

SHORT NOTES

NEW RECORD OF FUNGI ASSOCIATED WITH INDIAN LAC INSECT *KERRLA LACCA*

Indian lac insect, *Kerria lacca* (Kerr), an economically important insect is cultivated on many lac-host plants for products of commercial importance viz., resin, wax and dye. But the lac insect is prone to attack of various pests. In addition to the damage caused by insect pests, lac crop yield suffers significant losses due to other biotic agents particularly fungi. Das *et. al.*, (1986) have reported that application of fungicides bavistin (carbendazim, 0.05%) and dithane M-45 (mancozeb, 0.18%) by both dipping and spraying resulted in significantly higher yield of lac. Avoidable losses due to fungi alone were observed to be 40.9% to 59.8% in *kusumi* strain of lac insect. Similarly Mishra *et. al.*, (1997) have reported significant reduction in mortality (75.05% - 88.41%) of second instar lac nymphs with application of different concentrations of carbendazim (Bengard) and aureofungin on *Kusumi* strain of lac insect. Lac culture during rainy season is prone to fungal attack particularly when grown on Kusum, *Schleichera oleosa* due to its shady and spreading crown. Interestingly, no records are available from India on association of fungi with lac insect though indirect evidences clearly suggest so. Hence the study was initiated to locate fungal infection on lac and get it identified.

Samples of lac sticks were collected at random from natural population of lac insects cultured on *Schleichera oleosa* (*Kusum*) and *Flemingia macrophylla* (*Bhalia*) during rainy season crop. Fungal infected lac cells were utilized to prepare pure and sporulating slants in potato dextrose agar medium and were identified at Indian Agricultural Research Institute, New Delhi.

Three species of fungi belonging to family Eurotiaceae / Aspergillaceae viz., *Aspergillus awamori* Nakazawa, *Aspergillus terricola* Marchal and *Penicillium citrinum* Thom (syn. *P. aurifluum* Biourge) have been identified so far. Though Malhotra (1991) have reported two species of fungi namely *Conidiocarpur* (syn. *Podoxphium conidioxiphium*) and *Polychaeton* sp. causing 30-40% damage to lac insect in Vietnam; and 11 species of saprophytic pathogenic fungi causing dark mildew on lac insect have been reported from China by Shaoji (1993), association of the three fungi with lac insect reported here is a new record from India. Lac insects have also been reported to have mutualistic with fungi (Mahdihassan cited by Steinhouse, 1947).

Being phytosuccivorous in habit, lac insects excrete large quantity of honeydew (Varshney, 1972) which is a major cause of contamination by fungi. The earliest record of honeydew which drips from colonies of lac insects on the twigs of host trees inviting black mould species of *Capnodium* and *Fumago* is that of Lindsay and Harlow (1921). *Aspergillus awamori* (Fig.1) and *Penicillium citrinum*, black and greenish in colour, respectively were observed to make a continuous cover on lac insect culture, thereby blocking their breathing pores and ultimately mortality of lac insects. *P. Citrinum* has also been reported to attack larvae of carpenter worm, *Cossus cadambae* (Mathew and Mohamed Ali, 1987) and adults of *Corythucha ciliate* (Marletto and Minardo, 1984). As the honeydew excreted through anal tubercle often gets accumulated

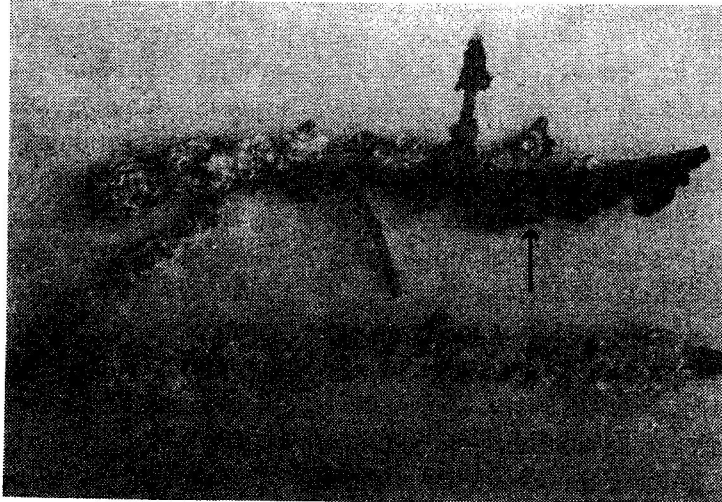


Fig. 1 : Thick black sheet-like covering formed by *Aspergillus awamori* over lac encrustation on *Schleicheria oleosa* (Kusum)

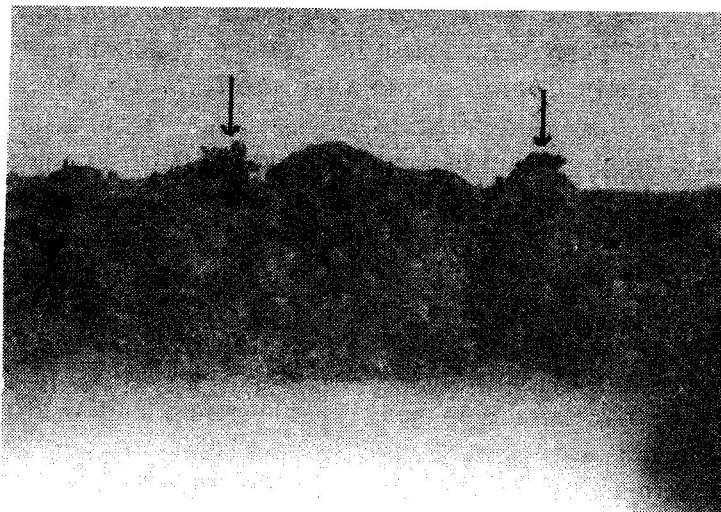


Fig. 2 : Lac stick of *Flemingia macrophylla* (Bhalia) showing *Aspergillus terricola* growing over anal opening where its developing hyphae embed the anal tubercle of lac insect

at the anal opening, the hyphae of *Aspergillus terricola* growing on it (Fig. 2) traversed the whole length of the anal tubercle and blocked it. Since anal tubercle also serves as an opening for mating and larval emergence, the young ones hatched from eggs remained trapped inside the hatching chamber and died within.

It is clear from the foregoing account that fungal infection in lac cultures causes severe losses in lac yield by i) killing the lac insect by inhibiting respiration, ii) hindering mating process, iii) blocking larval emergence and iv) affecting lac-host efficiency. The problem merits attention to further study the extent and nature of damage caused by microbial pathogens for devising effective control strategy and preventing losses.

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Division of Transfer of Technology
Indian Lac Research Institute,
Namkum, Ranchi - 834 010

K. KRISHAN SHARMA
 A.K. JAISWAL
 K.K. KUMAR

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