

# NBAII Newsletter



National Bureau of Agriculturally Important Insects



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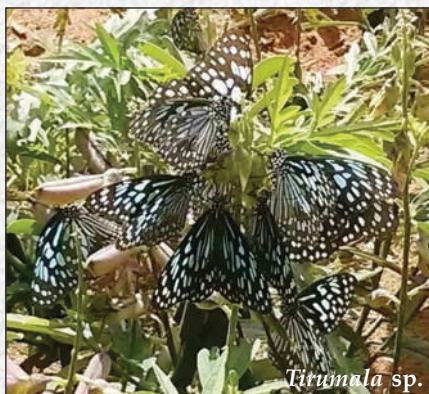
June 2014

## *Insect migration, monsoon and biocontrol*



The farm of the Bureau is literally an insect conservation garden with nearly 200 species of flora and thousands of insects spread in about 25 acres. Surrounded by Bengaluru's ever-growing populace and urbanisation, the farm is a major 'sink' for rest, food and breeding of several species of insects. From June onwards, the monsoon showers, though less, wet the parching lands only to get the grass and flora freshen up and lively, catching the attention of flying insects. No wonder then, our bug garden attracted a horde of migrating butterflies. If monsoon picks up in the peninsular region, the migration will further go up.

One of the butterflies was the emigrant *Catopsilla pyranthe*. These whitish-yellow, medium-sized butterflies move in loose swarms, all seemingly in one direction. But at our farm, they stop for refueling, i.e. food and rest. Where else an oasis for them, amidst concrete deserts of Bengaluru city? To this species, we also add another butterfly, the *Tirumala* sp. These too come flapping their blue spots and congregating, specially on the flowers



*Tirumala* sp.

of *Crotalaria retusa*. Insect migration is still an intriguing topic, less understood and hence more awe-inspiring!

My visit to Bangkok in May this year saw me also in the Insect Museum of Kasetsart University. It was interesting to breeze through all the collections. The insect collections are a good representative of Southeast Asia. The economically important insects are seriously curated and studied as Thailand does lean a lot on their agrarian economy. The entomologists here do speak English and for those travelling through, a visit to this insect museum will give a glimpse of insect diversity in this part of the world.

Back home, our very own insectarium had a distinguished visitor — Director-General Dr S. Ayyappan found time on 18 April to take a look at the variety of insects on display.

Meanwhile, let us hope our monsoon will pick up. With less water for pesticidal sprays, it is worthwhile considering biological control options for pest management to which we are geared up in conjunction with our AICRP on Biological Control Centres.

*Abraham Verghese*  
Director



Dr Ayyappan admiring insects

## Research Highlights

### Monograph on Indian Microgastrinae

Nearly 3,500 specimens of microgastrine wasps (Hymenoptera: Braconidae) were reared during caterpillar surveys undertaken in 2010-13 across India, covering 16 States and one Union Territory (Andaman & Nicobar Islands). The caterpillar inventory recovered over two hundred morpho-species within 22 families of Lepidoptera and yielded 90+ morpho-species of microgastrine wasps distributed among 13 genera. A monograph (Gupta & Fernández-Triana, 2014) providing a comprehensive list of microgastrine genera, host caterpillar species, host plants, cocoon colour, structure and spinning pattern, and hyperparasitoids has been published.

### Molecular characterisation

Molecular characterisation of the parasitoids, viz. *Aenasius advena* (GenBank accession KJ850498), *Blepyrus insularis* (KJ850500), *Myiocnema comperei* (KJ955498), *Praleurocerus viridis* (KJ955497), *Diglyphus isaea* (KM016074), and the predators, viz. *Brumoides suturalis* (KJ 850497), *Hyperaspis maindroni* (KJ850499), *Chilocorus nigritus* (KJ850496), *Cryptolaemus montrouzieri* (KM016073), has been completed.

### Entomopathogenic nematodes to the rescue of arecanut farmers

India is the number one producer of arecanut (*Areca catechu*) in the world. White grubs or root grubs pose perennial threat to the crop in the Western

Ghats. *Leucopholis coneophora*, *L. burmeisteri* and *L. lepidophora* are the most damaging. Commonly used chemicals like chlorpyrifos, carbofuran, phorate and carbosulfan have failed mainly due to the heavy rainfall in the region. Taking advantage of the moist conditions, NBAII has come out with a biological alternative to these polluting chemicals— in the form of an entomopathogenic nematode. A species of rapidly acting *Heterorhabditis* has been formulated into a wettable powder, which can be easily applied to the basin around an arecanut palm to suppress the white grub. About 20 kg of the formulation is sufficient to treat a hectare. In collaboration with the Village Development Society, NBAII organised an awareness programme at Heggodu in Karnataka's Shimoga district on 10 June 2014. The programme was presided over by Mr B.R. Jayanth, Director, Arecanut Growers' Association. Director of NBAII, Dr Abraham Verghese, was the guest of honour. Inventor of the technology, Principal Scientist Dr M. Nagesh, educated the arecanut farmers on the benefits of following biocontrol in pest-infested plantations. There were also talks by other scientists, district officers and a local farmer.



## Foundation Day celebrated at NBAII

NBAII celebrated its 'Foundation Day' on 21 June 2014. During the event, two eminent entomologists, Dr S.P. Singh (Founder Director, Project Directorate of Biological Control) and Dr V.V. Ramamurthy (Principal Scientist, Division of Entomology, Indian Agricultural Research Institute), were felicitated by Dr Abraham Verghese, Director, NBAII. The event was also graced by retired scientists and staff of NBAII.



