



**Australian Government**  
**Bureau of Rural Sciences**

## **Engaging in Biosecurity: Gap analysis**

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# Executive Summary

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## **Purpose of the study**

Risks to Australia's biosecurity are increasing as the mobility of people, plants, animals and trade increases within Australia and across international borders. In order to improve on-farm biosecurity it is necessary to enhance the capacity of landholders and people in rural communities to recognise, act upon and plan for animal and plant pests. This can only be achieved through careful communication with and engagement of these people and communities.

The purpose of this document is to review the current activities, approaches and relationships between government, industry representatives and community, including landholders, relevant to Australian horticultural biosecurity engagement.

This is a companion document to *Engaging in biosecurity: Literature review of community engagement approaches* also prepared for the Engaging in Biosecurity in Horticultural Regions Project.

## **Key research questions**

There are two key questions addressed in this report:

1. What is current practice for biosecurity engagement in Australia?
2. How could relationships between government, industry representatives and community be strengthened to address horticulture biosecurity in Australia?

## **Methods**

Key themes are identified through a stocktake of current activities and a review of literature relating to biosecurity engagement approaches in Australia.

## **Stocktake of biosecurity programs across Australia**

An analysis of current activities reveals that there are many biosecurity engagement programs planned or already in place, but significant gaps in knowledge exist about the following:

- diversity and range of engagement strategies used
- target audiences/participants
- engagement methods that work well in biosecurity and why
- purpose for which they are used
- how effective they are.

Furthermore, the key themes identified through the stocktake include:

- focus on top-down approach to program delivery
- lack of monitoring and evaluation
- inadequate reporting mechanisms
- information-laden programs
- a focus on incursion-specific participation

- limited opportunities for individuals to have face-to-face interaction with a biosecurity officer
- focus on threats that are easy to identify.

## **Review of literature**

A content analysis of reports from government agencies and independent consultants in relation to biosecurity engagement reveal another set of key themes very similar to those identified through the stocktake of current programs. These themes include a need to:

- strengthen the institutional framework for biosecurity engagement through stronger coordination, collaboration and networking
- define the roles between different levels of government and industry organisations more clearly
- strengthen biosecurity communication by tailoring the message for the target audience
- identify and engage gap audiences
- improve engagement with communities and the media
- sustain community engagement for pests and diseases that are not well known
- include evaluation and monitoring as key components of community engagement programs
- build on existing programs and biosecurity arrangements where possible.

Many of these themes and how they can be addressed are contained in *Engaging in biosecurity: Literature review of community engagement approaches*, the companion document to this gap analysis.

## **Flaws in current biosecurity engagement programs**

Many current biosecurity engagement programs do not effectively affect or engage their key constituents and stakeholders, nor do they have participatory monitoring and evaluation components that could show the way to more effective engagement. As part of this gap, engagement programs tend to involve one-way, top-down communication or information supplies. A shift from communication programs to participatory programs, which have the potential to be longer-term and self-sustaining, could improve impact and effectiveness. There are a range of tools and approaches that can be used to understand, involve and ultimately engage target audiences or communities and these are contained in *Engaging in biosecurity: Literature review of community engagement approaches*.

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# 1. Introduction

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Risks to Australia's biosecurity are increasing as the mobility of people, plants, animals and trade increases within Australia and across international borders. In order for Australia to improve on-farm biosecurity it is important that the capacity of landholders and people in rural communities to recognise, act upon and plan for animal and plant pests is enhanced. This can only be achieved through careful communication and engagement of these people and communities.

In a recent report to the Australian Government, Beale et al. (2008) list nine reasons why managing biosecurity has become more complex. These reasons include:

- globalisation
- population spread into new habitats and increasingly intensive agriculture
- tourism growth and the subsequent increase in passenger and cargo movements
- agri-terrorism by animal rights or political extremists
- the global movement of genetic material
- climate change
- a shortage of highly qualified plant and animal pest and disease professionals
- physical constraints on border interception activities
- financial constraints.

Further, Beale et al. (2008) highlight the increased prominence of biosecurity events in the media due to several disease and pest outbreaks around the world as an indication of the need to investigate how biosecurity is managed in Australia (e.g. foot and mouth disease, and bovine spongiform encephalopathy (BSE) in the UK; zoonoses such as avian influenza; and, most notably in Australia, equine influenza). Beale et al. (2008) have also reiterated the three core principles of effective biosecurity management highlighted by the Nairn Report of 1996, namely:

- the importance of maintaining an integrated biosecurity continuum
- risk assessments that reflect scientific evidence and rigorous analysis
- shared responsibility for biosecurity between different levels of government, the business community and the general community.

The value of these principles is reflected in the findings of this report.

Currently, biosecurity in Australia tends to be the domain of governments and experts and as such the concept is not well recognised among the broader community. However, the increased movement of people and products across borders and within Australia means that governments are unable to manage post-border biosecurity in isolation, if they ever were (Beale et al. 2008). This raises the question of how the broader community can be involved in aspects of biosecurity – particularly surveillance, detection and reporting. The potential for the broader community to play a more active role in biosecurity activities needs to be further investigated as do the conditions under which this is likely to work. As acknowledged in the Beale Review (Beale et al. 2008), working in isolation limits the ability of governments to successfully manage all aspects of biosecurity across the biosecurity continuum – particularly those activities related to surveillance, reporting of incidents and implementing tools to prevent incursions at the local and community level. The Engaging in Biosecurity Project is the spearhead of this challenge and seeks to examine the best approach to more actively involving the public in aspects of biosecurity management in the horticultural industry.

## 1.1. The Engaging in Biosecurity in Horticultural Regions Project

The Engaging in Biosecurity in Horticultural Regions project (referred to as Engaging in Biosecurity) runs from May 2008 until June 2011 and is tasked with forming a biosecurity engagement framework. This framework will ultimately involve landholders, industry and local communities in the detection, surveillance and prevention of exotic pest and disease incursions. The project is funded by the Department of Agriculture, Fisheries, and Forestry (DAFF) and is managed by the Product Integrity, Animal and Plant Health Division (PIAPH). PIAPH has contracted the Bureau of Rural Sciences (BRS) Social Sciences Program to carry out phase 1, which runs from May 2008 until February 2009. The aim of phase 1 is to consolidate existing information about biosecurity engagement through:

- a stakeholder analysis
- a national forum about biosecurity engagement
- a review of the intersection between community engagement and biosecurity literature and
- a stocktake and gaps analysis of current biosecurity engagement.

Appendix A contains more information about the components of Phase 1.

This report is the gap analysis of the current approaches taken to biosecurity engagement in Australia via stocktaking of current programs. It also includes a review of grey literature relating to biosecurity engagement arrangements in Australia. Grey literature refers to material not published in academic journals.

There are two key questions guiding this report, namely:

1. What is current practice for biosecurity engagement in Australia?
2. How could relationships between government, industry representatives and community be strengthened to address horticulture biosecurity in Australia?

The first section of this paper outlines the key terms and concepts of biosecurity and engagement while the second part examines how these are traditionally approached by industry and government through the stocktake of current biosecurity engagement programs. A third section is a review of grey literature identifying major themes arising from an analysis of the flaws in current institutional arrangements and biosecurity engagement approaches. This gap analysis finishes with a summary of the themes identified and directs the reader to a companion document outlining the key principles and tools of community engagement. This literature review (Thompson et al. 2009) outlines best practice principles along a continuum of community engagement and further illustrates how present biosecurity engagement programs have significant limitations – as identified through this document.

## 1.2. Key terms and concepts

### 1.2.1. Biosecurity

*'Biosecurity' is protecting the economy, environment and people's health from pests and disease. It includes trying to prevent new pests and diseases from arriving, and helping to control outbreaks when they do occur. While robust response arrangements are in place to combat outbreaks, preventing pest and disease incursions in the first place, remains a national priority (Biosecurity Australia 2008).*

Horticultural pests and diseases pose a biosecurity risk at two levels:

- i) the presence of a pest or disease in a particular place at a particular time, and
- ii) the risk of infestation more broadly.

To manage both risks, two forms of engagement are required; the first is concerned with individual agricultural extension and the second with broader risk management, which encompasses research on community preparedness and responsiveness to biosecurity issues. This division into two levels is further explained by the continuum of biosecurity relevant to the Australian context (Figure 2). Given the on-farm and regional emphasis of the Engaging in Biosecurity in Horticultural Regions project, the emphasis of this report is on the post-border biosecurity context.

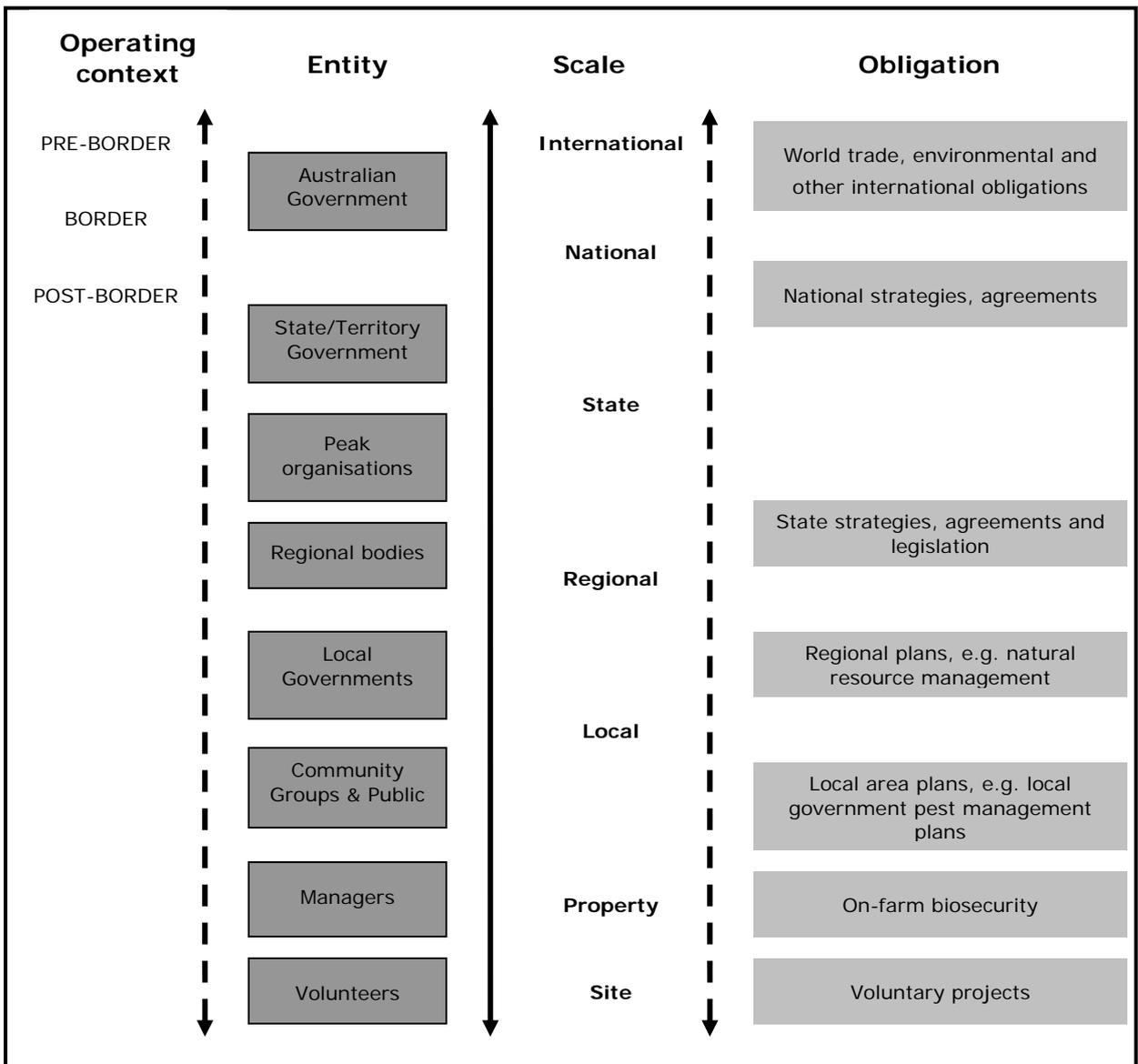


Figure 1: The Biosecurity continuum in Australia (Adapted from: Queensland Department of Primary Industries and Fisheries 2008)

