NBAIR Newsletter

Vol. VIII (3) September 2016

ICAR–National Bureau of Agricultural Insect Resources

Role of NBAIR in naming and taming IGRs

NBAIR has stood strongly for biodiversity conservation through its active involvement in collection, characterisation, documentation, research, conservation, exchange and utilisation of agriculturally important insect genetic resources (IGRs). In mid-2016, four "fresh" or "re-christened" objectives authoritatively entered into the 'Mandate page' of NBAIR – a) Capacity building, b) dissemination of technologies, c) forging linkages with stakeholders, and d) on-farm validation of biocontrol trials. NBAIR armed with expertise in both taxonomy and biological control, has accepted this challenge with grace. The emphasis laid on biosystematics and biodiversity at this Bureau has led to the clear understanding that species identity of the insects that we see and the interactions between diversity components and the mechanism underlying biodiversity effects would all definitely strengthen our efforts at fine-tuning biological control initiatives.

The efforts of the staff members at the erstwhile Project Directorate of Biological Control (PDBC) under the leadership of the then Project Director Late Dr S.P. Singh culminated in PDBC receiving the *Sardar Patel Outstanding ICAR Institution Award – 1998*. After 17 years of research on all facets of "insects and their resources" under the leadership of Drs R.J. Rabindra, N.K. Krishna Kumar, B.S. Bhumannavar and Abraham Verghese, NBAIR was again honoured with the *Sardar Patel Outstanding ICAR Institution Award – 2015* on 16 July 2016 (*see picture below*). We consider that this award, besides recognising us for our strengths and successes, has put forth a daunting challenge to us to further fine-tune and spread our technologies. At this juncture, our aim is to create awareness amongst farmers and other stake-holders on environment-friendly modes of pest management and disseminate our user-friendly pest management technologies to commercial entrepreneurs.

As I have just stepped into a research management and leadership role at NBAIR, I invite suggestions and corrections which would help in the progress of NBAIR. We strongly believe in the saying "A struggle precedes any change or progress". We are energised enough to struggle as we are confident that the goal is well within our reach.

Chandish R. Ballal
Director

Dr Chandish R. Ballal takes charge of NBAIR

Dr Chandish R. Ballal took charge of NBAIR as the new Director on 18 July 2016. She was the Head of Division of Insect Ecology at NBAIR before taking up the new responsibility. Another feather in her cap was winning the *Panjabrao Deshmukh Outstanding Woman Scientist Award – 2015* (*see picture*).

Research Highlights

Redescription of *Dardjilingia*

The pentatomid genus *Dardjilingia* (Fig. 1), earlier monotypic with *Dardjilingia nigriventris*, was redescribed along with the male and female genitalia which were illustrated for the first time for this species. The genus has also been removed from Lestonocorini. This species was recorded for the first time from Arunachal Pradesh and Manipur.

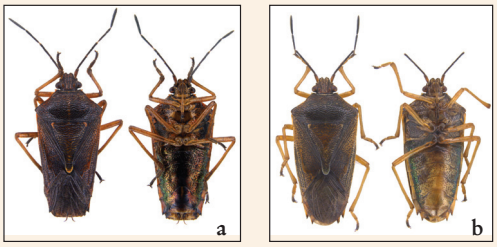


Fig. 1: *Dardjilingia*: **(a) Male; (b) Female**

First record of *Antonina thaiensis*

For the first time in India, *Antonina thaiensis* (Fig. 2) was recorded making dense colonies on the nodes and leaf sheaths of *Bambusa* species in Bengaluru. This mealybug was earlier recorded from Malaysia, Philippines, Thailand and Sri Lanka. The pest is also known to infest *Phragmites* species.

Fig. 2: *Antonina thaiensis*

First record of *Crotonothrips polyalthiae*

Crotonothrips polyalthiae (Fig. 3), a member of Phlaeothripidae, was recorded for the first time in India from the leaf galls of *Polyalthia longifolia* in Bhubaneswar, Odisha. It was previously known only from Malaysia and Indonesia.

Fig. 3: *Crotonothrips polyalthiae*

Pest alert!

