

Draft National Fruit Fly Strategy

March 2008

A Primary Industries Health Committee commissioned project



Plant Health
AUSTRALIA

Draft National Fruit Fly Strategy

March 2008

Commissioned by the Primary Industries Health Committee. Prepared in collaboration with the Australian Government, all state and territory governments, plant industries and the research community, and facilitated by Plant Health Australia

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Location: Suite 5, FECCA House
4 Phipps Close
DEAKIN ACT 2600
Phone: +61 2 6260 4322
Fax: +61 2 6260 4321
E-mail: admin@phau.com.au

Visit our web site: www.planthealthaustralia.com.au

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Communications Manager
Plant Health Australia
Suite 5, FECCA House
4 Phipps Close
DEAKIN ACT 2600

| | | | |
|--|-----------|--|-----------|
| Foreword | 4 | The long-term future management of economically significant endemic fruit fly species in Australia | 33 |
| Executive summary | 5 | Mediterranean fruit fly – Recommendation 18 | 33 |
| Introduction | 8 | Queensland fruit fly – Recommendation 19 | 34 |
| Historical perspective | 8 | Institutional arrangements – Recommendation 20 | 34 |
| Current position and critical issues | 9 | | |
| Benefits of a national fruit fly strategy | 12 | Case for a national fruit fly strategy | 38 |
| Cost–benefit analysis | 13 | Appendix 1: | |
| Structure of the document | 13 | National Fruit Fly Strategy Steering Committee and subgroups | 42 |
| Strategic foundation | 14 | Appendix 2: | |
| Overarching principles | 14 | Institutional arrangements – national committees | 46 |
| Key concepts underpinning the strategy | 16 | Appendix 3: | |
| | | Division of labour | 50 |
| Recommendations | 19 | Appendix 4: | |
| Enhance national ability to gain, maintain or regain market access – Recommendation 1 | 19 | Preliminary prioritisation | 52 |
| A national framework for regulatory approaches – Recommendation 2 | 21 | Appendix 5: | |
| Communication and awareness – Recommendation 3 | 22 | Fruit fly species and affected industries | 57 |
| Operational activities | 23 | Abbreviations and acronyms | 55 |
| Emergency Plant Pest Response Deed – Recommendation 4 | 23 | Glossary | 57 |
| Industry and on-farm biosecurity plans – Recommendation 5 | 23 | References | 59 |
| Regional and community biosecurity – Recommendation 6 | 24 | | |
| Surveillance strategy – Recommendation 7 | 24 | | |
| Diagnostics strategy – Recommendation 8 | 26 | | |
| Management resource – Recommendation 9 | 27 | | |
| Sterile Insect Technique – Recommendation 10 | 28 | | |
| Information systems – Recommendation 11 | 29 | | |
| Regulations – Recommendation 12 | 30 | | |
| Research and development funding processes | 31 | | |
| Research and development capacity – Recommendation 13 | 31 | | |
| Research and development prioritisation – Recommendation 14 | 31 | | |
| Research and development framework – Recommendation 15 | 32 | | |
| Research and development information systems – Recommendation 16 | 32 | | |
| Research and development communication – Recommendation 17 | 32 | | |

Foreword

4

This National Fruit Fly Strategy (NFFS) represents the culmination of 18 months' work that began when the states of New South Wales, South Australia and Victoria approached Plant Health Australia (PHA) in March 2006. The PHA Board approved the request at its meeting in May 2006 and appointed Professor Mal Nairn to chair the NFFS Steering Committee.

With pressures mounting on Australian horticulture from World Trade Organization (WTO) based requirements for international market access, growth in production areas and increasing costs of fruit fly management, there has been no better time for a strategy focusing on a national approach to all fruit fly species. A national strategy is imperative to address the escalating efforts and resources required to effectively respond to the significant impact of fruit fly on the community, and on interstate and international trade. The NFFS builds on the substantial investments made over many years by the Australian Government, state and territory governments, industry, Australian universities, and research funding bodies such as Horticulture Australia Ltd and the Co-operative Research Centre for National Plant Biosecurity.


The first open forum with all major stakeholders was held on 17 August 2006. Since then, the NFFS Steering Committee has met 10 times. The committee is assisted by four subgroups led by Mr Rob Duthie (Market Access and Biosecurity Subgroup), Mr Peter Liehne (Legislation and Regulation Subgroup), Mr Mark Panitz and Ms Lois Ransom (Operations Subgroup) and Dr Paul De Barro (Research and Development Subgroup). The subgroups researched, prepared and considered several papers to arrive at their final recommendations. This would not have been possible without the considerable support of their employers – the Australian Government Department of Agriculture, Fisheries and Forestry, the Australian Quarantine and Inspection Service, Biosecurity Australia, the Commonwealth Scientific and Industrial Research Organisation and Growcom – and the dedication of staff supporting the project, Kimberly Green, Suzy Perry and James Garden.

The project has been complex, large and challenging, with many interests at stake. A wide range of issues have been canvassed and investigated by more than 50 people from a range of organisations including the Australian Government, the state and territory governments, horticultural industries and research and development organisations. Every effort has been made to reach a resolution that will enable Australia to advance its long-term commitment to minimising the impact of fruit fly on industry, government and the community. This strategy provides a breakthrough, with a blueprint for action in partnership between industry and governments, regulators, policy makers and researchers across regions, borders and institutions.

We commend this strategy to you.



Ms Lindy Hyam
Chief Executive Officer
Plant Health Australia



Prof. Mal Nairn
Steering Committee Chair
National Fruit Fly Strategy

January 2008

The National Fruit Fly Strategy (NFFS) is a national initiative aimed at improving Australia's management of fruit fly, the world's most economically significant horticultural pest. Sustainable management of fruit fly is of central concern to Australia's \$6.9 billion horticultural industries, which capitalise on both domestic and international trade.

The NFFS aims to develop a viable, cost-effective and sustainable national approach to fruit fly management, with commitment from all stakeholders. The strategy applies to all endemic¹ and non-endemic species of fruit fly across the contemporary biosecurity² continuum, from pre-border to farm level.

The strategic framework

An initial task in the development of the NFFS was to define the vision, goal, outcomes and objectives. This foundation provided direction and focus, enabling the development of 20 recommendations, which are summarised below.

Vision

That fruit flies are no longer a constraint to sustainable production or a significant barrier to national and international market access.

Goal

Australia will have a viable, cost-effective and sustainable national approach to fruit fly management that will place us in the forefront of international biosecurity, with all stakeholders committed to the national policy that underpins this approach.

Outcome

Effective, efficient and sustainable pest management, achieved through innovative technical and systems capability that maintains and enhances market access to meet current and future needs.

Objectives

- To reduce the risk of fruit fly incursions from overseas and the spread of economically significant species within Australia as far as practicable.
- To optimise early detection and response to non-endemic and economically significant endemic fruit flies to minimise their impact.
- To manage fruit fly through effective and efficient use of tools, technology and people in order to establish, maintain or modify the fruit fly status of an area to support trade and sustainable production.

- To raise awareness of biosecurity generally and fruit fly specifically to empower growers, industry, government and community to work collaboratively to minimise the impacts of fruit fly on production, environment and trade.
- To establish and maintain an intelligence network that imparts information to target risks and threats, supports the risk assessment process and facilitates development and ongoing implementation of the fruit fly management system.

Critical success factors

Critical success factors provide a benchmark by which the quality, success and the benefits of the NFFS can be measured and kept on track throughout implementation.

The success of the NFFS depends on the following factors:

- a nationally coordinated approach to fruit fly management
- a nationally collaborative approach to fruit fly management
- a consistently applied evidence-based system for the management of fruit fly
- harmonisation of the regulations, processes and procedures that are implemented to support the strategies with:
 - international standards set by the International Plant Protection Convention (IPPC)
 - the World Trade Organisation (WTO) agreements
- compliance with national standards, including auditing and reporting
- adequate investment in the implementation of the NFFS
- application of a set of economic principles (given below).

Development and consultation

The NFFS has been developed through a collaborative effort by Australia's horticultural industries, the Australian Government, state and territory governments, and various research institutions facilitated and supported by Plant Health Australia (PHA).

The NFFS Steering Committee, chaired by Professor Mal Nairn, led the development of the strategy. Four subgroups (Market Access and Biosecurity, Operations, Legislation and Regulation, and Research and Development) were tasked with developing key strategies and approaches in their respective areas, to underpin the key directions and recommendations. In addition, a private consultancy undertook a cost-benefit study on the economic feasibility of the NFFS.

¹ 'Endemic' fruit flies are those considered 'native' to Australia; 'non-endemic' fruit flies are those considered 'exotic' to Australia

² 'Biosecurity' refers here to the protection of the economy, environment and plant health from negative impacts associated with fruit flies.

A broad cross-section of public and private stakeholders were invited to participate in actively shaping the NFFS through three open forums held over 15 months. Each forum presented the outcomes achieved to that point, with a focus on discussion and engagement. More than 60 organisations were invited to participate in this process, and the high turnout resulted in a strong partnership between all stakeholders in achieving a national solution.

Subgroups

This section outlines the scope of the area covered by each of the four subgroups.

Market Access and Biosecurity

The Market Access and Biosecurity Subgroup considered issues surrounding new, improved or restored entry for horticultural commodities into markets where terms and conditions of access need to be negotiated on an inter-governmental basis. The subgroup examined current policy focused on keeping exotic fruit flies out of Australia, encompassing components such as risk analysis, surveillance, incursion preparedness and emergency response.

Operations

Operations encapsulates the activities that deliver the elements of fruit fly management systems, enabling outcomes in prevention, detection, eradication, management, diagnostics and communication and awareness. These activities occur at all levels of the contemporary quarantine continuum including overseas (pre-border), at the entry points to Australia (border) and in areas throughout Australia (post-border). In Australia, these activities are undertaken throughout environments and within communities; they involve governments, industries (both large and small), individual farms and the wider public.

Legislation and Regulations

The scope of the Legislation and Regulations Subgroup was the legal and regulatory frameworks at the national and state/territory levels that provide the mechanisms by which consistent fruit fly management programs are delivered. If the strategic goals for accessing and maintaining international markets are to be achieved, the regulation and legislative controls for the management of pests must be harmonised internally across Australia and externally with international standards.

Research and Development

Research and development activities underpin all elements of fruit fly management, providing technically justifiable approaches and innovative solutions to meet the requirements of market access and biosecurity, operations, and legislation and regulation. The identification and prioritisation of current and future research and development is essential to maintaining horticultural production and market access advantages in Australia.

The national benefits

The benefits of a NFFS apply to a broad range of jurisdictions and organisations; those that apply to the three key stakeholder groups have been identified in the table below.

Benefits of the NFFS that apply to the three key stakeholder groups

| The Australian Government |
|---|
| Reduced management costs |
| Improved value of non-commercial amenities |
| Reduced impact on the environment |
| Improved regional economies |
| Food security. |
| State and territory governments |
| Improved state quarantine |
| Unified interstate trade regulations. |
| Australian horticultural industries and growers |
| New or improved market access |
| Increased interstate trade |
| Increased international trade |
| Improved and streamlined regulations |
| Improved crop yield and quality |
| Improved on-farm profitability |
| Reduced risk of non-endemic fruit flies. |

A cost-benefit analysis was undertaken as part of the development of the NFFS. The analysis proposed that an additional annual investment of around \$5 million is required to implement the NFFS's recommendations. It gave a conservative estimate that net benefits of more than \$50 million would accrue over 20 years. The proposed new investment is above and beyond existing spending, which is expected to continue during the implementation of the NFFS.

To ensure this positive national return, a set of economic principles were devised to guide the implementation of the NFFS; they are – contestability, division of labour, transparency, performance reviews and market access. These principles were applied by the subgroups as a test of reasonableness, to ensure that their proposed strategies would be cost effective, commercially relevant and meet WTO requirements for market access.

The establishment of an NFFS Implementation Committee will be necessary to oversee the implementation of the NFFS. This committee will be responsible for overseeing a detailed benefit-cost and beneficiaries analysis to establish the distribution of costs across key stakeholders. The Implementation Committee will also develop a 3 year action plan to prioritise and budget the recommendations of the NFFS.

Recommendations

The four subgroups developed 20 recommendations targeting major areas; these are listed below. The full document also includes a set of strategies underpinning each recommendation. These strategies cover critical issues and priorities identified within each area, and provide further direction for implementation.

Recommendation 1

Enhance the national ability to gain, maintain and/or regain market access through:

- targeted research and development to underpin market access applications
- development of international and national market access information packages (trade statistics and phytosanitary treatments) to drive planning, prioritisation and resourcing
- development of a generic national code of practice
- national harmonisation of management approaches and trade regulations.

Recommendation 2

Adopt the seven legislation and regulation principles (see Chapter 3 for the full list) as a national framework to review and harmonise regulatory approaches, to maximise the efficiency, effectiveness and competitiveness of Australian horticultural production.

Recommendation 3

Initiate a national approach to communications using a continuum of messages to establish and maintain awareness of fruit fly related issues with all stakeholders and within the broader community, thus encouraging all parties to work collaboratively.

Recommendation 4

Support the functionality of the Emergency Plant Pest Response Deed (EPPRD) through a high level of commitment by government and industry parties to meet obligations under the EPPRD, to reduce biosecurity risk and to maintain an appropriate level of capacity and capability.

Recommendation 5

Actively adopt the national industry biosecurity planning process as the primary vehicle to focus on high-priority fruit flies, and as a planning tool to assist in the implementation of biosecurity strategies, including contingencies for use in the event of an incursion.

Recommendation 6

Engage regions and communities to ensure a more systematic development of fruit fly management activities.

Recommendation 7

Develop and implement nationally agreed and consistent fruit fly surveillance systems to enhance the capacity and capability of existing and new programs.

Recommendation 8

Facilitate a nationally integrated approach to diagnostic capacity and capability for fruit flies, in alignment with international standards, to improve efficiency and reduce associated costs.

Recommendation 9

Bring together the management tools for fruit fly into a reference kit to facilitate dissemination of information and identification of deficiencies in, or opportunities to enhance, fruit fly management practices.

Recommendation 10

Develop a national position in relation to the application of sterile insect technique³ against economically important fruit fly species, including the feasibility of a multipurpose insect rearing facility.

Recommendation 11

Actively collect, analyse and communicate relevant information to create an environment of learning and understanding to realise opportunities for advancement and continuous improvement of the fruit fly management system.

Recommendation 12

Harmonise regulations, processes and procedures based on the agreed risk-based standards, underpinned by robust science and consistent with the principles of the NFFS.

Recommendation 13

Maintain and enhance fruit fly research capability, capacity and resources.

Recommendation 14

Develop a process for ongoing prioritisation of fruit fly research and development activities to provide clear direction for current scientific activities and proactively identify emerging research needs consistent with the directions of this strategy.

Recommendation 15

Develop and strengthen fruit fly research and development collaborations and linkages, nationally and internationally, and ensure these cover the different sectors involved in fruit fly management.

Recommendation 16

Develop information storage and retrieval systems to support and enhance fruit fly research and development.

Recommendation 17

Develop systems for efficient and effective uptake of fruit fly research and development outcomes.

Recommendation 18

Assess the feasibility, practicality and cost effectiveness of eradicating Mediterranean fruit fly from Australia, building on the outcomes from the cost-benefit analysis undertaken in 2001.⁴ The assessment should include all benefits, not just cost effectiveness, including those to the community from growing their own non-infested fruit.

Recommendation 19

Undertake an optimum scenario assessment of all the tools available (including sterile insect technique) for the future management of Queensland fruit fly to reduce the impact in endemic areas and to minimise the imminent threat of the introduction and spread from the existing populations to other parts of Australia with area freedom status.

Recommendation 20

Amend the current institutional arrangements to enable the implementation of the NFFS in compliance with the economic principle 'division of labour', and establish a committee to implement the NFFS with secretariat support from Plant Health Australia.

3 'Sterile insect technique' is a biological method used to control or eradicate insect pests; it involves using irradiation to create sterile insects that are released and compete with wild (fertile) insects

4 Mumford, et al. (2001)

Fruit fly is the world's most economically significant horticultural pest. The National Fruit Fly Strategy (NFFS) is an initiative aimed at significantly reducing the impact of fruit fly in Australia through better management. Sustainable management of fruit fly is of central concern to Australia's \$6.9 billion horticultural industries, which capitalise on both domestic and international trade. In 2002–2006, the total average export value for Australia's top 25 commodities that are host to fruit fly was \$432 million. The value of interstate trade of all host commodities subject to fruit fly quarantine requirements is estimated at \$1 billion annually.

The NFFS aims to develop a viable, cost-effective and sustainable national approach to fruit fly management, with all stakeholders committed to the national policy that underpins this approach. The strategy applies to all endemic and non-endemic⁵ species of fruit fly across the contemporary biosecurity⁶ continuum, from pre-border to farm level. Market access and sustainable production are the key outcomes of the NFFS.

The concept of a national strategy for fruit fly management in Australia has been under consideration for more than a decade, but only now do stakeholders consider that the time is right to develop a national approach; for example, to facilitate international market access negotiations. Although significant progress has been made in managing fruit fly, challenges continue to arise that support the need for a national approach; for example:

- the current trading environment is placing increasing emphasis on phytosanitary measures and, for many, industry sustainability depends on international market access
- nationally, a growth in production areas under management is increasing the cost of fruit fly control and compliance
- threat of withdrawal of postharvest treatments and a possible lack of future access to scientific and technical expertise.

The development of the NFFS has been the result of a collaborative effort by Australia's horticultural industries, state and territory governments, the Australian Government, Horticulture Australia Ltd (HAL) and various research institutions. Plant Health Australia (PHA) has facilitated and supported the development of the NFFS, beginning in July 2006 when Ms Lindy Hyam, PHA Chief Executive Officer, convened a steering committee for the strategy after an approach from government and industry members. The committee, chaired by Professor Mal Nairn, led the development of the NFFS. Four subgroups – Market Access and Biosecurity, Operations, Legislation and

Regulation, and Research and Development – developed strategies in their respective areas; these underpin the key directions and recommendations of the NFFS.

A broad cross-section of public and private stakeholders were invited to participate in actively shaping the NFFS through three open forums held over 15 months, with the first in August 2006. Each forum presented the outcomes achieved to that point, with a focus on discussion and engagement. More than 60 organisations were invited to participate in this process. There was a high turnout, indicating concern over fruit fly and commitment to the development of a national strategy. The process of developing a national solution has built a strong partnership between all stakeholders.

The NFFS builds on substantial investments in fruit fly management made over many years by government and industry. A stocktake undertaken by the Office of the Chief Plant Protection Officer (OCPPO) estimates expenditure on fruit fly-related activities and projects as being more than \$128 million over the five years from 2003 to 2008. Nevertheless, fruit fly funding has decreased steadily over recent years.

Historical perspective

Over the last 15 years, various reviews have led to principles and recommendations that have guided fruit fly management. These reviews include:

- *The Impact of Fruit Flies on Australian Horticulture – Bateman Report (1991)*
- *Managing Fruit Fly: A Discussion Paper Exploring Issues Relating to the Future of the Tri-State Fruit Fly Exclusion Zone* (Tri-State Fruit Fly Strategy Steering Committee 2002)
- *Technical Review of the Tri-State Strategy for Queensland Fruit Fly: Report to Standing Committee on Agricultural and Resource Management* (Tri-State Fruit Fly Strategy Steering Committee 2001)
- *Review of Queensland Fruit Fly Control Funding and Management in NSW* (Bull 2004).

Although none of these reviews had a national focus, common themes appear, such as the need for:

- a collaborative approach involving industry, community and government,
- better communication between all stakeholders
- the development of sterile insect technique⁷ as a management tool.

5 'Endemic' fruit flies are those considered 'native' to Australia; 'non-endemic' fruit flies are those considered 'exotic' to Australia

6 'Biosecurity' refers here to the protection of the economy, environment and plant health from negative impacts associated with fruit flies

7 Sterile insect technique' is a biological method used to control or eradicate insect pests; it involves using irradiation to create sterile insects that are released and compete with wild (fertile) insects

The NFFS builds on past reviews, ensuring that linkages are established to provide program security and long-term commitment through a strong yet flexible framework. This will increase the opportunities for securing the required level of funding and establishing the necessary long-term strategies required for export growth and sustainable production.

Current position and critical issues

This section provides an overview of the current situation in fruit fly management within Australia and the critical issues facing government and industry. It is these critical issues that will be addressed in later chapters of this strategy.

