



IAPPS NEWSLETTER

Number II

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WELCOME TO OUR NEW GOVERNING BOARD MEMBER



On behalf of the Executive Committee of the IAPPS Governing Board, I have the pleasure to welcome **Dr. Mustapha El Bouhssini**, Entomologist at the International Center for Agricultural Research in the Dry Areas (ICARDA) ad Aleppo, Syria, as our new Board Member and Coordinator for the newly established Region II, Middle East. Dr. El Bouhssini obtained his BSc in 1980 at the National School of Agriculture, Meknes, Morocco, his MSc in Entomology in 1986 and PhD in Entomology in 1992, both from Kansas State University, USA. He is currently Senior Entomologist (IPM of cereal and legume insect pests) at ICARDA, and also Adjunct Professor, Entomology Department, Kansas State University, USA. His previous research experience include the position of Research Entomologist (IPM of cereal insect pests), Dryland Research Center (INRA), Settat, Morocco, April 1985- to 1996.

His research interests are focusing on IPM of cereal and legume insect pests, and include biological control (parasitoids and entomopathogenic fungi) and host-plant resistance (screening of germplasm, mechanisms of resistance and biotypes characterization through differential and molecular techniques). He has obtained several awards, among them the ICARDA Outstanding Research Team (Resistance to insects identified through the Focused Identification of Germplasm Strategy), 2011 (team member); the Hassan II Prize for Research and Innovation, 2009, for the development of wheat varieties resistant to Hessian fly in Morocco (team member); the International Plant Protection Award of Distinction from the International Association for the Plant Protection Sciences (IAPPS), 2007; the CSO (Civil Society Organizations)/CGIAR award for ICARDA's Innovative Partnership for Sunn pest IPM, 2006 (team leader); the ICARDA outstanding research team award (IPM of Sunn pest research group), 2005 (team leader); the Research and Development Prize, 2002, 'Scientific studies and new technologies', from the Ministries of Higher Education, Industries and Agriculture, Morocco, for the development of the first Hessian fly resistant durum wheat varieties in Morocco (team member); the ICARDA

Scientist of the Year, 1998; and the R.C. Smith Award for Outstanding Ph.D. Student at Kansas State University, USA, 1991. Dr Bouhssini is author of 78 refereed publications, 26 published proceedings, 10 newsletters and extension publications, 3 books and 4 book chapters, and has over 100 voluntary and invited presentations at international and regional meetings worldwide.

We look forward to working with Mustapha in promoting IAPPS in the Middle East Region. Please join us in congratulating Mustapha and welcoming him to IAPPS.

Prof. E.A. “Short” Heinrichs

IAPPS Secretary General

E-mail: ehinric@vt.edu

AFLATOXIN CONTROL PROJECTS LAUNCHED IN SOUTHERN AFRICA

Aflatoxins, produced by the fungus *Aspergillus flavus*, are a major health concern because of their acute and chronic health effects on humans and domesticated animals. The Centers for Disease Control (CDC) estimates that more than 4.5 billion people in the developing world are chronically exposed to aflatoxins through diet. High doses cause serious illness like acute liver cirrhosis and death. Chronic exposure is widespread, leading to nutritional and immunological effects, and cancer. For example, two independent studies have linked aflatoxin to immune suppression, increased susceptibility to diseases (e.g. HIV and malaria), and possible compromised vaccine efficacy. Of particular concern is aflatoxin's role in reduction of child growth and development. Since chronic diseases in developing countries are underreported, acute aflatoxicosis outbreaks, like the ones recently documented in Kenya with over 100s of deaths, are likely to be an underestimation of the true size of the problem.

The toxicity of aflatoxins to humans and animals has resulted in stringent regulatory controls worldwide, which are not well enforced in sub-Saharan Africa. Aflatoxin contamination therefore limits international trade and hampers economic growth because of food safety concerns, as contamination prevents major commodities such as groundnuts and maize from meeting agricultural trade and food safety standards. To make matters worse, products are pre-screened based on aflatoxin levels prior to export, without destruction of contaminated material, effectively concentrating contaminated crops in the local food chain.

Maize and groundnut are the crops grown in sub-Saharan Africa most prone to aflatoxin contamination. At almost 1.5 and 2 million ton/year, maize is the second most and most important staple crop for Mozambique and Zambia, respectively, grown by mainly smallholder farmers for home consumption, with some production traded in local markets. Groundnut is an important staple and income-generating crop in Mozambique and Zambia, and constitutes the second most widely grown crop in Eastern Province in Zambia. Groundnuts have untapped potential to raise farmer incomes, particularly for woman who traditionally manage the crop.

