



Rearing the large avocado seed borer *Heilipus lauri* (Coleoptera:Curculionidae) in México

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Heilipus lauri



Body length female 14.77 mm and male 13.78 mm



Figura 1. Distribución mundial de *Heilipus lauri*. PQR-EPPO, 2015.

Heilipus lauri development



(66 días \pm 2,70 days)

(74, 68 \pm 1,71 days)

(76,14 \pm 7,31 days)

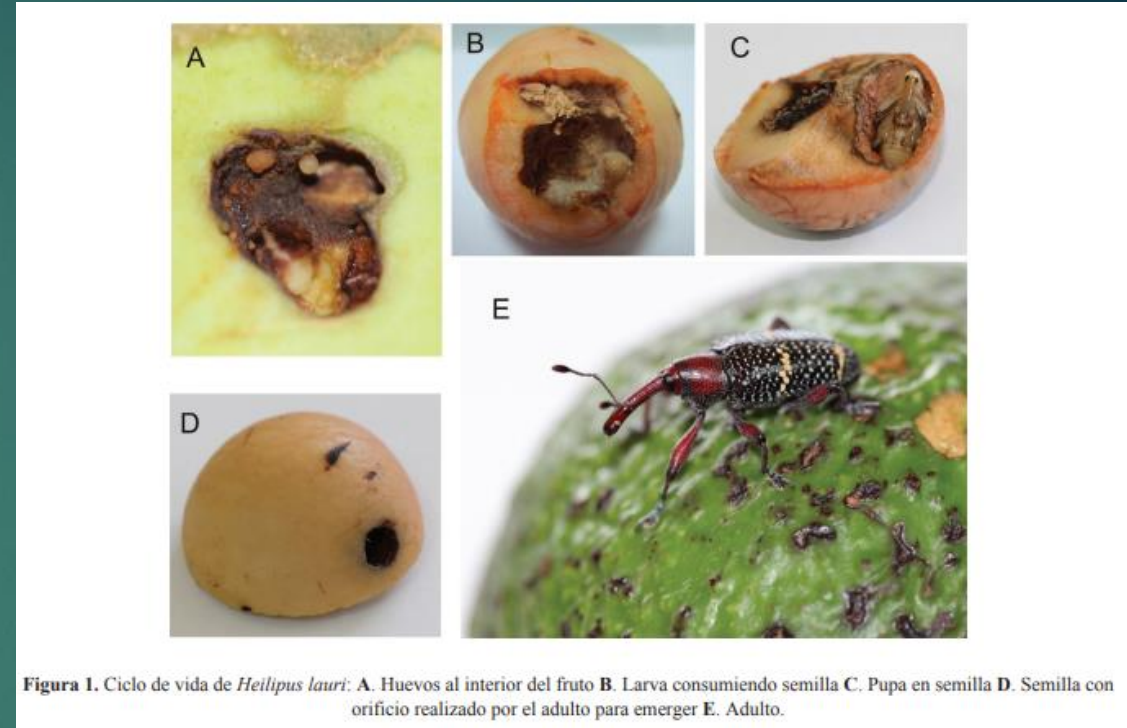


Figura 1. Ciclo de vida de *Heilipus lauri*: A. Huevos al interior del fruto B. Larva consumiendo semilla C. Pupa en semilla D. Semilla con orificio realizado por el adulto para emerger E. Adulto.

Castañeda-Vildózola A. 2008.
Bioecología del barrenador grande de la semilla del Aguacate *Heilipus lauri* Boheman (Coleoptera: Curculionidae) en la Región Central de México. PhD. Thesis. Colegio de Postgraduados, Montecillo Estado de México. 83 p.

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CICLO DE VIDA Y DESCRIPCIÓN MORFOLÓGICA DE *HEILIPUS LAURI*
BOHEMAN (COLEOPTERA: CURCULIONIDAE) EN COLOMBIA

LIFE CYCLE AND MORPHOLOGICAL DESCRIPTION OF *HEILIPUS LAURI*
BOHEMAN (COLEOPTERA: CURCULIONIDAE) IN COLOMBIA

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Heilipus lauri breeding stock



With material collected in areas with a presence in the state of Mexico with 100 infested seeds, the breeding stock was started.