According to Professor John Lovett, Chairman of Board, Co-operative Research Centre for National Plant Biosecurity:

*The principles of biosecurity are common and may be applied to all classes of 'pest' organism, including bacteria, fungi, viruses, insects and weeds. Good surveillance, to prevent ingress by a pest organism if at all possible; preparedness*

*for an incursion by an unfamiliar organism; a diagnostics capability in order that the identity of the organism may be confirmed rapidly, and the ability to initiate a rapid response in order that the potential spread of the pest be limited.*

(Lovett 2008 p. iii)

There are five key principles identified in Lovett’s quote, including:

1. surveillance
2. detection
3. diagnostics
4. preparedness
5. rapid response.

These five principles require the involvement of biosecurity stakeholders, with the first three particularly relevant to individuals and communities; and the final two requiring the involvement of broader social structures, such as government agencies and industry bodies. This structure is reflected in Figure 2, where the social structures can be seen at the bottom of the pyramid supporting the implementation of programs and the engagement of communities and individuals at the top. It can be seen at the top of the pyramid that there are three broad components needed to implement the first three principles in particular. These components are represented in Figure 2 to as ‘know how’, ‘have resources’ and ‘want to’. These components are discussed further below.

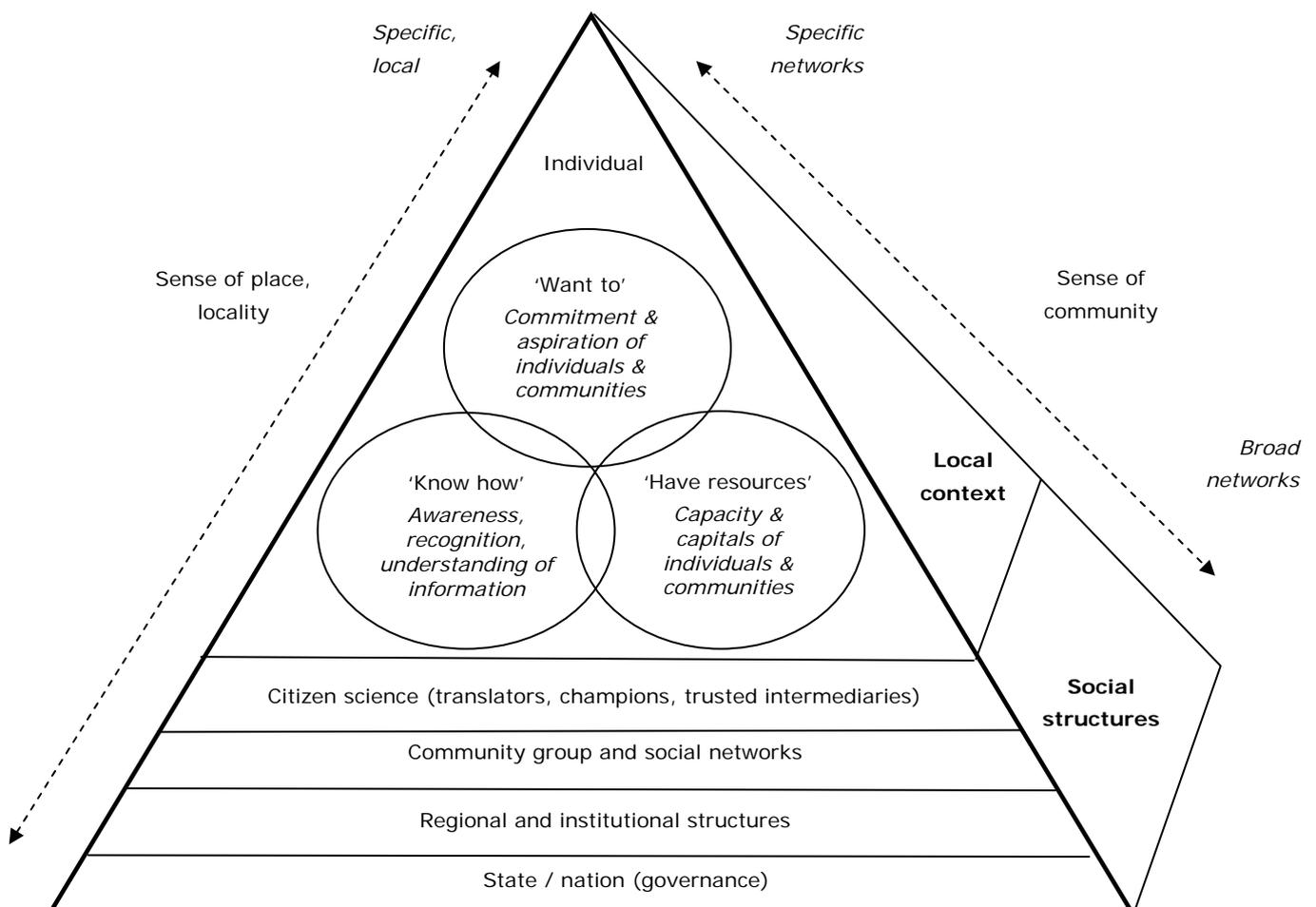


Figure 2: Relationships between the individual, community and social structures supporting biosecurity

### **1.2.2. Community engagement**

Community engagement is typically defined along a continuum of participation, ranging from the passive receipt of information (e.g. brochures, pamphlets, manuals, etc.), through to self-empowered communities that initiate actions independent of external agents. Community engagement implies a process of activities over time rather than a single event. Ideally, the following are integral components of community engagement: ongoing ownership and commitment from all stakeholders; acknowledgement and development of community capacities; collaborative planning, decision-making and action; as well as a monitoring-evaluation-feedback-action cycle for stakeholders. Ultimately, engagement activities should capture community attention, engender ownership of an issue, and promote local responsibility for decision-making, with ongoing commitment and resourcing from external agents where necessary (McKell 2008). Community engagement is explored in more detail in *Engaging in biosecurity: Literature review of community engagement approaches* (Thompson et al. 2009).

## **2. Stocktake and analysis of current biosecurity engagement programs**

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The following section provides a stocktake of current and recent biosecurity engagement activities undertaken in Australia that affect horticulture as at November 2008, and outlines some general themes arising from a review of specific programs. The activities are listed in Appendix B including those run at regional, state/territory and national levels and represent a stocktake of those running at the time of this review. This stocktake therefore provides a ‘snapshot’ of current and recent activities aimed at engaging landholders, producers and the wider community in biosecurity.

The programs listed were sourced from information available on the internet, as well as from talking with representatives of state departments involved in either horticulture or biosecurity. Farmer and conservation organisations were also asked to comment on these lists in order to capture any further engagement activities. The desktop analysis and feedback from state contacts revealed the presence of many more general programs, such as small landholder programs, which could be utilised to deliver biosecurity engagement programs in the future. Further, as this project is focussed on the intersection between biosecurity and engagement, with special emphasis on horticultural industries, the Table of Programs in Appendix B concentrates on activity around engagement relevant to the detection and surveillance of horticultural pests and diseases.

### **2.1. Top-down approach to program delivery**

At a national level biosecurity programs are delivered through a range of organisations, including national industry bodies such as Plant Health Australia. At a state/territory level, most seem to be delivered through government-based primary industry agencies. Although there are some notable exceptions, such as the Ord Guard regional plan which was initiated by growers, there was little information available to suggest that biosecurity engagement is occurring at a local level.

It is possible that more regionally- or locally-based biosecurity initiatives exist, however, the lack of mention made by state organisations infers that they were not aware of them and if they do exist there is significant potential for increased collaboration between agencies.

## **2.2. Lack of monitoring and evaluation**

One of the most significant gaps in current biosecurity engagement programs identified by this study is the lack of participatory evaluation and monitoring activities. Very few of the programs and activities listed in Appendix B have participatory evaluation or monitoring components that investigate the impact they have had on the target groups' attitudes and behaviour. The success of biosecurity engagement activities is often measured by the amount of information packs or pamphlets distributed or the number of website hits, rather than the real impact they have had at grassroots level. There seems to be a significant lack of in-depth evaluation of existing and previous programs to improve future initiatives.

## **2.3. Inadequate reporting mechanisms**

The review of programs revealed that the main avenue for individuals to engage in biosecurity surveillance and reporting is through reporting hotlines. A variety of hotlines exist, including general and incursion specific, however, little is known about how hotlines are utilised for reporting and whether they are the most appropriate tool for engaging community. There is a clear need for further research into the effectiveness of hotlines for reporting and the impact of investment in hotlines on biosecurity detection.

The focus on hotlines for communication by government agencies with community members potentially indicates that there is little communication or interaction occurring between those professionals charged with managing biosecurity and the general community. Furthermore, the use of hotlines has the potential to disassociate the community from biosecurity professionals, which discourages them from reporting an incident or other biosecurity-related matter.

## **2.4. Information-laden programs**

The primary focus of most of the existing programs is the provision of information via the internet or through brochures, pamphlets or fact sheets, such as AgNotes. At both the state and national level, programs focus on making information available, but not providing support for the interpretation, relevance or implementation of this information. This approach places a heavy reliance on self-motivated individuals or groups seeking information around biosecurity threats and is reflective of an one-way communication approach to community engagement. In an increasingly time-constrained world, individuals' capacity to access, interpret and apply this valuable information may be limited. Further, as people have different learning styles and levels of literacy it is unknown how accessible this information is – especially in the case of indigenous and culturally and linguistically diverse populations.

