

## Insect Pests Associated with Sesame at Tando Jam

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**Abstract:** The incidence and abundance of insect pests associated with sesame varieties were recorded during Summer, 2000 in the experimental field of Oilseed Section, Agriculture Research Institute, Tandojam. Four sesame varieties S-17, PR-19/9, PR-28/88 and PR-37/88 were tested. Five insect species i.e. plant bug, whitefly, aphid, thrip and leaf roller/webber were recorded attacking sesame. Leaf roller/webber was found in highest number during capsule formation and early vegetative stage, while lowest during flowering. Whitefly and bug population was relatively higher during the later vegetative phase. Thrips and aphids were observed from seedling stage and remained active upto crop maturity. However, aphid population was alarming and reached at peak in the 10th week in August. The varieties PR-19/9 and S-17 showed relative resistance against these insects, while PR-37/88 and PR-29/88 were relative susceptible for these insect pests. The varieties PR-19/9 and S-17 yielded significantly higher than susceptible ones i.e. PR-29/88 and PR-37/88.

**Key Words:** Insect Pests, Population, Sesame, Varieties, Resistance

### Introduction

Sesame, *Sesamum indicum* L; locally known as "til" belongs to the family "Pedaliaceae" is one of the most important summer crops grown in Indo-Pak. It is cultivated throughout Pakistan as irrigated as well as non-irrigated crop. In Sindh, it is grown in Mirpurkhas and Mithi Districts as non-irrigated crop and in Districts Dadu, Jacobabad, Sukkur and Hyderabad as irrigated crop (Chaudhry *et al.*, 1989). The sesame produces high quality edible oil, which is used for cooking. Its use is common in preparation of medicine and high quality soaps. Sesame contains 22% protein, while sesame cake has 42% protein and is an excellent feed for cattle and laying hens (Khan and Shaikh, 1985). Amongst the factors for low productivity, insect pests cause the havoc. Chaudhry *et al.* (1989) reported that leaf rollers/webbers and thrips are the serious pests of sesame. Leaf roller/webber, *Antigastra catalaunalis* (Dup.) caused 15-20 percent damage to the crop at vegetative phase and 10-15 percent at productive phase. However, thrip, *Thrips tabaci* (Lind.) damage the seedlings at germination stage of the crop. Montilla (1995a, 1995b) reported that the whitefly, *Bemisia tabaci* (Genn.) damage in the sesame plant caused reduction in the leaf area and photosynthetic activity causing an increase in empty seed percentage and a reduction in seed size, which are negatively related to seed yield. In a study Nenita, (1993) reported that aphid, *Myzus persicae* (Sulzer) nymphs and adult feed on cell sap of plant tissue of sesame while plant bug, *Stenobis sp.* that feed on leaves and shoots together considered to be the serious pest of sesame in Philippines. Since no systematic work has been done on insect fauna of the sesame crop in Sindh, therefore, the present studies were conducted to record insect pests associated with sesame in Tandojam area of Hyderabad district.

### Materials and Methods

Study was carried out to record the insect pests associated with sesame in the experimental field of Oilseed Section, Agriculture Research Institute, Tandojam, during Summer, 2000. Four sesame varieties (S-17, PR-19/9, PR-29/88 and PR-37/88) were drilled in 45 cm. apart rows in the 1<sup>st</sup> week of June. Each variety having 3-meter long 10 lines. Using a four replicated "Randomized Complete Block Design" a 5x3-m<sup>2</sup> net plot size and 22.5-cm plant spacing was maintained. Interculturing and weeding was done manually. However, no insecticide was applied to allow proper exploitation of insect pests. Observations regarding insect pest's counts were made at weekly interval. For this purpose, 10 plants were selected at random from each plot of respective variety and tagged. The pest populations were counted on average number of plant bugs, whiteflies, thrips, leaf rollers/webbers and aphids per leaf from top, middle and bottom of the plants. At harvest, seed yield was obtained on per plant basis and worked out in yield/ha. All the collected data were subjected to analysis of variance, to discriminate the superiority of treatment mean using LSD test at alpha = 0.05 according to the method described by Gomez and Gomez, (1984).

### Results and Discussion

Different insect pests attack sesame crop during its various growth stages. The taxonomic status of insect pests associated with sesame crop is given in Table 1. The results on mode of damage, incidence and abundance of insect pests are illustrated as Fig.1, 2, 3 and 4 and discussion there of is presented as follows:  
**Sesame Leaf Roller/Webber, *Antigastra catalaunalis* (Dup.)**: The incidence of *A. catalaunalis* at various stages (vegetative, flowering and capsule formation) of crops is shown in Fig: 1. It is obvious that during capsule formation phase the pest damage was

significantly greater in all four varieties tested as compared to vegetative growth or flowering stage. The pest damage recorded on varieties PR-37/88 and PR-29/88 was drastic at all three stages of crop growth, while S-17 and PR-19/9 has shown little resistance against the pest, as the pest damage recorded was relatively low. The larvae feed on tender foliage or web the leaves together, they bore into the tender shoots or capsules and destroy the contents. In cases of severe infestation yield is affected considerably. Research conducted earlier by Singh *et al.* (1985); Singh *et al.* (1986); Mahadevan and Mohanasoudaran (1986); Chaudhry *et al.* (1989); and Baskaran and Thangavelu (1991) concluded that *Antigastra catalaunalis* (Dup.) is an important pest attacking sesame.

