



Insects Associated With *Calotropis procera* (Milk weed) In Sokoto Metropolis

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ABSTRACT

A study on insects associated with *Calotropis procera* was conducted within the Sokoto metropolis. Purposive sampling was employed to determine areas with high population of the plant. Insect species observed on different vegetative parts of the plant were collected and taken to Entomology Laboratory for identification. These are *Trichius fasciatus*, *Apis mellifera*, *Anthophora species*, *Componotum perrisi*, *Physopelata famelica*, *Dysdercus chrysippus*, *Musca domestica*, *Antherenus scrophulariae* and *Cerceris spinicaudata*. Activities of the species on the plant were also recorded as feeding, pollination, shelter and predation. Effective management practices of the insect pests should be evolved to enhance growth and development of the plant.

Keywords: - *Calotropis procera*, Insects, Milk weed and Disease

INTRODUCTION

Calotropis procera (Milk weed) is a soft wooded, evergreen perennial shrub, belonging to a family asclepiadaceae, sub family secamonoideae and other Gentianales. It is commonly known as milk weed or swallow-wort and is locally called "Tunfafiya". This plant is a shrub with a few branches and relatively few leaves, mostly concentrated near the growing tip. *C. procera* may grow up to a height of 5.4m with milky latex though. The bark is corky furrowed and light grey; a copious white sap flows whenever a stem or leaves are cut (Parrotta, 2001).

A giant *C. procera* has very deep tap roots, the leaves arranged to the stem are opposite, the opposite leaves are oblong, obovate to nearly ovbicular short petals below a near clasping heart shaped based (Howard, 1989)

C. procera is abundantly found in semi arid environment, it is thought to be native to west and North Africa (Parrota, 2001) in Nigeria. It is mostly found in the northern part of the country where flowering and fruiting vary from one area to another. *C. procera* is favoured in an open habitat with little competition; other common habitats are beach from dunes roadsides and disturbed urban lot. Dailey, (1987) reported that during dry season milk weed is sometime attacked by the orange aphid which causes defoliation or death of branches and aborted fruits. *C. procera* is not a cultivated plant and therefore grows in an area that favours its dissemination and germination and hence a weed, Blunley (1989)

Despite the fact that *C. procera* provide valuable products such as latex contents or otherwise known as copious white sap, leaves, flower and roots which when collected can be used either alone or in combination with other medicinal plants to cure different diseases. Some of the diseases that can be cured with the appropriate utilization of different portion of milk weed include; Eczema, Asthma, Cough, Diarrhea, Vomiting, etc. Hence there is need to identify the insect associated with the plants and factors affecting its growth and development

MATERIALS AND METHOD

Study Area

Two sites with high population of *Calotropis procera* were purposively sampled after the conduct of reconnaissance survey; these were Permanent site of Usmanu Danfodiyo University, Sokoto and Eastern bye-pass.

Sokoto State climate is mainly semi arid characterized by low rainfall usually between 550 – 700mm annually (Iyanomo, 2002) occurring between May - October with a peak in August. Dry season starts from October and ends in May. Mean maximum temperature ranges from 35⁰c to 40⁰c (Iyanomo, 2002). The soil is sedimentary basement, complex type and is sandy with little organic matter content, humidity is recorded to be constantly below 40% in the dry season (November – May) but can rise up to 70% during the wet season (Iyanomo, 2002). There are two main wind regimes in the area, one that come from southern part of the country called tropical maritime air mass, it starts from June – September. The second wind comes from Sahara and is called tropical continental air mass, it is so hot, dry, dusty and often hazy. This wind starts from November and last until May (Iyanomo 2002).

Sample collection

A sweep net was used to collect insects sighted on the plants, also, plant parts where the insects were found, method of feeding or damage and description of the insects were observed and recorded made before collection into the sampling bottle containing formaldehyde for preservation until identification. Collection was carried out in the early morning hours and late in the evening when the weather is cool and conducive for the insect activities because in the mid-day, they tend to hide when the temperature is high.

Mounting and Pinning

Insects caught were mounted and pinned vertically through the body also, through the thorax between the bases of the front wing for the purpose of identification.

Statistical Analysis

Descriptive statistics was used to analyze the data using frequency and percentage.

