

## Developmental Biology and Management of Rice Moth, *Corcyra cephalonica* Stainton (Pyralidae: Lepidoptera)

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### Abstract

The rice moth, scientifically known as *Corcyra cephalonica* (Stainton) is a common pest that affects stored grains. They are found worldwide, especially in regions with a warm climate. They primarily affect stored grains including rice, wheat, barley, corn, and other cereals. They can also infest dried fruits nuts and spices. They are considered significant pests due to their ability to damage and reduce quality of stored grains. The larvae feed on grains, creating tunnels and webs, and can cause significant losses if left unchecked. They contaminate the grains with their excrement, webbing and cast skins making the affected product unfit for consumption and reducing their market value. To prevent the pest infestation, it is crucial to maintain good storage practices. This include ensuring proper cleaning and hygiene in storage facilities, using air tight containers or packaging to prevent access, and monitoring stored grains regularly for signs of infestation. Various chemical and non-chemical control methods, such as fumigation, heat treatment, and biological control agents, can be employed to manage rice moth population.

**Keywords:** - Rice moth, *Corcyra cephalonica*, Webbing, Grains

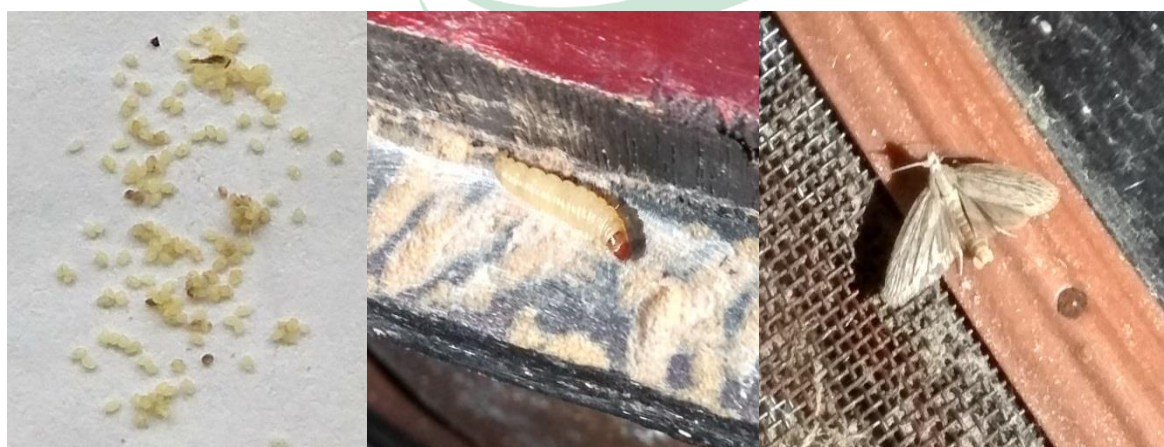
### Introduction

Stored grain provides a buffer against production fluctuations, ensures food security, stabilizes market prices, supports economic activities, reduces post-harvest losses and enables trade. Its importance extends beyond immediate consumption, contributing to overall sustainability and resilience of agricultural systems and food supply chain but infestation by pest in storage is a major constraint to maintain good quality grains. *C. cephalonica* is one such notorious pest of stored cereals and cereal commodities in India as well as in other tropical and subtropical region of the world. The pest predominantly attacks rice grains and is commonly

called as rice moth. It belongs to family Pyralidae and order Lepidoptera. It is distributed in Asia, Africa, North America and Europe. It is a primary storage pest and an external feeder that remains active from March to November when all stages are noticed and passes winter in larval stage. The female moth lays scattered eggs all over the produce. Its larvae are a gregarious feeder that causes a significant damage. The adult is a small moth of light brown or greyish colour. The pest needs to be controlled because its severe infestation can cause a heavy loss as it becomes unfit for human consumption as well as selling purpose. Management can be done by using various cultural, biological and chemical methods.

### **Biology of the pest**

The life cycle of the rice moth is similar to other lepidopterous insects, consists of four distinct stages: egg, larva, pupa, and adult. The moth is active at night and lay eggs individually or in cluster of 3-5. The incubation period of egg ranges from 4-7 days. The larval stage passes through six instars before forming a pupa. The neonate larvae are light creamish white in colour which turn dirty white in the second instar with a yellowish white colour head capsule. The third instar is active with a dark brown colour head capsule. 4<sup>th</sup> instar is similar to that of 3<sup>rd</sup> instar but vary in size and shape. 5<sup>th</sup> instar is dull white with brown head and has long fine hairs covering the body. The 6<sup>th</sup> instar larva is fully grown, elongated and slightly tapered towards the end. The larval period is completed in 27-35 days. The larvae stop feeding and become inactive before entering into the pre-pupa stage. The pupal period ranges from 9-14 days. The adults are small and nocturnal. The male moth is usually smaller than the female. The adult male and female lifespan ranges from 9-12 and 12-15 days. The pest completes its life cycle in 33-52 days.



### Symptoms of attack

The larval stage of the pest is most destructive and causes significant damage to rice and other grains. It causes serious damage to grains by feeding and resulting in the production of dense and tough silk threads in grains. The silk webs create a strong network within the grains making them clump together and reduce their quality. The larvae consume the grains while enclosed in silk webs, transforming them into mere frass and rendering them unsuitable for human consumption. The silk threads and frass can also contaminate nearby grains, leading to a rapid spread of infestation within storage facility.



### Management

Rice moth management typically involves implementing preventive measures to minimize infestations and taking appropriate actions if an infestation occurs. Here are some strategies you can employ to manage rice moths:

- ❖ Maintain proper storage hygiene to prevent moth infestation. Store grains in air tight containers. Make sure that the containers are clean and free from any existing infestation.
- ❖ Surface treatment and seed treatment can be done before storing grains.
- ❖ Biological control can be done using natural enemies that helps to control their population by parasitizing their eggs or larvae.
- ❖ Use of improved storage receptacles can also prevent infestation.
- ❖ Some natural repellents like neem leaves are known to deter rice moth.
- ❖ In severe infestations, chemical insecticides may be necessary. However, it is important to use these products judiciously and strictly follow the manufacturer's instructions and



safety guidelines. Aluminium phosphide is one such insecticide used as a fumigant to control rice moths, but its application requires expertise and caution due to its high toxicity.

### Conclusion

Rice moth is a significant pest that cause damage to stored rice and other grains. They infest grain storage facilities, contaminate the stored product, and reduce its quality and market value. Rice moth larvae feed on the grains, leaving behind webbing, frass (insect excrement), and empty pupal cases. Proper management of this pest using preventive measures and less toxic chemicals is necessary. By managing this pest can increase the shelf life of grain and their products in storage as well as get good market value.

### References

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