Dr Singh being honoured



Dr Ramamurthy being honoured

## Iraqis trained on biocontrol

An international training programme on “Bio-Intensive Pest and Disease Management” was organised at NBAII for seven officials from the Plant Protection Directorate / IPM Projects for Plant Production and Protection, Iraq, from 1–15 June 2014. It was a customised training programme organised under the aegis of AgrInnovate India Limited, a Government of India-owned company,



established under the Department of Agricultural Research and Education (DARE). The topics covered in the programme were selected with the objective of giving the Iraqi delegates an overall exposure to various aspects of plant protection. The trainees could grasp the underlying theories and principles of biocontrol because of the hands-on teaching approach during every session of the programme. In addition to institute scientists and technical staff, experts from the Indian Institute of Horticultural Research (IIHR), University of Agricultural Sciences (UAS) and Bio-Control Research Laboratories (BCRL) also gave lectures. The delegates were taken to BCRL, IIHR, Butterfly Park and National Park, besides a trip to the field. The course was directed by Dr S.K. Jalali and Dr Chandish R. Ballal.

## Potato scientists trained on aphids

A three-day “International Training Programme on the Biosystematics of Potato Aphids” was organised at NBAII from 3–5 June 2014. Nine participants from different parts of the country attended this course, sponsored by the International Potato Centre (CIP, Lima, Peru). The focus of the programme was on the biosystematics of Aphidoidea in general and potato-infesting aphids in particular. It also included theory and practical classes on the parasitoids of aphids, biological control of aphids and the use of molecular tools for identifying aphids. Dr Sunil Joshi coordinated the programme.



## International Day for Biological Diversity celebrated

The ‘International Day for Biological Diversity’ was celebrated at NBAII on 22 May 2014. Dr Abraham Verghese, Director, honoured the chief guest of the day, Padma Bhushan Prof. M. Mahadevappa, for his vast contributions to the Indian agrarian community through various innovative applications and research initiatives, including the development of several high-yielding rice cultivars and popularising a novel ecological technique to manage the invasive parthenium weed. Scientists Dr B.S. Bhumannavar, Dr Prashanth Mohanraj, Dr K. Veenakumari and Dr Deepa Bhagat, who served in the Andamans and contributed towards documenting or conserving insects as components of island biodiversity were also recognised and felicitated. To commemorate the ‘Island Biodiversity’ theme for 2014, Dr Prashanth Mohanraj, Principal Scientist & Head, Division of Insect Systematics, gave an account of the natural history studies and the uniqueness and importance of insects of the Andaman and Nicobar Islands. This was followed by a discussion on preparing a road map for insect biodiversity studies in the Andaman and Nicobar Islands.



## Biocontrol Workshop report

The “XXIII Workshop of All-India Coordinated Research Project on Biological Control of Crop Pests” was conducted at the Orissa University of Agriculture & Technology (OUAT) in Bhubaneswar from 27–28 June 2014. Vice-Chancellor Dr J.M.L. Gulati presided over the meeting. Dr C.A. Viraktamath (RAC Chairman, NBAII), Dr P.K. Das (Dean of Research, OUAT), Dr C. Chattopadhyay (Director, NCIPM), Dr B.K. Mishra (Dean, College of Agriculture, OUAT) and the respective Project Coordinators of White Grubs, Honey Bees and Ornithology participated in the meeting. Addressing the gathering, Dr P.K. Chakrabarty, Assistant Director-General (Plant Protection & Biosafety), emphasised the importance of popularisation and increasing the uptake of biocontrol technologies among the farming community and suggested to take up eco-specific niche-based biocontrol programmes under AICRP Biocontrol. The progress of research on biological control of insect pests, plant diseases and nematodes of various crops using parasites, predators, pathogens and antagonists was thoroughly reviewed by Dr Abraham Verghese, Director, NBAII & Project Coordinator, AICRP. Dr B. Ramanujam, In-Charge, AICRP PC Cell, reviewed the Tribal Sub-Plan proposals with reference to biocontrol technologies in 11 centres encompassing 120 tribal villages. The recommendations and the technical programme for 2014-15 were finalised. Over 80 scientists from biocontrol research centres across the country, and representatives from biocontrol industry attended the workshop.



### Technologies Transferred

The Institute Technology Management Unit of NBAII facilitated the transfer of six technologies to two agripreneurs, Agri Bio Care (Kottayam, Kerala) and Dr Abdul Rauf Agri-Research Foundation (Sirsi, Karnataka), in April 2014.

### Superannuation

**Mr P. Vanaraju**, Assistant Administrative Officer at NBAII, superannuated on 31 May 2014. Mr Vanaraju began his career as a Junior Clerk at the Indian Institute of Horticultural Research in 1982. After a brief stint, he was transferred to the erstwhile Biological Control Centre (BCC, now NBAII) of the National Centre for Integrated Pest Management (NCIPM) in Bangalore. The NBAII family lauds his contributions and wishes him a healthy and peaceful retired life.

### Congrats to Dr Verghese!

**Dr Abraham Verghese**, Director, NBAII, received a medallion for his contributions to fruit fly research from His Excellency Mr Yukol Limlaemthong, Deputy Prime Minister of Thailand, on 12 May 2014 in Bangkok.



### Selected Publications

- Gupta, A. & Fernández-Triana, J.L. 2014. Diversity, host association, and cocoon variability of reared Indian Microgastrinae (Hymenoptera: Braconidae). *Zootaxa*, 3800(1): 1–101.
- Hemalatha, B.N., Venkatesan, T., Jalali, S.K. & Reetha, B. 2014. Distribution and characterization of microbial communities in *Chrysoperla zastrowi sillemi*, an important predator of sap sucking pests. *African Journal of Microbiology Research*, 8(14): 1492–1500.

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