RESULTS

Table 1 shows insect species associated with *C. Procera* in Permanent site of Usmanu Danfodiyo University Sokoto. *Anthophora species* was observed to be the most common insect found in the area with 25% of occurrence followed by *Trichius fascitus* with 15.63% while insects with the least percentage of occurrence was *Dysdercus cingulatus*, with 4.69%.

Table 1: Insect pests associated with *Calotropis procera* in Permanent site of Usmanu Danfodiyo University, Sokoto

Insect species	Frequency	Percentage (%)
<i>Trichius faciatus</i>	10	15.63
<i>Apis mellifera</i>	4	6.25
<i>Anthonophora species</i>	16	25.00
<i>Danaus chrysippus</i>	5	7.81
<i>Componotus perrisi</i>	7	10.94
<i>Dysdercus cingulatus</i>	3	4.96
<i>Physopelata famelica</i>	4	6.25
<i>Musca domestica</i>	4	6.25
<i>Antherenus scrophulariae</i>	5	7.81
<i>Cerceris spincaudata</i>	6	9.38
Total	64	100

Table 2 shows the insect species associated with *C. procera* at Sokoto eastern bye-pass. *Anthonophora species* was observed to be the most common insect found in the area (25.37%) followed by *Trichus*

fasciatus with (13.43%), while the insects with the least percentage of occurrence is the *Physopeleta famelica*.

Table 2 Insects associated with *Calotropis procera* at Sokoto Eastern bye-pass

Insects Species	Frequency	Percentage (%)
<i>Trichius fasciatus</i>	9	13.43
<i>Apis mellifera</i>	6	8.96
<i>Anthonophora species</i>	17	25.37
<i>Danaus chrysippus</i>	6	8.96
<i>Componotus perrisi</i>	7	10.45
<i>Dysdercus cingulatus</i>	5	7.46
<i>Physopelata famelica</i>	3	4.45
<i>Musca domestica</i>	4	5.97
<i>Antherenus Scrophulariae</i>	4	5.97
<i>Cerceris Spincaudata</i>	6	8.96
Total	67	100

Table 3: Summary of insects associated with *Calotropis procera* in the study areas

Insects Species	Frequency	Frequency (%)
<i>Trichius fasciatus</i>	19	14.50
<i>Apis mellifera</i>	10	7.63
<i>Anthonophora species</i>	33	25.19
<i>Danaus chrysippus</i>	11	8.39
<i>Componotus perrisi</i>	14	10.69
<i>Dysdercus cingulatus</i>	8	6.11
<i>Physopelata famelica</i>	7	5.34
<i>Musca domestica</i>	8	6.11
<i>Antherenus Scrophulariae</i>	9	6.87
<i>Cerceris spincaudata</i>	12	9.16
Total	131	100

Table 3 above shows that still *Anthophora species* is the most important specie found to be associated with *C. Procera* having the highest percentage of (25.19%) in the study areas followed by *Trichius fasciatus* with 14.50% occurrence, while the insect with the least percentage of occurrence found to be living on *C. Procera* was *Physopeleta famelica* with 5.34% of occurrence.

DISCUSSION

Calotropis procera was observed to serve as source of food to some insects through its flowers, the flowers secrete nectar from nectarines which is essentially a solution of sugar together with traces of protein, salt, acid, enzymes, and aromatic substances (Morse, 1985).

The activities observed were feeding, pollination, shelter and predation. In terms of feeding all the ten species were observed feeding on the plants but only four species were observed pollinating the flower of the plants and these were *Apis mellifera*, *Anthophora species*, *Danaus chrysippus*, and *Componotus perrisi*. This agreed with the findings of Morse (1985) on insects visitors of *C. procera*. Six species were observed preying on the plant and these are *Trichius fasciatus*, *Antherenus Scrophularies*, *Comporitus perrisi*, *Dysdercus cingulatus*, *Physopelata famelica* and *Danaus chrysippus*.

A similar work to the study was carried out in the United States of America by Wilmer *et al.* (1998) who investigated the roles of insects' pollinators of *C. procera* and *Xylocopa* spp. Consequently Devakuma *et al.* (1998) conducted a research similar to the present study and looked on the modification of *Anthopora*

species foraging on the milk weed. Rao and Pari (1998) worked on the milkweed and their visitors, they observed the activities of the insects on the plants (milkweed). They looked at the pollinating activities of the insects and concluded that some insect present on the plants are pollinators, they further said that *Anthopora species* and *Apis mellifera* probably accounted for between 75% and 80% of the diurnal pollination in their areas of study.

