



# A Study on Various Crop Pests and Their Management Methods in the Agricultural Fields of Pilibanga Region (Hanumangarh)

Rajani

Research Scholar

Maharaja Ganga Singh University, Bikaner (Rajasthan)

**Abstract:** The author has completed this study related to crop pests and their control in the Pilibanga area of the Hanumangarh(Rajasthan) district. There is a lot of agricultural work in this area. The major crops cultivated in this area are wheat, mustard, cotton, gram, barley, guar etc. Many pests attack and damage these crops such as locusts, thrips, grasshoppers, termites, white fly, beetles, aphids, leaf borer, bugs, caterpillar's jassids, etc. Farmers use a variety of pesticides to control these pests. Many pesticides are widely used in this area like; chlorpyrifos, imidacloprid, monocrotophos, metalaxyl, mancozeb etc.

**Keywords:** Pilibanga, Hanumangarh, crop, pest, pesticides, chlorpyrifos.

**Introduction:** In this study, various pests found on the crops of the Pilibanga region and their controls have been studied. This study has been completed in the Pilibanga area of Hanumangarh district of Rajasthan. For this work, the researcher has visited different agricultural areas. Insects are the major organisms found around us, in which many amazing characteristics are found. These are wonderful creations of nature.

These insects have a head, thorax and abdomen. Their head part consists of compound eyes, antennae, ocelli and mouthparts. They are mostly winged, and their wings and legs are attached to the thorax.

Some insects are beneficial but some are harmful. Insects like the honeybee, silkworm, etc. are very beneficial for us. Bees, butterflies, flies etc. are also necessary insects for pollination. Their contribution to plant pollination is also well known. It is very important to have rich biodiversity for a balanced ecosystem. There are many types of organisms present in our ecosystem, but these insects do an important job of decomposition, that is, they are important decomposers.

Some insects attack the crops in large numbers and cause great damage to crops. Harmful insects are known as pests such as aphids, bugs, termites, locusts and grasshoppers.

Many insects are found around us in the form of pests. Ants are the most common pest in homes. The pests found in the crops of the Pilibanga region have been observed by this study. Due to the availability of irrigation facilities in this area, many crops are produced on a large scale.

Mainly two types of crops are grown here, Rabi and Kharif. Among these, mustard, wheat, narma, cotton, BT cotton, moong, moth, guar, millet etc. are mainly cultivated. Many pests damage these crops. Adult insects along with their larvae called caterpillars are also harmful to crops. These pests eat the leaves, stems, as well as fruits of the crops, which affects the production. Some pests penetrate the grain and spoil it.

Farmers use many methods to control these pests, but here the use of pesticides is more. Most farmers use several pesticides to kill these pests. Pesticides are easily found even in small villages in this area.

**Study Area:** Pilibanga, Hanumangarh (Rajasthan) area has been selected for this study. This region is located in the northern part of Rajasthan. The literal meaning of the name Pilibanga is yellow-colored bangles. Study area Pilibanga is an agriculture-based area. Farmers cultivate a wide variety of crops in this area. This area holds a leading position in crop production after being irrigated by Indira Gandhi Canal (IGNP). Extreme heat in summer and extreme cold in winter, erratic rains etc. are some of the weather-related features of this region. This area is famous for the production of wheat, cotton etc.

**Methodology-** The following procedures and methods were used for data collection of pests in the study area.

**Methods-** For this research work, many agricultural areas of the Pilibanga region have been visited by the author. The author used an insect net to capture the insects and also took pictures of them through a mobile. For this study, the researcher adopted many methods like collection method, observation method, talk with farmers, field visit etc. Several agricultural sites were also visited for the study.

**Collecting Equipment-** To prepare pests data for this study, the author collected several pests from the study area. Various types of materials were used for insect collection. The researcher used collection bags, entomological forceps, killing bottles, vials, specimens' jars, hand lenses, scissors, and plastic bags of various sizes to collect the pests. Tissue papers, pencils, label papers, and notebooks were also used for this purpose.

**Preservation and Identification of Pests-** Entomological pins and wooden insect boxes have also been used to preserve the captured pests as required. The author has also used identification keys to identify the captured pests from crops.

**Result and Discussion-** Several pests were reported while visiting the agricultural area of the Pilibanga region. Many caterpillars have also been observed from some farming sites.

## Major Crops and their pests-

**Wheat-** Wheat is the main food crop of this region, which is produced by most of the farmers here. Several pests have been reported from wheat fields. Wheat is highly produced in this area, but some pests damage the wheat crop. Beetles, wheat aphid, wheat bug, grasshopper, Termite (*Macrotermes*), armyworm (*Spodoptera frugiperda*), pink borer (*Sesamia inferens*) etc. major pests are reported during the study.

