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Plant Sciences and Risk Assessment

Department of Agriculture and Water Resources
GPO Box 858
Canberra ACT 2601

ABN: 25 107 507 559
ACN: 107 507 559
PO Box 138
Camberwell VIC 3124
Level 2, 273 Camberwell Road
Camberwell VIC 3124
T (03) 9882 0277
F (03) 9882 6722
E info@ausveg.com.au
www.ausveg.com.au

Via email: plantstakeholders@agriculture.gov.au

AUSVEG SUBMISSION ON THE 'DRAFT REVIEW OF IMPORT CONDITIONS FOR BRASSICACEOUS CROP SEEDS FOR SOWING INTO AUSTRALIA (FEBRUARY 2018)'

Preamble

AUSVEG welcomes the opportunity to comment on this draft Review. In our original submission as part of the working group for the Commonwealth, AUSVEG congratulated the Department of Agriculture and Water Resources (the Department) on this review and noted its importance to the vegetable industry. This is still the case and in many cases seed borne pests covered by this review are important for many horticultural and agricultural industries. Whilst supportive of the broader goal of protecting the industry at large, in this submission AUSVEG raises concerns with the suggested mandatory import measures for two identified pests on the organic production of vegetables, and encourages DAWR to continue active consultation with the vegetable industry and other affected parties to seek alternate methods that will both serve the phytosanitary needs of the industry without compromising a growing sector of the market.

Comments on import measures

The draft review has found that two pathogens warrant risk mitigation measures and fungicidal treatment: *Colletotrichum higginsianum* (cause of anthracnose disease) and *Fusarium oxysporum f. sp. raphani* (cause of fusarium wilt), and suggests that imported brassica seed be fungicide treated as a mandatory measure. In addition, the draft review also makes reference to additional provisions whereby seed may be sourced from an area or property formally declared free of the pathogens (presumably under International Standards for Phytosanitary Measure #4, though this is not explicitly stated) or where seed suppliers may present the Department with a systems approach for endorsement via a process that is also not defined.

If formalised, these latter arrangements would leave the responsibility of providing proof of pest freedom, or developing an adequate systems approach, to the plant health authority of the country of origin, or the seed supplier respectively. However, it is the view of AUSVEG that formalising more than one seed treatment option in the final import requirements, whereby arrangements could be made by Australian seed importers, would grant greater decision making power and commercial flexibility to the domestic industry. As an example, AUSVEG refers to seed regulations for carrot, which makes available two options for import of seed: heat treatment or seed batch testing using PCR.

Under the measures recommended by the Department in the draft review the currently recommended mandatory fungicide treatment would place organic vegetable growers in breach of the Australian Certified Organic Standard, and growers of organically grown produce are likely to experience difficulty sourcing appropriate seed from regions or production sites declared free of these pests. This may have a significant impact on the growing domestic industry; Australia has 53% of the worlds organic farmland with 36% of organic producers in Australia growing vegetables, the production value of organic fruit and vegetables exceeded \$122 million in 2014 at a growth rate of 13% (Australian Organic 2014).

While future changes to this standard may allow organic growers to be granted with a derogation on fungicide treated seeds, it is likely that international markets will not accept produce grown from treated seed as organic.

Organic fruit and vegetables are Australia's second largest organic export category (6%) after beef. The organic vegetable export market has seen strong growth over the past decade with Australia's total organic exports growing by 16% in 2016 to 27,000 tonnes (Australian Organic Ltd 2016). Australia competes in the premium segment for vegetable exports with brassica exports from both organic and conventional produce totalling \$24 million in 2017 (ABS 2018). The major export markets are also transitioning to a larger share of organic produce, with countries such as Japan importing almost 20,000 tonnes of organic vegetables per year in total from all international trading partners (GAIN 2013). This trade would be at risk under the proposed seed treatment regime.

AUSVEG makes comment on the draft Review noting that a specific fungicide has not been included in the current draft review. In addition, there is no elaboration on whether the two pathogens are commonly localised to the testa, cotyledon, or elsewhere within the seed. If the latter, fungicidal treatment would not necessarily be effective. The report should make clear that seed transmission can be both external or within the seed itself.

Regarding additional treatment options, AUSVEG makes the following comments:

Seed testing

Seed testing may be an option for reducing the risk posed by these pests under Australia's Appropriate Level of Protection (ALOP). We make reference to the primer sets developed by Kim et al. (2017) for *Fusarium oxysporum f. sp. raphani* that may be used to develop a seed testing protocol with an appropriate confidence interval, if not already designed by the International Seed Testing Association. One major benefit of seed testing as an option would be the collation of test results over time, which may provide an indication of *Fusarium* or *Colletotrichum* 'hotspots' internationally and allow the DAWR to change import requirements according to the international risk profile.

