MOVEMENT CONTROL ORDER NOTICE – TOMATO BROWN RUGOSE FRUIT VIRUS AND CARRIERS

Pursuant to section 124 of the *Biosecurity Act 2014* (the Act), I make the following movement control order.

1. Why this movement control order is being made and what it is intended to achieve

This movement control order is intended to assist in preventing the entry and establishment of Tomato brown rugose fruit virus (ToBRFV; *Tobamovirus fructirugosum*) into Queensland. It is being made on the basis that:

- Since 19 August 2024, ToBRFV has been confirmed at three commercial properties in the Northern Adelaide Plains region of South Australia and one commercial property in Victoria. The impacted businesses are operating under biosecurity requirements aimed at preventing the virus spreading while the full extent of the incursion is being determined.
- ToBRFV is a highly contagious plant virus that affects some plants in the Solanaceae family, including *Solanum lycopersicum* and *Solanum* species hybrids (tomato) and *Capsicum annum* and Capsicum species hybrids (capsicum and chilli). It has no known effects on human health.
- The virus spreads easily through mechanical transmission on contaminated equipment, vehicles, tools, hands, packaging, clothing and by direct plant to plant contact. It can also be seed-borne and transmitted through grafting of plants and irrigation water.
- The virus can remain in an infectious state on inert surfaces for months after contamination with infected plant sap.
- Reductions in individual crop yields of 30-70% are common in countries where ToBRFV has become widely established. Disease incidence can be as high as 100%.
- To date, no commercially available varieties of tomato have effective resistance to infection by ToBRFV.
- Effective disease management options are limited and ToBRFV creates significant additional imposts for growers, especially in protected cropping facilities, with sanitation of equipment and destruction of infected plant material adding substantially to production costs.
- It is not clear whether the quarantine measures taken in South Australia and Victoria to contain ToBRFV have been sufficient to control the risk of spread of the virus from the currently known infected properties.
- If the virus enters Queensland, eradicating ToBRFV would be costly and technically challenging due to the open cropping systems predominantly used in Queensland.
- Given the potential for ToBRFV to cause significant economic impacts, precautionary action is prudent to protect Queensland's tomato, capsicum and chilli producers and related sectors, and access to international quarantine-sensitive markets.

In this context, I consider it necessary to make this movement control order, to restrict the movement of ToBRFV and its carriers into Queensland and restrict the reuse of packaging for movement into and within Queensland, as I am satisfied, on reasonable grounds, that ToBRFV poses a biosecurity risk of enough seriousness, and the risk of entry, establishment and spread is high enough to justify the making of the order.

2. Details of the controlled biosecurity matter(s) and carrier(s) to which the movement control order relates

The movement control order applies to:

- the controlled biosecurity matter - Tomato brown rugose fruit virus (ToBRFV; *Tobamovirus fructirugosum*); and

- all of the known carriers detailed below:
  - tomato seed
  - tomato plants
  - capsicum and chilli seed
  - capsicum and chilli plants
  - protected cropping structures, trellis, machinery, appliances, equipment and tools that have been used in the production of tomato seed, tomato plants, capsicum and chilli seed or capsicum and chilli plants
  - packaging that has been in direct contact with tomato seed, tomato plants, capsicum and chilli seed or capsicum and chilli plants.

Tomato seed: means seed of *Solanum lycopersicum* and *Solanum* species hybrids used in tomato production, and seed of *Solanum* species used for tomato rootstock.

Tomato plants: means any plant part, tissue culture, seedlings, and fruit with or without intact stems and calyxes, of *Solanum lycopersicum* and *Solanum* species hybrids used in tomato production, and *Solanum* species used for tomato rootstock.

Capsicum and chilli seed: means seed of *Capsicum* species and hybrids used in capsicum and chilli production, including seed used for rootstock.

Capsicum and chilli plants: means any plant part, tissue culture, seedlings, and fruit with or without intact stems and calyxes, of the *Capsicum* species and hybrids used in capsicum and chilli production.

Protected cropping structures, trellis, machinery, appliances, equipment and tools: includes any structure (or part thereof), vehicle, equipment or other mechanical apparatus of any kind that has been in direct contact with tomato, capsicum or chilli seed, or tomato, capsicum or chilli plants.

Packaging: means any article that has been used to contain, wrap or package tomato seed, tomato plants (including fruit), capsicum and chilli seed or capsicum and chilli plants (including fruit).

