Available online at www.easletters.com

ISSN No: 2349-2864

Entomology and Applied Science Letters, 2016, 3, 5:23-26

Defoliation of *Termnalia ivorensis* by the larvae of *Epicerura pulverulenta* Hampson (Lepidoptera: Notodontidae) at the Forestry and Environment Arboretum, Rivers State University of Science and Technology, Port Harcourt, Nigeria

[1]Ukoima, H.N, [1]Chukunda, F.A., [1]ABERE, S.A and [2]Dimkpa, S.O.N.

[1]Department of Forestry and Environment, Rivers State University of Science and Technology, Nkpolu-Oroworukwo, Port-Harcourt, Nigeria
[2]Department of Crop/Soil Science, Rivers State University of Science and Technology, Nkpolu-Oroworukwo, Port-Harcourt, Nigeria
Corresponding E-mail:rijmanconsult@yahoo.com

Abstract

Terminalia ivorensis (Idigbo or black afara) is a useful hard wood of the humid tropics of Africa. It is currently under threat due to over exploitation as well as poor regeneration. Qualitative studies was carried out in a mixed population of T. ivorensis and some fruit and medicinal trees at the Forestry and Environment Arboretum, Rivers State University of Science and Technology (RSUST) . Data presentation was done visually and pictorially. It was observed that the larvae of Epicerura pulverulenta with a Diameter of 1.5cm and Length of 7.1cm. The larvae are aggressive defoliator of T.ivorensis. Defoliation of entire plant stand occurred less than 7days. It was also noticed that defoliation was selective as other plants were not affected.This is the first report on E. pulverulenta invasion of T.ivorensis in Rivers State and Nigeria in general. Conclusively, the larvae of E.pulverulenta are a major threat to the growth and establishment of T. ivorensis.

Keywords: *Epicerura pulverulenta, T. ivorensis, Arboretum, Defoliator*

INTRODUCTION

Terminalia ivorensis have a well acknowledged commercial value with a total volume of exported logs representing 10% of the national round production **[10]**. Besides their high commercial value are commonly used in agriculture to establish Taungya Agric- Sivicultural system in which they provide shade as well improve soil fertility for crops **[14]**.

T. ivorensis are important component for traditional medicine **[7]**. They are frequently used for ornamentals in Urban areas in Cameroon. Most times they are used in national regeneration programmes. In Africa, the species of *T. ivorensis* occur in environments ranging from evergreen primary and secondary forests to open woodlands or wooded Savanna **[2,4,9,12]**. Although these species of *Terminalia* trees tend to display natural resistance to pests and diseases **[11,6]**. However their wide ecological distribution exposes them to variable climatic conditions, environmental stress and other negative factors such as human activities and diverse pests and diseases. **[15]** carried out studies on the survival and growth of mixed plantations of *Milicia excelsa* and *Terminalia superb* in Ghana. The authors observed that the gall forming Psyllids of the genus Phytolyma hampered the growth of these plants. Survival of *M. excesa* was 10% in the short season plantation and 30% in the long season plantation. **[1]** also investigated into the incidence of *Apate spp*[Coleoptera: Bostrychidae] on young plantations in Ghana. The study showed that *Apate terebrans* and *A. monachus* can damage *Khaya ivorensis, Khaya senegalensis* and *Tectonia*

grandis. In the same vein the works of **[8]** revealed that *Epicerura pergisea* [Lepidoptera: Notodontidae] defoliated *T. ivorensis* and *T.superba* in the Cote d Ivore. They recommended decamathrin of 9.6 a.i ha^{-1} and hydrogenoxalat of thiocyclam at the concentration of 300g.i.ha^{-1} as a control measure.

This research appears to be novel, as this is the first time it was spotted in Rivers State and Nigeria in general. Moreso, data and documentation of pests of Forest trees in Nigeria and Rivers State is lacking. This research therefore, will help to improve on the list of potential pests of *T.ivorensis* in Nigeria as well as provide valuable information on the management practices of this pest.

MATERIALS AND METHODS

Location/ Study site

The study was carried out at the Forestry and Environment Arboretum, Rivers State University of Science and Technology and Technology, Port Harcourt Nigeria. Located at latitude 4^0 42^1 and 4^0 48^1 N ; Longitude 6^0 15^1 and 7.25^0 E on an elevation of 18 meters above sea level with mean annual temperature of 27 ^{0}C and annual rainfall of 2000 – 2476mm **[16]**.