**Plant Bug, *Stenobis sp.*:** The incidence of plant bug on sesame varieties is illustrated in Fig: 2 & 3, which exhibit that difference in pest population between time interval and varieties were significant ( $P < 0.05$ ). The peak population was recorded after 8<sup>th</sup> and 9<sup>th</sup> week of germination and declined afterwards as the crop goes to maturity. In case of varieties the pest population was relatively greater on PR-37/88 and PR-29/88 as compared to rest varieties, being lowest on PR-19/9. Both the nymphs and adults sucked the cell sap by puncturing the leaves and buds and preferred to feed through the punctures already made by other insects. Nenita and Patricio (1993) have also reported similar mode of damage and incidence level of this pest of sesame crop.

**Whitefly, *Bemisia tabaci* (Genn.):** The damage level of whitefly on different sesame varieties is represented as Fig: 2 & 3. The pest population varied significantly within time intervals and varieties, but no significant interaction of these variables observed. Generally, the pest population was low, may be weather conditions were not conducive. The pest incidence was at peak in the 10<sup>th</sup> week after germination and declined later on gradually. So far varieties are concerned, PR-37/88 was found to be susceptible attracts maximum pest population while PR-29/88 and PR-19/9 showed moderate susceptibility to pest. On the other hand, S-17 showed relative resistance against the pest and attracts lowest pest population. Both, the nymphs and adults of whitefly damaged the plants in two ways: a) the vitality of the plant is lowered through the loss of cell sap and b) normal photosynthesis is interfered due to the growth of sooty mould as the honey dew excreted by the whiteflies and the attacked plants with a silky black appearance. Researches conducted earlier by Solor (1981); Beech (1981); Bakheit (1986) and Coty (1988) have also

argued the damage symptoms in whitefly attacked sesames, which consequently resulted in reduced yield. **Green Peach Aphid, *Myzus persicae* (Sulzer):** The observations on population dynamics of aphid on sesame varieties are elucidated as Fig: 2 & 3. The population fluctuation of aphid varied significantly ( $P < 0.01$ ) between time intervals, varieties and their interaction. The aphid started appearing from cweek of germination increased their activity rapidly and its peak was recorded in the 10<sup>th</sup> week and declined there after. The varieties, PR-37/88 and PR-29/88 showed relatively susceptible as these attract alarming pest population level, while S-17 and PR-19/9 were relatively tolerant to aphid attack. The nymphs and adults of this insect pest suck the plant sap, as a result the leaves curled up, tender portions faded gradually and the whole plant became more or less blighted black. The honeydew secreted helped the sooty mould to grow on the plants. The finding of Nenita *et al.* (1993) supports the present results.

**Thrip, *Thrips tabaci* (Lind.):** The frequency of thrips in sesame varieties is illustrated by Fig: 2 & 3 that showed significant ( $P < 0.01$ ) fluctuation in time intervals and varieties and non-significance noted for interaction. The pest started appearing after 1<sup>st</sup> week of germination (seedling stage), population reached to its maximum upto 6<sup>th</sup> week and remained in the crop fields upto 12<sup>th</sup> week, washed-out later on. In varieties' case, all the varieties showed tolerance against this pest, however, S/17 and PR-19/9 were relatively more tolerant to pest attack as compared to PR-29/88 and PR-37/88. Both, the nymphs and adults were present in the crop plants and suck the cell sap in result the leaves curled up, wrinkled and gradually dried up. The attacked plant did not bear flowers and seeds, which adversely affected the yield. Research conducted earlier by Chaudhry *et al.* (1989) also have the similar opinion.

**Yield :** The association of different insect pests with sesame seed yield was also evaluated which explicit that in insect resistant varieties yield was significantly greater (Fig.4) compared to varieties with less resistance against insect pests or susceptible ones. Variety PR-19/9 yielded significantly greater compared to rest, while S-17 ranked second which was also under the somewhat similar insect pressure level. Varieties PR-37/88 and PR-29/88 which were under maximum insect pressure yielded well lower than PR-19/9 and S-17. The results are well supported by Selvanarayanan and Baskaran (1996) and Ahuja and Bakheta (1995) whose consolidated findings suggested that resistant varieties suffered lesser insect infestation than susceptible ones and varieties under high insect pressure resulted reduced yields.

