FFTC Research Highlights

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Current status of baculovirus

Implications for insect pest control

BACULOVIRUSES have been promoted as promising bioinsecticide agents for more than half a century now. However, only a few have been found successful as biological control agents, and almost none have been proven commercially successful or have been widely used for large-scale insect pest control. Today, bioinsecticides represent only a small fraction of the world pesticide market. The success of the Bt crop marked a special achievement in the growth of bioinsecticides. The main constraint for baculoviruses to be developed as bioinsecticide is their poor performance compared to chemical insecticide, particularly their slow speed of killing and limited host range. It is important to understand the nature of baculoviruses, and to explore the possibilities to develop new ways in applying the baculovirus as a bioinsecticide.

News source: **Faculty of Agriculture, Gadjah Mada University, Indonesia**

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Control of collar rot disease of *Hibiscus*

Effect of microorganisms in silkworm litter

MICROORGANISMS, a form of bioagent, are alternatively used for plant disease control for the safety of human, animals, food, and environment. These bioagents can be collected and selected from several natural sources. For this study, silkworm was selected as the natural source. Isolation and selection of antagonistic microorganisms in order to decrease collar rot disease development in roselle (*Hibiscus*) *subdaritta* L., and determination of their effect on the number of surviving *Phytophthora* propagules in the soil were done in this study. Laboratory and greenhouse experiments were conducted in Bangkok and in field experiments in Udonthani.

The result showed that *Pseudomonas fluorescens, Bacillus #2*, Actinomycetes #1, and mixed microorganisms (*Pseudomonas fluorescens* + *Bacillus* #1 + *Bacillus* #2 + Actinomycetes #1) could inhibit the growth of *Phytophthora nicotianae* var. *parasitica* on PDA medium and in soil. In the greenhouse, collar rot disease development in hibiscus plants decreased when infested soil (sporangia and chlamydospores) was inoculated into the amended soil with 3% silkworm litter, and a decrease in disease development was observed more on roselle plants grown in the amended soil incorporated with the antagonistic microorganisms, *Pseudomonas fluorescens, Bacillus* #2, and Actinomycetes #1. However, the number of surviving *Phytophthora* propagules was not less than that in the infested soil treatment. In the field trial, disease development in roselle plants decreased when infested soil was inoculated into amended soil with 3% silkworm litter and incorporated with *Pseudomonas fluorescens, Bacillus* #1, *Bacillus* #2, Actinomycetes #1, and mixed microorganisms (*Pseudomonas fluorescens* + *Bacillus* #1 + *Bacillus* #2 + Actinomycetes #1). There was no difference in the number of surviving *Phytophthora* propagules among the soil treatments.

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Production of *Corypha elata* Roxb.

('Buri') planting stock using wildlings

A STUDY was conducted to assess the growth performance of *Corypha elata* ('buri') as affected by collection method and size of wildlings. Buri belongs to the palm family that grows in low to medium altitudes throughout the Philippines.

As a minor forest plant, the different parts of buri, like the trunk, stem, leaves, buds, and fruits, have many uses. Its petiole is a source of 'buntal' fiber, the only material used in making 'Lucban' hats, popularly made in Southern Luzon. The unopened leaf or shoot is a source of raffia fiber used in making cloth, good quality hats, mats, and bags. The stem has a potential as building material. Buri production provides an alternative source of income for farmers and producers. Buri production enhances ecological rehabilitation and biodiversity in open areas.

Due to limited supply of buri seedlings as planting material, buri wildlings as alternative was highly recommended. Buri wildlings were found abundant under the patches of buri palms.

The best planting materials, aside from seeds, are earthballed buri wildlings with five to seven leaves because they attain 100% survival rate due to their fully developed root system. Collected wildlings are placed in bamboo baskets or any suitable container for transport to the nursery, and then potted in 5 in x 8 in polyethylene bags with pulverized potting medium. The wildlings are watered right after potting. In the nursery, they are watered only as necessary.

Potted wildlings are maintained in the nursery for 1 year including the hardening and conditioning period. They are hardened for 6 months by gradually exposing the plants to direct sunlight and minimizing water.

News source: **Philippine Council for Agriculture, Forestry and Natural Resources Research and Development**

For further information, see Tura, C. Buri wildling production. DENR- ERDS, Region VII, 2000.

'Agri-nipa' aquaculture technology

COASTAL ecosystems and mangroves in the Philippines are in danger of overexploitation. Aquasilviculture, the production of mangroves with fish, saves these areas from extinction and exploitation. A variation of aquasilviculture, 'agri-nipa'-aquaculture combines 'nipa' and agricultural crops with fish production. It involves the planting of nipa in 70-80% of the area at the center of the fishpond, and in the 20-30% open and deeper areas around the nipa plantation, where fish congregates during low tide. Water is allowed to enter during high tide to freshen the water in the fishpond. This brings in plankton and oxygen for the fish. During low tide, the ponds are drained slowly, leaching the tannins produced by the mangrove species.

The technology has the following advantages: rehabilitates and protects coastal environment; abates coastal pollution; enhances wetlands and wildlife habitat; rehabilitates degraded or abandoned fishponds; creates job opportunities; increases income; increases equal access to natural resources; makes available low-priced animal protein; and enhances community awareness on sustainable utilization of coastal resources.

The agri-nipa aquaculture technology involves the following steps: 1) protect existing mangrove stands from firewood and pole gatherers; 2) construct two nipa-aquaculture ponds and stock them with golden hybrid tilapia (*Oreochromis niloticus, or O. mossambicus, or O. hornorum*) and 'bangus' (*Chanos chanos*) fry for fish production; 3) plant nipa; and 4) plant fruits or vegetable crops on the dikes and open spaces for immediate source of income because nipa can be harvested only after 3-4 years.

News source: **Philippine Council for Agriculture, Forestry and Natural Resources Research and Development**

For further information, see Baconguis, S. R. Agri-nipa aquaculture technology: a sustainable land use in the nipa-dominated wetlands of Puerto Galera. College, Laguna: ERDB-DENR, 1994.