

## NEW RECORD OF *COCCINELLA TRANSVERSALIS* F. ON BUSHY LAC HOST, *FLEMINGIA SEMIALATA*

The most common Indian lac insect of commercial importance is *Kerria lacca* (Kerr) thrives well on tender twigs of specific host plants called lac hosts. Of the more than 400 plant species reported as lac hosts, lac insect is commercially cultivated on *Schleichera oleosa* (*kusum*), *Butea monosperma* (*palas*), *Ziziphus mauritiana* (*ber*) and *Flemingia semialata* (Sharma *et al.*, 1997). *Flemingia semialata* is a leguminous plant and has been identified as potential quick growing bushy lac host suitable for intensive lac cultivation. *F. semialata* is a native of Nepal and distributed in India, Pakistan and Bhutan. Owing to its merits, organized plantations of *semialata* are increasing year by year in potential lac growing tracts of the country for lac cultivation.

The ladybird beetles are of great economic importance as their both larval and adult stages are predaceous on various important crop pests such as aphids, coccids and other soft bodies insects including aphids (Hippa *et al.*, 1978). Of these the species *Coccinella transversalis* feed on many species of aphids (Mani, 1995). The occurrence of this beetle in lac production system was recorded for the first time on lac culture and inflorescences of *Flemingia semialata*, which is discussed herein.

The *kusmi* winter season (*aghani*) lac crop was raised on *Flemingia semialata* at Indian Institute of Natural Resins and Gums (IINRG) Research Farm, Ranchi, Jharkhand. For raising the crop, the broodlac was inoculated @ 40-50 g per plant during the month of July, 2013. All the cultural operations were carried out as per package and practices of the IINRG, Ranchi. Plant shoots were regularly monitored for proper settlement of lac insect. Used-up broodlac sticks were removed as soon as larval emergence/ settlement was over. Flowering of *F. semialata* starts during November and seeds mature during April.

During the later stage of lac crop growth during December, 2013 and emergence of inflorescences on *F. semialata* plants, occurrence of beetle was observed in good numbers on lac encrustation as well as on inflorescences. The adult beetles were collected manually, brought to the laboratory, preserved and sent to National Pusa Collection, Division of Entomology, Indian Agricultural Research Institute, New Delhi for identification.

The occurrence of adults of *Coccinella transversalis* was recorded for the first time in lac production system on lac encrustation as well as on inflorescence of *Flemingia semialata*. The adults of this predator appeared on *kusmi* lac crop raised on *F. semialata* during the later stage of crop growth, it is unlikely that it predate on lac insect after the formation of thick cell over its body. The occurrence of this predatory beetle was not observed in early stage of crop growth period. It might be due to application of insecticides on lac crop during the early stage of crop growth period for the management of predatory insect *viz.*, *Eublemma amabilis*, *Pseudohypatopa pulvereae* and *Chrysopa* spp. of lac insect, *Kerria lacca* (Kerr).

Transverse ladybirds are medium in size ranging about 4-6 mm in length; the transverse ladybird shows little variation across its wide range. It has a black head with predominantly bright red or orange elytra. Ladybirds are active during the day. Both adults and larvae are predators of soft-bodied insects, such as aphids. Larva is greyish brown in colour with dark markings with medium length walking legs. Plants that attract aphids and other insect prey are the best habitat for the beetle. Transverse ladybirds lay eggs on food plants. The eggs hatch into carnivorous larvae, and then pupate into oval pupae before hatching out as adults.

The occurrences of adult Transverse ladybirds were observed on lac encrustation and inflorescences of *semialata* during last week of December, 2013 and persist up to 20-25 days i.e. up to third week of January, 2014. The population of beetles varies from 2-8 per plant and the occurrence of beetles were observed on about 50-60% of the lac cultured *semialata* plants. It appeared that the adult beetles were attracted for feeding on honey dews as at the later stage of crop growth relatively more honey dews are secreted on lac encrustation by the lac insect and honey dews has also been observed on inflorescences of the plants. The population of beetles dwindles after the rain perhaps due to washing of honey dews secreted by lac insect on lac encrustation as well as on inflorescences and reappeared after 2-3 days after rain is over.

Like many species of ladybirds, the transverse ladybird plays an important role in agriculture as it preys on a wide array of plant-eating insects which damage crops, particularly early in the growing season [Entomology

Team (Field Crops) (10 February 2010)]. Poorani (2007) reported those insects hunted by *C. transversalis* include many species of aphids, including the pea aphid (*Acyrtosiphon pisum*), *Aphis affinis*, cowpea aphid (*Aphis craccivora*), cotton aphid (*Aphis gossypii*), milkweed aphid (*Aphis nerii*), spirea aphid (*Aphis spiraeicola*), leafcurling plum aphid (*Brachycaudus helichrysi*), cabbage aphid (*Brevicoryne brassicae*), *Cervaphis quercus*, *Cervaphis rappardi indica*, turnip aphid (*Lipaphis pseudobrassicae*), *Macrosiphoniella yomogifoliae*, potato aphid (*Macrosiphum euphorbiae*), rose aphid (*Macrosiphum rosae*), *Melanaphis donacis*, *Melanaphis sacchari*, *Myzus nicotianae*, green peach aphid (*Myzus persicae*), *Pentalonia nigronervosa*, corn aphid (*Rhopalosiphum maidis*), *Sitobion rosaeiformis*, *Taoia indica*, *Toxoptera aurantii*, *Therioaphis ononidis*, *Therioaphis trifolii*, *Uroleucon compositae* and *Uroleucon sonchi*, species of leafhopper including *Empoasca indica* and *Idioscopus clypealis*, the scale insect species *Orthozia insignis*, the Asian citrus psyllid (*Diaphorina citri*) and owlet moth species the cotton bollworm (*Heliotherpa armigera*) and oriental leafworm moth (*Protophthera litura*).

We have not observed occurrence of *C. transversalis* on lac culture during early stage of lac development as well as any predatory activity of beetles on lac insect during later stage of development. During later stage of lac crop growth period, lac insect

secretes relatively more honey dew over lac encrustation which is a major source of fungus infestation on lac culture leading to low yield and some time crop failure when infestation is severe. Conceivably, this beetle is attracted towards honey dew for feeding on them; it may be beneficial by reducing the source of fungal infestation on lac culture.

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