

18. NEW RECORDS OF NITIDULID AND RHIZOPHAGID BEETLES ON MAIZE COBS IN THE U.P. TARAI

During a survey of maize crop in the years 1966-68 at Pantnagar and the adjoining areas of Tarai, larvae of some Nitidulid and Rhizophagid beetles were seen feeding on maize cobs, on and between the grains from the tip to the butt end. Such cobs gave a very offensive smell, making them unfit for marketing. The larvae which were collected and reared on healthy green cobs were identified as of *Carpophilus obsoletus* Er., *C. mutilatus* Er. and *C. marginellus* Mots (Nitidulidae : Coleoptera) and *Europs depressus* Gouv. and *Haptoncus (Epuraea) luteolus* (Er.) (Rhizophagidae : Coleoptera).

Carpophilus spp. and *Haptoncus* spp. have long been known to lead a saprophytic existence. In general they feed on decaying fruits and other plant parts as well as on the fermenting 'sap flows' of many tree species, on animal matter and raw sugar. The insects have also been recorded as pests of stored cereals, peanuts, dried maize, sesamum, maize cobs and dried fruits. Lefroy (1909) recorded *C. dimidiatus* var. *mutilatus* Er. on borer holes of canes and sorghum and on the flowers of cotton. Agrawal (1958) reported *C. mutilatus* and *Haptoncus luteolus* (Er.) as occurring in large numbers beneath the leaf sheath on sugarcane and feeding on the sap which oozed due to the feeding of the sugarcane mealy-bug, *Saccharicoccus sacchari* (Ckll.). The beetles were always found associated with the mealy-bugs and were attracted by the sap but caused no apparent damage. In the Pantnagar and surrounding area they cause light to moderate damage to the grains of maize. The cobs whose sheaths were destroyed by birds or those not fully covered with the sheath, were mostly damaged. It is probable that the maize grains in the milky stage attract beetles for feeding and breeding.

We have not come across any reference to these beetles as pests of maize in India and perhaps this is the first record. Other Nitidulids namely, *Carpophilus lugubris*, *C. humeralis*, *C. freemani*, *C. hemipterus*, *Glischrochilus fasciatus* and *G. quadrisignatus quadrisignatus* including *Carpophilus marginellus* have been reported as pests of sweet corn under field conditions in North Carolina, U.S.A. (Daugherty & Brett 1966).

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19. A CONVENIENT METHOD OF REARING TIGER BEETLES (COLEOPTERA : CICINDELIDAE) IN THE LABORATORY FOR BIOLOGICAL AND BEHAVIOURAL STUDIES

The authors have been making observations on the biology and behaviour of the tiger beetle, *Cicindela cancellata* Dej., and in this connection, the following rearing method was found to be very satisfactory.

A glass specimen jar, 20×20×40 centimetres is used as the rearing jar. It is filled with washed sand which has been sifted through a wire gauze with about 36 meshes per square centimetre, to a height of about thirty centimetres. The sand is kept moist by sprinkling about 100 ml of water twice a week regularly. The jar is preferably placed on a table in an open verandah so that it may be exposed to direct sunlight at least once a day, in the forenoon or in the afternoon. The observations of the authors suggest that a certain amount of strong and direct sunlight is necessary for the normal life and activities of tiger beetles.

The jar is provided with a lid of plastic gauze with about 49 meshes per square centimetre, fixed on a heavy wooden frame. Plastic gauze is preferred to wire gauze which will go rusty in course of time due to sprinkling of water through it. A gauze of fine mesh is selected in order to prevent the escape of small insects which are offered to the beetles and their larvae as food. The gauze-lid also serves the purpose of a ventilator and also prevents excessive humidity and moisture in the sand.

About a dozen adult tiger beetles including both sexes are introduced into each jar. They are offered as food, nymphs of grasshoppers, bits of grasshoppers and leafhoppers collected with a sweep-net over grass. Once in two days, the surface of sand in the jar should be cleaned by removing the remains of dead food-insects and dead beetles. The



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