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Mosquito Nuisance in Rural Area of Hong Kong

A total of 72 species of mosquitoes are recorded in Hong Kong. Some of them are well adapted to human dwellings which breed in small water bodies (e.g. *Aedes albopictus*); whereas others prefer rural inhabitations. Many of the rural inhabitants feed readily on human and cause nuisance. Some of them can be encountered quite readily with the development of the rural area.

Culex tritaeniorhynchus

Culex tritaeniorhynchus is the principal vector of Japanese Encephalitis. It breeds in clean to slightly polluted water, flooded fields, fish ponds and slow flowing streams. The adult mosquito attacks birds and mammals including man. They are night biters with peak activity at one hour after dark. They are exophilic but would stay indoors before and after feeding.



Adult *Culex tritaeniorhynchus*

Armigeres subalbatus

Armigeres subalbatus bites viciously on human and cause serious nuisance. It is the vector of filariasis. It breeds in heavily polluted water, including septic tanks and sewers. The adult mosquito enters houses and bites at night.



Adult *Armigeres subalbatus*

Armigeres magnus



Adult *Armigeres magnus* Pitcher Plant

Armigeres magnus feeds readily on human. It breeds mainly in pitcher plants. Therefore, its distribution depends on the existence of pitcher plants.

Mansonia uniformis

Mansonia uniformis bites humans at night. It is the vector of filariasis. They breed in ponds and flooded fields with aquatic plants (such as water hyacinth). The respiratory siphons of larvae are modified to penetrate into stems and roots of aquatic plants for retrieving oxygen.



Siphon of *Mansonia uniformis* Larvae Pond with water hyacinth

Aedes togoi

Aedes togoi inhabits brackish water in rock pools along seashores. Adult females enter houses and bite humans at night.



Adult *Aedes togoi* Rock pools along seashore

The following personal protection measures can help prevent mosquito bites in rural areas:

- Install mosquito screens at windows / louvers (16 meshes per square inch).
- Use mosquito net in bedroom.
- Wear long sleeved clothes and long trousers during outdoor activities at night.
- Install appropriate mosquito trapping device.

More information on mosquito prevention and control is available from the website of FEHD.

By CY TSANG, Pest Control Officer

Pheromones

Pheromones are naturally occurring chemicals produced and released by insects to the outside that causes a specific reaction in a receiving insect of the same species. There are three principal pheromones, which are aggregation, sex and alarm, used to attract or disperse others of the same species. Aggregation pheromones are usually produced by males of long-lived insects, and both sexes often respond. Sex pheromones are usually produced by females of short-lived insects to attract males of the same species. Alarm pheromones are usually produced by an individual insect to repel and disperse other insects in the vicinity. It is usually released by an individual insect when it is being attacked.

The number of pheromones identified and their application have been greatly increased since it was announced in 1950s. At present, it has been possible to use some of the pheromones to direct control insects through mating disruption, lure and kill techniques and mass trapping. Long before entomologists learned to use pheromones to attract their prey, the Bolas spider was patiently attracting its next meal with a moth sex attractant pheromone. Bolas spiders attract certain moths by aggressive chemical mimicry of those moth species' sex pheromones. Pheromones of insects can be closely related or even identical to secondary plant substances. Kairomones are crop or animal volatiles that are used by the insect pest to detect its host. They are chemicals which benefit the receiver rather than the emitter. A classic example of this is the studies conducted to identify the kairomone in cattle that attracts the tsetse fly. The studies have resulted in the development of lures based on acetone and carbon dioxide as well as a control technique utilizing insecticide-impregnated screens baited with the lure.

Aggregation and sex pheromones are now widely used in pest management as effective tools for control and monitoring pest infestations, such as stored product insects. Stored product insects are very costly to us because they consume products that have been grown, harvested, and many times gone through a processing phase, a packaging phase, a marketing phase, a transportation phase, and finally come to rest in a storage facility. Products that become infested may have to be discarded, costing thousands of dollars. Appropriate quantities of synthetic pheromone are placed in traps to detect and evaluate pest infestations. Traps are checked periodically to aid in formulating an effective pest management programme. It is important to know that no one type of trap is the best to use in a pest monitoring programme in all situations. It is important to match the specific trap to the environmental conditions in each particular situation.

Alarm pheromones can also be used to good effect in insect pest management. In the case of the honey bee, the alarm pheromone has been used to repel the bees from oilseed rape before insecticide application. Many species of aphid produce an alarm pheromone, which is normally released when they are under attack, increasing their mobility and hence, chances of escape from natural enemies. The reaction to the pheromone has been utilized ingeniously to increase aphid contact with synthetic pyrethroids and thereby increasing the effectiveness of this control measure. All in all, pheromones will have a diverse and important role in our future pest management strategies as greater understanding is obtained of their properties and functions.

KY CHEUNG, Pest Control Officer