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Research Article

DIVERSITY OF INSECT FAUNA AND DAMAGE CAUSED BY PESTS ASSOCIATED WITH SESAME (*SESAMUM INDICUM* L. 1753) CULTIVATION IN THE CENTRAL REGION OF CÔTE D'IVOIRE

[1*]OSSEY Christian-Landry, [2]GOME GOMUN Arthur, [1]GADJI André Gabazé, [1]COULIBALY Noupé Diakaria, [1]N'GAZA Aya Félicité Lucie, [1]KOUAKOU N'guessan Kan Pulcherie, [1]FONDIO Lassina, [2]ABOUA Louis Roi Nondenot

[1]CNRA (Centre National de Recherche Agronomique),01 BP 633 Bouaké 01, Côte d'Ivoire
[2]Université Felix Houphouet Boigny, Côte d'Ivoire

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ABSTRACT

The need to develop effective pest control methods to improve sesame productivity led to an inventory of insects and an assessment of pest damage. The study was conducted at a research station in Central Côte d'Ivoire from July to October 2022. Insects were manually collected twice a week using tweezers and a sweep net. Pest damage was evaluated by carefully inspecting leaves and capsules. In total, 23 species were identified, grouped into 18 families and eight orders. The larvae of the Lepidopteran *Antigastra catalaunalis* were the most numerous, accounting for over 20% of the insects captured. These larvae attack sesame leaves, flowers, and capsules. The dipteran *Asphondylia sesami* was also harmful due to the nature of its damage (gall formation on capsules). Damage assessment revealed that two accessions (Se3/17BF and Se4/KGO1) were most affected by pests, with more than 12.69 ± 1.90 to 17.24 ± 4.56% of capsules attacked per plant. The other three accessions (Se1/17BF, Se2/17BF, and Se5/KGO2) were less affected, with capsule attack rates below 10%. Regarding damage from the main pest, A. catalaunalis, accessions Se3/17BF and Se4/KGO1 had the highest percentages of capsules attacked per plant (9.95 ± 4.88 and 9.63 ± 2.00%). The lowest percentage (1.73 ± 0.78%) was recorded for Se2/17BF.

Keywords: Sesame, Insect fauna diversity, Accessions, Damage, Pests.

INTRODUCTION

Sesame (*Sesamum indicum* L.) is one of the main oilseed crops grown in tropical and subtropical regions of Africa, Asia, and South America (Muthoni, J., & Shimelis, H., 2025). Globally, this plant ranks ninth among the top thirteen oilseed crops, and its demand continues to increase (Saha *et al.*, 2014; Sène *et al*., 2021). Estimates suggest that the global market for sesame could be worth more than 15 billion dollars by 2025 (Anonymous, 2021). Africa, which accounts for nearly half of the world's production, is well positioned to benefit from this financial opportunity (Anonymous, 2021). The strong global demand is justified by the high oil content of sesame seeds. According to several authors (Queiroga, 2007; Girmay, 2018; Chau *et al*., 2021; Gashaw, 2021), sesame seeds contain a higher oil content (60%) compared to other oilseed crops such as soybean (20%), rapeseed (40%), sunflower (45%), and peanut (45-56%). Consumption of oil extracted from sesame seeds offers essential nutritional benefits for human health, including antioxidant, anti-aging, antihypertensive, anti-inflammatory, and anticancer properties (Yasothai *et al*., 2014). Sesame seeds are consumed directly like peanuts and are used in the preparation of buns, crackers, cakes, soups, and spices (Abou-Gharbia *et al*., 2000). Sesame cake contains about 32% crude protein and 8-10% oil, making it an essential food for livestock and poultry (Yasothai *et al.*, 2014). Sesame seeds are also used in the pharmaceutical and cosmetic industries (Purseglove, 1984). Despite its socio-economic importance, sesame cultivation faces significant challenges, particularly from pests that negatively impact production. Among these constraints,

*Corresponding Author: OSSEY Christian-Landry, CNRA (Centre National de Recherche Agronomique),01 BP 633 Bouaké 01, Côte d'Ivoire. Email: osseychristianlandry@yahoo.fr.

attacks by numerous insect pests have a considerable negative effect on yields. In Africa, several studies (Mahmoud, 2012; Amonkou *et al*., 2013) have been conducted on this plant. However, very few studies have been carried out on sesame in Côte d'Ivoire. Those conducted by Siéné *et al*. (2021) focused on evaluating the agronomic characteristics of five sesame accessions in Korhogo (Côte d'Ivoire) and determining the phytopathological constraints related to its cultivation. Regarding entomological constraints, no studies have been conducted. It is therefore necessary to undertake research to inventory the insect fauna associated with sesame cultivation and to assess the related damage in Côte d'Ivoire. The general objective of this study is to determine the diversity and damage of insect fauna associated with sesame cultivation in order to develop effective pest control methods.