In addition, there is a focus on providing information in one context only – a 'one-size fits all' approach. Few government programs tailor their communication to meet the needs of individual industries or groups. It may be that such targeted information is developed through industry organisations, such as the export manual for cherries and stone fruits developed by Fruit Growers Tasmania; however, few such examples emerged through this study.

## **2.5. Incursion-specific participation**

Programs that contain activities to increase participation are generally incursion-specific. An example of this is the National Citrus Canker Eradication program, which required commercial citrus growers to undergo biosecurity training. Likewise the Greater Sunraysia Pest Free Area in New South Wales/Victoria directly links surveillance to market access by involving growers in

monitoring for fruit fly in order to gain market access and reduce reliance on cold storage processes.

Extending or replicating successful programs such as Weed Spotters or Waterwatch programs, which focus on general monitoring and surveillance systems to include more community or industry members in biosecurity surveillance, may improve biosecurity outcomes. Increased research into the successes and challenges in these programs will inform development/extension of similar programs.

## **2.6. Limited opportunities for face-to-face interaction**

As noted above, information is mainly provided online or through pamphlets and fact sheets. Few biosecurity-specific extension staff are employed, indicating that there is little contact between department staff and individuals. One notable exception to this within local and state governments has been the employment of a regional pest management officer by the Far North Queensland Regional Organisation of Councils. However, during its tenure the role of this position was extended to include other issues such as climate change and currently this appointment is under review. This further emphasises the lack of biosecurity-specific roles in the industry and if they do exist they seem to lack longevity. This also contributes to the issue of inadequate reporting mechanisms identified above.

## **2.7. Focus is on threats that are easy to identify**

Pests and diseases that are very recognisable (e.g. cane toads), trigger strong emotions in the broader community (e.g. fire ants), have received significant attention in the media before (e.g. foot and mouth disease) or require on-going management (e.g. weed programs) are easier to communicate. This is an issue which is best exemplified by the conservation movement for example, where 'cute and cuddly' animals or iconic sites are more easily protected than less attractive or unknown animals or sites.

In general the state-based programs described in Appendix B focus on pests and weeds that already occur in Australia. The difficulty in communicating the characteristics and symptoms of the infinite pests and diseases that could come to Australia is extremely difficult, but has been attempted through some national and state-based campaigns. For example, the current AQIS *Big Bugs* advertising campaign creates awareness amongst international travellers about the dangers posed by pests and diseases that could be lurking in items from overseas. Another example is the *Spot The Difference* Program, which encourages reporting of any symptoms that are unusual. This relies on the individual having significant prior knowledge of the local environment in order to know what is different. The Northern Australia Quarantine Strategy's (NAQS) Quarantine Top Watch! has attempted to assist members of the public to identify exotic pests, weeds and diseases by producing the *Quarantine Pocket Guide - Essential information for residents of northern Australia* containing pictures and information on a 15 high risk exotic pests, weeds and diseases.

Programs that include a deeper level of community engagement tend to focus on weed and pest threats that are easy to identify. Programs in this category include the participatory weed watching programs operating in Western Australia, Victoria and Queensland (previously Tasmania as well); NAQS Quarantine Top Watch! through building relationships with local communities; and the National Weedbuster campaign. There are few programs for engagement around diseases, aside from incursion specific programs such as Potato Cyst Nematode and Citrus Canker.

## 2.8. Summary

There are three main threads that can be identified through the themes listed here. Firstly, there is the issue of government- or organisation-led program development and delivery. This is often referred to as a top-down approach (see Section 2.1) and is a very common approach to engagement in Australian agricultural extension or engagement. This top-down approach hides an approach to knowledge that values scientific or expert knowledge above local or non-expert knowledge. This is not to imply that expert knowledge is not important, but rather that the prior knowledge held by non-experts, as well as the practical ways in which the target audience approaches biosecurity, need to be acknowledged and also included in engagement programs.

Secondly, current biosecurity engagement programs appear to have limitations in terms of subject matter (e.g. easy to identify pests) and presentation (i.e. mainly pamphlets, brochures and fact sheets). The latter limits accessibility for people with differing learning styles and also people of indigenous or cultural and linguistically diverse backgrounds.

Finally, reporting and feedback mechanisms appear to be an issue, with opportunities for personal contact with a biosecurity officer limited. Further, despite the existence of reporting hotlines, it is unclear how reports or other information from community members are used to inform biosecurity programs. There is a link between this theme and the top-down approach to biosecurity program development and community engagement.

This section has outlined themes arising from a stocktake of present biosecurity engagement programs. The following section will detail themes arising from a review of grey literature on biosecurity institutional arrangements and community engagement.

### 3. Review of grey literature on Australian biosecurity engagement

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The thematic analysis of the programs listed in Appendix B is supported and enlarged in this section by a review of several documents providing broader reviews related to biosecurity engagement in Australia. As there is a lack of academic literature evaluating biosecurity engagement arrangements, this study used mainly grey literature. The primary sources include:

- the outcomes of the National Biosecurity Engagement Forum (the Forum) (McKell 2008)
- the stakeholder analysis titled *Stakeholder perceptions of key bio-security issues for horticulture* (Mooney 2008)
- The National Communications Strategy Framework – A Final report for the Cooperative Research Centre for National Plant Biosecurity (McGrath et al. 2008)
- The Beale Review, including submissions (Beale et al. 2008).

The study's two main questions guided the analyses of these documents, namely:

1. What is current practice for biosecurity engagement in Australia?
2. How could relationships between government, industry representatives and community be strengthened to address horticulture biosecurity in Australia?

Content analysis of these documents revealed a number of themes surrounding both the institutional arrangement for biosecurity management in Australia, as well as the ways in which biosecurity engagement in approached. These themes include:

- The institution framework for biosecurity engagement, including
  - improve national coordination
  - encourage and strengthen collaboration and networking between government and industry
  - better involvement of industry
  - define roles of commonwealth and state governments
  - building on existing programs and arrangements.
- Community focus, including
  - strengthen biosecurity communication between various stakeholders
  - support two-way information flow
  - build trusting relationships
  - focus regionally
  - persist with engagement around less well known pests and diseases
  - include evaluation and monitoring as key components of engagement projects.

These themes are described in more detail below.

### **3.1. The institutional framework: Improve coordination, collaboration and networking**

There are some critical issues surrounding the way in which the biosecurity continuum has been managed in Australia. As evident from Figure 1, the continuum is separated into three components, namely pre-border, border and post-border. This separation reflects an approach to biosecurity dominated by quarantine concerns (Beale et al. 2008). Of particular concern to stakeholders in biosecurity is the lack of coordination of biosecurity matters beyond the pre-border quarantine issues.

A wide range of biosecurity engagement activities exist at pre-border and border level targeting a range of audiences at national, state/territory and local levels. Together they involve a significant amount of resources in terms of finance, staff and time; however, few of these activities are coordinated across states/territories or industries.

The Australian Government does not currently coordinate biosecurity at a national level due to several reasons. Primarily, the Commonwealth has only exercised its biosecurity-related quarantine powers under Section 51 of the Australian Constitution to implement primarily quarantine measures at the Australian border and post-border levels (Beale et al. 2008). It has not utilised its powers to affect internal biosecurity, instead leaving this to the states and territories.

The lack of coordination, or integration, of biosecurity engagement activities was a key message arising from the Forum. Participants indicated that there is unnecessary duplication of biosecurity messages and materials, such as fact sheets, between agencies through the biosecurity continuum and between states/territories. Hence, current biosecurity information is cluttered and messages are sometimes inconsistent.

#### **3.1.1. The need for a more integrated approach**

Leaving the responsibility for biosecurity within Australian borders to individual states or territories has created a series of inconsistencies related to the analyses of risk in particular, but also to surveillance systems, a quarantine requirement, and resourcing of activities (Beale et al. 2008). This impacts on how each state or territory engages with local and regional communities.

Forum attendees mentioned that the state and territory borders were widely seen as a false demarcation for biosecurity issues and that they contribute to duplication, inconsistent application of legislation and impoverished program linkages. State and territory borders could also lead to illogical responses in times of incursions as stressed by Apple & Pear Australia Limited in its submission to the Beale review ([http://www.daff.gov.au/\\_\\_data/assets/pdf\\_file/0006/671424/126b-apal-sub.pdf](http://www.daff.gov.au/__data/assets/pdf_file/0006/671424/126b-apal-sub.pdf)):

*'At times of incursions the Australian state governments respond by immediately closing their borders to movements of the affected products. This knee-jerk reaction is perhaps understandable in the first instance but the closure of borders persists even when it can be clearly demonstrated that state borders are arbitrary and irrelevant to the issue at hand. When the area that requires quarantine is smaller than a state (or even bigger than a single state) the use of areas or regions would be more sensible and practical than closing*

*whole states. This situation was clearly demonstrated in outbreaks of fire blight, equine influenza and citrus canker.'*

The Beale Review highlights the tension between the Australian Government and states and territories, which arises from the current distribution of responsibilities between the two levels of government. These responsibilities are outlined in the *Memorandum of Understanding (MOU) on Animal and Plant Quarantine Measures*; however this document is not legally binding. This MOU indicates that the Australian Government is generally responsible for border and pre-border biosecurity measures, while the states and territories are responsible for biosecurity within Australia's borders (i.e. post-border). These two responsibilities however can sometimes overlap and even conflict (Beale et al. 2008).

There is an obvious need for a more integrated approach to shared responsibility for biosecurity. The Beale Review, and its predecessor, the Nairn Report (1996) consider shared responsibility and integration between stakeholders in agricultural biosecurity to be of key importance to effective biosecurity management (Beale et al. 2008, Nairn 1996). In fact, the importance that the Beale Review (2008) places on integration is reflected in the title of that document 'One Biosecurity: A working partnership'.

The Beale Review (2008) notes that the National Biosecurity Committee is charged with establishing AusBIOSEC, a whole-of-government project to enhance the biosecurity system for primary production and the environment; however, it noted that progress is slow and the tensions described above will impact on the ability to achieve seamless integration and collaboration.

The importance of integration between government agencies at federal, state and territory level (governance) is discussed further in the Literature Review on Community Engagement companion document (Thompson et al. 2009).

### **3.1.2. Roles and responsibilities need to be better defined and communicated**

Another issue is that roles and responsibilities in biosecurity are not clearly defined or communicated (Beale et al. 2008, McKell 2008, Mooney 2008). This can lead to a blurring of roles and a lack of clarity about responsibilities causing gaps in the biosecurity continuum. This issue is of particular concern during emergency situations that require swift decision-making and action and involve communication between a wide range of agencies.

