

MINOR AND EMERGING COCOA PEST IN WEST AFRICA



BY A. R. CUDJOE,
J.E.SARFO & J.B.
ACKONOR,



COCOA RESEARCH
INSTITUTE OF
GHANA (CRIG),
NEW TAFO-AKIM,
GHANA

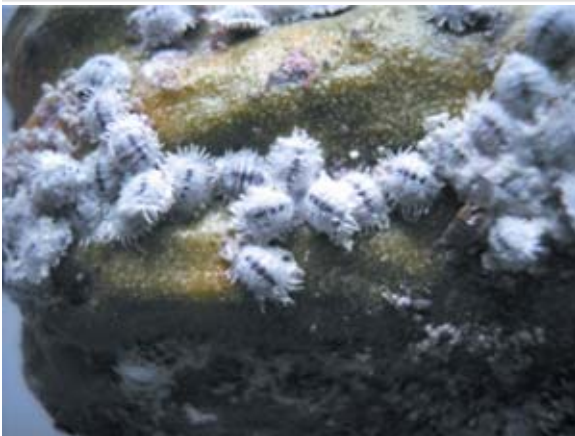
INTRODUCTION

- Wilson (1999) estimated the annual loss of cocoa world-wide, as 558,000 mt to insects. Mossu (1992) puts estimated losses at 46% of potential production out of which 25% is from insect pests only.
 - Trend is similar in West Africa, where capsids/mirids alone are estimated to cause losses of about 25 % potential production (Padi, B., undated)
-

INTRODUCTION (Cont.)

- In this discussion insect species characterised by occasional outbreaks, or occurring but only sparsely and in low numbers are considered emerging and/or minor pests.
 - Entwistle *et al*/ (1959) suggested that such occasional outbreaks resulted from intensive spraying of insecticides against mirids
-

INSECTS PEST SPECIES IN W/AFRICA



- **Major**
 - Mirids /capsids (Heteroptera:Miridae)
 - Disease Vector esp. Mealybugs (Homoptera: Pseudococcidae)
 - Termites (Isoptera: Termitidae)
- **Emerging**
 - Stem borers (Lepidoptera sp.)
 - Shield/Stink Bugs (Heteroptera: Pentatomidae)
- **Minor**
 - Leaf Defoliators/Skeletonizers (Lepidoptera spp)
 - Aphids (Homoptera:Aphididae)& Psyllids(Hom: Psyllidae)

STEM BORERS



THE COCOA STEM BORER *Eulophonotus myrmeleon*

- Most past information on the pest did not portray it as an important pest. (Cotterell, 1928; Alibert, 1951; Entwistle, 1962)



STEM BORERS AS EMERGING PEST

- Currently widely distributed in West Africa from Sierra Leone to Cameroon (Entwistle, 1972). Also reported in Togo as emerging pest (Gnakpenuo et al, 1996; Wegbe et al, 1997)
 - Now a very seriously and widespread pest in Ghana (Padi and Adu-Acheampong, 1998; 2001)
-

STEM BORERS (Cont.)



- Padi and Adu-Acheampong (1998) recorded severe infestation on farms that have not been sprayed for many years.
 - Is it due to spraying of mirids with insecticides the only reason for outbreaks?
-

SHIELD BUGS AS EMERGING PEST.



SHIELD/STINK BUG (*Bathycoelia thalassina*(HS.) (Hemiptera:Pentatomidae)

- Menace posed is highlighted in many cocoa growing countries (Mayne, 1917; Golding, 1940; Alibert, 1951; Gerald, 1964; Owusu-Manu, 1976)
- At the 4th Conference of West African Cocoa Entomologists held in Ghana in 1974 it was declared an important insect pest of cocoa.

THE SHIELD BUG (Cont.)



DAMAGE CAUSED:

- ❑ Owusu-Manu (1976) estimated annual crop loss to its infestation in Ghana at 18%
 - ❑ Both adult and nymph feed on the pod. Mature pods may turn yellow at the points of attack and may also become distorted.
 - ❑ Most activities on the bug have centered on studying factors influencing mating, oviposition, development, distribution and abundance, as well as its natural enemies (Owusu-Manu, 1974, 1977a, 1977b, 1980).
-

SAP SUCKING INSECTS (Cont.)

Aphids (Toxoptera aurantii) & Psyllids

- ❑ Aphids & Psyllids are not showing any signs of serious pest
- ❑ **Damage**

They feed on cocoa flushes and cause the leaves to develop poorly. The insects are usually not controlled but serious outbreaks may be controlled on young cocoa

DEFOLIATORS/SKELETONIZERS



□ *Anomis leona* Schauss

- This pest received some research attention by Owusu-Manu, 1987, 1988
- It is the most common insect that feeds on the leaves.
- It is green with yellow marking at the sides.



□ Damage

- The young ones (caterpillar) feeds on cocoa soft leaves sometimes mature leaves, green stem and the outside of unripe pods. . It is common at the beginning of the rains (March - June).
 - It is usually not controlled but serious outbreaks may be controlled.
-

DEFOLIATORS/SKELETONIZERS

Earias biplaga Wlk -



- Kuma (1988), devoted sometime to research into this pest which feeds on the leaves

Damage

- The larva plant eats the growing tips of the stems and young soft leaves. It's feeding activity prevents the plant from growing properly to form canopy.
- The attack is more where there is no shade over the cocoa. It's attack therefore may be prevented if fast growing shade trees are provided over cocoa that has been freshly planted.