MATERIALS AND METHODS

Plant Material

The plant material consisted of five sesame accessions (Se1/17BF, Se2/17BF, Se3/17BF, Se4/KGO1, and Se5/KGO2) from the collection of the Vegetable and Protein Crop Program (CMP) of the National Center for Agronomic Research (CNRA) of Côte d'Ivoire. The crop cycle of these accessions ranged from 99 to 108 days after sowing (DAS).

Animal Material

The animal material consisted of all insects collected from the sesame plants.

Technical Material

The technical material included equipment for establishing and maintaining the experimental plot, capturing insects, observing, identifying, and preserving insects. The equipment used for setting up and maintaining the plots consisted of a tractor fitted with a disc plow for tilling and clearing the plot. Hoes were used for weeding, and a double measuring tape was used to measure the plot and the distance between stakes. The capture equipment included a sweep net (FiW for catching flying insects and entomological tweezers for handling less mobile insects. A CANON IXUS 145 digital camera (16.00 megapixels) was used to photograph insects and their damage. A MOTIC binocular magnifier equipped with a Mikrocamlab camera and connected to a computer was used to magnify insects for identification. It was p also used to photograph the developmental stages of insects. Identification keys or guides based on adult morphology (Delvare and Aberlenc, 1989) and reference books such as those by Hill (1983), de Villiers (1948), Michel and Boumier (1997), Bordat and Arvanitakis (2004), and Poutouli *et al*. (2011) were used to determine certain insect genera and species.

Study Area

The study was conducted at the experimental site of CNRA Bouaké, at the Food Crops Research Station (SRCV). This station is located at PK8 on the Sakassou road, with geographic coordinates: 7°46' North latitude, 5°06' West longitude, and at an altitude of 376 meters. The climate is of the Baoulé type. Rainfall is bimodal, with two rainy seasons (from April to July and from September to October) and two dry seasons. The vegetation in the Bouaké region is savanna-forest, characteristic of the "V Baoulé" area, with shrub savanna as the dominant vegetation. According to the soil classification commission (Perraud, 1967), the soil in Bouaké is ferralitic. The study period extended from July to October 2022, with average temperatures ranging from 25.7 to 29.2°C, relative humidity between 82.3 and 87.5%, and rainfall of 182.85 mm.

Experimental design

The experimental design (Figure 1) was a randomized complete block design (Dagnelie, 2003) comprising five entries or accessions and three replications. The experimental plot, with an area of 256 m² (16 m × 16 m), was divided into three blocks separated by 2 meters. Each block contained five (5) elementary plots, each measuring 4 meters in length and 2 meters in width. Two elementary plots were separated by 1.5 meters. In each elementary plot, sowing was done in three (3) rows of 4 meters, spaced one meter apart. The distance between hills on the row was 0.5 meters, resulting in 8 hills per row.

Establishment and management of the crop

Before planting, a tractor equipped with a disc plow was used for clearing and tilling the plot. Then, a dose of 120 kg/ha of NPK fertilizer was applied. During sowing, the seeds were mixed with sand in the proportion of one-third seeds to two-thirds sand. The mixture was then sown directly into the hills. Thinning to two plants per hill was carried out fifteen (15) days after sowing. Six weeks later, hoeing and ridging were performed to form mounds. During crop management, no phytosanitary treatment was applied.

Method of collection, preservation, and identification of insects

Insects were captured twice a week using tweezers and sweep nets during flowering and fruiting. Sweeping was performed every two days (Tuesday and Friday) at various times of the day (from 7 a.m. to 10 a.m. and from 4 p.m. to 5 p.m.). The captured insects were preserved in vials containing 70% alcohol and transported to the laboratory for identification and species counting. Larvae were also collected from leaves, flower buds, and capsules. Each larva was then placed in a rearing box. The boxes were kept in the rearing room under conditions of average temperature (25 ± 2°C) and relative humidity (70 ± 5%). The larvae were fed with healthy sesame leaves, flowers, and capsules, which were renewed daily until pupation. The

adults obtained were also taken to the laboratory for identification. Identification was carried out using a MOTIC binocular magnifier equipped with a Mikrocamlab camera (Figure) and identification keys and reference books (Delvare and Aberlenc, 1989; Hill, 1983; Villiers, 1948; Michel and Bournier, 1997; Bordat and Arvanitakis, 2004; Poutouli *et al*., 2011). Two ecological parameters were used to analyze the data: relative abundance and frequency of occurrence. According to Dajoz (2000), the frequency of occurrence represents the ratio between the number of samples in which the species is found (Pi) and the total number of samples (P):

$$C(\%) = \frac{Pi \times 100}{P}$$

Five classes of frequency of occurrence were defined:

Ubiquitous species (C = 100%). Constant species (50% ≤ C < 100%), Frequent species (25% ≤ C < 50%), Accessory species (5% ≤ C < 25%), Rare species (C < 5%)

As for relative abundance, according to Zaime and Gautier (1989), it expresses the ratio between the number of individuals of a given species (Ni) and the total number of individuals of all species combined (N):

$$Ar(\%) = \frac{Ni}{N} \times 100$$

Four classes of relative abundance were defined:

Very abundant species (Ar ≥ 10%), Abundant species (5% ≤ Ar < 10%), Fairly abundant species (1% ≤ Ar < 5%), Scarce species (Ar < 1%)

Evaluation of damage caused by pests

Observations were made on the leaves and capsules of ten central plants in each elementary plot. The number of damaged and undamaged leaves was determined. The percentage of damaged leaves was calculated using the following formula:

Percentage of damaged leaves = (Number of damaged leaves) / (Total number of leaves) × 100

Capsules were counted and inspected to identify those infested or attacked by insects. The percentage of infested or attacked capsules was calculated using the following formula (Isirima *et al*., 2010; *N'Ta et al.*, 2013):

Percentage of attacked capsules = (Number of attacked capsules) / (Total number of capsules) × 100

Statistical analysis of data

EXCEL software version 2013 was used to enter the collected data and calculate the means of the different parameters of the five sesame accessions, the relative abundance, the frequency of occurrence of collected insects, the number of damaged leaves for each accession, and the percentage of capsules attacked by insect pests. The various analyses were performed using STATISTICA software version 7.1. One-way analysis of variance (ANOVA) was conducted to evaluate agronomic and entomological parameters. In case of significant differences between the percentages of capsules attacked by pests and the number of damaged leaves among the five sesame accessions, Tukey's test at the 5% threshold was performed to classify them into homogeneous groups.

RESULTS AND DISCUSSION

The collection techniques used enabled the capture of 1,556 insects belonging to eight (8) orders, distributed across 18 families and 23 species. The orders Hemiptera, Coleoptera, and Orthoptera, with six, five, and four species respectively, were the most diverse. The three orders (Hemiptera, Lepidoptera, and Orthoptera) were the most abundant, representing 26.09%, 21.74%, and 17.39% of the individuals collected, respectively. The orders Dictyoptera and Diptera were poorly represented (one species per order, each accounting for 4.34% of the insects collected) (Table 1). The number of individuals varied by species. *Antigastra catalaunalis*, belonging to the family Pyralidae, had the highest total count (311 larvae). Next were *Cheilomones sulphurea*, *Nezara viridula*, and *Aspavia armigera*, with 256, 203, and 152 individuals collected, respectively (Table 2). The other 19 species each had fewer than 100 individuals.

Table 1. Species richness and proportion of individuals collected by order.

Order	Number of species	Proportion of individuals collected (%)
Orthoptera	4	17.39
Dictyoptera	1	4.34
Coleoptera	5	8.70
Lepidoptera	2	21.74
Diptera	1	4.34
Homoptera	2	8.70

Heteroptera	6	26.09
Hymenoptera	2	8.70
Total	23	100

Four species (*Antigastra catalaunalis*, *Nezara viridula, Cheilomones sulphurea*, and *Aspavia armigera*) were very abundant (relative abundance greater than 10%). The species *Nagusta obscuripennis* was abundant with 5.36% on sesame crops. Thirteen species were fairly abundant (1% ≤ Ar < 5%): *Componotus floridanus, Pachnoda cordata, Aphis gossypii, Ptyelus spp, Dysdercus voelkeri, Rhynocoris carmelita, Cosmolestes pictus, Mantis religiosa, Tettigonia viridissima, Leptysma marginicollis, Xenecatantops humilis, and Zonocerus variegatus*. Six species were scarce (Ar < 1%): *Asphondilia sesami, Vanessa cardui, Ptilothrix bombiformis, Chrysolagria cuprina, Medithia quaterna, and Pachnoda consentanea*. The distribution of insects according to frequency of occurrence revealed nine ubiquitous species (*N. viridula, A. armigera, N. obscuripennis, D. voelkeri, A. gossypii, C. sulphurea, Mantis religiosa, A. catalaunalis, and A. sesami*), eight constant species (*P. cordata, C. floridanus, Ptyelus spp, R. carmelita, C. pictus, L. marginicollis, X. humilis, and Z. variegatus), four frequent species (M. quaterna, T. viridissima, P. bombiformis, and V. cardui L*), and two accessory species (P. *consentanea* and *C. cuprina*).

