

Research Paper :

Field evaluation of *Micromus igorotus* banks (Neuroptera: Hemerobiidae) for the management of sugarcane woolly aphid, *Ceratovacuna lanigera* Zehntner

VIDYA MULIMANI, S. LINGAPPA, R.K. PATIL AND G.K. RAMEGOWDA

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SUMMARY

Sugarcane woolly aphid (SWA), *Ceratovacuna lanigera* Zehntner, appeared in an epidemic form in Southern Maharashtra and Northern Karnataka, India during 2002 and biological control of pest with the potential predator, *Micromus igorotus* Banks was found to be dependable remedy. Preliminary studies were conducted under confinement in sugarcane crop from January to December, 2004-05 by erecting the nylon net of 5 x 5 x 4 m. Severity of SWA was reduced to grade one within 30 DAR of predator during June – August and October – December. On the contrary, further 30 days were required to reduce to same level during January – March. Under open field condition, predator (*M. igorotus*) pupae were released @ 500, 1,000 and 1,500 per ha. Studies on predatory dosage, level of incidence and gestation period for suppression of SWA to desired level indicated that there exists choice in altering the dosage depending on severity of aphid incidence, age of the crop and gestation period targeted for suppression of pest. Augmentation of 500 pupae/ha was adequate to suppress the pest in 90 days when it was prevalent at grade 2 – 3 on 6 – 7 month crop during June – November. To reduce the gestation period and thus to prevent growth and loss of cane, release of 1000 pupae/ha on 6 – 7 months crop infested with SWA at 3 – 4 grade ensured the suppression of the pest in 60 days after release (DAR) in June – November. A dosage of 1500 pupae/ha proved effective to lower the SWA incidence from severe state of grade 5 – 6 on crop of 6 – 7 months in 30 DAR during June to November. In all the field release studies, native population of SWA predator assisted the augmented population.

See end of the article for authors' affiliations

Correspondence to :
VIDYA MULIMANI
AICRP, on Cashew
Agricultural Research
Station, UAS (B),
Chitamani,
CHIKKABALLAPUR
(KARNATAKA)
INDIA

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Natural enemies are key mortality factors of insect pests devouring field crops, much before the invention of artificial measures of pest control, specially chemical toxicants. Use of toxicants, while providing temporary relief from insect pests, disrupted the ecological balance by killing natural enemies. In situations, where this interaction is disrupted, potential insect pests are relieved from the constraints imposed by their natural enemies and therefore, unhindered population growth lead to pest outbreak.

Insects also become enemies when dissociated from their natural enemies due to habitat modification that differentially favour the pest, egg., habitat simplification. Use of natural enemies in pest management is mainly concerned with redressing the imbalance that has occurred through this disassociation, either by reintroducing natural enemies into the system or by trying to recreate conditions where an association can occur.

In sugarcane, biological control occupies a pivotal position in insect pest management.

Similarly for the management of sugarcane woolly aphid, *Ceratovacuna lanigera* Zehntner, which appeared suddenly in an epidemic form in Southern Maharashtra and Northern Karnataka during 2002, biological control appears to be the potential and dependable remedy. Solitary and the first report of *Micromus igorotus* Banks in India by Lingappa *et al.* (2004) as a most potent and amenable predator for mass production and utilization in SWA management paved way for undertaking this investigation in an effort to provide effective and sustainable biocontrol technology. This neuropteran belonging to family Hemerobiidae was encountered commonly in SWA infested fields in Northern Karnataka.

MATERIALS AND METHODS

Under confined condition:

Preliminary studies were conducted to know the impact of *M. igorotus* release on SWA suppression under confinement. In the first year, trials were conducted in sugarcane crop of six to seven months old under differential

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