POD BORER



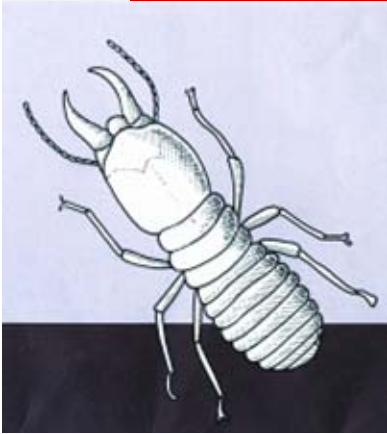
Pod borer, *Characoma stictigrapha* Hmps
(Lepidoptera: Noctuidae)

- Incidence was initially studied by Johnson and Entwistle (1954),
- Followed by its population dynamics by Gerard,s (1963). Further work done by Akotoye(1975), , 1979a, 1979b), Owusu-manu and Kuma(1987) and Owusu-Manu and Darkwa(1988).

□ Damage

The damage is done by the larva which bores holes into pods of all sizes. It produces a mass of frass held together by silk at the entrance of the holes. If the pod is very young and soft (cherelle) then it wilts . The insect is usually not controlled.

Termites (Isoptera: Termitidae)



- Termites have long been associated with cocoa but it is in recent times that they have become important pests. Many species of termites damage cocoa (Ackonor J.B, 1997; Ackonor J.B., and A. Nkansah, 2001)



- **Damage**
 - Eat the roots and stems of cocoa and can cause death of plants.
 - They cut down seedlings mostly in the dry season.
 - Damage is common where dead decaying wood and leaves are gathered close to the base of stems.
 - Their damage also causes leaves to wilt but remain hanging on plant.
-

CONCLUSIONS

- ❑ Research on cocoa insect pests has been going on for a long time with some achievements made.
 - ❑ Insects continue to pose serious problems on cocoa because most factors are not clear.
 - ❑ The menace caused by those currently considered minor or emerging pose serious challenges
 - ❑ Such species should be monitored carefully and techniques developed to forestall their surge to serious pest status.
-

LITERATURE CITED

- Ackonor, J. B. (1997) Preliminary findings on termites associated with cocoa and coffee in Ghana. *Insect Science and its Application*, 17 (3/4):401-405
- Ackonor, J.B., Sarfo, J.E. and Nkansah, A. (2001). Studies on termites (Isoptera) associated with cocoa and coffee: Studies on termiticides. *Rep. Cocoa Res. Inst. Ghana*, 1998-99: 196-197.
- Adu-Acheampong, R., Padi, B. and Sarfo, J.E () The life cycle of cocoa stem borer, *Eulophonotus myrmeleon* in Ghana. *Tropical science* (In press)
- Akotoye, N.A. K. (1975). Biology of *Characoma stictigrapta*. Proc. 4th Int. W. Afr. Cocoa entomologist: 150-159
- Akotoye N.A.K. (1979a). Economic importance of *Characoma stictigrapta* Hamsom (Lepidoptera: Noctuidae), pest of cocoa in Ghana. *Bull. Ent. Res.* 69:387-394
- Akotoye, N.A.K. (1979b). Natural enemies of *C. stictigrapta*, a pest of cocoa leaves and pods in Ghana. *Proc. 5th Int. Cocoa. Res. Conf.* 1979: 443-447
- Alibert, H. (1951) Les insect vivantes sur les cacaoyers en Afrique Occidentale. *Mem. Inst. Franc. Afric. Noire*, 15: 1-174
- Cotterell, G. S. (1928). Minor pest of cocoa. *Bull. Dep. Agric. Gold Coast, no. 13* (Year book 1927); 100-106
-

LITERATURE CITED (Cont.)

Cotterell, G. S. (1943) Entomology. *Rep. Central Cocoa Res. Sta. Tafo, 1938-42: 46-51*

Entwistle, P. F. (1972) *Pest of cocoa*. Longman Ltd. 779 pp

Entwistle, P. F. Johnson, C. g. and Dunn, E. (1959). New pests of cocoa in Ghana following application of insecticides. *Nature* 184: 2040

Firempong, S. K. (1974) The biology of the black citrus aphid, *Toxoptera aurantii* (Boy.) on cocoa in Ghana. In: *Proc. 4th Conf. W. Afr. Cocoa Entomologist, Ghana, 9th-13th Dec. 1974: 146-149.*

Gerald, B. M. (1964). Insects associated with un-shaded *Theobroma cacao* L. in Ghana. *Proc. Conf. Mirids and Pests of cocoa, Ibadan Nigeria, 1964: 101-111*

Kuma, N. K. (1988) Miscellaneous insects: Infestation of replanted cocoa. *Rep. Cocoa Res. Inst. Ghana, 1986/87:42*

Leston, D. (1970). Entomology of the cocoa farm. *Ann. Rev. Ent. 273-293*

(Literature cited To be completed)
