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STUDIES ON NATURE OF DAMAGE OF FRUIT FLY *BACTROCERA ZONATA* ON MANGO

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Abstract: Female of *B. zonata* damage the matured fruits (nearer to the ripening stage) of mango, by puncturing them with the help of sharp ovipositor and lay eggs inside the fruits. Female fruit fly laid 3-11 eggs inside the fruit tissues by inserting the sharply pointed ovipositor. Due to the oviposition puncture, sticky substance oozed out from the puncture which later on dried up and dark brown spots appeared on the fruit surface. The infested fruits were unfit for human consumption.

Index terms: *Bactrocera zonata*, Ovipositor, and Ripening

INTRODUCTION

Mango (*Mangifera indica*) occupies a pride place amongst fruits grown in the country. The mango which belongs to family Anacardiaceae is an important tropical and sub-tropical fruit crop. It is grown in India for more than 4000 years (Candolle, 1904). It can be grown in almost all part of country except in temperate zone.

Among the fruits of universal importance, mango is one of the top, because if it's sweet fragrance, attractive colour, high palatability, taste and quality being rich in sugar, Vitamins (Vitamin –A and Vitamin-C) and minerals. It is rightly referred as "KING OF FRUITS".

Fruit fly is an important pest of mango belongs to family Tephritidae and order Diptera. These are commonly called "Fruit fly" due to their close association with fruits. Kapoor (1970) listed 128 species of fruit flies and out of these, eight species are found infesting mango fruit in India. These species are *Bactrocera zonata* (Saunders), *Bactrocera dorsalis* Hendel, *Bactrocera correctus* (Bezzi), *Bactrocera diversa* (Coquillet), *Bactrocera hageni* De majiere, *Bactrocera cucurbitae* (Coq.); *Dacus incises* Walker and *Dacus tau* (Walker).

NEED OF THE STUDY

The adult female fruit flies insert the ovipositor inside the fruits and eggs are deposited in clusters. Dark puncture caused due to the oviposition. Maggots on hatching, feed on the pulp and brown patches appear on the fruit surface. Later on the fermenting organisms like bacteria and fungi gain entry through the oviposition puncture and fruit start rotting. Due to this, mesocarp become dirty brown and finally fruit drop down. Pupation took place in soil.

Looking to the apparent importance of the pest the investigation was carried out to study nature of damage of fruit fly *Bactrocera zonata* on Mango.

REVIEW OF LITERATURE

In Baluchistan (Quetta), Janjua (1948) reported that of *D. ferrugineaus* (dorsalis) infesting mango and guava fruits, when the fruits are about to ripen. The fly punctures the fruits with its sharp ovipositor and lays eggs inside the fruit tissues. The maggots feed on the pulp of fruit later on, fruit rotted and become unfit for human consumption.

According to Shah *et al.* (1948), the adult female laid eggs inside the mango fruits by inserting its sharp ovipositor. Further, they mentioned that, puncture is recognised by a dark spot on the fruits and can be visible on pale yellow varieties of mango after 2 to 3 days. Maggot's feeds on the pulp of fruit inside and due to feeding, brown rotten patches appeared on the fruit surfaces.

Atwal (1976) reported that fruit fly; *D. zonatus* laid eggs just under the skin of fruit in groups of 2-9 eggs and later on the place of oviposition is marked by resinous secretion.

Butani (1979) and Puttarudriah (1983) reported that the eggs of *D. zonatus* were laid below the epidermis of fruits in clusters of 2 to 10 eggs and affected fruit showed dark coloured punctures through which, juice oozes out and show the rotting of fruits.

Kapoor (2000) observed that fruit fly , *B. zonata* laid their eggs under the soft rind of fruit in clusters of 3 to 12 eggs and insertion of ovipositor causes wounds on fruits which exude the fluid and this droplet later on appear like a brown resinous deposit.

RESEARCH METHODOLOGY

The fruits of mango were observed critically in the field as well as in the laboratory for studying the nature of damage of *B. zonata*.

RESULTS AND DISCUSSION

During the field and laboratory study, it was observed that female of *B. zonata* damage the matured fruits (nearer to the ripening stage) of mango, by puncturing them with the help of sharp ovipositor and lay eggs inside the fruits. Female fruit fly laid 3-11 eggs inside the fruit tissues by inserting the sharply pointed ovipositor. Due to the oviposition puncture, sticky substance oozed out from the puncture which later on dried up and dark brown spots appeared on the fruit surface. When the eggs hatched, tiny maggots start feeding on the pulp of the fruit. Due to feeding on the pulp, the appearance of the fruit changes and rotting of fruit takes place. The full fed maggots move from centre to the peripheral part of fruit where small oviposition marks were present. At the time of oviposition, female fruit fly made some true puncture where the eggs were deposited. But, at the same time, some false puncture called 'pseudo-puncture' were also made by the female fly, Which helps the full grown maggots to came out easily through that small holes. Later on, it becomes larger in size due to rotting of the fruit skin. During this process, the full grown maggot curves it's body and bring the two ends of the body together, the inwardly curved oral hooks were then fixed in a depression below the anus and with a sudden jerk the body is straightened. This habit helps full grown maggots to come out from the fruit for pupation in the soil. The infested fruits were unfit for human consumption.

The observation of present study is in accordance with the findings of Janjua (1948), Shah *et al*. (1948), Atwal (1976), Butani (1979), Puttarudriah (1983) and Kapoor (2000). They mentioned that, female fruit fly lay eggs inside the fruit tissue with it's sharp ovipositor and insertion of ovipositor causes wounds on fruits and exude fluid, which later on appeared like dark brown spot and fruit shows rotted symptoms.

REFERENCES

[1] Atwal, A.S. 1976. Agricultural pest of India and south –East Asia. Kalyani Publisher, Ludhiana: 189-190.
[2] Butani, D.K.1979. Insect and fruits. Periodical Expert Book Agency, Delhi: 297-299.
[3] Candolle, De.(1904). Origin of cultivated plants. Kegal plant trench and co., London.
[4] Janjua, N.A. 1948. The biology of Dacus (Strumeta) ferrugineus (Fab.) (Trypetidae : Diptera) in Baluchistan. Indian J. Ent. , 10: 55.
[5] Kapoor, V.C.2000. IPM system in Agriculture, Fruit flies (Diptera: Tephritidae) : Status, Bioecology and management strategies (Vol. 7). Aditya Book Pvt.Ltd. New Delhi: 123-142.
[6] Shah, M.I.; Batra, H.N. and Renjan, P.L. 1948.Notes on the Biology of Dacus (Strumeta) ferrugineus Fabr. And other fruit flies in the North-West Frontier Province. Indian J.Ent. 10: 249.
[7] Puttarudriah. 1983. Fruit crops, a guide for cultivation and protection of important crops. S & V Rangaswamy and Co. Ltd, : 726-727.