

CEBRA IGAB review draft submission

**Comments on the IGAB review draft**

**Centre of Excellence for Biosecurity Risk Analysis (CEBRA)**

**The University of Melbourne.**

To whom it may concern,

Please find attached the comments on the IGAB review draft from the Centre of Excellence for Biosecurity Risk Analysis.

**Overview:**

- 1) **Updating pest priority lists.** The IGAB review correctly recognizes the importance of developing and maintaining a plant pest priority list. Pest priority lists focus attention and effort for research investment and preparation for incursion. The review recommends a 5-year cycle for updating the plant pest priority list, but pest threats can develop much more quickly. Recommendation 14 (p. 44) should be expanded to include (i) adoption of systems for off-shore monitoring and (ii) protocols for assessing short-term threats and carrying out nimble changes in prioritization.
- 2) **Research that works.** The IGAB review should note the importance of developing and nurturing clear lines of communication between regulators and research providers, to ensure that clear and present challenges receive appropriate research attention, and that research solutions readily foster implementation. The IGAB review should recommend a study of research operating models for practical and trustworthy research outcomes.
- 3) **Incorporating incentives and stakeholder behaviour into biosecurity regulation.** Building incentives into Australia's biosecurity system is discussed only very briefly in Section 3.4 of the IGAB draft report. Incorporating incentives into rules and considering the behaviour of stakeholders in response to rules matters a great deal for how effective regulatory interventions can be in preserving Australia's valued biosecurity status. The IGAB review should note the importance of stakeholder behavior in biosecurity practice, and the extensive work being undertaken by the Department of Agriculture and Water Resources (DAWR) and CEBRA to try to better understand and activate its benefits.
- 4) **Minor edits.**

**Andrew Robinson, CEBRA Director**

## Updating pest priority lists

*The IGAB review correctly recognizes the importance of developing and maintaining a plant pest priority list. Pest priority lists focus attention and effort for research investment and preparation for incursion. The review recommends a 5-year cycle for updating the plant pest priority list, but pest threats can develop much more quickly. Recommendation 14 (p. 44) should be expanded to include (i) systems for off-shore monitoring and (ii) protocols for assessing and carrying out short-term changes in prioritization.*

The risk presented by any pest is affected by a range of factors, including the projected economic and environmental damage, the availability of host materials or systems, and the availability of pathways from known infestations. Inevitably, pest lists are constructed using the information available at the time, but these factors are liable to change, so it is necessary to update the plant pest priority list periodically.

A key consideration in the frequency of updating is how quickly the factors that affect pest risk will change. Some of the factors noted above will likely change slowly – for example, the projected economic and environmental damage and the availability of host materials or systems. The projected economic damage will depend mostly on trade relationships, but also on the cost of surveillance and efforts at eradication. The projected environmental damage will depend on the exposure of vulnerable ecosystems.

However, when trading partners suffer incursions, the risk presented by pathways from those trading partners increase sharply. The recent border threats presented by the brown marmorated stinkbug (BMSB) form a useful example. Previously, BMSB did not present a border threat from its home range, which is in Asia. Rather, the clear and present BMSB threat to Australia is a consequence of the pest's vigorous incursion into the United States. This difference in threat does not simply reflect a different profile of export products from the USA compared with the BMSB home range, but rather a different pest behaviour, namely swarming and invasion into novel environments. The success with which the pest has invaded the USA presents substantial threats via trade pathways that are not reflected in similar pathways from the pest's home range.

CEBRA and DAWR have developed a system that provides early insight into potential threats arising from changes in pest incursion status in trading partners, namely the International Biosecurity Information System (IBIS). Although IBIS has enjoyed considerable attention and success in the animal health monitoring sphere<sup>1</sup>, it has not yet been applied to plant pests with similar energy, at least in part due to the complexity of the plant biosecurity threats. The recent development of a priority list presents an opportunity to refresh attention of the potential benefits of IBIS or similar systems to support the maintenance of a timely and responsive list of plant pest priorities.

