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REVISED TARGETS AND TOOLS IN IPM FOR INSECT PESTS OF COTTON IN INDIA

In India, adoption of Bt cotton to contain bollworm menace has seen dramatic increase from 0.038 to >113 mha just in 15 years. Being largest grower of Bt cotton hybrids expressing *CryIAc+CryIIAb* toxins, striking benefits of bollworm suppression (>95%), insecticide usage reduction (60-100%) against bollworms and yield advantage (>50%) have been harnessed. The reduction of synthetic pyrethroids and organophosphate insecticides after introduction of BG-II Bt cotton hybrids has led enhanced infestation of non-target insect pest species in India and elsewhere. The target pests of bollworm complex and sucking pests viz., thrips, leafhoppers, aphids and whiteflies before introduction of Bt cottons. The present day key target pests are mealybugs (*Phenococcus solenopsis*, *Paracoccus marginatus*), mirid bug (*Creontiades biserrata*), and flower bud maggot (*Dasineura gossypii*). These pests affect fruiting structures and cause >60% loss urging for insecticide application atleast twice. Other major problem is neonicotinoid resistance in sucking pests particularly in leafhoppers. Imidacloprid resistance is widespread and upto 2000 folds. Survival of pink bollworm (PBW) in Bt cottons is also causing an issue. Thus cotton pest management has new targets now which need revised tools in integrated pest management (IPM) for sustained profit. The ideal approach include: avoiding seed dressing with neonicotinoids; new chemistry for sucking resistance management (flonicamid, pymetrazine); high efficacy bio-molecules and insect pathogens are essential for effective management of leafhoppers, thrips, whiteflies. Location specific management of mites, shoot weevil is also essential. Development of pheromone based and colour traps, biotech tools viz., RNAi and host plant resistance are tools to avoid insecticides being used against miridbugs, flower bud maggots and mealybugs. Parasitoids and sterile insects also have logical place in revised IPM

Biography

Shashikant S Udikeri is Principal Scientist (Cotton Entomology) at University of Agricultural Sciences, Dharwad, India having 20 years of experience in cotton pest management research. He is PhD from UAS, Dharwad and Postdoc Fellow of Rothamsted Research, UK. He was Visiting Fellow of Indian National Science Academy, New Delhi to Iran. With rich experience, 28 plant protection technologies have been developed by him in cotton insect pest management. Area wide management of cotton insect pests through IRM project as State Co-ordinator over decade is his major dent. About six adhoc projects have been successfully operated by him. Insecticide resistance and emerging insect pests are his focus in research. He has much toured has a lot of international exposure, and chaired Plant Protection Session in World Cotton Research Conference-6, held at Goiania, Brazil during May/ 2016. During 2012, he could attend International Congress of Entomology at Daegu, South Korea as Invited Speaker for IPM symposia. He guided 12 PG students in Entomology and Molecular Biology so far besides involving regular teaching programmes at College of Agriculture, Dharwad and Vijayapura. He is Elected Follow of Royal Society of Entomology UK, Royal Society of Biological Sciences UK, Entomological Society of India and member of many more professional bodies. He has about seven awards for his credit. With about 90 peer reviewed papers and 62 conference presentations he has Google scholar h-index of 14 and RG score 38.

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