

NBAIR Newsletter



ICAR–National Bureau of Agricultural Insect Resources



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December 2015

2015 has been an “insecty” year!

2015 has rolled by, and on the timescale, another milestone has been etched. Unlike driftwood ebbing downstream into the sea of unknown infinity, we at NBAIR have been “drifting” upstream propelled by a clear vision, telescoped from 2015 to 2050. The last quarter has been a culmination of that. The hallmark of the year was that we were ranked first among all ICAR institutes in terms of Publication Productivity Index (as per RFD). Publication in highly rated journals is the ultimate litmus test of high scientific endeavours of a scientist and a research organisation. I would say that the hard work of all our scientists and staff has paid off.

Last quarter, while taking stock of our achievements, I found that, during the year, we identified >1,000 insect specimens, free of cost, for several entomologists and students. Further, >1,000 shipments of live macrobial and microbial cultures were sent across the country to supplement biological control laboratories and research. On the discovery side, we found the world's smallest flying insect, *Kikiki*, and nearly two dozen new species with >50 new records for the country. Our web-data has had over a lakh hits. The insectarium and insect biodiversity park have been popular with students, farmers and lay people, with more than 2,000 visitations.

Our expeditions too were in far-flung areas, sometimes almost inaccessible regions. It has been very much an “insecty” year! We have not been narrow either!

December saw us hosting a two-day workshop on Human–Wildlife Conflict, on behalf of ICAR, which drew to our campus experts on elephants, monkeys, wild boars, birds, antelopes (nilgai), etc. This synergy between vertebrate specialists and us (the invertebrate group) that emerged will augur well for science. No wonder, then, our Hon'ble Director-General, Dr S. Ayyappan, was there throughout, actively deliberating on the issues.



We had also two “authored-books” published. The one on *Watching Insects* (Amazon.in) is meant for students, farmers and lay readers. The other book on *Fighting Pesticide Resistance in Arthropods* is for serious advanced reading. Even in literature, NBAIR addresses a wide swath of readers, promoting insect study from the grassroots, i.e. schools through farms to lay public. Insects are so interwoven with man and his environs that most of them are interesting and useful (bees, butterflies, ladybirds, etc.) and hardly a few detestable, that insects deserve to be watched and/or researched by a wide spectrum of humankind.

As we enter the New Year, our staff, our extended families (AICRP-Biocontrol and Network Project on Insect Biosystematics) and I wish all of you a very fruitful 2016.

Abraham Verghese
Director

Book on pesticide resistance released

During the “National Conference on Golden Jubilee of Green Revolution” on 27 November 2015 in New Delhi, the Union Minister of Agriculture and Farmers Welfare, Shri Radha Mohan Singh, released a book on *Fighting Pesticide Resistance in Arthropods*.* Padma Vibhushan Dr M.S. Swaminathan, Dr S. Ayyappan, Secretary (DARE) & Director-General (ICAR), and Mr S.K. Singh, Additional Secretary & Financial Advisor (DARE/ICAR), received the first copies. This book, authored by NBAIR scientists Drs M. Mohan, T. Venkatesan, G. Sivakumar, Mahesh S. Yandigeri and Abraham Verghese, provides recent information on the ever-changing field of pesticide resistance in insect pests and mites.

[*Published by Westville Publishing House, New Delhi]



Research Highlights

New species of parasitic wasps

Two new species of parasitic wasps (Hymenoptera: Eulophidae) were discovered in Goa: *Tetrastichus thetisae* Gupta *et al.* (Fig. 1), a gregarious parasitoid of *Curetis thetis*, and *Sympiesis thyrissae* Gupta *et al.* (Fig. 2), a gregarious parasitoid of *Gangara thyrissis*.

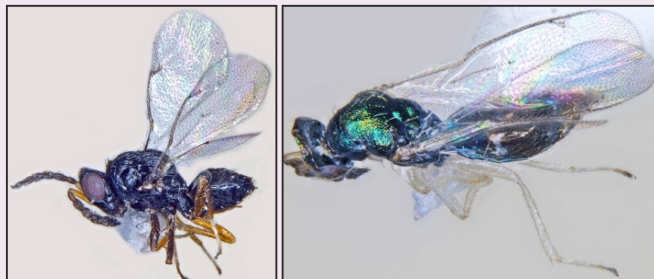


Fig. 1: *Tetrastichus thetisae*

Fig. 2: *Sympiesis thyrissae*

Solanum whitefly and potential biological control agents

The solanum whitefly *Aleurotrixus trachoides* was originally described as *Aleurotrachelus trachoides*. This name transfer is forming a new record of the genus from India (Dubey & Sundararaj, 2016, in press). In Bengaluru, this pest was recorded on several host plants, including capsicum, brinjal and *Duranta*. Natural predation of the whitefly by the coccinellid *Axinoscymnus puttardriabi* (Fig. 3a) was observed on capsicum. Highly significant relationship recorded between the population of the predator grubs and the immature stages of *A. trachoides* indicates that it could be a potential bioagent for this invasive pest. The anthocorid *Blaptostethus pallescens* (Fig. 3b), when released on the infested plants, could also effectively predate on *A. trachoides*.