Growcom, a representative organisation for Queensland's horticulture industries, stressed that shared responsibility and leadership should be underpinned by well-defined roles and responsibilities, capacity building and effective communication (Growcom's submission to the Department of Primary Industries & Fisheries on the Queensland Biosecurity discussion paper for the development of the Queensland Biosecurity Strategy (September 2008), [http://www.growcom.com.au/\\_uploads/65727APU\\_Qld\\_biosecurity\\_discussion\\_paper\\_Sept2008.pdf](http://www.growcom.com.au/_uploads/65727APU_Qld_biosecurity_discussion_paper_Sept2008.pdf)):

*'Growcom understands the importance of shared responsibility and leadership as an underlying principle to the biosecurity strategy. However, for this approach to work there must be:*

- *Clear definition and understanding of the roles and responsibilities of all stakeholders, including all level of governments (and within departments), industry, business operators and the community;*
- *Capacity building and resources to ensure all stakeholders can undertake and achieve their defined roles and responsibilities;*
- *Widespread awareness and communication activities undertaken to ensure everyone understands the importance of biosecurity, their role, knowing what to look for and how to report potential risks.'*

The payment of compensation by government in the past has led to the perception by some sectors that biosecurity response is the government's responsibility (Mooney 2008; Personal Communication, BRS 2008). Industry needs to clearly take responsibility when things go wrong and this will provide an incentive to landholders to better manage biosecurity along the way (Mooney 2008). Industries should seek to leverage current government communications activities to ensure that messages to growers are complementary and consistent (McGrath et al. 2008).

On the other hand, Government agencies need to ensure that prior to developing and disseminating biosecurity messages they have consulted with industry stakeholders to ensure consistency and support.

### **3.1.3. A need for more networking, collaboration and stronger relationships**

An issue associated with the lack of national coordination described above relates to the lack of linkages and networking between industries and government agencies. Information sharing is important on a regional, national and international level for learning and improving engagement practice. Limited networking means that there is a lack of collaboration and limited reciprocal learning from the analysis of the strengths and weaknesses of biosecurity activities (Beale et al. 2008, McKell 2008).

Many Forum participants for example were frustrated by the lack of opportunities for information sharing both internationally and nationally, i.e. between states and territories; between state and territories and the Australian Government; and between government agencies and industry. Existing biosecurity knowledge is not effectively managed and is not widely available. Biosecurity would benefit from a greater sense of interdependence between agencies (McKell 2008).

In his submission to the Beale review, Trevor Ranford on behalf of the Cherry Growers of Australia Inc., wrote the following ([http://www.daff.gov.au/\\_data/assets/pdf\\_file/0007/671398/70b-cga-sub.pdf](http://www.daff.gov.au/_data/assets/pdf_file/0007/671398/70b-cga-sub.pdf)):

*'Industry does not believe that the appropriate feedback loops exist within the whole Quarantine and Biosecurity process.'*

*There is a lack of*

- *true partnership between the Government Agencies and Industry particularly at the 'grass roots' grower level, and*
- *trust in the process and systems resulting a 'them and us' mentality, and*
- *transparency right throughout the process, and*
- *appropriate information being made available to industry*

*We would believe that the sharing of pest and disease information, particularly relating to those pests/diseases being detected at pre-border, border and post-border, with industry has been extremely poor. With the establishment of Plant Health Australia and Industry Biosecurity Plans we believe the sharing of information may improve. AQIS appears to be the agency most negative in supplying appropriate pest/disease information.'*

Some industries are more organised than others and therefore better represented on governmental committees. Government agencies need to be aware of representation gaps and actively seek to engage industries that have traditionally been excluded (McGrath et al. 2008).

The Waterwatch Program, a program that engages volunteers in monitoring the health of local waterways, is considered highly successful due to the networks created. In particular the national Waterwatch conferences are viewed as extremely important networking opportunities (Thomson 2004).

Forum participants suggested that networks would be more effective if they included representatives of a wide range of stakeholder groups, such as consumer groups, lobby groups, gardening groups, historical groups, tourist and travel associations, supply chains, transport groups, farmer groups, research and development organisations, industry bodies and all levels of government (McKell 2008).

Mooney (2008) reports that strong relationships are crucial for communication between agencies when responding to serious biosecurity threats. For example, close cooperation between industry, government and the community underpinned the successful eradication of the Black Sigatoka outbreak in bananas in Tully, Queensland. The industry bodies organised the eradication process which involved very effective grower-led shed meetings. The Queensland Department of Primary Industries and Fisheries (DPI&F) supported this initiative through, amongst other things, good regulation. Mooney (2008) notes the importance of the involvement across stakeholders and also found the highly interdependent nature of the community was an important success factor in the management of this incursion.

Research relating to biosecurity engagement will also benefit from networking and collaboration through more efficient use of resources and knowledge sharing opportunities.

### 3.1.4. Recommendations for improved coordination and collaboration

It is clear from this section that there is significant scope for a more strategic and coordinated approach to planning and implementing engagement activities within individual industries, across the entire agricultural sector and with Australian and state government agencies, as well as between these bodies and the wider community (Beale et al. 2008, McGrath et al. 2008).

Several stakeholders have made recommendations on how coordination and collaboration of biosecurity engagement activities could be strengthened. McGrath et al. (2008) suggest the creation of a national coordination body to collaborate with various industries and agencies to work towards greater consistency. Such a body would provide leadership in:

- supplying communication tools and resources
- providing biosecurity intelligence
- offering solutions to reaching specific audiences
- identifying and accessing government resources.

Growcom suggested an industry engagement strategy in its submission to the Beale review: ([http://www.daff.gov.au/\\_\\_data/assets/pdf\\_file/0005/671324/107b-growcom-sub.pdf](http://www.daff.gov.au/__data/assets/pdf_file/0005/671324/107b-growcom-sub.pdf)):

*'We believe that there should be an established industry engagement strategy where there is a clear understanding of all roles and responsibilities. If there is a requirement for or expectation of industry representation or involvement, then this must be channelled through recognised industry peak bodies.'*

Plant Health Australia made a number of recommendations in its submission to the Beale review ([http://www.daff.gov.au/\\_\\_data/assets/pdf\\_file/0008/671426/98a-pha-sub.pdf](http://www.daff.gov.au/__data/assets/pdf_file/0008/671426/98a-pha-sub.pdf)):

*'Recommendation 6: That a national framework be established to coordinate and resource monitoring and surveillance for high priority exotic plant pests and for information collected along the continuum to be shared.'*

*'Recommendation 18: That monitoring and surveillance activities across the plant based agricultural and environment sectors be nationally coordinated and the information gathered be freely exchanged.'*

*'Recommendation 20: That a national cross-continuum communications strategy be prepared to identify gaps, define roles and responsibilities and elevate post-border community biosecurity awareness and practices.'*

## 3.2. Communicating biosecurity

This theme focuses on how the public, including landholders, volunteers and the broader community, can be better engaged in biosecurity issues and practices. It is not less important than the institutional framework discussed in 3.1, it simply presents a different aspect to the management of biosecurity engagement.

### 3.2.1. The message

Communicating biosecurity requires more than making a compilation of scientific facts on pests and diseases publicly available. The message needs to be carefully crafted based on the characteristics of the intended target group and the anticipated outcome.

#### *Address ignorance about biosecurity*

An important finding from the Forum was that the level of understanding about biosecurity varies across the community and that in large parts of the population biosecurity is poorly understood in terms of the risks and consequences (McKell 2008). Mooney (2008) has also highlighted that many people do not know what biosecurity means or why it is important.

In its submission to the Beale review, Growcom wrote the following about public awareness of biosecurity policies and procedures ([http://www.daff.gov.au/\\_\\_data/assets/pdf\\_file/0005/671324/107b-growcom-sub.pdf](http://www.daff.gov.au/__data/assets/pdf_file/0005/671324/107b-growcom-sub.pdf)):

*‘There is a lack of knowledge and understanding of Australia’s biosecurity policies and processes, and the associated biosecurity risks and challenges that they set out to manage. Governments, in partnership with industry organisations, must communicate Australia’s quarantine and biosecurity policy settings more effectively in order to improve understanding of these complex issues.’*

Forum participants stressed that it is important for educational institutions to receive support, relevant information and funding to communicate biosecurity messages, highlighting the importance of coordination, collaboration and networking. Education was viewed as important in addressing ignorance and changing perceptions through targeting people’s values as well as providing an understanding of potential biosecurity risk pathways and emphasising the consequences of incursions (McKell 2008).

#### *Tailor messages*

Information needs to be tailored to specific community or target groups, as there is a perception that too much information is still packaged as “one-size-fits-all”. Forum participants suggested that biosecurity jargon hinders access to biosecurity information and there is a perception that biosecurity is too ‘scientific’. These are both issues that were identified through the review of current biosecurity programs in Section 1.

Information needs to be contextual and sensitive to local experience and conditions. Ideally, it should create awareness amongst the target group of what the direct personal impact would be of the biosecurity threat to the things they value, such as the environment or their own backyards. It could also emphasise the notion of being a “good” neighbour or community citizen, or that that “doing the right thing” contributes to the greater good. This should go hand-in-hand with creating awareness of the reporting process and if it is easy to use.

Mooney (2008) also stresses that each target group should know of existing and emerging risks that are relevant to them and their area, how the consequences of an incursion might affect them and what the benefits of sound biosecurity practices are. For

example, gardeners in regional towns could think of their backyards as potential pest and disease reservoirs that could seriously affect trade opportunities for nearby farming operations.

### ***Pests and diseases that are difficult to communicate***

As pointed out in Section 2.6, current biosecurity awareness campaigns often focus on pests and diseases that are easy to communicate and which are already present in Australia. It is not uncommon for some pests and diseases that are more risky, but harder to communicate, to receive less attention.

Mooney (2008) reports that communities will become involved in biosecurity issues when they have a direct impact on their lifestyles. This is a difficult task in the case of agricultural pests that may not have a direct impact on the non-agricultural community. Hence, more innovative approaches will be required to address the risk these pests pose. In addition, the level of knowledge about diseases is much lower than for pests, because the biology of diseases is more challenging to communicate than that of pests or weeds. It is more difficult for people to identify, understand and respond to disease (Mooney 2008). Clearly, non-experts cannot be expected to understand the epidemiology associated with diseases; however they can potentially learn to identify indicators of disease – such as spots, discolouration on plant leaves, etc.

## **3.2.2. Target groups for biosecurity engagement**

Forum participants identified a number of groups that could be targeted through biosecurity engagement, including the broader community, farmers/landholders, peri-urban landholders, farm visitors and the media. The specific issues relating to each group are discussed below.

### ***The broader community***

During the Forum many issues were raised relating to the engagement of the broader community as a target group, indicating that this is an area of weakness in current biosecurity engagement activities. Participants pointed to the need for a ‘risk ready’ community that can be easily mobilised in response to biosecurity threats and incursions (McKell 2008).

There is a need to work with the people on the ground to develop greater ownership of biosecurity issues, i.e. a bottom-up approach from the community and regional level. However, there is also a lack of knowledge about how diseases and pests spread and the impacts they can have on an industry. A key concern for horticulture biosecurity stakeholders is that many people are not aware of the consequences of bringing infected material to an uninfected area. The development of empathetic relationships between community and producers could help alleviate this issue (Mooney 2008).

