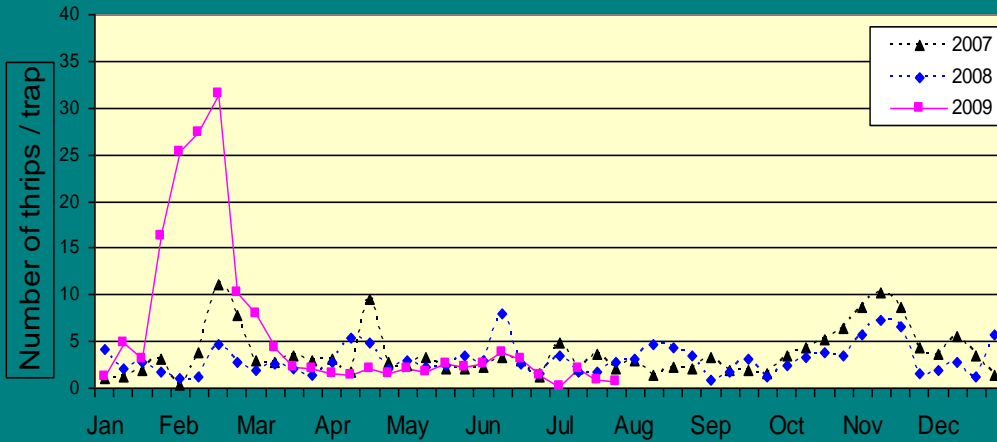


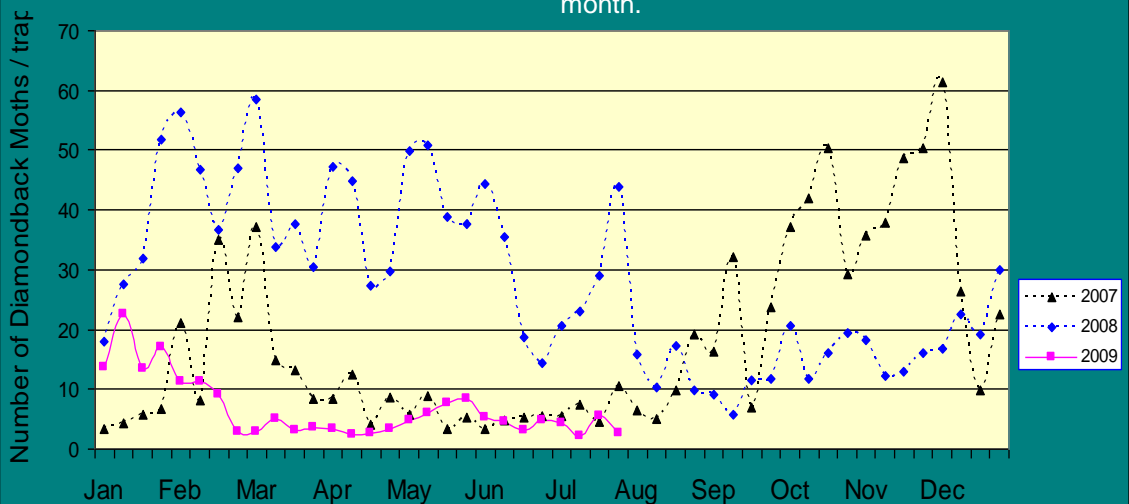
Endemic Pest Surveillance: A – *Thrips* infestation on Orchid plants

Comments: The average thrips populations have not changed compared to last month.



Endemic Pest Surveillance: B - Diamond Back Moth infestation on Vegetables

Comments: The average DBM populations have not changed compared to last month.



Rust Diseases on Local Ornamental Plants

Rust diseases of plants are caused by a group of fungi that contains over 1400 fungal species affecting trees, grasses, food crops and ornamental plants worldwide. They are obligate parasites requiring living hosts and some require 2 host types to complete their life cycles. Rust species are often host specific and are easily recognised by the yellow to orange powdery spots found on the undersides of leaves and stems. The coloured spores are developed from localised fungal infections beneath the leaf or stem cuticle surfaces and at maturity rupture out to be carried away in the air currents or water splashes to start new infections nearby.

