



Stored Grain Insect Pest of Rice and their Management

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Abstract

The major contribution of losses in grains due to storage grains pest. Total storage loss due to insect pest in storage *i.e.* 4.0 to 6.0 % only in cereals (Dhingra, 2016). The world population increasing day by day so, we need to 60 to 70% more food grains. Although post-harvest losses major issue does not receive the necessary attention and importance. Globally 1.3 billion tons of food production is wasted annually during post-harvest operations at different stages (harvesting, threshing, transportation& storage).

Introduction

Rice is one of the most vital staple plants inside the global, feeding a full-size part of the global populace. But, even after harvest and storage, rice is vulnerable to diverse pests that could motive considerable damage and losses. In this newsletter, we are able to explore some of the not unusual stored grain pests of rice and talk powerful management techniques to protect saved rice from infestation. Grain insect pests divided into primary and secondary pests. Primary grain bugs have the capability to assault entire, unbroken grains, at the same time as secondary pests assault handiest damaged grain.

Primary storage pest (Internal feeder)

- **Rice Weevil (*Sitophilus oryzae*):** The rice weevil is a primary pest of stored rice, causing damage via feeding at the grain. Adults are small beetles, about 2-three mm in duration, with a characteristic snout. They infest rice during storage and lay eggs inside the grain kernels. Larvae increase inside the grain, inflicting further damage.
- **Lesser Grain Borer (*Rhyzopertha dominica*):** The lesser grain borer is another major pest of stored rice, capable of causing substantial losses. Adults are small, cylindrical beetles measuring about 2-3 mm in length. They infest rice during storage, penetrating the grain kernels and causing damage through feeding and tunneling.
- **Angoumois Grain Moth (*Sitotroga cerealella*):** The angoumois grain moth is a common pest of stored grains, including rice. Adult moths are small, measuring approximately 5 mm in length, and have a distinctive elongated shape. Females lay eggs on rice kernels, and the hatched larvae tunnel into the grain, causing damage and facilitating the entry of other pathogens.

External Feeder

- **Rust red flour beetle (*Tribolium castaneum*):** The rust red flour beetle is a small insect, measuring about 2-4 millimeters in length. It has a reddish-brown or rust-colored body. These beetles are primarily found in stored grain products such as flour, cereal, rice, and other processed grains. The larvae, in particular, cause damage by tunneling through the grain, contaminating it with their excrement and cast skins.

Secondary storage pest

- **Indian Meal Moth (*Plodia interpunctella*):** The Indian meal moth is a cosmopolitan pest that can infest a wide range of stored products, including rice. Adult moths have a wingspan of around 15-20 mm and are easily recognizable by the characteristic reddish-brown coloration of the wings. The larvae of this pest spin silken threads, creating webbing in stored rice.
- **Saw-toothed Grain Beetle (*Oryzaephilus surinamensis*):** The saw-toothed grain beetle is a common pest found in stored grains, including rice. Adult beetles are small and flat, measuring about 2-3 mm in length, and have distinctive saw-like projections on their thorax. They infest stored rice and can cause extensive damage by feeding on the kernels.

Management

Storage Hygiene: Maintaining cleanliness and proper sanitation in storage facilities is the first line of defense against stored grain pests. Regularly clean and sweep the storage area to remove any spilled or infested rice. Pay attention to corners, cracks, and crevices where pests can hide. Thoroughly wash storage containers, shelves, and equipment with soap and water to eliminate residual grain particles and pest eggs.

Temperature and Humidity Control: Stored grain pests thrive in favorable environmental conditions. To discourage their growth and reproduction, maintain the storage area at cool temperatures (below 15°C) and low humidity levels (below 14%). Proper ventilation and air circulation are essential to prevent moisture build-up, which can promote pest infestation. Consider using fans or natural airflow to control temperature and humidity.

Proper Drying: Before storing rice, ensure that it is adequately dried to reduce moisture content. Moisture levels above 12% can facilitate pest activity and lead to mold development. Use appropriate drying techniques, such as sun drying or mechanical dryers, to bring the moisture content down to safe levels. Conduct regular moisture checks using a moisture meter to monitor the rice during storage.

Integrated Pest Management (IPM)

Implementing an IPM approach combines multiple strategies for effective pest control while minimizing the use of chemical pesticides. IPM involves the following practices:

A. Monitoring: Regularly inspect stored rice for signs of infestation, including live pests, damaged grains, webbing, or fecal matter. Use pheromone traps, sticky traps, or light traps to monitor pest populations and identify potential problem areas.

B. Biological Control: Introduce natural enemies of stored grain pests, such as parasitic wasps or predatory beetles, to control infestations. These beneficial organisms can help keep pest populations in check without relying solely on chemical interventions.

C. Physical Control: Use mechanical methods to control pests, such as sieving or winnowing to remove live insects and their eggs. Regularly turn or stir stored rice to disrupt the breeding sites of pests.

D. Chemical Control: If necessary, consider using approved insecticides or fumigants specifically labeled for stored grain pest control. Follow all safety precautions and usage instructions while handling and applying chemical products.

Conclusion

Protecting stored rice from pests is critical to ensure food safety and prevent economic losses. Implementing integrated pest control strategies, which include right storage hygiene, normal monitoring, and the use of physical and chemical control methods, can extensively reduce infestations as a result of rice weevils, lesser grain borers, angoumois grain moths, purple rust flour beetle, Indian meal moths, and saw-toothed grain beetles. Through using those management practices, farmers, storage operators, and efficient management of rice stored grain pests is critical to defend the quality and amount of saved rice.