

行政院農業委員會動植物防疫檢疫局 函

地址：100臺北市中正區和平西路二段100號9樓

承辦人：黃國修

電話：(02)2343-1405

傳真：(02)2304-7455

電子信箱：

受文者：本局高雄分局

發文日期：中華民國108年11月8日

發文字號：防檢四字第1081417655號

速別：最速件

密等及解密條件或保密期限：

附件：如文1081417655-a1~a2

主旨：有關澳大利亞新增訂Tomato mottle mosaic virus寄主植物種子緊急輸入檢疫措施及修正Tomato brown rugose fruit virus檢測規定，請惠轉知輸出業者配合辦理，請查照。

說明：

- 一、依據澳大利亞農業部（以下簡稱澳洲農部）108年11月5日緊急輸入檢疫措施通知文件（如附件1）辦理。
- 二、旨述緊急措施管制對象為番茄（*Solanum lycopersicum*）及番椒（*Capsicum annuum* species complex，包括C. *annuum*、C. *chinense*及C. *frutescens*）種子，輸入時應檢附輸出國植物檢疫機關簽發之植物檢疫證明書（以下簡稱檢疫證），並加註經實驗室以澳洲農部指定之引子對及方法（如附件2）進行聚合酵素連鎖反應（PCR）檢測確認未罹染Tomato mottle mosaic virus（ToMMV），並分2階段實施：
 - （一）108年11月18日前：依現行規定辦理，無須強制加註經檢測未罹染ToMMV。
 - （二）108年11月19日起：應取樣至少20,000粒種子（或少量種子其重量的20%），以澳洲農部指定之PCR檢測方法確認未罹染ToMMV。
- 三、檢疫證加註事項應符合澳方檢測要求，其相關之實驗室檢測報告（Laboratory reports，應與檢疫證及種子批號有所連結）應加註事項如下：
 - （一）受檢種子之學名。
 - （二）受檢種子之最少數量。
 - （三）以澳洲農部網站指定之引子對及方法進行PCR檢測。

(四)檢測結果確認未罹染ToMMV。

(五)受檢種子批號 (lot/batch)，須與檢疫證所列相符。

(六)檢測時間，實驗室名稱及地址。

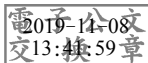
四、另本局108年4月22日以防檢四字第1081493419號函（諒達）通知前揭種子應以ELISA商業化試劑套組進行檢測確認未罹染Tomato brown rugose fruit virus (ToBRFV)，澳方同時通知自108年4月1日起亦應以澳洲農部指定之之引子對及方法（如附件3）進行PCR檢測確認未罹染ToBRFV，其取樣數量、檢疫證及相關實驗室檢測報告加註事項比照ToMMV規定辦理。

五、澳方另建議現階段進行PCR檢測時，每個樣本之檢測種子數量不宜超過400顆種子（如50個樣本，每個樣本400顆種子）。

六、有關番茄及番椒種子須以澳洲農部指定之之引子對及方法進行PCR檢測未罹染ToBRFV事宜，可洽行政院農業委員會種苗改良繁殖場協助辦理，由貴分局依據檢測報告進行輸出植物檢疫證明書之加註事宜，相關加註內容請參見附件1辦理。

正本：本局基隆分局、本局新竹分局、本局臺中分局、本局高雄分局

副本：臺灣種苗改進協會、行政院農業委員會種苗改良繁殖場、行政院農業委員會農糧署、本局植物檢疫組



Alerts

Alerts provide information about significant changes to import conditions. Keep informed of alerts by following individual import cases.

Emergency measures: Tomato mottle mosaic virus

Effective from 5 November 2019

The purpose of this notification is to advise of an emerging risk, *Tomato mottle mosaic virus* (ToMMV), and the actions that the Department of Agriculture is taking to manage this risk in tomato and capsicum seed for sowing imports.

Key changes:

1. The department is planning to introduce emergency measures on 19 November 2019 to reduce the likelihood of introducing ToMMV to Australia.
2. Addition of PCR test for ToMMV for tomato and capsicum seed for sowing using a department approved protocol.
3. Department approved protocols for ToMMV and other information related to ToMMV can be found on the [Department of Agriculture website](#).
4. Laboratory test reports and/or phytosanitary certificate additional declarations must include a statement that testing for ToMMV and *Tomato brown rugose fruit virus* (ToBRFV) was conducted using primers and protocols approved by the Australian Department of Agriculture. Laboratory reports and phytosanitary certificates related to testing for ToBRFV that were issued prior to 19 November 2019 will not require this detail.

