



National Symposium on

Entomology 2022: Innovation & Entrepreneurship
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Invited Speakers and abstracts of their Talk

VI. Insect Physiology, Genetics and Molecular Biology

Dr. R Asokan

Principal Scientist, IIHR, Bengaluru, INDIA

Title of the talk

“Insect Genome Editing for Pest Management”

Abstract

Genome editing mediated by programmable CRISPR/Cas system is a new, emerging technology that holds great potential in developing genetic pest management strategies via precision guided sterile insect technique, genetic improvement of pollinators, natural enemies etc. The seemingly innocuous prokaryotic immunity has now been translated into a mammoth site-specific editing technology for its use in medical, agricultural, diagnostic fields etc. Until recently most of the genome editing work dependent on RNA directed site specific cleavage by Cas9 enzyme following error prone non homologous end joining (NHEJ). Recent developments of improved editing systems like base editor and prime editor have changed the site-specific random mutations to obtain site-specific specific mutations which do not require a double stranded break. Similarly, many engineered Cas9 variants and other Cas proteins belonging to different classes and types improved the existing editing tool box. Currently efforts are being made to design and implement suitable gene drive methods for various pests to realize the potential of genome editing.