



IAPPS NEWSLETTER

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CASSAVA MEALYBUG HAS REACHED ASIA

In May 2009, the Department of Agriculture at Chatuchak, Bangkok, Thailand contacted the International Institute of Tropical Agriculture (IITA) for help in the biological control of the cassava mealybug, *Phenacoccus manihoti*, which had recently invaded Thailand and probably also Laos and Cambodia. This mealybug had already spread over 160,000 hectares around the East and Northeastern provinces of Thailand, where cassava is an important export crop mainly for starch production and cattle feed. On pressure by the farmers and the Thai Tapioca Development Institute including four other private sector associations (the Thai Tapioca Trade Association, the Thai Tapioca Processors Association, the Northeast Tapioca Processing Plants Association, and the Thai Tapioca Starch Producers Association), the government authorities became worried about the high economic impact of this new pest. In fact cassava production was forecast to be only 22.21 million tones for the 2009-2010 harvest season, down from an earlier forecast of 27.76 million tones. This loss was attributed to the devastation caused by cassava mealybug.

This same mealybug had reached Africa in the 1970s and caused wide-spread devastation and even famine when it destroyed cassava, which on this continent is an important food and locally traded subsistence crop. At the time, an IITA-led group of institutions including CABI, CIAT, EMBRAPA, the Agricultural Ministry of Paraguay, and the numerous agricultural ministries of the 20 or so concerned African countries under the umbrella of the Phytosanitary Council of the Organization of African Unity had started a campaign to find, import, rear and distribute adapted natural enemies from South America, the purported home of this foreign invader. By 1981, the encyrtid parasitoid *Anagyrus lopezi* (then *Apoanagyrus* or *Epidinocarsis*) had been located in Paraguay, later in Brazil, shipped through quarantine, mass-reared at IITA and distributed. What followed was one of the greatest recent successes in classical biological control. By 1995, when the whole continent was invaded by the cassava mealybug, *A. lopezi* had been released in about 150 sites, where it established and spread throughout all cassava growing countries of sub-Saharan Africa. In each country, within 2-4 years after its establishment, mealybug populations fell by 10 times or more to non-economic levels, producing economic benefits of billions of US\$ (depending on which scenario of benefit calculation was adapted). Interestingly, *A. lopezi*, an uncommon parasitoid found in South America in a rather limited area of the Rio de la Plata, had been able to establish in Africa in all ecological zones from the dry Sahel through the Congolian rainforest to the East African Highlands. The only places where control was not satisfactory and where *A. lopezi* was not considered effective were un-mulched fields on totally sandy soils. In these places, only better soil management was able to improve the situation.

In the beginning, spread of mealybug in Africa was around 150 km per year, but once *A. lopezi* had reached the front, further spread of the mealybug slowed down considerably. Thanks to good quarantine services, Madagascar and the surrounding islands of the Indian Ocean remained free of this pest; - this was until the discovery of cassava mealybug in Asia last year. By 2009, the pest had already spread in Thailand, so that it must be assumed that the actual introduction had occurred some time in 2008 or perhaps earlier. The new invader was not immediately recognized because another closely related mealybug species common on cassava in Thailand, presumably *Phenacoccus madeirensis*, confused the situation. Once the invader had been identified by a taxonomic authority of the California Department of Food and Agriculture (Dr. Gillian Watson) the path for classical biological control was cleared. A stock rearing colony of *A. lopezi* was imported from the IITA laboratories in Benin into Thailand in September 2009 and placed into rearing under quarantine conditions at the Department of Agriculture, Bangkok, with the view of releasing the insect once release permits were issued. This happened in November 2009. Since then, about 2000 pairs of *A. lopezi* were released on 100 hectares of cassava at the Rayong Field Crop Center. In January 2010, more than 6000 adults were collected and released again nearby. Right now three rearing units in the outbreak areas located in the East, Northeast and Central plain of the country are being constructed.

Conditions in Thailand are rather different from those in Africa. Cassava varieties and the economics of cassava production are different, and herbicides and insecticides are largely available to farmers and often used indiscriminately. At the species level, the local food-webs also differ from those in Africa. A monitoring program was thus set up.

Though mite pests were also discovered, these proved to be local species of *Mononychellus* (in the northern part of the country) and others. However the feared cassava green mite *Mononychellus tanajoa* from South America, which led to an equally important biological control program across Africa, until now does not seem to have reached Asia.

It is hoped that, by extending to Asia the collaboration that was so successful in Africa, this foreign mealybug will be controlled within a much shorter time span and at much reduced costs.

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SP-IPM TECHNICAL INNOVATION BRIEFS

The CGIAR Systemwide Program on Integrated Pest Management has launched a new series of publications called Technical Innovation Briefs. These electronic briefs intend to inform the SP-IPM members, sponsors, partners, other researchers, and practitioners in a concise manner about the innovative research carried out by SP-IPM members and collaborators, and their new findings. They address topics in the four SP-IPM's focus areas, namely (1) adaptation of IPM to climate change adaptation; (2) food, feed, and environmental safety; (3) agroecosystem resilience; and (4) IPM capacity building.

In addition, these briefs provide an opportunity to get to know better the scientists that form part of the SP-IPM team, and should help prospective partners link directly to these scientists with expertise in specific areas of interest.

So far, two volumes have been produced. The first one, by Grant Singleton, wildlife ecologist with IRRI, is titled "Rodents - gnawing away at crops, stored grain and our health", and describes novel techniques for ecologically sustainable, farmer-led management of rodents particularly in rice crops. The second one, titled "Lost to the weeds - changing practices favor an old enemy" by IRRI weed scientists David Johnson, Donna Casimero, Bhagirath Chauhan and Joel Janiya, advocates for a diversified approach to integrated weed management, i.e. by looking at all possible options in a long term perspective.

The publications can be downloaded from the SP-IPM website at <http://www.spipm.cgiar.org/ipm-research-briefs>.

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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 a the world's crop and forest ecosystems.

Membership Information: IAPPS has four classes of membership (individual, affiliate, associate, and corporate) which are described [here](#).

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

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