The Draft National Fruit Fly Strategy states that engagement of a larger, more diverse and motivated participant base has the potential to provide more effective outcomes for fruit fly management than could be achieved through smaller, more intensive, government and industry programs (Plant Health Australia 2008). The need to engage with young people through schools and youth groups like the scouts was a significant issue raised during the Forum. As outlined in Appendix B there are several existing pest

and weed programs involving school children that could be tailored to suit different areas' biosecurity needs.

There are specific groups within the broader community that are often overlooked in communication campaigns (McGrath et al. 2008). The following groups could be considered for specific biosecurity messages:

- tourists (including 'grey nomads', i.e. retirees travelling across Australia)
- recreationalists (including naturalists, bush walkers, birdwatchers, four-wheel drivers, off-road and mountain bike riders)
- gardeners
- indigenous Australians and
- people of culturally and linguistically diverse backgrounds.

Mooney (2008) and Falk et al. (2008) stress that the knowledge and resources within any specific community is an untapped resource. A significant number of stakeholders outside of agriculture have biosecurity expertise and the willingness to volunteer, including some indigenous people who have in-depth local knowledge. Changing communication strategies to reflect community values may lead to increased ownership of biosecurity issues by individuals within specific communities (Falk et al. 2008).

A recent study to investigate the potential for enlisting community experts for pests, weeds and diseases detection found that a significant opportunity exists to develop a community detectives network. Findings suggest that government officers, scientists, retirees, tradespeople, and representatives from conservation, Landcare and wildlife groups are interested, enthusiastic, knowledgeable and confident about biosecurity monitoring and detection (De Chazal 2008).

Weed Spotters is an example of an existing community-based detection network where volunteers find weeds while they are doing something else. Volunteers include people from community-based groups such as local LandCare or CoastCare groups and societies with a conservation interest, as well as government pest management officers (Morton 2007). Large, well-organised conservation organisations, such as Birds Australia, could also be encouraged to become involved in biosecurity surveillance and detection.

Risk pathway analyses are important to determine where surveillance and therefore community engagement should be focused. The Queensland Weed Spotters network chose Rockhampton and Townsville as pilot sites because they have a number of pathways for new weeds to enter these areas, including major ports handling shipments from overseas, a large urban population that could disperse ornamental plants and Australian Government defence bases that host overseas vehicles (Morton 2007).

### ***Farmers/Landholders***

There is significantly more information available surrounding biosecurity awareness and engagement amongst landholders compared to other biosecurity stakeholders, due to the traditional focus on this target group through agricultural extension activities. Nevertheless, biosecurity awareness and the implementation of biosecurity measures varies between farmers, and there is a need to reach all producer groups to provide them with the skills to identify serious pests and diseases (Mooney 2008).

A number of studies have been conducted in the past to gauge farmers' awareness of biosecurity. For example, a survey commissioned by Animal Health Australia found that 74 percent of livestock producers interviewed could correctly identify the correct meaning of biosecurity, even when prompted with a range of possible meanings (Quantum Market Research (Aust) Pty Ltd 2007). However, a survey conducted by Solutions Marketing in 2004 (Solutions 2004) found a higher level (88 percent) of concern for keeping properties free from new pests and diseases amongst traditional Australian plant industries. Ninety-six percent of farmers look over their crops to see if they have any new disease or pests; with ninety percent inspecting fortnightly or more. Almost all farmers surveyed indicated that they would report anything unusual, although they were not sure to who they need to report. Sixty-five percent would report to their state department of agriculture and 52 percent would report to an agronomist.

In addition, the Australian Bureau of Agricultural and Resource Economics (ABARE) conducted a survey during the 2005-06 financial year involving 266 vegetable farmers across Australia (Ashton 2007). The survey revealed that 77 percent of vegetable growers across Australia follow a set pest and disease monitoring program. The highest figure was recorded for Victoria, with 90 percent of growers indicating that they followed such a program. The Northern Territory had the lowest number with only 18 percent of growers undertaking set pest and disease monitoring. The Northern Territory is also by far the smallest vegetable growing state/territory (Ashton 2007).

The ABARE study (Ashton 2007) also showed that vegetable farmers are eager to find better ways to manage pest and diseases. Vegetable growers were asked to indicate the priorities that they placed on various areas of research and development. Overall, most growers indicated that pest and disease management is a high priority. Pest and disease management generally scored higher than the other options provided, including developing more productive or higher yielding varieties; improving farm productivity in general; marketing and market development; chilling and storage technology; and environmental sustainability.

Whilst there are no mandatory requirements for on-farm biosecurity systems, 19 horticultural industries have developed biosecurity industry plans in collaboration with Plant Health Australia (PHA). These contingency plans focus on managing and reducing the risks posed by exotic plant pests and diseases and aim at building partnerships between government, industry and the community. However, there seems to be little evidence that they have much impact on the day-to-day activities on-farm. An exception is the apple and pear industry. PHA, in conjunction with Apple and Pear Australia Limited (APAL), organised a series of workshops with apple and pear growers during 2008 to increase biosecurity awareness and provide them with tools to achieve best biosecurity practice. However, no monitoring mechanisms are in place to evaluate the impact of industry biosecurity plans and workshops on on-farm behavioural change.

In his submission to the Beale review, Trevor Ranford on behalf of the Cherry Growers of Australia Inc., wrote the following ([http://www.daff.gov.au/data/assets/pdf\\_file/0007/671398/70b-cga-sub.pdf](http://www.daff.gov.au/data/assets/pdf_file/0007/671398/70b-cga-sub.pdf)):

*'While we now have a Cherry Industry Biosecurity plan and Industry is developing the other appropriate 'tools' we are not convinced that industry and*

*individual growers are sufficiently and well resourced to manage and survive a major exotic pest/disease outbreak.'*

According to Mooney (2008) biosecurity 'best practice' protocols have been available in some industries for many years. However, compliance would involve a major cultural change, especially for the smaller operators for whom compliance with complex protocols is a low priority. Quality assurance systems which include good record keeping are a key to good biosecurity. Whole farm management practices should incorporate biosecurity. Biosecurity needs to be embedded in the way things are done as a routine. There are numerous activities being undertaken on-farm to manage food safety, animal health and so on, which are effectively biosecurity activities. There is a need to demonstrate biosecurity outcomes, which should be approached by identifying areas for monitoring and reporting to be built into existing on-farm routines (Mooney 2008). At the time of writing, Freshcare, the national on-farm food safety program for the fresh produce industry, was in the process of developing a biosecurity module. Despite the activities being undertaken, the meshing of on-farm biosecurity across commodities is not happening (Mooney 2008).

In its submission to the Beale review, Growcom wrote the following ([http://www.daff.gov.au/\\_\\_data/assets/pdf\\_file/0005/671324/107b-growcom-sub.pdf](http://www.daff.gov.au/__data/assets/pdf_file/0005/671324/107b-growcom-sub.pdf)):

*'Many projects and initiatives have demonstrated the importance of on-farm biosecurity activities. However, it appears that biosecurity is not something that growers generally see as a prime consideration in how they operate their businesses.*

*One of the main difficulties in getting wide-scale improvements in risk mitigation on the ground is that growers lack a meaningful and immediate incentive to improve on-farm biosecurity practices. Certainly the market is not providing strong signals to growers to lift standards at this point in time. Plans to integrate biosecurity into existing enterprise management and quality assurance systems will provide a driver. However, if these are found to be too costly or onerous, they will fail.*

*Solving this problem is of fundamental importance. Without near to universal grower participation, monitoring and surveillance systems will provide an incomplete picture of Australia's pest and disease status and expenditures on communications and behavioural change programs may be wasted.'*

### ***Peri-urban landholders***

Maller et al. (2007) found that there are knowledge gaps for peri-urban landholders regarding their behaviours, attitudes, land uses, practices, their knowledge about biosecurity, their networks and sources of information. Their national study built a typology of Australian peri-urban landholders and identified practices that may give rise to exotic pest and disease incursions. Their findings concluded that small landholders can be divided into two broad categories:

- Lifestylers – keep a variety of plants and animals for a range of personal and professional reasons.
- Farmers – are mostly involved in intensive farming and are interested in new and emerging industries.

Knowledge about land management and biosecurity risk varies between lifestylers and farmers. The former are generally keen to learn and will seek advice, whereas the latter are less likely to. Lifestylers' lack of knowledge about land management is generally seen as the main reason they are a potential risk to biosecurity. However, Maller, Kancans et al. (2007) concluded that they pose no greater risk than any other landholder population. In addition, small landholders from culturally and linguistically diverse (CaLD) backgrounds also did not appear to pose a greater biosecurity risk than their counterparts with an English-speaking background, as is often believed.

McGrath et al. (2008) suggest that small landholders are generally not reached by biosecurity education and awareness communications, in particular in New South Wales, Tasmania, the Northern Territory and Australian Capital Territory. CaLD farmers are also not sufficiently targeted (McGrath et al. 2008). Maller, Kancans et al (2007) suggest using multiple communication methods and approaches to engage small landholders. Face-to-face delivery appears most effective, but print and electronic media are also important.

The unique risks posed by peri-urban areas were also noted by the Beale review (Beale et al. 2008). In addressing the issue, the Beale review indicated that because individuals and business in peri-urban areas may not be members of industry groups they may be detached from developments in biosecurity management. The review suggests that *'community leaders, cultural groups and focal points such as farmers' markets (be utilised) in order to heighten biosecurity awareness in peri-urban areas'* (Beale et al. 2008, p84).

Growcom also stresses the importance of engaging peri-urban landholders in relation to biosecurity in its submission to the Department of Primary Industries & Fisheries on the Queensland Biosecurity discussion paper for the development of the Queensland Biosecurity Strategy (September 2008) ([http://www.growcom.com.au/\\_uploads/65727APU\\_Qld\\_biosecurity\\_discussion\\_paper\\_Sept2008.pdf](http://www.growcom.com.au/_uploads/65727APU_Qld_biosecurity_discussion_paper_Sept2008.pdf)):

*'New models of stakeholder engagement are required to ensure that risks associated with hobby farmers and growers in peri-urban areas are identified and managed, and the responsibility of risk appropriately shared. Communication and awareness activities are also essential.'*

### ***Farm visitors***

There is also a lack of awareness about good biosecurity practice among farm visitors (Mooney 2008). Visitors can unwittingly spread weeds, diseases and pests with their vehicles, clothes and shoes, especially if they travel from farm to farm. Farm visitors include family and friends, farm contractors, harvesters, sprayers, agri-business people and other service providers such as earth-moving contractors, electricians and telecommunication technicians. It is easy for people not directly involved in agriculture to underestimate the implications of their actions and they may neglect the washing down of their vehicles and equipment. In addition, they often have no on-going commitment to the industry involved (Mooney 2008). Anecdotal evidence indicates that it is not uncommon for farmers to face resistance and even intimidation when they insist

that only 'clean' vehicles and equipment enter their properties (Personal Communication, Victorian Farmers Federation 2008).