**Mustard-** Mustard is also cultivated on a large scale in this area. Due to the demand for edible oil, the farmers get a lot of profit from the mustard crop. Various coleopterans, lepidopterans, hemipterans and hymenopterans have been reported in the mustard crop. The reported pests in mustard are; ladybug, patent bug (*Bagrada hilaris*), mustard aphid (*Lipaphis erysimi*), mustard sawfly (*Athalia lugens*) and some beetles.

**Cotton-** Cotton is also the main crop of this area. Many sucking types of pests are found in the cotton crops. These are; leafhopper, red hairy caterpillar, weevil, cotton grasshopper, cotton bug, blister beetle, thrips, cotton white fly (*Bemisia tabaci*), red cotton bug (*Dysdercus cingulatus*), cotton jassid (*Amrasca biguttula*), pink ball worm (*Pectinophora gossypiella*), mealy bug (*Phenacoccus solenopsis*), cotton aphid etc.

**Bajra (millet crop) -** Bajra is also cultivated here. Locust attacks the millet crop, which the local people know as “Fadka”. This insect eats the leaves of millet such as; Locust (*Cataloipus cymbiferus*). Some other pests are Red hairy caterpillar (*Amsacta albistriga*), Stem borer etc.

**Gram-** Gram is also called the king of pulses. Termites and Pod borer (*Helicoverpa armigera*) are the major pests in gram crops that harm the crop.

**Ground nut-** Many pests also harm the groundnut crop, such as termite, aphid (*Aphis craccivora*), jassid, leaf miner thrips (*Approaerema modicella*), leaf eating caterpillar (*Amsacta albistriga*) and white grub etc.

**Moong-** Moong is a legume crop, many pests also harm the moong crop such as; termite, aphid (*Aphis gossypii*), Jassid (*Amrasca biguttula*) and Thrips (*Frankliniella schultzei*) etc.

**Barley-** Several pests have been reported in this crop. Aphid (*Schizaphis graminum*), grasshopper, click beetle (*Pyrophorus noctilucus*) and khapra beetle (*Trogoderma granarium*) are reported during this study.

**Guar-** Guar is a very important crop. Due to its market prices, this crop is always discussed among farmers. Several pests have been reported in the guar crop. Aphid, jassid, beetle, leaf hopper, white fly, and leaf borer are the major pests of this crop.

**Pest Management-** The agricultural area of the Pilibanga region is attacked by many pests, which are managed in many ways. There are various methods to manage the pest of different crops.

I. **Mechanical control-** In some areas pests are also controlled by some mechanical methods. The pests are also collected and controlled by light traps and pheromone traps. In these methods, the pests are attracted and killed. In some agricultural areas, pest attacks are also reduced by removing infected parts of the crops. The light trap is also used for the nocturnal type of pest.

II. **Chemical control-** Most of the farmers in the Pilibanga region manage various pests with different pesticides. For the control of aphids in wheat and barley, thiamethoxam 25 wg or methyl demeton 25 pesticides are used. Metalaxyl and Mancozeb pesticides are sprayed to control white roly disease.

Methyl parathion 2% or quinolphas pesticides are used for the control of Fadka pest (Locust) and red hairy caterpillars in millet crops (Bajara). To prevent stem borer, farmers apply imidacloprid 600 FS in same crop.

The author has reported that malathion and imidacloprid pesticides are also sprayed in the mustard crop areas. In this area, termites are very dangerous pests, so farmers use chlorpyrifos and imidacloprid pesticides for termite control in crops of gram. Monocrotophos pesticides are also sprayed to control pod borer in same crops.

Similarly in the groundnut crop, carbendazim and mencozeb pesticides are sprayed. Pesticides like quinalphos 25% profenofos etc. have been used to control the pest in the guar crop and also profenofos, imidacloprid, chlorpyrifos etc. pesticides apply in cotton field.

III. **Biological control-** When a harmful organism is controlled by other organism, it is called biological control. There are many insects in the fields which are the friend of the farmers. Many insects are predatory in nature. Many wasps, ants, flies, ladybugs and spiders are insects that eat eggs, larvae, of the other insects and also eat to small insects. In this way, it is also a method of pest control in agricultural fields.

**Conclusion:** There is a lot of agricultural work in this area. The main crops cultivated in this area are wheat, mustard, cotton, gram, barley, guar etc. Many pests attack and damage these crops such as locusts, grasshopper, termite, white fly, aphid, leaf borer, bug, caterpillar jassid, etc. Production is also affected by these pests. In this way, this study provides useful information about the pests found in the crops and various methods of their management.

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