

## Cucumber Green Mottle Mosaic Virus (CGMMV)

### BACKGROUND

*Cucumber green mottle mosaic virus* (CGMMV) is a plant disease which was considered exotic to Australia up until September 2014, when it was detected on melon crops in the Northern Territory.

Subsequently it was detected in Queensland in melon crops in April 2015 and then in cucumber crops in Western Australia in July 2016. CGMMV also occurs in Europe, Asia, the Middle East, some parts of the USA, and Canada.

The virus infects fruit and vegetables belonging to the family Cucurbitaceae; including watermelon, cucumber, melons, zucchini, pumpkin, squash, bitter gourd, and bottle gourd and has been found in Cucurbitaceae weeds.

There are at least five strains of the virus, and symptoms can vary between hosts. Other mosaic diseases, caused by potyviruses, are known to occur in Australia and express somewhat similar symptoms. This makes it difficult to visually identify CGMMV, which can only be conclusively established by laboratory testing.

Infected watermelon plants may appear stunted with a bleached appearance, created by mosaic-like mottling on the leaves. Affected plants may also wilt and then runners, or the whole plant, may die prematurely. Symptoms on fruit can include fruit abortion, yellowing, dirty red discolouration and decomposition of the flesh of the fruit. Infection may also cause fruit malformation. The combined effects of CGMMV can result in substantial crop losses.

### TRANSMISSION

CGMMV can be easily spread and may remain viable for an extended period in plant debris and soil, or on vehicles, equipment and tools.

The virus can be introduced into a crop in many ways, but contaminated seed and soil are among the most common. It can readily infect plants and survive and spread by several means, including:

- Infection of roots in soil that is contaminated with infected plant debris and can spread through root-to-root contact.
- In water or in nutrient solutions in soil-less culture.

- By mechanical transfer, especially in protected or high-input culture systems where plants are frequently pruned, staked, handled or touched. This can occur via contaminated machinery, clothing, or even the hands of persons who have come in contact with infected plants.
- Packaging materials such as bins used for harvesting, storage or marketing fruit. Recycling of packaging materials should be avoided.
- In field production by machinery, pickers, and possibly by birds and other wildlife in the crop.
- Infected rootstock plants and grafts.
- Seed harvested from infected plants.

The virus can remain dormant within the seed coat and entry of the virus into the plant normally occurs through entry of the virus into plant cells through plant wounds. Preliminary findings to date suggest that bees may play a role in the transmission of CGMMV.

### SYMPTOMS

#### Seedlings

Typical CGMMV symptoms can be mistaken for similar symptoms caused by other cucurbit viruses. This renders visual identification of CGMMV as unreliable.

Symptoms on young seedlings may be indistinct or difficult to recognize as being caused by a virus. In severe infections embryonic leaves may become yellow, but symptoms may not be apparent until more mature leaves emerge.

#### Leaf

On young leaves, vein clearing and crumpling may be apparent, while mature leaves may display mottling or mosaic patterns, or be pale, yellow, or yellow-white.

#### Fruit

Fruit may be symptomless—at least externally—or can become severely spotted or streaked and distorted, especially during high temperatures. In some cases, fruit showing no external symptoms may be internally discoloured or necrotic. This can be especially pronounced in watermelon.



CGMMV watermelon fruit yellowing



CGMMV watermelon leaf mottling



Watermelon flesh breakdown

## MANAGEMENT OF CGMMV IN THE NORTHERN TERRITORY

As a trade sensitive pest, affected industries and governments from all states, territories and the Commonwealth have agreed to a national plan for managing CGMMV in Australia to prevent spread, reduce impacts on currently affected regions and mitigate trade impacts. A copy of the plan can be found at [www.nt.gov.au](http://www.nt.gov.au) and search for CGMMV.

Growers and government in the Northern Territory (NT) are working together to manage and contain CGMMV to areas of current infestation and reduce its spread. Restrictions apply to the movement of plant material, seeds, soil, machinery and bee hives from the NT. Growers are required to have farm biosecurity plans which may be audited annually by NT Quarantine.

If you suspect the presence of CGMMV call the hotline number listed below.

## FOR MORE INFORMATION

Please phone the  
Exotic Plant Pest Hotline on

**1800 084 881**

or contact

**NT Farmers on 08 8983 3233**

or [ids@ntfarmers.org.au](mailto:ids@ntfarmers.org.au)

## BIOSECURITY


Farm biosecurity plans should identify risks of transmission of CGMMV onto and off the property and measures growers have implemented to address those risks. Such measures may include restricting farm visitor access, minimising entry and exit of vehicles, using footbaths upon entry and exit to the property, and cleaning and disinfecting tools and machinery.

Other biosecurity practices that will help limit the spread of CGMMV include:

- Sterilization of vehicles, equipment, plant trays, tools and footwear with potassium peroxymonosulfate or freshly prepared 1% sodium hypochlorite (NaOCl) bleach.
- Disposal on site of suspect plants and crop residues by burning or deep burial.
- Removal of weeds that may harbour viruses in and around cucurbit crops.
- Developing a biosecurity plan for your farm.

A template for a CGMMV Farm Biosecurity Plan can be found at [www.farmbiosecurity.com.au](http://www.farmbiosecurity.com.au).

For assistance in completing your farm biosecurity plan, please contact NT Farmers on 08 8983 3233 or [ids@ntfarmers.org.au](mailto:ids@ntfarmers.org.au)



**Farm Biosecurity Plan Template for CGMMV and NT Cucurbit farms**

Business name .....

Farm Address .....

Contact .....

Office .....

Mobile .....

Email .....

Completed by .....

Signed ..... Date ...../...../.....

WARNING

FARM BIOSECURITY  
IN PLACE

Please contact the office before entering.

Do not enter property without prior approval.  
Keep to roadways and laneways.  
Do not enter growing areas.

