

TENVIPALPIDAE

Brevipalpus phoenicis (Geijskes, 1939)

ERIOPHYIDAE

Non-identified species

Cassava stemborers in Colombia

B. Lohr*

Cassava stemborers can cause damage to cassava in the following ways:

- yield reduction
- plant lodging as they form galleries inside the stem
- loss of planting material or reduction of its quality
- entrance way for pathogens

Three species of Coleoptera and one of Lepidoptera have been reported in Colombia as cassava stemborers.

Coleoptera

Lagochirus sp. (Cerambycidae) is 20 mm in length and gray in color with a black lateral spot on each elytra. This species prefers to attack old and lignified material.

Eulechriops manihoti (Monte) (Curculionidae) is 2 mm in length and dark brown in color. This stemborer attacks weak or dead plants.

Coelosternus granicollis (Pierce) (Curculionidae) has only been reported in the region of the Llanos Orientales. The adult is 5 mm in length, grayish brown in color and the body is covered by yellow scales; this stemborer prefers weak plants attacked by diseases. Eggs are oviposited in the apical part of branches, deeply interred in the tissue. Larvae only feed on the pith causing dieback of thin branches. The larva forms a puparium with its excrements, commonly located near the base of the attacked branch. The presence of the insect is difficult to detect as excrements are not observed and dieback can also be caused by diseases. Studies on their economic damage have not been reported.

In Colombia, the most common mites that cause economic damage in cassava crops are *Mononychellus tanajoa*, *M. caribbeanae*, *Tetranychus urticae*, *T. cinnabarinus*, and *Oligonychus peruvianus*. The rest of the species are not considered important due to the fact that they only occur occasionally and prefer other existing hosts.

Lepidoptera

Chilomina clarkei (Amsel) (Pyrilidae) is the first Lepidoptera reported as a cassava stemborer. It has been found in Colombia (1) and in Venezuela (2, 3, 4). In Colombia it has been reported in the Llanos Orientales and in Tolima. Studies on the biology, ecology, and economic damage are being carried out at CIAT.

Biology and ecology

C. clarkei shows nocturnal activities; the adult measures approximately 20 mm in length, has a light brown color with lines and a dark central spot on the front wings. The male and female do not show sexual dimorphism but can be distinguished by their genitalia. A female can oviposit up to 350 eggs with a mean of 130 under laboratory conditions. Eggs are oviposited in protected sites, such as around buds or underneath the stipules. The incubation period of eggs is six days and fertility is almost 100%. After eclosion, larvae remain around the buds, covering themselves with a web. The first four larval instars develop outside the stem, and after the fifth instar, larvae penetrate into the pith in the stem where they complete their cycle. The larval period shows eight instars and lasts approximately two months. Pupae are found inside the stem in a silk puparium and last from 12-16 days. Male longevity is four days and female, five days up to 12 days, in case they are not fertilized.

The population fluctuates during the year, reaching peak populations during the rainy season. Survival of larvae to adults also varies between 1% during the dry season to 16% during the rainy season.

Natural enemies

Brachymeria sp. (Hymenoptera, Chalcididae) parasitizes pupae year round.

There is another unidentified species from the order Hymenoptera and family Braconidae which is an endoparasite of larvae.

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Other unidentified species (Hymenoptera, Braconidae) are exoparasites of larvae and are present from September until the end of the dry season in April.

Two unidentified species (Hymenoptera, Formicidae) that predate larvae and pupae.

Two unidentified species (Hemiptera, Reduviidae) that predate larvae.

Two other unidentified species of Coleoptera, Carabidae, that predate larvae.

Economic damage

Considering that cassava is a vegetatively propagated crop, stemborer attacks have two consequences: a reduction in yields and a loss in planting material. These losses vary according to the variety, as oviposition preferences have been observed on varieties with long stems without branching and/or on well developed buds; also, poorly lignified varieties such as CMC 40 have a greater tendency to lodging than varieties such as M Ven 77 with well lignified stems. Lodging causes a considerable delay in growth as well as a complete loss in planting material. No data are available on yield reductions, but the loss in planting material varies between 30-70%, depending on the variety.

Control

Two control methods can be recommended:

1. Cultural control. When the field is completely harvested all stems that are not to be used as

planting material should be burned before a new planting is done; undamaged cuttings should be used.

2. Chemical control. The application of insecticides to the crop is not recommendable since most of the life cycle of the stemborer occurs inside the plant and only systemic insecticides would cause some effect. However, a preventive control method is to treat cassava stakes before planting. In this way, eggs and small larvae which are difficult to detect can be controlled, and the crop is protected during the first weeks of growth.

References cited

1. BELLOTTI, A.C. and SCHOONHOVEN, A. VAN 1978. Mite and insect pests of cassava. Annual Review of Entomology 23:39-67.
2. GUAGLIUMI, P. 1965. Contributo alla conoscenza dell'entomofauna nociva del Venezuela. Rivista di Agricoltura Subtropicale e Tropicale 49(7-9): 376-408.
3. QUIROS L., M. 1977. Estudio preliminar de algunos insectos y ácaros, plagas en el cultivo de la yuca (*Manihot esculenta* Crantz) en el estado Zulia, Venezuela. Revista de la Facultad de Agronomía de la Universidad de Zulia 4(1): 63-95.
4. YEPEZ, F.F. and TERAN B., J.B. 1973. Presencia de *Chilomina clarkei* (Amsel) y *Chilozela bifilalis* (Hampson) (Lepidoptera, Pyralidae) en yuca (*Manihot esculenta* Crantz) en Venezuela. Agronomía Tropical (Venezuela) 23(4): 407-411.

Ozineus prolixus and *Ceroplesis quinquefasciata* T. are the other cerambycids known to attack cassava in other cassava growing areas of the world (1, 2).

The adult beetle measuring 0.8 cm in length is grey in color with two conspicuous black spots on the elytra towards the tip of its abdomen.

The grub bores into the stems and feeds on the pith, growing to a length of 1.2 cm when its color changes into cream. The stems are bored from the base to the top. Pupation takes place inside the stem. A large number of grubs and pupae are observed when the attacked stem is split open (see photograph). Small holes are observed externally on the infested stem. Attacked plants die when the infestation is severe.

On a new stemborer of cassava

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Cassava, *Manihot esculenta* Crantz, a major food crop of Kerala was recently attacked for the first time by the stem borer, *Sybra praeusta* Pascoe (Lamiinae: Cerambycidae: Coleoptera) at Trivandrum, Kerala State. Stems of 6 to 8 months old cassava plants were found attacked by *S. praeusta* in the institute's experimental farm during January, 1979.

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