Fig. 3: Predators feeding on the whitefly:

(a) *Axinoscymnus puttardriabi*; (b) *Blaptostethus pallescens*

Looper damage to neem in Nalgonda district of Telangana

A looper (*Cleora* sp.) (Lepidoptera: Geometridae) was found to feed extensively on neem trees in a few villages of Samsthan Narayanpur mandal of Nalgonda district in Telangana during October/November 2015. Dr G. Anitha from the AICRP-Biocontrol centre in Hyderabad visited the affected villages for firsthand assessment. Many trees were completely defoliated (Fig. 4) due to extensive feeding by the larvae. The eggs, laid singly or in groups sometimes, were light green-coloured. Larvae were green with a yellowish line on the lateral side and faint longitudinal lines all over the body with clear inter-segmental lines. As many as five instars of the pest were observed feeding voraciously on the trees. They fed in a semi-circular fashion on the leaves. Pupa was light green-coloured at first and became brown eventually. The adult was brownish grey and survived for 6–8 days. Eminent lepidopteran taxonomist Dr Peter Smetacek confirmed the identity of the pest. The pest had earlier been observed on neem and pigeonpea at Rajendranagar in Hyderabad, but at a very low intensity with negligible damage. It was also previously recorded on neem trees in villages around Lucknow in Uttar Pradesh. A spider (*Argiope* sp.) was observed feeding on the larvae. Cocoons of *Apanteles* were also observed on the infested trees. A biocontrol solution is being worked out.



Fig. 4: Neem tree defoliated by the looper
(Inset: Larva of *Cleora* sp.)

Thai sacbrood disease in honey bees in Dakshina Kannada

Recently, NBAIR scientists, Drs A.N. Shylesha and R. Rangeshwaran, surveyed and assessed the prevalence of diseases in honey bees in Dakshina Kannada district of Karnataka. The survey was conducted in Puttur, Sulyapadavu, Dharmasthala and Sullia, the major beekeeping areas in the district. The Thai sacbrood disease was rampant in these areas causing losses to bee colonies from 35 to 50 per cent. It was more severe in Sullia, Sulyapadavu and Dharmasthala than in Puttur (<10%). After the survey, three meetings were conducted at Sulyapadavu, Sullia and Dharmasthala for briefing the beekeepers about preventive measures and management practices to overcome this serious virus disease.





Vigilance Awareness Week observed at NBAIR

“Vigilance Awareness Week” was observed at NBAIR from 26–31 October 2015. This year's theme was ‘Preventive vigilance – a tool of good governance’. The programme was initiated with the NBAIR staff assembling and taking the pledge. Posters on the ill effects of corruption and the need for preventive vigilance in government organisations were put up at prominent spots in the institute. To create awareness on the need for integrity, and to promote a culture of integrity, transparency and accountability,

NBAIR organised essay writing and debate competitions. Deputy Superintendent of Police Mr E.P. Suresh Kumar, from the Anti-Corruption Branch, Central Bureau of Investigation, presented a talk and gave away prizes to winners of competitions, during the valedictory function.

Workshop on Human–Wildlife Conflict in Agro-pastoral Context



A “Workshop on Human–Wildlife Conflict in Agro-pastoral Context” was held on 11–12 December 2015 at NBAIR. The meeting was jointly organised by ICAR and the National Institute of Advanced Studies (NIAS, Bengaluru) with funding from the National Agricultural Science Fund (NASF). Scientists from ICAR institutes, agricultural universities, NIAS, Indian Institute of Science and ATREE, as well as state forest department officials and independent researchers, participated in the meeting. Dr Abraham Verghese, Director of NBAIR and Convenor of the Workshop, welcomed the participants. The workshop was inaugurated by Dr S. Ayyappan,

Secretary (DARE) & Director-General (ICAR). Dr Baldev Raj, Director of NIAS, delivered the inaugural address and Prof. V.S. Ramamurthy, Former Secretary, Department of Science & Technology, gave his remarks. As an outcome of the workshop, collaborations were established to develop measures to mitigate and manage the human–wildlife conflict in agriculture. Dr P.K. Agrawal, Assistant Director-General & Director of NASF, coordinated the programme.

Celebration of “Jai Kisan Jai Vigyan” week at NBAIR

A week-long (23–29 December 2015) programme was organised at NBAIR to celebrate “Jai Kisan Jai Vigyan” week, commemorating the birth anniversaries of former Prime Ministers Shri Atal Bihari Vajpayee and Late Shri Chaudhary Charan Singh. In association with the Department of Horticulture, Karnataka, NBAIR organised a farmers’ awareness programme and exhibition for showcasing NBAIR technologies on 27 December in Cubbon Park, Bengaluru. The event was attended by farmers, home gardeners and schoolchildren. Dr Jagadeesh Patil, Mr Satandra Kumar and Dr A. Raghavendra managed the programme.