Forty-six species of fruit fly have been identified as a high-priority threat to Australian horticultural industries (see Appendix 5). Of these, 36 are exotic, and many of these are present in South-East Asia and the South Pacific. In response to this situation, Australia currently conducts various activities relating to fruit fly management at a national, state and regional level. Activities include:

- the Tri-State Fruit Fly Strategy (the state governments of New South Wales, South Australia and Victoria, and the Australian Government)
- the National Exotic Fruit Fly surveillance program (Australian Government)
- state surveillance programs
- a sterile Queensland Fruit Fly rearing facility in Camden, New South Wales
- a sterile Mediterranean Fruit Fly rearing facility in Perth, Western Australia
- other projects, many of which are funded by HAL or by individual industry research and development corporation programs.

Industry contributes to the management of fruit fly through industry funding of research and development projects, management initiatives and emergency response. Industry also contributes at a grower level through compliance with regulations supporting the maintenance of quarantine and on-farm management practices aimed at suppressing pest prevalence and produce damage.

Costs associated with fruit fly management continue to increase, leading to increased funding pressure. A nationally coordinated fruit fly strategy will help to coordinate priorities and alleviate some of this pressure. Table 1.1 summarises the improvements in the system that will be gained from a national strategy, and the implications of failing to adopt such a strategy.

The challenge is to bring all organisations, parties and stakeholders together to enable a long-term national strategic approach.

The remainder of this section looks at the issues within the four areas addressed by subgroups – market access and biosecurity, operations, legislation and regulation, and research and development.

Table 1.1: The case for a national fruit fly strategy

Areas where a national strategy will improve the current system:

- increased overall coordination of fruit fly management activities
- increased efficiency in the allocation of resources for fruit fly management activities
- provision of ongoing funding mechanisms for fruit fly management activities, with activities being program (5–10 years) oriented, and with funding cycles that provide opportunity for building experience, career paths and commitment
- harmonisation of fruit fly legislation and regulations throughout Australia
- improved industry unity and commitment for fruit fly control and management
- ability to demonstrate a nationally-coordinated approach to fruit fly management to Australia's international trading partners, helping to gain and maintain market access
- increased preparedness regarding phytosanitary issues related to the current trading climate.

The implications of not adopting a national strategy include:

- a reduction in overall capability and capacity for fruit fly management
- a fruit fly management system that is not sustainable in the longer term
- the loss of key international markets, such as Taiwan, and delays in gaining new markets
- a reduction in expertise and knowledge throughout industry and government
- a short-term, reactive approach to fruit fly management, with fruit fly management activities project oriented (1–3 years)
- the inability to identify, manage and coordinate nationally important fruit fly issues.

Market access and biosecurity

The term 'market access' refers here to new, improved or restored entry for horticultural commodities into markets where terms and conditions of access need to be negotiated on an intergovernmental basis.

The term 'biosecurity' refers here to the protection of the economy, the environment and plant health from negative impacts associated with fruit flies. It covers activities aimed at keeping out exotic fruit flies, and encompasses components such as risk analysis, surveillance, incursion preparedness and response strategies. A comprehensive biosecurity strategy is essential to ensure continued industry sustainability and to provide strong support for market access initiatives.

Currently, several fruit fly related aspects significantly affect market access and biosecurity; these include:

- the continued need to align national and international phytosanitary treatment requirements to ensure that Australia meets its obligations under the World Trade Organisation (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement)⁸
- the continued trend for trading partners to introduce or upgrade quarantine requirements
- international quarantine agencies are increasingly questioning the pest status of many of Australia's non-economic species of fruit fly (ie species that are not of economic importance)
- the risk of system failure, due to the lack of a central system for coordinating and administering components of the individual trapping networks (coordination, funding, diagnostics and trapping data)
- the lack of a national surveillance strategy for non-lure responsive species of fruit fly (ie species that are not attracted to the lures used in traps)
- the lack of funding and resources, now and in the long term, for meeting current and future market access and biosecurity demands.

At present, market access negotiations draw on the various components of the fruit fly management system within Australia. Overall capacity could be improved in several aspects of domestic and international market access; possible improvements include:

- greater coordination of market access strategies across regional, state and national levels
- more efficient use of resources across regional, state and national levels
- improved partnership between industry and government in market access negotiations
- greater cohesiveness of the information available to negotiators
- greater timeliness of market access processes.

Operations

Operations are the activities that deliver the elements of the fruit fly management system to achieve outcomes in prevention, detection, eradication, management, diagnostics and communication or awareness. Activities occur at all levels of the contemporary biosecurity continuum including overseas (pre-border), at the entry points to Australia (border) and in areas throughout Australia (post-border). In Australia, the activities are undertaken throughout environments and within communities, and they involve governments, industries (both large and small), individual farms and the general public.

In the past, cooperative developments in operations, such as funding agreements and reporting networks, have been important in the development of fruit fly management and have delivered significant national benefits. However, national consistency through coordination of procedures is now required to enhance capacity to the necessary levels. If this is not achieved, the lack of capacity and capability to undertake fruit fly activities will increase the risk of the introduction, establishment and spread of non-endemic and endemic fruit fly species. In turn, this will lead to the loss of market access and unsustainable production.

The major issues currently affecting operational activities include:

- differences in fruit fly pest status and risk across Australia
- the increasing cost of operational activities, including that of complying with domestic and international market access
- potential loss of key post-harvest disinfestation measures.

These issues clearly demonstrate the need for a coordinated approach to fruit fly management across the country.

The national exotic fruit fly trapping program exemplifies some of these issues (Box 1.1).

Box 1.1: National exotic fruit fly trapping program

The national exotic fruit fly trapping program is a surveillance activity. It is an 'early warning system' – detecting and identifying incursions of targeted exotic fruit fly pests through international pathways at ports and associated urban areas. A further benefit of the program is that it defines and maintains Australia's fruit fly status, which is useful for international market access negotiations. The program consists of various separate trapping networks; when compiled, these constitute a national program with a national capacity.

The maintenance of the trapping networks is a costly exercise that is funded on a cost-sharing or cross-subsidised basis between the Australian Government and the state and territory jurisdictions. Not all program costs are covered; therefore, the program is unlikely to be sustainable in the longer term in its current form. Another issue is that the focus differs depending on the priorities of the jurisdiction. Thus the main concern of the southern states, such as New South Wales or Victoria, is Mediterranean fruit flies potentially entering via infested fruit or vegetables. On the other hand, in the Northern Territory and Queensland, the main concern is exotic fruit flies coming in from Asian neighbours.

⁸ For an explanation of the WTO SPS Agreement, see *The SPS Agreement: Help Australia Trade* (DAFF 2003)

There is a strong link between operations and market access. Specific issues affecting operational activities that could significantly affect domestic and international market access include:

- the review of fenthion and dimethoate as disinfestation treatments⁹
- the perception by Australia's trading partners of an increased quarantine risk of endemic species of fruit fly (other than Queensland fruit fly and Mediterranean fruit fly)
- the potential loss of pest free areas or country freedom from exotic species
- the differing trigger points for declaration of an incursion between export markets
- the requirement of international markets for supporting data that are evidence based.

Increasing cost pressures on operational programs are leading to the consideration of the beneficiaries. Industry engagement in management and contribution to funding of programs is seen as critical for the future sustainability of fruit fly operational activities.

Legislation and regulation

The legal and regulatory frameworks at the national and state/territory levels provide the mechanisms through which consistent fruit fly management programs are delivered. To achieve the strategic goals of accessing and maintaining international markets, the regulations and legislative controls for the management of pests must be harmonised within Australia as well as with international standards.

At present, legislation and regulations for fruit fly management within Australia vary between states and territories. This lack of harmonisation may undermine the credibility of fruit fly management from the perspective of Australia's trading partners, and have a negative effect on international market access negotiations. A national fruit fly strategy will inevitably assist in gaining and maintaining access to both national and international markets.

A nationally harmonised approach to fruit fly regulations, consistent with the WTO SPS Agreement, would:

- significantly strengthen and enhance negotiations for international market access for Australian horticultural products
- facilitate a more coherent and transparent internal system for Australian horticultural industries that supply fruit on the domestic market.

Many issues currently face government and industry, including the need to:

- harmonise domestic regulations with international standards and obligations, such as the WTO SPS Agreement
- accept that interstate regulations and processes must be harmonised and must have a sound scientific basis
- develop cost effective and user-friendly protocols that can be implemented by industry
- build capacity to monitor and enforce compliance with regulations
- regulate alternative production systems that fall outside of industries' formal systems
- implement effective measures for knowledge transfer (eg consistency in application of legislation; corporate memory) and dealing with key skill shortages
- increase communication with the community, and increase the community's understanding and awareness of regulations.

Research and development

Research and development activities underpin all elements of fruit fly management, including operations, legislation, regulation, market access and biosecurity. They achieve this by providing technically justifiable approaches and innovative solutions to enable market access and sustain production.

The identification and prioritisation of current and future research and development is essential for maintaining horticultural production and market access advantages in Australia. Short and long-term research goals are defined in the context of operations, legislation and regulations, market access and biosecurity, and industry considerations.

Deficiencies in the funding processes and collaborative linkages are affecting fruit fly research and development activities in Australia. Research activities are funded from numerous sources, and there is little evidence of consultation across those sources. There has been some progress in the area of international market access through mechanisms associated with HAL and the Co-operative Research Centre for National Plant Biosecurity (CRCNPB). However, further initiatives are required to decrease research duplication and improve coordination, collaboration, transparency, adherence to national and international research quality standards, access to past data, and consistency with respect to the funding approvals process.

Several fundamental issues have been identified that relate to both the actual research and development activities, and the processes used to prioritise and fund these activities in Australia.

Current issues of importance to research and development activities include:

- the threat of withdrawal of certain registered or permitted uses of fenthion and dimethoate as disinfestations treatments

⁹ The review was commissioned by the Plant Health Committee (PHC) to look into post-harvest quarantine treatments and their ongoing availability. This work is necessary because the APVMA are undertaking a review for residues of Dimethoate and Fenthion in food. The study outcomes are being used by PHC, HAL and APVMA to develop alternative post-harvest treatment options. Contact the PHC secretariat for further information.

- increasing phytosanitary awareness and emphasis on the need for scientific rigour in the interpretation of supporting data
- the effects of climate change on fruit fly biology, ecology, distribution and abundance
- the increasing cost of surveillance activities
- increased public resistance to chemical eradication methods.

Current issues that relate to research and development funding processes include:

- problems with funding allocation
- lack of research coordination and collaboration
- Australia's dwindling research capacity in entomology and plant sciences.

At present, research and development is disengaged from the end user; this needs to be rectified by:

- more efficient use of limited resources with practical outcomes for industry
- extension of technology transfer to assist industry with implementation
- proactive identification of the gaps in research and development activities
- clear communication of outcomes and values to stakeholders.

Benefits of a national fruit fly strategy

The case for a NFFS rests on three related types of evidence about the net benefits the strategy will deliver:

- *in-principle evidence* that a centralised program for the management of fruit fly risks will enhance national income
- *circumstantial evidence* that the planned new institutional structure will be likely to have beneficial effects on the productivity and targeting of existing and new fruit fly management expenditure
- *specific evidence* that the strategies proposed by the subgroups will generate net returns.

In relation to specific evidence, the identification by the NFFS Steering Committee and its subgroups of new strategies to fill known gaps in the management of fruit flies nationally is itself evidence of the scope for the NFFS to enhance national income.

As well as addressing the specific issues highlighted earlier in this chapter, the NFFS will provide a range of benefits to the jurisdictions of the three key stakeholder groups – the Australian Government, state and territory governments, and industry.

Expected benefits of the NFFS for the **Australian Government's jurisdiction** are:

- *reduced management costs* – a national approach and improved management systems will reduce duplication of activities and increase gains from current investment
- *improved value of non-commercial amenities* – more effective management will reduce the effect of fruit flies on affected non-commercial amenities, such as backyard fruit trees
- *reduced impact on the environment* – greater management of endemic and non-endemic species of fruit fly will reduce the impact these have on the environment
- *improved regional economies* – reductions in the effects of fruit flies will lead to more productive horticulture, with a direct positive effect in the communities and economies supported by horticulture
- *food security* – a viable horticultural industry within Australia will contribute to food security for all Australians.

Expected benefits of the NFFS for **state and territory governments' jurisdictions** are:

- *improved state quarantine* – better quarantine will reduce the likelihood of serious pest incursion occurring, and will thus reduce the impact and costs (which can be significant) associated with breaches of quarantine
- *harmonised interstate trade regulations* – harmonisation of interstate regulations will drive a more robust and easily managed system that meets international standards, thus reducing regulatory costs to governments

Expected benefits of the NFFS for the **Australian horticultural industries and growers** are:

- *new or improved market access* – Growers will have access to a greater range of domestic and international markets providing Australian agriculture with opportunities to grow and prosper whilst improving trade stability, flexibility and security.
- *increased interstate trade* – harmonised regulations and improved management practices will allow greater flexibility in interstate trade, improving delivery to the end consumer and generating greater demand.
- *increased international trade* – increased trade will provide greater security for Australian producers, increased returns and greater flexibility and diversity within the horticultural sector.
- *improved and streamlined regulations* – greater efficiencies in the system (particularly in regulations and compliance) will reduce costs and input on the part of the growers while providing a more transparent and coordinated service
- *improved crop yield and quality* – better management practices and improved technology will reduce the effect of fruit flies (and of treatment measures for these pests) on crops
- *improved on-farm profitability* – a minimisation of the threat of fruit flies and their impact will reduce costs for management and compliance
- *reduced risk of non-endemic fruit flies* – a national approach will minimise the risks of, and improve the ability to respond to, a pest incursion, reducing the potential impact on production and increasing the likelihood of successful containment and eradication.

Cost–benefit analysis

A cost–benefit analysis was undertaken in parallel with the development of the NFFS. The aims of the analysis were to:

- provide a transparent platform for assessment
- demonstrate the opportunities and benefits that could accrue for all parties
- demonstrate any negative impacts.

The analysis considered Australia's participation in domestic and international markets, the beneficiaries of a national strategy, and the social impacts and benefits of fruit fly management and control. Carrying out this analysis was seen as critical to the development and justification of the NFFS.

The cost–benefit analysis established that an additional annual investment of approximately \$5 million is required to implement the NFFS's recommendations. The analysis projected that, over 20 years, net benefits (such as those identified above) of more than \$50 million would accrue. The proposed new investment is above and beyond existing spending in this area.

To ensure this positive return, a set of economic principles were devised to guide the implementation of the NFFS. These principles (discussed in Chapter 2) will ensure that the proposed strategies are cost effective, commercially relevant and meet the WTO's requirements for market access.

Implementation of the NFFS

The establishment of an 'Implementation Committee' is recommended to oversee the implementation of the NFFS. This committee will liaise directly with key stakeholders and committees, promoting awareness of the strategy and the implementation and extension of its specific recommendations and strategies.

Initially the Implementation Committee will be required to develop:

- a 3 year 'action plan' that will provide a detailed breakdown of the proposed activities to be undertaken in relation to some or all the NFFS's recommendations, including the development of an appropriate budget for each nominated activity
- a detailed benefit/cost and beneficiaries analyses that will take into account both current and new (NFFS) investment, and where the benefits and costs lie.

Structure of the document

This chapter has identified the need to unite organisations, parties and stakeholders to address fruit fly management issues. The remainder of this document provides more details about a long-term national strategic approach to fruit fly management. It outlines:

- the proposed vision, goal, outcomes and objectives of the NFFS; the critical success factors that will be used to measure its success; and the economic principles and key concepts that underpin the strategy (Chapter 2)
- the recommendations put forward by the NFFS Steering Committee and strategies for achieving these recommendations (Chapter 3)
- the case for a national fruit fly strategy, focusing on the net benefits that such a strategy would deliver (Chapter 4).

There are also a number of appendixes that provide information on:

- the members of the NFFS Steering Committee and its subgroups (Appendix 1)
- the proposed NFFS Implementation Committee (Appendix 2)
- the organisational groups involved in the management of fruit fly in Australia (Appendix 3)
- the priorities for funding and action, (Appendix 4)
- the fruit fly species that are a threat to Australia, and the horticultural industries that may be affected (Appendix 5).

Strategic foundation

14

This chapter presents the vision, goal, outcomes and objectives established by the steering committee for the NFFS, and outlines the critical factors that will shape its success. It also explains the five economic principles on which the NFFS is based, and which will be adopted as the test of reasonableness. Finally, this chapter outlines the key concepts that underpin the NFFS – the contemporary biosecurity continuum, the NFFS matrix and the interactive framework.

Overarching principles

In developing the NFFS, the steering committee established a set of statements defining the vision, goal, outcomes and objectives. This foundation provided the direction and focus for the four subgroups, enabling the development of the 20 recommendations given in this document.

The committee also established critical success factors by which the quality, success and benefits of the NFFS will be measured. These factors, which are given below, will be used to keep the strategy on track throughout its implementation.

Vision

That fruit flies are no longer a constraint to sustainable production or a significant barrier to national and international market access.

Goal

Australia will have a viable, cost-effective and sustainable national approach to fruit fly management that will place us at the forefront of international biosecurity, with all stakeholders committed to the national policy that underpins this approach.

Outcome

Effective, efficient and sustainable pest management achieved through innovative technical and systems capability that maintains and enhances market access to meet current and future needs.

Objectives

- To reduce the risk of fruit fly incursions from overseas and the spread of economically significant species within Australia as far as practicable.
- To optimise early detection and response to non-endemic and economically significant endemic fruit flies to minimise their impact.
- To manage fruit fly through effective and efficient use of tools, technology and people in order to establish, maintain or modify the fruit fly status of an area to support trade and sustainable production.

- To raise awareness of biosecurity generally and fruit fly specifically to empower growers, industry, government and community to work collaboratively to minimise the impacts of fruit fly on production, environment and trade.
- To establish and maintain an intelligence network that imparts information to target risks and threats, supports the risk assessment process and facilitates development and ongoing implementation of the fruit fly management system.

Critical success factors

The success of the NFFS depends on the factors listed below:

- A nationally coordinated approach to fruit fly management.
- A nationally collaborative approach to fruit fly management.
- A consistently applied evidence-based system for the management of fruit fly.
- Harmonisation of the regulations, processes and procedures that are implemented to support the strategies with:
 - international standards set by the International Plant Protection Convention (IPPC)
 - the WTO agreements.
- Compliance with national standards, including auditing and reporting
- Adequate investment in the implementation of the NFFS.
- Application of a set of economic principles (given below).

A coordinated, collaborative evidence-based approach will increase overall capability and capacity to manage fruit fly and help establish common management practices to facilitate favourable international trade negotiation outcomes. The economic principles provide a test of reasonableness against which the strategies, and their outcomes, can be measured.

The approach will bring together all jurisdictions and all affected industries. The strategy is intended to further strengthen plant health management options by linking with the National Plant Health Strategy and Australian Biosecurity System for Primary Production and the Environment (AusBIOSEC). Securing new investment specifically targeted at achieving the recommendations of the NFFS is critical to ensure its success nationally.

Economic principles

The steering committee set five economic principles to be adopted as the test of reasonableness for the NFFS, including the appropriate division of labour between levels of government, and between government and private sectors. This section discusses the conceptual issues behind the setting of the economic principles, and then describes each of the principles.

Conceptual issues

From an economic policy standpoint, fruit fly policy is naturally dominated by the question of how economic effects should be handled. Some general economic principles and some that are fruit-fly-specific can be identified to guide the answer to this question. These principles need to be taken into account in designing a national fruit fly strategy.

As is the case with many plant pests, the proper management of fruit flies involves the consideration of 'spillovers'; that is, effects that extend beyond the boundaries of any single company involved in the growing or distribution of vulnerable products. Some of these spillovers may be a policy problem; for example, any spillovers that are not built into prices or contractual arrangements between the perpetrators and those affected.

A likely concern is that the fruit fly risk faced by any one production unit may well depend not only on its own actions, but also on the actions (or inactions) of others who produce or handle vulnerable products. With fruit flies, these spillover concerns between production units are mutual, but not necessarily offsetting. Most of the potential spillovers of interest are between:

- adjacent crop producers
- crop producers and adjacent landholders, including householders, who own plants or are holding product that could harbour the pest.

