

RICE GALL MIDGE

(*Pachydipløsis Cryzae* = *Orseolla Oryzae*)

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Introduction

Rice gall midge causes serious damage to rice crops in many parts of Southeast Asia - including Sri Lanka. Being a Dipteron it is a fly, about the size of a small mosquito, phototrophic and nocturnal in habit, but fairly active early in the morning. Adult midge feeds on dew drops and lives only for 2-5 days.

The Life Cycle

Its life cycle has four stages, Egg, larva (Maggot) - Pupa and Adult (Imago). The maggot causes the damage to rice plants. Adult female has a bright abdomen, copulates once soon after emergence, and lays eggs few hours later. It lays 100-200 eggs, singly or in groups of 3-4 anywhere on the leaf blade, leaf sheath or at the base of the plant.

The Egg Stage

Eggs are shiny white, pinkish, red or yellow in colour, tubular in shape and are tiny in size. Eggs hatch in 3-4 days. High humidity is necessary for the development of the egg.

The Larval Stage

Newly hatched larvae can live in water for 3-6 days. But prolonged submergence can destroy them. Larvae wriggle down and creep through leaf sheaths and find their way to the growing point, where they lacerate and feed on the meristematic tissues. Larvae don't seem to pierce any part

in finding their way to the growing point of the rice plant. It is thought that growth substances (auxins, hormones etc) attract the pest, to the growing apex. Larval stage normally lasts for 15-20 days and consists of 3 instars.

1. 1st.instar larva - migratory phase - 4-5 days.
2. 2nd.instar larva - feeding and developing phase - 4-5 days
3. 3rd.instar larva - feeding and developing phase - 3 days.

Duration of each instar stage depends on the place of infestation. Larvae entering dormant tillers will not develop further, until the tiller enters a phase of active growth. Usually only the larva is found in one tiller. There may be instances, when a few of them gain entry into one shoot. But not more than 3 of them will enter 2nd. instar stage. Of these 3, not more than 2 can enter the 2nd. instar stage. Ultimately only one can pupate in a single growing point.

Gall Formation

Feeding by the larva stimulates growth of the gall. Whether it is a physical effect or a chemical effect or both is not yet clear. Growth materials being translocated to the growing point, are consumed by the larvae. As a result plant growth is arrested. Secondly a chamber is formed round the larva out of the innermost leaf sheath. This chamber has longitudinal ridges on the inner-wall. Finally this chamber gets elongated, in the form of a long tubular structure called the "gall", the "silver shoot" or the "onion leaf." Latter phase takes place only after the larva has stopped feeding on the growing point. This happens when it is ready to pupate. That is why we normally don't see the larva inside the elongated galls.

The Pupal Stage

Pupation takes place, at the base of the gall. Real pupal stage is preceded by a prepupal stage. Pupa has got a series of spines pointing backwards, and these are used in wriggling it's way up the gall to the tip, before emergence. When it is about to emerge, it pierces the tip of the gall and protrudes it's body half way out. Emergence normally takes place at night. Pupal stage may vary from 2-8 days.

The Damage

Feeding by the larva causes the formulation of the gall, and then the plant cannot produce a panicle. As a result the shoot becomes unproductive. Although early attacks lead to profuse tillering, the new tillers too are attacked subsequently and rendered unproductive. This pest attacks only those shoots that have not entered the reproductive phase. Infestation in the nursery seems to be more severe, because optimum conditions for the pest are available there.

Conditions favourable to the pest

Pest are high humidity (82-88) and favourable conditions for the temperature between 26-30°C. When rice plants are not formed in the field they live on grassy weeds. There, it completes the life cycle in 9 - 14 days. Once the rice crop is established, pest shifts quickly on to rice plants where it takes 9 - 26 days to complete the life cycle. Normally late planted rice suffers most from this pest.

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