Table 1: Taxonomic Position of Insect Pests Recorded on Sesame Crop During Summer Season at Tandojam

Sr.No.	Common Name	Technical Name	Family	Order
1.	Sesame Leaf Roller/Webber	<i>Antigastra catalaunalis</i> (Dup.)	Pyralidae	Lepidoptera
2.	Plant Bug	<i>Stenobis sp.</i>	Pentatomidae	Hemiptera
3.	Whitefly	<i>Bemisia tabaci</i> (Genn.)	Aleyrodidae	Homoptera
4.	Thrip	<i>Thrips tabaci</i> (Lind.)	Thripidae	Thysanoptera
5.	Green Peach Aphid	<i>Myzus persicae</i> (Sulzer)	Aphididae	Homoptera

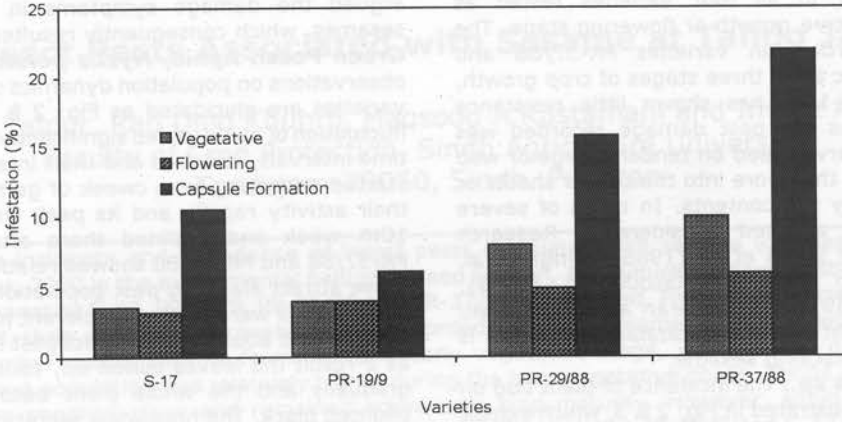


Fig.1: Infestation (Leaves, Flowers and Capsules) of Sesame Leaf Roller/Webber on Different Varieties of Sesame

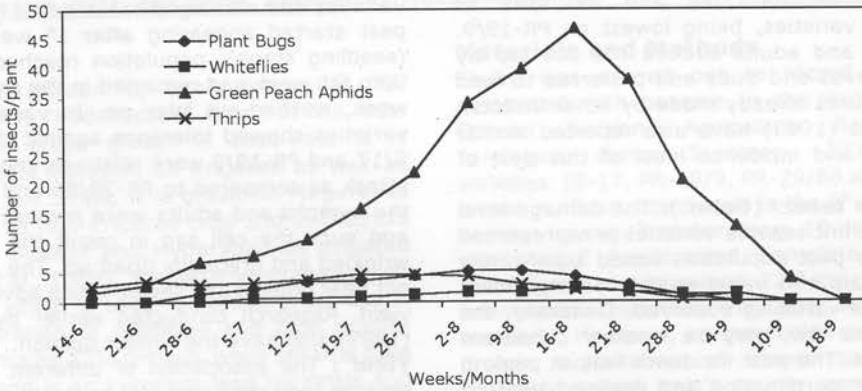


Fig.2: Population Dynamics of Sucking Insect Pests on Different Varieties of Sesame

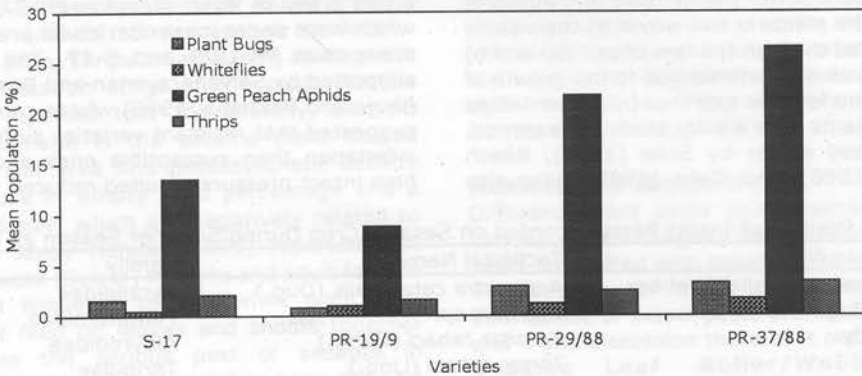


Fig.3: Mean Population (Percentage) on Different Varieties of Sesame Against Sucking Insect Pests

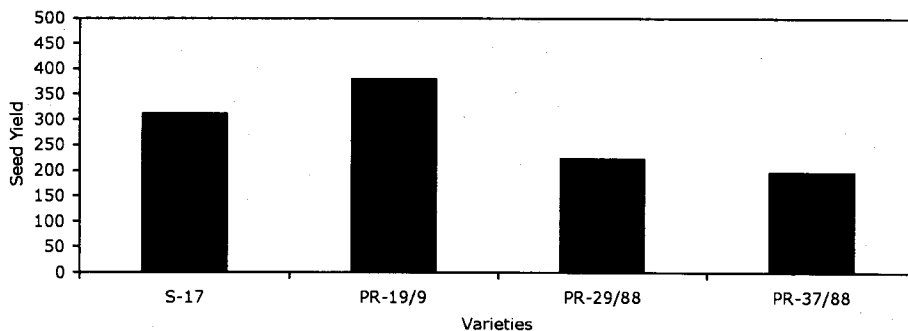


Fig.4: Seed Yield (kg/ha) of Different Sesame Varieties During 2000 at Tandojam

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