Breeding stock



Piercing with oviposited eggs



Incubation eggs in Petri dish



7 y 12 days from egg to larvae



Seeds inoculated with larvae, spend 29 days of larval instars



Pupa: 13 a 15 days



Heilipus lauri adults

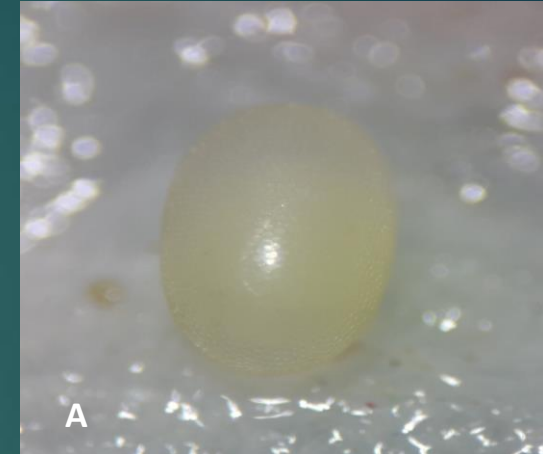
Heilipus lauri eggs development

Heilipus lauri eggs

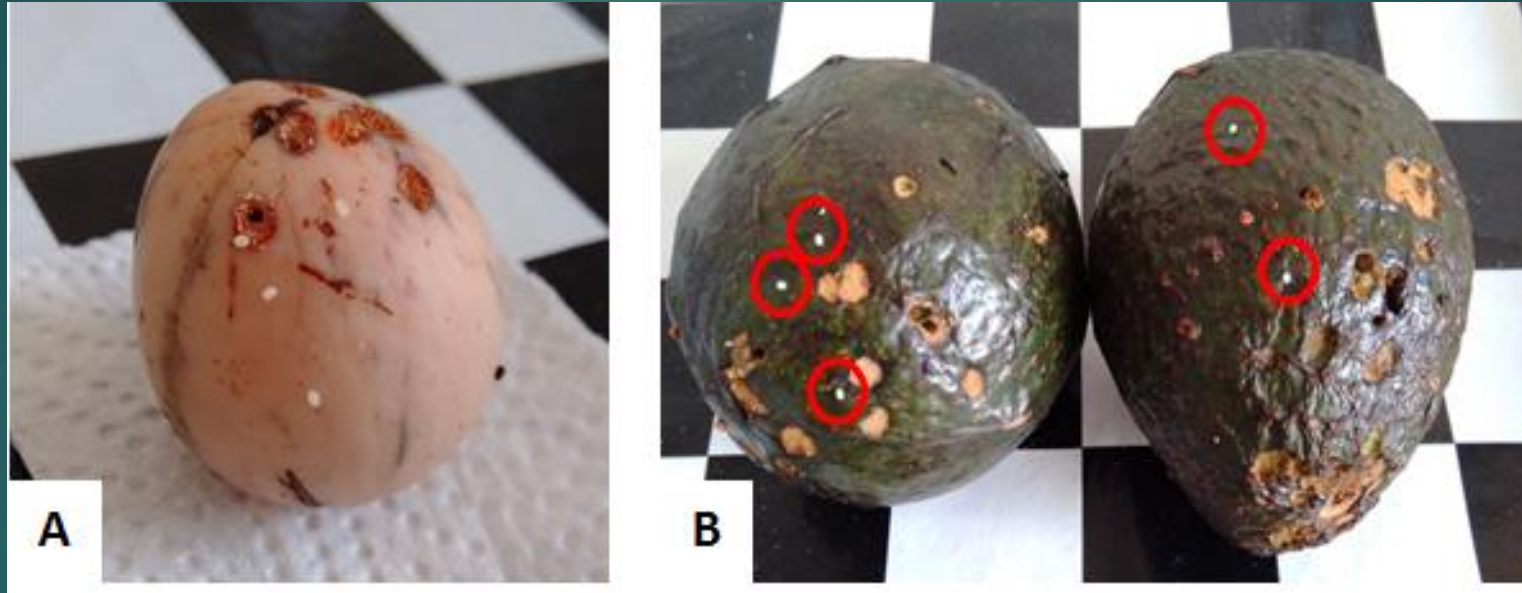
A) Egg just oviposited

B) Egg with the larvae inside ready to emerge

The egg surface (corion) is reticulated

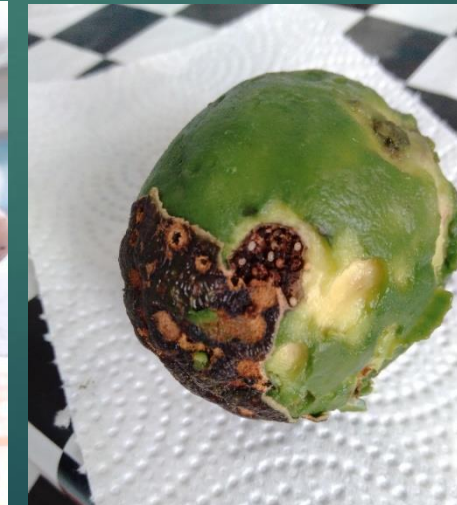
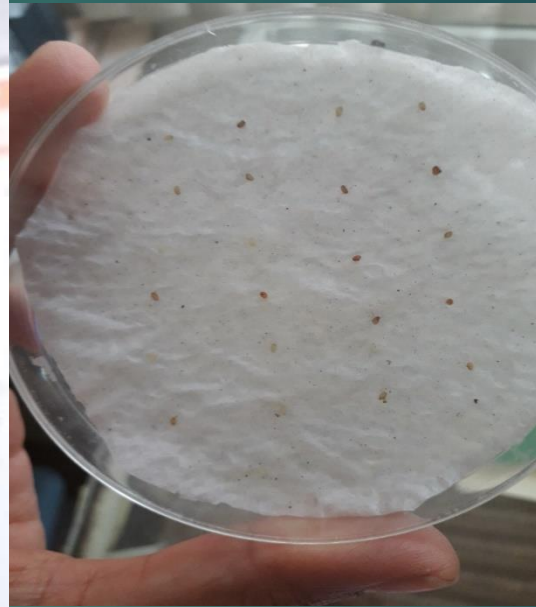