### ***The media***

Some Forum participants felt it was important to work closely with the media to communicate more appropriate biosecurity messages. Communication with the media should be improved particularly in relation to issues of emergency responses as there often appears to be poor understanding of the issues (McKell 2008).

The Beale review also highlighted the importance of media, especially as an awareness raising tool, and indicated that quarantine media campaigns have been highly successful in getting the quarantine message across to Australians and visitors (Beale et al. 2008, McGrath et al. 2008). At the Forum participants highlighted the need to send biosecurity messages through commercial television, e.g. through gardening and outdoor shows and advertisements containing information about the potential impact and identification of significant pests (McKell 2008).

A review of the Tasmanian fox incursion stresses the importance of ensuring that information provided to the public through the media is true and validated to prevent misinterpretation and reduce public scepticism (Saunders et al. 2006).

McGrath et al. (2008) pointed out that all stakeholders should be consulted about how the media is used in order to ensure consistency and support for the messages. Mooney (2008) suggests a practical means of involving the media by distributing pre-prepared media kits so that the basic information or sources of information are available when needed.

### **3.2.3. Means of engagement**

This section provides an overview of the key factors contributing to successful grassroots engagement to achieve positive biosecurity outcomes. There is a need for a different approach than traditional agricultural extension where Natural Resource Management (NRM) authorities, industry bodies or private consultants 'teach' the community what they 'need' to know. A better alternative would be a partnership approach. For example, findings from the National Needs and Gap Analysis of Community Engagement in Waterwatch (Thomson 2004) suggest a capacity enhancement approach. Such an approach recognises that everyone (communities and institutions) has prior knowledge, networks, skills, etc. about issues in their area and that these can be enhanced to achieve more strategically aligned (and shared) outcomes.

In order to create a greater sense of partnership, trusting relationships and a two-way flow of information should be strengthened. Better biosecurity outcomes could also be achieved by addressing biosecurity on a regional basis and by avoiding introducing new programs by building on existing mechanisms. These factors are discussed below.

#### ***Trusting relationships***

Trust and personal contact are key ingredients in many successful biosecurity communication activities. Examples include the National Fire Ant Eradication Program

and Northern Australia Quarantine Strategy's (NAQS) Quarantine Top Watch! campaign (McGrath et al. 2008), both relying heavily on community partnership for their success.

Mooney (2008) found that some stakeholders perceived the cut-backs on state extension services as a real risk for biosecurity as it jeopardises trusting relationships that were conduits for two-way biosecurity information flow. As many people source information informally through trusted individuals (Royce 2005), increasing retention of extension staff who build trusting relationships with locals may be valuable in increasing local engagement. This type of approach builds on social networks in place and the leveraging of local networks is considered an effective way in which to interact with target groups. The use of social networks builds on trust relationships already in place and can facilitate effective communication.

Several Forum participants pointed out that leaders and champions need to be developed and incorporated within the biosecurity engagement arena at a local, national and international level (McKell 2008).

Beale et al. (2008) also highlight the importance of trust in implementing a more embedded and broader partnership approach. The companion document to this one, Literature Review on Community Engagement (Thompson et al. 2009), contains more in depth information about the role of champions, trusted intermediaries and partnerships.

### ***Two-way information flow***

Current biosecurity education and engagement programs tend to comprise a one-way information flow, i.e. from government or industry bodies to community members. This was evident from the review of biosecurity engagement program reviewed in Section 2. There is a need for stronger information flow from communities (including landholders) to those organisation charged with managing biosecurity. This can occur through stakeholder consultation and feedback mechanisms such as blogs and face-to-face contact with a biosecurity officer (McKell 2008). Community-generated information can provide government or industry bodies with important knowledge on local conditions and context and help inform how future communication activities could be improved.

Two-way information flow between the target groups and government/industry bodies is conducive to local ownership of, and involvement in, biosecurity. It supports the sense of partnership and trust that helps overcome the notion of "them" versus "us".

Monitoring and reporting by communities are particularly vital aspects of biosecurity as pointed out by Lovett (2005) in his four key principles of biosecurity outlined in Section 1. During the Forum, reporting mechanisms, specifically 1800 phone numbers and local reporting mechanisms, were seen as an important communication tool. Quick response times and follow up are vital to successful reporting mechanisms (McKell 2008). As outlined in Section 2 however, hotlines can reduce the lack of face-to-face communication with biosecurity officers and the way in which information is fed back into the policy- and decision-making processes has not been evaluated. In addition, hoax calls could be a significant issue with hotlines as experienced by the Fox Free Tasmania program (Saunders et al. 2006). A reliance on hotlines as a key, or the only, communication or reporting tool is therefore potentially inadequate.

## ***Regional focus***

McGrath et al. (2008) state that planning and program development at a regional scale would bring together producers across different industries and the community to improve the management of biosecurity. There needs to be regional coordination of all stakeholders, including local government and local organisations as well as industry and the broader community. This is supported under the Draft National Fruit Fly strategy, which states that effective management of fruit fly relies on engagement of stakeholders at a local and regional level (Plant Health Australia, 2008).

The success of Waterwatch for instance has relied on engaging people with their local environment as well as equipping them with the knowledge to understand broader issues that impact on their waterways. The flexible nature of Waterwatch is one of its key success factors enabling the program to be relevant across socially and biophysically diverse regions. Waterwatch Australia is not prescriptive about how Waterwatch should be run at the State and regional level. However, the overarching objectives of Waterwatch Australia have been adopted at State and regional levels enabling complementary visions and goals across Australia (Thomson 2004).

Hence, Waterwatch is delivered in various ways in different regions. The organisations that support Waterwatch activities at a regional level vary from region to region and Waterwatch coordinators are hosted by a wide range of organisations. Waterwatch also has a range of emphases across different regions. In some areas the emphasis is on community education, in others it is on community-based water monitoring and in others there is a balance between community education and monitoring activities (Thomson 2004).

Communities need to be aware of local biosecurity issues, including their potential to affect local industries, and understand their role in managing these risks, if they are to be effective in managing biosecurity. They should know what to look for and how to respond if they find something out of the ordinary (Lovett 2005, Mooney 2008).

Forum participants suggested that strong regional biosecurity could be created by (McKell 2008):

- involving local councils; communities (including rural and indigenous) and champions
- strengthening or building local networks
- targeting funding at a local or regional level
- tailoring biosecurity messages to have a local focus.

## ***No need for new programs***

There was a strong view at the Forum that current biosecurity-related programs, networks and activities should be supported and built upon, rather than having to compete with new ones (McKell 2008).

Mooney (2008) suggests existing activities could be used as conduits to communicate biosecurity. For example people going on-farm, such as NRM professionals, could be educated and trained in basic surveillance and pest and disease recognition. Professionals, like the integrated pest management specialists, could also be engaged to increase resources on the ground and broaden the biosecurity surveillance network. Community engagement programs that have been successful in other NRM arenas may

be adapted to achieve biosecurity aims. Thompson (2004) suggested that Waterwatch could be used as a key engagement model for all regional NRM programs. In addition, on-farm biosecurity could build on everyday farm activities, not be re-packaged as a new on-farm program or new set of regulations (Mooney 2008).

The Beale Review (2008) suggests that there are some substantial changes needed to Australia's biosecurity arrangements. The authors also note however that, in general, Australian biosecurity arrangements are the envy of other nations and that this country has a long history of partnership arrangements, both between levels of government and between government and business – especially as these relate to quarantine arrangements. This tends to support the idea that there are aspects of the approach to biosecurity that require support, but perhaps also require reinforcement and strengthening rather than radical change.

### ***Evaluation and monitoring***

The management of biosecurity engagement activities would greatly benefit from measureable ways of determining the effectiveness of existing activities (Mooney 2008). McGrath et al. (2008) found that there is minimal evaluation of biosecurity communication activities across all stakeholders and therefore little knowledge about the impact of biosecurity communications on behavioural change. They suggest the following reasons:

- campaigns often concentrate on short-term goals such as planning, liaising with stakeholders, 'getting the materials out' and staying within budget
- there is a perception that campaign funding is better spent on actual activities and that evaluation is a 'post-campaign' activity
- limited resources and timeframes rarely accommodate funding of campaign staff and evaluation activities.

McGrath et al. (2008) stress that campaigns without evaluation have no mechanism to:

- learn from their mistakes and apply the lessons learned to future campaigns
- verify all commitments and activities were undertaken as agreed in a timely manner
- demonstrate accountability to stakeholders.

The importance of evaluation activities in biosecurity engagement projects can be demonstrated by the National Fire Ant Eradication Program Community Engagement Initiatives conducted by the Queensland Department of Primary Industries and Fisheries. Regular evaluation and surveys activities enabled monitoring of the project's progress and allowed for adaptation where required. The program is considered very successful, with over 65,000 nests found in 2001 and fewer than 200 nests in the 2006/2007 financial year (McGrath et al. 2008).

## **4. Summary**

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This report contains a stocktake of current biosecurity engagement activities relevant to horticulture biosecurity. It aims to raise awareness of where the gaps and opportunities in processes and activities concerning biosecurity engagement might exist.

There are many new programs involving biosecurity engagement as revealed in the review of engagement activities in Section 2. Many of these use written communication strategies and it appears that the emphasis is on one-way, top-down communication rather than two-way communication and engagement. Research into agricultural extension and the use of community engagement as a policy tool indicate that top-down 'one-way' knowledge transfer approaches to community engagement and behaviour change will be less effective in generating lasting change than collaborative or participatory approaches (Pannell et al. 2006).

This review identified a number of gaps in the current biosecurity engagement arena that hampers the relationships between government, industry representatives and community. They include a lack of:

- coordination of biosecurity engagement activities
- effective collaboration and networking between Government at all levels, industry and community groups
- trust between stakeholders at all levels, from government down to individuals
- inclusion of various stakeholders in engagement processes and practices
- identification of target groups
- two-way communication
- relevance of messages and activities to community needs, including appropriate communication of scientific knowledge to non-experts
- communication on pests and diseases that are difficult to identify
- face-to-face communication between biosecurity agencies and communities
- monitoring, feedback and evaluation of programs

These points can also be viewed as opportunities in current biosecurity practice and ways to strengthen the sense of partnership between biosecurity stakeholders. They represent the chance to conduct further research into both the motivations and aspirations within communities; and the social structures that can help foster relationships between stakeholders – from individuals, through to communities, industry bodies and government agencies (see the companion document; *Engaging in biosecurity: Literature review of community engagement approaches* (Thompson et al. 2009)).

