



A SURVEY OF INSECTS PEST OF GROUNDNUTS FROM SOME FARMS IN GWAGWALADA

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ARTICLE INFO	ABSTRACT
Received 21 st April, 2016 Received in revised form 29 th May, 2016 Accepted 08 th June, 2016 Published online 25 th July, 2016	The investigation of the groundnut pest was conducted on some farms around Gwagwalada area council. During the survey the insect were collected once in a weeks, Mondays 6:00-7:00am when the insect were still weak for a period of five month (June - October). Naphthalene (A.A.F) was use to preserved part of the plant damage by the pest and formalin for the preservation of insect pest before identification. During the investigation the following insect pests were found Termites, Black ant, Crickets, Grasshoppers and Beetles. The common insect pests observed were Grasshopper (40%) followed by Termite (22%), Beetle (14%) and other pest constituted (24%). The highest incidence of insect damage was due to lack of proper control measures.
Keywords: Groundnut, Insectpest, Gwagwalada, Prevalence, Seeds	

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INTRODUCTION

Groundnut (*Arachis hypogaeae*) is a leguminous plant grown worldwide, predominantly in developing countries. According to food and agricultural organization (1996), about 90% of the total world production come from developing countries and approximately 67% from the semi-arid tropics (SAT). Africa alone produces 5.2 million tones, representing 20% of the global production concentrated in the semi-arid tropical countries. Production in West Africa as a whole showed a decline from 1966-1985. This was, however followed by a period of growth due to cultivation of the crop on more acreage of available land from 1985-1995 Debrah and Waliyar (1998).

Groundnut constituted a major source of foreign exchange as an export commodity as well as generating local income for farmers. It is rich in protein and oils and used in the manufacture of cooking oil as well as in making a paste for preparation of groundnut sauce in many African communities. It's also eaten boiled, fried or roasted, and its by-products can be used as animal feed Debrah and Waliyar (1998). Groundnut is grown singly or intercropped with other legumes and cereals.

The decline of groundnut Production in Africa is attributed to factors such as drought, pests, disease, temperature variability Yayock (1978) and inappropriate cultural practices. In addition, unstable government agricultural policies, for instance the dissolution of the production Board, created by the government to facilitate the procurement of farm inputs and the marketing of groundnut in Nigeria, have also contributed toward the fall in groundnut production. The potential for

increasing groundnut production exists in the vast arable areas of Africa. However, biotic constraints such as insect and diseases discourage farmers from taking up groundnut cultivation. Furthermore, the financial implication associated with the acquisition and developments of more cultivable land preclude the participation of resource-poor farmers (which constitute the greater part of agricultural producers) in Africa on large-scale, more profitable agriculture. There is a need, therefore, to maximize the yield in smallholder farmer's field controlling pests and disease and providing an environment for increased production Yayock (1978), Lynch (1986).

Insect pests constitute a major constrain on food production in tropical region across the world. Not only do these cause great loses in the quality of groundnut production but also seriously lower the quality. Some indirect damage to the crop is also possible; many insect species are notorious for their ability to spread plant pathogens, especially virus spread by the aphid Agboola (1979).

Insect pests might have arisen as a result of monoculture practice by man as groundnut plants provide, not surprising that insects are often most serious pests of cultivated groundnut plants. The ways in which the pests affect man's welfare are many. However, the numbers of species of insect that are regarded as pest are not predominant in number considering the ecology of insects and their spread. The groundnut pests are found both on land and in the soil. They damage the groundnut at different stage beginning from the seed to seedling as well as mature and harvest stage of the plants.

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The economic loss from all insects causes a total of billion dollars throughout the world Gadzama (1983). It's therefore obvious that the long association of man with insect has yielded a state of dubious co-existence. Insects had been existing for long some of which are even before Man according to the geological evidence strangely South Wood (1977) in his publication "Man and Entomology" said that the study of insects had its origin in theology and art.

The aim of this investigation is to determine the insect pests that are associated with groundnut production, the damage cause and suggest the possible measure of controlling them in Gwagwalada and also to identify some diseases that affect groundnut plant.

All pests at the mature stages were collected after the degree of damage was assessed on which part of the crop either the root, leave, or the flower.

Laboratory studies

All pests collected in the field were identified with x40 objective of a dissecting microscope and classified individually based on the family, order and species to which they belong using Hill and Waller (1999). Some of the damage parts of the plant and insect responsible for the particular damage were pictured in the laboratory.

RESULTS

Table 1 Prevalence of insect pests of groundnuts collected from the 3 farms

S/N	Order	Family	Species	No. Collected	Percentage prevalence %
1.	Isoptera	Termoplidea	<i>Odontotermes sp</i>	7	14
			<i>Zootermopsis</i>	4	8
2.	Hymenoptera	Formicidae	<i>Messor. barbarous</i>	2	4
			<i>Otiorychus sp</i>	3	6
3.	Coleoptera	Chysomelidea	<i>calaspis brunnea</i>	4	8
			Gryllotalpidea	<i>Mole cricket</i>	4
4.	Othorptera	Tettigonidea	<i>Schistocerca. gregaria</i>	8	16
			Acrididea	<i>Kraussaria. angulifera</i>	12
5.	Thysanoptera	Thripidea	<i>Frankline sp</i>	3	6
6.	Lepidoptera	Nymphalidea	<i>Molesta sp</i>	3	6
Total				50	100%

MATERIALS AND METHODS

Study Area

This research was conducted in Gwagwalada. Gwagwalada is one of the six Area Council of Federal Capital Territory Abuja, Nigeria and is located on the longitude 7°04'E, 8°56'N and latitude 7°06'E, 8°58'N. Three different farms were visited. The farms located behind Shari'ah Court belonging to Mr. Jonathan Danbaki, Mr. Isyaku and Mr. Dodo while some of the pests were collected behind the Boys hostel of University of Abuja Mini Campus.