Economic spillovers can originate from both privately held and public land containing plants that the pests might reside in or traverse. Spillovers can arise, for example, from the actions of travellers carrying infected product on public roads. In addition, those involved on the commercial side of vulnerable crops can be affected by the perceptions of consumers and producers elsewhere about whether a region is infected. In this way, the fortunes of a farm or premises that is not infected can be affected by the status of any of their fellow producers that cannot provide similar assurance. Corporate product branding may counteract this problem to some extent but, in certain markets, spillover effects of this kind can extend nationwide. Besides relating to operational and defensive aspects of fruit fly management, spillovers between activities may also relate to research and promotion.

Such realities are the basis for collective, or joint, action whether by governments or others. In particular, they can be the motivation for voluntary agreements amongst producers. Thus, to address fruit fly issues, regional and product-based farmer associations may adopt rules or codes of behaviour for their members. Also, distributors and those further along the supply chain may contract with their suppliers to observe preventive and treatment standards. In other areas, especially where the organisational costs make voluntary action impractical, supplementary intervention at local, regional, state or national level may be economically justified. This has been the underlying rationale for the initiatives taken by

governments at different levels in Australia, through actions ranging from local roadblocks to the central management of outbreaks. There are economic guidelines on:

- whether activities would ideally be undertaken by the private rather than the public sector
- which activities undertaken by the public sector should be assigned to which levels of government
- whether governments would be better adopting regulations to guide private activity rather than undertaking the activity themselves.

Australia has detailed and extensive legislation relating to fruit fly management. Taking into account this legislation and the many intergovernmental and industry–government committees and working parties that meet regularly, the impression might be gained that virtually all of the elements that would be expected to form a national fruit fly strategy are already in place. However, the wide consultations undertaken by the cost–benefit analysis team with industry and senior government officials during 2007, and more recently with the subgroups established by the NFFS Steering Committee, indicate that administrative arrangements for fruit fly management in Australia need to be redesigned. In short, expert opinion is that the current arrangements are not producing the required results and, in economic terms, the defects identified point to shortcomings in the decision-making framework. A new national strategy could remedy these deficiencies. Particular deficiencies identified were as follows:

- The private sector is as not as galvanised or involved as it should be in some areas, suggesting a need for some fresh organisational initiatives.
- Some of the government work in Australia involves the supply of services that, in other circumstances, could be undertaken by the private sector. With changes in industry structure, technology, weather and markets, the appropriate selection and assignment of services is expected to change; the administrative structure should be anticipating and responding more quickly to these changes.
- It seems that some of the government activities being undertaken may be redundant, while some apparently worthwhile activities are not being undertaken at all.

In view of this situation, the cost–benefit team devised a set of five principles to be adopted by the NFFS to ensure a positive national return. With the assistance of the cost–benefit team, the subgroups applied these principles to test the reasonableness of their proposed strategies, and to ensure that the strategies would be cost effective, commercially relevant and meet the WTO's requirements for market access. Consistency with the economic principles will be used to help prioritise the projects from the NFFS's recommendations. The principles will also be applied in the design of further strategies.

The five economic principles

Contestability

Funding of fruit fly research and development (and, where feasible, funding of operations activities) needs to be made contestable, to ensure that activities are relevant and program costs are contained. Two initiatives that would help achieve this are:

- allowing outside suppliers to bid for service delivery
- increasing industry participation in decisions to allocate funds, and in funding itself.

Where it is impractical to apply contestability to the project selection process, there needs to be increased transparency and performance review, with a focus on cooperation, collaboration and communication with all stakeholders. Some activities cannot be contestable as they can only be undertaken by government (eg the development of legislation).

Division of labour

In the design of fruit fly programs, an appropriate division of labour between levels of government and between the public and private sectors is needed to safeguard the national interest.

The division of labour principle identifies the organisations and stakeholders that need to be involved in the implementation of the NFFS. Appendix 3 provides an overview of the organisational groupings and their roles and responsibilities.

Transparency

Processes for the allocation of research and development funding and the operation of fruit fly programs need to be clearly observable to all stakeholders. Transparency is an important tool for ensuring accountability and contestability.

Performance reviews

Fruit fly programs, particularly those not subject to other forms of contestability, need to be regularly reviewed using appropriate performance indicators.

Market access

Given global developments, priority needs to be given to requirements for international market access and consistency with WTO obligations when determining elements of the NFFS. In part, the answer to this lies in rationalising access to domestic markets, which remain important in their own right.

Key concepts underpinning the strategy

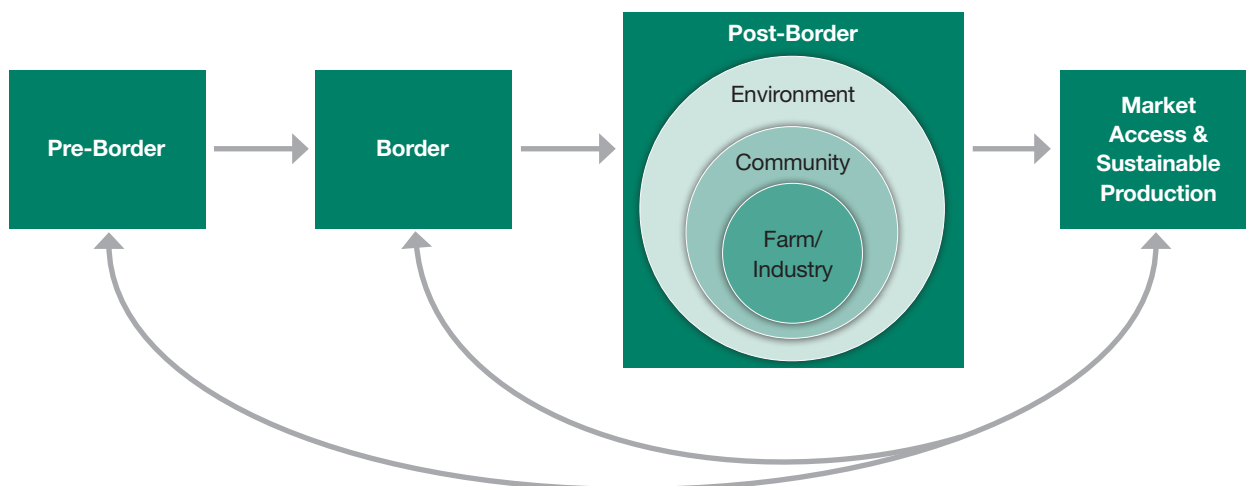
This section outlines the key concepts underpinning the strategy; these are:

- the contemporary biosecurity continuum
- the NFFS matrix
- the interactive framework.

Contemporary biosecurity continuum

The contemporary biosecurity continuum builds on the continuum of quarantine – pre-border, border, and post-border elements as first described in the Nairn Review – by directly linking in the environment, community, industry and the farm (Figure 2.1). Each element has its own function in mitigating risks and thus helping to prevent the introduction, establishment and spread of economically significant fruit fly species, both endemic and non-endemic.

Figure 2.1: The contemporary biosecurity continuum



The NFFS matrix

The NFFS matrix (Figure 2.2) represents the range of fruit fly operational activities undertaken across the contemporary biosecurity continuum. These activities are prevention, detection, eradication, management, diagnostics, communication and awareness.

Note: Management incorporates both *official management*, referring to the active regulation and enforcement of activities that manage fruit fly species to a defined threshold in a defined area; for example, activities such as pest risk analysis, and *unofficial management* referring to the activities undertaken to manage fruit fly species that are not regulated or enforced; for example, sustainable crop production.

'Enablers' provide a third dimension by underpinning fruit fly management activities to assist in their implementation and operation. An example of an enabler would be 'research and development' where the outputs from this area improve the ability to undertake, say, diagnostic activities. The 'enablers' identified for fruit fly management are:

- economic analysis
- education and training
- information and data management
- legislation and regulation
- operations – tools, methods, systems
- pest risk analysis, priority setting
- policy
- research and development

The matrix was used in the initial development of the NFFS to ensure that all fruit fly activities across the contemporary continuum, and their interface within the overall structure of the NFFS, were considered.

The interactive framework

The interactive framework brings all the components of the fruit fly management system together (Figure 2.3).

The four main objectives of fruit fly management – early detection and response, management capability and capacity, raising awareness, and maintaining intelligence networks – contribute to the two overall outcomes of market access and sustainable production.

The NFFS consists of nine operational activities:

- the Emergency Plant Pest Response Deed (EPPRD)
- industry and on-farm biosecurity plans
- regional and community biosecurity
- surveillance
- diagnostics
- management resource
- intelligence
- sterile insect technique
- regulations.

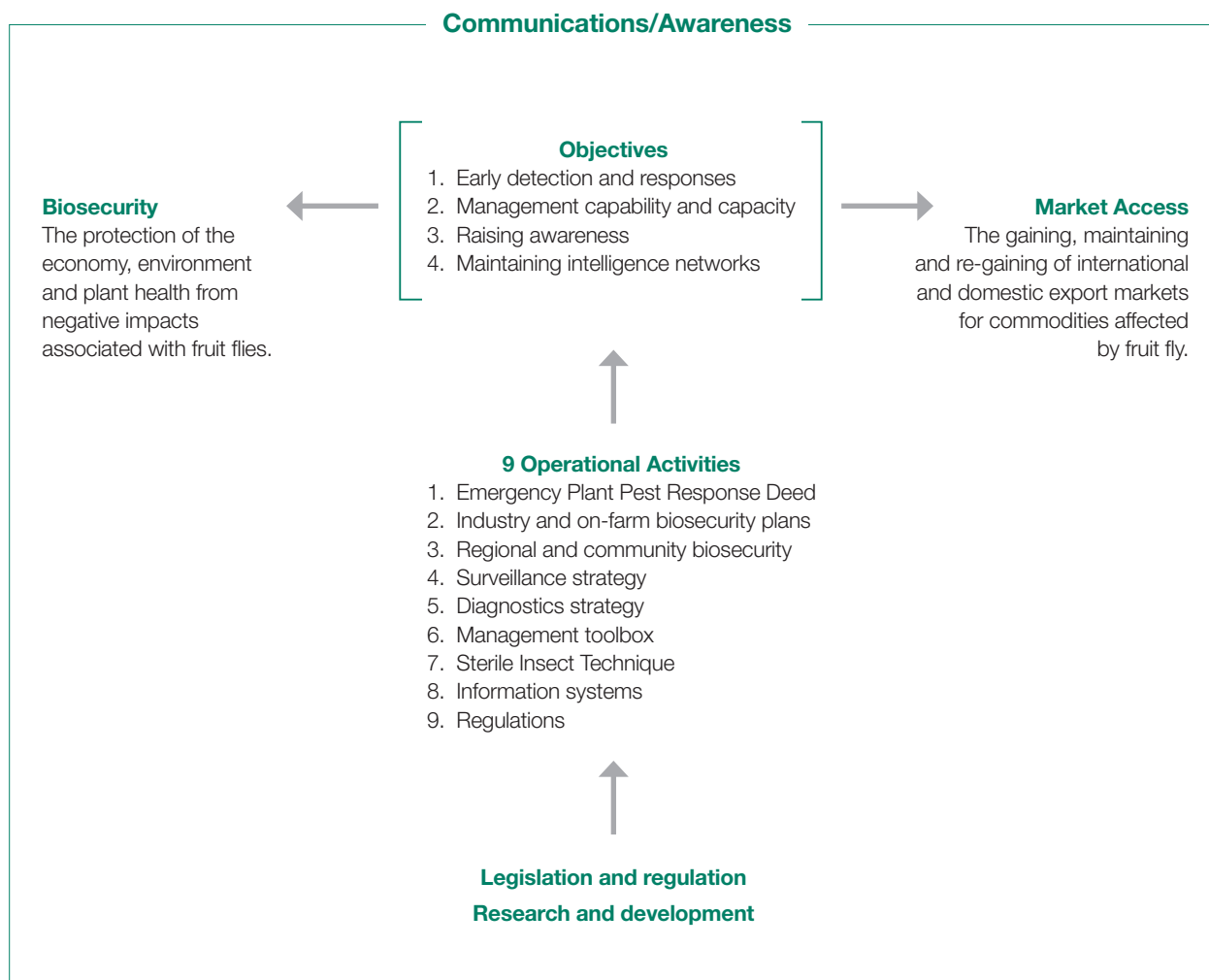
To work effectively, these activities need to be underpinned by appropriate legislation and regulations, and by research and development. Overall, the effectiveness of the system is achieved through good communication and awareness.

These operational activities – supported by appropriate regulations and research and development – will enable endemic and non-endemic fruit fly species to be managed in a more efficient and timely manner.

Figure 2.2: Fruit fly strategy matrix

| Strategy element | Fruit fly management activities | | | | | |
|------------------|---------------------------------|-----------|-------------|--------------------------------------|-------------|-----------------------------|
| | Prevention | Detection | Eradication | Management (unofficial and official) | Diagnostics | Communication and awareness |
| Preborder | | | | | | |
| Border | | | | | | |
| Post border | | | | | | |
| • Environment | | | | | | |
| • Community | | | | | | |
| • Industry | | | | | | |
| • Farm | | | | | | |

Figure 2.3: The interactive framework



This chapter presents the recommendations put forward by the NFFS Steering committee on the advice of the four subgroups, and strategies for achieving these recommendations. In some cases, two or more of the subgroups suggested similar strategies. Where this was the case, the complementary strategies have been combined.

This chapter also contains case studies illustrating the need for these strategies.

Enhance national ability to gain, maintain or regain market access

The major benefit of the NFFS will be the enhancement of Australia's ability to gain, maintain or regain domestic and international markets. These market access outcomes are linked to, and dependent upon, all elements within the NFFS.

RECOMMENDATION 1

Enhance the national ability to gain, maintain and/or regain market access through:

- targeted research and development to underpin market access applications
- development of international and national market access information packages (trade statistics and phytosanitary treatments) to drive planning, prioritisation and resourcing
- development of a generic national code of practice
- national harmonisation of management approaches and trade regulations.

19

Strategy 1.1

Focus research and development on market access outcomes aligned with existing international standards through greater coordination between key funders of fruit fly research and development, ensuring their plans are aligned with the NFFS.

New market access for fruit fly host commodities will inevitably require risk analyses and the application of risk management measures.¹⁰ It is therefore essential that preferred risk management measures for fruit flies are soundly supported by valid scientific data to enable the finalisation of export protocols as quickly as possible.

Strategy 1.2

Develop and provide ongoing maintenance of an international market access information package containing relevant trade statistics and risk management measures, to assist planning for international market access strategies.

International export statistics for fruit fly host commodities are commercially available, and a database of relevant risk management measures for the export of horticultural commodities is maintained by the Australian Quarantine and Inspection Service (AQIS). This information will help to:

- focus on high-priority markets and drive resourcing of requirements for operations, legislation and research and development
- reduce the time currently required to capture an overall assessment of the different phytosanitary conditions for overseas markets
- highlight current discrepancies between markets and comply with the key policy principles of coordination, collaboration and harmonisation.

Strategy 1.3

Develop and provide ongoing maintenance of a national market access information package containing relevant trade statistics and risk management measures. This will assist with coordination, collaboration, harmonisation and planning for national market access strategies.

¹⁰ See *Import Risk Analysis Handbook* (2007) for further details on risk analysis and risk management in this context.

Approximately 80 per cent of gross value of production of fruit fly susceptible commodities produced within Australia are traded within Australia. Central availability of this information (combined with trade statistics in the medium to long term) will:

- greatly assist in gaining and maintaining markets
- highlight discrepancies in the national adoption of risk management measures and be useful in aligning these measures
- provide a clearer picture of the industry costs associated with fruit fly risk management for various interstate markets.

Strategy 1.4

Finalise the draft revised *National Code of Practice for the Management of Queensland Fruit Fly* and the draft revised *National Code of Practice for the Management of Mediterranean Fruit Fly*, and ensure that the management principles are adopted by all states and territories.¹¹ Use the finalised codes of practice as the basis for a generic code of practice.

The development of a generic code of practice will outline the principles for fruit fly surveillance, diagnostics, management and eradication. Codes of practice for species or genera will sit under the generic codes of practice; this will provide a solid foundation for gaining, maintaining and improving market access.

Strategy 1.5

Consolidate and integrate, where appropriate, national and international trading protocols (risk management and certification).

Support moves being taken by the Plant Health Committee (PHC) and the Domestic Quarantine and Market Access Working Group (DQMAWG) for domestic quarantine regulations to be in line with international standards, and seek additional resourcing for these tasks if required.

Harmonise, refine and adopt interstate measures and the associated Interstate Certification Assurance Scheme for possible use in international trade to reduce costs and increase flexibility of trading options for industries.

Box 3.1 Rationale for action – A case study

'Australia is fortunate to be free from many of the serious pests and diseases that exist in many other countries. The quarantine system – and the biosecurity policy that underpins this system – is essential in maintaining the highly favourable plant and animal health status and environment. Accordingly, the Australian Government has set Australia's appropriate level of protection as being one that reduces the quarantine risks associated with imported goods to a very low level, but not to zero.'¹

The currently accepted risk management measures for oranges at the national and international levels are listed in a supporting paper developed by the Market Access and Biosecurity Subgroup.² Area freedom and cold treatment are recognised as accepted risk management measures by approximately 75 per cent of Australia's trading partners. However, the specific requirements within the area freedom and cold treatment protocols vary significantly among trading partners.

The national area freedom and cold treatment risk mitigation measures are outlined in the draft national codes of practice for Queensland and Mediterranean fruit fly. The codes provide a standard set of requirements to manage these species of fruit fly and meet international phytosanitary requirements for overseas markets.

Currently, less than 30 per cent of Australia's international trading partners accept all of our domestic conditions for area freedom. Cold treatment is recognised as a risk mitigation measure by 85 per cent of international trading partners, and by all domestic trading partners. However, national conditions vary markedly in regards to the required treatment time and temperature.

Treatment with dimethoate and fenthion as a risk mitigation measure for fruit fly is recognised by all domestic trading partners. However, among international trading partners, only Papua New Guinea accepts dimethoate.

Methyl bromide, a versatile risk mitigation measure, is accepted by two or less trading partners (depending on the employment of the measure).

This case study illustrates various factors that would apply directly to many different commodities that are host to fruit fly.

There is large variation, nationally and internationally, in the specific requirements for each risk management measure, particularly for area freedom, cold treatments and treatment with dimethoate and fenthion. The NFFS seeks to gain greater acceptance and alignment of the risk management options preferred by Australian industries for various markets. This would significantly reduce the costs related to the current multiple risk management requirements and associated administration.

¹ Biosecurity Australia (2007)

² Confidential documents held by Plant Health Australia (PHA), contact PHA for further details

¹¹ Both codes are currently under review

A national framework for regulatory approaches

Legal and regulatory frameworks at the national, state and territory levels currently provide the mechanism through which fruit fly management programs are delivered. The regulation and legislative controls for fruit flies must be harmonised across Australia and with international standards if the strategic goals for accessing and maintaining international markets are to be achieved. Variations in requirements may result in:

- greater costs for industry
- reduced competitiveness
- potential confusion in negotiations for market access and maintenance, where such variations cannot be formally and rigorously justified on scientific grounds.

The principles that reference the WTO SPS Agreement and the subordinate International Standards on Phytosanitary Measures (ISPM)¹² developed under the IPPC should underpin the national framework to review and harmonise regulatory approaches.

RECOMMENDATION 2

Adopt the seven legislation and regulation principles (given below) as a national framework to review and harmonise regulatory approaches, to maximise the efficiency, effectiveness and competitiveness of Australian horticultural production.

21

Principle 2.1

Legislative and subordinate regulation frameworks addressing management of fruit fly must be consistent with the principles and requirements of the WTO SPS Agreement.

As a signatory to the WTO and its SPS agreements, Australia is obliged to abide by the principles and requirements of these agreements. This obligation extends to all jurisdictions – national, and state and territory. Adoption of the SPS principles provides a structured mechanism to deliver consistent and coherent requirements for fruit fly management. The SPS principles cover scientific justification, minimum requirements to achieve the appropriate level of protection, transparency and recognition of equivalence.

Principle 2.2

Regulations, procedures and processes must be in line with internationally agreed standards, definitions and procedures as reflected in the ISPMs adopted under the IPPC.

Principle 2.3

Fruit fly management programs should be managed on a production region basis, applying consistent management measures within bio-geographical regions of equivalent risk profile. (See Glossary for the definition of bio-geographical regions)

This principle addresses the importance of management approaches within a production area defined by biogeographical region. Variations based on political boundaries that transect the biogeographical region can reduce the effectiveness of management strategies, increase costs to producers and potentially undermine the integrity of the recognised status of the production area (eg pest free production areas).