## 5. Recommendations

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The following set of recommendations results from the identification of core challenges and opportunities of biosecurity engagement and offers a way forward to strengthen the relationships between government, industry representatives and community:

- Strengthen the institutional framework for biosecurity engagement
  - Improve national coordination, collaboration and networking between levels of government and between government and other stakeholders
  - Government agencies should engage effectively with industry bodies
  - Clarify and assign the different roles and responsibilities of the Commonwealth, state governments and industry

- Strengthen biosecurity communication
  - Strengthen biosecurity education and awareness raising (i.e. what is biosecurity and who is affected?) to encourage ownership among all stakeholders including the broader community and the media
  - Target biosecurity messages to the intended participants
  - Engage with landholders to increase biosecurity monitoring and surveillance on-farm, including those in peri-urban areas or those with culturally and linguistically diverse backgrounds
  - Increase engagement with visitors to farms who may not understand the on-farm biosecurity risks and threats that they cause
  - Build trusting relationships between stakeholders at all levels, from government agencies through to communities and individuals
  - Support two-way information flow and feedback
  - Adopt a regional focus that joins stakeholders at this level
  - Build on existing programs and arrangements
  - Persist with engagement around pests and diseases that are difficult to communicate or that are not well known
  - Include evaluation and monitoring as critical components of community engagement projects.

It is recommended that further empirical work be undertaken including on-the-ground case studies, to better establish the types and effectiveness of community engagement strategies that are being undertaken, where they sit on the community engagement continuum and whether the principles of community engagement are evident. This is the subject of phase 2 of the Engaging in Biosecurity in Horticultural Regions project.

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## Appendix A - The Engaging in Biosecurity in Horticultural Regions Project – Phase 1

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### *(i) Stakeholder analysis*

BRS engaged Rural Development Services (RDS) to conduct a stakeholder analysis by:

- developing a database of people and agencies active in biosecurity
- consulting with a subset of stakeholders about their key biosecurity concerns and ultimate outcomes. Stakeholders were asked about their key biosecurity concerns, desired outcomes and biosecurity practices. The output of this activity is a short paper titled *Stakeholder perceptions of key bio-security issues for horticulture* detailing stakeholder perceptions of issues, concerns and desired outcomes relating to horticultural biosecurity.

These activities were completed by the end of July 2008.

### *(ii) The National Biosecurity Engagement Forum (the Forum)*

The Forum was held on Wednesday 17 September 2008 in Canberra as a first step towards a coordinated project to develop community-based biosecurity engagement strategies. Participants to the Forum were invited to help develop a clear framework of effective community-based programs and activities to do this better. The focus on the day was to develop biosecurity engagement programs for horticulture but with reference to the experiences and lessons learned from other primary industries and natural resource management community-based programs.

The main objective of the Forum was to identify practical action for biosecurity engagement across Australia, and the day's agenda was framed around this objective. Specifically, the Forum aimed to:

- Share current knowledge on biosecurity engagement
- Negotiate and develop a national approach to the project
- Identify key biosecurity outcomes
- Prioritise critical factors in biosecurity for selection of case studies
- Define and identify suitable engagement mechanisms
- Encourage networking between stakeholders and practitioners in the field.

Biosecurity engagement is an issue of concern to a wide range of industries, and the experiences of representatives from a wide range of industries and sectors outside the horticultural industry added significant value to discussions at the Forum. The event attracted over 100 representatives from diverse stakeholder groups, including grower groups, farmer organisations, research and development groups, retailers and numerous government agencies from across all Australian states. Organisers received very positive feedback from participants, underscoring the need for integration of biosecurity engagement across Australia.

### *(iii) Literature review*

The literature review has been conducted by the Bureau of Rural Sciences as a companion document to this gaps analysis. It provides a review of current literature on community engagement concepts and tools and provides an overview key principles that could be employed by the horticultural industry for biosecurity engagement activities (Thompson et al. 2009).

*(iv) Stocktake and gap analysis*

The purpose of this document is to provide a stocktake of current biosecurity engagement activities and to identify opportunities for improving biosecurity engagement.

## Appendix B – List of state, territory and national biosecurity programs

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### Current community engagement programs and activities

The main biosecurity engagement activities relating to horticulture are summarised below. This information is based on information available on the internet and feedback received from state/territory governments, environmental government agencies and other bodies related to either horticulture or biosecurity. The organisations contacted by BRS are contained in Appendix 1, however, it should be noted that not all organisations contacted provided further information. The desktop analysis and feedback from the states revealed the presence of many more general programs, such as small landholder programs, which could be utilised to deliver biosecurity engagement programs in the future.

### *Biosecurity Engagement in New South Wales*

The key organisation involved in biosecurity engagement in New South Wales is the New South Wales Department of Primary Industries (DPI). The following table outlines formal programs DPI has in place that facilitate engagement in biosecurity in New South Wales.

Organisation	Program	Description
DPI	Tri-state Fruit Fly Program	Program covers South Australia, Victoria and New South Wales, and delivers educational services including signposting, web information and a hotline. Target audiences are travellers and gardeners. It also includes an enforcement element with quarantine regulations for the area which include roadblocks and on-the-spot fines.
DPI	Greater Sunraysia Pest Free Area	This is an area contained within the Fruit Fly Exclusion Zone (FFEZ), and is a declared pest free area covering parts of New South Wales and Victoria used to help secure market access for high value horticultural crops. The education and enforcement arrangements are similar to those in the Tri-state program, but the program also includes landholder involvement in the fruit fly trapping component for demonstration of pest freedom. Although they work collaboratively with DPI New South Wales, DPI Victoria is the leading agency in this program.
DPI	The New South Wales Invasive Species Plan 2008-2015	This plan is an overarching plan for the management of weeds and pest animals in New South Wales, developed and implemented in partnership with numerous state government agencies, local government and individual landholders.
DPI	The Bird and Flying Fox Damage Survey	This is an online survey available for individual landholders to provide information on pest species, their effects on production and control techniques employed. The surveys are used to develop targeted research programs in the areas with the biggest problems.
DPI	Orchard Plant Protection Guide	The guide is available online, and provides technical information for landholders on control methods for numerous orchard pests and

diseases.

<b>DPI</b>	No Space 4 Weeds Program	This is a state-wide awareness program to promote a collective responsibility for weeds. Various organisations including regional weeds committees, catchment management authorities, local councils, community groups and schools have been involved and run events to promote awareness
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In addition to the specific programs listed above, DPI has numerous fact sheets and agricultural notes available on the management of certain weeds, pests and diseases available on their website and at their regional offices.

The Horticultural branch of the New South Wales Farmers Federation was also contacted to assess their contributions to engagement in the biosecurity arena. Although the New South Wales Farmers Federation does not have any programs specifically for biosecurity engagement, they are able to facilitate two-way communication with their members through their media department, relationships with local government, and their team of 13 Regional Service Managers based throughout New South Wales, which is a valuable conduit for information exchange.

There are also several weed programs that have community engagement components; however, these have not been included given their strong emphasis on environmental, rather than horticultural weeds.

### ***Biosecurity Engagement in Victoria***

As is the case in New South Wales, DPI Victoria is the key organisation managing biosecurity activities and risks in the State. In June 2004 the Victorian Agricultural Minister announced the formation of “Biosecurity Victoria” a new business group within DPI to manage biosecurity Key programs being delivered by DPI are outlined in the table below.

Organisation	Program	Description
<b>DPI</b>	The Tri-state Fruit Fly Program	As described under <i>Biosecurity Engagement in New South Wales</i>
<b>DPI</b>	The Greater Sunraysia Pest Free Area	As described under <i>Biosecurity Engagement in New South Wales</i> . The program is led by DPI Victoria.
<b>DPI</b>	DPI Potato Cyst Nematode Program	This program seeks to increase awareness and reporting of potato cyst nematode. Communications and reporting tools include brochures, newsletters and signage and there is a hotline and email address available for reporting suspected outbreaks. Industry partnerships have been developed and legislation controls the movement of host material and equipment.
<b>DPI</b>	DPI Phylloxera Management Strategy	This strategy seeks to contain phylloxera within the various invested zones around Victoria. There are fact sheets, videos and maps available on the DPI website which provides basic facts on phylloxera and descriptions of host materials. Movement of host materials outside infested zones is prohibited.

<b>DPI</b>	DPI Weed Alert Program	Through this program community members interested in or working with plants receive training to become “Weed Spotters” to help them identify 25 state prohibited weeds, some of which could affect the horticultural industry.
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In addition to the programs in the table above, the DPI publishes a range of newsletters for various horticultural industries including the grape, vegetable, and fruit, nut and berry industries, which are often used to convey biosecurity information.

The Victorian Farmers Federation has been involved in distributing information to their members on biosecurity threats. They have also trained industry liaison representatives in Emergency Animal Disease (EAD) outbreak responses, but have not yet delivered any training for plant disease emergencies.

### ***Biosecurity Engagement in South Australia***

Biosecurity programs in South Australia are managed predominantly by Primary Industries and Resources South Australia (PIRSA) and the Department of Water, Land and Biodiversity Conservation (DWLBC). Key programs are included in the table below.

<b>Organisation</b>	<b>Program</b>	<b>Description</b>
<b>PIRSA</b>	Biosecurity Strategy for South Australia 2008-2013	The strategy is still in draft form, but has been made available to industry and the public through various mediums including brochures, the PIRSA website, contact officers in the regions, regional media and a public forum for comment.
<b>PIRSA</b>	PIRSA Fruit Fly Program	The program is similar to programs in New South Wales and Victoria, and focuses on awareness and education materials aimed at travellers and the general community as well as enforced restrictions on the movement of fruit.
<b>PIRSA</b>	The Tri-state Fruit Fly Program	As described under <i>Biosecurity Engagement in New South Wales</i>
<b>DWLBC</b>	The Department of Water Land and Biodiversity Conservation Protocols	One protocol has been developed for managing exotic plant incursions and another for managing new exotic vertebrate animal incursions. These protocols are structured through reports provided by the government and individuals and provide a framework for state government to respond to biosecurity incursions.

Both PIRSA and DWLBC also have various webpages related to specific diseases and plant and animal pests.

### ***Biosecurity Engagement in Tasmania***

The Department of Primary Industries and Water (DPIW) is the main state organisation associated with biosecurity in Tasmania. Key programs are included in the table below.

Organisation	Program	Description
DPIW	The Tasmanian Biosecurity Policy and Strategy	The strategy underpins the Tasmanian Biosecurity Policy and provides broad direction for increasing government and industry partnerships to develop more effective preventative and responsive mechanisms. The strategy also outlines strategic actions to develop and deliver biosecurity training programs to DPIW staff and industry representatives.
DPIW	Biosecurity Tasmania E-News	This is a new e-newsletter launched in November 2008 designed for primary producers, hobby farmers, industry and the broader community that seeks to increase awareness of biosecurity.

The Department of Primary Industries and Water (DPIW) also deliver some emergency response training with industry bodies and have general information about pests and diseases, quarantine guidelines for the broader community and informative, industry specific calendars available on their website. They also have strategic plans for the management of weeds.

