The Rice Moth, Corcyra Cephalonica: A Royal Food of Bio-Agents

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The goal of the study was to compare different rearing media for mass production of the rice moth Corcyra cephalonica Stainton (Lepidoptera: Pyralidae), which is a key host for a variety of bio-control agents. A pest of rice, millets, and other cereals that have been preserved. Broken grains and flour are preferred.

1. Introduction

Corcyra cephalonica (Stainton) (Lepidoptera; Pyralidae) is economically an important stored grain pest in Asia, Africa, North America and Europe (Atwal and Dhaliwal, 2008)[1]. There are many biological control agents such as predators, parasitoids and microorganisms, which are naturally controlling the insect pests (Bhandari, 2014)[4]. The majority of the world's food is made up of stored grains. Around 70% of stored grains in India are for farmers' own consumption (Bhandari et al., 2014)[3]. Poor storage procedures, on the other hand, had cost the farmers a lot of money. Chemical pesticides are widely utilized in storage strategies to prevent this loss. Chemical pesticides are typically applied in the form of dust and combined with grains. These pesticides are more effective at controlling insect infestations, but they are more hazardous to animals. Botanical pesticides are safer than conventional chemical pesticides, which are generally neurotoxic (Balmain et al., 2001)[2]. Pest and mite infestations account for more than 10% of post-harvest damage in warehouses and granaries (Tooba et al., 2005)[9]. Insect infestations cause 5-10% of stored grains in India to be lost (Frenemore and Prakash, 1992)[5]. The rice moth, Corcyra cephalonica (Stainton) (Lepidoptera Pyralidae), is one of the most damaging insect pests of stored grains, including paddy grains, rice, jowar, and other cereals, and is found across India and many other regions of the world (Osman, 1984)[6]. The use of strong host eggs is critical for the rearing of egg parasitoids (Pathak et al., 2010)[7].

2. Economic Importance

The pest occurs in almost all the parts of the world. It is considered to be one of the most destructive pests of stored paddy, rice and other cereals in many parts of India. Besides cereals, legumes, oil cakes, dried fruits, suji, atta, etc. are also damaged by this insect.

3. Damage

Caterpillars create damage by weaving grains together and producing a lump, which they then feed from inside. Before pupation, larvae move about and leave a lot of webbing in the grains, creating severe lumping and lowering the grain's marketing grade.

4. Characters

Corcyra cephalonica eggs are round with a white surface sculptured at one end and a small nipple-like process. Except for the head capsule and the brown prothoracic tergite, the larvae are creamish-white. On abdominal segments 3-6 and 10, the prolegs are well-developed (Rasool et al., 2018)[8]. The last-instar larva spins a double-layered cocoon that is tightly woven and exceedingly
robust, and it matures into a dark-brown pupa. The adult emerges via a line of weakness in the front section of the cocoon. Adults have pale-buff hind wings and mid-brown to greyish-brown forewings with thin indistinct lines of deeper brown colour running down the wing veins. Males are smaller than females, and sexual activity normally begins soon after they reach adulthood. The pre-oviposition stage lasts around two days. Although oviposition can occur at any time during a person's life, the majority of eggs are laid on the second and third days following emergence. It takes roughly 2-3 days for eggs to hatch. The ideal parameters for *C. cephalonica* larval development are 30–32°C and 70% relative humidity (Rasool *et al.*, 2018)[8]. The time it takes for an egg to hatch and an adult to appear is only 26-27 days. The number of larval instars varies considerably; however, males typically have seven and females have eight. Adults emerge through a line of weakness in the cocoon's anterior end, where the last-instar larvae pupate within the meal.

5. Mass production

Broken grains for sorghum or maize, yeast powder, muslin cloth, oviposition cage with an entrance to introduce the moths and a bottom fitted with a 40 mesh wire net, moth collecting glass tubes with funnel mouth, plastic tube, wooden racks, petri dishes, oven, honey solution, etc. 5.1. Methodology

Broken sorghum or maize grains are sterilized in a hot air oven for 2 hours at 700°C. After that, the same grain should be conditioned before being used. Each tray contains 2.5 kg of sterilized grains combined with dried yeast powder at a rate of 2 g/kg. Each tray contains one cc of *Corcyra* eggs, which are retained for development. In a low-roofed rearing room, the tray is covered with a thick cloth or left open. Larvae feed on the grains after emergence and pupate inside the tray. The emergence of the moth begins on the 30th day. The moths are gathered every day and placed in oviposition cages to lay their eggs. The majority of the eggs are laid by the moths within three days of their emergence. The eggs are gathered early in the morning from the oviposition cages and utilized to multiply *Trichogramma*.

6. Conclusion

In storage, the rice moth *Corcyra cephalonica* is a major pest. By eating behind silken webs, the larvae alone cause harm to rice and maize kernels. When the infestation is severe, the entire grain stock might be transformed into a webbed mass. Eventually, a distinct unpleasant odour emerges, rendering the grains unfit for human consumption.

7. References

6. Osman, N. 1984. Assessment of damage by rice moth, *Corcyra cephalonica* Stain ton, on different grains at four levels of moisture. Presented at seminar on health and ecology in grains post-

