

First parasitoid to fight papaya mealybug in West and Central Africa released in Benin

This month, IITA released micro-wasps in the field in Parakou, Benin, to fight against the papaya mealybug, a new invasive insect pest on the African continent. The ceremonial release was attended by a delegation of Benin officials, donor representatives, and IITA scientists including Mr Chabi Gani Sare, head of the Agricultural Directorate Porto Novo, Mr Jean-Luc Virchaux, country representative for the Swiss Agency for Development and Cooperation, the director of the CARDER Borgou-Alibori, collaborators of SPV-CP (Plant Protection and Phytosanitary Services at Porto Novo), and PASDER (Programme d'Appui au Secteur du Développement Rural).

Outbreaks of papaya mealybug, a native of Mexico and Central America, were first detected in the surroundings of Accra, Ghana, in 2009, where they caused serious damage on papaya grown mainly for export. From there, the newly introduced pest rapidly spread along the coast to neighboring countries and, by 2012, it had reached Togo, Benin, Nigeria, Cameroon, and Gabon. New records from Sierra Leone and Burkina Faso indicate that the pest is invading still more regions on the African continent. Nigeria, the third biggest producer of papaya in the world, is particularly at risk. This mealybug



Left: Researchers inspecting mealybug-infested papaya.

Above: Parasitoid *Acerophagus papayae* = modified after <http://www.nbaii.res.in/Featured%20insects/Acerophagus-papayae.html>

primarily targets papaya, but is in fact extremely "polyphagous" attacking a wide range of tropical crops, ornamentals, and wild plants.

Attempts to control the papaya mealybug by pesticide applications in Ghana proved to be economically and environmentally unsustainable in the long term. Thus, as an emergency, FAO subcontracted IITA-Benin to import natural enemies to Ghana to releases in pilot papaya

orchards. In 2012, in view of the rapid spread of the pest, IITA initiated a new project, funded by the Swiss Agency for Development and Cooperation, to tackle the problem at a regional level. In close collaboration with quarantine authorities of Ghana and Benin, natural enemies were transferred early this year to the IITA facilities of the Biological Control Center for Africa, Cotonou, Benin, where they are now being mass-reared to serve as source for project partners and other African countries.

The present inoculative releases in Benin are part of a program that started in mid-April in the main papaya-producing areas near Cotonou following an official go-ahead by the Benin Ministry of Agriculture. Similar actions are planned in the near future in all countries involved in this three-year project. Quantitative assessments of the efficiency of the parasitoid in the field and the socioeconomic impact of the pest and its control will be accompanied by training and capacity building in biological control.

Similar biological control campaigns in Florida, the Caribbean Islands, and on Guam and the Palau Islands, suggest that the released micro-wasps are host specific and have proven to be highly efficient in permanently controlling the papaya mealybug. The same effect is expected in Africa.

Welcome

Thomas Wobill has assumed duty as Monitoring and Evaluation (M&E) Specialist in IITA-Ibadan. Thomas, from Ghana, has vast experience in monitoring and evaluation of development programs and projects. He obtained a Master's in Development Management (MDM) from the Ghana Institute of Management and Public Administration (GIMPA) in 2009. He received a Certificate in the Study of Population Issues from the University of Costa Rica in 2009 and holds a BSc degree in Mathematics and Statistics (combined major) from the University of Ghana, Legon.

Thomas has served in various capacities as a national and international development specialist.



He worked as Coordinator/Director for the Science Resource Center at the Ministry of Education/Ghana Education Service (January 1999 to November 2000). He was the M&E Officer (II) at the Catholic Relief Services/Ghana Country Program (November 2000 to February 2004), Deputy Senior M&E Officer at IFAD/AfDB/ Government of Ghana Rural Enterprises Project (REP) (February 2004 to March 2005), National Program Associate with UNFPA/Ghana Country Program (April 2005 to August 2007), Program Management Specialist (M&E) at USAID/Ghana Mission (September 2007 to November 2008), Technical Officer II/International M&E Specialist (November 2008 to May 2011), and International M&E Specialist at World Bank Global Partnership for Basic Education Project (Ministry of Education, Liberia) (July 2011 to 2013).

He lives on the IITA campus at Apartment 3C and his office is in Building 500, room no. 216. Thomas is married to Josephine E. Akwaboah and they have three children.

