

SUBMISSION ON AMENDMENTS TO *ALSTROEMERIA* NURSERY STOCK SCHEDULE

27 January 2023

To: The Ministry for Primary Industries

Name of Submitter: Horticulture New Zealand

Contact for Service:

Gabi Hidvegi

Risk Policy Advisor

Horticulture New Zealand

PO Box 10-232 WELLINGTON

Email: Gabi.Hidvegi@hortnz.co.nz

Overview

Submission structure

Overview.....	3
HortNZ's Role.....	4
Submission.....	5
References.....	9

Our submission

Horticulture New Zealand thanks the Ministry for Primary Industries (MPI) for the opportunity to submit on the proposed amendments to the *Alstroemeria* schedule of the *Importation of Nursery Stock* (155.02.06) import health standard.

The horticulture sector welcomes any opportunity to continue to engage with MPI and to discuss this submission.

This submission is being made by Horticulture New Zealand and is supported by the following organisations:

- Citrus New Zealand
- Vegetables New Zealand Incorporated

HortNZ's Role

Background to HortNZ

Horticulture New Zealand (HortNZ) advocates for and represents the interests of approximately 5,500 commercial fruit and vegetable growers in New Zealand. These growers supply fresh and processed fruit and vegetables to domestic consumers, as well as exporting crops to discerning consumers overseas. The horticulture industry is valued at \$7b with \$4.6b in exports annually.

The national and regional economic benefits associated with horticultural production are important. The industry employs more than 40,000 people and provides critical regional development opportunities in Northland, Auckland, Bay of Plenty, Waikato, Hawke's Bay, Gisborne, Manawatu, Marlborough, Nelson, Canterbury and Central Otago. The rural economy supports local communities and primary production defines much of the rural landscape.

HortNZ's purpose is to create an enduring environment where growers thrive. This is done through enabling, promoting and advocating for growers in New Zealand.

Submission

Overview of identified pests

1. MPI's risk analysis (MPI, 2022a) identified three pests that naturally infect *Alstroemeria* tissue culture and are not managed by current import requirements for this commodity:
 - Broad bean wilt virus 2 (BBWV-2)
 - *Candidatus* Phytoplasma asteris (16Srl group aster yellows) and
 - Clover phyllody phytoplasma (16Srl group aster yellows).

All three organisms would pose a risk to important horticultural crops in New Zealand if they were to arrive.

2. Overseas, broad bean wilt virus 2 is an emerging virus for many horticulturally important crops such as pepper, spinach, beet, celery, lettuce, soybean, pea, beans, tomato, and eggplant (MPI, 2022a). It is globally widespread and infected hosts can be asymptomatic or symptomatic. Symptoms include mild mosaic, malformation, stunting and chlorosis. Aphids are known to vector BBWV-2 (Kwak, et al. 2013 and 2016; Han et al. 2021).
3. *Candidatus* Phytoplasma asteris is a globally widespread bacterium but currently unreported in New Zealand. Its host range is extensive and includes horticulturally significant species such as maize, apples, brassicas e.g., broccoli, citrus and onions (MPI, 2020).
4. *Candidatus* Phytoplasma asteris transmission can occur via grafting from infected plants and biological vectors such as leafhoppers. Host symptoms are varied depending on the host and include abnormal growth, stunting and bunched growth (MPI, 2020).
5. Clover phyllody phytoplasma is present in over 20 countries and impacts horticulture hosts such as celery and strawberry. Infected hosts can be symptomatic or asymptomatic with symptoms varying depending on the host. Typical symptoms include virescence, yellow/reddening, phyllody, stunting and abnormal flowers. Clover phyllody phytoplasma can be transmitted by leafhoppers (CABI, 2023).

Comments on proposed amendments for Broad Bean Wilt Virus 2

6. HortNZ believes that it is critical that BBWV-2 is managed on the *Alstroemeria* tissue culture pathway for the reasons identified in MPI's Risk Management Proposal:
 - BBWV-2 is a regulated quarantine pest in New Zealand (ONZPR, 2022).
 - BBWV-2 is associated with *Alstroemeria* tissue culture and many horticulturally significant hosts in New Zealand such as spinach, celery, lettuce, soybean, peas, beans, tomato, eggplant, and red pepper (MPI, 2022a).
 - BBWV-2 is present in at least one of the exporting countries and given that testing is limited on ornamental plants, it is considered likely that BBWV-2 is present in more countries than reported (MPI, 2022a).

- BBWV-2 is likely to establish in New Zealand if it is not adequately managed on the *Alstroemeria* tissue culture pathway (MPI, 2022a).
 - If BBWV-2 were to arrive in New Zealand via the *Alstroemeria* pathway, it is likely to be inadvertently transferred to other suitable host species as *Alstroemeria* are regularly planted in home gardens (MPI, 2022a).
7. Furthermore, HortNZ believes that BBWV-2 presents a serious biosecurity risk to New Zealand and needs to be managed for the following additional reasons:
- The widespread distribution of BBWV-2 means that it will be a persistent threat across multiple import pathways.
 - BBWV-2 produces both symptomatic and asymptomatic host expression which makes observing and detecting infection difficult.
 - BBWV-2 is vectored by aphids. There are over 100 aphid species in New Zealand (MWLR, 2023) and it is currently unknown whether they are capable of transmitting BBWV-2.
 - As it is an emerging virus for horticulture overseas, it is currently unknown what other horticulturally significant species are hosts of BBWV-2 and therefore, the risks of this virus are probably far greater than currently known.