Examples of packaging used that has been in direct contact with carriers-

- *pots / trays used for seedling or plant production;*
- *plastic / polystyrene / cardboard cartons, boxes and crates used to hold plants (including fruit) through the supply chain;*
- *bins that do not contain a disposable lining and used to hold fruit or bare-rooted plants;*
- *bags, drums used to hold plants (including fruit); and*
- *bulk containers used to hold fruit or bare-rooted plants.*

Examples of packaging which has not been in direct contact with carriers-

- *bins used to hold already packaged fruit or plants produce for ease of transport;*
- *metal cages used to hold already packaged produce for ease of transport; and*
- *pallets used to carry packed produce.*

3. The area to which the movement control order relates

This movement control order relates to the entire State of Queensland.

4. The prohibitions and restrictions that must be complied with by persons to whom this movement control order applies

A. Notification of the presence of ToBRFV

A person within the area to which the movement control order relates must notify an inspector appointed under the Act about:

(i) the presence of ToBRFV;

OR

(ii) if the person reasonably suspects the presence of ToBRFV.

B. Movement of ToBRFV carrier into Queensland

A person must not move any ToBRFV carrier(s) listed in section 2 of this movement control order into Queensland unless they meet the following criteria:

(i) The ToBRFV carrier(s) were grown on or sourced from a property in a certified pest free area for ToBRFV.

Under this condition, documentation that verifies the origin of the carrier may be requested**.**

OR

(ii) The ToBRFV carrier(s) were grown on or sourced from a property located in a State or Territory of Australia for which an "area freedom certificate", issued by an officer responsible for agriculture for the State or Territory of Australia where the ToBRFV carrier(s) were grown or sourced is currently in force certifying that all of the State or Territory of Australia is known to be free from ToBRFV.

Under this condition, documentation that verifies the origin (or history) of the carrier may be requested**.**

OR

(iii) The ToBRFV carrier(s) were grown or sourced, treated, inspected, labelled and certified in accordance with the conditions prescribed in Schedule 1 under an approved accreditation program, administered by the department responsible for agriculture in the affected State or Territory of Australia.

The carrier(s) must be accompanied by an acceptable biosecurity certificate under section 413 of the Act certifying that the conditions in Schedule 1 have been met.

A copy of the biosecurity certificate(s) must be emailed to Biosecurity Queensland (qld.plantquarantine@daf.qld.gov.au) at least 24 hours prior the arrival of the consignment to which it relates.

OR

(iv) The ToBRFV carrier(s) are accompanied by an acceptable biosecurity certificate under section 413 of the Act certifying that the conditions in Schedule 1 have been met.

A copy of the biosecurity certificate(s) must be emailed to Biosecurity Queensland (qld.plantquarantine@daf.qld.gov.au) at least 24 hours prior the arrival of the consignment to which it relates.

C. Packaging of the ToBRFV carrier

(i) The ToBRFV carrier(s) packaging meets the following criteria:

1) The packaging is new and unused:

or

2) The packaging has been:
   i. cleaned of organic matter; and
   ii. sanitised in the following way:
      a) steam sterilised at 95°c for 40 minutes; or
      b) sterilised by soaking in hot water at 90°c for 5 minutes; or
      c) treated with a broad-spectrum disinfectant shown to be effective against ToBRFV and in accordance with label or Australian Pesticides and Veterinary Medicines Authority (APVMA) permit instructions.

(ii) The ToBRFV carrier(s) has a complying label or complying identifier that are clearly labelled with the following information printed on an external surface in letters not less than 5 mm in height:

1) name of commodity; and
2) name and address of the grower; and
3) name and address of packing house.

D. <u>Movement of packaging to a place in Queensland used for commercial production</u>

A person must not move any packaging which is a ToBRFV carrier(s) listed in section 2 of this movement control order to a place within the area to which the movement control order relates that is used for the commercial production of tomato plants or capsicum and chilli plants, unless they meet the following criteria:

(i) The packaging is new and unused:

OR

(ii) The packaging has been:

1) cleaned of organic matter and
2) sanitised in the following way:
   i. steam sterilised at 95°c for 40 minutes; or
   ii. sterilised by soaking in hot water for 90°c for 5 minutes; or
   iii. treated with a broad-spectrum disinfectant shown to be effective against ToBRFV and in accordance with label or APVMA permit instructions.

