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Sim HeokChoh

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ISSN 1016-3263**ISBN 978-3-901347-84-9****Cover photos (from left to right):**

1. *Corythucha ciliate* adults, sucking on *Platanus occidentalis* leaf – Choi KwangSik, Korea Forest Research Institute
2. A burned Taiwan red pine (*Pinus taiwanensis*) forest in 2002 showing seriously damaged trees – Lin ChauChin; Taiwan Forest Research Institute
3. *Lycorma delicatula* 4th instar larvae, sucking on *Ailanthus altissima* – Choi KwangSik, Korea Forest Research Institute

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COOPERATIVE SURVEILLANCE AND MANAGEMENT OF INVASIVE ALIEN SPECIES IN THE PHILIPPINES

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Introduction

The surveillance and management of invasive alien species (IAS) are mandated in various agencies of the Philippine Government. The plant, fisheries and animal IAS are taken care of by the Bureau of Plant Industry, the Bureau of Animal Industry and the Bureau of Fisheries and Aquatic Resources respectively. These agencies are all under the Department of Agriculture. The forest IAS is the domain of the Department of Environment and Natural Resources, but the Plant Quarantine Service of the Bureau of the Plant Industry is in charge of the incoming forest plants and forest products.

Under the present surveillance system, surveillance and management, particularly on pest and disease, are mostly done by the Bureau of Plant Industry thru the farmer's field school, rice, corn, and high value commercial crops pest surveillance. Bt corn post commercialization monitoring (Cayabyab *et al.* 2007) and coconut pest and disease surveillance

Methodology

The information on invasive alien species (IAS) in the Philippines in this paper was gathered from the field experiences of the authors and from published literatures. The proposed cooperative surveillance and management of invasive alien species (IAS) in the Philippines is the outcome of the continuing partnership between the academe, in this case, the University of the Philippines Los Baños, and various agencies of the government such as the Department of Agriculture and the Department of Environment and Natural Resources.

Results and Discussion

Some of the most recent destructive invasions of IAS in the Philippines that emanated from the agricultural ecosystem are the followings.

The invasion of leaf miners in the late 90's in Cordillera, the highland vegetable and strawberry producing region (Colting *et al.* 2003) (Figure 1). The infestation and movement of the rice black bugs from Palawan to Mindanao then to the Visayas and Luzon (Arguelles 2007) (Figure 2).

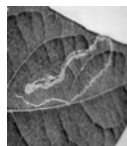


Figure 1. Leaf miner, *Liriomyza* spp., tunnel on legume leaf.

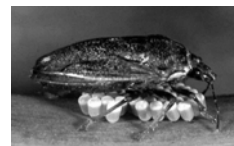


Figure 2. Rice black bug, *Scotinophora* spp.

The Buff mealy bugs (Figure 3) that initially attacked coconuts and palms in Luzon and later the fruit crops and ornamentals (Lit & Lit 2005).

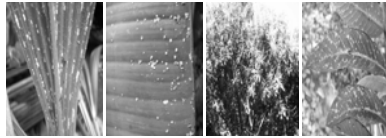


Figure 3. Buff mealy bugs, *Nipaecoccus nipae* (Maskell), on coconut, banana, and mango.

The Eulopid gall wasp of coral trees that started in Luzon (Lit *et al.* 2006) is now spreading to the remaining islands of the country (Figure 4).



Figure 4. Damage pattern on coral trees of *Quadrastichus erythrinae*

The mussel/oyster shell scale of lanzones in Mindanao devastated the crops in 2007 (Figure 5).

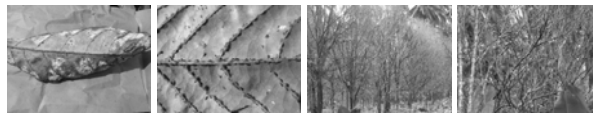


Figure 5. The mussel/oyster shell scale, *Lepidosaphes ulmi* (L.) and damage pattern.

The coconut hispin that was detected earlier in Luzon affects the coconuts, nipa and ornamental palms (Fernandez 2007).

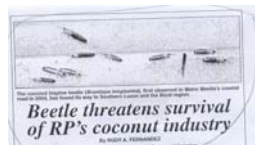


Figure 6. The coconut hispin, *Brontispa longissima* (Gestro)

The current alarming infestations of the new corn plant hopper pest in Mindanao and Luzon (Cayabyab *et al.* 2004, Cayabyab *et al.* 2008) threatens the gain from improved production practices and benefits from biotechnology such as on Bt corn, stacked genes (Bt corn and Round up Ready or Glyphosate resistant corn) RR corn and other hybrids (Figure 7). Most of the time, the presence of the IAS and their effects are detected when they already caused considerable damages.

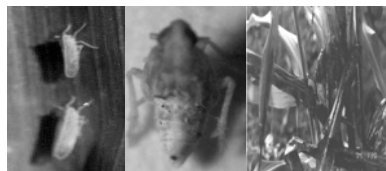


Figure 7. The new corn planthopper pest, *Stenocranus pacificus* Kirkaldy, and damage.

There is a thin line separating the agro ecosystem where most IAS were detected from the forest ecosystem. The impact of IAS from the agro ecosystem into the forest communities is still not known. There are rice fields, cash crops and fruit crops in forest communities that are sources of IAS infestation. The IAS can easily move to other vegetations in the forest thereby affecting the overall forest health. Hence a cooperative surveillance and management programme to combat the menace of IAS is a must.

As mentioned earlier, there is already existing surveillance of pests and diseases where IAS are included under the Department of Agriculture. The BPI together with the UP Los Baños have pioneered the farmer-based pest surveillance via text or short messages sending using mobile phones (Cayabyab *et al.* 2005). This cooperative endeavour can be extended by combining the efforts on the surveillance of plants, animals, and fishes/fisheries products. Stakeholders from the farmers/fisher folks, government agencies, local government units, non-government organizations and the academe will participate. This scheme is feasible due to the Department of Agriculture's rationalization plan. The group will be called the Agricultural IAS Surveillance and Management Team. It will be under the Assistant Secretary for Operations of the Department of Agriculture and with an Advisory Board. This team will address surveillance/monitoring/detection, education, eradication/control, and information management system. The surveillance/monitoring is made up of targeted surveillance, border detection and control, community based surveillance, and diagnostics. The diagnostics will rely on APEC/ASEANET trained systematists and online resources i.e. PESTNET, GISP, etc. Eventually, a harmonized surveillance and management for agriculture and forest IAS will be worked out. Moreover, it is now imperative to conduct targeted surveillance of recent IAS incursions in the agro-ecosystems that eventually move to the forest ecosystem to ensure forest health in the Philippines.

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