Field collection

Field collection of pest was carried out a week, Mondays 6:00-7:00am when the insect were still weak. The pest and the extent of the damage were assessed by the establishment of close contact with farmers which with friendly approach and explanation gave their cooperation. The collected pest organism were kept in vile containing formalin for preservation and taken to the laboratory for identification. The plant parts (roots and pods) damaged by pest organisms were carefully removed and preserved in naphthalene before taken their pictures. The plant presser was used to give plant leaves better shape before making their pictures.

Seeds that failed to germinate were removed from the soil and observed for pest damage on the root or the soft tissue of young plant. The wilted plant was uprooted and examined the pest responsible for the root damage and if found the pest was preserved in the flask containing formalin for identification.

DISCUSSION

An investigation on the insect pest of groundnut was carried out in some farms in Gwagwalada. The investigation started in June immediately after the farmers stated sowing groundnut seeds to October that is the harvesting period.

During the period of observation, it was found that some of the seeds were not germinating. To examine the reason for this failure, the seeds were removed from the soil for observation during which it was found that part of the seed was eaten up by the termite (*Odontotermes*) and the remaining parts of the seed were moulded. This was observed behind Shari'ah Court. Some species of microtermes store their food to survive hard times although some of the stored food of termites was moulded which might form part of the food of the termite Johnson et al., (1981), Umeh (1998).

The black ant (*Messor Berbarous*) was found to be one among the pest of sown seeds. They eat the seeds that are not well fixed in to the soil or those that fall-off during sowing while some burrow down to sown seeds. Parts of the seed were eaten by some while some were carried to their nest. According to Brian (1983) in south-west France, species of *Messor* prefer seeds to prey which eat when the food is short.

Amin et al. (1985) suggested that in time of food scarcity some mammal die or migrate but the macro termite persists by using their stored food. Despite the fact that, most ants eat seed, some collect and store the seeds but do not feed on them Matthew (1989). *Lasius alienus* (farmicinae) are good example of ants that collect seeds but do not feed on them. Also the differences in the time of availability and colony demand for food have lead

to the evolution of storage behavior of black ant (*Messor barbarous*) especially the workers.

Furthermore, observation revealed that the plant at the growing stage (seedling) was attacked by beetles. They were seen eating the cotyledon leaving the rest on the young plant. This type of damage was enormous on the farm of Mr. Dodo. Dennis (1987) said adult beetles such as *Colaspis brunnea* feed on pieces of hypo cotyledon and roots and make holes on the cotyledons and leaves but underground damage to the hypo cotyledon is the most serious.

The severity of damage caused by insect pest was observed to be dependent on the nature of their mouth parts. Crickets were found excavating tunnels near the damaged groundnut and part of the plant dragged in to be used as food during the day time. Crickets are large insects with powerful-fore-legs modified for digging the soil but of low population Dennis (1987). Beside this, Dennis (1987) further reported that the root, tubers, and underground stem are eaten by these subterranean pests. Ground crops such as strawberry may be eaten as well. Small seedling may be entirely eaten up by the tunnel nymphs and adults. Such destroyed plants by cricket were observed, in the present study.

During the flowering period, it was observed that the number of insect pests damage had increase than at any stage. This is because the egg of many insects might have hatched out and a possible place to be attacked was increased on the plant as started earlier. Two species of grasshoppers (*Kraussaria angulifera* and *Schistocerca gregaria*) were the most destructive insect that feed on leaves of the plant. They have biting chewing mouth parts. When feeding they hold down the plant parts with the tarsi of their thoracic legs. Both the adult and the nymph were seen eating the leaves. Leaves were eating from the lamina down to the plant mid-rib. Their feeding pattern reduces the rate of photosynthesis required by the plants. They feed vertically on the plants and are active during the day but weak in the early hours of the day. Dennis (1987) reported that the grazing by both nymphs and adults cause loss of leaf lamina. Severe attacks by large population of these grasshoppers can result in complete defoliation.

Thrips were among the notorious insects observed during this investigation. These species were found attached to and feeding on many flowers of the plant. They rasp the cells off the upper surface of young leave while they sill in the bud, and these leaves become distorted. Seedling growth may be retarded by several weeks and yield can be seriously affected. Mature plants are little affected by thrips Hill and Waller (1999).

According to Dennis (1987) butterflies larvae are among the pests that have great economic importance as was also observed during the field investigation, they feed starting from the lamina to the midrib. The damage caused by the larvae of the butterfly (*Molestia*) and many other such as charaxes were on the lamina of the groundnut leaves as was observed behind boy's hostel.

The pest spectrum for this crop is wide and some of the more serious pests tend to be rather local in distribution, so generalization about the pest complex on the growing crop are difficult to make Hill and Waller (1999).

In conclusion, insect pest have wider range of destruction on the field crop particularly in the tropical region of the world. They either feed directly or indirectly on the plant introducing pathogens to the crop and the direct or indirect impact it has on human welfare and existence. Therefore, efforts should be geared towards eradicating these pests as a means of achieving food security while giving good income for the farmers.

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