Heilipus lauri infertile eggs oviposition



It was found that during the first month of the emergence of the adults, the oviposited eggs are infertile. It was observed an uncommon behavior laying eggs on the surface of fruits and seeds.

Heilipus lauri eggs oviposition

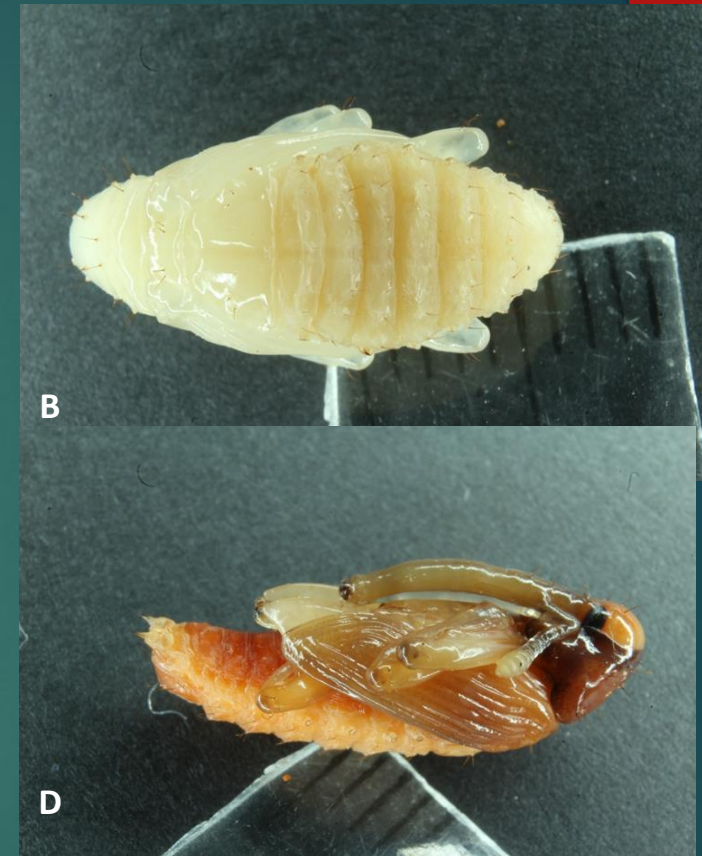


Heilipus lauri larvae development



A) nine days; B) 17 days; C) 24 days;
D) 30 days

Heilipus lauri pupae development



- A) Ventral view, five days
- B) Dorsal view, five days
- C) Ventral view, 11 days
- D) Lateral view, 11 days
- E) Ventral view last pupal stage. 15 days

Heilipus lauri life cycle

Longevidad	Egg	Larvae	Pupa	Adult
Adults in laboratory conditions can live for a year but they are fértil just During 8 months	The eggs spend a period of 7 to 12 days	Larvae instars development period is about 30 days inside de avocado sedes.	The fourth larvae instar built a pupal cell. Pupae develops in about 12-15 days	The adult emerge from the seed, it feeds on avocado fruit. It takes 45-55 days to be sexually mature



Heilipus lauri adults



A) Female



B) Male

Adults feeding on avocado fruit on laboratory conditions



The large avocado seed borer, *Heilipus lauri*, is a regulated pest for avocado cultivation, its presence limits entry to the export program in Mexico for sale and marketing abroad. Federal programs work intensively with producers seeking to enter the list of areas free of the pest, which is generally achieved through its eradication.

Conclusions

- ▶ General aspects of biology and behavior have been recorded, from its tolerance to temperature to competition with other seed boring species. With this breeding technique it is possible to obtain adults of this species in such numbers that they facilitate tests such as biological effectiveness tests of insecticides or tests of feeding preference or oviposition with different varieties of avocado.
- ▶ The knowledge generated will support management work on this economically important species for different avocado producing countries.