Table 2. Numbers, relative abundance, and frequency of occurrence of different insect species collected on sesame Plants.

Order	**Family**	**Species**	**Number of insects collected**	**Relative Abundance** Ar (%)	**Frequency of occurrence** C (%)
Orthoptera	Pyrgomorphidae	*Zonocerus variegatus*	24	1.58	75
	Acrididae	*Xenecatantops humilis*	42	2.77	87.5
		Leptysma marginicollis	61	4.03	87.5
	Tettigoniidae	*Tettigonia viridissima*	43	2.84	25
Dictyoptera	Mantidae	*Mantis religiosa*	41	2.71	100
Heteroptera	Pentatomidae	*Nezara viridula*	256	16.49	100
		Aspavia armigera	152	10.05	100
	Reduviidae	*Nagusta obscuripennis*	81	5.36	100
		Cosmolestes pictus	43	2.84	62.5
		Rhynocoris carmelita	22	1.45	75
	Pyrrhocoridae	*Dysdercus voelkeri*	61	4.03	100
	Cercopidae	*Ptyelus spp*	34	2.25	75
Homoptera	Aphididae	*Aphis gossypii*	45	2.89	100
Coleoptera	Coccinellidae	*Cheilomenes sulfurea*	203	13.43	100
	Cetoniidae	*Pachnoda cordata*	26	1.72	50
		Pachnoda consentanea	11	0.72	12.5
	Chrysomelidae	*Medithia quaterna*	5	0.33	25
	Tenebrionidae	*Chrysolagria cuprina*	4	0.26	12.5
Hymenoptera	Formicidae	*Componotus floridanus*	62	4.10	75
	Apidae	*Ptilothrix bombiformis*	13	0.86	37.5
Lepidoptera	Pyralidae	*Antigastra catalaunalis*	311	20.58	87.5
	Nymphalidae	*Vanessa cardui L*	4	0.26	25
Diptera	Cecidomyiidae	*Asphondylia sesami*	12	0.79	100
8	**18**	**23**			**1556**

The pest insects captured were classified into three categories according to their actions on the plant: defoliators, piercing-sucking insects, and capsule/seed borers. Beneficial insects were represented by predators and pollinators. Defoliators belonged to the orders Lepidoptera, Coleoptera, and Orthoptera. This group of pests was represented by six species. Coleoptera (*Medithia quaterna* and *Chrysolagria cuprina*) partially devour the leaves, causing perforations in the leaf blade. Lepidoptera (*Antigastra catalaunalis*) cause damage through their larvae, which consume the upper leaf parenchyma, sometimes leaving only the veins. Orthoptera (*Zonocerus variegatus*, *X. humilis*, and *L. marginicollis*) devour the leaf blade. The proportion of insects collected belonging to this group was 11.5% (Table 3). Piercing-sucking insects belonged to the orders Hemiptera and Homoptera. Hemiptera (*A. armigera, N. viridula*) pierce and suck sap from capsules and stems, covering them with multiple

black spots and causing seed abortion. Homoptera (*Ptyelus spp, Aphis gossypii*) pierce and extract sap from leaves, thereby weakening the plant. This group of pests was the most numerous (35.22% of insects collected) on sesame crops (Table 3). Capsule borers belonged to the orders Lepidoptera and Diptera. Lepidoptera were represented by the larvae of *Antigastra catalaunalis*. Females lay eggs on leaves, flowers, and young capsules during flowering and fruiting. The larvae penetrate the capsules and consume their reserves. Diptera such as *Asphondilia sesami* are flies that lay eggs in the ovaries, causing galls and capsule drop. They represented 20.76% of the total insects collected (Table 3).