Quarantine thrips, *Frankliniella occidentalis*, found in Tamil Nadu

Frankliniella occidentalis

Frankliniella occidentalis, an exotic thrips of quarantine importance, was collected from the leaves of *Erythrina indica* in Udhagamandalam in the Nilgiris, Tamil Nadu. The common golden everlasting daisy, *Xerochrysum bracteatum*, along with other planting material carried by tourists and farmers could aid in the dispersal of *F. occidentalis* to the other temperate regions of the country. Under these circumstances, it is imperative that the quarantine mechanisms within the country are activated and strengthened to prevent the spread of this notorious pest to the rest of India.

Collecting insects: overriding an ethical imperative

(Continued from the previous issue)

It should be impressed on the uninitiated that a large proportion of insects are smaller than the smallest bird by many orders of magnitude. Families of insects have individuals that are less than a millimetre or two in size. With even the most advanced digital technology we cannot capture their images in their natural surroundings. The only way to study is by catching them dead in traps and then imaging and examining under highly advanced microscopes. Even amongst butterflies, there are so many in families such as the Hesperiidae and Lycaenidae, where the best of field photographs cannot help distinguish between species. They have to be caught, killed and dissected to reveal species-specific characters. Only after this can their identities be conclusively established. E.H. Aitken finds the charge of cruelty levelled against entomologists totally groundless. To him a wo/man becomes more compassionate towards her/his fellow creatures only when s/he develops a close acquaintance with them. And this acquaintance with insects can only be gained by sacrificing the lives of a few. Will the votaries for the ban on all forms of insect collecting pay heed?

Prashanth Mohanraj

Whitefly infestation on cotton in Punjab

The level of whitefly infestation on cotton in Punjab was assessed through surveys in Ludhiana, Moga, Bhatinda, Faridkot, Muktsar, Abohar and Fazilka districts during July 2016. In and around Ludhiana, the infestation was very low, ranging from 0–3 adults per leaf. A few chrysopids and coccinellids were also observed. In Moga, Bhatinda, Faridkot and Muktsar districts, it was moderate with a population ranging from 0–20 adults/nymphs per leaf. A very high predatory activity was observed there, with a chrysopid population ranging from 1–10 larvae/eggs per leaf, besides the presence of different coccinellids. In Abohar and Fazilka districts, the whitefly population ranged from 60–70 per leaf, with hardly any predator population. No parasitism was recorded from pupae collected during the survey. Molecular characterisation of the collected pupae revealed the identity of the pest as *Bemisia tabaci*.

Brainstorming on Access and Exchange of Insect Germplasm Resources

A "Brainstorming on Access and Exchange of Insect Germplasm Resources" was organised by NBAIR on 23 July 2016. At the outset, NBAIR Director, Dr Chandish R. Ballal, welcomed the gathering and flagged the issues related to international exchange/export of live-insect resources. Dr Prashanth Mohanraj (Principal Scientist & Head, Division of Insect Systematics) presented an account of the importance of exchange of dead insects for taxonomic research. Dr B. Meenakumari, Chairperson of National Biodiversity Authority (NBA), in her address, highlighted the role, organisational setup, challenges and functions of NBA apart from exemptions under the Biodiversity Act. Mr T. Rabikumar (Secretary, NBA), Dr Ranjan Agrawal (Director, DARE), Dr P.K. Chakrabarty [ADG (PP&B), ICAR], Mr R.M.N. Sahai [Chairman, Karnataka Biodiversity Board (KBB)], Dr Veerendra Singh (Member Secretary, KBB), Dr C.A. Viraktamath (Professor Emeritus, University of Agricultural Sciences, Bengaluru), Dr N.K. Krishna Kumar (Regional Director, Bioversity International), Dr Abraham Verghese (Director, GPS Institute of Agricultural Management), Dr Rajan (Principal Scientist, ICAR), Dr N.K. Ramesh (Professor of Law, National Law School of India University), Mr P. Jaishankar (NBA), Ms Soumyashree (Institute attorney, NBAIR) and scientists of NBAIR actively participated in the discussion. Several issues regarding the international exchange of live as well as dead insects for research purpose were debated and queries raised by the participants were addressed effectively by the NBA officials.