E. <u>Additional powers of inspectors</u>

A person within the area to which this movement control order relates must allow an inspector appointed under the Act or a person under the direction of an inspector appointed under the Act:

(i) to inspect or test any ToBRFV carrier(s);
(ii) to treat or destroy any ToBRFV carrier(s); or

(iii) to clean or disinfest any place, including any structure or thing at a place.

Note – If a person is unable to meet the criteria listed in section 4B, under section 132 of the *Biosecurity Act 2014*, a person may apply to an inspector for a biosecurity instrument permit allowing movement of ToBRFV carrier(s) listed in section 2 of this movement control order into Queensland. The inspector may grant the biosecurity instrument permit only if the inspector is satisfied in the circumstances that granting the permit will not increase the level of biosecurity risk posed by ToBRFV and will not otherwise be detrimental to the effectiveness of this Movement Control Order.

5. Period of the order

The movement control order is effective from 16 March 2025 and will stay in force for three months unless earlier revoked.

6. Revocation of previous movement control order

This movement control order replaces the movement control order relating to Tomato brown rugose fruit virus that was signed and commenced on 16 December 2024.

7. Authorisation

…….. 10/03/2025……...
Signed Date of Authorisation

Graeme Bolton
Director-General
Department of Primary Industries

Schedule 1 – Conditions for granting of an acceptable biosecurity certificate under section 413 of the Act

1. Conditions for a ToBRFV carrier which is tomato, capsicum or chilli fruit

Each consignment must satisfy the following conditions.

1.1 The fruit must have been grown from seed that meets one of the following conditions:

(i) Seed that has originated from overseas and met Australian Government import requirements

OR

(ii) Seed that has been tested using an approved testing method before propagation and found free from ToBRFV.

AND

1.2 The crop of plants from which the fruit was harvested must have been grown on a property that is not a ToBRFV infected property or a ToBRFV linked property.

AND

1.3 The crop of plants from which the fruit was harvested must have been tested in accordance with a testing program, as outlined in Attachment 1, and found free of ToBRFV.

AND

1.4 Harvested fruit must remain isolated from other ToBRFV free host material until the crop being tested is found free of ToBRFV.

2. Conditions for a ToBRFV carrier which is tomato, capsicum or chilli seed

Each consignment must satisfy the following conditions.

2.1 Seed has been tested in accordance with a testing program, as outlined in Attachment 1, and found free of ToBRFV.

OR

2.2. For seed that has originated from overseas-

(i) The seed is still in its original packaging and is accompanied by a copy of the import clearance issued by the Australian Government that states the country of origin.

OR

(ii) Any dealings with the seed, including for example repackaging of the seed or reconsignment, have been undertaken in secure conditions and the seed is accompanied by a copy of the import clearance issued by the Australian Government that states the country of origin.

3. Other ToBRFV carriers

There are no conditions under which an acceptable biosecurity certificate can be granted.

Definitions –

Assessed negative property means a property that was a ToBRFV linked property and has been cleared of suspicion of infection by the Chief Plant Health Officer/Manager for that state or territory and is subject to restrictions that prevent the introduction of ToBRFV to that property.

Crop means the crop of plants from which the fruit was harvested.

Leaf means a leaflet for tomato plants (as tomato plants have compound leaves).

Property means

(a) A parcel of land (lot on plan), or

(b) Several parcels of land which

i. are contiguous with one another or are separated from one another only by a road, river, creek, other watercourse, or similar, and

ii. constitute or are worked as a single enterprise regardless of ownership or lease arrangements.

Seed means seed of *Capsicum* species and hybrids used in capsicum and chilli production, including seed used for rootstock; and seed of *Solanum lycopersicum* and *Solanum* species hybrids used in tomato production, and seed of *Solanum* species used for tomato rootstock.

ToBRFV linked property means a property that is not a ToBRFV infected property but is connected to a property where ToBRFV has been detected in any of the following ways:

(a) has received host material from a ToBRFV infected property,
(b) shares resources or equipment with a ToBRFV infected property,
(c) shares a boundary with a ToBRFV infected property,
(d) irrigation water that is used at a ToBRFV infected property was afterwards used at the linked property,
(e) any other water moved or flowed from a ToBRFV linked property where that property is classified as an 'assessed negative property'.

ToBRFV infected property means a property that has been, or is known to be, infected with ToBRFV. The entire property is considered to be infected even if ToBRFV has only been detected in a single glasshouse as the virus is very easily moved through contaminated tools, clothing, plants, soil and water; and can survive on hard surfaces and in soil without a host for many months.

