



PO Box 10232, The Terrace,
Wellington, 6143

Level 4, Co-operative Bank House

20 Ballance Street, Wellington, 6011

Phone: +64 4 472 3795

Fax: +64 4 471 2861

Web: www.hortnz.co.nz

Email: info@hortnz.co.nz

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**SUBMISSION ON
THE DRAFT MPI IMPORT HEALTH STANDARD FOR VEHICLES, MACHINERY AND
TYRES DATED SEPTEMBER 2015, AND THE ASSOCIATED RISK MANAGEMENT
PROPOSAL, AND TECHNICAL ADVICE**

Submitter: Horticulture New Zealand Incorporated
Submitted by: Richard Palmer, Biosecurity Manager
Contact Details: P O Box 10232, The Terrace, Wellington 6143, New Zealand
Ph +64 4 472 3795
Email Richard.palmer@hortnz.co.nz

References:

- A. MPI Technical Advice; The Likelihood of establishment of Brown Marmorated Stink Bug in the New Zealand autumn/winter period dated 16 Sept 2015
- B. MPI Risk Management Proposal; Review and amendment of the Import Health Standard for Vehicles, Machinery and Tyres
- C. MPI Import Health Standard; Vehicles, Machinery and Tyres – draft for consultation dated 24 Sept 2015
- D. MPI Technical Advice; treatments for Brown Marmorated Stink Bug dated 7 Sept 2015

EXECUTIVE SUMMARY

1. Brown Marmorated Stink Bug (BMSB) presents significant biosecurity risk to New Zealand horticulture, agriculture, to New Zealand's native flora and fauna, and as a major nuisance pest to the general populace. There are no acceptable and effective pest control options available for BMSB in New Zealand, and early-warning surveillance methods are extremely limited.

2. HortNZ views very seriously any changes to risk biosecurity management which may result in the establishment of BMSB, and the consequence on food production. In light of this, and as signatories or near signatories to the Government Industry Agreement for

biosecurity readiness and response (GIA), horticulture product groups have been identifying their high priority pests. BMSB sits at the top end of pests of concern to the broad horticultural sector, given its significant production impact, and the lack of detection and control methods.

3. To reduce the risk of BMSB Horticulture New Zealand has engaged extensively with its 5500 member producers across New Zealand to improve awareness of BMSB, and recently committed significant resource to the national BMSB public awareness campaign.

4. HortNZ acknowledges the extensive work undertaken by MPI to mitigate against the risk posed by BMSB, including the implementation of emergency measures for vehicles from USA; a national awareness campaign; and readiness and response preparedness.

5. The IHS, RMP, and treatments technical advice set out the following changes to BMSB/vehicle and machinery risk management:

- Require treatment for vehicles from the USA during 1 Sept to 30 April only (US shipping dates)
- Amended US vehicle treatment requirements for BMSB (time, rate etc.)
- Require all vehicles, shipped break bulk from Japan, to be processed offshore
- Require the cleaning of all used agricultural machinery before export

6. There remains sufficient uncertainty regarding BMSB establishment during the New Zealand autumn/winter. The risk of establishment cannot therefore be substantiated as negligible, and could be determined as higher than is stated in the Risk Management Proposal (Ref B) and BMSB Establishment advice (Ref A). When considered together with the consequence of establishment, and the lack of available controls, the overall risk from BMSB would be unacceptable.

7. Horticulture New Zealand:

- supports the proposal to require mandatory offshore processing for used vehicles, shipped break bulk, from Japan, noting the success of the existing programme and the risks of managing uncleared vehicles on arrival;
- does not support the proposal to remove the emergency measures for vehicles from the USA, and to therefore redefine the BMSB risk period requiring treatment only from 1 September to 30 April each year;
- would support a joint research proposal to eliminate/reduce the BMSB post-diapause survival uncertainty, in order that the suppositions drawn in the RMP, and changes proposed might be concluded;
- does not support the proposed changes to treatments for vehicles and machinery from the USA for the management of BMSB. The proposed treatments lack the scientific evidence demonstrating efficacy that is expected for a pest of such significant concern to New Zealand;
- supports the proposal for a thorough, offshore clean of all used agricultural, forestry and horticultural vehicles and machinery from all countries. The evidence of biosecurity contamination arriving on used equipment underscores the need for this improvement

8. In summary, New Zealand's horticulture sector needs to be assured that New Zealand's imports of vehicles, machinery, and tyres are underpinned by a robust IHS which manages biosecurity risk, especially for such a high impact pest.

