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29. Taxonomy and diversity of pest populations

Organizers: Mukesh Dhillon and Mamta Sharma

Lead

O29-1. Genetics of diapause in spotted stem borer, *Chilo partellus* (Swinhoe)

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Diapause is an endocrine controlled arrested metabolic activity to delay development or reproduction under unfavorable conditions. To gain an understanding on importance of diapause for ecological adaptation, it is important to study diapause regulation in insects. We examined genetics of diapause in *Chilo partellus* using five parental populations viz., hibernating (HD), aestivating (AD), post-hibernating (PHB), post-aestivating (PAB), and nondiapause (ND) for making crosses in all possible combinations including reciprocals in a diallel fashion. Data were recorded on fecundity, egg hatching, larval survival, diapause induction and termination and adult emergence in the parents (P1, P2), F1 hybrids, and the reciprocal crosses. Genetic analysis showed that AD strain is general combiner, which also improved egg hatching, larval survival, diapause termination and adult emergence. The HD strain increased incidence of diapause in F1 hybrids. Incidence of diapause was highest in HD × AD, whereas termination was greatest in PHB × AD. However, ND strain and its reciprocal crosses with other strains did not exhibit any noticeable developmental response associated with diapause. Specific combining ability analysis revealed that pre-existence of PHD and ND or AD and PAD populations under unfavorable conditions might result in drastic reduction in active population, while co-existence of PHD and AD populations might reduce diapause incidence, increase survival and faster multiplication of their progenies resulting in outbreak of *C. partellus*. Degree of dominance estimates revealed that diapause and associated traits in *C. partellus* are governed by overdominance gene effects, and mainly depends on parental diapause history.

Invited

O29-2. Dire need of biodiversity studies in the midst of "sixth mass extinction": challenges in Indian pretext with vivid examples

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The dreadful climate change is leading to 'biological annihilation' at a very rapid rate in this Anthropocene era. As presumed, this impact is going to be harsher and more rapid in tropical regions. Apparently, the biodiversity is well studied, documented and preserved in the west than in India. We are already in the midst of "sixth mass extinction" without even having the knowledge of what and how many species are getting extinct or getting evolved! Current knowledge on many taxa from India is diminutive when compared globally. For instance, Braconidae- the second largest family of wasps though of enormous agricultural and ecological importance, remains poorly documented. The arbitrary global diversity estimates of total valid species described to date is 18,000. Perhaps barely 3,000 species are known from Asia (tropical), approximately 1,100 species from India, as compared to 17,000 species from Africa and 11,000 species from the Neotropics. In this deplorable scenario, are we in a position to ascertain species dynamics and interactions of the lost ones when we were totally unaware about their existence! This presentation would highlight how