In order to meet the food grain requirement for the increasing population, India would have to increase the food production to the tune of 240 mt. The study growth in the world population, which is likely to reach 10 b in 2020, will demand more food to eat. Despite availability of several eco-friendly technologies for pest management, farmers rely mostly on chemical pesticides, because of their immediate and spectacular knockdown effect and availability. Intensive agriculture with indiscriminate use of pesticides and fertilizers leads to the problems like health hazards, environmental pollution, and adverse effect on non-target organisms and unsustainable farming systems.

Total reliance on insecticides for pest control in most part of the world have produced many disturbing ecological and economic imbalances that, in some instances, have resulted in grave consequences to crop protection and production. Further, insect resistance to insecticides has become a distinct threat to continuous and profitable crop production. Thus, there is an urgent need to focus our attention on current trends in insect pest management programmes and the strategies practiced in different agroecosystems. Integration of different eco-friendly practices and technologies will have strong influence among the agriculturists to implement them at the field level. In this context, a National Symposium on “Insect Pest Management Strategies — Current Trends and Future prospects” was organized at the Entomology Research Institute (ERI), Loyola College, Chennai during 01-02 February 2001.

The discussion during the symposium were directed towards identification of better alternatives for chemical pesticides. The role of predator/parasite population, microbial pesticides and botanicals gained more importance. Dr S Kannaian, Vice Chancellor, Tamil Nadu Agricultural University, Coimbatore while inaugurating the symposium discussed in length about the components of IPM with advantages and disadvantages. He requested the researchers to work more on ecofriendly agents for a evergreen agriculture. Rev Dr S Ignacimuthu, s.j., Director, E R I and organizing secretary of the symposium stressed upon the need for immediately attention on alternative technology development to promote healthy environment and pest-free food grains.

The technical programme was divided into four session to discuss the various insect pest management components viz. microbial pesticides, botanicals, pheromones and predator/parasite-insect interactions. Scientists representing various institutes, through invited lectures, discussed the latest developments and need for the future in their respective fields. Dr S Jayaraj, National Professor, Indian Council of Agricultural Research (ICAR) presented a detailed account on the insecticides resistance in Helicoverpa armigera and use of NPVs and microbial pesticides in insecticide resistance management programmes. While attributing the different factors involved in cropping system approach to Insect Pest Management, viz. host plant quality, non-host surface area, chemical interference, diversity stability, associational resistance, enemies hypothesis and resource concentration hypothesis, he highlighted the possibilities of modifying the agro-ecosystem more favourable to the natural enemies of the pests and least favourable for the pests themselves. Dr Abraham Verghese, Indian Institute of Horticultural Research, Bangalore, delivered a lecture
on the current Integrated Pest Management Strategies in Fruit Crops. Dr A Ragupathy, Tamil Nadu Agricultural University, Madurai discussed the management of insecticides resistance in fields and stressed the need for environmentally softer techniques for rural areas. Dr Dunston P Ambrose, Entomology Research Unit, St Xaviers College, Palayamkottai introduced the importance of Reduviid bugs in insect pest management programmes and need for more concrete studies to achieve large-scale economical mass rearing and release of reduviids in fields. Dr B Vasantharaj David, while stressing on the judicious use of safer insecticides, he expressed concern over the non-availability and poor quality of biopesticides and pheromones, NPVs/GVs for use by farmers. CPR Nair from Central Plantation Crops Research Institute, Kayankulam while explaining the IPM strategies in coconut listed various pests and their controlling measures and laid thrust on the importance of using wide genetic base available in India in IPM programmes. Devasahayam, representing Indian Institute of Spices Research, Marikunnu, informed about the status and possible future strategies in IPM in spices. Mani from Indian Institute of Horticultural Research, Bangalore highlighted the existing possibilities of biological control practices in insect pest management of horticultural crops and requested scientists to identify suitable pheromones and kairomones for effective control. P K Mehta, H P Krishi Visvavidyalaya, Palampur discussed the possibilities of controlling Henosepilachna vigintioctopunctata through plant extracts. AV Navarajan Paul, Indian Agricultural Research Institute, New Delhi presented a detailed account of chemical ecology and semiochemicals for effective use in field conditions. He explained how chemical ecology is important for understanding the tritrophic interactions found among the plants, herbivore, and parasitoid/predator in a given ecosystem. T K Dongre, Bhabha Atomic Research Centre, Trombay discussed the risks, advantages, and economics associated with transgenics and attributed their success to the regulatory climate, patent issues and ability of researchers to deal with target insects.

Workers from various institutes presented papers on various topics viz., predators in cotton pest complex, predator-pest interactions, indigenous technologies for insect pest control, botanical and microbial pesticides for insects, Helicoverpa-crops interaction, statistical methods for application in entomological research, and insect pests-horticultural crops interaction. A paper presented by M A Khan and coworkers from G B Pant University, Pantnagar reported some of the little known Hymenopteran parasitoids associated with economically important lepidopteran pests of northern India. Adiroubane and Letchoumanane, Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal reported the behaviour of rice brown planthopper on the steam distillate extracts of selected rice cultivars. Soundararajan and Baskaran, Annamalai University, Annamalainagar reported the anatomical features, especially the trichomes of tomato plants, to offer better resistance against Helicoverpa armigera. Bhattacharya and Mandal, Bidan Chandra Krishi Viswavidyalaya, Mohampur while discussing the distribution of coccinellid predators of Aphis gossypii in Taru fields, reported Harmonia arcuata as the most dominant predator species. During the discussions, main focus was on the future studies on the development, mass rearing, and environmental impact assessment on the release of predators on various insect pests as well as cropping systems. Emphasis was also given to the conceiving of a national programme to promote more taxonomists and to maintain a taxonomic collection of insect pests, predators, parasites, etc., at different levels. Improvement in research to identify alternative agents viz., natural enemies like predators and parasitoids, microbial pesticides and botanicals was also discussed.

Panel Discussion
The symposium concluded with a panel discussion comprising Dr S Jayaraj, Dr B V David, Dr Dunston P Ambrose, Dr Abraham verghese, Dr S Ignacimuthu and Dr S Ragupathy as members. Array of topics, related to scouting for botanicals, efficient utilization of pheromone technology, vitalization of taxonomy of insect pests, predators and parasitoids, fixation of standards for bioagents, efficient lab and commercial house collaborations were discussed. As a result the following recommendations were made:

- Strengthening pest surveillance and studies on insect pest dynamics.
- Identification of new tools to study host plant resistance and multiple resistance.
- Integration of IPM with Integrated Natural Resource Management.
- Improved inter-laboratory collaboration among various institutes engaged in entomological research.
• Developing better stable formulations of botanical and microbial pesticides.
• Strengthening of pheromone technology with cost-effective formulations.
• Studies on insecticide resistance management.
• Finding out alternative ways of pesticide application technology.
• Increased studies on tritrophic interactions in various cropping systems.
• Revising the existing quarantine structure, thus enabling effective domestic quarantine.

• Improvement in facilities and funding for taxonomy and biocontrol agent production to strengthen biosystematics.
• It is better to accept the collateral data available from other quarters for toxicology data on microbial pesticides instead of investing again on toxicity studies.
• Set standard for biocontrol agents and stop accepting substandard material from fly by night commercial houses.
• Set up a national facility of entomological research.
• National institutes should charge nominally the intending scientists for insect identification and to carryout various entomology related studies.