ORAL PRESENTATIONS

IPM IN SOMALIA AND ORGANIC PLANT PROTECTION PERSPECTIVES. G.M. Balestra. *DAFNE (Department of Science and Technology for Agriculture, Forestry, Nature and Energy) University of Tuscia - Via S. Camillo de Lellis - 01100 VITERBO. Email: balestra@unitus.it*

Considering the persistent unstable political situation, the Somalian agriculture is one of the most disadvantaged of the world and in particular among those of African countries. Thanks to an NGO's *Consortium*, a project supported by the EU promoted the Integrated Pest Management (IPM) principles in Somalia as part of a major international effort to assist in the reconstruction of this country after more than 20 years of civil war. Here are synthesised field investigations related to the main Somalian phytopathological problems. Plant pathogens have been investigated on the most important horticultural, cereals and stone fruits (cucurbits, eggplant, onion, pepper, tomato, maize, sorghum, rice, cotton, sugar cane, sesame and sunflower, banana, citrus, mango, date palm and papaya) crops in Somalia. Moreover, first organic plant protection strategies were developed to spread the fundamental bases of an agricultural able to preserve this environment and to give a safe and real opportunity to rebuild the future of Somali farmers.

POTENTIAL VECTORS OF '*CANDIDATUS* PHYTOPLASMA PHOENICIUM' IN LEBANON. R. Tedeschi[1], F. Quaglino[2], L. Picciau[1], M. Jawhari[3], Y. Abou-Jawdah[3], M. Molino Lova[4], P. Casati[2], E. Choueiri[5], H. Abdul-Nour[6], P.A. Bianco[2], A. Alma[1]. *[1]DISAFA, Università degli Studi di Torino, Largo P. Braccini 2, 10095 Grugliasco (TO), Italy. [2]DISAA, Produzione, Territorio, Agroenergia, Università degli Studi di Milano, Via Celoria 2, 20133 Milano, Italy. [3]Faculty of Agricultural and Food Sciences, American University of Beirut, PO Box 11-0236, Beirut, Lebanon. [4]AVSI Lebanon, Rue St. Fawka, Centre Jean Paul II, 1200 Jounieh Ghadir, Lebanon. [5]Lebanese Agricultural Research Institute, Tal Amara, Rayak, PO Box 287, Zahlé, Lebanon. [6]B.P. 90 549, Jdeidet al-Matn, 1202 2050, Lebanon. E-mail: alberto.alma@unito.it*

The presence and rapid spread of Almond Witches' Broom (AlmWB) phytoplasma in Lebanon, causing serious economic losses, entails the activity of one or more efficient insect vectors. Samplings of cixiid (planthopper) fauna were carried out through the years 2010-2013 by means of Malaise and yellow sticky traps in two AlmWB infected orchards planted respectively with almond and nectarine trees. Moreover direct samplings with a hand-held D-vac were performed in the same orchards and surroundings. All cixiids captured were identified by morphological features and subsequently analysed for phytoplasma detection.

Total DNA was subjected to direct and nested PCR, using respectively the semi-specific primer pair AlWF2/AlWR2 and the primer pair P1/P7 followed by the primers R16F2n/R16R2 universal for phytoplasmas. Nested PCR products were then sequenced to identify taxonomic 16Sr group/subgroup.

The following cixiid genera were collected during the different insect field samplings: *Cixius*, *Tachycixius*, *Eumecurus*, *Oliarus*, *Pentastira*, *Pentastiridius* and *Hyalesthes*. The molecular analyses pointed out *Cixius*, *Tachycixius*, *Eumecurus* and *Hyalesthes* as carriers of '*Ca.* Phytoplasma phoenicium'. These results highlighted the role of planthoppers in the epidemiology of AlmWB disease. Besides '*Ca.* Phytoplasma phoenicium', '*Ca.* Phytoplasma asteris', '*Ca.* Phytoplasma solani' and '*Ca.* Phytoplasma mali' were recorded in the different collected insect taxa. Further studies are required to better clarify the taxonomic status and the bio ethology of collected planthoppers and deeply study their role as phytoplasma vectors.

The knowledge of these aspects is extremely important considering also the real risk of introduction of the disease in Euro Mediterranean Countries.

TECHNICAL AND INSTITUTIONAL STRENGHTENING IN PLANT PROTECTION TO ENHANCE FOOD SECURITY IN MEDITERRANEAN REGIONS THROUGH INTERNATIONAL COOPERATION. B. Di Terlizzi, D. Petruzzella, A. Dragotta, A.M. D'Onghia. *CIHEAM/Institute of Bari, Via Ceglie 9, 70010 Valenzano (BA), Italy. E-mail: diterlizzi@iamb.it*

Most of diseases affecting Mediterranean crops are seriously compromising food security and, consequently, the sustainability of rural populations in several countries in North Africa and Middle East.

CIHEAM Bari implements *international cooperation* initiatives financed by several donors, notably the Italian Ministry of Foreign Affairs (General Direction of Cooperation for Development), in different geographical areas.

