

## 21 days ICAR sponsored winter school training

### **Insecticide resistance: Biochemical and molecular perspectives; and strategies for combating resistance to insecticides**

ICAR-NBAIR, Bangalore conducted ICAR sponsored 21 days winter school on “Insecticide resistance: Biochemical and molecular perspectives; and strategies for combating resistance to insecticides” from 8-28<sup>th</sup> January 2020. Twenty five participants including nine women candidates from the ICAR/SAU system in the rank of Assistant Professor / Scientist and above attended the training. The program was inaugurated on 8th January 2020 by the Director, ICAR-NBAIR. Apart from internal faculty of NBAIR, six subject matter experts from other organizations were invited to deliver lectures on their field of specialization. The theory topics covered in the training were: Status of insecticide resistance, insect system and physiology, mode of action, mechanism of resistance, resistance detection: Conventional, biochemical & molecular aspects, role of endosymbionts, resistance detection methods, management aspects, bioinformatic tools and analysis. Dr B.M. Prasanna, Director of CIMMYT's Global Maize Program and the CGIAR Research Program on Maize delivered a talk on insecticide resistance management in maize Fall armyworm.

The following hands on practicals were conducted: Hygienic rearing of insects, Basics on lab biosafety, buffers, pH and other lab techniques, Log dose mortality bioassays, discriminating dose assays, probit analysis using PoloPlus, Probit and ANOVA by SAS package, Extraction of midgut enzymes, Protein estimation, Resistance detection by biochemical assays such as estimation of carboxylesterases, glutathione S-transferases, p450 monooxygenases and acetyl cholinesterases, Native PAGE analysis of esterases, isolation and characterization of insect endosymbionts, DNA isolation, Molecular detection of Na channel mutation, Real time quantitative PCR assays to quantify the expression level of resistant genes, Primer design techniques, Bioinformatics: Sequence analysis, submission and phylogenetic analysis. The training programme was well received by the trainees. The valedictory function, presided over by Director, ICAR-NBAIR was held on 28, January 2020 and the participants were awarded the certificates. Looking at the feedback, all who attended only had positive comments and rated the course as **excellent** to **outstanding**. All the resource persons including research scholars and students helped to create a real buzz around the training course.

## Trainee's feedback and testimonials

- “ One of the best training classes attended... ever. The students are lucky to have able mentors at NBAIR. The team led by Mohan sir is not only a source of inspiration and also gives free hand to learn.  
Dr. Gangadhar, UHS, BAangalore
- “ The training team had excellent coordination. Thank you for everything you have done to make our training useful and also for spending your quality time with us.  
Dr. Dhivya Bhoopathy, TANUVAS, Chennai
- “ Along with the faculty, all the students, SRF and RAs also very cooperative and learnt from everyone.  
Dr. Shivaji H. Thube, CPCRI, Vittal
- “ We the field entomologists are really fortunate to get such a wonderful training on molecular entomology by the team of NBAIR.  
Dr. Timmanna, IARI
- “ We are wholeheartedly thankful to the team for taking care of each and every aspects of the training. I landed Guwahati just now with beautiful memories we shared at NBAIR.  
Dr. Mousumi Phukon, AAU, Jorhat
- “ Thanks to Dr Mohan sir for giving me an opportunity to be one of the participants. I learnt many things from you sir. I am also thankful to all the research scholars. The time we spent and knowledge we gained that will remain in a special corner of everyone's heart. Thank you all...  
Dr. Saranabasappa, UAHS, Shimoga
- “ When I crossed NBAIR gate to get a bus to reach airport, for a minute my eyes went tear up. Days moved very fast, 21 days back, we were unknown to one other. As the days passed, our daily routine activities silently created a beautiful friendship bond. I got the best teacher, Dr. Mohan sir and his team to lead my carrier and excellent seniors and friend circle across the country. We are missing beautiful days at NBAIR and the wonderful and positive Director and her team of Scientists. Since from 9am to 9pm enlightened lectures from the experts, fruitful practicals from the experienced scholars and brain storming discussions with fellow trainees enriched my knowledge and built a confidence to excel in my carrier. Many thanks to Director and her team for giving me this wonderful opportunity  
Dr. Timmanna, IARI
- “ I had a wonderful and memorable stay at NBAIR with all my colleagues. All are cooperative and spent good and precious time at the training. Thank you all for your cooperation and keeping friendly atmosphere in our training programme. Many thanks to our mentor Mohan sir and his entire team for their untiring efforts to successfully conducting the training program  
Dr. Shivaji, CPCRI, Vittal
- “ I am the last to leave after training. Saw the empty rooms, dining hall, the memories we had in guesthouse, dining hall, labs, especially seminar hall. We may get chance to visit NBAIR again but we will not be surrounded by trainee friends. 21 days passed like hours. It is very hard to depart last seeing those empty rooms and dining area. Had very memorable and beautiful memories with all of you. Mohan sir gave good friends all over India. Thank you for selecting us for training. Now I can say proudly say I have friends all over India. With tears in eyes, with heavy heart finally I am leaving Bangalore with haunting memories which I can never forget for life time. We all had such a beautiful bond with each other including student friends. I thank you everyone for such a beautiful chapter in my life.  
Dr. Tamoghna Saha, BAU, Sabour  
Dr Shrivanthi, YSRHU, MRS, Nuzvid
- “ It is said that time flies and I could experience that in the last 21 days. It seems like yesterday that we met as strangers in the lovely campus of NBAIR and now after 21 days we are carrying back home memorable moments and many new friends. Many thanks to Mohan sir and his team of experts for making the sessions interesting and enriched with knowledge.  
Dr Simly Das, OUAT, Kalahandi







