



## Pacific Pests and Pathogens - Fact Sheets

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### Bele (Hibiscus) chlorotic ringspot (079)



Photo 1. Mild mosaic pattern on *bele* following infection from *Hibiscus chlorotic ringspot virus*.

#### Common Name

Hibiscus chlorotic ringspot

#### Scientific Name

*Hibiscus chlorotic ringspot carmovirus*

#### Distribution

Widespread. Tropics and subtropics of Asia, North and South America, Oceania. It is recorded from Fiji and Solomon Islands. The virus was first found in the ornamental *Hibiscus rosa-sinensis*, and then found throughout the Pacific in *Abelmoschus manihot* (*bele*, *aibeka*, *sliperi cabbage*), during UNDP/FAO surveys of the 1980s.

#### Hosts

Bele, (*aibika*, island cabbage or *sliperi kabis*, *Abelmoschus manihot*), and the ornamental *Hibiscus rosa-sinensis*. A number of plant species used for virus detection in labs are hosts, including cotton and French bean, but there is no record of these plants being infected in the field.

#### Symptoms & Life Cycle

Patches of light green occur, scattered amongst the normal dark green of the leaves. These areas are sometimes large, and seen easily (Photo 1), or very faint, and difficult to detect. When mixtures of pale and dark green occur on leaves they are called mosaics or mottles. The word "chlorotic" in the name refers to the overall yellowness of the leaves. Ringspots occur on the ornamental *Hibiscus*, but are uncommon on *bele*. The ringspots are pale green circles, 2-3 mm diameter.

The main method of spread of the virus is on cuttings used for planting, but it can also be spread in sap from infected plants if it makes contact with those that are healthy. Transfer on knives and secateurs is also a possibility. However, the importance of spread in sap is unknown.

The virus is not spread in seed. Other, similar viruses are spread by beetles, and also by a soilborne fungus, but their importance in the spread of *Hibiscus chlorotic ringspot virus* is unknown.

#### Impact

Symptoms are common wherever *bele* is grown, but little is known about the effect of the virus on plant growth. Damage is probably slight. Growers rarely recognise symptoms of this disease, suggesting that its overall impact is small. However, there is always the

possibility of more severe symptoms if plants become infected by *Hibiscus chlorotic ringspot virus* and other viruses at the same time.

## Detection & inspection

Look for the yellow-pale green patterns on the leaves, but note that plants can, at times, appear symptomless; this means that the leaves appear healthy, even though they are infected by the virus. Look for ringspots on ornamental *Hibiscus*.

## Management

### CULTURAL CONTROL

#### *Tissue culture*

Tissue culture can be used to produce plants that are free from virus. The technique involves growing the smallest part of the shoot tip where leaves and stems develop. The shoot tip is cut out, placed on a sterile tissue culture medium and grown into a new plant. If done properly, there is a chance that the plant is free of virus, but to make sure it has to be tested.

Hibiscus cabbage plants from Papua New Guinea and Fiji are available from the SPC Centre for Pacific Crops and Trees (CePaCT). The plants from Papua New Guinea were introduced to Fiji as seed, and then tested for their nutritional quality, before being treated to remove *Hibiscus chlorotic ringspot virus*. The plants were grown from meristems and tested for virus.

#### *Seed*

*Hibiscus chlorotic ringspot virus* is not seedborne, so plants from seed will be free from virus. However, flowering and seed set is not common in *Albemoschus*, and even if it were, the seedlings will not be the same as their parents genetically. Nevertheless, the large number of varieties in Papua New Guinea and other countries of Melanesia are likely to have originated as seedlings selected by farmers. Therefore, seed offers a way of obtaining healthy plants from which selections can be made for further propagation.

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