Its integrated and multi-focus approach, which includes *training* of officers, professionals, researchers, extensionists, national civil servants and farmers; *applied research & networking* linking local scientists with the international research communities on phytosanitary topics; *participatory governance* that means encouraging discussions and interactions among public and private stakeholders, has been successfully applied to implement the above initiatives.

The achieved results have demonstrated that it is possible to ensure the shift towards sustainable production based on a comprehensive phytosanitary management, also harmonizing the national rules with the EU technical/Phytosanitary/legal standards, which finally stimulates improvement in domestic and export trading of safer food in conformity with Governments' strategic plans.

The whole experience gained by CIHEAM Bari on food security in the Mediterranean, Middle East, Balkan and Central Africa through such integrated approach represents also one of the core issues of the EXPO Milan 2015 "Feeding Knowledge" programme (www.feedingknowledge.net) as "innovative technological ecosystem" shortening the knowledge chain and reverting its usual orientation, starting from real problems to develop and share knowledge (more than 700 researchers involved) on food security, to meet the needs and challenges of Mediterranean countries through the sharing of best practices.

MAIZE RESISTANCE TO *FUSARIUM VERTICILLIOIDES* AND FUMONISIN REDUCTION, A SHARED APPROACH. P. Battilani[1], P. Giorni[1], R. Bandyopadhyay[2], A. Pietri[1], A. Marocco[1]. *[1]Università Cattolica del Sacro Cuore, Piacenza 29100, Italy; [2]International Institute of Tropical Agriculture, Ibadan, Nigeria. Email: paola.battilani@unicatt.it*

Mycotoxins represent the main health risk from food, in terms of exposure and severity of chronic disease, especially cancer. Maize is a focus crop in this context, being susceptible to several fungi, co-existing on the ears in several environments and meteorological conditions. The main concern in northern Italy regards *Fusarium verticillioides* and *Aspergillus flavus*, fumonisin and aflatoxin producers, respectively. A multifaceted approach was followed from 2000 to prevent grain contamination in field, including breeding for resistance with focus on *F. verticillioides*, and biocontrol with atoxigenic strains of *A. flavus* for aflatoxin reduction. A wide range of maize lines was screened by artificial inoculation, allowing to select those more promising for possible commercial development. Several genomic approaches (microarrays, RNASeq, GBS) were used in order to understand the molecular basis of the maize resistance and to identify QTLs for resistance. A consolidated collaboration with IITA-Nigeria is in force. This country faces the same mycotoxin problems, but with more severe contamination and related risks for the population. Few promising lines, potentially suitable for growing in Africa, were shared with IITA. Final data are not yet available but this is an important

contribute in knowledge sharing to jointly reduce the human and animal exposure to mycotoxins.

This work was supported by Università Cattolica del Sacro Cuore, Safe Africa project.

USING GENETIC DIVERSITY OF ETHIOPIAN DURUM WHEAT TO CHALLENGE CLIMATE CHANGE. **D.K. Mengistu[1,2], Y. Kidane[1,3], C. Mancini[1,4], M. Dell'Acqua[1], C. Fadda[4], M.E. Pè[1].** *[1]Scuola Superiore Sant'Anna, Piazza martiri della Libertà – 56124 - Pisa, Italy. [2]Mekelle University, Makalè, Ethiopia. [3]Sirinka Agricultural Research Center, Sirinka, Ethiopia. [4]Bioversity International, ICRAF Campus Nairobi, Kenia. E-mail: marioenrico.pe@sssup.it*

Here we present our approach aimed at the characterization and exploitation of Ethiopian tetraploid wheat germplasm to tackle the challenges posed by climate change.

1. Germplasm Characterization. We extensively characterizing 400 landraces of durum wheat collected in various regions of Ethiopia. Several morphological and agronomical traits were collected and analyzed. Extensive phenotypic variation was present among accessions. Several landraces outperformed improved varieties for many traits including resistance to fungal diseases, indicating that landraces could be useful either by direct distribution or as starting materials in breeding schemes. These same accessions, together with a number of improved durum wheat varieties approved for cultivation in Ethiopia were genotyped for >50,000 polymorphic SNPs. Ethiopian tetraploid accessions were clearly separated from bread wheat and durum wheat from the Mediterranean basin.

Principal Component Analysis of the genetic diversity clearly separates Ethiopian germplam from that of the mediterranean regions. Furthermore improved varieties are grouped in a separate cluster, separated from landraces. Genome-wide association mapping identifies suggestive genomic loci linked to several agronomic traits.

2. Development of nested association mapping (NAM) population. A sub-set of 50 landraces, chosen to represent most of the phenotypic and genetic variation were crossed to the elite cultivar Asasa in order to derive a large NAM population of recombinant inbreds (about 200 lines from at least 25 original F_2), to be used both for gene discovery and as pre-breeding material. All 50 F_2 are currently in the field for reproduction. Considering two generations per year, we expect to reach RIL-F_6 in December 2014.