Principle 2.4

National criteria for fruit fly management frameworks must require consistent management across regions of equivalent risk profile and must be evidence based (ie made on scientific grounds that can be documented and/or verified). Any variations must be scientifically valid and applied on the basis of pest risk analysis based on international standards.

This principle recognises that unless variations are scientifically justified, jurisdictional performance criteria should align with internationally accepted positions. Inconsistencies in these criteria (eg outbreak criteria and exclusion zones in recognised fruit fly free areas) could adversely affect trade negotiations and market access. Any variations in conditions must be scientifically justified, based on pest risk analysis of the specific species against which the measures are directed.

¹² For further information visit the IPPC website: <https://www.ippc.int>

Principle 2.5

Regulations should be harmonised with and reflect internationally accepted criteria for the effectiveness of treatments required for trade in fruit from known fruit fly infested production areas, provided the application of these measures will meet jurisdictions' Appropriate Level of Protection (ALOP).

This principle recognises that performance criteria for treatment of produce from known fruit fly infested production areas should be aligned with internationally agreed benchmarks, provided these meet jurisdictions' ALOP. Variations between jurisdictions on the acceptance of such criteria may affect trade negotiations, market access and market maintenance; therefore, they should only be applied if scientifically justified. If a lesser treatment provides an equivalent measure of biosecurity protection – which meets a jurisdiction's ALOP and is accepted internationally – this should be adopted.

Principle 2.6

Management frameworks – including the national codes of practice – need sufficient flexibility to allow for regional responses that would meet the requirements of all international markets.

This principle allows for urgent regional action to be sanctioned where this is required to retain international markets and is justified by the economic impacts in the local region. Thus, the criteria to trigger an outbreak and implement eradication action procedures in the national codes of practice must be sufficiently flexible, to enable all international requirements to be met (eg the detection of two flies as a trigger point for an outbreak, as required by New Zealand).

Further, this is reflected in the Asia Pacific Plant Protection Commission's Guidelines for the Application of emergency actions and the establishment of emergency measures. The standard quotes the IPPC, Article VII 6, stating "Nothing in this Article shall prevent any contracting party from taking appropriate emergency action on the detection of a pest posing a potential threat to its territories or the report of such a detection. Any such action shall be evaluated as soon as possible to ensure that its continuance is justified. The action taken shall be immediately reported to contracting parties concerned, the (IPPC) Secretary, and any regional plant protection organization of which the contracting party is a member".

Principle 2.7

In the first instance, priority should be given to management of known economically significant fruit flies, but capacity needs to be retained to address problems that may arise with other, non-economically significant fruit fly species, if these affect trade and market access.

This principle recognises that non-economically significant fruit flies may have a peripheral effect on market access and market maintenance, and that action may be needed to address such concerns where they arise. However, it is important to manage species in this category carefully, to avoid misrepresenting them as being of economic significance.

Communication and awareness

As explained in Chapter 2, communication and awareness applies to all components within the interactive framework, and is central to the system working cohesively. It is the mechanism that enables engagement of a wide scope of people that contribute to the overall success of managing fruit flies.

RECOMMENDATION 3

Initiate a national approach to communications using a continuum of messages to establish and maintain awareness of fruit fly related issues with all stakeholders and within the broader community, thus encouraging all parties to work collaboratively.

Strategy 3.1

Make appropriate use of all fruit fly stakeholders (including government, industry and community), and gain their commitment to adhere to and implement a wide range of activities that underpin the successful development and implementation of all components of fruit fly management.

Strategy 3.2

Increase communication of the international and national market access processes, including formalisation of roles and responsibilities of the various stakeholders.

Strategy 3.3

Develop a communication and awareness strategy to support each of the nine operational functional elements (see Figure 2.3).

Operational activities

Emergency Plant Pest Response Deed

The EPPRD is a formal agreement that outlines obligatory responsibilities of the parties to the prevention of, and response to, an incursion of an emergency plant pest¹³; that is, an exotic or non-endemic fruit fly. This pre-agreement delivers the best possible chance of improving biosecurity and minimising the impacts from an incursion of exotic fruit fly species.

RECOMMENDATION 4

Support the functionality of the Emergency Plant Pest Response Deed through a high level of commitment by government and industry parties to meet obligations under the EPPRD to reduce biosecurity risk and to maintain an appropriate level of capacity and capability.

Strategy 4.1

Continue the commitment to the EPPRD by meeting obligations under the deed, related to the ongoing process of reducing risk and maintaining an appropriate level of capacity and capability for emergency response, preparedness, contingency planning, industry biosecurity planning, surveillance and diagnostics.

Strategy 4.2¹⁴

Support the research and development of nationally agreed contingency plans for major groups of fruit flies, based on existing specific contingency plans,¹⁵ to capture the most effective detection, attraction, control and annihilation techniques. Where applicable, species considered likely to respond to treatments in a similar way should be grouped.

In developing such plans, it is important to consider whether they will be acceptable for use in urban and environmentally sensitive areas (including consideration of use of chemicals approved and registered for Australian situations).

Strategy 4.3

Encourage industry bodies, Australian companies and suppliers to invest in research and development to develop more effective field control and eradication tools for fruit fly management.

Strategy 4.4

Foster the national industry biosecurity plans as the primary mechanism to collate, analyse and communicate information on available risk management tools, current gaps in information and priorities.

Strategy 4.5

Increase parties' awareness of their roles and responsibilities under the EPPRD, through various communication mechanisms.

Industry and on-farm biosecurity plans

Industry and on-farm biosecurity plans are the mechanism used to identify high-priority pests for a specific industry (large or small), collate information relating to the pests' biology and ecology and collaboratively develop risk mitigation strategies. The plans provide a guide to the allocation of resources; the aim is to minimise the risk of incursions and to ensure that resources are ready in the event of an incursion.

RECOMMENDATION 5

Actively adopt the national industry biosecurity planning process as the primary vehicle to focus on high-priority fruit flies, and as a planning tool to assist in the implementation of biosecurity strategies, including contingencies for use in the event of an incursion.

Strategy 5.1

Support the industry biosecurity plans (IBPs) as the vehicle for focusing on high-priority pests and using as a planning tool to help in implementing biosecurity strategies.

¹³ The term used under the EPPRD to define a non-endemic plant pest

¹⁴ Timeframes for all research and development activities were considered and established for all relevant strategies.

¹⁵ *National Contingency Plan for the Incursion of Papaya Fruit Fly and Regional Contingency Plan for Bactrocera species on Cape York Peninsula*

Strategy 5.2

Through research and development, generate appropriate biological data (eg reproductive capacity, establishment and spread potential and distribution data) on which to base recommendations within industry biosecurity plans and pest risk reviews (PRRs), and continue to develop PRRs and other relevant datasheets.

Strategy 5.3

Further develop research and development methods to prioritise the key threats and ensure PRRs are developed for the key pests. Prioritise the 46 species of fruit fly identified as high-risk threats (Appendix 5); develop PRRs to identify the biosecurity risks and provide data to assist in the treatment of those risks (PPRs currently developed for 12 species).

Strategy 5.4

Link the national IBPs to overarching procedures that apply to the management of fruit fly, such as the national codes of practice.

Strategy 5.5

Promote national IBPs and develop practical on-farm biosecurity measures to create a high level of awareness, to engage growers in delivering fruit fly management activities at the farm level.

24

Regional and community biosecurity

Engagement of the wider community at the regional and local level will help to achieve successful fruit fly management by assisting in early detection.

RECOMMENDATION 6

Engage regions and communities to ensure a more systematic development of fruit fly management activities.

Strategy 6.1

Recognise and use existing delivery mechanisms to establish a community-based fruit fly management program within a region.

Strategy 6.2

Improve detection capacity by extending the passive surveillance network into high-risk regions and communities, promoting the process and benefits of capturing surveillance information.

Strategy 6.3

Using related research based on social science, develop and implement methods and programs that appropriately identify stakeholders. Develop appropriate methods to engage and monitor effectiveness of stakeholder involvement across all fruit fly activities.

This strategy will ensure greater coverage, implementation and support of activities to underpin fruit fly mitigation in a more cost effective manner. Engagement by a larger, more diverse and motivated stakeholder base has the potential to provide more effective outcomes than could be achieved solely by smaller, more intensive, government and industry programs.

Surveillance strategy

A national framework to identify, develop and focus capacity and capability is critical to support specific and general surveillance systems. The surveillance systems detect pests, provide information for pest risk analyses and establish the pest status of an area in accordance with international standards. The systems underpin early detection and rapid response and the ability to access markets.

RECOMMENDATION 7

Develop and implement nationally agreed and consistent fruit fly surveillance systems to enhance the capacity and capability of existing and new programs.

Strategy 7.1

To better detect and record the presence or absence of endemic and non-endemic fruit fly species, facilitate a national approach to develop fruit fly surveillance systems that are consistent with any national plant health surveillance strategy and based on science, risk analysis, international standards and world's best practice.

Strategy 7.2

Formalise a commitment to the national non-endemic fruit fly detection system through long-term funding agreements, and regularly review methodologies to maximise the ability to detect non-endemic species, based on pathway analysis whilst ensuring the surveillance system is managed in a cost-effective manner.

Strategy 7.3

Continue to support the long-term Torres Strait containment program to minimise incursions of non-endemic fruit fly species into northern Australia.

Strategy 7.4

Engage crop monitors and consultants to increase surveillance capacity and implement techniques (eg training and accreditation) to increase the quantity and quality of surveillance data for future international and national consideration and acceptance.

Strategy 7.5

Develop sampling and survey methods and systems that are technically sound, to improve Australia's ability to capture – accurately and cost-effectively – a wide range of high-quality information on fruit flies, which will be accepted by domestic and international trading partners.

Developments include more efficient trapping grids and arrays based on host phenology and fruit fly behaviour, new surveillance hardware, improved data collection and management systems, and the integration of geographic information systems (GIS) into all surveillance systems.

Develop new surveillance systems to detect fruit flies, and improve existing systems; in the medium to long term this will allow more efficient and cost-effective use of surveillance funds and resources.

Strategy 7.6

Validate surveillance techniques and data interpretation methods for use as decision-making tools, to facilitate the development of improved surveillance systems.

Add further rigour to the process of developing or enhancing surveillance systems by providing improved tools to assess the risk associated with interstate and international access of produce that is susceptible to fruit fly.

Strategy 7.7

Develop and validate better traps and other tools to detect the presence of fruit flies; these could include:

- lures and baits for currently non-lure responsive species, and female attractants for species for which male lures are already available
- more effective trap designs for different species of fruit flies, using different attractants and designs that can operate under a range of climatic conditions
- bait formulations designed for a range of climatic conditions
- auto-reporting traps able to detect, identify and record the presence or absence of fruit flies in remote areas
- automated inspection technologies for detection of fruit fly eggs and larvae in picked fruit
- methods for optimising the positioning of in-tree (localised) traps to detect fruit flies and statistical methods for interpreting densities of flies detected in this way.

These research outcomes will increase the timeliness and cost-effectiveness of current methods for detecting non-endemic species that cover high-risk areas, including the northern coast of Australia. New and innovative methods of detection should provide management options to growers and packers that can be integrated into current operational practices (eg detection through grading).

The benefits to Australia in having a nationally coordinated, well managed and scientifically based, early detection system that embraces both regulatory authorities and the community can be seen from the case study presented in Box 3.2. This study clearly shows the benefits to all stakeholders in early detection.

Box 3.2: Benefits of the exotic trapping network – a case study

One of the most serious exotic plant pest outbreaks in Australia's history occurred in far-north Queensland, when an outbreak of the Asian papaya fruit fly (PFF) (*Bactrocera papayae*) was detected in pawpaws near Cairns, in October 1995.

The Mediterranean fruit fly (*Ceratitis capitata*) and the Queensland fruit fly (*B. tryoni*) are of economic importance in Australia; however, PFF was considered to be a much greater threat to Australian horticultural industries. Financial losses and increased costs were estimated at millions of dollars, due to restrictions on the export of fruit and interstate fruit movement, increases in insecticide usage and social and economic impacts. Trade bans alone were expected to cost more than \$100 million per annum. Because of these significant costs, containment of the pest outbreak and eventual eradication was considered an economically viable option.

At the time of detection, limited trapping of adult flies was being conducted near the port and other urban areas of Cairns. The pest had spread over a wide geographical area, and this needed to be delineated as soon as possible to initiate containment and eradication programs. Although a large area of north Queensland suffered the effects of the pest, the outbreak was detected sufficiently early to be contained, which meant that eradication was feasible.

The eventual eradication of PFF through a nationally cost-shared program over a four-year period cost approximately \$34 million. The impact in dollar terms on industry and the cost of eradication would probably have been considerably lower if there had been an existing national program that encompassed trapping of fruit flies in high-risk areas.

Although the origin of the outbreak was never clearly established, the pest probably arrived via Torres Strait or from Papua New Guinea (PNG). PFF is present in PNG and invades the Torres Strait islands each year from the PNG mainland. The Long-Term Containment Strategy for Exotic Fruit Flies in Torres Strait was established during the PFF eradication campaign. The strategy provides an ongoing monitoring and eradication program for PFF and other exotic species of concern in the islands between PNG and the Australian mainland.

Since 1993, the Torres Strait program has detected 2837 target fruit flies, including *B. trivialis*, *B. papayae* and *B. cucurbitae*. Swift implementation of routine response activities has successfully eradicated all flies, and no residual populations are present. With the increased proximity of economically important species to Australia in the past decade, this program has undoubtedly prevented other outbreaks on the Australian mainland since the PFF eradication from north Queensland.

Without this early-warning monitoring system in the Torres Strait and in other areas with a high risk of entry, the costs of eradicating PFF and other exotic fruit fly outbreaks would be higher by some orders of magnitude. Also, in some cases, it is possible that the decision to eradicate would be unacceptable, such as if the pest had established over a wide geographical area and therefore the technical feasibility of eradication was significantly reduced.

The PFF outbreak can be contrasted with the *B. philippinensis* outbreak in Darwin in 1997. *B. philippinensis*, a similar species to PFF, also affects a broad range of horticultural crops. This outbreak was detected in a trapping network for exotic fruit flies that had been established in 1975, expanded across urban and near rural areas in 1985, and upgraded after the PFF detection in north Queensland, with a focus on detection around the port and airport.

In the Darwin outbreak, the early detection of *B. philippinensis* in traps in the urban areas enabled the outbreak to be contained to two relatively small geographic areas and rapidly eradicated at a cost of less than \$5 million. The impact of the detection in terms of trade restrictions imposed on industry and its effect on the community was much less than that of the PFF detection.

This example clearly demonstrates how the early detection of species of concern can minimise the effects on industry and community, and that a national surveillance network for exotic fruit fly is an essential component of the NFFS.

Diagnostics strategy

Efficient diagnosis of fruit fly species underpins effective management of a species.

RECOMMENDATION 8

Facilitate a nationally integrated approach to diagnostic capacity and capability for fruit flies, in alignment with international standards, to improve efficiency and reduce associated costs.

Strategy 8.1

Facilitate a national approach to diagnostic capacity and capability for both endemic and non-endemic fruit flies through creation of a diagnostic network, national diagnostic standards and reference laboratories, and by contributing to the initiation, development and revision of international standards. The approach should be consistent with any national plant health diagnostic strategies.

Strategy 8.2

Identify and discriminate fruit fly species and resolve species complexes.

Accurate, rapid and robust identification using a standardised tool set will increase the capacity for those who are not fruit fly specialists to identify fruit fly correctly.

Strategy 8.3

Develop tools to streamline and facilitate identification including:

- a key using minimal morphological descriptors (adults and larvae)
- methods for identification in the field
- molecular tools to detect highest priority species within mixtures (eg trap catches)
- remote diagnostics.

Ease of identification and improved throughput means reduced reliance on specialist taxonomists. In-field tools enable rapid identification and molecular discrimination within mixed samples, providing the ability to detect specific taxa at low population densities.

Strategy 8.4

Promote the value of diagnostic services to stakeholders, to gain a higher level of investment in essential infrastructure, expertise, research and inputs to deliver the diagnostic strategy.

Management resource

A reference source (toolbox) that supplies information on available phytosanitary measures, including treatments, efficacy data, methods of application and other relevant information, to provide government and industry with resources in a centralised place, to manage fruit flies nationally in a consistent and effective manner. The inclusion of the latest research and development outputs will enable these to be rapidly delivered to all end users.

RECOMMENDATION 9

Bring together the management tools for fruit fly into a reference kit to facilitate dissemination of information and identification of deficiencies in, or opportunities to enhance, fruit fly management practices.

Strategy 9.1

Maintain a documented and transparent management toolbox that identifies, captures and analyses information on high-priority fruit fly pests and their specific biology, ecology, host production areas, likely spread and effective phytosanitary treatments.

Strategy 9.2

Undertake research in the field of fruit fly biology and ecology, to increase understanding of the physiological, behavioural and ecological processes relating to a wide range of fruit fly species, particularly Queensland fruit fly.

This knowledge underpins the capacity to deliver surveillance, eradication, field control, pest status, systems approaches, management and policy.

Strategy 9.3

Develop optimum combinations of field-control treatments to ensure improved levels of protection on a crop or area basis.

This strategy will provide greater production sustainability through crop protection; it will also facilitate the development of systems approaches to market access. Such approaches will incorporate field-control practices as viable risk management measures accepted for international and national market access.

Strategy 9.4

Improve understanding of the application of field-control measures in relation to fruit fly ecology, crop architecture, landscape ecology and integration with management strategies for other pests (ie integrated pest management programs).

This strategy will improve targeting of control measures, minimise use of chemical treatments, reduce environmental contamination and increase consumer safety with respect to chemical residues in commodities that are host to fruit fly.

Strategy 9.5

Develop new or improved, cost-effective, postharvest disinfestation treatments that mitigate the risk of fruit flies and pests that are of quarantine concern to domestic and international markets.

Current disinfestation research and development priorities include alternatives to dimethoate and fenthion, a replacement for methyl bromide, new fumigants, new combination treatments, cold disinfestations, heat treatments, irradiation, controlled atmosphere treatments and improved postharvest dips. Research is required to tailor disinfestation treatments and subsequent supply chain handling to meet phytosanitary requirements of trading partners, while at the same time providing high-quality, residue-free product.

Strategy 9.6

Develop and negotiate systems approaches as alternatives to single step disinfestation treatments, including researching and developing processes and standard methodologies to quantify risk in systems approaches.

Systems approaches to the development of market access protocols are required in situations where single step-disinfestation treatments are either not available or not economically feasible. Systems approaches involve risk reduction measures; thus, specialised statistical analyses and risk assessment methods are required to quantify the overall efficacy of the system for phytosanitary purposes.

Strategy 9.7

Determine whether climate change will drive genetic adaptation and affect the potential distribution and abundance of non-endemic and endemic fruit fly species in Australia, and determine how this may affect current or future control methods.

This strategy will enable better planning for climate change, strengthen prioritisation and improve the robustness of current and future approaches to fruit fly management.

Strategy 9.8

Support the review of current field-control and eradication techniques for fruit flies, to improve the efficacy of behaviour-based controls (ie male annihilation technique, protein bait sprays and sterile insect technique), through a strong focus on behavioural and physiological responses of individuals. Where viable, incorporate newly developed, tested and approved technological methods into agreed protocols.

Current eradication techniques are based on technologies that are several decades old; this situation supports the need for more efficient chemical delivery techniques and for more environmentally friendly pesticide options.

Sterile Insect Technique

Sterile Insect Technique can be used for suppression, containment or eradication. The technique is a specific management technology that requires detailed understanding of key aspects of the biology, behaviour and ecology of fruit flies. A critical assessment of this knowledge is required to determine feasibility and the costs and benefits of implementation.

RECOMMENDATION 10

Develop a national position in relation to the application of Sterile Insect Technique against economically important fruit fly species, including the feasibility of a multipurpose insect rearing facility.

Strategy 10.1

Study the technical feasibility of successfully implementing Sterile Insect Technique in Australia.

Strategy 10.2

Study the economic feasibility of successfully implementing Sterile Insect Technique in Australia.

Strategy 10.3

Based on the outcomes of the studies proposed in Strategies 10.1 and 10.2, consider the opportunities available – including possible collaborative partnerships – for establishing a successful Sterile Insect Technique program, and recommend an appropriate course of action for Sterile Insect Technique for fruit fly management in Australia.

Sterile Insect Technology has been used for a number of years in Australia as a means to eradicate fruit fly outbreaks. Whilst research and development in this area has been undertaken, a great deal is still unknown about how sterilised flies interact with wild flies and therefore additional research in this area is necessary. A summary of the key issues around Sterile Insect Technology are outlined in Box 3.3.