The utility of a priority pest list is intimately linked to its timeliness. A list that is out of date can impede appropriate and efficient regulatory action. Some factors that affect the risk presented by a pest may change more quickly than is allowed for in the proposed updating cycle. *The IGAB*

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<sup>1</sup> Lyon, A., Gossel, G., Burgman, M. A., & Nunn, M. (2013). Using internet intelligence to manage biosecurity risks: a case study for aquatic animal health. *Diversity and Distributions*, 19, 640–650. <http://doi.org/10.1111/ddi.12057>

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*review should take account of the factors that affect the level of risk presented by pests and allow for how quickly those factors may change.*

## **Research that works**

*The IGAB review should note the importance of fostering clear lines of communication between regulators and research providers, to ensure that clear and present challenges receive appropriate attention, and that research solutions readily foster implementation.*

The IGAB review correctly recognizes the importance of a vigorous and constructive research community (Chapter 6). Research, carried out by academic bodies and others, has the potential to greatly enhance the efficiency and effectiveness of biosecurity activities in the main.

Biosecurity research has the potential to provide benefits globally, which could provide further indirect benefits to Australia. The 2001 outbreak of foot and mouth disease (FMD) in the United Kingdom forms a useful example. The incursion to England presented a very substantial threat to the local agricultural systems, but also created a new invasive population from which Australia faced new threats of incursion. The more effective the UK's response was to the incursion, the less threat Australia and its other trading partners would face. The most cost-efficient preventive measures can often be controlling populations off shore. Therefore, research into the various undertakings that are needed to minimize the threat arising from an FMD incursion would not only assist Australia directly, in the case of its arrival, but also indirectly in reducing the likelihood of that arrival, by assisting international control efforts.

Biosecurity-motivated research has enjoyed considerable support from a range of sources, not least the Department of Agriculture and Water Resources, in line with its remit of imposing science-based biosecurity regulation and intervention. However, relatively little attention has been paid to developing mechanisms that ensure that biosecurity research efforts focus on developing the outcomes that will result in the best biosecurity outcomes. This alignment of demand and supply can only come about when the regulators and the research providers communicate clearly and regularly. The responsibility is two-fold: the regulator must identify and communicate their most pressing research needs, and the research providers must focus their efforts on ensuring that the outcomes have operational relevance and value, perhaps even at the compromise of effort upon high-profile journal publications.

This coordination and interplay can occur in an ad-hoc way but their initiation and maintenance are effortful on both sides. The chances of success are greatly enhanced by appropriate communications and research infrastructure. The relationship between DAWR and CEBRA is a useful example. Considerable attention is paid on both sides to nurturing the lines of communication to ensure that CEBRA's research outputs focus squarely on the most pressing of the Department's requirements<sup>2</sup>. This attention involves substantial input and engagement from technical officers, managers, and senior executives. The premise of the relationship is that the best focused productivity is enabled through significant ongoing investment in communications at all levels. The promise of this undertaking is realized through the ongoing utility of previous

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<sup>2</sup> Burgman, M.A. 2015. Governance for Effective Policy-Relevant Scientific Research: The Shared Governance Model. *Asia & the Pacific Policy Studies*, doi: 10.1002/app5.104. Available at: <https://asiaandthepacificpolicystudies.crawford.anu.edu.au/publication/apps/6362/governance-effective-policy-relevant-scientific-research-shared-governance>

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CEBRA research outputs, and the scope and ambition of the present research program, which includes projects such as measuring the value and health of the biosecurity system (mentioned in draft IGAB review Box 14, p. 92).

### **Incorporating incentives and stakeholder behaviour into biosecurity regulation**

*Building incentives into Australia's biosecurity system is discussed only very briefly in Section 3.4 of the IGAB draft report. Incorporating incentives into rules and considering behaviour of stakeholders in response to rules is very important for how effective regulatory interventions can be in preserving Australia's high biosecurity status. The IGAB review should note the importance of stakeholder behavior in biosecurity practice, and the extensive work being undertaken by the DAWR and CEBRA to try to better understand and activate its benefits.*

The DAWR has introduced efficiencies into its border inspection system by moving towards a risk-based approach to inspection – inspection resources are applied according to assessments of the risks posed by consignments<sup>3</sup>. Specifically, under the department's CBIS (Compliance-Based Inspection Scheme), inspection rules on a range of low-failure pathways<sup>4</sup> are now based on rewarding 'good' importers – those who comply with the rules and bringing in clean consignments – relative to those who demonstrate a lower level of compliance with Australian biosecurity requirements. Good importers are rewarded with fewer inspections.

