

# VG15013 – Improved Management options for Cucumber Green Mottle Mosaic Virus (CGMMV)



The Northern Territory Government leads a national project titled “VG15013 Improved management options for *Cucumber green mottle mosaic virus*” funded by Horticulture Innovation Australia using vegetable industry levy and funds from the Australian Government. The key research areas of the project are to

1. Determine the importance of weed and non-hosts of CGMMV in disease epidemiology.
2. Examine the potential for in-field diagnostics to assist rapid detection of the virus on farms known/suspected to be infected with CGMMV.
3. Develop multilingual communication and extension materials to assist with management options to cucurbit growers including on-farm biosecurity protocols.

The three year project commenced in February 2016 and progress to date includes conducting weed surveys in regions previously infested with CGMMV in the NT, and cucurbit growing regions in WA, QLD, NSW and VIC (depending on production periods). In consultation with NT Farmers Association, a non-host list was compiled to determine alternative crops that could be grown in CGMMV infested soils. A technique to purify CGMMV particles from soil was initiated with a small-scale experiment from leaf material and water using magnetic beads coated with CGMMV antibodies. The research group has also been conducting research into the link between honey bees and CGMMV. In addition, the NTG funded project to investigate CGMMV persistence in soil was completed.

Preliminary findings to date show a range of weed species do harbor CGMMV and it is recommended that growers maintain weed control on their properties as part of their farm management. Pot trials using soils collected from infested properties from different growing regions within the NT has persistent CGMMV in the soil in the absence of any cucurbit hosts. Honey bee hive surveys were conducted on bees and bee products from hives in the Darwin, Katherine and Ti Tree areas were conducted from October 2014 and December 2014. Further surveys were conducted in Katherine/Mataranka region in February 2015, Aug/Sept 2015 and April 2016. A small number of newly emerged bees, brood, wax and propolis was tested. CGMMV was detected in all samples tested but viability plant testing determined that there was only live virus in pollen and honey thus far.

A preliminary bee field trial was conducted in late 2015 to determine whether bees are able to transfer CGMMV to virus free cucurbit plants. Only flowers sampled from cucurbit plants available to the bees returned positive results for the virus and the leaves remained virus free. Plants that were excluded from bees remained virus free throughout the trial. These results suggest that bees or any other insect pollinators may be able to transmit the virus. A larger scale bee trial is planned to understand the risk of moving hives between properties and regions.

Extension activities include growers meetings and stakeholder engagement plan with consultation with key stakeholders have been developed and currently awaiting approval from HIA.