CONCLUSION

Calotropis procera (Milkweed) is commonly found in semi-arid environments and it is thought to be native of west and North Africa. In Nigeria it is mostly found in Northern part of the country. *C. Procera* is usually attacked by insects like *Trichius fasciatus*, *Apis mellifera*, *Anthophora species*, *Componotum perrisi*, *Physopelata famelica*, *Dysdercus chrypsippus*, *Musca domestica*, *Antherenus scrophulariae* and *Cerceris spinicaudata*. Activities of the species on the plant recorded include feeding, pollination, shelter and predation. Effective management practices of the insect pests should be evolved to enhance growth and development of the plant.

REFERENCES

- Al-Zaharani, H.S (2002). Effect of Sanity Stress on Growth of *Calotropis Procera* Seedlings. Pure and Applied Science Vol. 21, 109-122p.
- Baile, L.H and Bailey , E.Z (1976). Hortus third edition: A concise Dictionary of Plants cultivated in USA and Canada. Macmillan, New York, 2006.
- Blunley, N. (1989). Life History and Significance of size triggered Metamorphosis in Milkweed bug, 57 – 63p
- Caius, J.F (1989). The Medicinal and Poisonous plants of India Scientific Publisher Jodphu, India 251 – 220p
- Dailey, J.P, Graves, C.R and Herrings,I.J (1989). Hemipetra Collected on Milkweed, *Asclepias Syriaca* at on ohio site, New York , 157 – 161p.
- Ghos, N.C (1988) Comprehensive Materials Medical Hanna Mann Publishers Company Limited, Calcuta India. 8 – 10p
- Grieve, M. (1977). A Modern Herbal Jonathan Limited, London Vol. 1: 925p.
- Hampson C.R and Simpson, G.M (1990). Effect of Temperature, salt and osmotic potential on early growth of Wheat Tritian Sativum, 524 – 528p
- Howard, R.A (1989), Flora of the Leaser Antilles , Leward Winward Island Dictylenae (Vol. 6) Anold Arbventum, Harvard University.
- Iyanono, K.M (2002) Soil Study of Gum Arabic Soil Sokoto, Zamfara and Kebbi State (Field Study) Rubber Research Institute of Nigeria Report, 1971- 1977.
- John, E and Paul, E.R (1993). The Biology of Horticulture, An Introductory Textbook, John Wiley and Sons, W.C Great Britain . 348p.
- Kozliwski,T.T (1969). Seed Biology and Physiological Ecology. Cambridge University Press . 380 – 383p
- Lindely J.A (2001). Healing plants of Peninsular India CAB International Wallingford, U.K and New York, 940 – 944
- Little, E.L, Wood Bury, R.O and Wadsword, F.H (1974). Trees of Pucto Rico and Virgin Island, Vol. 2 Agricultural Handbook U.S Department of Agriculture, Washington D.C, 124 - 135p.
- Morse, H.D (1981) Modification of Bumble Bee Foraging, the Effect of Milk weed Pollina, Ecology, Vol. 5, 25 – 30p
- Morse, H.D (1985), Milkweed and their visitors, Science of Ecology Vol. 3, 9 -96p
- Parrotra, J.A (2001). Healing plants of peninsular India . CAB International Wallingford, U.K and New York. 994 – 950p
- Rao, P.J, Pari, K and Devakumar, C. (1998). A novel insect anti feedant non protein amino acid from *C. Procera* gigantheum, Nat Prod and ACS Publication.

- Rahman , M.A and Wilcock, C.C (1991). A taxonomic revision of *Calotropis Procera*, Nordic Journal of Botony, 301 – 308p.
- Sastry, C. S.T and Karathekar, K.Y (1990). Plants for Reclamation of Wasteland, publication directorate . CSIR, New Delhi. 240 – 246p
- Singh , U, Wadbwani, A.M and John, B.M (1996). Dictionary of Economic plants of India. Indian council of Agricultural research, New Delhi 39-40p.
- Seeman, J.R and Critically, (1985). Effect of salt stress on growth ion content and phototsythetic capacity of salt sensitive species phaseolus Vuglaries Planta. 151 – 164p.