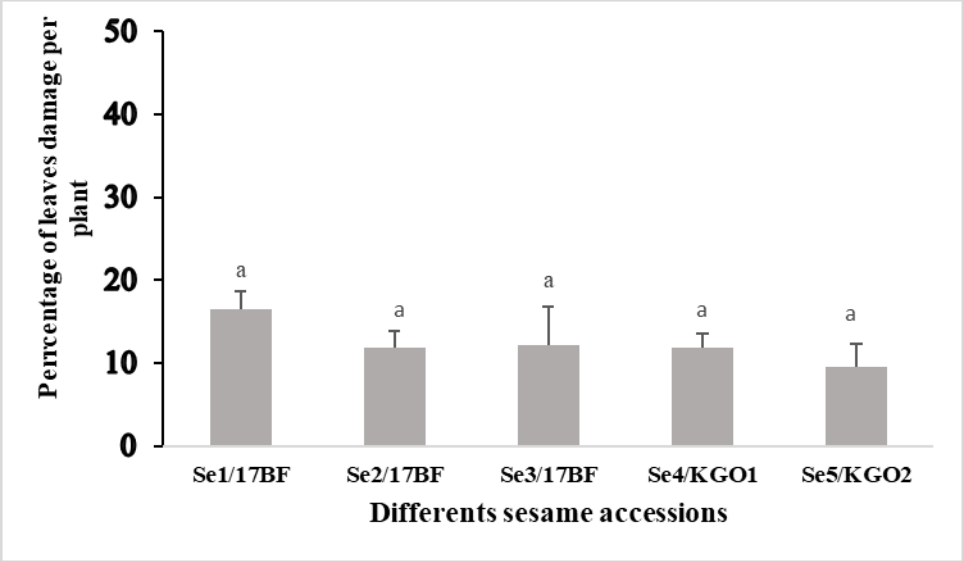
Table 3. Number and proportion of individuals according to trophic status.

Statut trophique	Espèces		Effectifs	
	Nombre	Proportion (%)	Nombre	Proportion (%)
Défoliateurs	6	26.09	179	11.50
Foreurs	2	8.70	323	20.76
Piqueur-suceurs	4	21.74	548	35.22
Prédateurs	5	21.74	390	25.06
Pollinisateurs	2	8.70	17	1.09
Autres	3	13.04	99	6.36

Table 4. Actions of insects collected on sesame (*S. indicum* L.)

Ordres	Family	Species	Insect action
Orthoptera	Pyrgomorphidae	*Zonocerus variegatus*	
	Acrididae	*Xenecatantops humilis*	**Defoliators**
		Leptysma marginicollis	
	Tettigoniidae	*Tettigonia viridissima*	
Dictyoptera	Mantidae	*Mantis religiosa*	**Predators**
Heteroptera	Pentatomidae	*Nezara viridula*	**Piercing-sucking**
	Pentatomidae	*Aspavia armigera*	
	Reduviidae	*Nagusta obscuripennis*	
	Reduviidae	*Cosmolestes pictus*	**Predators**
	Reduviidae	*Rhynocoris carmelita*	
	Pyrrhocoridae	*Dysdercus voelkeri*	
Homoptera	Cercopidae	*Ptyelus spp*	**Piercing-sucking**
	Aphididae	*Aphis gossypii*	
Coléoptère	Coccinellidae	*Cheilomenes sulfurea*	**Predators**
	Cetoniidae	*Pachnoda cordata*	**Fruit eater**
	Cetoniidae	*Pachnoda consentanea*	
	Chrysomelidae	*Medithia quaterna*	**Defoliateurs**
	Tenebrionidae	*Chrysolagria cuprina*	
Hyménoptère	Fourmicidae	*Camponotus floridanus*	**Honedew feeder**
	Apidae	*Ptilothrix bombiformis*	**Pollinisateurs**
Lépidoptère	Pyralidae	*Antigastra catalaunalis*	**Defoliators, borers**
	Nymphalidae	*Vanessa cardui L*	**Pollinisateurs**
Diptère	Cecidomyiidae	*Asphondylia sesami*	**Borers**
8	**18**	**23**	

Table 5 presents the number of damaged leaves per plant for five sesame accessions at the fruiting stage. The number of damaged leaves ranged from 9.60 ± 2.69 to 16.53 ± 2.14 across the five accessions. Analysis of variance revealed no statistically significant differences in leaf damage among the accessions ($P > 0.05$).



Bars marked with the same letter do not differ significantly at the 5% level (Tukey's HSD test)

Figure 1. Percentage of leaves damaged per plant by pests according to sesame accessions.

