

REVIEW OF SUBMISSIONS ON THE DRAFT IMPORT HEALTH
STANDARD FOR *RUBUS* SPP. NURSERY STOCK FROM ALL
COUNTRIES

MAF Biosecurity New Zealand
Ministry of Agriculture and Forestry
PO Box 2526
Wellington
New Zealand

Telephone: +64 4 894 0862
Facsimile: +64 4 894 0662
Internet: <http://www.biosecurity.govt.nz>

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Table of contents

Introduction.....	3
Acknowledgements.....	3
Submissions	4
1. <i>Black raspberry necrosis virus</i> (BRNV).....	4
2. <i>Blackberry chlorotic ringspot virus</i> (BCRV)	4
3. <i>Raspberry bushy dwarf virus</i> (RBDV)	4
4. <i>Raspberry mottle virus</i> (RMoV)	5
5. New viruses found to infect <i>Rubus</i> spp.....	6
References.....	7

Introduction

The draft import health standard (IHS) for *Rubus* spp. nursery stock from all countries was notified for public consultation on the MAF Biosecurity New Zealand (MAFBNZ) website on 26 January 2009.

The following submissions were received:

Lisa Ward - MAF Plant Health and Environment Laboratory	4 February 2009
Harvey K. Hall - Shekinah Berries Ltd	24/25 February 2009

This document provides a summary of the submissions and correspondence that were received for the proposed draft IHS for *Rubus* spp. nursery stock from all countries; and how these have been addressed by MAFBNZ.

Acknowledgements

MAFBNZ would like to acknowledge the following people who have contributed to this review:

- Dr Stuart Macfarlane, virologist, Scottish Crop Research Institute
- Dr Ioannis Tzanetakis, virologist, University of Arkansas.

Submissions

1. *Black raspberry necrosis virus* (BRNV)

It was requested that the testing requirements for *Black raspberry necrosis virus* (BRNV) be updated to include PCR (Halgren *et al.*, 2007); the draft import health standard required graft indexing using *Rubus occidentalis*. BRNV is recorded as present in New Zealand (Pearson *et al.*, 2006), and has a status of non-regulated in New Zealand (BRAD, March 2009). However, as previously discussed in the 'Discussion document for the importation of *Rubus* spp. nursery stock from all countries', the *Black raspberry decline associated virus* (BRDaV) strain of BRNV is not known to be present in New Zealand. As such, *Black raspberry necrosis virus* [strains not in New Zealand] is included in the pest list.

Halgren *et al.*, 2007 records Black raspberry decline as a 'disease of major concern' and a 'serious disease observed in black raspberry'. 'Black raspberry plants affected by the disease initially display leaf chlorosis and puckering... eventually, the fruiting canes prematurely die back, resulting in rapid and severe reduction in yield'. It is thought that BRDaV (strain of BRNV) is the causal agent of this disease.

Conclusion

As the presence of Black raspberry decline associated virus in New Zealand could significantly impact on Black raspberry production, MAFBNZ have updated the testing requirements for Black raspberry necrosis virus [strains not in New Zealand] to include PCR. Testing by PCR will increase the likelihood of detecting Black raspberry decline associated virus while the plants are in post-entry quarantine.

2. *Blackberry chlorotic ringspot virus* (BCRV)

It was requested that the testing requirements for *Blackberry chlorotic ringspot virus* (BCRV) be updated to include PCR (Tzanetakis *et al.*, 2007). The draft import health standard required herbaceous indexing using *Chenopodium quinoa*. BCRV is not considered to be present in New Zealand (Pearson *et al.*, 2006), and has a regulated status (BRAD, March 2009).

BCRV was first identified in 2005; occurring in the USA (in *Rosa* spp.) and Scotland (in *Rubus* spp.), Tzanetakis *et al.*, 2007. The impact of BCRV on *Rubus* is unknown and needs more research.

Conclusion

*As little is known about the impact of Blackberry chlorotic ringspot virus on *Rubus* spp., the testing requirements have been updated to include PCR. Testing by PCR will increase the likelihood of detecting Blackberry chlorotic ringspot virus while the plants are in post-entry quarantine.*

3. *Raspberry bushy dwarf virus* (RBDV)

It was requested that *Raspberry bushy dwarf virus* resistance breaking strain (RBDV-RB) be added to the regulated pest list, with testing for this strain required. RBDV is recorded as

present in New Zealand (Pearson *et al.*, 2006), and has a status of non-regulated (BRAD, March 2009).