Fruit Growers Tasmania (FGT) is another organisation playing a role in biosecurity engagement. FGT is represented on various biosecurity working groups initiated by DPIW and several peak industry organisations. FGT initiates various meetings and strategies with government departments and local councils to address issues of concern for the industry i.e. neglected orchards. They also use a variety of media to transfer information to members including newsletters, seminars, field days and conferences, and develop an annual export manual for cherry and stone-fruit growers within the state. FGT conducts annual export training sessions to help members understand their responsibilities in global exports.

### *Biosecurity Engagement in Western Australia*

The Department of Agriculture and Food in Western Australia (DAFWA) is the main government organisation associated with biosecurity in Western Australia. Key programs are included in the table below.

Organisation	Program	Description
DAFWA	Pest and disease Information Service (PaDIS)-	This online service provides educational materials and information on pests and diseases that affect industry, civic gardens, households and the community.
DAFWA	Orchard Alert	This is an early warning system on pest numbers accessible by email, fax and the departmental website. Informed through a network of approximately 20 growers, chemical company representatives and crop scouts who carry out weekly monitoring during the summer months.
DAFWA	Western Australian Rainbow Lorikeet	This strategy utilises an online reporting system and toll-free number to allow community and industry members to report incursions. The program is promoted through presentations, letter drops in affected areas, media releases and websites.

	Management Strategy	
<b>DAFWA</b>	Australian Plague Locusts pages	These online pages contain advice for control of locusts on a variety of horticultural crops and regular status reports and information for gardeners.
<b>DAFWA</b>	Starling Eradication Program	The information in the program is communicated through website, brochures, field days, and media releases. A toll free enquiry number is also available and individual farmers are able to receive technical advice for trapping starlings on their land.
<b>DAFWA</b>	Small Landholder information service	This service is a database which allows small landholders to ask farming related questions.
<b>DAFWA</b>	Weed Watcher Program	This program uses a web-based interface for finding and reporting weed infestations on a statewide map. There are several categories of users uploading information to the map, including unverified users such as community members, and verified members, including departmental staff.
<b>Ord Guard</b>	The Ord Guard Regional Biosecurity Plan	Based in north-west Western Australia, this is an ongoing program, collaboratively developed and managed by Ord River Irrigation Area Growers, DAFWA and the Shire of Wynham/East Kimberly. Through the project, stakeholder-specific information packages were developed for tourists and farmers. Other communications tools include road signage, fruit disposal bins, media releases and a reporting phone number.
<b>Landcare Solutions</b>	Heavenly Hectares	Originally developed through a partnership with DAFWA, a consultancy named <i>Landcare Solutions</i> deliver a program called <i>Heavenly Hectares</i> , which engages small landholders in property planning, including good practice guidelines for biosecurity.

The DAFWA has a comprehensive website also containing general information for gardeners, producers, researchers, importers and travellers through its biosecurity web-pages.

### ***Biosecurity Engagement in Queensland***

The majority of Queensland biosecurity engagement programs are delivered by Biosecurity Queensland within the Department of Primary Industries and Fisheries (DPI&F); and the Far North Queensland Regional Organisation of Councils. Key programs are included in the table below.

<b>Organisation</b>	<b>Program</b>	<b>Description</b>
<b>DPI&amp;F</b>	A-Z list of pests and diseases and the A-Z list of weeds	These webpage's provide information on specific pests, diseases and weeds for general audiences.

<b>DPI&amp;F</b>	Exotic Plant Pest Surveillance program	This is a targeted early warning survey where randomly selected households are asked to cooperate in inspections and trapping on their properties.
<b>DPI&amp;F</b>	Call Centre - Protect Queensland from Exotic Pests	This program aims to encourage people to watch out for and report suspicious occurrences through a call centre set up for reporting of exotic species. The associated webpage's provide advice on what and how to report.
<b>DPI&amp;F</b>	Exotic Fruit Fly Surveillance Program	This is a trapping program for fruit fly detection supported by media releases, brochures, pamphlets and community awareness displays to promote the program. Some departmental staff have one-on one contact with individuals involved in the trapping program and there are some restrictions on movements of fruits south of Coen.
<b>DPI&amp;F</b>	Northwatch	This is a community awareness program is delivered in northern Queensland, and includes frequent media releases and the development and distribution of a 'Biosecurity is everybody's business' booklet. Close consultation with indigenous communities to seek support, collaboration and input has occurred and community rangers participate in the surveillance program where possible.
<b>DPI&amp;F</b>	The National Citrus Canker Eradication Program	Managed by DPI&F, this is a national program developed to eradicate citrus canker after an outbreak in Emerald in 2004. Quarantine and movement controls applied, and commercial citrus growers in Queensland were required to undergo biosecurity training. A hotline for reporting outbreaks was also set up.
<b>DPI&amp;F and the Cooperative Research Centre for Australian Weed Management</b>	Weedspotters Program	Initially funded by the Cooperative Research Centre for Australian Weed Management this project set up a network of volunteers with botanical experience to receive training on weed identification to assist the department in identifying weed incursions. Participants also received a quarterly newsletter, providing useful information on new weeds and relevant events. This project has been scaled back since June 2008.
<b>Far North Queensland Regional Organisation of Councils</b>	Weed Identification Deck	Aimed at a general audience, this is a set of weed identification cards with an associated reporting hotline.
<b>Far North Queensland Regional Organisation of Councils</b>	Engaging Schools in Pest Management Education	The program aims to engage school children in the identification and surveillance of pests.
<b>Far North</b>	Priority Weeds	This is CD ROM developed to assist with identification of weed

<b>Queensland Regional Organisation of Councils</b>	CD	species that have been locally determined as a significant threat in the Far North Queensland Region.
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DPI&F also has comprehensive web pages with information available on a range of serious pests, including numerous species of tramp ants, which can affect horticultural crops. Queensland's Biosecurity Strategy is still in draft form; however, a discussion paper is available for public comment. The draft strategy includes comments on the need for increased community and industry education and engagement.

### ***Biosecurity Engagement in the Northern Territory***

The Primary Industries group within the Northern Territory Government carries out the majority of biosecurity engagement work in the Northern Territory. Main programs are outlined in the table below.

<b>Organisation</b>	<b>Program</b>	<b>Description</b>
<b>Northern Territory Government</b>	Grapevine Leaf Rust Eradication Program	The program successfully eradicated leaf rust through an extensive inspection program, including door-knocking of over 30,000 households and enforcement of a quarantine zone.
<b>Northern Territory Government</b>	The Katherine Regional Weed Identification Deck	A deck of cards (also available on CD) each featuring a local weed aimed at increasing general community awareness.

The Northern Territory Government also uses print, TV and broadcasting media to engage the public in biosecurity and have identification resources and a hotline available via their website.

### ***National Programs***

There are also a number of key national biosecurity engagement programs and campaigns which are outlined in the table below.

<b>Organisation</b>	<b>Program</b>	<b>Description</b>
<b>PHA</b>	The National Plant Health Awareness Campaign	This program featured the tagline "Spotted anything unusual lately?" and targeted commercial plant operators through the media and directed producers to the exotic plant pest hotline.
<b>DAFF</b>	DAFF translation services	Information on biosecurity and quarantine is available in 26 different languages on the DAFF website for people without English language skills.
<b>DAFF</b>	NAQS Quarantine Top Watch!	This is a national community awareness campaign under the Northern Australian Quarantine Strategy (NAQS) designed to increase awareness of biosecurity threats in northern Australia and encourage residents to keep watch for anything unusual. This program targets indigenous communities, horticulturists,

pastoralists and the general community in NAQS zones with a range of media and advertising tools including posters, a quarantine calendar, a quarantine booklet and web materials.

<b>DAFF</b>	Defeating the Weed Menace Program	A national action plan for defeating Australia's most threatening weeds, which includes a significant community awareness component. The community awareness campaign targets two key sectors: home gardeners and hobby farmers in peri-urban areas; and key industries and land managers including the garden, nursery and landscape industries; government organisations, such as primary industry departments and catchment management authorities; and corridor managers, such as telecommunications companies, road and rail service providers. Awareness and engagement activities under the program included the development of industry partnerships, the development of a new website, support materials (available from website), support for weedbusters week, a publicity and editorial campaign focusing on ABC radio stations, and the presence of relevant information at key gardening and industry events.
<b>AQIS</b>	Big Bugs	The latest phase in the Australian Quarantine and Inspection Service's (AQIS) advertising campaign Quarantine Matters! The 'Big Bugs' campaign builds on existing awareness amongst the key target audiences about the dangers posed by pests and diseases that could be lurking in items from overseas.
<b>Australian and State Governments</b>	Weedbusters	This is a national community awareness program supported by the Australian Government and all states and territories, aimed at increasing community understanding and ownership of weed threats and management problems. Activities are run year round, culminating in an annual weedbuster week.
<b>PHA</b>	The Draft National Fruit Fly Strategy	Developed by PHA outlines a specific need to increase engagement of all sectors of the community and industry and recommends the initiation of a national approach to communications to increase collaboration between all stakeholders. Several forums were held and attended by a wide range of stakeholders during development of the NFF strategy.
<b>PHA</b>	<i>Tendrils</i> - national e-newsletter	This national weekly newsletter is delivered to PHA members and stakeholders and sometimes includes biosecurity advice and information.
<b>Museum Victoria, PHA, DAFF and DAFWA</b>	PaDIL -Pest and Disease Image Library	This is a Australian Government initiative designed to capture detailed information, including photographs, of pests and diseases to assist in diagnostics. The purpose of the library is to assist with plant health diagnostics in all areas, from initial to high level; build capacity for diagnostics, including linking training and

research organisations; develop education tools for students and engender public awareness about plant health concerns in Australia.

<b>PHA</b>	Australian Plant Pest Database (APPD)	This is an Australia wide online database that links 11 pre-existing state and territory plant pest databases containing details on individual specimens of insects, nematodes, fungi, bacteria and viruses that affect plants of economic and ecological significance.
<b>PHA in cooperation with the Australian/State and Territory Governments</b>	Exotic Plant Pest Hotline	A 1800 number provided for members of Australia's plant production sectors and plant health services to report suspect detections of unusual plant pests and diseases
<b>PHA</b>	Australian Biosecurity Intelligence Network (ABIN)	This network is intended to develop biosecurity information management tools, including a shared workspace that allows individuals and groups including industry groups, policy makers, producers and researchers to share information, knowledge and materials.
<b>PHA</b>	PLANTPLAN	This program aims to provide a set of nationally consistent guidelines covering management and response procedures for emergency plant pest incursions affecting the Australian plant industries. The plan improves provisions for the training of key personnel in emergency response and preparedness training.
<b>AHA and PHA</b>	Farm Biosecurity – secure your farm: secure your future	This program aims to increase on-farm biosecurity through a monthly e-newsletter and other information available via the Animal Health Australia website.
<b>State departments</b>	Weed Warriors	Originally a federally funded program, Weed Warriors is primarily aimed at school children. This program involves engaging local people with weed or NRM management experience in promoting awareness and ownership of weeds in local areas. The program is supported by national and state/territory coordinators and locally based volunteer mentors.

