

<http://www.pjbs.org>

PJBS

ISSN 1028-8880

**Pakistan
Journal of Biological Sciences**

ANSI*net*

Asian Network for Scientific Information
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan

Insect Pests found on *Helianthus annuus* Linnaeus (Compositae) in the Potohar Region of Pakistan

¹Muhammad Aslam, ²Nazia Suleman, ²Asia Riaz, ²Abdul Rehman and ²Qamar Zia

¹Department of Entomology, University of Arid Agriculture, Rawalpindi, Pakistan

²Research Fellows, UGC/UAAR Sunflower Project, Rawalpindi, Pakistan

Abstract: Surveys of Potohar Region (Rawalpindi, Islamabad, Golra, Tarnol, Sehala, Mandra, Kalar Syedan, Attock, Fateh Jang, Bahatar Jang, Qutabal, Jand, Chakwal, Dhudial, Gujhar Khan; Sohawa, Kamalpur, Daultala, Dena, Jatli, Kalas, Kahuta, Jhelum, Hazro, Sagri and Tret etc.) were carried out during early, growing and anthesis stages of sunflower plants (both spring and autumn 1999) under UGC/UAAR Sunflower Project. The insect pests found on sunflower (cultivated and wild) included *Chrotogonus* spp. (Grass hopper), *Agrotis* spp. (Cut worm), *Odontotermes obesus* (White ants), *Agapanthia dahlia* (Stem borer), *Melanagromyza* spp. (Stem girdler), *Aphis gossypii* (Cotton aphid), *Bemisia tabaci* (whitefly) *Agrius convolvuli* (Horn worm), *Empoasca* spp. (Jassid), *Suleima helianthana* (Sunflower bud moth), *Helicoverpa* (Heliiothis) spp. (Boll worm), *Spodoptera litura* (Tobacco caterpillar), *Plusia orichalcea* (Cabbage semi-looper), *Homoeosoma electellum* (Sunflower moth), *Nezara viridula* (Green stink bug) *Diacrisia obliquata* (Hairy caterpillar), *Myllocerus blandus* (Cotton green weevil), *Zygogramma exclamationis* (Sunflower beetle) and *Smicronyx* spp. (Sunflower seed weevil).

Key words: *Helianthus annuus* Linnaeus, Sunflower moth, Sunflower seed weevil, Sunflower beetle, Sunflower moth, Sunflower Insect Pests, Potohar Region, Wild sunflower spp.

Introduction

One of the insuperable challenges facing Pakistan is attaining self-sufficiency in edible oils which constitute the largest food import commodity (Dogar, 1997). Sunflower (*Helianthus annuus* Linnaeus: Compositae), an annual herb and ornamental plant grown almost throughout the world, can meet this deficiency of oil and protein due to its wide range of adaptability and highest seed oil contents ranging from 40-50 percent (Bakhsh *et al.*, 1999). Based on Quresh (1997), sunflower cultivation is on the rise in Pakistan. According to Tanvir (1998), acreage of sunflower increased from 212,000 in 1995 to 315,902 in 1996-97. According to APSEA (1999), it was grown on 4 lac acres during 1999 in Pakistan. Based on PODB (2000), it will be grown on an area of 5 lac acres in Pakistan during 2000. Due to the significance of this oilseed crop, the President of Pakistan inaugurated at Tarnab, Peshawar, the autumn plantation of Sunflower on August 11, 1997 under the one-year Crash Programme for the maximization of Sunflower acreage (PODB, 1997). It is grown both in irrigated as well as arid zones in Pakistan during spring and autumn to furnish raw material to the oil and ghee manufacturing industries. Being such an important crop of our country, there is a need of the day that its area, cultivation, production, protection from the ravages of pests and diseases, disposal and marketing be encouraged throughout our country especially in the Potohar Region/Areas (where the cultivation of this crop in the past was ignored due to lack of its disposal/marketing) so that we may be able to meet the deficiency of oil in the country.

Based on Aslam (1994), Sunflower acts as an host of several pests which ravage it both in the field as well as in the ware-houses and inflict severe losses. The pests ravaging this crop include Cutworms (*Agrotis* spp.), Green stink bug (*Nezara viridula* (Linnaeus)), American bollworm (*Helicoverpa (Heliiothis) armigera* (Hb.)), Cotton aphid (*Aphis gossypii* Glov), Potato aphid (*Macrosiphum euphorbiae* Thos), Green leaf hopper (*Empoasca* spp.), Cabbage semi-looper (*Plusia orichalcea* (Fabricius)), Safflower caterpillar (*Perigea capensis* G.), Head caterpillar (*Stathmopoda theoris* Mayr), Melon fly (*Dacus cucurbitae* Coq.), Whitefly (*Bemisia tabaci* Genadius), Yellow flower thrips (*Frankliniella sulphurea* S.), several species of army worms, grasshoppers and termites, Brown bruchid (*Caryedon gonaga* Fabricius), Sawtoothed beetle (*Oryzaephilus* sp.), Ash weevils (*Myllocerus* spp.), sparrows, black birds, rose ringed parakeet (*Psittacula krameri*), collard dove and rodents. Rafiullah *et al.* (1998) recorded whiteflies, loopers and