Box 3.3: Sterile insect technology

The last two decades have seen a bias towards more applied research, with relatively few studies focusing on fundamental biological information. More research and development is needed on the biological, behavioural and ecological aspects of Queensland fruit fly to underpin Sterile Insect Technique and to determine the feasibility of its application and the scale required to be successful.

Of particular importance are:

- the significant scientific issues around mate finding and host finding for low-density populations in complex landscapes
- the potential impact of climate change on feasibility and scale of implementation.

The feasibility of applying sterile insect technique to Mediterranean fruit fly eradication and against species other than Queensland fruit fly and Mediterranean fruit fly also requires specific attention.

The seven basic processes involved in sterile insect technique might form the foundation for an assessment; they are:

- *domestication* – involves the maintenance of genetic variation, the introduction of new stock to production systems and the selection of mass-rearing strains
- *mass-rearing* – takes into account factors such as diet, general factory operation and quality control procedures
- *processing of pupae* – involves dyeing, chilling for synchronised development, irradiation and packing or hypoxia
- *delivery and release* – includes factors such as the transport to release zones, hypoxia in transit, rearing out procedures, the efficacy of dyeing in released flies, and the release methods used.
- *field performance* – involves analysis of the survival, dispersal, sexual performance and effect of sterile flies on population dynamics
- *monitoring/triggers* – involves identifying trapped flies for detection of wild flies and decision criteria for action
- *verification of field efficacy* – involves monitoring wild fly populations to determine the effectiveness of sterile insect technique.

Information systems

Collection and analysis of relevant national and international intelligence is required to create an environment of understanding and learning, to enable advancement and the continuous improvement of the national fruit fly management system.

RECOMMENDATION 11

Actively collect, analyse and communicate relevant information to create an environment of learning and understanding to realise opportunities for advancement and continuous improvement of the fruit fly management system.

Strategy 11.1

Proactively capture and analyse information relating to people and host production movement with respect to fruit fly distribution, spread and management both outside and within Australia.

Strategy 11.2

Make full use of the proposed Australian Biosecurity Intelligence Network (ABIN) to enable intelligence to be collated, analysed and reported, in order to increase interaction between all elements of the fruit fly management system that are responsible for continuous improvement.

Note: The ABIN provides a vehicle for the storage and retrieval of intelligence information and analytical tools online that can be used by the plant health community and others involved in biosecurity activities. A proposal was submitted to the National Collaborative Research Infrastructure Strategy (NCRIS) Committee. In late November 2007, the Investment Plan – which included a fruit fly pilot program for the plant sector – was endorsed by the NCRIS Committee. The development of ABIN will continue in early 2008. Other sectors involved in the ABIN project include human, animal, wildlife and aquatic health.

Regulations

Harmonisation of prescribed rules governed by overarching Australian Government, state or territory legislation to prevent the entry, establishment and spread of fruit fly, or to achieve and maintain areas of pest freedom or low pest prevalence.

RECOMMENDATION 12

Harmonise regulations, processes and procedures based on the agreed risk-based standards, underpinned by robust science and consistent with the principles of the NFFS.

Strategy 12.1

Increase consistency of regulatory measures at both the international and national level.

Strategy 12.2

Foster a collaborative approach between industry and government to support the harmonised application of regulations, compliance and enforcement mechanisms, which reflects the pest status and risk profile of the region (eg area freedom).

Strategy 12.3

Ensure coordinated regulatory authority is available to deliver timely, effective and coordinated controls for emergency responses, and has the resources to deliver rapid response to detections or outbreaks of endemic fruit flies in pest free areas and areas of low pest prevalence. To provide guidance on this subject an appropriate legal model is required; South Australia's legal arrangements could possibly provide a model for such legislation.

Strategy 12.4

Communicate the risk of abandoned orchards and unmanaged hosts to individuals, growers and industry, community and environment sectors through links with their respective plans.

Strategy 12.5

Foster a collaborative approach between industry and government to enable trade in fruit fly host products to operate in the least restrictive way under systems approaches that are in accordance with international standards.

Strategy 12.6

Support the continual development of a seamless interface between party's responsibilities and roles in relation to imports and exports, at the border and post-border levels.

Strategy 12.7

Investigate and, where appropriate, implement alternative equivalent processes for regulations associated with the domestic trade for fruit fly hosts (eg for a specified pest risk, there may be different phytosanitary measures that can be used to achieve a contracting party's ALOP).

Strategy 12.8

As part of the communication strategy, continue to support programs that promote regulatory requirements for management of fruit fly.

Research and development funding processes

Capacity and capability in research and development is required to underpin the requirements of fruit fly operations, legislation and regulation, market access and biosecurity activities. A nationally coordinated approach to research and development will facilitate and encourage the establishment of a funding structure to support short-term research goals in the application of science, and long-term strategic goals. A national approach will also increase skills, expertise and knowledge; facilitate collaboration and linkages; and assist in prioritisation and information sharing, to ensure that necessary research and development is identified and duplication does not occur. Mechanisms to communicate fruit fly research activities, outcomes and outputs to various stakeholders will also be enhanced.

Research and development capacity

The current level of research capability, capacity and funding resources is insufficient to address the requirements of fruit fly operations, legislation and regulation, market access and biosecurity activities effectively; and this is a major vulnerability for fruit fly management in Australia.

RECOMMENDATION 13

Maintain and enhance fruit fly research capability, capacity and resources.

Strategy 13.1

Establish a research and development funding process that supports both short-term research goals in the application of science, and long-term strategic goals.

Strategy 13.2

Establish a mechanism to maintain and increase the current level of scientific and technical skills, expertise and knowledge available for fruit fly research and development.

Research and development prioritisation

Prioritisation of fruit fly research and development activities is necessary to ensure the recommendations identified in the NFFS are addressed. The prioritisation process should be ongoing, to cover the completion of current research activities and the emergence of new issues in relation to fruit fly operations, legislation and regulation, market access and biosecurity. Prioritisation is also necessary to maximise the rate of return on investment from research and development funding.

RECOMMENDATION 14

Develop a process for ongoing prioritisation of fruit fly research and development activities to provide clear direction for current scientific activities and proactively identify emerging research needs consistent with the directions of this strategy.

Strategy 14.1

Implement a process to plan, prioritise and agree on research and development projects, and to ensure the research outcomes address the recommendations of the NFFS.

Strategy 14.2

Implement a process to identify emerging fruit fly management issues that require research and development, as they arise.

Strategy 14.3

Establish a mechanism to ensure that the research and development prioritisation process is open, consultative, transparent and includes independent expert scientific advice.

Strategy 14.4

Implement a system of regular project reviews to evaluate research and development outputs and outcomes.

Research and development framework

A research and development framework that facilitates and encourages collaboration between the different research and development sectors of fruit fly management, both nationally and internationally, would help to maximise the research outcomes.

RECOMMENDATION 15

Develop and strengthen fruit fly research and development collaborations and linkages, nationally and internationally, and ensure these cover the different sectors involved in fruit fly management.

Strategy 15.1

Establish a structure that facilitates and encourages scientific collaborations both nationally and internationally, eliminates research duplication and maximises the benefits gained from the combined scientific knowledge, skills, expertise and multidisciplinary approach.

Strategy 15.2

Ensure that the structure of the research and development funding process encourages linkages and cooperation amongst the different sectors involved in fruit fly management, and fosters a strong partnership between science and industry.

Research and development information systems

The establishment and maintenance of information systems will enable more effective sharing and access to past and present research data relating to fruit fly management activities.

RECOMMENDATION 16

Develop information storage and retrieval systems to support and enhance fruit fly research and development.

Strategy 16.1

Develop a national repository for fruit fly research data and information. This information repository should have open access and be linked to ABIN or an equivalent national information network.

Strategy 16.2

Stipulate that the deposition of data in the national information repository is a mandatory contractual requirement of fruit fly research and development funding.

Research and development communication

To ensure the knowledge generated through research and development is received and understood by a range of stakeholders, effective communication systems must be in place that can deliver the information efficiently and effectively.

RECOMMENDATION 17

Develop systems for efficient and effective uptake of fruit fly research and development outcomes.

Strategy 17.1

Investigate the most effective mechanisms for communicating fruit fly research and development activities, outcomes and outputs to the various stakeholders.

Strategy 17.2

Use the most effective mechanisms to:

- facilitate knowledge and technology transfer
- improve communication between scientists and the end users of the research outcomes
- ensure adoption of the research and development.

The long-term future management of economically significant endemic fruit fly species in Australia

The recommendations that have been proposed are incremental steps that can lead towards more efficient and effective management, and a more robust system that can successfully adapt to change.

The NFFS has as its vision that fruit flies are no longer a constraint to sustainable production and a significant barrier to national and international market access. To achieve this, monumental changes are required. Plausible future outcomes could be the eradication of Mediterranean fruit fly from Australia and a reduction in the effect of Queensland fruit fly.

Mediterranean fruit fly

RECOMMENDATION 18

Assess the feasibility, practicality and cost effectiveness of eradicating Mediterranean fruit fly from Australia, building on the outcomes from the cost–benefit analysis undertaken in 2001. The assessment should include all benefits, not just cost effectiveness, including those to the community from growing their own non-infested fruit.¹⁶

Strategy 18.1

Conduct an assessment based on two scenarios:

- eradication of Mediterranean fruit fly from Australia, including the indirect benefits to areas free from Mediterranean fruit fly
- eradication of Mediterranean fruit fly in areas outside metropolitan Perth, including the costs of maintaining production area freedom.

While the eradication of Mediterranean fruit fly from Australia may be technically feasible this needs to be balanced against the cost/benefit of doing so. Box 3.4 highlights the case for the eradication of Mediterranean fruit fly from Australia and earlier cost/benefit work.

Box 3.4: Mediterranean fruit fly eradication from Western Australia

Mediterranean fruit fly has been eradicated in the United States, Mexico and Chile using sterile insect technique. A pilot eradication trial using this technique was undertaken at Broome, and demonstrated that such control is technically feasible in Western Australia.

A cost–benefit analysis conducted in 2001¹⁷ indicated that eradication of Mediterranean fruit fly from Western Australia would have an overall cost of \$70 million, would take 6 years and was highly likely to be successful.

The two main variables affecting the program were the availability of sterile flies (the estimated requirement was 100 million sterile male flies per week) and the production area with susceptible hosts. The current facility for producing sterile Mediterranean fruit fly in Western Australia does not have the capacity to produce this quota. The analysis estimated that a sterile insect technique facility would cost \$15 million to build, although economies of scale would apply if a larger facility was built. Recommendation 10 (sterile insect technique) proposes an assessment of the feasibility of a multiple insect rearing facility.

The benefits from eradication include:

- reduced production residual losses to growers
- reduced pesticide residues
- community benefits related to the environment, backyard protection and enjoyment
- lower quarantine costs to government and industry
- the eventual removal of research requirements for emergency control and disinfestation.

The cost–benefit analysis estimated that 68 per cent of the benefits were to the growers, and that industry should therefore contribute to an eradication program. Indirect benefits were indicated for South Australia.

The analysis indicated that, if horticulture areas doubled in the next 20 years, the net benefit would be \$16 million net present value for 20 years. Even if horticulture areas increased by only 18 per cent over the 20 years, there would be a break-even result.

Since the cost–benefit analysis in 2001, several factors have changed in fruit fly management that may affect any re-assessment. These factors include the potential loss of fenthion and dimethoate as postharvest phytosanitary treatment, and the use of Spinosad as an organic-certified bait. The analysis recommended that key sensitive variables be investigated further before recommendations were put into action. The variables included the host areas within metropolitan Perth, host areas in bush areas near rivers, sterile insect technique fly production costs and sterile insect technique application costs. These variables may have changed in the last six years. The sterile insect technique assessment proposed under Recommendation 10 will assist in these determinations.

16 Mumford et al (2001)

17 Mumford et al (2001)

Queensland fruit fly

RECOMMENDATION 19

Undertake an optimum scenario assessment of all the tools available (including sterile insect technique) for the future management of Queensland fruit fly to reduce the impact in endemic areas and to minimise the imminent threat of the introduction and spread from the existing populations to other parts of Australia with area freedom status.

An optimum scenario for the future of Queensland fruit fly is to limit the spread of the species from its native habitat, to reduce:

- the impact in endemic areas
- the imminent threat of introduction and spread from the existing populations to other parts of Australia with area freedom status.

Queensland fruit fly is established in northeastern Australia, where a significant proportion of horticultural produce is grown and traded domestically.

Area-wide management programs – such as those being undertaken in Central Burnett, Queensland – may be able to become part of a systems approach to fruit fly management that is acceptable to international and national trade. As an example, the management of Mexican fruit fly in the Lower Rio Grande Valley of Texas involves the release of sterile fruit flies at a low rate over citrus growing areas; this enables citrus to be exported without treatment unless detections of fertile Mexican fruit fly exceed a regulatory threshold.¹⁸

Queensland fruit fly continues to threaten Australia's major horticultural regions that are currently free of fruit fly, particularly the Murray basin region. Fruit fly area freedom is a phytosanitary measure of great importance to Australian growers and exporters; recognised by 34 international trading partners and all states and territories in Australia. Strategic preventative release programs, using sterile insects, provide a barrier to the southern movement of fruit flies and in the long term, may incrementally move populations north. In southern areas, this important barrier is threatened by the effects of climate change, because the changes mean that populations are likely to increase and survive throughout the year.

Institutional arrangements

Institutional arrangements provide the formal mechanisms for setting and implementing policy directions and operational activities, and for determining priorities in market access research and development.

Such arrangements enable national decision making and allocation of resources, including funding. The institutional arrangements for fruit fly reflect a large number of primary stakeholders, including Australian Government, state and territory governments, industries and research and development organisations. Institutional arrangements cover the areas of policy, operations, market access, quarantine and research and development. This complexity results in a large structure of institutional arrangements.

Already there are several bodies that seem to have responsibility for the type of activities that would be associated with the national management of fruit fly risks. However, there are deficiencies in the present arrangements (mentioned in Chapter 1, and discussed further in Chapter 4). These are becoming more critical given budget constraints, globalisation trends, tighter treatment standards and the increasing emphasis being placed on product quality in traditional and emerging markets in Australia and overseas.

New institutional arrangements are needed that promote recognition of the opportunities for national gain from activities that take better account of the common interest in actively combating fruit fly infestation. Progress would seem to depend on better coordination of the activities of existing agencies and the promotion of a more proactive approach to the development of risk management strategies Australia-wide.

RECOMMENDATION 20

Amend the current institutional arrangements to enable the implementation of the NFFS and establish a committee to implement the NFFS with secretariat support from Plant Health Australia.¹⁹

The institutional arrangements cover the three main areas of fruit fly management, (1) policy and operations, (2) market access and quarantine and (3) research and development.

¹⁸ USDA (2006).

¹⁹ Recommendation inserted after consultation with participants at the Open Fruit Fly Forum, 24th October 2007.

The following strategies will enable the NFFS to be implemented in line with the division of labour required under the economic principles. Currently, related committees do not include all the representatives required to meet the design or carriage of the fruit fly programs as identified in the division of labour. This aspect is therefore addressed below.

Strategy 20.1

Form a National Fruit Fly Strategy Implementation Committee (NFFSIC) to implement the NFFS through interaction with the national committees responsible for policy and operations, market access, research and development and industry engagement across areas relevant to fruit fly.

The Implementation Committee would oversee the NFFS, promoting awareness of the strategy and the implementation and extension of its specific recommendations and strategies. It would not have authority to direct other agencies, but would coordinate functions and engage in joint-venture projects specifically related to improving fruit fly management. The committee would apply the principles outlined earlier in this strategy, including the economic principles, to the selection and conduct of its activities.

It is envisaged that the influence of NFFSIC would be determined as much by acceptance of its expertise and standing as by its direct capacity to invest in projects. Among other things, it is expected that it would liaise regularly with PHC, Horticultural Market Access Committee (HMAC) and the HAL Working Group for Market Access Research and Development (WGMARD), as outlined below in strategy 20.2.

Providing the NFFSIC with resources of its own would allow it to undertake such liaison proactively, and would give it the required freedom to directly address gaps in current activities with investments of its own.

Members of NFFSIC would be representatives of the Australian Government, the state and territory governments and industry. The committee would have an independent chair who would be a person with appropriate expertise. PHA would serve as its secretariat, on a user-pays basis.

NFFSIC would report on an annual basis to the Australian, state and territory governments and industry via a public document that would record the past year's activities, and document compliance with the prioritisation, implementation and evaluation of activities against the NFFS's 20 recommendations. A forward-looking component of the report would be developed in conjunction with an open forum, where discussion and feedback on the NFFS's prioritisation and implementation could occur.

Contributions to NFFSIC's resources would be reviewed every three years, with any new levels of contribution set by agreement of its partner members.

Initially the Implementation Committee will be required to develop:

- a 3 year 'action plan' that will provide a detailed breakdown of the proposed activities to be undertaken in relation to some or all the NFFS's recommendations, including the development of an appropriate budget for each nominated activity
- a detailed benefit/cost and beneficiaries analyses that will take into account both current and new (NFFS) investment, and where the benefits and costs lie.

Appendix 2 provides suggested terms of reference for the proposed NFFSIC.

Strategy 20.2

Gain endorsement of the proposed reporting and communication lines to facilitate the implementation of the NFFS, as identified in Figure 3.1. These proposed lines are as follows:

- policy and operations
 - direct reporting and communication between NFFSIC and PHC
 - chair of PHC to sit on NFFSIC
- market access and quarantine
 - direct reporting and communication between NFFSIC and HMAC
 - direct reporting and communication between NFFSIC and industry via PHA industry forums and fruit fly related conferences
 - chair of HMAC to sit on NFFSIC
- research and development
 - direct reporting and communication between NFFSIC and WGMARD.
 - chair of WGMARD to sit on NFFSIC.

The NFFSIC is structurally suited to coordinate the implementation of the NFFS through communication and performance reports with the various national forums and committee structures.

Strategy 20.3

Gain endorsement from the required governing structures for the proposed amendment to representation on committees, as identified in Figure 3.1, to reflect the division of labour to deliver the strategies, as follows:

- market access and quarantine:
 - representation on HMAE expanded to include state and territory governments, to reflect their responsibilities and delivery of core fruit fly management activities affecting market access (ie area freedom and surveillance)
- research and development:
 - formation of a fruit fly specific industry advisory group to build capacity, particularly in funding via cross-commodity research and strategic research, consistent with the agreed directions of the NFFS
 - proposed expansion of WGMARD to include state and territory governments, the Australian Centre for International Agricultural Research (ACIAR), and the Rural Industries Research and Development Corporation (RIRDC), to bring in all research and development being undertaken by these organisations on fruit fly.

Strategy 20.4

Support the current structural arrangements to achieve the outcomes of the NFFS by:

- strengthening and enhancing the role of DQMAWG as the primary committee for the coordination and review of the scientific evidence for:
 - performance benchmarks for the management and control of fruit flies
 - treatment of fruit from production areas within the fruit fly areas
- strengthening the reporting structure for DQMAWG through PHC to the Primary Industries Ministerial Council, by requiring an annual progress report on enforcement and harmonisation of fruit fly regulations across Australia
- supporting the national dispute resolution process (in line with WTO requirements) currently being developed by PHC.

Appendix 2 contains details of the committees for which these recommendations are relevant.

Strategy 20.5

Secure funding for 'new investment'. This 'new investment' will be above and beyond current spending on fruit fly related activities, and will be spread across a range of short and long-term projects focused on the implementation of the recommendations presented in the NFFS. It will also provide for the administrative and operational costs of the NFFSIC. It is not recommended that funding currently reserved for fruit fly activities be diverted to the implementation of the NFFS; rather, that the alignment of current activities with this strategy be considered as it is expected that the national approach promoted by the NFFSIC will affect activities well beyond those directly supported with new funds. It will influence the way a great many currently funded fruit fly activities are undertaken, improving both their cost effectiveness and relevance. This influence will increase over time as the national strategy becomes established. The cost benefit estimates presented elsewhere in this document take account of these wider benefits.

Horticulturalists in all Australian states and territories are affected by fruit fly – whether the pest is present or absent – through the cost of control measures (especially the cost and regulation associated with the management of free areas) and through having to meet the additional measures necessary to trade in products susceptible to fruit fly. All sectors could be expected to gain internationally and domestically from the greater coherence and credibility that adoption of the NFFS will give to Australia's fruit fly regime.

