

SCANNING ELECTRON MICROSCOPY OF THE ANTENNAL SENSILLA OF ZAMAGIRIA DIXOLOPHELLA DYAR (LEPIDOPTERA: PYRALIDAE). Victor R. Castrejón Gómez(1,2), Ma. Guadalupe Nieto L.(2), Jorge Valdez(3), and Julio C. Rojas(2). (1) Becario COFAA and CONACYT (91489). Centro de Desarrollo de Productos Bióticos del I. P. N. Apdo. Postal. 24, Carretera Yautepec-Jojutla km.8.5, Yautepec, Morelos, México. E-mail : vcastrej@hotmail.com; (2) Departamento de Entomología Tropical, El Colegio de la Frontera Sur. Apdo. Postal 36, Tapachula, Chiapas, CP 30470, México; (3) Instituto de Fitosanidad, Colegio de Posgraduados, 56230 Montecillo, Estado de México, México.

We used the technique of scanning electron microscopy to identify the antennal sensilla of *Zamagiria dixolophella*. This basic information will be important in future studies aimed to identify the sex pheromone of this moth species. In southern Mexico, *Z. dixolophella* is considered by local farmers as an important pest of sapodilla, *Manilkara zapota* [1] and pheromone may be used as a tool for management of this insect.

The antennae of 32 males and 32 females were separately placed in a solution of 70% ethanol and 2% formaldehyde for 24 h. They were washed with 76% ethanol and dehydrated in 80, 90, and 100% (two changes each) ethanol for one h each. They were dried at the critical point of CO₂ and gold-palladium coated in a Denton-vacuum desk II ion sputter (20 nm). The specimens were viewed using a TOPCON SM-510 microscope at 5 kV [2, 3].

There was sexual dimorphism in *Z. dixolophella* antennae. The male antenna has a tuft of hairs or modified scales on its base (not showed) and one protuberance for each flagellar segment in the first seven segments, below the tuft of hairs (Fig. 1B). The female antenna did not present the tuft of hairs nor the other protuberances. To our knowledge this is the first time that these structures have been reported in Pyralidae. There were six types of sensilla on the flagellum: trichoidea, chaetica, coeloconica, styloconica, auriculica and squamiformia (Fig. 1A). The chemoreceptive sensilla trichoidea were the most abundant type in *Z. dixolophella*. They can be divided into two subtypes according to their length. Subtype I is present only on male antennae (Fig. 1B). Subtype II is mainly present on female antennae (Fig. 1A). There were three to five sensilla chaetica present on each flagellar segment in both sexes, except in the apical segment where there were 12 to 15 of these sensilla. They are stubby and curved apically and the tip is truncated in the majority of sensilla. The base is inserted into a socket that consists of a cuticular structure (Fig. 1A, C). There was a single sensillum styloconic (from the seventh to eleventh segment) in the middle part of the distal edge of each segment, in males and females. On the terminal segment there were two sensilla joined (Figure 1C). Sensilla coeloconica were distributed on the ventral surface of the antennae. Zero to eight sensilla occurred per segment of males and females. Each sensillum consisted of a depression surrounded by 14 to 18 cuticular "spines" and a porous peg with longitudinal striations on its surface, arising from the center of the depression (Fig. 1D). Sensilla auriculica were found on the lateral part of the antennal segments, close to the scale-bearing dorsal surface. These sensilla usually had a typical rabbit-ear shape, but sometimes were simply dorsoventrally flattened or biforked at the tip (Fig. 1A). The only evident sensillum present on the dorsal part of the antenna, between the scales, is the sensillum squamiformia (Fig. 1A). Squamiformia structures were found on the scape, pedicel and the first 3-5 segments of the flagellum. They are shorter and finer than the scales. The base is inserted into a socket and is pointed distally (Fig. 1A).

References

- [1] R. Iruegas. et al. Florida Entomologist (2002) 85: 303-308.
- [2] C. Wall. International Journal Insect Morphology and Embryology (1978) 7: 237-250.
- [3] J. Valdez. Boletín de la Sociedad Mexicana de Entomología (1991) 8: 9-18.