An innovative scientific solution in the form of bio-control has been developed and



A proud maize farmer in Nigeria, showcasing Aflasafe, a bio-control product to reduce aflatoxin contamination in his fields.

commercialized by the United States Department of Agriculture's Agricultural Research Service (USDA-ARS), and is widely used in the Southern USA to combat aflatoxin contamination in maize, cotton and groundnut. This breakthrough technology reduces aflatoxins during both crop development and post-harvest storage, and throughout the value chain. Naturally occurring atoxigenic strains are released to out-compete their aflatoxin-producing cousins. IITA, in partnership with USDA, the African Agricultural Technology Foundation (AATF), Doreo Partners and others, have successfully adapted this technology for use in West Africa on maize and groundnuts. Native Nigerian strains have been developed into a bio-control product called Aflasafe. Ongoing field testing of Aflasafe on maize and groundnut in Nigeria and on groundnuts in Senegal (using Senegalese atoxigenic strains) over the past four years has produced very positive results in reducing aflatoxin contamination, consistently by 80-90%. The product consists of sterile grains colonized by atoxigenic strains. Aflasafe is applied to crops prior to flowering and before crop

resources are fully colonized by aflatoxin producers. Aflasafe was applied on almost 1,000 ha in 2011, and commercial and sustainable delivery methods of bio-control of Aflasafe to the farming communities are currently being developed in Nigeria. The success in Nigeria has prompted initiation of aflatoxin bio-control programs in Mozambique and Zambia, starting 2011.

In Mozambique, IITA, the University of Eduardo Mondlane and the University of Lurio launched a multi-year aflatoxin bio-control project with funding from USDA, USAID and the Ministry of Agriculture. In Zambia, a similar project was launched by IITA and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) under the USAID/Zambia Feed the Future (FTF) Multi-Year Food Security Strategy program. The Zambian project will work in close collaboration with the Zambia Agriculture Research Institute (ZARI), USDA-ARS and the National Institute for Scientific and Industrial Research (NSIR). Synergies in efforts to develop bio-control in both countries will be exploited, and an ultimate aim is to develop a single bio-control product, based on native atoxigenic strains, with possibly centralized manufacturing for both countries and eventually the entire region. The basis of intervention must be built on the knowledge of the extent of the aflatoxin problem. Limited data is available on aflatoxin prevalence in maize and groundnut in Mozambique and Zambia, and a strong initial focus of both projects will be on mapping the incidence of aflatoxin in maize and groundnut in both countries. At the end of both projects, it is anticipated to have commercial products, Aflasafe-Zambia and

Aflasafe-Mozambique, developed and registered for use in farmer fields. A great emphasis will be placed on developing a viable business plan for production (including manufacturing capacity, marketing and refinement of formulation to optimally use locally available resources), adoption (e.g. through incentivization) and distribution. Raising awareness about aflatoxin and bio-control is equally essential. Both projects include a public information campaign targeting consumers, farmers, extension services and government officials in a phased and focused manner and will educate communities regarding the dangers of aflatoxin and the means by which to control it. The campaign will also inform food safety and regulatory officials as a means to enable policy environments facilitating the use of bio-control. Finally, capacity building of national partners features highly in both projects, and work related to bio-control development will be housed in laboratories of national institutions in Mozambique and Zambia.

For more information, please contact:

Dr. Ranajit Bandyopadhyay
IITA, Nigeria
E-mail: r.bandyopadhyay@cgiar.org

Dr. Thomas Dubois
IITA, Uganda
E-mail: t.dubois@cgiar.org

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IAPPS Mission: to provide a global forum for the purpose of identifying, evaluating, integrating, and promoting plant protection concepts, technologies, and policies that are economically, environmentally, and socially acceptable.

It seeks to provide a global umbrella for the plant protection sciences to facilitate and promote the application of the Integrated Pest Management (IPM) approach to the world's crop and forest ecosystems.

Membership Information: IAPPS has four classes of membership (individual, affiliate, associate, and corporate) which are described in the IAPPS Web Site www.plantprotection.org.

The *IAPPS Newsletter* welcomes news, letters, and other items of interest from individuals and organizations. Address correspondence and information to:

Manuele Tamò
Editor, IAPPS Newsletter
IITA-Benin
08 B.P. 0932 Tri Postal, Cotonou, Republic of Benin
E-mail: m.tamo@cgiar.org