Hot water treatment

AUSVEG is aware that hot water treatment is currently being considered by the Department and would support the addition of this treatment, noting that this treatment may impact shelf life. Hot water treatment is routinely used in the major vegetable seed production region of Willamette Valley, Oregon, to combat Black Leg and other brassica diseases. We encourage the Department to review current protocols in use by Oregon industry.

In regards to seed viability following hot water treatment, Nega et al. (2003) demonstrated that seed-borne pathogens could be reduced without significant losses of germination by hot water treatments at 50 °C for 20 to 30 minutes up to 53 °C for 10 to 30 minutes. At higher temperatures, however, it was found that treatment time must be lowered to avoid reduced germination of sensitive crops. Studies have also shown that hot water treatment will penetrate the interior of the seed (Nega et al. 2003), making this a potentially efficacious option. However, it is also important to note that appropriate seed treatment times will differ according to cultivar and brassica species. Therefore, it is evident that careful consideration must be made when determining treatment parameters, necessary protocol modifications per species/cultivar, and impact on shelf life.

Chemical treatment

Sodium hypochlorite and chlorine have previously been used as a fungal treatment, although chemicals will only clean the seed surface and may not be appropriate for pathogens that can penetrate the seed coat. We encourage the Department to investigate this option further.

Additional comments

Species level information

There are a number of pathogen genera for which seed borne transmission is recorded, although in several cases, there is no evidence provided at the species level. These genera include *Alternaria*, *Cercospora* and *Cladosporium*. The draft does acknowledge difficulties associated with these and some other genera, however a greater degree of comfort from stakeholders would be gained if further elaboration on the lack of evidence was provided for these problematic genera. A list of papers that were consulted would provide some indication as to the degree to which absence of evidence was pursued. AUSVEG makes reference to an earlier Pest Risk Assessment within which the Department stated that *Candidatus Liberibacter solanacearum* was not seed transmitted.

Economic data

AUSVEG would also raise concerns about the lack of economic impact data. As an example we refer to *Alternaria malorum* syn. *Cladosporium malorum*, whereby it is acknowledged in the draft as being seed borne but not regarded as being a pest of economic importance. However, AUSVEG notes that this fungus infects a range of other horticultural crops of economic importance such as cherries and apples (Goetz and Dugan 2006). Goetz and Duncan (2006) cite a number of other papers that suggest damage on other species.

Raphanus sativa viruses (1-3), although acknowledged as seed borne, are also stated to have no economic impact, however Schmelzer (1976) has noted substantial crop damage.

Use of primary evidence

AUSVEG would also raise concerns about the overreliance on Farr and Rossman (2017) and would point out that the link leads to an extensive fungal database rather than a direct primary reference. Preferably, the draft would cite individual primary papers found within the database and include "...as cited in Farr and Rossman (2017)". This would provide a trail or evidence, and would also be of assistance in the future should the Department need to revisit this topic.

Absence of evidence

In the interests of scientific rigour, statements such as “Seeds do not provide a pathway for this fungus which...” should be omitted as they are not demonstrably true, and should be replaced with “There is no published evidence that seeds provide a pathway for this fungus”.

We have similar reservations around *Candidatus Phytoplasma asteris* (CPA), a pest for which there has been limited research and it would be good practice to highlight how many studies have researched seed borne spread of CPA. AUSVEG notes the detection of CPA in a commercial carrot field in Scotland and no identified vectors in the vicinity (Calari et al. 2011).

With respect to viruses there are also some concerns. For some viruses, references are used that support a lack of seed transmission (e.g. Turnip crinkle virus) whilst for other viruses there are no references used to support the same conclusion. These states are not equal and therefore should be reflected in Appendix 1.

Human impacts

In our original comments on the first Draft provided to members of the Seed Regulation Working Group, we raised questions about the degree to which potential human health impacts are considered in compiling Pest Risk Assessments and noted genera such as *Chaetomium* as potential risks in this area. This question requires addressing in any final report.

Summary

AUSVEG welcomes this review as one method of further safeguarding our production regions from biosecurity threats. However, AUSVEG has highlighted several sections of the draft review that require further rigor.

The mandatory fungicide treatment of imported brassica seeds risks the future sustainability of exports into the growing international organic market and may see a fall in overall vegetable exports. However, AUSVEG understands the biosecurity risk identified by this review and supports taking action, and have therefore suggested investigation of additional treatment options in this submission. AUSVEG notes the stakeholder teleconference held by the Department of Agriculture and Water Resources on 11 April 2018, and is the supportive of the Department in continuing with stakeholder consultation in the lead up to release of the final report.

Lastly, we thank the Department for the opportunity to provide this submission.

For further information please contact Tyson Cattle on (03) 9882 0277, or at tyson.cattle@ausveg.com.au.

Kind regards,



James Whiteside

AUSVEG Chief Executive Officer

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