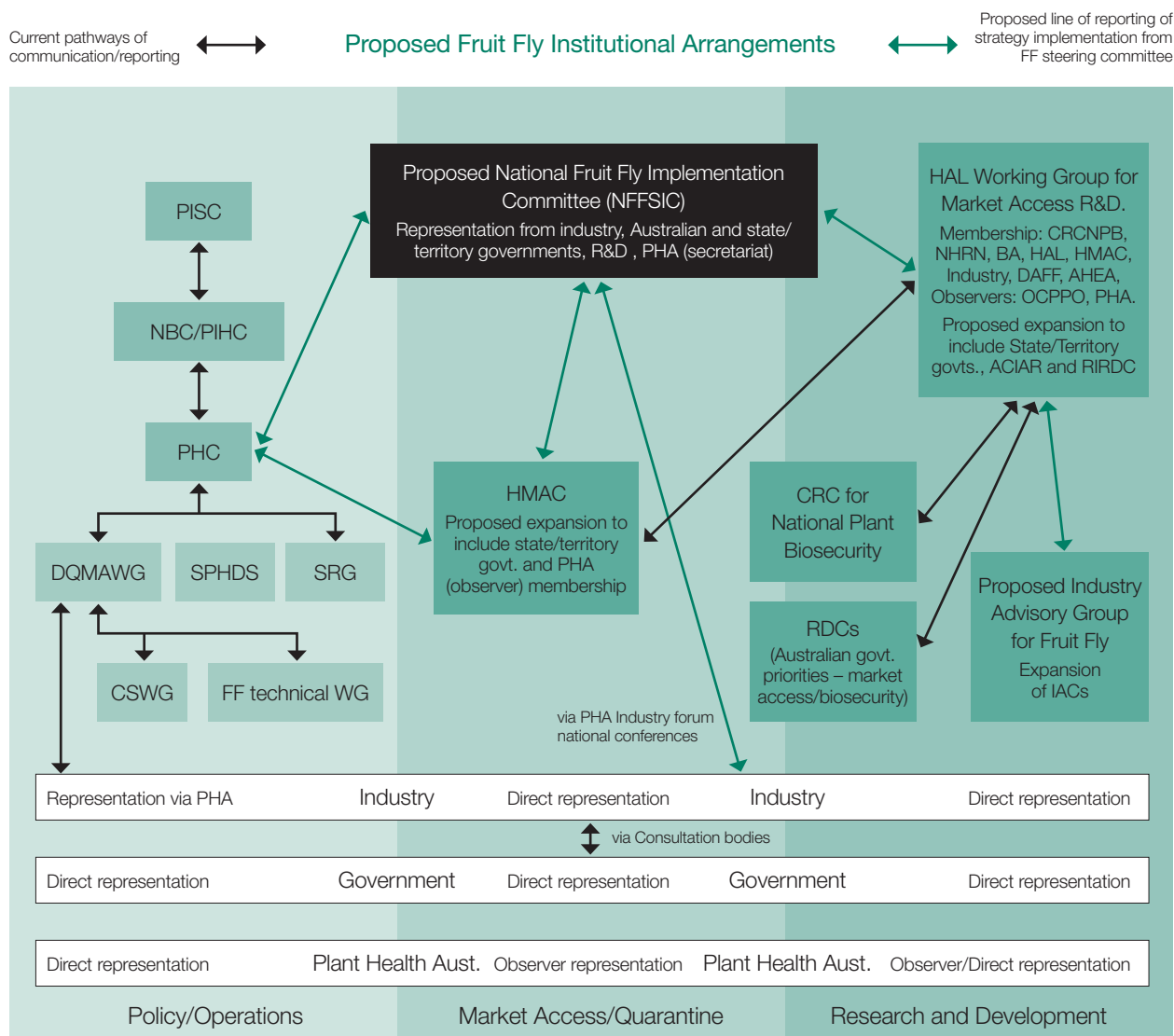
The logic for having industry as a significant contributor is obvious. Its contribution would give it a significant say in how the new body operates, a feature that will provide a cost and relevance discipline, which past experience indicates will be necessary. There are good reasons for also having the Australian, state and territory governments as significant contributors. The Australian Government's involvement would provide it with the influence to exercise its proper custodial roles in regard to international trade, the management of spillover effects between states and in guarding the general interests of consumers against protective excess. Equally, by being significant contributors, states and territories would have the influence necessary to manage interregional issues, and to ensure that the intended transfer and contracting out of several of their traditional functions occurs in an orderly way.

The NFFSIC will work with all contributing parties to establish an appropriate funding mechanism to ensure investment. Further analysis will be undertaken on the proportional distribution of benefits between industry and governments and within industry and between state and territory governments. This will be used to determine the appropriate split of funding between and within industry and governments that best reflects a beneficiary pays principle.

The Australian Government has stated its commitment through its Plan for Primary Industries. State and territory governments have, to date, indicated their support if all parties contribute. After endorsement of the NFFS by the Primary Industries Standing Committees, discussion with Industry will need to occur on the most appropriate manner of contributing its share (mechanisms may include voluntary or statutory levies).

This new investment will generate efficiencies in the management of fruit fly that will provide savings on existing investment.

Figure 3.1: Current and proposed fruit fly institutional arrangements



ACIAR = Australian Centre for International Agricultural Research; AHEA = Australian Horticulture Exporters' Association; BA = Biosecurity Australia; CRCNPB = Co-operative Research Centre for National Plant Biosecurity; CSWG = Commonwealth–State Working Group; DAFF = Australian Government Department of Agriculture, Forestry and Fisheries; DQMAWG = Domestic Quarantine Market Access Working Group; FF = fruit fly; HAL = Horticulture Australia Ltd; HMAC = Horticultural Market Access Committee; IAC = Industry Advisory Committee; NFFSIC = National Fruit Fly Strategy Implementation Committee; NHRN = National Horticulture Research Network; OCPPO = Office of the Chief Plant Protection Officer; PHA = Plant Health Australia; PHC = Plant Health Committee; PIHC = Primary Industries Health Committee; PISC = Primary Industries Standing Committee; R&D = research and development; RDC = research and development corporation; RIRDC = Rural Industries Research and Development Corporation; SPHDS = Subcommittee on Plant Health Diagnostic Standards; SRG = Surveillance Reference Group; WG = working group

Case for a national fruit fly strategy

38

The case for a national fruit fly strategy rests on three related kinds of evidence about the net benefits such a strategy will deliver:

- *in-principle evidence* that a centralised program for the management of fruit fly risks will increase national income
- *circumstantial evidence* that the planned new institutional structure will be likely to have beneficial effects on the productivity and targeting of existing and new expenditure on fruit fly management
- *specific evidence* that the strategies proposed by the subgroups will generate net returns.

In relation to specific evidence, the identification by the NFFS Steering Committee and its subgroups of many new strategies to fill known gaps in the national management of fruit flies is itself evidence of the scope for the NFFS to increase national income.

Provided the principles enunciated in the NFFS are observed, the NFFS is likely to produce net national benefits of approximately \$50 million in present value terms. This is a 'net present value' figure for the flow of benefits into the future, based on conservative assumptions. The main assumptions relate to:

- the amount of new and old funds that will be involved
- the degree to which the new institutional framework will yield improved productivity and targeting of management expenditure
- the timing of the returns.

In-principle evidence

With an activity such as fruit fly management, there are some in-principle grounds for expecting that a centrally driven national strategy will deliver significant national economic benefits.

While fruit flies are a potential cause of great economic damage to vulnerable crop product sales, there are conceptual reasons why the task of managing the pest cannot sensibly be left solely to the farmers that are primarily affected. Rather, fruit fly management is a 'public policy issue', in that there is, and probably always has been, an *a priori* case for collective action to assist with it. That is, conceptually, fruit flies represent a disease risk that centrally organised collective programs are likely to be able to respond to efficiently for society as a whole.

Collective programs are likely to be of benefit for the same reasons that overarching agencies such as PHA, OCPPO, HAL and the Co-operative Research Centre for National Plant Biosecurity (CRCNPB) were established. As for certain other plant pests, fruit fly control involves what economists term 'unpriced spillovers' or 'market failure' (see 'Economic

principles' in Chapter 2). In general, neither the costs of neglectful management, nor the benefits of careful management of fruit flies can be fully contained within any farm business involved. The underlying problem is that market processes cannot readily bring to account all those who can materially affect the outcome of decisions to invest or not invest in control measures. As with the infectious diseases suffered by humans, the effects of fruit fly infestations or the effects of measures that individuals might deploy to control them are not easily confined within any one premises. And while there is considerable scope for private containment of the benefits of using certain damage control tools (eg postharvest chemical treatments of product before sale), such treatments:

- are made materially more expensive if, as is likely, the outdoor pest presence remains unaffected
- address only part of the damage the pest can impose on farm output
- are declining in availability, because some of the most effective chemicals are being disallowed by governments or rejected by consumers for health reasons.

In addition, the scope for voluntary collective action to address unpriced spillovers is limited.

The fruit fly management problem has been made more difficult because of mixed success with some of the inherently less interventionist approaches to minimising market failure, such as the mandating of levies from affected industries for spending on pest control. Regional levies are neither legally nor practically straightforward, especially given Constitutional constraints and the fact that some of the parties involved are widely dispersed and, individually, have (or may claim they have) little stake in the outcome. The upshot is that fruit fly management has become a more mainstream departmental activity than might otherwise have been the case. Indeed, with recent developments – such as the impending demise of some postharvest chemical treatments and the greater resistance of consumers and governments in Australia and overseas to infected product – the case for increased central involvement may have become stronger (eg in the organisation of alternative systems-based management techniques).

Institutional sources of benefit

As explained in Chapter 3, new institutional arrangements are proposed as part of the NFFS. The new structure will provide an incentives environment, with two desirable economic features:

- it incorporates financial and other measures that will bring competitive discipline to the delivery of management operations and research and development; this will encourage cost effectiveness and relevance to production and end-market conditions

- it is structured to allocate different tasks to parties with the appropriate perspectives and responsibilities.

The central body called the NFFSIC, which will manage the NFFS (see Chapter 3), will arguably be the key institutional feature of the national strategy.

Specific evidence that the planned strategies would be beneficial

The strategies presented in the reports produced by each of the four subgroups (outlined under the recommendations in Chapter 3) contain projects that are strongly consistent with the economic principles outlined in Chapter 2. It is therefore reasonable to assume that, overall, their implementation will generate a net economic gain.

The section below provides examples of beneficial strategies proposed, taken from the reports of each of the subgroups.

Market access

It is apparent that the current lack of harmonisation of national and international phytosanitary treatment requirements in regard to fruit fly is compromising Australia's ability to meet its obligations under the WTO SPS Agreement. This situation is threatening access to markets that are sensitive to fruit fly, such as those of the United States, New Zealand, Japan, China, Taiwan and Korea.

A particular problem identified is the lack of coordination amongst state and regional market access strategies. This fragmented approach is costly and makes market access processes slower than they need to be.

The strategic response will include discussions about domestic and international market access strategies at regional, state and national levels. Strategies will include market access submission processes, risk analysis and management, industry biosecurity plans, including the roles of Biosecurity Australia (BA), HMAC and DQMAWG.

Benefits in the form of cost savings and greater access should result.

Operations

Operations suffer from both increasing costs and a lack of coordination. An example is the national exotic fruit fly trapping program. It is a vital defence against incursions and important for maintaining market access overseas, particularly in view of:

- the threat of withdrawal of specific uses of fenthion and dimethoate as disinfestation treatments

- an increase in the perceived quarantine risk of endemic species of fruit fly (other than Queensland fruit fly and Mediterranean fruit fly) by Australia's trading partners
- the loss of pest free areas or country freedom from exotic species
- the requirement from international markets for evidence-based supporting data.

The trapping program is funded on a cost sharing or cross-subsidised basis that does not cover all program costs and is not sustainable in the longer term. To address this, strategies that involve greater industry engagement in management and funding of programs have been proposed.

Benefits should arise through the containment of costs and improvements in the relevance of the activities.

Legislation and regulation

The main task identified is the development of laws that are harmonised across Australia and with international standards. Thus, one strategy proposed is the development of a harmonised approach to fruit fly regulations across Australia, consistent with the WTO SPS Agreement.

Adoption of this strategy will be expected to strengthen negotiations for international market access for Australian horticultural products, and facilitate a more coherent and transparent internal system for Australian horticultural industries that supply fruit on the domestic market. There is scope for the harmonised protocols that emerge from the NFFS to deliver additional national benefits if the consideration of consumer interest is included in the mandated criteria for determining conditions of access.

Research and development

In relation to research and development (which underpins all elements of fruit fly management), the goals are defined in the context of operations, legislation and regulations, market access and biosecurity, and industry considerations.

Deficiencies in funding processes and collaborative linkages have been identified in regard to fruit fly research and development activities in Australia. While there has been some progress in the area of international market access through mechanisms associated with HAL and cooperative research centres, there is still plenty of room for improvement.

Strategies have been proposed to decrease research duplication and improve coordination, collaboration, transparency, adherence to national and international research quality standards, access to past data and consistency with respect to the funding approvals process. They will address problems with funding allocation, the lack of research coordination and collaboration, and Australia's dwindling research capacity in entomology and plant sciences.

Benefits will follow from implementation of these strategies in the form of more efficient use of limited resources, with practical outcomes for industry, extension of technology transfer to assist industry with implementation, identification of the gaps in research and development activities and clear communication of outcomes and values to stakeholders.

Estimates of the net national benefits

An estimate of the benefits of adopting the NFFS has been made on the basis of general inferences that can be drawn from the evidence presented in this and earlier chapters.

The main empirical information available to support estimates of the returns from reforms of the scope and scale planned in the NFFS is the historical record of gains reaped in other situations in Australia (and elsewhere) when more contestable, more transparent and more focused procedures were applied to the areas formerly dominated, both operationally and in a regulatory sense, by entrenched government departments and agencies. Arguably, the key initiative that the NFFS will introduce to change that situation will be greater engagement of the industries and subindustries that face fruit fly risks. This will involve increased private sector participation in both decision making and funding, while retaining the regulatory framework necessary for a set of activities characterised, as fruit fly management is, by pervasive market failure. The NFFS will also demand improvements in those fruit fly related activities that must remain wholly government functions.

The National Competition Policy process that ranged across most economic activities from 1995 to 2004 generated a wide understanding amongst the Australian public of the benefits of adopting a more competitive approach to the delivery of public services. Much of the required cost-benefit information on the subject has been assembled over several years in reports of the Productivity Commission and its predecessors. The commission's assessments of the benefits of the National Competition Policy reforms have been illustrative. Perhaps even more useful in the present context is the Industry Commission report on its 1995–1996 Inquiry into Competitive Tendering and Contracting by Public Agencies.²⁰

In the competitive tendering inquiry, the commission found that introducing competitive processes into the delivery of public services had, as a general rule, delivered productivity gains of around 15 per cent, with the savings appearing partly through cost containment and partly through better targeting of the services themselves.

The historical record of improved productivity through administrative reform includes cases involving biosecurity; for example, the changes introduced a decade ago to bring increased contestability to the delivery of the functions of the AQIS. In that case, user charges prompted a greater focus on relevance and cost containment. Some former AQIS employees who were contacted recall that budgetary savings generated in some service areas were as high as 30 per cent.

These have been ongoing savings. No significant reduction in the quality of AQIS's services over this period has been recorded and, indeed, in certain areas the reforms prompted improvements.

In light of this history, the 15 per cent productivity gain found in the competitive tendering inquiry would seem to be a conservative but reasonable estimate of the productivity gain that will be generated as result of the reforms implemented by the NFFS. Such gains are likely to be modest to begin with, but likely to extend as the NFFS increases its influence.

For the purposes of estimation, it might reasonably be assumed that the 15 per cent productivity improvement will apply across all fruit fly expenditure after five years from commencement of the NFFS.

Data are limited on the level of expenditure on fruit fly management and research and development. The 2006 OCPPO stocktake indicates that, in recent years, the public outlay on fruit fly operations and research and development has averaged some \$23 million a year. Some of the factors not recorded in the stocktake were:

- in-kind services of government officials, mainly in the form of time spent travelling and in meetings
- other departmental overheads, including a share of the cost of capital tied up in buildings and office equipment
- private sector outlays on fruit fly management, compliance and participation in official forums.

Allowing for the outlays that the OCPPO stocktake did not cover, it would seem reasonable to assume that the total expenditure on fruit fly management in Australia is running currently at about twice the stocktake amount, or some \$45 million a year. In addition to that, the lists of proposed strategies prepared by the subgroups suggest that, in the years following the commencement of the stocktake, an additional \$5 million a year of new money will be required. Presuming that the proposals for new expenditure are accepted, this would suggest that an updated total fruit fly expenditure figure of some \$50 million a year should apply in the years following commencement of the NFFS.

Assuming a gain in efficiency of 15 per cent and \$50 million expenditure, the benefit would be \$7.5 million. This productivity dividend would be available from five years after the start of the strategy. In the first four years, with a gradual increase in the volume of expenditure subject to the disciplines of the NFFS, it might be reasonable to assume that the net productivity and efficiency gains would be \$1 million, \$2 million, \$4 million and \$6 million per year respectively.

Estimates of the net present value of these benefit streams are presented in Table 4.1. The preferred, albeit conservative, estimate is the \$50 million that is derived if a discount rate of 10 per cent and a net benefit stream life of 20 years are assumed. A 10 per cent discount rate is preferred, to reflect a premium of a few percentage points above the basic interest rate; this takes into account the inherent riskiness of investments in this class of activity.

²⁰ Industry Commission (1996).

A 20-year benefit stream life is preferred because it would be unreasonable to assume that the background technological and social conditions that would allow the NFFS to continue to generate net benefits would remain in place for any longer than this.

Table 4.1: Estimates of the ‘net present value’ of the net national benefits of the NFFS (\$millions)

| Years from start of NFFS | Discount rate (%) | | | |
|--------------------------|-------------------|----|----|----|
| | 7 | 8 | 9 | 10 |
| 10 | 38 | 36 | 34 | 32 |
| 20 | 65 | 59 | 54 | 50 |
| 30 | 78 | 70 | 63 | 57 |
| 40 | 85 | 74 | 66 | 59 |
| 50 | 86 | 77 | 67 | 60 |

Appendix 1: National Fruit Fly Strategy Steering Committee and subgroups

42

The National Fruit Fly Strategy Steering Committee

The terms of reference of the National Fruit Fly Strategy (NFFS) Steering Committee were as follows:

1. Address the regulatory considerations, operational requirements and research and development needs of fruit fly management in Australia from a strategic perspective, taking an overall national viewpoint.
2. Focus on determining the most viable, cost effective and sustainable national approach to fruit fly management for the longer term, in the context of continuing to meet market access requirements in the short to medium term, while capturing the opportunities for future market development for the affected Australian plant industries.
3. Take account of the range of issues and financial commitments of territory, state, Commonwealth and industry, and relevant reports and reviews of fruit fly.
4. Be directed by a steering committee, which, after consultation with key stakeholders, will be responsible for providing a discussion paper with recommendations for a national fruit fly strategy and priorities to the Primary Industries Health Committee (PIHC).
5. Take appropriate action, where required, to follow PIHC in progressing the recommendations through to Primary Industries Standing Committee (PISC) and to the Primary Industries Ministerial Council (PIMC).

The membership of the NFFS Steering Committee was as follows:

| Organisation | Member |
|--|--|
| Independent | Professor Mal Nairn (Chair) |
| Australian Citrus Growers | Ms Judith Damiani |
| Australian Quarantine and Inspection Service | Mr Peter Liehne |
| Biosecurity Australia | Ms Louise Van Meurs Alternate: Mr Rob Duthie |
| Australian Government Department of Agriculture, Fisheries and Forestry | Ms Lois Ransom |
| Department of Primary Industries Victoria (representing Tri-State) | Mr Peter Bailey |
| Department of Primary Industries and Fisheries (representing Queensland, Northern Territory and Western Australia) | Mr Chris Adriaansen |
| Department of Agriculture and Food Western Australia (representing Queensland, Northern Territory and Western Australia) | Dr Shashi Sharma |
| Growcom | Ms Jan Davis Alternate: Mr Mark Panitz |
| Horticulture Australia Limited | Mr Brad Wells Alternate: Mr Kim James |
| Plant Health Australia | Ms Lindy Hyam (Project convenor/champion) Alternate: Mr Rodney Turner |
| Plant Health Australia | Ms Kimberly Green (Project manager) Alternate: Mr James Garden |
| Plant Health Australia | Dr Suzy Perry (Project coordinator) |

Early in the development of the NFFS, the steering committee was assisted by Kathy Gott from New South Wales Department of Primary Industries.