CHANGES TO IHS DEFINED RISK PERIOD FOR US VEHICLES

9. There appear to be several factors which have led to the conclusion that establishment of BMSB in the NZ autumn/winter would be 'so low as to be considered negligible' (Ref A). These are:

- Propagule pressure is low
- Biological data suggests BMSB unlikely to re-enter diapause on encountering NZ autumn/winter conditions
- Low likelihood of reproduction from gravid females
- Establishment would therefore require multiple BMSB arriving and surviving together to create a breeding colony, which is considered negligible due to the low numbers of BMSB arriving in this period.
- There is a moderate likelihood of that BMSB could survive, post-diapause, through the NZ winter until reproductive conditions are suitable.

Propagule Pressure

10. Propagule pressure appears the key factor in determining the risk of establishment in the NZ autumn/winter period. Reducing the uncertainty of knowledge of BMSB arrival in this period is therefore critical to calculating the risk. It is acknowledged that the propagule pressure is lower in the NZ winter/autumn period, however.

11. Propagule pressure is likely to be low in NZ autumn/winter and the lack of border interceptions does lend support to this, however there is little evidence to support the effectiveness of border inspections for BMSB. Despite the excellent work of MPI border staff, Ref A does note that detections are 'ad hoc' and '*in the absence of structured sampling, statistically reliable estimates of numbers are not possible*'. The data has enabled areas of particularly high risk to be identified but Ref A notes 'Beyond this, these data must not be used for any quantitative analysis without applying a robust procedure which accounts for their qualitative origins'. BMSB has only been a focus of inspections for a relatively short term, and the exponential increase in detections underscores the relatively unknown BMSB pressure. Until such time as statistical analysis is undertaken of BMSB inspection efficacy, or the BMSB detections stabilise, no firm conclusion can be drawn on propagule pressure.

Post-diapause NZ winter survival

12. The effect of the move of BMSB from north to south into the NZ winter/autumn period, and diapause does not appear to be sufficiently well understood. Ref A notes that BMSB are unlikely to re-enter diapause on encountering NZ autumn/winter conditions, however, '*there is a moderate likelihood that some BSMB may survive in post-diapause quiescence through the New Zealand winter and into a period when suitable conditions occur for reproduction*'. The concerns previously raised about emerging, albeit sometimes anecdotal, evidence of varied BMSB overwintering patterns, and survivability from early emergence, appear to have been partly addressed in reclassifying some of the establishment risk as moderately likely, but sufficient uncertainty remains.

Effect of Uncertainty

13. As a result of this uncertainty we conclude that, when combined with the potential consequence of establishment, and the lack of available surveillance and pest control, removing the mandatory treatment of US vehicles in the NZ autumn/winter is premature, and

not in line with the precautionary principle. Should evidence become available in future that reduces this uncertainty, HortNZ would support revisiting this proposal.

PROPOSED CHANGES TO BMSB TREATMENT MEASURES

14. The RMP (Ref B), and the BMSB Treatments technical advice (Ref D), do not meet the science-based evidential standard required for the effective treatment of such a serious pest to New Zealand. The BMSB risk can be considered equivalent to fruit fly, therefore the expectation is of treatment research with efficacy proven to probit 8.7 (or equivalent). Given MPI's expectation of appropriately robust phytosanitary standards to support market access; the principle of equivalence; and science-support risk management, the lack of appropriate, peer-reviewed science to support these treatments does not meet the acceptability test.

15. The research conclusions drawn from "commercial trials, unpublished data, and 'projected' mortality" do not meet the test for scientific evidence to support the treatment changes. Whilst research ultimately may demonstrate efficacy, the apparent standards applied in this are inconsistent with expectations, with MPI's stated positions, and may serve to reduce New Zealand's standing as a science-supported risk manager in the international trade context. The proposal to add safety margins to treatments further expresses the lack of scientific rigour in support of, and therefore confidence in, these treatments.

16. Accordingly HortNZ does not support the proposed treatment changes at this stage.

Comments and Queries on Changes To Treatment For BMSB (Ref B)

17. The lack of data, research deductions, and application of safety margins raises a number of queries over proposed treatments. In turn these queries raise doubt as to the veracity of the treatments proposed. HortNZ may support changes to treatments provided the appropriate standard of research and data is made available.

18. Changes to Methyl Bromide fumigation.

- a. Para 23 cites unpublished data of commercial fumigation at 16g/m³ for 12 hrs at >15°C providing probit 9 efficacy;
 - i. Does MPI expect the research by Walse, S.S. to be published and available before a final decision is made on changes to methyl bromide treatments?
 - ii. Has MPI reviewed this research, and concluded the research and data is of sufficient standard and the treatments effective, in the absence of peer-reviewed and published research data?
- b. Para 17: are the specified endpoint values for methyl bromide a key reason for large reduction in fumigant rate, and is a straight line decline in concentration valid?