The economic risks associated with BBWV-2 are too significant for horticulture to have unmanaged pathways in New Zealand's biosecurity system. It is therefore critical that BBWV-2 is adequately managed on the *Alstroemeria* tissue culture pathway of the nursery stock import health standard, and all other relevant host germplasm pathways.

8. HortNZ broadly supports additional phytosanitary measures for *Broad Bean Wilt Virus 2* (BBWV-2) and notes MPI is proposing the following:
- *Alstroemeria* tissue culture can be imported from a 'pest free area' (PFA) where BBWV-2 is not known to occur.
 - *Alstroemeria* tissue culture can be imported if it is derived from parent plants that have been tested by PCR or ELISA and found free from BBWV-2 (MPI, 2022a).
9. To have confidence in these measures, HortNZ would like assurance that the parent plant testing will be carried out using accurate and verified tests.
10. We would also like to understand how the parent plant testing will be undertaken. For example; will plants be sampled in a controlled environment that is free of vectors to prevent inoculation post-sampling?

Comments on exclusion of *Phytoplasmas*

11. MPI states that there are no proposed phytosanitary measures for *Candidatus Phytoplasma asteris* or clover phyllody phytoplasma in the risk management proposal (MPI, 2022a) for two reasons:
 - there is an upcoming consultation for proposed phytosanitary measures for phytoplasmas and,
 - MPI is proposing a 12-month implementation period from the date the amendments for phytoplasmas come into effect. MPI seeks to facilitate *Alstroemeria* trade without meeting measures for phytoplasmas until this time.
12. HortNZ strongly opposes trade on the *Alstroemeria* tissue culture pathway while New Zealand lacks phytosanitary measures to mitigate the biosecurity risks associated with the identified phytoplasma species.
13. It is unacceptable that New Zealand will have an unmanaged import pathway for phytoplasmas for several months while trade continues - this puts the horticulture sector at significant risk.
14. HortNZ strongly encourages MPI to either implement interim measures to manage the risk or halt trade on the *Alstroemeria* tissue culture pathway until all three of the identified biosecurity risks are addressed. This approach would ensure that the risks associated with the three identified pests are mitigated until MPI implements adequate phytosanitary measures.
15. HortNZ supports MPI's rationale and proposal for additional declarations to mitigate the risk of BBWV-2 on the *Alstroemeria* tissue culture pathway and believes that the same justification is relevant and applicable to *Candidatus Phytoplasma asteris* and clover phyllody phytoplasma (Table 1).
16. Furthermore, *Candidatus Phytoplasma asteris* is listed on Biosecurity New Zealand's current priority list of pests and diseases lists. Biosecurity New Zealand considers the organisms on this list as those that "would pose a serious threat if they established here" and "that we consider most serious to plant and aquatic health" (MPI, 2022b).

Table 1: Comparison of New Zealand statuses, hosts, and distribution of broad bean wilt virus 2 (BBWV-2), *Candidatus Phytoplasma asteris* and clover phyllody phytoplasma.

Species	NZ status (ONZPR, 2022)	Host species	Distribution
Broad bean wilt virus-2 (BBWV-2)	<ul style="list-style-type: none"> • Regulated • Quarantine pest • Unwanted 	48 plant species from 41 genera and 24 families (Appendix A, MPI, 2022a) Hosts relevant to NZ horticulture: <ul style="list-style-type: none"> • <i>Beta vulgaris</i> (beet) • <i>Spinacia oleracea</i> (spinach) 	All continents (except Antarctica) (MPI, 2022a)

		<ul style="list-style-type: none"> • <i>Apium graveolens</i> (celery) • <i>Lactuca sativa</i> (lettuce) • <i>Phaseolus vulgaris</i> (common bean) • <i>Pisum sativum</i> (pea) • <i>Vicia faba</i> (broad bean) • <i>Capsicum annum</i> (red pepper) • <i>Solanum lycopersicum</i> (tomato) • <i>Solanum melongena</i> (eggplant) 	
Candidatus Phytoplasma asteris	<ul style="list-style-type: none"> • Regulated • Quarantine pest 	<p>“A large host range across many different plant families. Hosts overseas include maize, roses, apples, brassicas (like broccoli), gladiolus, clover, citrus, onions, and hydrangea.” (MPI, 2020)</p> <p>Hosts relevant to NZ horticulture (EPPO, 2022):</p> <ul style="list-style-type: none"> • <i>Citrus paradisi</i> (grapefruit) • <i>Citrus chinensis</i> (orange) • <i>Daucus carota</i> subsp. <i>sativus</i> (carrot) • <i>Lactuca sativa</i> (lettuce) • <i>Phaseolus vulgaris</i> (bean) 	<p>23 countries (EPPO, 2022)</p> <p>25+ countries across all continents except Antarctica (MPI, 2020)</p>
Clover phyllody phytoplasma	<ul style="list-style-type: none"> • Regulated • Quarantine pest • Unwanted 	<p>15+ plant species from multiple genera and families (CABI, 2023)</p> <p>Hosts relevant to NZ horticulture:</p> <ul style="list-style-type: none"> • <i>Apium graveolens</i> (celery) • <i>Fragaria</i> (strawberry) • <i>Vitis</i> (grape) • <i>Vitis vinifera</i> (grapevine) (CABI, 2023) 	<p>21 countries (CABI, 2023)</p>