Plate 6A: Complete/ Selective defoliation (7th) day Plate 6B: Complete/Selective defoliation (7th day)

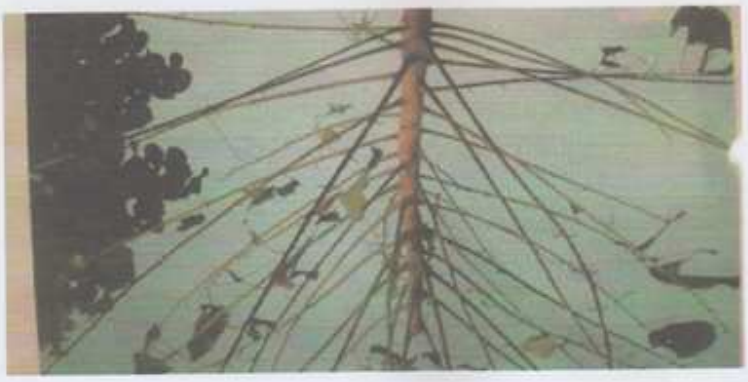

Plate 7: Defoliation by *E. spp on the 4th day*

Methods

Over one hundred young forest mixed plantation species were observed regularly for the occurrence of pests and diseases at the Department of Forestry and Environment Arboretum. The arboretum is made up of timber, fruit and

medicinal plants such as *T.ivorensis*, *T.grandis*, *Irvingia gabonenesis*, *Moringa oliefera*, *Annona muricata* and others. Experiment was qualitative using pictorial presentations.

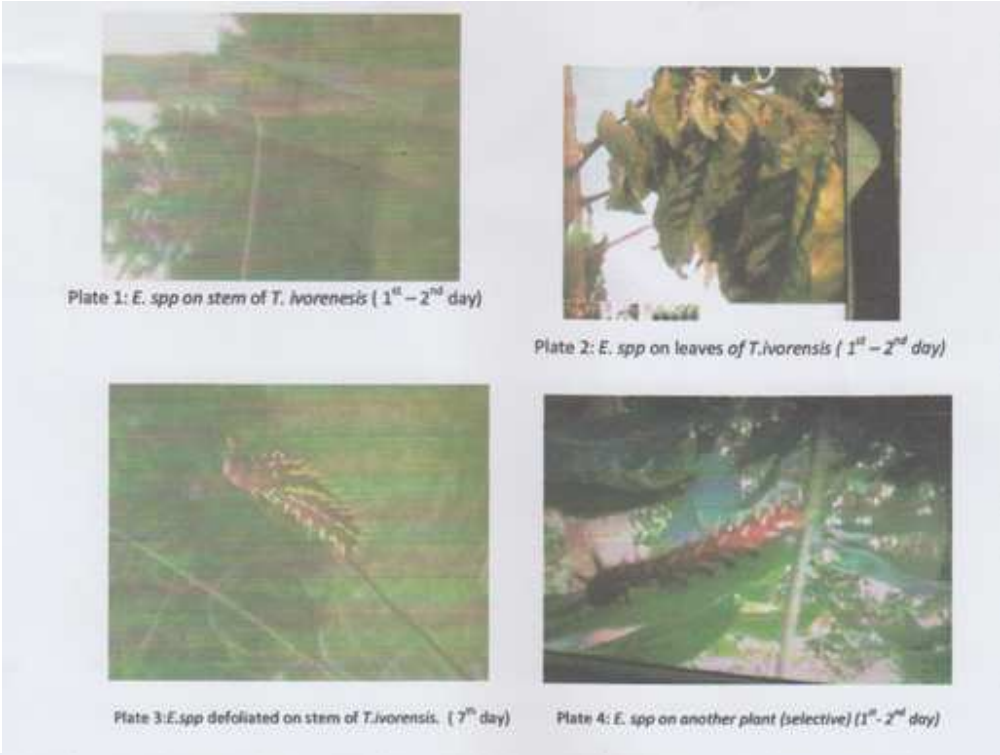

Plate 1: *E. spp on stem of T. ivorenesis* (1st – 2nd day)

Plate 2: *E. spp* on leaves *of T.ivorensis* (1st – 2nd day)

Plate 3:*E.spp* defoliated on stem of *T.ivorensis.* (7th day)

Plate 4: *E. spp on another plant (selective) (1st- 2nd day)*

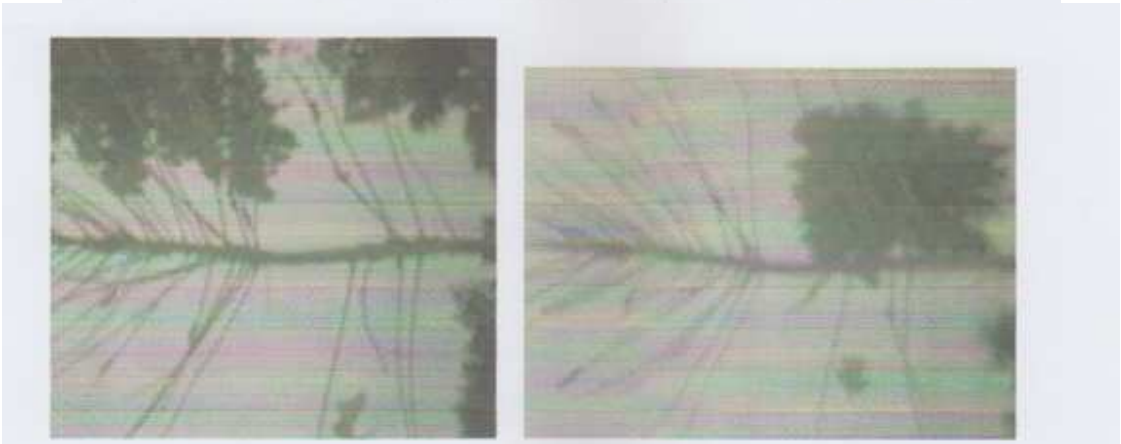

Plate 5A: Selective defoliation by *E.* spp (7th day)

