

A Review on Stored Grain Pests

Masanam Lakshmi Sahithi Sri*

Student, SSJP'S College of Agriculture, Ongole, India

Abstract: Insect pests of stored grain. Insect pests causes severe damage to stored grain foods by directly consuming the embryos of the food grain. During offseason, when fresh produce is unavailable people need to eat stored grains. Food stored in sacks and canisters are particularly vulnerable to pervasion with a few bugs which can cause broad post-collect misfortunes, decay, and less interest in business sectors, causing a colossal monetary emergency. Thus, effective administration of stored grain pests becomes important to forestall these from insect pests. Current methodologies for their administration are one of the promising objectives, as it incorporates preventive works on, checking, disinfection, and distinguishing proof of fundamental microbes. By this insect pests both quantitative and qualitative losses occur. There are almost thousands of species of stored grain pests are there in the world mainly with the two orders coleoptera and Lepidoptera. This review tries to provide the necessary information about the damage caused by stored grain pests.

Keywords: Stored grain pests, rice weevil, khapra beetle, rice moth, pulse beetle.

1. Introduction

Stored grain pests have a genuine danger to dried, put away, solid and, perishable horticultural items and non-food subsidiaries of farming items around the world. These bugs make harm stored grains bringing about both subjective and quantitative misfortunes. Subjective misfortune in stored grain is brought about by substance changes in proteins, sugars, amino acids which adversely influence the nutritional worth of grains. The fundamental explanation for the event of stored grain pests is the presence of great environments for their development and endurance. Tragically, over 75% of the produced grains are stored in towns in customary designs such as earthen pots, storehouses, gunny packs, steel drums, and containers. This leads to loss of food grains, especially in less developed countries where the need is the best. There are different elements which cause postharvest misfortunes of food grains, and harm inflicted by bugs addresses the most elevated danger. It has been accounted for that there is a wide scope of misfortunes of around 10-30% of the world's all out horticultural creation because of bug pervasion alone on stored food grains. Bug pervasion might change the environment of the stockpiling chamber which could give favourable conditions to intrusive capacity organisms that bring about additional misfortunes. These infested stored grains are unfit for human consumption and hazardous to human health. Hence, the management of insect pests are necessary by identifying the

main pathogen, observing, sterilization etc. The main stored grain insect pests are Rice weevil, Khapra beetle or wheat weevil, Lesser grain borer, Rust red flour beetle, Pulse beetle etc.

Different insect pests:

1. Rice weevil
2. Khapra beetle
3. Rice moth
4. Pulse beetle

1) Rice Weevil

Scientific Name: Sitophilus oryzae

Family: Curculionidae

Life Cycle: Life span of adult is 4-5 months

Eggs → Larva → Pupa → Adult

Damage: Rice weevil is the major stored grain pests and completely destroy the grain. Grown-up and hatchlings both assault grains out of nowhere and irregularly eat them. Greatest harm is done in the long stretch of august to October.

2) Khapra Beetle

Scientific Name: Trogoderma granarium

Family: Dermestidae

Life Cycle: Life span of adult is 15-30 days.

Eggs → Larva → Pupa → Adult

Damage: Damaging stage of khapra beetle is larvae only. However, it is a significant irritation of wheat yet it invades bajra, jowar, maize and rice. Khapra beetle destroys the stored grains in a very short time. Larvae attack the embryo of the seed or grains. Damage causes critical decrease in seed feasibility and further damage Prompts horrible changes in compound organization and those grains are unfit for sowing, human consumption and hazardous to human health.

3) Rice Moth

Scientific Name: Corcyra cephalonica

Family: Pyralidae

Life Cycle: Life cycle of adult is 5-6 weeks

Eggs → Larva → Pupa → Adult

Damage: Damaging stage of rice moth is larvae. Rice moth hatchlings defile food by delivering a lot serious areas of strength webbing and frass and gives unpleasant smell. This can tie food together and make food sources unacceptable available to be purchased or utilization. Frass from the rice moth can likewise draw in other put away food nuisances and increment the harm and tainting of the item.

4) Pulse Beetle

Scientific Name: Callosobruchus chinensis

*Corresponding author: sri3071999@gmail.com

Family: Bruchidae

Life Cycle: Life cycle of adult is 5-20 days

Eggs → Larva → Pupa → Adult

Damage: Damaging stage of pulse beetle is Grub. Pulse beetle is the major pest of cowpea and gram. By making a hole pulse beetle enter inside and feed on kernel of the grain. Beetle damage all parts of the grains except external shell.

Preventive Measures:

- For the protection of stored grain pests, seed treatment before sowing is the main preventive measure of stored grain pests.
- The moisture content of the grains may not be more than 14% at the time of harvesting.
- Adjusted and clean development is vital with the goal that a solitary seed might turn into the transporter of invasion.
- Gunny bags have to be insect free.
- Threshing yards ought to be away from storage facilities and ought to be perfect.
- Try not to store infected seed without legitimate treatment.
- Mainly, the drying of the grains by spreading a thin layer of grains in the sun before storage because insect pests cannot survive when the moisture content of the grains is below 8%.
- Blending of residue with grains like sand, mud, debris makes the passage of bugs in grains a troublesome undertaking and cause actual wounds to the bugs.
- By the spreading of sand on grains prevents egg laying of the insects.
- For storing the grains use aluminium canisters, steel containers, plastic receptacles and pusa canisters.
- Refrigeration at below 10 degrees Celsius insect pests are unable to lay eggs and also heat treatment at above 50 degrees Celsius insect pests cannot survive.

Chemical measures:

- Fumigation is the cycle where deadly dosages of insect sprays to kill grain vermin is utilized in the vaporous structure. It is for the most part, more powerful in encased spaces. All fumigants are pretty much harmful to humans and animals, so care ought to be taken to keep away from its over openness to the specialists

utilized for fumigation work. Such as, Ethylene bromide, Methyl bromide etc.

- Supplanting oxygen with inactive gas like carbon dioxide has been viewed as tentatively fruitful in killing the pests inside the hermetically sealed granaries.
- Now a days malathion is used as a insecticide for stored grain pests in this world because malathion is less harmful to humans and animals, Malathion 50% E.C is used as a spray in the ratio of 1:100 with water @3 lit/100 square meters on walls, floors and also on grain bags.
- Dichlorvos is an insecticide and it is a dense colourless liquid, it has high vapour density. It has to be applied in the ratio of 1:300 @3 lit/100 square meters surface.
- Food grains, which are going to be used for seed purposes can be mixed with few insecticidal dusts like naphthalene, camphor, dried neem leaves etc.

2. Conclusion

In this world, the human population is increasing day by day. It will reach to 9.9 billion in 2050. Food and Agriculture Organization (FAO) anticipated that the world might confront an enormous shortage of food on the off chance that the all-world food production isn't expanded by 60% continuously 2050. Food grains and pulses comprise most ate and the most well-known stored food products on the planet. Maximum storage of food grains are in towns in gunny packs, steel drums and furthermore in bushels which are conventional techniques. This cause loss of food grains significantly by insect pests. Small-hold farmers facing many challenges by this storage losses due to stored grain pests.

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