The Steering Committee members were tasked with overseeing the development of the strategy not only from their jurisdictional or organisational point of view but also on a national scale.

Cost Benefit Analysis

The cost benefit analysis work undertaken for this project was performed by private consultants; Mr Greg Cutbush and Ms Carolyn Tanner.

Subgroups

Market Access and Biosecurity

The terms of reference of the Market Access and Biosecurity Subgroup were as follows:

1. Conduct a stocktake of the current strategies applicable to market access and biosecurity projects/programs relating to fruit fly host commodities.
2. Identify gaps in current strategies for biosecurity and market access, to improve market access for fruit fly host commodities, and to improve biosecurity programs for protection of domestic horticultural industries.
3. Link outcomes with other NFFS subgroups to ensure the development of a concise and coherent national fruit fly strategy.

The membership of the Market Access and Biosecurity Subgroup was as follows:

| Organisation | Member |
|--|--|
| Biosecurity Australia | Mr Rob Duthie (Chair) |
| Australian Horticultural Exporters' Association Inc | Mr Maxwell Summers |
| Department of Agriculture and Food Western Australia | Dr Francis De Lima |
| Department of Primary Industries, Fisheries and Mines Northern Territory | Mr Ian Kilduff |
| Department of Primary Industries New South Wales | Dr Philip Wright |
| Department of Primary Industries Victoria | Mr Gary Darcy |
| Department of Primary Industries and Water (Tasmania) | Ms Rebecca Barker |
| Horticulture Market Access Committee | Mr Stephen Winter |
| Primary Industries and Resources South Australia | Mr Gary Cox |
| Plant Health Australia | Dr Suzy Perry |
| Australian Horticultural Exporters Association | Mr David Minnis (Not a member but identified as a consultant if required on a needs basis) |
| Queensland Department of Primary Industries and Fisheries | Mr Peter Leach |
| Plant Health Australia | Ms Kimberly Green |

Operations

The terms of reference of the Operations Subgroup were as follows:

1. Prepare a draft strategy for the operational component that will nest within the broader NFFS. The structure of the draft will be consistent with the overall national strategy framework.
2. In developing the strategy consider operational activities across the contemporary biosecurity continuum and address identified issues. The assessments will be based on the 'opportunity' and 'risk-based' equation and the overlying themes will include consistency/compatibility with International Standards of Phytosanitary Measures (ISPM), efficiencies and effectiveness, uniformity/ standardisation, and coordination.
3. Draw on expertise and consult as required.
4. Liaise with other subgroups to link the draft operations strategy to the other subgroup's strategies and considerations.
5. Prepare the draft strategy on the operational component of the NFFS by June 2007.

The Operations Subgroup members were as follows:

| Organisation | Member |
|---|---------------------------------------|
| Growcom | Mr Mark Panitz (Chair) |
| Office of the Chief Plant Protection Officer | Ms Lois Ransom (Supporting Chair) |
| Australian Citrus Growers | Ms Judith Damiani |
| Department of Agriculture and Food Western Australia | Mr Bill Woods |
| Department of Primary Industries and Water (Tasmania) | Ms Rebecca Barker |
| Department of Primary Industries Victoria | Mr Bill Ashcroft |
| Department of Primary Industries Victoria | Dr Patrick Sharkey |
| New South Wales Department of Primary Industries | Mr Ian Roth |
| Plant Health Australia | Mr Rodney Turner |
| Plant Health Australia | Dr Suzy Perry |
| Primary Industries and Resources South Australia | Mr David Heaven |
| Primary Industries and Resources South Australia | Mr David Cartwright / Mr John Cornish |
| Queensland Department of Primary Industries and Fisheries | Mr Chris Adriaansen |
| Plant Health Australia | Ms Kimberly Green |

Legislation and Regulation

The terms of reference of the Legislation and Regulation Subgroup were as follows:

1. Determine the principles that need to underpin regulations that are consistent with the World Trade Organization (WTO) Sanitary and Phytosanitary (SPS) Agreement.
2. Establish the benchmarks for national fruit fly regulations that will enable international market access.
3. Recommend the reflection of the principles, requirements and terminology within the national codes of practice (currently draft status).
4. Determine the surveillance and enforcement mechanisms used to monitor compliance with regulations, and establish the capacity for enforcement of these activities.
5. Critically examine current regulatory frameworks and approaches to identify improvements to regulations and legislation. Considerations will be risk based and include identifying opportunities.
6. Consult and link in with the Domestic Quarantine and Market Access Working Group (DQMAWG), the National Fruit Fly Working Group (subcommittee of DQMAWG) and subgroups involved in the development of the NFFS as required.

The members of the Legislation and Regulation Subgroup were as follows:

| Member | Organisation |
|--|------------------------------------|
| Australian Quarantine Inspection Service | Mr Peter Liehne, Chair |
| Australian Quarantine Inspection Service | Mr Craig Scheibel, Alternate Chair |
| AUSVEG | Mr Ian James |
| Department of Primary Industries Victoria | Mr Bruce Mackie |
| Department of Primary Industries Victoria | Mr Geoffrey Jackson |
| Department of Primary Industries and Water (Tasmania) | Dr Alice Morris |
| Horticulture Australia Council | Ms Kris Newton |
| New South Wales Department of Primary Industries | Mr Richard Walker / Dr Kathy Gott |
| Office of the Chief Plant Protection Officer | Ms Roberta Rossely |
| Plant Health Australia | Dr Suzy Perry |
| Primary Industries and Resources South Australia | Mr Bruce Baker |
| Queensland Department of Primary Industries and Fisheries and Chair of Domestic Quarantine and Market Access Working Group | Mr Cameron Tree |
| Plant Health Australia | Ms Kimberly Green |

Research and Development

The terms of reference of the Research and Development Subgroup were as follows:

1. Identify the key high-level research priorities (for the research and development subgroup) that contribute to the development of the NFFS. These will underpin/guide future near, medium and long-term fruit fly research and development. The development of these priorities will be an iterative process between the subgroups and the steering committee. The NFFS will be derived in part from the deliberations and consultation between the subgroups, the steering committee and other relevant groups.
2. Identify the broad strategies that will help deliver the research priorities. These strategies will depend on the directions identified within the NFFS. They will identify the high-level activities/directions/inputs, etc that will be needed to develop future research and development. Strategies will be developed from within the research and development subgroup in addition to utilising the outputs of the other subgroups, the steering committee and those of the Market Access Working Group, the Market Access Support Program and other similarly focused groups, to identify likely changes in market access requirements and identify the key research and development priorities that stem from these changes.
3. Identify which current research and development activities are on target, missing, need strengthening, need a change of emphasis or do not fit with additional research and development required to strengthen the strategic position for Australia.

The members of the Research and Development Subgroup were as follows:

| Organisation | Member |
|--|---|
| CSIRO Entomology | Dr Paul De Barro (Chair) |
| Office of the Chief Plant Protection Officer | Dr Mike Cole |
| Dept. Agriculture and Food WA | Dr Darryl Hardie |
| Horticulture Australia Limited | Mr Kim James |
| Queensland Department of Primary Industries and Fisheries (QDPI&F) | Dr Annice Lloyd |
| CRC Plant Biosecurity | Dr James Ridsdill-Smith |
| South Australian Research and Development Institute, PIRSA | Dr Cathy Smallridge |
| Department Primary Industry, Fisheries and Mines, NT | Mr Stuart Smith |
| Macquarie University | Dr Phil Taylor |
| Department of Primary Industries (DPI), Victoria | Dr Andrew Tomkins |
| Horticulture Australia Limited | Mr Brad Wells |
| NSW Department of Primary Industries | Dr Deborah Hailstones |
| Plant Health Australia | Ms Kimberly Green Alternate: Mr James Garden |

Appendix 2: Institutional arrangements – national committees

The proposed National Fruit Fly Strategy Implementation Committee

Scope

Implementation of the NFFS.

Terms of reference

The terms of reference of the proposed National Fruit Fly Strategy Implementation Committee (NFFSIC) are as follows:

1. Direct the implementation of the NFFS in accordance with the recommendations and strategies presented within.
2. Communicate and promote awareness of the NFFS to relevant stakeholders and interested parties.
3. In conjunction with key stakeholder groups (Australian, state and territory governments, and industry), determine the priority activities within the NFFS's recommendations for implementation, taking into consideration the five economic principles.
4. Independently allocate funding provided for the implementation of the NFFS on coordinating functions and engagement in joint-venture projects specifically related to the achievement of the NFFS's recommendations, in accordance with the economic principles outlined in the NFFS. Any new levels of funding will be set by agreement with the NFFS's contributing members.
5. Abide by decision of consensus. The policies of the NFFSIC do not supplant the policies of the respective member organisations. Therefore, NFFSIC policy is only achievable when consensus is achieved. Where consensus is not achievable, the right to influence and/or determine the prioritisation of activities undertaken to implement the NFFS reverts to NFFSIC stakeholders.
6. Liaise regularly with the Plant Health Committee (PHC), Horticultural Market Access Committee (HMAC) and the Horticulture Australia Ltd (HAL) Working Group for Market Access Research and Development (WGMARD).
7. Associate and link the NFFS to other major national initiatives where applicable and beneficial.
8. Produce a public report annually detailing:
 - a. the activities undertaken against each of the NFFS's 20 recommendations and their compliance with the identified economic principles
 - b. the major achievements and impediments that have occurred
 - c. the current funding and allocation of resources against the NFFS.

9. Arrange an open forum once a year to present the annual report and hold discussions on the NFFS going forward.

Membership

Members of NFFSIC will be representatives of the Australian, state and territory governments and industries. The new body will have an independent chair who is a person with appropriate expertise. PHA will serve as its secretariat, on a user-pays basis. Organisations that are currently contributing to fruit fly management will have preference for selection on NFFSIC. It is provisionally recommended the size of the membership be 10–12.

The membership will be as follows:

- Chair – independent
- Secretariat – Plant Health Australia
- Chair of the Primary Industries Health Committee
- Chair of the Plant Health Committee
- Chair of the Horticulture and Market Access Committee
- Chair of the Working Group for Market Access Research and Development
- Horticulture Australia Council representative
- Industry representative for domestic market access (international market access represented by HMAC Chair)
- Remaining members will be individuals with specific or applicable skills/knowledge pertaining to one of the four areas of fruit fly management (Market Access and Biosecurity, Operations, Legislation and Regulations, and Research and Development) and represent the Australian Government, state or territory governments, or industry.

Funding

NFFSIC will be resourced with funds contributed by the Australian Government, the state and territory governments and industry in equal proportions (ie one-third from each).

Meetings

NFFSIC will meet three or four times each year.

Policy and operations

Plant Health Committee

Role

- Facilitate improved biosecurity for Australia's plant industries and contribute to safe domestic and international trade in plant products – this is the principal focus of the committee's activity.

- Provide strategic policy, technical and regulatory advice to PISC on plant health matters.
- Establish standards for adoption in national plant health programs.
- Facilitate a consistent approach to legislative outcomes for plant health activity in Australia.
- Collaborate with PHA and other appropriate organisations and committees.

Scope

All plant health issues, including issues of forest health and environment plant health likely to affect primary production and public amenity.

Membership

Membership of PHC is as follows:

- Members – senior plant health managers in agriculture and primary industries agencies in state and territory governments and in the Australian Government, including:
 - the Australian Quarantine and Inspection Service (AQIS)
 - Biosecurity Australia (BA)
 - the Office of the Chief Plant Protection Officer (OCPPO)
 - the Commonwealth Scientific and Industrial Research Organisation (CSIRO)
 - PHA
- Observers – the Co-operative Research Centre for National Plant Biosecurity (CRCNPB) and Biosecurity New Zealand
- Chair – the Chief Plant Protection Officer, Australian Government Department of Agriculture, Forestry and Fisheries (DAFF)
- Secretariat – DAFF.

Funding

All participants are self funded. The committee does not have discretionary funds, but may request financial support for specific national activities from PIHC or PISC.

Meetings

Face-to-face meetings take place in June and November; teleconferences in February and September.

Terms of reference

1. To ensure a continuing review and prioritisation of the pests affecting Australian plant industries is undertaken with particular regard to their incidence, management and economic importance.

2. To advise PISC on the general principles and procedures required for the control, containment or eradication of plant pests including the need for new or changed international or domestic quarantine action.
3. To advise PISC on recommendations which should be made to PISC with respect to developments in the fields of plant health, particularly with regard to research, extension, training and regulatory issues.
4. To advise PISC on the prospects for, and all aspects of action required for, the use of biological and chemical control and integrated management techniques for plant pests.
5. To recommend to PISC on actions necessary for the containment or eradication of specific plant pests that may gain entry to Australia with particular regard to technical and regulatory considerations.
6. To consider and advise PISC on the technical implications of government policies as they apply to plant health.
7. To consider, report and make recommendations on any matter referred to it by PISC.
8. To ensure alignment, effective liaison and complementary work programs with PHA.
9. To develop a two year workplan and use this as a basis for providing six monthly reports to PISC, through PIHC.
10. To develop policies, procedures and measures for interstate and international market access and quarantine for plant products for both domestic and international markets risks to industries and regions.

47

Market access and quarantine

Horticulture and Market Access Committee

Role

The principal functions of the committee are to develop strategies and priorities for market access issues that are key to the future of the horticulture industry. Activities cover the areas of phytosanitary (quarantine) and sanitary (contaminants) access as well as non-quarantine access (eg multilateral Doha Round, bilateral free trade agreements, etc) and other technical barriers to access.

For quarantine access, the committee addresses both new market access and market maintenance, which relates to interruption and restoration of ongoing trade through market access. The committee supports several market access working groups that relate to specific commodity/country access issues and are open to any industry member. Details

of new or renegotiated access protocols or work plans are usually left to the decision of such working groups, including consultation with the government agencies. The committee also provides a review and monitoring process for applications from industry for export market access.

The committee defines and operates a communications process with other committees, and between industry and government agencies, to structure the discussion and negotiations processes.

The committee is responsible to the industry stakeholders through HAL. It works closely with industry (growers and exporters) to determine views and secure inputs, and with the government agencies who are usually the negotiators for access outcomes.

The committee operates under a five-year rolling market access plan, which is drafted by the coordinator and approved by all committee members. Committees whose establishment has been supported by HMAc and that report to HMAc are WGMARD and the Contaminants Management Committee, which is currently under formation.

Scope

HMAc has been in existence since 1989. Its objectives, processes and procedures were improved as a result of a review undertaken in 2002. The committee is the peak Australian industry and government agency body for market access, and operates from a whole-of-industry or across-industry perspective.

The committee is a major channel through which the government agencies can liaise with industry on market access in a coordinated fashion. It empowers industry to set their own strategies and priorities, which government agencies generally support.

Membership

The committee consists of six industry-related persons who are appointed as expert individuals in areas relevant to market access. These six individuals become members of the committee as a result of an open request and selection process managed by HAL for two years, which may be extended upon agreement. These individuals are asked to undertake their committee responsibilities on behalf of the entire horticulture industry.

Two formal representatives also sit on the committee, representing the exporting communities, through the Australian Horticultural Exporters' Association (AHEA) and the research communities, through the National Horticultural Research Network (NHRN). These representatives may change on the advice of their representing bodies.

Members of the government departments with responsibilities for market access are also committee members, in an advisory role. They represent DAFF, covering DAFF International Division, DAFF Industry Division, BA and AQIS, as well as the Australian Government Department of Foreign Affairs and Trade.

The committee's Chair is the Managing Director of HAL. The committee is managed through HAL by the Horticultural Market Access Coordinator, who acts as secretariat.

Meetings

The committee meets at least three times a year and is available for discussions between meetings.

Research and development

HAL Working Group for Market Access Research and Development

Role

WGMARD is a market access research and development group administered through HAL. It was established in 2006 as the primary stakeholder representative group for a national approach to market access research and development strategy and administration. WGMARD originally developed from, and expanded on, the working group established for the five-year Market Access Strategic Research and Development Plan proposed by HMAc and developed with the support and assistance of the National Horticultural Research Network (NHRN).

WGMARD is accountable to the horticulture industries, HAL, HMAc (which is administered by HAL) and all industry and government funders of market access research and development. The mission of the working group is to use high-quality research and development to build market access for the Australian horticultural industry.

Scope

WGMARD is responsible for market access research and development strategy development. It also identifies, leads and manages a portfolio of research and development investments to build horticultural market access. WGMARD is focused on:

- gaining or regaining and maintaining market access via a targeted priority research and development program
- communicating progress broadly to industry, government and other stakeholders, both generally and through the organisations represented on WGMARD.

More specifically WGMARD:

- implements the 2005 Market Access Strategic Research and Development Plan, which itself is a key component of the horticultural industry's five-year Market Access Strategic Plan
- identifies priority research and development programs, including addressing appropriate funding levels for them

- identifies priority research projects, including negotiation and approval of funding, monitoring progress against agreed milestones, and assessing research and development outcomes against market access requirements
- seeks to identify and select the best possible research and development providers for the market access outcomes required
- ensures that research and development quality and data packages meet standards set by international trading partners and Australian governments
- reports progress and achievements – usually three times a year but more frequently if required – to funders and stakeholders.

Membership

WGMARD comprises members from the horticultural industry and supply chain, as well as research organisations, government and industry bodies involved in market access for Australian horticultural products. The membership of the working group comprises representatives of the horticultural industries, exporters, NHRN, CRCNPB, HMAC, BA and DAFF, with OCCPO and PHA as observers.

WGMARD has an independent chair – Barry Windle. Meetings are held regularly, with visits to each state to review that state's market access research and development portfolio, with the state organisations in attendance. Meetings address key issues for market access research and development from a national and strategic perspective.

Appendix 3: Division of labour

50

This section discusses how the tasks involved in implementing the NFFS could be divided between different organisational groups. The groups covered are the Australian Government, the state and territory governments, industry, research and development organisations, local governments, contracted suppliers and the community.

Australian Government

The plant biosecurity responsibilities of the Australian Government are delivered principally through the Agriculture, Fisheries and Forestry portfolio. Under this portfolio are:

- DAFF
- BA
- the research and development corporations (RDCs)
- the Australian Pesticides and Veterinary Medicines Authority (APVMA).

Operating under DAFF are AQIS, the Product Integrity, Animal and Plant Health Division (PIAPH), International Division (ID), the Bureau of Rural Sciences (BRS) and the Australian Bureau of Agriculture and Resource Economics (ABARE). Other organisations contributing to Australia's plant biosecurity are CSIRO; the Australian Customs Service; the Australian Government Department of Environment, Water, Heritage and the Arts; the Australian Government Department of Defence; and the Office of the Gene Technology Regulator.

BA provides science-based quarantine assessments and policy advice to protect Australia's pest and disease status; it also enhances Australia's access to international markets. RDCs are responsible for the research and development needs of industry and the broader community. Government agencies, in partnership with industry, are responsible for funding the research and development and the delivery of outputs through the corporations. APVMA administers the national registration scheme for agricultural and veterinary chemicals.

AQIS provides quarantine inspection for international passengers, cargo and animal or plant products arriving in Australia. The role of AQIS also includes inspection and certification of agricultural products for export. OCPPO, located within PIAPH, is responsible for helping to protect Australia's plant industries from the impact of new plant pests, diseases and weeds, to ensure the safe interstate and overseas trade of plant products. OCPPO coordinates national responses to plant pest incursions and provides policy leadership in Australia's plant health. ID is the international arm of DAFF; it provides policy and strategic support to the International Food and Agricultural Service, established to expand opportunities for Australia's agriculture, fisheries, food and forestry industries. BRS collaborates with state and other Australian government agencies to provide up-to-date scientific advice to decision makers. It is the interface between science and rural policy in agriculture, fisheries, forestry, natural resources, social and regional

issues. ABARE undertakes economic research and provides advice on a range of commodities.

CSIRO Plant Industry is one of the world's leading centres for plant science, conducting research to promote profitable and sustainable agrifood, fibre and horticultural industries, develop new plant products and improve natural resource management. It maintains strong working relationships with growers, industries and communities to target and deliver practical research outcomes.

