Biodiversity and insect pest management

Biodiversity is the full range of variety and variability within and among living organisms, their associations and habitat-oriented ecological complexes. Before the advent of the ‘Green Revolution’, our farmers largely relied on organic manures and cultural methods of pest management, which were helpful in promoting parasitoid and predatory populations. Diversity of natural enemy complexes attacking various stages of the pests prevalent in poly crop and intercropping systems tends to prevent severe pest outbreaks, maintain the biotic balance and reduce pest populations below the economic injury level.

Sustainable crop protection would involve an array of interactions among the herbivores, natural enemies and vegetation. An agroecosystem which is free from chemical pesticides harbours rich arthropod community, including different kinds of natural enemies; and their abundance is sometimes greater than the pests (Table 1). To achieve sustainability in agriculture through integrated farming practices, we should maintain and conserve biodiversity. With a view to explore the emerging trends in pest management practices through biodiversity conservation and enhancement, a national symposium on biodiversity and insect pest management was organized recently in Chennai.

Deliberations during the symposium covered various aspects of biodiversity in relation to host plants, pests and natural enemy complexes in different agroecosystems, traditional pest-control practices, chemical ecology, tritrophic relationships of insect pests and natural enemies, conservation and enhancement. J. R. B. Alfred (Director, Zoological Survey of India, Kolkata) in his inaugural address, stated that everything in the world has relationship with biodiversity. He categorized the bioresources into genetic, organismic and ecosystem resources and commented that habitat destruction and introduction of exotics and hybrids are two principal causes among others for loss of native biodiversity. He noted that 10,000 insects are sporadic pests and 1000 insects are serious pests in the world. He recom

* A report on the two-day National Symposium on Biodiversity and Insect Pest Management conducted at Entomology Research Institute, Loyola College, Chennai during 3–4 February 2005.
yellow hairy caterpillar, M. hiemalis and F. moniliforme were found to be suitable yellow hairy caterpillar, M. hiemalis and F. moniliforme were found to be suitable and efficient fungal agents to check moths and efficient fungal agents to check moths of yellow rice borer and leaf folder. M. Mani (Indian Institute of Horticultural Research, Bangalore) said that Anagyrus of yellow rice borer and leaf folder. M. Mani (Indian Institute of Horticultural Research, Bangalore) said that Anagyrus dactylopii (How.) causes up to 70% paraisal dactylopii (How.) causes up to 70% parasitism on pink mealybug Macnellicoccus. parasitism on pink mealybug Macnellicoccus hirsutus (Green) in grape gardens. He recommended the release of the coccinellids Chilocorus nigrita (Fab.) to check red scale on citrus and C. montrouzieri against green shield scale on guava for effective management. R. K. Murali Basheeran (Horticultural Research Station, Kodaikanal) said that the predators Scymnus nibulous Mulsant, S. latemaculatus Mots, S. castaneus Sic. and S. coccivora Ayyar were efficient biocontrol agents of aphids and mealybugs in Madurai, Theni and Sivagangai districts, and up to 82% control of M. hirsutus was achieved on guava in 56 days. A. Regupathy (TNAU) reported 19, 21, and 57 species of spiders were recorded respectively, and foliar application of insecticides caused significant reduction in foliage-dwelling spiders. During the panel discussion, the need for establishment of a national-level bureau for biodiversity issues, giving more attention to forest biodiversity studies, establishment of biodiversity clubs in schools and colleges, and encouraging use of traditional knowledge-based farmers’ practices like biopesticides and organic farming for sustainable agriculture were stressed.

S. Ignacimuthu, Entomology Research Institute, Loyola College, Chennai 600 034, India. e-mail: eri_le@hotmail.com