The DAWR acknowledges the crucial need to understand the 'feedback loop' created by its border inspection rules – the behavioural responses of importers to the regulations imposed upon them when importing into Australia. Inspection rules and protocols imposed upon stakeholders (importers, overseas suppliers, Competent Authorities) have inherent incentives properties. If these are not well understood when regulations are being designed and implemented, then biosecurity outcomes are unlikely to match with the government's regulatory expectations and objectives. For example, some rules might lead participants to take actions that potentially undermine the Australian Government's biosecurity objective, whereas other sets of rules might feasibly lead participants to take actions that are beneficial to the national biosecurity objective. The key is to design and implement intervention protocols in ways that will encourage import-supply chain participants to take steps to reduce the likelihood of biosecurity risk material being present in their consignments.

Incentive regulation thus provides a further layer of sophistication on top of risk-based regulation. It considers the behavioural response of importers, with the regulator using both rewards and punishments to induce behaviours that are consistent with the regulator's objective. Furthermore, incentive regulation allows for the design of rules that reduce administrative burden on the government and the regulation burden on the regulated entity. Designing and implementing appropriate import protocols involves understanding the trade-offs involved in the inspection system including how entities in the import-supply chain will respond to different regulatory requirements.

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<sup>3</sup> See Robinson, A., Bell, J., Woolcott, B. and Perotti, E. (2012), 'AQIS Quarantine Operations Risk Return: Imported Plant-Product Pathways', ACERA 1001 Study J: Final report, 1 June. Available from: [http://cebra.unimelb.edu.au/\\_\\_data/assets/pdf\\_file/0003/1290504/1001j.pdf](http://cebra.unimelb.edu.au/__data/assets/pdf_file/0003/1290504/1001j.pdf).

<sup>4</sup> As at November 2016, 21 categories of plant-based products are part of the DAWR's Compliance-Based Inspection Scheme, including dried apricots, green coffee beans, almonds, dates, cashews, sesame seeds and pistachios.

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DAWR is taking practical steps to investigate and implement incentive regulation through several projects it is undertaking with CEBRA<sup>5</sup>. Under one of these projects a field trial of new inspection protocols<sup>6</sup> has been implemented on two pathways: i) peat and ii) selected vegetable seeds for sowing. Eligible importers experience a reduced inspection frequency once ten 'clean' consignments in a row pass inspection. The project will measure the cost savings of these rules to importers (including savings in time and inspection costs) and DAWR will evaluate changes in importer behaviour resulting from the rules. Findings from this field trial will assist DAWR to roll out incentive regulation more widely, including on pathways with higher failure rates.

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<sup>5</sup> Projects include CEBRA 1304C Incentives for importer choices (final report available at [http://cebra.unimelb.edu.au/\\_data/assets/pdf\\_file/0020/2172152/CEBRA-Project-1304C-Final-Report.pdf](http://cebra.unimelb.edu.au/_data/assets/pdf_file/0020/2172152/CEBRA-Project-1304C-Final-Report.pdf)); CEBRA 1404C Testing compliance-based inspection protocols; CEBRA 1608C Testing incentive-based drivers for importer compliance. See also Rossiter, A. and Hester, S.M. (accepted) Designing Biosecurity Inspection Regimes to Account for Stakeholder Incentives: An Inspection Game Approach, *Economic Record*.

<sup>6</sup> More information on the trial may be found at <http://www.agriculture.gov.au/import/goods/plant-products/risk-return/trial-peat-vegetable-seeds>

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**Minor Edits**

p. 88 – *exasperated* -> *exacerbated*, and *of the its* -> *of its*

p. 93 – *infers* -> *implies*