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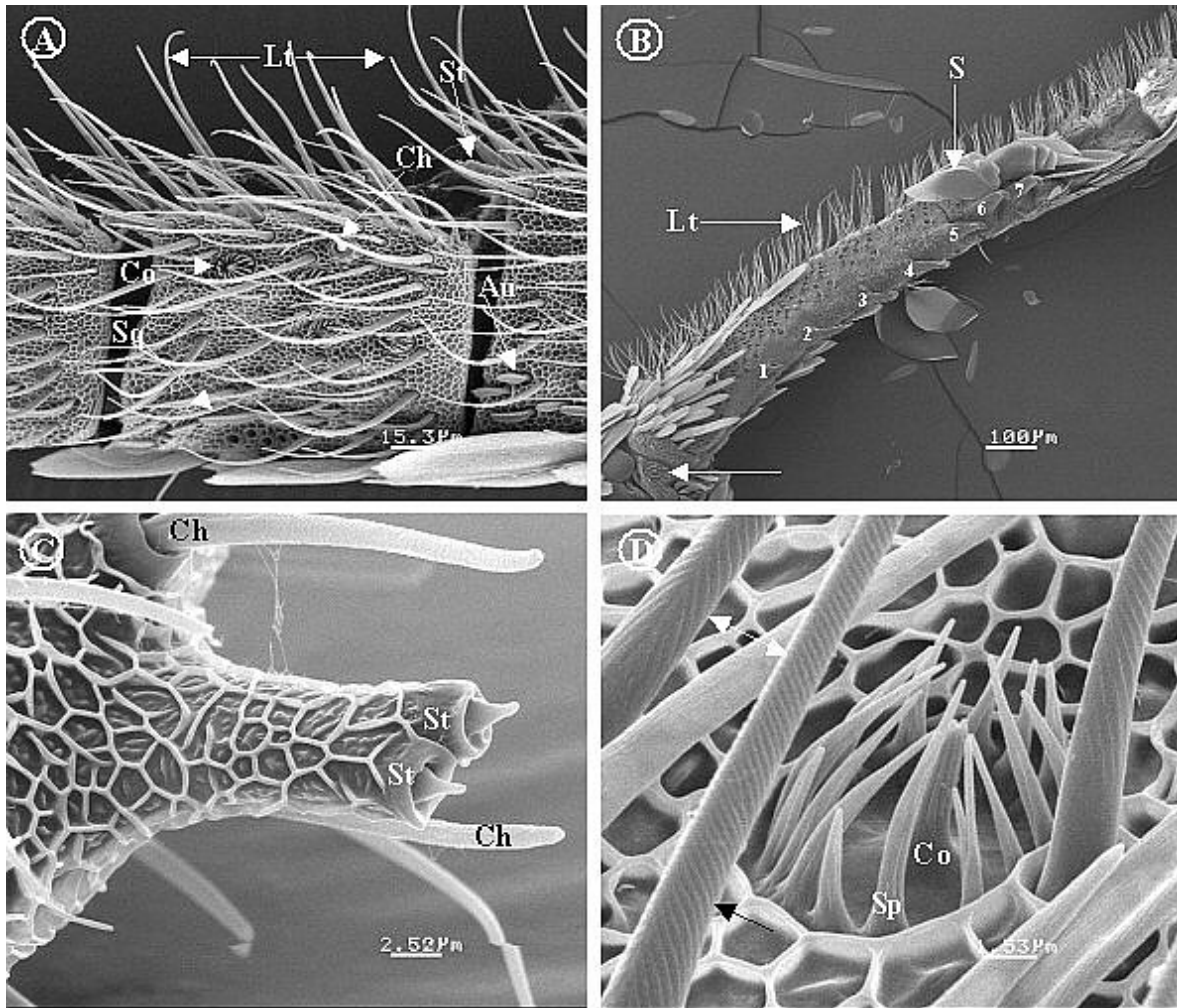


Figure 1. Scanning electronic microscopy of antennal sensilla of *Z. dixolophella*. A) general view of antennal sensilla of female. B) Long trichoidea sensilla of antenna male. C) Styloconic and chaetica sensilla in female antenna. D) Coeloconicum sensillum on female antenna. Lt = Long trichoidea lateral sensilla. S = scales. Ch = Chaeticum sensillum. Co = coeloconicum sensillum. Sq = Squamiform sensillum. Au = Aurilica sensillum. 1-7 = ornamentations on the male antenna. St = styloconic sensillum. Sp = Spines. White arrow in figure B indicate start of the segment. Black arrows in figure D indicate ornamentations of the long trichoidea sensilla.