

## **Identification and study on biology of *Heliothis* spp.on pistachio trees in Rafsanjan region.**

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According to studies carried out at recent years, damage of *Heliothis* spp. on pistachio fruits has been proved in Rafsanjan. In this region two heliothis species (*Heliothis armigera* and *H.peltigera*) were identified. Study of collected insects with light trap, indicated that emergence of mature in orchards was at the first decaded of April. The females lay their eggs individually on different parts on tree (such as fruit , two sides of leaves , etc). within two weeks, the eggs hatched and the small larvae start to feed on newly-set fruits and penetrate into them, in order to feed young kernel and then go out through the fruit via larger hole occurence by feeding and go interior to vicinity fruits. For this reason every larve within larval stage collapse 8-12 and average 9.2 of the fruits. The larval stage in the labratory condition, lasts 3 weeks and then metamorphosis into pupa in the depth of 5 cm in the soil. The pupal stage lasts 8-14 and average 11.6 days .

*H.armigera* & *H.peltigera* have 2 peak of flight in Rafsanjan pistachio orchards .Only the first generation caused damage and another generation imigrate from orchard and continue their life cycle on weeds specially calligonum bungei.

recorded after thawing. A relative leakage ratio was calculated by dividing the UV absorption after treatment by the total absorption obtained after freeze-killing the tissue.

Cell injury increased with rising salinity and was highest in root tips of the *P.vera* cultivars and lowest in *P. mutica*. Treatment of root tips with iso-osmotic

solutions of NaCl and PEG showed increased leakage with salt, showing that at least part of the damage was due to specific ion effects, rather than simply osmotic effects.