scala[1].** *[1]Department of Agricultural Sciences, University of Naples Federico II, via Università 100, 80055 Portici (Naples), Italy. [2]Department of Biology, Division of Natural Science, Bob Jones University, Greenville, USA, 29614. E-mail: giuliano.bonanomi@unina.it*

Intensive farming in agriculture raises serious concerns about the environmental sustainability due to the widespread use of