Attachment 1 – Approved testing program for ToBRFV carriers seeking entry to Queensland

Approved seed sampling requirement for ToBRFV testing

> *Under the MCO schedule 1, (1.1) (ii), seed that has been tested using an approved testing method before propagation and found free of ToBRFV.*
>
> *Under the MCO schedule 1, (2.1), Seed has been tested in accordance with this testing program approved by the Chief Plant Health Officer and found free of ToBRFV.*

For seed testing, a sampling size of 35,976 seeds (or 20% for small seed lots) collected at random from each seed lot is required. This sample size provides 99% confidence level to detect a minimum proportion of infected seeds (i.e. prevalence) of 0.02% or greater with an assumed detection efficiency of 80% and a homogenous infection rate across the seed lot (Table 3 in the ISPM 31 Methodologies for sampling of consignments (IPPC, 2008)).

Seeds can be tested in sub-samples of no more than 400 seeds per sub-sample. A larger sub-sample size may risk false negative test results (Emergency measures for tomato and capsicum seed: Tomato brown rugose fruit virus - DAFF (agriculture.gov.au)

Approved crop sampling requirement for ToBRFV testing

> *Under the MCO schedule 1, (1.2), the crop of plants from which the fruit was harvested must have been tested in accordance with this testing program approved by the Chief Plant Health Officer and found free of ToBRFV .*
>
> *Under the MCO schedule 1, (1.3), harvested fruit must remain isolated from other ToBRFV free host material until the crop being tested is found free of ToBRFV.*

For asymptomatic plants, a sampling size of 300 leaves/sepals (from fruits) collected at random from each site of production and cultivar is required. This sample size provides 99% confidence level to detect a minimum proportion of infected plants (i.e. prevalence) of 2% or greater with an assumed detection efficiency of at least 80% and a homogenous infection rate in the site of production (Table 3 in the International Standards for Phytosanitary Measures (ISPM) 31 Methodologies for sampling of consignments (International Plant Protection Convention (IPPC, 2008)). Sampling should be undertaken no more than 10 days prior to harvest of the first fruits from the crop.

For molecular testing, leaves/sepals can be pooled, however the number of leaves/sepals that can be reliably tested in a sub-sample should be validated.

For symptomatic plants, at least three symptomatic young leaves from the top of the plants or shoots should be sampled for laboratory testing.

NOTE:

The approach undertaken to derive sample size calculations was based on consignment sampling and is not a population-based sampling. The approach assumes large lots (or units) that are being sampled are sufficiently mixed, the likelihood of finding an infested unit is approximated by simple binomial statistics. The sample size is less than 5% of the lot size.

Approved diagnostic methods for ToBRFV

Notes for the testing laboratory: *-*

Analysis of samples is to be carried out using the first two published quantitative (real-time) RT-PCR assays listed below.

These assays target different gene regions of ToBRFV.

CaTa qRT-PCR (Target = MP, movement protein)

Detection of Infectious *Tomato brown rugose fruit virus* (ToBRFV) in Tomato and Pepper Seed. https://worldseed.org/wp-content/uploads/2022/06/2024_April_Protocol-TomatoPepper_ToBRFV_1.6_FINAL.pdf

Note: Only the CaTa28 primers and probe (CaTa28-Fw, CaTa28-Rv and CaTa28-Pr) are to be used. The CSP primers and probe (CSP1325-Fw, CSP1325-Rv and CSP1325-Pr) which occur in the same paper **are not to be used** due to known issues including (1) false negatives with known ToBRFV positives and (2) cross-specificity with capsicum host tissue.

Menzel and Winter (2021) (Target = CP/3'NTR, coat protein/3'non-translated region)

Menzel and Winter (2021). Identification of novel and known tobamoviruses in tomato and other solanaceous crops using a new pair of generic primers and development of a specific RT-qPCR for ToBRFV, *Acta Horticulturae*, 1316, 143-148.

NOTE: If inconsistencies occur between the two recommended qRT-PCR diagnostic methods indicated above, a third qRT-PCR which targets the replicase gene may be used. Again, this assay needs to be validated by the testing laboratory before use.

Bernabé-Orts et al. (2021) (Target = Replicase gene)

Bernabé-Orts JM; Torre C, Méndez-López E, Hernando Y, Aranda MA (2021) New Resources for the Specific and Sensitive Detection of the Emerging Tomato Brown Rugose Fruit Virus. *Viruses*, 13, 1680