An awareness programme was carried out by Dr Mahesh S. Yandigeri for farmers of Alur and Madenur villages of Hassan district of Karnataka on 24–26 December. He interacted with farmers growing ragi, lablab bean and banana, and created awareness on the biocontrol technologies available with NBAIR with the intention to reduce the use of chemical pesticides. NBAIR, in association with Tamil Nadu's Department of Agriculture and Dr Perumal Krishi Vigyan Kendra, organised two seminars at Yennagalpudur in Krishnagiri district on 29 December to benefit the farming community. Around 50 farmers attended the programme. The first seminar was on tomato pinworm's (*Tuta absoluta*) identification and management. As the pest was new to this area, the farmers had little awareness regarding this pest. An extension folder on the pest was distributed to the farmers. The second session was a scientist–extension worker–farmer interface on rice-IPM. Dr K. Subaharan, representing NBAIR, clarified doubts on the mangement measures for various rice pests.

The week also had quiz and debate competitions for tenth-class students of Gokul Public School, Bhuvaneshwarinagar, Bengaluru.

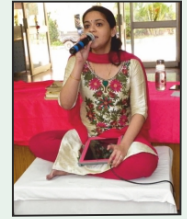


“Kannada Rajyotsava” celebrations at NBAIR



The 59th “Kannada Rajyotsava” (Karnataka Formation Day) was celebrated at NBAIR on 21 November 2015. The south Indian state of Karnataka was formed on 1 November 1956, and Kannadigas around the world celebrate the occasion, with events throughout the month. The day began with the hoisting of Kannada flag by Director Dr Abraham Verghese, followed by the singing of the Kannada anthem. Special invitee Ms Nikhila Ballal, daughter of Dr Chandish R. Ballal (Principal Scientist and Head, Division of Insect Ecology), mesmerised the audience with her

rendering of various folk songs in the local language. Prizes were given away to winners of various competitions that were held for staff members, with an accent on the Kannada language.



Dr B.R. Subba Rao honoured

As part of the celebrations, Dr B.R. Subba Rao, a Karnataka-born veteran entomologist, was honoured on 10 November 2015 for his significant contributions in the field of insect taxonomy. Dr Rao, who retired from the Commonwealth



Institute of Entomology, England, delivered a special lecture on the “History of entomology in India”. He was posed several questions on entomology and tennis (his favourite pastime), which he answered passionately. Several reputed entomologists from Bengaluru, including Prof. G.K. Veeresh, were present.



DDG (Crop Science) inaugurates India's first ‘Molecular Database on Indian Insects’



Dr Jeet Singh Sandhu, Deputy Director-General (Crop Science), ICAR, visited NBAIR on 19 November 2015. He showed keen interest in the research underway by

visiting the laboratories and interacting with the scientists. He was particularly impressed with the insectarium and museum collections of NBAIR. Dr Sandhu also inaugurated India's first ‘Molecular Database on Indian Insects’ (MODII), which can be freely accessed at www.cib.res.in. The DDG later visited the research farm of NBAIR situated at Yelahanka and appreciated the research work on pollinators and their diversity. While addressing scientists, he stressed that apart from basic research scientists should also work to solve farmers' problems and come up with solutions for problematic pests and diseases.



Technologies Transferred

“Novel insecticidal wetttable powder formulations of *Heterorbabditis indica* for the biological control of white grubs and other soil insect pests” to University of Agricultural and Horticultural Sciences, Shivamogga.

“Dorsa Lure – Plant volatile dispenser for increasing the trap efficiency for mango fruit flies” to Bio95.com Agrotech, Bengaluru.

Selected Publications

Kumara, A.D.N.T., Chandrashekharaiyah, M., Subaharan, K. & Chakravarthy, A.K. 2015. Periodicity of adult emergence and sexual behaviour of coconut black headed caterpillar, *Opisina arenosella* Walker (Lepidoptera: Oecophoridae). *Phytoparasitica*, 43: 701–712.

Sreerama Kumar, P. & Verghese, A. 2015. *Cyrtobagous salviniae* — Godsend in God's own country. *Antenna*, 39: 175–177.

Venkatesan, T., Reetha, B., Jalali, S.K., Lalitha, Y., Ballal, C.R., More, R.P. & Verghese, A. 2015. Molecular identification of egg parasitoid, *Trichogramma* species of India using COI and ITS-II regions and their phylogenetic relationships. *Genome*, 58: 291–292.

NBAIR thanks **Prof. D. Rajagopal** (formerly with University of Agricultural Sciences, Bengaluru) for donating three volumes of *Termitologia* to the library.

Compiled and edited by: **P. Sreerama Kumar & Abraham Verghese**

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Phone: +91 80 2341 4220 ♦ Fax: +91 80 2341 1961 ♦ Website: www.nbair.res.in

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