19. Changes to Sulfuryl Fluoride fumigation.

- a. Para 25 cites unpublished data of commercial fumigation at 16g/m³ for 12 hrs at >10°C with 50% endpoint reading, as highly efficacious (probit 9):
 - i. Does MPI expect the research by Walse, S.S. to be published and available before a final decision is made on changes to sulfuryl flouride fumigation?
 - ii. Has MPI reviewed this research, and concluded the research and data is of sufficient standard and the treatments effective, in the absence of peer-reviewed and published research data?

20. Changes to heat treatment.

- a. Overall the commentary in Ref B suggests many variables in the application of commercial heat treatment are not well understood. Whilst the intent of applying a safety margin is understood, using this approach pest mortality may still not be achieved.
- b. Para 26: the in-publication research by Kuhar and Aigner refers to ‘laboratory trials’ and ‘confirmation by commercial trials’ of the 50°C ≥ 15 minutes treatment. Does this trial work meet the required level of efficacy (probit 8.7)?
- c. Does MPI expect the research by Kuhar and Aigner to be published and available before a final decision is made on changes to heat treatment?
- d. What research has been undertaken to determine the coldest location in vehicles being treated, and what conclusions have been drawn to enable appropriate monitoring of heat treatments?
- e. MPI has added a 33% margin to the proposed schedule time for heat treatment to manage inconsistencies in heating rates within vehicles. Does this reflect:
 - i. that the coldest location is unknown? or
 - ii. that there are relatively cold locations which heat at different rates dependent on the vehicle type? or
 - iii. there is a lack of confidence in the research into the coldest location, and consequently any reduction in temperature may be premature?
- a. Para 30: The segregation should be mandatory not recommended to ensure re-infestation does not occur.

Comments and Queries: Treatments for BMSB, MPI Technical Advice September 2015 (Ref D)

- 21. Section 3.1 cites ‘projected’ mortality between 99% and 99.9968% (LE_{P9}). What level of research is available to support these projections, and is there actual treatment mortality research and data to support efficacy?
- 22. Section 3.1 cites 56 separate fumigations with three replicates to confirm mortality – what data is available from these replicates and will it be published and peer-reviewed?
- 23. Section 3.3 cites heat treatment efficacy ‘in the laboratory’, supported by a ‘demonstrated effectiveness’ at a commercial facility of the 15min /50°C resulting in ‘100% mortality’. Does the research by Kuhar and Aigner meet the required standard?
- 24. Section 3.3 cites the need to add 33% margin of time to reflect the ‘difficulty in locating a temperature probe in all locations where BMSB may hide’, and the difficulty to ‘locate every cold spot for temperature monitoring’. This accords with our questions raised in para 20 (d) and (e) above – there is apparent uncertainty about both the coldest location in any vehicle, how this location is monitored during treatment, and therefore what the actual minimum temperatures are during treatment.
- 25. Kuhar and Aigner’s research concludes that adult BMSB are killed after exposure to 50°C for 15 minutes but at 45°C an hour’s exposure is required. Ensuring that 50°C is achieved across the entire vehicle is therefore critical to achieving mortality under the proposed treatment schedules. The addition of 50% extra treatment time does not adequately account for the deduced exponential decline in mortality as temperatures fall. If treatment temperatures fell closer to 45°C rather than 50°C would a 30 minutes treatment still be effective? Like the use of cold treatment for fruit fly the simple addition of extra time

does not adequately protect against an unknown or un-prescribed variation in treatment temperature.

CONCLUSION

26. Given the **uncertainty of knowledge about BMSB establishment, the potentially severe consequence**, and **the lack of pest-control options** there would appear to be ample basis for a more precautionary approach to this pathway from the US. Reinforcing this high level of uncertainty is the lack of scientific veracity in support of both BMSB establishment, and the proposed treatment schedules, which would also likely reduce New Zealand's standing as a science-supported risk manager in the international trade context.

27. This submission is supported by Kiwifruit Vine Health, New Zealand Avocado Growers Association, Pipfruit New Zealand, and Vegetables New Zealand.

28. HortNZ supports the Kiwifruit Vine Health and Pipfruit New Zealand submissions.

29. HortNZ welcomes the opportunity to discuss the concerns raised together with other horticultural industry product groups.