Strains of RBDV

There are no strains recorded for this virus in Fauquet *et al.*, 2005, or ICTVdB (March 2009); however, a literature search returned reference to four strains of this virus:

- Common or type strain (RBDV-S) - Murrant 1987.
- Resistance breaking strain (RBDV-RB) - Murrant 1987; Jennings and Jones 1989.
- Black raspberry strain (RBDV-B) - Murrant 1987.
- Chinese strain (RBDV-China) - Chamberlain *et al.*, 2003.

Further clarification on whether these are considered to be distinct strains or isolates of RBDV was requested from Dr Stuart MacFarlane of the Scottish Crops Research Institute. Dr MacFarlane replied that he did not differentiate between strains and isolates of a virus; and that RBDV-RB was the name given to isolates found in England and potentially elsewhere in Europe (Dr Stuart Macfarlane, pers comms. 8 March 2009).

Testing for RBDV

RBDV shows good symptoms with herbaceous indexing onto *Chenopodium quinoa* (Murrant 1987), but there is currently no serological/molecular test available that can differentiate between isolates as it is unknown what causes some isolates to overcome the *Bu* gene resistance. The only way to determine if imported material is infected with the resistance breaking 'strain' of RBDV would be by graft indexing onto a Raspberry cultivar known to carry the *Bu* gene (Dr Stuart Macfarlane, pers comms. 8 March 2009).

Conclusion

MAFBNZ will not regulate for 'strains' of Raspberry bushy dwarf virus not present in NZ, as the currently known isolates are not able to be differentiated by serological or molecular testing. In addition, it is uncertain if the different isolates are distinct strains; MAFBNZ does not regulate against different isolates of viruses. If industry has concerns about the resistance breaking 'strain' of Raspberry bushy dwarf virus entering New Zealand they may wish to implement their own certification scheme for imported material, to ensure freedom from isolates of Raspberry bushy dwarf virus able to overcome the Bu gene resistance.

4. Raspberry mottle virus (RMoV)

It was requested that *Raspberry mottle virus* (RMoV) be removed from the pest list, as it is considered to be a synonym of *Raspberry leaf mottle virus* (RLMV) and *Raspberry leaf spot virus* (RLSV). RLMV and RLSV are recorded as present in New Zealand (Pearson *et al.*, 2006), and both have a status of non-regulated (BRAD, March 2009).

Dr Stuart MacFarlane has confirmed that RMoV is the same virus as RLMV and RLSV (unpublished). It is proposed that both viruses be referred to as *Raspberry leaf mottle virus*, as this was the first virus to be described (Dr Stuart Macfarlane, pers. comms. 8 March 2009).

Conclusion

Raspberry leaf mottle virus is present in New Zealand (Pearson et al., 2006). MAFBNZ will not regulate for Raspberry mottle virus, as this is considered to be the same virus as

Raspberry leaf mottle virus. Raspberry mottle virus *will be removed from the regulated pest list.*

5. New viruses found to infect *Rubus* spp.

It was requested that five viruses, newly discovered to infect *Rubus* spp., be added to the pest list. These viruses were first brought to the attention of MAFBNZ during the preparation of the draft import health standard (Dr Ioannis Tzanetakis, pers. comms. 31 October 2008). Dr Tzanetakis requested at this time that these viruses were not added to the pest list until such time as they have been published.

Conclusion

The five newly discovered viruses infecting Rubus spp. will not be added to the pest list until they are published, and appropriate testing methods are identified. MAFBNZ has requested to be notified once information on these new viruses is published, so they can be added to the pest list.

References

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Dr Stuart MacFarlane, pers comms. 8 March 2009: Dr Stuart MacFarlane. *Rubus* virus expert, Scottish Crops Research Institute. Discussion on *Raspberry bushy dwarf virus* and *Raspberry mottle virus*. Personal communication 8 March 2009.

Dr Ioannis Tzanetakis, pers. comms. 31 October 2008: Dr Ioannis Tzanetakis. *Rubus* virus expert, Department of Plant Pathology, University of Arkansas. Discussion on newly discovered viruses infecting *Rubus* spp. Personal communication 31 October 2008.

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