Conclusion

17. Given the breadth of BBWV-2, *Candidatus* Phytoplasma asteris and clover phyllody phytoplasma hosts and potential adverse impact if they were to establish in New Zealand, HortNZ recommends that MPI reviews all germplasm pathways where these species could currently be unmanaged to ensure the risk posed is mitigated.
18. HortNZ welcomes the opportunity to discuss any of the points raised in this submission.

References

Centre for Agriculture and Bioscience International (CABI). 2023. Clover phyllody phytoplasma (phyllody of clover).
<https://plantwiseplusknowledgebank.org/doi/10.1079/PWKB.Species.14189#sec-3>
Accessed: 9 January 2023

European and Mediterranean Plant Protection Organization (EPPO). 2022. '*Candidatus* Phytoplasma asteris' (PHYPAS) Distribution.
<https://gd.eppo.int/taxon/PHYPAS/distribution>
Accessed: 20 December 2022

Han, S.J., Choi, B., Kim, M.H., Kwon, S.J., Kwak, H.R. & Seo, J.K. 2021. Viral strain-specific activation of pathogen-associated molecular pattern-triggered immunity enhances symptom severity in Broad Bean Wilt Virus 2 infection. *Frontiers in Plant Science*. 12.
[https://www.frontiersin.org/articles/10.3389/fpls.2021.746543/full#:~:text=Broad%20bean%20wilt%20virus%20%20\(BBWV2\)%20is%20an%20emerging%20virus,increased%20damage%20to%20pepper%20crops.](https://www.frontiersin.org/articles/10.3389/fpls.2021.746543/full#:~:text=Broad%20bean%20wilt%20virus%20%20(BBWV2)%20is%20an%20emerging%20virus,increased%20damage%20to%20pepper%20crops.)
Accessed: 12 January 2023.

Kwak, H.R., Kim, M.K., Nam, M., Kim, J.S., Kim, K.H., Cha, B. & Choi, H.S. 2013. Genetic compositions of broad bean wilt virus 2 infecting red pepper in Korea. *Plant Pathology*. 29: 274-284.
Doi: 10.5423/PPJ.OA.12.2012.0190
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4174799/>
Accessed: 12 January 2023.

Kwak, H.R., Lee, Y.J., Kim, J., Kim, M.K., Kim, J.S., Choi, H.S. & Seo, J.K. 2016. A determinant of disease symptom severity is located in RNA2 of broad bean wilt virus 2. *Virus Research*. 211: 25-28.

<https://www.sciencedirect.com/science/article/abs/pii/S0168170215300745>

Accessed: 12 January 2023.

Manaaki Whenua Landcare Research (MWLR). 2023. Aphids.

<https://www.landcareresearch.co.nz/tools-and-resources/collections/new-zealand-arthropod-collection-nzac/tfbis-funded-specimen-information/aphids/>

Accessed: 12 January 2023.

Ministry for Primary Industries (MPI). 2020. Aster yellows phytoplasma – *Candidatus Phytoplasma asteris*.

<https://www.mpi.govt.nz/biosecurity/pests-and-diseases-we-want-to-keep-out-of-new-zealand/horticultural-pests/aster-yellows-phytoplasma/>

Accessed: 12 January 2023.

Ministry for Primary Industries. 2022a. Risk Management Proposal: Amendments to the import health standard *Importation of Nursery Stock* (155.02.06) for *Alstroemeria* tissue culture.

<https://www.mpi.govt.nz/dmsdocument/54823-Risk-management-proposal-Amendments-to-the-Import-Health-Standard-Importation-of-Nursery-Stock-155.02.06-for-Alstroemeria-tissue-culture>

Accessed: 9 January 2023

Ministry for Primary Industries. 2022b. Alphabetical list of priority pests and diseases. Last reviewed 6 October 2022.

<https://www.mpi.govt.nz/biosecurity/pests-and-diseases-we-want-to-keep-out-of-new-zealand/alphabetical-list-of-priority-pests-and-diseases/>

Accessed: 12 January 2023.

Official New Zealand Pest Register (ONZPR), MPI. 2022.

<https://pierpestregister.mpi.govt.nz/pest-register-importing/pest-details?id=Broad%20bean%20wilt%20virus%202>

Accessed: 20 December 2022