jassids on different local genotypes of sunflower in Peshawar. Sattar *et al.* (1984) reported the insect pests of sunflower in NWFP, Pakistan as whitefly, *Bemisia tabaci*, aphids *Aphis gossypii*, jassids *Amrasca devastans*, bud moth *Heliothis armigera* and surface grass hopper *Chrotogonus* spp. These pests damage this crop during germination, growing, milky, harvesting and post harvesting stages. Various measures including chemical, biological, cultural and physical were tried against these pests. Injudicious use of pesticides against these pests in the past caused severe losses to the non-target organisms and the environment, so it is very important to protect this crop from ravages of different pests. Therefore in the first phase of the project it has been planned to identify different insect pests found in the Potohar region on this important oilseed crop of our country so that based on the position of these insect pests, the future plans especially the use of resistant varieties for the control of these insect pests may be chalked out.

Materials and Methods

The Potohar Region/Areas of Pakistan including Rawalpindi, Islamabad, Golra, Tarnol, Sehala, Mandra, Kalar Syedan, Attock, Fateh Jang, Bahatar Jang, Qutabal, Jand, Chakwal, Dhudial, Gujhar Khan; Sohawa, Kamalpur, Daultala, Dena, Jatli, Kalas, Kahuta, Jhelum, Hazro, Sagri, Tret, Pakistan Oilseed Development Board Islamabad, Barani Agricultural Research Station Fateh Jang, National Agricultural Research Station, Islamabad were visited during the early, growing and anthesis stages of the sunflower crop (both spring and autumn 1999) under UGC/UAAR Sunflower Project. The fields of the sunflower growers in different villages of the Potohar Region/Areas were visited periodically from March 1999 to November 1999. Using Dahms (1972) and Aslam *et al.* (1998a, 1999), the plants of the sunflower (cultivated and wild) were observed for the insect pests. Field identifications of the insects found on sunflower were made using field keys, personal experience, literature and pictures.

Results and Discussion

As a result of visits of different areas of Potohar region and subsequently following Dahms (1972) and Aslam *et al.* (1998a, b 1999), the insect pests found on sunflower in different areas are presented in Table 1.

The results conclude that there were great variations in insect pests found on different sunflower genotypes in

Aslam *et al.*: Insect Pests found on *Helianthus annuus* Linnaeus

Table 1: Insect Pests Attacking Sunflower Observed During 1999 in Different Areas of Potohar

| Technical name | Common name | Distribution |
|--|-----------------------|---|
| <i>Chrotogonus</i> spp. | Grass hopper | Fateh Jang, Sohawa, Kamalpur and Sehala |
| <i>Agrotis</i> spp. | Cut worm | Dhudial, Fateh Jang, Sohawa and Sehala |
| <i>Odontotermes obesus</i> | White ants | Fateh Jang, Golra, Daultala and Dena |
| <i>Agapanthia dahlia</i> | Stem borer | Kamalpur |
| <i>Melanagromyza</i> spp. | Stem | girdler Kahuta, Kalar Syedan |
| <i>Aphis gossypii</i> | Cotton aphid | Fateh Jang, Sehala, Jatli, Kamalpur, Jand, Gujar Khan, Dena, Golra, Kalas, Sohawa, Daultala, Bahatar, Kahuta, Jhelum, Hazro, Tarnol, Sagri, Qutabal, Tret and Dhudial |
| <i>Bemisia tabaci</i> | Whitefly | Jhelum, Hazro, Kamalpur, Dena and Golra |
| <i>Agrius convolvoli</i> | Horn worm | Daultala, Bahatar, Kahuta, Jhelum, Hazro, Tarnol and Sagri, |
| <i>Empoasca</i> spp. | Jassid | Fateh Jang, Sehala, Jatli, Kamalpur, Jand, Gujar Khan, Dena, Golra, Kalas, Sohawa, Daultala, Bahatar, Kahuta, Jhelum, Hazro, Tarnol, Sagri, Qutabal, Tret and Dhudial |
| Suleima helianthana | Sunflower bud moth | Fateh Jang |
| <i>Helicoverpa</i> (<i>Heliothis</i>) spp. | Boll worm | Dena, Golra, Kalas, Sohawa, Daultala, Bahatar, Kahuta, Jhelum, Hazro and Tarnol |
| <i>Spodoptera litura</i> | Tobacco caterpillar | Fateh Jang, Sehala, Jatli, Kamalpur, Jand, Gujar Khan, Dena, Golra, Kalas, Sohawa, Daultala, Bahatar and Kahuta |
| <i>Plusia orichalcea</i> | Cabbage semi-looper | Fateh Jang, Tarnol, Bahatar, Qutabal and Sohawa |
| <i>Homoeosoma electellum</i> | Sunflower moth | Fateh Jang, Sohawa, Kamalpur, Sehala Daultala, Bahatar and Kahuta |
| <i>Nezara viridula</i> | Green stink bug | Dena, Golra, Kalas, Sohawa, Daultala, Bahatar, Kahuta, Jhelum, Hazro, Tarnol and Sagri |
| <i>Diacrisia obliquata</i> | Hairy caterpillar | Fateh Jang and Sohawa, |
| <i>Myloccerus blandus</i> | Ash weevil | Fateh Jang, Sehala, Jatli, Kamalpur, Jand, Gujar Khan, Dena, Golra, Kalas, Sohawa, Daultala, Bahatar, Kahuta, Jhelum, Hazro, Tarnol, Sagri, Qutabal, Tret and Dhudial |
| <i>Zygogramma exclamationis</i> | Sunflower beetle | Fateh Jang, Sehala and Jatli |
| <i>Smicronyx</i> spp. | Sunflower seed weevil | Jhelum, Hazro and Tarnol |