Rust diseases have increasingly been noted from our plant surveillance among the diversified plant types that has been added to the garden city. Rust disease previously common on frangipani trees (*Plumeria* spp.), are now also seen on *Heliconia* spp., *Canna* spp., *Costus* spp. and lately on imported grape vines (*Vitis vinifera*). The disease does not kill the plants but severe infection would cause stunting, tissue distortion, defoliation and predispose the plants to other fungal diseases e.g. anthracnose that would increase leaf spots and necrotic patches.

Rust fungi, *Coleosporium plumeriae* infect the different Frangipani varieties. This rust causes small orange coloured pustules (Fig. 1) on the undersides of the leaves carrying millions of rust spores (Fig. 3) which further infect surrounding frangipani trees. The leaf surfaces where the pustules are become necrotic (Fig. 2) and with severe infections, the leaves fall-off prematurely. The rust does not affect the flowers. The Singapore hybrid *Plumeria obtusa* is more tolerant to the disease as compared to *Plumeria rubra*, the red frangipani.



Fig. 1: Rust spots on frangipani leaf



Fig. 2: Necrotic spots on leaf surface.

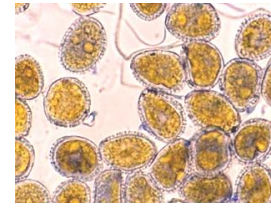


Fig. 3: Rust spores (magnified)

The *Heliconia* group contains around 180 species of medium to large erect banana like plants which are cultivated as ornamentals in the tropics and subtropics. *Puccinia heliconiae* is the causal organism of the rust disease of *Heliconia* spp. (Fig 4). The rust pustules are dark yellow surrounded by a reddish halo carrying the rust spores. Other *Puccinia* spp. are also responsible for rust diseases on *Canna* and *Costus* plants grown in landscapes (Figs. 5 & 6).

The rust, *Phakopsora euvitis*, was recently recovered from grape plants, *Vitis vinifera* (Fig. 7). Brown necrotic spots develop on the upper surfaces at the yellow pustules on the lower leaf surfaces. Heavy infection causes early senescence of the leaves and premature leaf fall. The rust is native to Asia and is restricted to the grape plant.

Rust diseases are controlled primarily through sanitation with the pruning and removal of fallen infected leaves preferably to be incinerated. This may be follow-up with applications of fungicides like triadimefon, triflorine, propiconazole or mancozeb to protect against re-infection.



Figs. 4, 5, 6: *Puccinia* rust spots on *Heliconia* spp., *Canna* spp. and *Costus* spp.

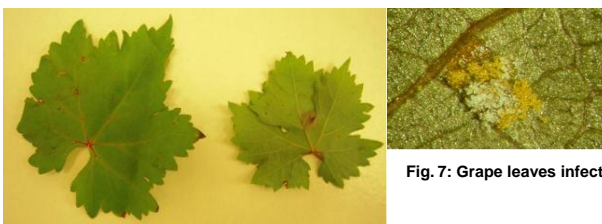


Fig. 7: Grape leaves infected with *Phakopsora uvitis* rust

Pest Interceptions from Importing Countries (July 2009)

AVA was notified of two pest interceptions from exported aquatic plant consignments for July 2009. These were:

Commodity = *Echinodorus* sp
Pest Intercepted = *Bemisia tabaci*
Country Intercepted = United Kingdom

Commodity = *Vallisneria spiralis*
Pest Intercepted = *Hirschmaniella* sp.
Country Intercepted = France

Exporters are advised to implement pest control management on farm with yellow sticky traps and insecticide applications to control whiteflies infestations. Pre-shipment chemical dip treatments for whiteflies will further increase the killing of the whitefly pupae on aquatic plants. In addition, apply nematicides in the aquarium beds to control the nematodes.

CONTACT US

Please report any unusual occurrence of pests and diseases (new or severe occurrence) to Plant Health Laboratories, AVA. It would help to protect our plant industry and the garden city from new invasive pests or diseases. You can report your observations through:

Email : AVA_Planthealth@ava.gov.sg or

Telephone: [63165168](tel:63165168) or [188](tel:188) or

Fax: [63161090](tel:63161090).

Please provide the location, plant hosts attacked and suspected pests or diseases to our officers to follow-up and confirm the situation if required.

Visit us at:

<http://www.ava.gov.sg/AgricultureFisheriesSector/PlantHealthServices/PlantHealthLabServices/index.htm>