

Biological Control of Corn Leaf Aphids by Felicia Kueh Tai Fui

The corn plant is often infested by corn leaf aphids. Corn leaf aphid is about 0.9 mm to 2.4 mm long, elongated in shape with a pair of short antennae. . It is yellow green to dark olive green. It has sucking mouthparts and feeds by inserting the stylets into the corn tissue. There are two forms: wing or wingless. These aphids are very unique. When their populations increase, the females will develop wings and fly to less crowded sites to begin their new colonies. The aphid population is primarily females that reproduce asexually, i.e. without mating. Therefore, they can be found in big numbers.

Corn leaf aphids infest all part of the corn plant above ground. They initially live in the furled leaves and develop rapidly in the inflorescences. Serious damage is often found on the corn tassel within the protective sheath. This will affect proper pollination and cause incomplete ear formation, thus affecting the yield. Heavy infestations of aphids cause yellow mottling, wilting and curling of leaves. These aphids also excrete honeydew which may attract ants and serves as a medium on which sooty mold may grow, and as food for another pest, corn earworm.



Aphids on corn stalk



Aphids on tassel



Aphids on leaf blade

Biological control with ladybird beetle

Corn leaf aphids are subjected to control by different types of natural enemies, including parasitic wasps and predators such as ladybird beetles and lacewings. Predatory ladybirds are widely considered as important biological control agents. The ladybird beetle, *Menochilus sexmaculatus* has been reported as the most common species of predators. Both larva and adult stages actively search for aphids to prey on. The larva locates its prey by contact while the adult uses its smell and visual cues to detect their prey.



Larva of ladybird beetle feeding on aphid



Ladybird beetle feeding on aphid

The biology and life cycle of ladybird beetle

The ladybird beetle passes through four developmental stages: egg, larva, pupa and adult. The eggs are laid in clusters where there is abundance of aphids. Freshly laid eggs are cigar in shape and yellow in colour, and usually in a cluster of 20 to 30 eggs. They turn blackish as they mature and become completely dark before hatching.

Once the eggs hatch, the larvae will come out and start looking for something to eat. The larva looks completely different from the adult and they undergo four instar stages before it pupate. At the time of pupation, it assumes a curved shape and attaches itself to the leaf surface. The adult has a body length of 3.3 mm to 6.2 mm, orange or light red colour with two zig-zag lines and a posterior black spot. The female can be differentiated from the male at the pupa stage or the adult stage by its size. The female is slightly bigger than the male.



Eggs of ladybird beetle



Newly emerged larva of ladybird beetle



Ladybird beetle searching for aphids to prey on



Male (left) and female (right) ladybird beetle

The ladybird beetles are found naturally in the environment where the corn leaf aphids exist. Since the corn leaf aphids seldom occur in damaging densities, it is encouraged to depend on this biological control agent, the predatory ladybird beetle, to regulate the aphid population and thus reduce the need for costly and environmentally damaging insecticide application.

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