Table 5 presents the number of capsules per plant and the percentage of capsules damaged per plant by all pests combined, as well as by the two main pests' larvae of *Antigastra catalaunalis* and *A. sesami* across the different sesame accessions. The number of capsules per plant ranged from 101.00 ± 44.78 to 118.57 ± 36.81 across the five accessions. No statistically significant differences were observed among accessions ($P > 0.05$). Regarding the percentage of capsules damaged per plant by all pests, analysis of variance revealed a significant difference among accessions ($F = 8.015$; $P = 0.003$; $df = 4$). The highest damage rate (17.24 ± 4.56%) was recorded on accession Se3/17BF, while the lowest (5.08 ± 0.96%) was observed on Se2/17BF. The damage percentages for Se4/KGO1, Se5/KGO2, and Se1/17BF were 8.14 ± 1.09%, 9.15 ± 3.75%, and 12.69 ± 1.90%, respectively. For damage caused specifically by *A. catalaunalis* larvae, the highest percentage (9.95 ± 4.88%) was recorded on Se3/17BF, and the lowest (1.73 ± 0.78%) on Se2/17BF. The corresponding values for Se4/KGO1, Se5/KGO2, and Se1/17BF were 3.59 ± 1.33%, 6.28 ± 1.87%, and 9.63 ± 2.00%, respectively. Analysis of variance confirmed a significant difference among accessions ($F = 14.628$; $P = 0.0003$; $df = 4$). In contrast, the percentage of capsules damaged per plant by *A. sesami* larvae ranged from 0.19 ± 0.17% to 1.58 ± 1.22%. No significant differences were found among accessions ($P > 0.05$).

Table 5. Number of damaged leaves and percentages of pods attacked per plant by pests

Accessions	Number of capsule par plant	Percentages (%) of pods attacked per plant		
		Ravageurs	*Antigastra catalaunalis*	*Asphondilia sesami*
Se1/17BF	110.20±70.20^{a}	8.14±1.09^{b}	3.59±1.33^{b}	1.58±1.22^{a}
Se2/17BF	118.57±36.81^{a}	5.08±0.96^{b}	1.73±0.78^{bc}	0.49±0.35^{a}
Se3/17BF	102.17±18.43^{a}	17.24±4.56^{a}	9.95±4.88^{a}	1.11±0.79^{a}
Se4/KGO1	101.00±44.78^{a}	12.69±1.90^{ab}	9.63±2.00^{a}	0.19±0.17^{a}
Se5/KGO2	113.70±60.87^{a}	9.15±3.75^{b}	6.28±1.87^{ab}	0.27±0.24^{a}
F	109.13	8.015	14.628	2.284
df		4	4	4
P	0.99	0.003	0.0003	0.131

Values in the same column followed by the same letter do not differ significantly at the 5% level according to Tukey's HSD test

Numerous insect species were captured on the plants of the five sesame accessions. These findings are consistent with those reported by Mahmoud (2012) and Amonkou *et al.* (2013), who also observed a wide diversity of insect species on sesame crops in Egypt, Niger, and Cameroon, respectively. In total, 23 species were recorded during this study. The collected insects were classified into three trophic groups: pests, predators, and pollinators. Sesame

plants likely emitted volatile compounds that attracted insects from these different groups. According to Vet & Dicke (1992), insects use secondary metabolites produced by host plants to locate them and feed. Predators have also evolved the ability to exploit these informative cues to the detriment of herbivorous insects and to the benefit of the host plant (Barbosa & Letourneau, 1988). Pests including defoliators, piercing-sucking insects, and capsule and seed borers were the most abundant on sesame. Various plant organs serve as food sources for multiple defoliating, boring, and sucking species (Traoré *et al*., 1993; Amonkou *et al*., 2013). Among the pests, defoliators were the most numerous. These results align with those of Dilipsundar *et al*. (2019), who also found defoliators to be the dominant group on sesame. This may be explained by the continuous availability of leaves throughout the three phenological stages, making them accessible to a wide range of insect species.