different areas of the potohar region. The insect pests found in one area were not necessarily found in all the other areas. However, some of the insects like *Myloccerus blandus* (Ash weevil), *Nezara viridula* (Green stink bug), *Helicoverpa* (*Heliothis*) spp. (Boll worm), *Spodoptera litura* (Tobacco caterpillar), *Aphis gossypii* (Cotton aphid) and *Empoasca* spp. (Jassid) were found in most of the areas. *Odontotermes obesus* was found in tremendous number in the fields of sunflower at Chaccanwali Deri (Fateh Jang). Some of the insect pests presented in Table 1 were also reported by Aslam (1994), from Tobacco Research Station Kunjah and Farms of University of Arid Agriculture Rawalpindi. Rafiullah *et al.* (1998) recorded whiteflies, loopers and jassids on different local genotypes of sunflower in Peshawar. Sattar *et al.* (1984) reported the insect pests of sunflower in NWFP, Pakistan as whitefly, *Bemisia tabaci*, aphids *Aphis gossypii*, jassids *Amrasca devastans*, bud moth *Heliothis armigera* and surface grass hopper *Chrotogonus* spp.

References

APSEA., 1999. Felicitations. All Pakistan Solvent Extractors Association, The News, Friday, March 12, 1999.

Aslam, M., 1994. Combating pests ravaging sunflower. The Nation, Vol. 6, No. 138, pp: 9.

Aslam, M., R.B. Chalfant and G.A. Herzog, 1998a. Population of harmful and beneficial arthropods on selected cotton strains grown under different levels of pest management. Sarhad J. Agric., 14: 463-469.

Aslam, M., R.B. Chalfant and G.A. Herzog, 1998b. Naturally occurring arthropods on cotton strains grown under different levels of pest management. Pak. J. Arid Agric., 1: 61-67.

Aslam, M., R.B. Chalfant and G.A. Herzog, 1999. Resistance of high gossypol cotton strains to *Heliothis* spp. (Lepidoptera: Noctuidae) under field conditions. Scient. Khyber, 12: 65-72.

Bakhsh, I., I.U. Awan and M.S. Baloch, 1999. Effect of various irrigation frequencies on the yield and yield components of sunflower. Pak. J. Biol. Sci., 2: 194-195.

Dahms, R.G., 1972. Techniques in the evaluation and development of host-plant resistance. J. Environ. Qual., 1: 254-259.

Dogar, A.T., 1997. Oilseeds: Production and potential. Oilseeds update. Pakistan Oilseed Development Board, Ministry of Food, Agriculture and Livestock, Islamabad, pp: 1-17.

PODB., 1997. Oilseeds update. President inaugurates autumn sunflower plantation. Pakistan Oilseed Development Board, Ministry of Food, Agriculture and Livestock, Islamabad, No. 1, pp: 1.

PODB., 2000. Cultivation of sunflower. Suggestions Pakistan Oilseed Development Board, Zirrat Sarhad, No. 24, pp: 9-14.

Quresh, Z., 1997. Oilseed research development in NWFP: Annual report. POB, ARI, Tarnab, Pehawar.

Rafiullah, S.F., F. Subhan and R. Ahmad, 1998. Screening of sunflower genotypes against insect pests under field conditions. Sarhad J. Agric., 14: 591-595.

Sattar, A., K. Ullah and M. Yousaf, 1984. Insect pests of sunflower in NWFP, Pakistan. Pak. J. Agric. Res., 5: 239-240.

Tanvir, A., 1998. PARC develops another sunflower hybrid. The Nation, Lahore, Islamabad, April 19, 1998.