

A Note on Sesame Gall Midge *Sphondylia Sesami* Felt. (Diptera; Cecidomyiidae) in the Blue Nile State, Sudan

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Abstract— *Sesame gall midge Asphondylia sesami* is one of important pest on sesame in the Sudan . A survey was carried out in the Blue Nile State- Sudan, season 2017/2018, the same observation was done in South Kordofan state 2007/2008 for sesame gall midge damage determination on sesame. The damage observed by the maggot feed inside the floral buds and young capsule leading to formation of galls. Three sites was surveyed for sesame gall midge incidence, four farms per site and three unit area per farm were selected, the damage were taken on buds and capsules. it was observed that high infestation was record in late sowing date throughout different sites, the damage which affected on yield was observed on buds and flowers which wither and drop.

Keywords— *Gall, Midge, Bud, Damage, Infestation.*

I. INTRODUCTION

Sesame (*Sesamum indicum* Linnaeus) is an important oilseed crop mainly grown in tropics and sub-tropics and major producing countries are India, China, Turkey, Myanmar, Pakistan, Egypt, Sudan, Greece, Venezuela, Argentina, Colombia, Nicaragua, El Salvador, Mexico and USA. Sesame is a warm weather crop and is often grown under marginal or stressed conditions (Rojeet, 2012). *Sesame indicum* L. is an oil seed crop, with oil contents varying between 40% and 60% according to crop variety. Sesame is a major oil crop produced in Sudan under mechanized and traditional rainfed system of the central clay plains (Gadarif and Blue Nile States) and on clay and qoz lands of western Sudan (Kordofan and Darfur States). Sudan is also one of the largest exporters of sesame ranking second in the world as it exported about 124000 tons annually on average about 18.3% of total worlds exports (Hala, 2010)

The sesame crop attack by many pests: leaf webber and capsule borer (*Antigastra catalaunalis* Duponchel), red hairy caterpillar (*Amsacta albistriga* Walker), horn worm (*Acherontia styx* Westwood), pod bug (*Elasmolomus sordidus* Fabricius) and also the phytoplasma disease phyllody transmitted by *Orosius albicinctus* Distant. (Diraviam, 2014).

Sesame gall midge *Asphondylia sesami* restricted to East Africa and Southern India (Ahuja, *et al.* 2001). The sesame gall midge reported as a major pest from Maharashtra (India). The incidence of the pest is common during flowering period of sesame and number of generation will be increased due to staggered sowing as well as inclusion different varieties of sesame (Baskaran, *et. al.* 1997).

Phillips (1977) reported that gall midge *Asphondylia sesami* is one of the main insects pest of sesame in Nigeria. In Sudan the pest was reported by Schmutterer (1969), occurs in the southern Fung (Tozi), in Nuba Mountains (Kadugli, Talodi) and in Equatoria Province (Magwe, Yei).

II. DESCRIPTION

Adult midge about 4 – 5 mm long and pale orange in colour. Legs slender, yellowish – brown. Forewings transparent, dusky and covered by numerous small grayish hairs. Distal part of halteres strongly enlarged. Eye dark, dorsal connected. Antennae long, 14 – jointed. Abdomen of female with long protrusible ovipositor (Schmutterer, 1969).

III. LIFE CYCLE

The female lays its eggs singly by its needle-like ovipositor in the flowers and buds and flowers of sesame (Schmutterer, 1969). The egg period is 2-4 days; the larval period is about 2-3 weeks with the 4 larval instars. The numbers of larvae observed per bud varied from 3 – 14. The fully fed larvae cut a hole in the bud, drops and pupate in the soil 5 – 7 cm deep or

inside the malformed capsules. The fly emerges from galls in 7-12 days. The total life cycle is completed in 23-27 days (Baskaran, *et. al.* 1997).

IV. DAMAGE, ECONOMIC IMPORTANCE AND MANAGEMENT

Usually a miner pest but occasionally high infestation occurs with resulting considerable crop losses. The irritation caused by feeding of larvae results in drops of flower buds and formation of gall like buds, which do not develop in to seeds capsules. These reduce seed yield by up to 100% in susceptible genotypes and under favourable conditions. Capsule damage due to gall midge of up to 29-34.3% has been reported in Uganda (Ubor, *et. al.* 2015).

Monitoring of the plants at the time of bud initiation is necessary; use the resistant and tolerant varieties. Early sowing of the crop may prevent heavy damage as the pest usually appears in numbers in the late mid rainy season intercropping with mungbean, pear millet and groundnut. Clip the galls, pick and burn the shed buds. Conserve natural enemies, larval parasites like *Eurytoma sp.*, *Baracon hebetor*. Use neem product when necessary as it reduce capsule damage by gall fly.

V. SURVEY CONDUCTED

A survey was carried out in the Blue Nile State season 2017/2018 mainly in the late sown sesame. The damage observed by the maggot feed inside the floral buds and young capsule leading to formation of galls, flower buds become wither and drop, or become twisted and stunted and do not develop in to flower or capsules and the pods were develops completely distorted and contain no seeds.

Three sites was selected (Damazin Experimental farm, East and North El Damazin) was surveyed for sesame gall midge incidence, four farms per site and three unit area per farm were selected, the damage were taken on buds and capsules, Ten plants were taken randomly and total number of buds, capsule, infested buds and infested capsules to determined percentage damage. The same observation was done in South Kordafan state 2007/2008 when the pest were outbreak in that time.

The pest was rear in the lab till adult emerge were keep will and send to Wad Medani, insect collection unit (ARC) for identification.

