

Study of behavioral responses of the melon weevil, *Acythopeus curvirostris persicus* to host plants in laboratory conditions

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Melon weevil, *Acythopeus curvirostris persicus* Thompson (Col.: Curculionidae), is one of the most important pests of cucurbits that is spread in the Middle East countries and on average 40 to 70% of damage can be caused, especially in watermelon and melon. Currently, only chemical control method used to control this pest. Due to the ineffectiveness of insecticides and their environmental impact, new methods of pest control can be used. Some of these methods that used to control and pest management include the use of so-called secondary plant metabolites, kairomones that have important role in the attraction of herbivorous insects toward host plants. This new method is in the range of ecological control. In this study, olfactometry tests was conducted using live insects of melon weevil by two way static olfactometer and evaluate role of host plants (fruits of melon, cucumber, watermelon and bitter melon) in terms of attraction of this species. In this experiment, the fruit was used in the early stage of development, each the size of a walnut, weighing approximately 100 grams. For each olfactometry test, 30 mated and unmated insect of each sex were used. In order to achieve insects, insect eggs that infected fruits were collected from the farm. Then as soon as weevil adults were emerged, they were differentiated by sex. A number of insects were mated and Insects were tested separately and one by one. The research was conducted at 50-60% relative humidity, $26 \pm 1^\circ\text{C}$ and photoperiod of 12 hours of light and 12 hours of darkness. In this experiment more than 99.5% of insects were active. The results of the olfactometry experiments showed that mated and unmated male and female weevil adult has responded positively to fruits of host plants. The survey also showed that bitter melon and cucumber fruits with 26.6% and 39.16% had less attraction than the watermelon and melon with 40% and 43.3%. The response of insect to the fruit extract which was obtained from the fruit of host plants by water distillation (Clevenger-type apparatus) was also statistically significant and melon with 36.6%, watermelon with 33.3% and cucumber and bitter melon extract had 32.5% attraction. So it can be concluded that the odours of the host plants for mated and unmated males and females have attractive effect, and the host plants have kairomones that attract *A. curvirostris persicus*. The results also showed that the leaf of host plants for males and females of melon weevil has very little attraction. The attractive rate of melon, watermelon, cucumber and bitter melon plant leaves were 24.16%, 29.16%, 24.16% and 27.7%, respectively. Understanding chemical ecology of this species in the laboratory could provide necessary information for its control using kairomones.

Keywords: Behavioral responses, melon weevil, kairomones.