Plate 5B: Selective defoliation by *E. spp (7th day)*

RESULTS AND DISCUSSION

It was observed on the 7th May, 2016 at Arboretum of the Department of Forestry and Environment, at the peak of rainy season in Port Harcourt of the occurrence of larvae suspected to be *Epicerura pulverulenta* on *T.ivorensis*. The larvae is about 7.1cm in length and diameter 1.5cm from an average sample of 6. It has yellow black color with white spikes all over the body (Plates1, 2, 3 and 4). The larvae defoliated stands of *T.ivorensis* in 7days leaving the petioles as broom sticks or the disease known as witches broom (Plates, 5A , 5B , 6A, 6B, 7). Defoliation of plant stands by the larvae was selective as other plants such as *A.muricata, I.gabonensis*, and matured *T.ivorensis* were not affected (Plates 4,6 A and 6B). It then appears that the affected plants were breeding grounds for the pests.

The findings indicated that the larvae of *E. pulverulenta* are potential threat to the growth and establishment of *T.ivorensis*. This work agrees with the findings of **[8]** who opined that *E.spp* is a major defoliator of *T.ivorensis*. It was suggested in their research that appropriate control measures such as cultural practices [pruning] and recommended chemicals [decamathrin] should be applied in severe cases of infestation. **[17]** and **[3]** have demonstrated some pests are associated with *M.oleifera* and *I.gabonensis* even though as pollinators. **[13]** reported on the damage caused *by Phytolyma lata* on *Milicia excels* established in mixed species tropical plantation in Ghana. Similarly **[18]** and **[5]** also identified the forest economic damage caused by Epicerura spices as a major forest insect in Ghana.

Research is on going to determine why the selective defoliation as well as fungi, bacteria and viruses associated with the intestines of these larvae so as to elucidate their potentials.

REFERENCES

[1] Atuahene, C.K.N **(1976)**. *Ghana Forestry Journal*. 2: 29-35.
[2] Carr, J.D **(1994).** Sandton, S.A publications of the Sandton Nature Conservation Society and Tree Society of South Africa.
[3] Chukunda, F.A., Ukoima, H.N., Abere, S.A. and Ebere, N. **(2016)**. *Journal of Forestry*. 3(2): 1-8.
[4] Dale, I.R and Greenway, P.J. **(1961)**. *Kenya Tress and Shrubs*. London, UK: Buchanan's Kenya Estates Ltd. In association with Hatchards.
[5] FAO **(2007)**. *Food and Agricultural Organisation of the United Nation, Forestry Department, Forest Health and Bio-security working papers; over view of forest pest in Ghana,* 1-5pp.
[6] Groulez, J. and Wood, P.J. **(1985)**. *Terminalia superba a monograph*. Oxford, UK: Common Wealth Forestry Institute.
[7] Kamtchoung, P., Kahpui, S.M., Djomeni, D.P.D., Tedong, L., Asongalem, E.A. and Dimo, T. **(2006)**. *Journal of Ethanol* 104, 306-309
[8] Kanga, L. and Fediere, G. **(1991)**. *Forest Ecology and Management*. 39: 73- 79.
[9] Keay, R.W.J. **(1989)**. *Trees of Nigeria.* Oxford Clarendo Press.
[10] Laird, S.A **(1999)**. P. Rome: FAO,51-60 pp.
[11] Lamb, A.F.A and Ntima, O.O. **(1971).** *Terminalia ivorensis. Fast growing timber trees of the lowland tropics* No.5.Oxford,UK, Common Wealth Forestry Institute.
[12] Lebrum, J.P and Stork, A. **(1991)**. Enumeration des plantes a Flerus d' Afrique Tropicale, Pandaceae, Geneve. Conservation et. Jardin botaniques de la Ville.
[13] Nichols, J.D., Ofori, D.A., Wagner, M.R., Bosa, P.K and Cbbinah, J.R. **(1999)**. *Agricultural and Forest Entomology*. **1 (2): 137.**
[14] Norgrove, L. and Hauser, S.S **(2002).** *Forestry Ecology Management*. 166,261-270.
[15] Paul, P.B., Joseph, R.C. and Michael, R.W **(2006)**. *Forest Ecology and Management*. 233(2): 352-357.
[16] Tariah, N.W., Zuofa, K. and Douglas, D.C. **(1991)**. *Nigerian Journal of Crop Science and Forestry* 1(1): 13-18.
[17] Ukoima, H.N., Chukunda, F.A., Abere, S.A and Ebere, N. **(2016)**. *Entomology and Applied Science Letters*. **3(2):1-9**.
[18] Wagner, M.R., Atuahene, S.K.N and Cobbinah, J.R. **(1991)**. *Forest Entomology in West Tropical Afica Forest insects of Ghana*. Dordrecht, Boston and London: Kluwer Academics Publishers, 210pp.