A novel initiative under *Mera Gaon Mera Gaurav*

Under the *Mera Gaon Mera Gaurav* programme, NBAIR scientists have been divided into small groups to provide advisories and consultations to farmers in identified villages for increasing farm production and productivity. The group led by Dr M. Nagesh, consisting of Drs M. Sampath Kumar, K. Selvaraj, Omprakash Navik and B.K.Chaubey, explored a novel way to get connected with the farming community and the possibilities of using existing information communication media without any additional financial commitment. Accordingly, the group identified 'WhatsApp' as a good medium for multi-media information flow from the laboratory to farmers and vice versa. Mobile phone numbers of farmers from each village were collected, grouped and an individual 'WhatsApp' group has been created for each village for communication and coordination among the group members. As this novel approach has been successful on a trial basis, it can be adopted and replicated across the country.

Infusing Science Instincts in Young Minds

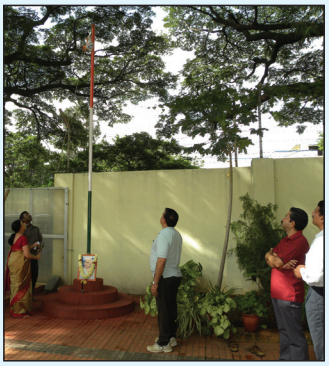
On 29 July 2016, a day-long programme on "Infusing Science Instincts in Young Minds – 2016" was organised at NBAIR's Yelahanka campus. The objective of this programme was to train and expose schoolchildren to cutting-edge technologies in farm science so as to motivate them in food production campaign. Dr Kesavan Subaharan, Principal Scientist, welcomed the gathering and outlined the genesis and importance of the programme. NBAIR Director, Dr Chandish R. Ballal, chaired the meeting and introduced the theme of the programme to the students. Over 30 schoolchildren enthusiastically participated in the activities. Presentations on various topics by scientists from the National Centre for Biological Sciences (NCBS, Bengaluru) and Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR, Bengaluru), and the student–scientist interactions culminated in fruitful results.

Technologies transferred

The Institute Technology Management Unit of NBAIR facilitated the transfer of three technologies this quarter: A novel wettable powder formulation of *Heterorhabditis indica* for the biological control of white grubs and other soil insect pests; an organic non-pesticidal herbal swabber for the management of coffee white stem borer; and a booster for enhancing health of coffee plants, to three agripreneurs, Mitrakida (Pune), Aspartika Biotech (Bengaluru) and Planttech Solutions (Chikkamagaluru).

Celebrations at NBAIR

Independence Day



NBAIR celebrated the 70th "Independence Day" on 15 August 2016. After hoisting the National Flag, NBAIR Director Dr Chandish R. Ballal addressed the staff and urged them to work hard for the benefit of farmers.

Foundation Day

NBAIR celebrated its "Foundation Day" on 21 September 2016. During the event, meritorious members of staff were given *Best Worker Awards* for their significant contributions. The event was also graced by former Directors, retired scientists and former staff members of NBAIR.

Selected Publications

Prathibha, M., Venkatesan, T. & Jalali, S.K. 2016. Resistance in *Maconellicoccus hirsutus* (Green) in India to selected insecticides and quantification of enzymes imparting resistance. *Crop Protection*, 89: 116–122.

Rangeshwaran, R., Velavan, V., Frenita Lewis, M., Surabhi Kumari, Shylesha, A.N., Mohan, M., Kumar, S. & Sivakumar, G. 2016. Cloning, expression and bioassay of Vip3A protein from an indigenous *Bacillus thuringiensis* isolate. *Journal of Pure and Applied Microbiology*, 10: 1533–1539.

Salini, S. 2016. Redescription of *Dardjilingia* Yang (Hemiptera: Heteroptera: Pentatomidae) from India. *Zootaxa*, 4144: 131–137.

Venkatesan, T., More, P.R., Reeta, B., Jalali, S.K., Lalitha, Y. & Ballal, C.R. 2016. Differentiation of some indigenous and exotic trichogrammatids (Hymenoptera: Trichogrammatidae) from India based on internal transcribed spacer-2 and cytochrome oxidase-I markers and their phylogenetic relationship. *Biological Control*, 101: 130–137.

Compiled and edited by: **P. Sreerama Kumar, R.R. Rachana & Chandish R. Ballal**
Published by: Director, ICAR–National Bureau of Agricultural Insect Resources, Hebbal, Bengaluru 560 024, India
Phone: +91 80 2341 4220 ✦ Fax: +91 80 2341 1961 ✦ Website: www.nbair.res.in

Printed at: Sharadh Enterprises, Bengaluru 560 008