Scope

These emergency measures apply to all permitted species of tomato and capsicum seed listed in the following BICON Cases:

- Tomato seed for sowing
- Capsicum spp. (requiring testing) seed for sowing

Emergency measures

Prior to 19 November 2019

Seed consignments that are shipped to Australia prior to, or on 18 November 2019, will be allowed entry into Australia under the existing arrangement (no mandatory test required for ToMMV, existing testing requirements for other pathogens remain).

Commercial documentation will be required to confirm the shipping date to Australia.

From 19 November 2019

Consignments that are shipped to Australia on or after 19 November 2019, will be subject to mandatory testing for ToMMV. This testing may be done offshore at any laboratory able to perform the required test or onshore at a department approved laboratory.

Seeds must be tested using a department approved PCR test and found free of ToMMV with a sample size of 20,000 seeds for large seed lots (or 20 per cent for small seed lots).

Phytosanitary certification will be required to attest to the testing requirements, and/or corresponding laboratory reports (that link to the phytosanitary certificate and seed lot) confirming that the seed was found free of ToMMV. Laboratory reports must confirm that the testing protocol is approved by the Australian Department of Agriculture.

The laboratory report must state:

1. The seed species tested,
2. That a minimum seed sample was tested,
3. A statement that testing for Tomato mottle mosaic virus was conducted using primers and protocols that were on the Australian Department of Agriculture list of approved primers and protocols at the time of testing. For approved primers and protocols, please refer to the department's webpage for [Tomato mottle mosaic virus](#).
4. The test result confirming freedom from ToMMV,
5. The lot/batch number(s), and these numbers must match the phytosanitary certificate,
6. The date, the laboratory name and address.

Where phytosanitary certification is not presented or not accepted for ToMMV testing, consignments are subject to onshore testing in Australia at a sample size of 20,000 seeds for large seed lots or 20% of the seed lot by weight for small seed lots to verify freedom from ToMMV.

If any sub-sample returns a positive result on any targeted pathogen, the seed lot will not be permitted entry into Australian territory.

New additional requirement in laboratory report and additional declaration

Consignments that are shipped to Australia on or after 19 November 2019, an additional statement will be required for ToMMV and ToBRFV.

A statement that testing for *Tomato mottle mosaic virus* and *Tomato brown rugose fruit virus* was conducted using primers and protocols that were on the Australian Department of Agriculture list of approved primers and protocols at the time of testing.

For approved primers and protocols, please refer to the department's webpages for [Tomato mottle mosaic virus](#) and [Tomato brown rugose fruit virus](#).

Laboratory reports and phytosanitary certificates related to testing for ToBRFV that were issued prior to 19 November 2019 will not require this detail.

Testing for all pathogens for tomato and capsicum seed for sowing imports

All testing may be performed using the same seed sample, so only a total of 20,000 seeds or 20% of the seed lot by weight is necessary to perform all required testing for tomato and capsicum seed for sowing imports.

Background

ToMMV is a member of the Tobamovirus genus. It is transmitted through propagative materials (seeds, plants for planting, grafts, cuttings), and spreads locally by contact including direct plant-to-plant contact, contaminated tools, hands, or clothing and by bees. Tobamoviruses can remain infective in seeds, plant debris and contaminated soil for months. It has plant disease resistance breaking capabilities for commercial cultivars of tomato.

ToMMV naturally infects tomato and capsicum resulting in unmarketable fruit. On tomato, symptoms include severe necrotic lesions, chlorosis, leaf distortion, mottle and systemic crinkling symptoms and fruit necrosis. Disease incidences of up to 87% have been reported. On capsicum, symptoms include foliar mottle, shrinking and necrosis.

ToMMV is not known to be present in Australia

Import permits

- All current import permit holders will be notified of the emergency measures.
- Import permits will be varied to reflect the emergency conditions. The department plans to vary all affected import permits by 19 November 2019.