IITA-Tanzania and national partner to host Second International Whitefly Symposium

Scientists from the eastern Africa hub were among the hundreds of scientists that gathered in Crete Island, Greece, for the first international symposium on whiteflies, 20-24 May. The team, together with scientists from Mikocheni Agricultural Research Institute (MARI), succeeded in lobbying for the hosting of the second symposium in Tanzania tentatively scheduled for 2015.

The team was composed of James Legg, IITA virologist, who made a presentation on IITA's and partners efforts to battle the *Bemisia tabaci* whitefly that is behind the pandemic of cassava diseases in Africa and Rudolph Shirima, a research associate, who made a poster presentation on the cassava diseases pandemic and the genetic characterization of *B. tabaci* in East and Central Africa, and Christopher Lulah, a research technician, who presented a poster describing a countrywide assessment of the diversity and importance of parasitoids of *B.*



Close-up of *Bemisia tabaci* adults.

tabaci. Presentations of IITA-supported collaborative work in East and Southern Africa were also made by two University of Catania/IITA PhD students (Devid Guastella and Lensa Sefera), as well as by Zambia Agricultural Research Institute's virologist, Dr Patrick Chikoti.

Legg said winning the bid to host the Symposium in Tanzania was an

important outcome of the meeting and an honor for the two institutes and Tanzania. He noted that it would create more awareness on the whitefly-driven cassava viral disease epidemics in the country and ongoing research efforts to halt their spread, not to mention the likely contribution towards building the country's economy through increased revenue from tourism.

Shirima said that the symposium, being the first of its kind, was an important forum for sharing and learning from other whitefly researchers from all over the world.

The Symposium was a result of the merger of the International Bemisia Workshop

(IBWS) and the European Whitefly Symposium (EWS). It brought together researchers from all over the world working on broad issues on the whitefly including genetics, their biology and evolution and control, among others. Whiteflies are among the most troublesome and destructive pests of plants in the world.

Planning workshop on IPM-omics for cowpea held in Ghana

A planning meeting was held in Accra to launch the new phase of the "IPM-omics: Scalable and sustainable biological solutions for pest management of insect pests of cowpea in West Africa". It was sponsored by the USAID-funded and recently awarded "Feed the Future Legume Innovation Lab" project, (former Dry Grain Pulses Collaborative Research and Support Program, DGP-CRSP).

The planning meeting was jointly organized by the University of Illinois at Urbana-Champaign (UIUC), and IITA, and officially

opened by the Director General of the Ghana Council for Scientific and Industrial Research (CSIR), Dr A.B. Salifu.

In his opening remarks, Dr Salifu, an enthusiastic cowpea IPM disciple in his earlier days, reiterated the importance of approaching insect pest problems from a holistic perspective, and encouraged the participants to find pest management solutions which would allow cowpea farmers to substitute toxic chemicals with more sustainable options. Prof Barry Pittendrigh of UIUC, the project lead, emphasized the excellent collaboration with the NARS partners, which will facilitate scaling out of technologies developed in the project, and the knowledge generated, in the form of educational materials, e.g., cellphone video animations.

Presenting the progress on the 'biocontrol pipeline', Dr Manuele Tamò, IITA co-PI of the project, said he is confident that a combination of biopesticides and tiny parasitic wasps attacking the various pests will provide cowpea farmers with the much hoped solutions to substantially reduce yield losses.

Over the next four years the project will research, develop, implement and determine the impacts of an Integrated Pest Management (IPM)-omics program for cowpea in four countries in West Africa: Benin, Burkina Faso, Ghana, and Niger.

IPM involves the concurrent

application of multiple control measures to reduce damage caused by insects to crop plants. *Omic*s is a term used in molecular biology to describe biological processes in large scale or high throughput. Thus, IPM-omics is defined as the use of scalable technologies to develop and deliver pest control solutions.

The first step in the approach will be to define the pest problems. The following "tools" will be focused on a regional understanding of pest problems on cowpea across West Africa: (1) scouting, field experiments, light traps; (2) genomic markers to define pest and biocontrol agent populations – movement patterns and sources of the outbreaks; (3) computational modeling; and (4) GIS systems – understanding pests in the background of their ecology and life history – in real time.

The second step is to identify appropriate solutions. A biocontrol/biopesticide pipeline has been established to develop a series of environmentally and economically appropriate pest control solutions. This includes a diversity of technologies that provide farmers with a variety of solutions to suppress pest populations.

The third step is the scaling of solutions, which fall into three categories: (1) direct release of natural enemies into the environment and natural establishment; (2) educational solutions; and (3) private sector and NGO involvement.



Cowpea plant