COMPARATIVE TOXICOLOGICAL AND BIOCHEMICAL STUDIES OF SOME INSECTICIDES AND ENTOMOPATHOGENIC AGENTS ON THE PEACH FRUIT FLY, *BACTROCERA ZONATA*(SAUND.)

(DIPTERA:TEPHRITIDAE)

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﴿قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا
إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ﴾

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The peach fruit fly, *Bactrocera zonata* (saund.) (Diptera: Tephritidae) is one of the most harmful species of Tephritidae. It causes a large amount of damage in Asia **(Agarwal *et al*., 1999**), and it is a serious pest of peach *Prunus persica* L. (Annonaceae) in India (**Grewal and Malhi, 1987**), as well as guava *Psidium guava* L. (Myrtaceae) and mango *Mangifera indica* L. (Anacardiaceae) in Pakistan (**Sayed *et al*., 1970).** It is a polyphagous species attacking about 40 species of fruits and vegetables (**White and Elson-Harris, 1992)** and also has been recorded from wild host plants of families Euphorbiaceae, Lecythidaceae and Rhamnaceae (**Kapoor and Agarwal, 1983**).

According to **FOA/IAEA** report **(2000),** the economic loss of *B. zonata* infestation to horticultural plantfruits was estimated as 190 million EUR/ year in Egypt. The pest is present in numerous countries of tropical Asia, India, Indonesia, Laos, Serilanka, Vitenam and Thailand (**White and Elson-Harris, 1992**). Also, *B. zonata* is present in Buma, Nepal, Bangladesh and probably all of South East Asia (**Kapoor, 1993**)

The peach fruit fly, *B. zonata* was recorded in Egypt in 1924(**Efflaton, 1924)**, but it hasn't any distribution before the 90's of 20th century. **Hashem *et al.* (2001)** mentioned that this pest infested mango, apple, guava and citrus in Egypt, and they added that the population increased gradually with fruiting and riping. **El-Minshawy *et al*. (1999**) mentioned that larvae of *B. zonata* were found seriously in Alexandria. **El-Samea and Fetoh (2006)** found that potato tubers which were collected from Giza Governorate, Egypt during 2004 were infested by *Bactrocera zonata* and this record was considered the first report of this pest in Egypt.

Recently, **El-Aw *et al.* (2008)** stated that the peach fruit fly, *B. zonata* is a newly recorded species in Egypt last decade. For an attempt to control the horticultural pests, insecticides have been widely used and extensively produced. Accordingly, the large scale use of toxicants against several agricultural pests including the peach fruit fly, *B. zonata* has frequently led to the development of insect strain resistance to many insecticides which were designed for their controlling.

Resistance to chemical insecticides is wide spread among a large number of insect species. Detoxification of insecticide by metabolism is the common mechanism that has evolved to protect insects (**Price, 1991).** Early detection of insecticide resistance provides a basis for the management of resistant pest populations **(El-Zen *et al.*, 1992**). Development of resistance countermeasures depend on nature, frequency and evolution of resistance mechanisms in field populations of pest insects **(Brent, 1986).** Rapid biochemical assays are potential tools for estimating the intensity and the frequency of resistance in the field **(Brown and Brogodon, 1987).**

Management of *B. zonata* can be targeted at two general areas: preventing infestation of the peach fruit fly, and eliminating sources of infestation. Pest management based on identifying these sources of infestation, and targeting pest management is an important component of less chemically intensive management program. It is also potentially a better fit for biological control than applications targeted at preventing infestations within the stored commodity **(Scholler and Flint, 2000).**

To avoid chemical pollution it is necessary to find out more safe alternative methods for controlling this pest. These alternative methods in integrated pest management programs include the use of different methods to minimize its damage with minimum risk to the environment and human health.