State and territory governments

Plant health matters pertaining to states and territories are the responsibility of the respective state and territory agricultural departments. Broadly, the state and territory departments are responsible for activities associated with prevention, detection, eradication, management, diagnostics, and communications and awareness at a post-border level. Prevention encompasses a range of activities, including the development of biosecurity strategies and policy, risk assessments of pest threats, and the maintenance of quarantine regulations and measures within and between states. Detection involves activities that aim to identify pest threats, quarantine services and targeted and passive surveillance programs. State and territory government roles in eradication include the coordination of programs – in conjunction with industry – to eliminate non-endemic pests when necessary, guided by current legislation and regulations. Response plans and arrangements exist to ensure that effective procedures, protocols and systems are in place, and that there is clear delineation of roles and responsibilities, to ensure an effective response. All state and territory governments have various biosecurity management arrangements specific to their needs, including a combination of councils, committees and groups responsible for policy development and implementation. Diagnostics are needed in surveillance, response, research and development activities, and states and territories maintain their own diagnostic facilities, tailored to their specific requirements. These facilities are involved in identifying pests, developing pest-specific diagnostic protocols and maintaining detailed reference collections and databases. Awareness activities are undertaken by states and territories to support quarantine restrictions, to reduce the risk of entry and encourage early detection through reporting.

Industry

Industry activities take place through industry representative organisations at a regional, state or national level. Industry contribution to fruit fly management occurs through several mechanisms:

- Funding is provided by an industry for specific research and development projects, management initiatives or emergency responses. This funding – often managed by a

research and development funding body such as HAL – is often matched by the Australian Government or the state and territory governments, and supported through their active involvement.

- An industry's individual growers and businesses will contribute via the maintenance of quarantine through the treatment of produce for compliance with regulations (eg interstate certification assurance and export protocols) and on-farm management practices aimed at suppressing pest prevalence and produce damage.

Plant Health Australia

Plant Health Australia (PHA) is the peak body for plant biosecurity in Australia. It is owned by the Australian Government, all State and Territory Governments and all of the major commercial plant industries of Australia. As an independent, not-for-profit organisation, PHA works in genuine partnerships with its 45 government and industry Members to provide national coordination and strategy support for Australia's plant health system. PHA's activities lead to improved biosecurity policy and practice across Australia's plant sector, help mitigate risks posed by serious pest and diseases and build capacity to respond to plant pest emergencies.

The new ways of working together promoted by PHA have built trust between stakeholders in the national plant health system and engendered a sense of shared responsibility, rights and obligations. Specifically, they have enabled the creation of breakthrough partnership arrangements such as the Emergency Plant Pest Response Deed (a formal legally binding agreement between PHA, the Australian Government, all State and Territory Governments and plant industry signatories covering the management and funding of responses to emergency plant pest incidents) and integrated approaches to improve performance of the national system for areas such as risk mitigation, surveillance and diagnostics. PHA has also led the development of Industry Biosecurity Plans. These plans provide a rigorous assessment of high priority biosecurity risks (including for fruit flies) and apply the outcomes to enable prioritisation of further risk mitigation, diagnostic standards and contingency planning efforts. In the event of an incursion, PHA personnel are also available to provide technical support to industries where needed and act as an independent party scientific, technical advisory and decision making committees. Specific projects to address problems of national significance are undertaken on a fee-for-service basis.

PHA participates directly in government Standing Committee structures providing a conduit for presentation of industry issues and views, and mechanism for reaching collective agreement on risk mitigation and emergency response programs. In the absence of equivalent industry decision committee structures, PHA supports twice annually a forum that brings together its 30 industry peak body Members, as well as a range of other inter-government and industry consultation events, and project-focussed working groups.

With support from governments and affected industries, and on behalf of PIHC, PHA initiated and coordinated development of the National Fruit Fly Strategy in 2006–2007.

Research and development organisations

There are 15 rural research and development corporations that cover virtually all of the agricultural industries. The RDCs bring industry and researchers together to establish research and development strategic directions, and to fund projects that provide industry with the innovation and productivity tools to compete in global markets.

The RDCs do not perform research themselves, rather, they provide support through research providers such as state research and development agencies, tertiary institutions, CSIRO, industry associations and private service providers.

Cooperative research centres are Australian Government funded and aim to turn scientific innovations into new products, services and technologies that improve the efficiency, productivity and competitiveness of Australian industries. There is an emphasis on collaboration between business and researchers, and a strong education component, which focuses on producing graduates with skills that suit industry needs.

Local governments

Local governments operate under state and territory governments, and represent the needs of the local community. Local governments are policy and decision makers, they also:

- act as an advocate for concerned community members
- provide for regional planning and development, regional collaboration and participation
- manage projects involving local activities.

Contracted suppliers

A contracted supplier is a party who has been awarded the right, under contract to supply goods or services to another party.

Community

Community is described as a group of people defined by an aspect of their lifestyle, such as the district in which they live, or their occupation or interests. Civil societies, existing within communities, are important stakeholders in post-border activities.

Appendix 4: Preliminary prioritisation

52

Preliminary prioritisation

The following is a list of activities that have been recognised as priorities for funding and action. This list represents initial discussion on the activities that need to be undertaken in the short term (some of which extend into the medium term), and is intended as a guide. Only the recommendations with prioritised activities have been listed here. Short-term activities are those taking up to 18 months, medium-term activities are those taking 18–36 months.

Recommendation 1: Enhance the national ability to gain, maintain and regain market access

- *Short term* – Gain national and international endorsement of the revised code of practice (CoP) for Queensland and Mediterranean fruit fly.
- *Medium term* – Develop and finalise the generic CoP, extrapolating provisions of international standards to flies other than Queensland and Mediterranean fruit fly.

Recommendation 2: A national framework for regulatory approaches

- *Short term* – Continue to harmonise state regulations, to achieve consistency on a national basis that reflects continuous biogeographical zones and harmonisation with international standards. This will involve reviewing domestic trade certification (eg ICAs) relevant to fruit fly and establishing principles for harmonisation.

Recommendation 3: Communication

- *Short term*
 - Establish a national approach to communication; that is, activities that will consolidate a national approach in relation to regulation, communication and engagement of the plan in setting priorities and work programs, reporting, and regional and community elements of fruit fly awareness.
 - Undertake development and extension of communications materials and processes – possibly in conjunction with on-farm biosecurity activities, regional initiatives, periurban, and other communication projects (eg CRC communications, national biosecurity messages, Quarantine Domestic Publicity Program).

Recommendation 4: Emergency Plant Pest Response Deed

- *Short term* – Compile generic contingency plans based on groupings of ‘like’ fruit flies, taking into account existing protocols for detection and eradication of fruit flies attracted to methyl eugenol (Torres Strait program), cuelure (Queensland fruit fly CoP – fruit fly exclusion zone [FFEZ] operations) and Trimedlure (Mediterranean fruit fly CoP – Kunnunurra operations)

Recommendation 5: Industry and on-farm biosecurity

- *Short term*
 - Gather information and populate data sheets on economically significant fruit flies as the basis for consolidating generic contingency plans, surveillance, detection programs and management tools.
 - Identify biological information gaps in current systems (suspension zones, trap densities, sterile insect technique, dispersal, host status).
 - Identify global expertise for each economic fruit fly across a range of management areas, including surveillance, identification, management and control.
 - Store data sheets and technical information in the Pests and Diseases Image Library (PaDIL).

Recommendation 6: Regional and community biosecurity

- *Short term* – Carry out social-science based research, using fruit fly as a case study, to optimise biosecurity awareness activities and monitor the impact of the strategy.

Recommendation 7: Surveillance strategy

- *Short term* – Identify available lures, their efficacy and source or availability for all flies of economic importance.

Recommendation 8: Diagnostics strategy

- *Short term* – Develop fruit fly diagnostic protocols to identify and distinguish between all economic and non-economically significant flies for Australia.

Recommendation 9: Management resource

- *Short term*
 - Develop new systems for appropriate levels of protection, production and export systems, and gather data to support systems approaches.
 - Develop innovative management methods as elements of the tool box.
 - Develop analytical methods for systems approaches in trade – using the review of fenthion and dimethoate as a driver to integrate equivalent alternatives, and develop systems that will result in the recognition of production measures that meet appropriate levels of protection for the receiving region.
 - Generate data to support equivalent alternatives to fenthion and dimethoate in post harvest, immediate pre-harvest crop protection against fruit fly and treatments for fruit in compromised pest free areas.
- *Medium term* – Develop innovative management tools, including alternative treatments (fumigants) and quantification of system elements in integrated export or trade systems.

Recommendation 20: Institutional Arrangements

- *Short term* – Annual stakeholder consultation:
 - Report via a public document that will highlight the prioritisation, implementation and evaluation of activities against the 20 recommendations of the NFFS.
 - Hold an open forum to present the report, at which participants can discuss and provide feedback on the implementation and prioritisation of the NFFS.

Appendix 5: Fruit fly species and affected industries

This section lists fruit fly species of high priority in Australia (Table A5.1) and fruit fly affected industries in Australia (Table A5.2).

Table A5.1: Australian high-priority fruit fly species

| Scientific name | Common name | Scientific name | Common name |
|---|--------------------------|----------------------------------|----------------------------------|
| <i>Anastrepha fraterculus</i> | South American fruit fly | <i>Bactrocera melas</i> | – |
| <i>Anastrepha ludens</i> | Mexican fruit fly | <i>Bactrocera musae</i> | Banana fruit fly |
| <i>Anastrepha obliqua</i> | West Indian fruit fly | <i>Bactrocera mutabilis</i> | – |
| <i>Anastrepha serpentina</i> | Sapote fruit fly | <i>Bactrocera neohumeralis</i> | Lesser Queensland fruit fly |
| <i>Anastrepha spp.</i> | Anastrepha fruit flies | <i>Bactrocera occipitalis</i> | Fruit fly |
| <i>Anastrepha striata</i> | Guava fruit fly | <i>Bactrocera papayae</i> | Papaya fruit fly |
| <i>Anastrepha suspensa</i> | Caribbean fruit fly | <i>Bactrocera pasiflorae</i> | Fijian fruit fly |
| <i>Bactrocera aquilonis</i> | – | <i>Bactrocera philippinensis</i> | Philippine fruit fly |
| <i>Bactrocera bryoniae</i> | Fruit fly | <i>Bactrocera trivialis</i> | New Guinea fruit fly |
| <i>Bactrocera carambolae</i> | Carambola fruit fly | <i>Bactrocera tryoni</i> | Queensland fruit fly |
| <i>Bactrocera caryeae</i> | – | <i>Bactrocera xanthodes</i> | Pacific fruit fly |
| <i>Bactrocera correcta</i> | Guava fruit fly | <i>Bactrocera zonata</i> | Guava fruit fly, peach fruit fly |
| <i>Bactrocera cucumis</i> | Cucumber fruit fly | <i>Ceratitis capitata</i> | Mediterranean fruit fly |
| <i>Bactrocera cucurbitae</i> | Melon fly | <i>Ceratitis catoirii</i> | Pest fruit fly |
| <i>Bactrocera dorsalis</i> | Oriental fruit fly | <i>Ceratitis cosyra</i> | Mango fruit fly |
| <i>Bactrocera expandens</i> | – | <i>Ceratitis rosa</i> | Natal fruit fly |
| <i>Bactrocera facialis</i> | Tropical fruit fly | <i>Dacus ciliatus</i> | Cucurbit fly |
| <i>Bactrocera frauenfeldi</i> or <i>Bactrocera obliqua</i> | Mango fruit fly | <i>Drosophila pararubida</i> | – |
| <i>Bactrocera jarvisi</i> | Jarvis' fruit fly | <i>Drosophila rubida</i> | – |
| <i>Bactrocera kandiensis</i> | – | <i>Myospila argentata</i> | – |
| <i>Bactrocera kirki</i> | Fruit fly | <i>Rhagoletis pomonella</i> | Apple maggot |
| <i>Bactrocera kraussi</i> | Krauss's fruit fly | <i>Rhagoletis fausta</i> | Black cherry fruit fly |
| <i>Bactrocera melanotus</i> | Fruit fly | <i>Rhagoletis indifferens</i> | Western cherry fruit fly |

Table A5.2: Australian fruit fly affected industries

| | |
|--|---|
| Apple and Pear Australia Ltd | Australian Tomato Processors Association Inc. |
| Australian Banana Growers | Australian United Fresh Fruit and Veg Association |
| Australian Blueberry Growers Association | AUSVEG Ltd |
| Australian Citrus Growers | Avocados Australia Ltd |
| Australian Custard Apple Growers Association | Canned Fruit Industry Council of Australia |
| Australian Dried Fruits Association Inc. | Cherry Growers of Australia |
| Australian Hydroponic and Greenhouse Association Inc | Growcom Fruit and Vegetable Growers Ltd |
| Australian Kiwifruit Growers Association | Low Chill Australia Inc |
| Australian Lychee Growers Association | Melon Growers of Australia |
| Australian Mango Industry Association Ltd | National Citrus Packers Association |
| Australian Nashi Growers Association | Nursery and Garden Industry Australia Ltd |
| Australian Olive Association | Organic Agriculture Association Inc |
| Australian Papaya Industry Association | Rambutan and Tropical Exotic Growers Association |
| Australian Passionfruit Industry Association | Riverina Citrus |
| Australian Persimmon Industry Association Ltd | Summerfruit Australia Limited |
| Australian Table Grape Association Inc. | |

Abbreviations and acronyms

| | |
|-----------|--|
| ABARE | Australian Bureau of Agriculture and Resource Economics |
| ABIN | Australian Biosecurity Intelligence Network |
| ACIAR | Australian Centre for International Agricultural Research |
| AHEA | Australian Horticulture Exporters' Association |
| ALOP | Appropriate Level of Protection |
| APVMA | Australian Pesticides and Veterinary Medicines Authority |
| AQIS | Australian Quarantine and Inspection Service |
| AusBIOSEC | Australian Biosecurity System for Primary Production and the Environment |
| BA | Biosecurity Australia |
| BRS | Bureau of Rural Sciences |
| CoP | code of practice |
| CRCNPB | Co-operative Research Centre for National Plant Biosecurity |
| CSIRO | Commonwealth Scientific and Industrial Research Organisation |
| CSWG | Commonwealth–State Working Group |
| DAFF | Australian Government Department of Agriculture, Forestry and Fisheries |
| DQMAWG | Domestic Quarantine Market Access Working Group |
| EPPRD | Emergency Plant Pest Response Deed |
| FF | fruit fly |
| FFEZ | fruit fly exclusion zone |
| GIS | geographic information systems |
| HAL | Horticulture Australia Ltd |
| HMAC | Horticultural Market Access Committee |
| IAC | Industry Advisory Committee |
| IBP | industry biosecurity plan |
| ID | international division |
| IPPC | International Plant Protection Convention |
| ISPM | International Standard on Phytosanitary Measures |
| NCRIS | National Collaborative Research Infrastructure Strategy |
| NFFS | National Fruit Fly Strategy |
| NFFSIC | National Fruit Fly Strategy Implementation Committee |
| NHRN | National Horticulture Research Network |
| OCCPO | Office of the Chief Plant Protection Officer |
| PaDIL | Pests and Diseases Image Library |
| PFF | Asian papaya fruit fly |
| PHA | Plant Health Australia |
| PHC | Plant Health Committee |
| PIAPH | Product Integrity, Animal and Plant Health Division |
| PIHC | Primary Industries Health Committee |

| | |
|--------|---|
| PIMC | Primary Industries Ministerial Council |
| PISC | Primary Industries Standing Committee |
| PNG | Papua New Guinea |
| PRA | pest risk analysis |
| PRR | pest risk review |
| R&D | research and development |
| RDC | research and development corporation |
| RIRDC | Rural Industries Research and Development Corporation |
| SPHDS | Sub-Committee on Plant Health Diagnostic Standards |
| SPS | Sanitary and Phytosanitary (refers to the WTO Sanitary and Phytosanitary Agreement) |
| SRG | Surveillance Reference Group |
| WG | working group |
| WGMARD | Working Group for Market Access Research and Development |
| WTO | World Trade Organization |

| Term | Definition |
|---------------------------------|---|
| Activities | |
| Awareness | The establishment or improvement of understanding about a topic (or issue) and its priority. Awareness activities aim to promote the understanding and consciousness of an issue. |
| Communication | The deliberate, planned and sustained effort to establish and maintain awareness and mutual understanding. |
| Detection | Survey or investigation conducted in an area to determine if pests are present or absent [ISPM 5, modified by including 'or investigated'] |
| Diagnostics | The process of identifying a pest. |
| Eradication | Application of phytosanitary measures to eliminate a pest from an area [ISPM 5]. |
| Management | Evaluation, selection and implementation of options to reduce the risk associated with a pest's introduction, spread and impact. |
| Prevention | The act of intercepting; using foresight to stop something (a pest) from occurring, proceeding or arriving. |
| Enablers | |
| Education and training | The process of acquiring or transferring specific skills or knowledge. |
| Information and data management | The processes and tools used to store, access and manipulate information. |
| Operations | Actions and activities that deliver elements of the plant health system to achieve prevention, detection, eradication, management and communications or awareness outcomes. |
| Pest risk analysis | The process of evaluating biological or other scientific and economic evidence to determine whether a pest should be regulated and the strength of any phytosanitary measures to be taken against it [ISPM 5]. |
| Phytosanitary regulation | Official rule to prevent the introduction and/or spread of quarantine pests, or to limit the economic impact of regulated non-quarantine pests, including establishment of procedures for phytosanitary certification [ISPM 5]. |
| Policy | A plan or course of action, as of a government, political party, or business, intended to influence and determine decisions, actions and other matters. |
| Research and development | Scientific investigation to identify and understand a problem, and then determine the most efficient way to resolve it; also the application of those findings to business practice, to receive the greatest gains. |
| Strategy elements | |
| Border | The boundary of a defined area; commonly used as a point of differentiation between jurisdictions. |
| Community | A group of people defined by an aspect of their lifestyle, such as the district they live in or their occupation. |
| Farm | A tract of land used for the purpose of agricultural production. |
| Industry | A particular sector of an economy made up of private enterprise. |
| Pre-border | All activities, items or organisms that occur outside of a defined border or external to an area. 'Transport refrigeration is a <i>pre-border</i> treatment for imported goods'. |
| Other definitions | |

| Term | Definition |
|--|--|
| Bio-geographical region | <p>An area that is common across its breadth with regard to distinct environmental factors (climate, soil, geography, geology, ecology and epidemiology - as it impacts, in this case, on fruit flies) so that sanitary and phytosanitary measures can be, and are demonstrated to be, applied consistently to it as a whole.</p> <p>The area may be:</p> <ul style="list-style-type: none"> • naturally free from fruit fly due to the presence of barriers or environmental conditions; • maintained free from fruit fly due to movement restrictions and related measures (although fruit flies have the potential to establish there); and/or • made free from fruit fly due to a successful fruit fly eradication programme. |
| Buffer zone | An area surrounding or adjacent to an area officially delimited for phytosanitary purposes, to minimise the probability of spread of a target pest into or out of the delimited area, and subject to phytosanitary or other control measures, if appropriate. |
| Containment | Application of phytosanitary measures in and around an infested area to prevent spread of a pest [ISPM 5]. |
| Economically significant (pest or fruit fly) | <p>An organism that may have one or more of the following impacts:</p> <ul style="list-style-type: none"> • a significant and detrimental reduction in the quality or yield of a horticultural commodity during production or storage • a limitation in the access to domestic or international markets, denying access completely or requiring expensive treatment procedures • significant public or social costs due to a reduction in the value of public amenity or public wellbeing. |
| Endemic | Pests or organisms considered 'native' to Australia. |
| Equivalence (of phytosanitary measures) | The situation where, for a specified pest risk, different phytosanitary measures achieve a contracting party's appropriate level of protection [ISPM 5] |
| Harmonise | The alteration or adjustment of regulations to achieve a greater degree of alignment and best fit. |
| Non-endemic | Pests or organisms considered 'exotic' to Australia. |
| Quarantine pests | A pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled [ISPM 5]. |
| Regulated non-quarantine pests | A non-quarantine pest whose presence in plants for planting affects the intended use of those plants with an economically unacceptable impact, and which is therefore regulated within the territory of the importing contracting party [ISPM 5]. |
| Surveillance | An official process which collects and records data on pest occurrence or absence by survey, monitoring or other procedures [ISPM 5]. |

Note: all references recognised here were used in the development of the strategy or the underlying supporting papers developed by each of the four subgroups.

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Contact us

Plant Health Australia
Suite 5, FECCA House
4 Phipps Close
DEAKIN ACT 2600

Phone +61 2 6260 4322

Fax +61 2 6260 4321

Email admin@phau.com.au

www.planthealthaustralia.com.au

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