Among the defoliators, *Antigastra catalaunalis* was the most abundant species on sesame. Several authors (Egongu *et al*., 2005; Amonkou *et al*., 2013; Kinati; Swapna *et al*., 2021) have identified this lepidopteran as the principal pest of sesame. It was omnipresent, attacking leaves, flowers, and capsules, and proved to be the most harmful species to the crop. Piercing-sucking insects, represented by four species, were also abundant but caused less damage. According to Siené *et al*. (2021), their presence on sesame does not necessarily result in significant harm. A high number of the aphid-predating lady beetle *Cheilomenes sulfurea* was recorded. Sesame may attract natural enemies of pests, particularly *C. sulfurea*. These findings are consistent with those of Mahmoud (2012), who observed a high abundance of aphidophagous lady beetles on sesame. Two pollinator species were identified, representing only 1% of the total insects collected. This low number may be attributed to the experimental plot being surrounded by various flowering crops such as eggplant, okra, and chili pepper. According to Mahmoud (2012), sesame attracts fewer pollinators when grown near other flowering crops. Being a self-pollinating plant, sesame is less attractive to pollinators, which tend to prefer the flowers of other species when available (Ashri, 2007). Damage assessment focused on leaves and capsules. At the fruiting stage, ANOVA revealed no significant differences in the number of damaged leaves per plant among accessions. However, statistical analysis of capsule damage percentages showed that accession Se2/17BF was less affected by pests, particularly the two main ones: *A. catalaunalis* and *A. sesami.* Some accessions may be less susceptible to pest attacks due to morphological or physiological traits (thick tissues, leaf and stem pubescence, plant odor). The high percentage of capsule damage caused by *A. catalaunalis* and *A. sesami* larvae in accessions Se3/17BF and Se4/KGO1 may be due to the presence of nutrients essential for rapid larval development. Additionally, these accessions may have emitted volatile compounds that attracted female insects for oviposition on sesame capsules.

CONCLUSION

The need to develop effective pest management strategies to improve sesame productivity led to an entomofaunal inventory and health assessment of five accessions. The inventory, conducted at the Bouaké research station, identified 23 insect species belonging to 18 families and 8 orders. These species were classified into three trophic groups: pests, predators, and pollinators. The most dominant group was pests, including defoliators, piercing-sucking insects, and capsule borers.Among the pests, larvae of *Antigastra catalaunalis* and *Asphondylia sesami* were identified as the main damaging agents of sesame. Of the five accessions evaluated for pest susceptibility, accession Se2/17BF was the least affected, particularly by the larvae of *A. catalaunalis* and *A. sesami*.

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CONFLICT OF INTERESTS

The authors declare no conflict of interest

ETHICS APPROVAL

Not applicable

FUNDING

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AI TOOL DECLARATION

The authors declare that no AI and related tools are used to write the scientific content of this manuscript.

DATA AVAILABILITY

Data will be available on request

REFERENCES

Abou-Gharbia, H. A., Shehata, A. A. Y., & Shahidi, F. (2000). Effect of processing on oxidative stability and lipid classes of sesame oil. *Food Research International, 33*(5), 331-340. https://doi.org/10.1016/S0963-9969(00)00052-1

Amoukou, I. A., Boureima, S., Yayé Dramé, A., & Abdoulkadri, B. C. (2013). Dynamique des insectes ravageurs du sésame (*Sesamum indicum* L.) au Niger. *Bulletin de la Recherche Agronomique du Bénin (BRAB), Numéro spécial Productions Végétales, Animales et Économie Sociologie Rurales*, 5, 41-47.

Anonymous. (2021, March 9). *Le sésame africain continue sa percée en Chine*. Agence Ecofin.

https://www.agenceecofin.com/oleagineux/0903-85971-africain-continue-sa-percee-en-chine

Ashri, A. (2007). [Complete title and publication details required: cited for work on genetic resources, breeding strategies, and oilseed crop improvement in sesame.]

Bordat, D., & Arvanitakis, L. (2004). *Les insectes ravageurs des cultures maraîchères en Afrique de l'Ouest*. Montpellier, France: CIRAD.

Chau, C. F., Ciou, J. Y., & Wu, C. L. (2021). Commercialized sesame oil analysis: Quality characterization and oxidative stability of blended sesame oil. *ACS Food Science & Technology, 1*(7), 1222-1227.

Dajoz, R. (2000). *Précis d'écologie* (7e éd.). Paris, France: Dunod.

Delvare, G., & Aberlenc, H. P. (1989). *Les insectes d'Afrique et d'Amérique tropicale: Clés pour la reconnaissance des familles*. Montpellier, France: CIRAD.

Dilipsundar, N., Chitra, N., & Gowtham, V. (2019). Checklist of insect pests of sesame. *Indian Journal of Entomology, 81*(4), 928-944. https://doi.org/10.5958/0974-8172.2019.00141.X

Egongu, A., Boureima, S., Yayé Dramé, A., & Abdoulkadri, B. C. (2005). *Inventaire et dynamique des insectes ravageurs du sésame (Sesamum indicum L.) au Niger*. Bulletin de la Recherche Agronomique du Bénin (BRAB), Institut National des Recherches Agricoles du Bénin (INRAB).

