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Reduviid Bug - An Effective Natural Enemy

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SUMMARY

One living thing is the food for another, is a rule of nature. According to the same, the natural enemies of every pests play a significant role in maintaining the pest population. But the indiscriminate use of chemical pesticides in farming business have hampered a lot on natural enemies, who were actually the pest controllers in the field. Therefore, now a days Biological control of pest is focused so as to get rid of chemicals and their effects on environment. Reduviid bug is amongst those natural enemies who are obligate entomophagous predators which have high capacity and efficiency in killing the various types of pests occurring in the crops. Their conservation in the ecosystem can save efforts of farmers against pest control.

INTRODUCTION

Since twentieth century, agriculture has been revolutionised by growing high yielding varieties, where crop protection was started being relied upon synthetic chemical pesticides. During the period, in 1962 an American scientist Rachel Carson wrote a book named "Silent Spring" wherein she casted the harmful effects of synthetic chemicals on environment. However, increased and indiscriminate use of pesticides created a number of problems like resistance in insect to insecticides, rapid resurgence of minor pest, creation of new pest problems, environmental pollution, health hazards, toxic residue in food, fibres and fodder crops. This all ultimately lead human to deadliest diseases like cancer. But unintentionally, a huge injustice happened with 'The Natural Enemies'.

Actually every pest has its natural enemies in the ecosystem. But the in discriminate use of pesticides trammelled the balance of nature. Later, learning from experiences and researches, we moved on to Integrated Pest Management (IPM) practices for pest control, so as to reduces excess cost incurred on pesticides by farmers and provides ample food for natural enemies to survive in the ecosystem. Among these tactics, use of bio-control agents constitute one of the major component of IPM. Now a days, about 150 different species of insects have been used as natural enemies of crop pests. One of this natural enemy species is Reduviid Bug.

Reduviid Bug

Throughout the world, about 7000 species of reduviid bug have been identified. Out of which, 96% species are predators of insects with hunting habit, whereas others are nectar feeders. Some of the predator species had been used in biological control of pests after successful scientific evidences. National Institute of Plant Health Management (NIPHM), Hyderabad have suggested use of Reduviid Bug species named *Rhynocoris marginatus*. It is a polyphagous assassin bug normally found in semi-arid zones, tropical, scrub and evergreen forests in many parts of the world. According to research, it is a natural predator of more than 44 pests of agro-ecosystem without making harm to human and other natural enemies (Sahayaraj, 2014). The insect pests having soft outer body cuticle are prey for reduviids. Bugs have proboscis with adapting feeding mechanism consisting sharp mandibular stylet that helps to pierce through the soft cuticle of prey. Reduviids release proteolytic saliva into the body of

prey at the time of piercing and sucks the inner body content. The prey experiences a huge pain after a bite, even if reduviid doesn't suck its body content (Smith, 1966). In such a harsh way, a single reduviid can kill about 30 to 40 larvae of insects throughout its life (George, 1999). The reason why reduviid can feed such more number of prey is their increasing hunger with respect to life stage. Eventually, bio-control potential of any natural enemy is evaluated based on its prey preference, hunger, reproductive potential and capacity to acclimatize in new environment and reduviids are found enormously well in all these stipulations of evaluation.

Nymph of Reduviid Bug (feeding on caterpillar)

Adult of Reduviid Bug

Eggs of Reduviid Bug

How to utilize Reduviids in field

Conservation and augmentation of reduviid bug has been found effective in pest management strategy. Augmentation of reduviids in the field can be done by releasing egg masses or 5000 nymphs of 3rd and 4th instar per hectare. Reduviids are recommended by NIPHM, Hyderabad as a successful bio-control agent. In laboratory, reduviids are reared on artificial diet as well as several types of caterpillars of insects.

Significance of Reduviid bugs

- Reduviids can kill not only leaf eating and fruit boring caterpillars but also some sucking pests found on crops (Sahayaraj *et. al.*, 2016).
- Reduviids have capacity to kill more number of insects than several other natural enemies (George, 1998).
- Reduviid bugs are much resistant to many inorganic, organic pesticides and biopesticides too.
- Both nymphs and adults of reduviids are predacious.
- Reduviids can survive for 2 to 3 months in the field and reduces the pest population significantly.
- Reduviid bugs can be very useful bio-control agent for kitchen gardens as they can kill pests of several crops.

CONCLUSION

Conservation and augmentative release of Reduviid predators in local agro-ecosystem can enhance the efficiency of Biological Pest Control as well as Integrated Pest Management.

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