Further Information

Please contact Plant Import Operations on 1800 900 090 or email imports@agriculture.gov.au (please title the subject line of the email with 'Tomato and Capsicum seed emergency measures, Plant T2".)

This Alert applies to the following Cases:

- [Tomato seed for sowing](#)
- [Capsicum spp. \(requiring testing\) seed for sowing](#)

附件2、澳大利亞農業部指定之ToMMV引子對及PCR檢測方法

Approved PCR testing protocol and primers for ToMMV

Date	approved Primers	PCR protocol
19 November 2019	F-5476 – GAAGAAGTTGTTGATGAGTTCAT R-6287 – GATTTAAGTGGAGGGAAAAACAC Reference Levitzky, N, Smith, E, Lachman, O, Luria, N, Mizrahi, Y, Bakelman, H, Sela, N, Laskar, O, Milrot, E & Dombrovsky, A, 2019, 'The bumblebee <i>Bombus terrestris</i> carries a primary inoculum of <i>Tomato brown rugose fruit virus</i> contributing to disease spread in tomatoes' <i>PloS ONE</i>, vol. 14, no. 1, p.e0210871.	Protocol as specified by Levitzky et al. 2019

- Note, PCR-amplified products from positive test results can be sequenced to confirm detection of ToMMV. The outcome of the identified sequence results must be provided to the department.

附件3、澳大利亞農業部指定之ToBRFV引子對及PCR檢測方法

Approved PCR testing protocol and primers for ToBRFV

Date	approved Primers	PCR protocol
1 April 2019	F-5476 – GAAGAAGTTGTTGATGAGTTCAT R-6287 – GATTTAAGTGGAGGGAAAAACAC Reference Levitzky, N, Smith, E, Lachman, O, Luria, N, Mizrahi, Y, Bakelman, H, Sela, N, Laskar, O, Milrot, E & Dombrovsky, A, 2019, 'The bumblebee <i>Bombus terrestris</i> carries a primary inoculum of <i>Tomato brown rugose fruit virus</i> contributing to disease spread in tomatoes' <i>PLoS ONE</i> , vol. 14, no. 1, p.e0210871.	Protocol as specified by Levitzky et al. 2019
1 April 2019	ToBRFV - F - AATGTCCATGTTTGTACGCC ToBRFV - R - CGAATGTGATTTAAACTGTGAAT Reference Alkowni, A, Alabdallah, O & Fadda, Z 2019, 'Molecular identification of <i>tomato brown rugose fruit virus</i> in tomato in Palestine' <i>Journal of Plant Pathology</i> , available at DOI 10.1007/s42161-019-00240-7.	Protocol as specified by Alkowni
7 June 2019	CSP1325 – F – CATTTGAAAGTGCATCCGGTTT CSP1325 – R – GTACCACGTGTGTTTGCAGACA CSP1325 – P – ([VIC*] – ATGGTCCTCTGCACCTGCATCTTGAGA [BHQ1]) *can be FAM Reference ISHI-Veg 2019. Detection of Infectious <i>Tomato brown rugose fruit virus</i> (ToBRFV) in Tomato and Pepper Seed. https://www.worldseed.org/wp-content/uploads/2019/05/Tomato-ToBRFV_2019_1.2.pdf	Australian protocol (RTqPCR) Set up RT-PCR cycles: ● 48 °C for 30 min ● 94 °C for 5 min ● 40 cycles of 94 °C for 10 sec., 60 °C for 30 sec.
24 June 2019	CaTa28 – F – GGTGGTGTCTAGTGTCTGTTT CaTa28 – R – GCGTCCTGGTAGTGATGTT CaTa28 – P – (6FAM – AGAGAATGGAGAGAGCGGACGAGG [BHQ1]) Reference ISHI-Veg 2019. Detection of Infectious <i>Tomato brown rugose fruit virus</i> (ToBRFV) in Tomato and Pepper Seed. https://www.worldseed.org/wp-content/uploads/2019/05/Tomato-ToBRFV_2019_1.2.pdf	Australian protocol (RTqPCR) Set up RT-PCR cycles: ● 50 °C for 10 min ● 95 °C for 3 min ● 40 cycles of 95 °C for 10 sec., 60 °C for 60 sec.

- Note, PCR-amplified products from positive test results can be sequenced to confirm detection of ToMMV. The outcome of the identified sequence results must be provided to the department.