Gashaw, G. (2014). Sesame (*Sesamum indicum* L.) production and marketing trends in Ethiopia: A review. *International Journal of African and Asian Studies, 3*, 1-8.

Girmay, A. B. (2018). Sesame production, challenges and opportunities in Ethiopia. *Vegetos: An International Journal of Plant Research, 31*(1), 51-56. https://doi.org/10.5958/2229-4473.2018.00007.1

Hill, D. S. (1983). *Agricultural insect pests of the tropics and their control*. Cambridge, England: Cambridge University Press.

Isirima, C. B., Umesi, N., & Nnah, M. B. (2010). Comparative studies on effects of garlic (*Allium sativum*) and ginger (*Zingiber officinale*) extracts on cowpea insect pest attack. *World Rural Observations, 2*(2), 65-71.

Mahmoud, F. M. (2012). Insects associated with sesame (*Sesamum indicum* L.) and the impact of insect pollinators on crop production. *Pesticidi i Fitomedicina, 27*(2), 117-129.

Michel, B., & Boumier, J. (1997). Contribution à l'étude des insectes ravageurs du sésame (*Sesamum indicum* L.) au Burkina Faso. *Insectes et Ravageurs des Cultures Tropicales, 10*, 45-52.

Muthoni, J., & Shimelis, H. (2025). Production of minor tropical oil crops in Africa: Case of sesame (*Sesamum indicum* L.). *Australian Journal of Crop Science, 19*(7), 816-829. https://doi.org/10.21475/ajcs.25.19.07.p357

Nta, A. I., Ibiang, Y. B., Uyoh, E. A., Edu, N. E., Ekanem, B. E., & John, Q. E. (2013). Insect pest damage to leaves of cowpea (*Vigna unguiculata* L. Walp.): Comparative effects of aqueous extracts of *Piper guineensis*, *Allium sativum* and *Myristica fragrans*. *IOSR Journal of Environmental Science, Toxicology and Food Technology, 3*(2), 17-20.

Poutouli, W., Silvie, P., & Aberlenc, H. P. (2011). *Hétéroptères phytophages et prédateurs d'Afrique de l'Ouest*. Paris, France: Éditions Quae; CTA.

Purseglove, J. W. (1984). *Tropical crops: Dicotyledons* (Vols. 1-2). London, England: Longman.

Queiroga, V. P., Duran, J. M., & Santos, J. W. (2007). Effect of cotton seed coating on its physiological quality. *Brazilian Journal of Oilseeds and Fibers, 11*(3), 131-137.

Saha, R., Dimar, A. M., Nabila, K. A., & Roy, P. (2014). HPLC analysis and cell surface receptor binding activities of the crude aqueous and methanolic extract of *Sesamum indicum* L. *Asian Pacific Journal of Tropical Biomedicine, 4*(Suppl. 1), S516-S520. [Page range needs verification.]

Swapna, M., Ramesh, K., & Reddy, K. S. (2021). Insect pests of sesame and their management: A review. *Journal of Oilseeds Research, 38*(2), 73-83. https://doi.org/10.56739/jor.v38i2.134

Siené, L. A. C., Doumbouya, M., Bayala, R., Guei, D. H., Kouadio, A. F. B., Conde, M., ... Yeo, Z. (2021). Évaluation des caractéristiques agronomiques de 5 accessions de sésame (*Sesamum indicum* L.) à Korhogo au nord de la Côte d'Ivoire. *International Journal of Advanced Research, 9*(11), 1248-1258. [Volume and issue details should be checked.]

Vet, L. E. M., & Dicke, M. (1992). Ecology of infochemical use by natural enemies in a tritrophic context. *Annual Review of Entomology, 37*, 141-172.

Villiers, A. (1948). *Hémiptères réduviidés de l'Afrique noire*. Paris, France: Office de la Recherche Scientifique Coloniale.

Yasothai, R. (2014). Energy content and protein quality of sesame oil cake: A review. *International Journal of Science, Environment and Technology, 3*(3), 901-904. https://www.ijset.net/journal/309.pdf

Zaime, A., & Gautier, H. (1989). Étude des insectes ravageurs du sésame (*Sesamum indicum* L.) au Sénégal. *Cahiers ORSTOM, Série Biologie, 24*(2), 123-130.

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