Through the survey it was observed that high infestation was record in late sowing date throughout different sites, the damage which affected on yield was observed on buds and flowers which wither and drop, Moreover early sown crop escaped the pest attacks with a light infestation on tender plants. The infestation on flowers was high than that on capsules. During the survey there are two genus of the parasitoid was recorded on sesame gall midge pupa and identified as *Eurytoma sp* and *Baracon hebetor*. The results of percentage damage by sesame gall midge was presented in (Figs. 1, 2)

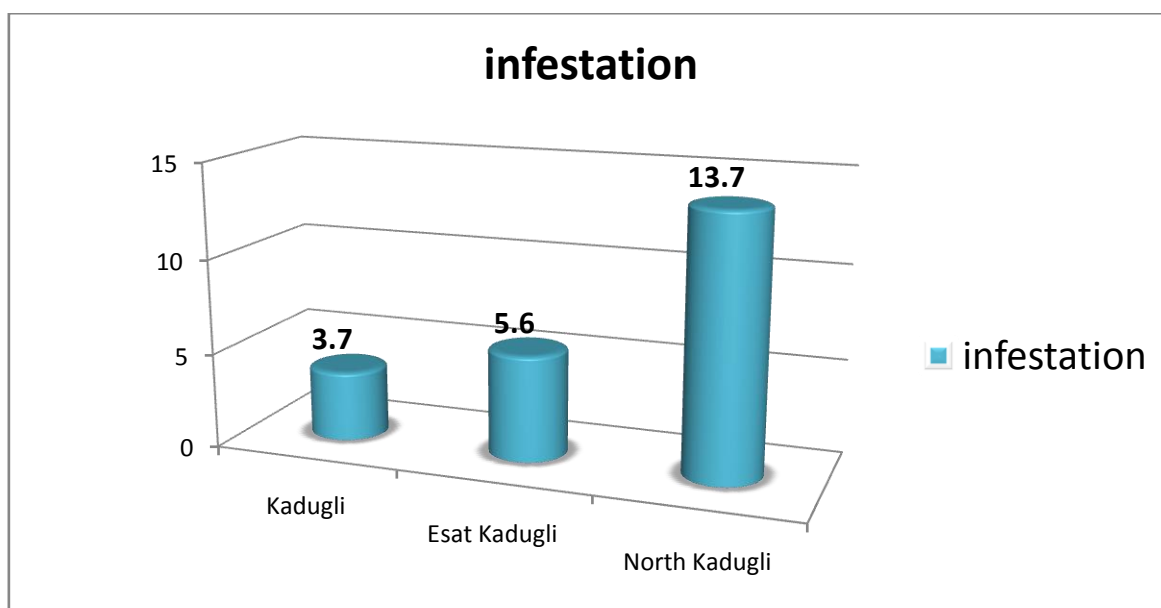


FIGURE 1: Mean percentage of infestation on sesame capsule caused by sesame gall midge in three different location, South Kordofan 2007/2008

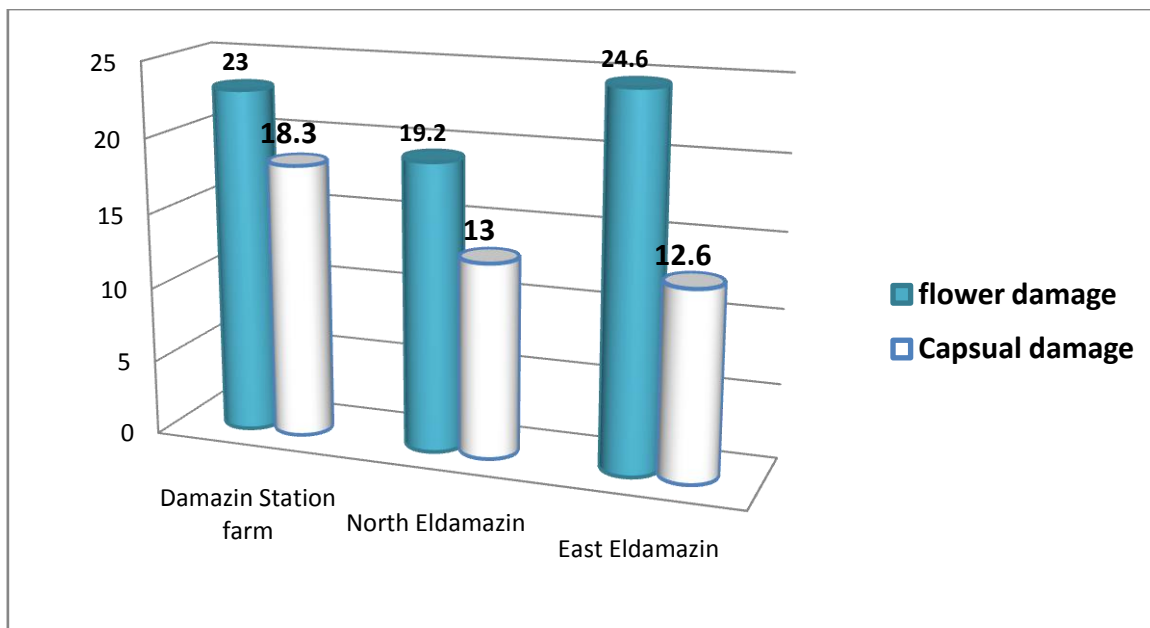


FIGURE 2: Mean percentage of infestation on sesame flower and capsule caused by sesame gall midge in three different location, Blue Nile State, 2016/2017



FIGURE 3: Damage on leaves by sesame gall midge



FIGURE 4: Damage on buds and flowers



FIGURE 5: Damage on capsule and gall formation



FIGURE 6: Sesame gall midge (Adult)

VI. CONCLUSION

It was observed that high infestation was record in late sowing date throughout different sites, the damage which affected on yield was observed on buds and flowers which wither and drop, Moreover early sown crop escaped the pest attacks with a light infestation on tender plants. The infestation on flowers was high than that on capsules.

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