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Image courtesy of John McDonald, Nursery and Garden Industry Australia

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Image courtesy of the Australian Table Grape Association

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Foreword

Australia maintains its freedom from many serious plant pests by devoting considerable resources to plant biosecurity. It's a status that, while often taken for granted, benefits all Australians. Our unique ecosystems, vigorous plant production industries, high standard of social amenity and rural way of life are sustained by the system.

The National Plant Biosecurity Status Report documents the pest species that pose a significant threat to our nation and charts the efforts of the government, industry, research and community partners in maintaining and strengthening the plant biosecurity system.

This year, the content of the report has been rearranged to better reflect the multiple contributions that stakeholders make to maintain the integrity of the system – the plant biosecurity partnership. Activities are set out in accordance with the system's three layers of protection: pre-border, at the border and post-border.

Setting the content out in this way emphasises the role of everyday Australians as they go about their daily activities. Each of us has a role to play in keeping unwanted pests from spreading to and within Australia and it is hoped that the new format will assist in raising understanding of shared responsibility.

The final chapter of the book collates and analyses the 700 scientific projects being carried out at multiple institutions around the country. It is included in a chapter of its own since scientific knowledge underpins all layers of biosecurity in Australia. Each project sheds light on some aspect of plant or bee biosecurity that will inform better management of pests and crop production. The data is more robust this year, due to the use of an improved data collection technique.

Throughout the book the reader will find feature articles, which make apparent the significance of all of this activity. Examples of how the system works in specific circumstances brings the system to life.

This 2017 edition has been developed from some 90 contributions from plant biosecurity stakeholders. PHA is grateful for the cooperation that allows its publication.

I commend this highly valuable resource to you.



Steve McCutcheon
Chairman
Plant Health Australia







Overview

Without biosecurity efforts, plant pests such as insects, fungi, bacteria and viruses will spread to suitable host plants in new areas, countries and, aided by the movement of people and goods, to new continents.

The damage from new pests varies from species to species, but it can be significant. In addition to changing natural ecosystems and disrupting the built environment, it is estimated that every year between 20 and 40 per cent of crops are lost to plant pests and weeds globally¹. The losses to food, fibre and foliage production are vast and will worsen without measures to curtail further spread.

Australia is fortunate to be free from many serious plant pests that exist overseas, due to our geographic isolation and more than a century of effective quarantine measures. Our enviable plant health status confers significant benefits to us all. Not only does it protect our unique natural environment, but it also supports our rural way of life and the economy. It allows higher yields for farmers, with less pesticide use, resulting in lower production costs and greater acceptance of our produce around the world.

The definition of a pest used in this report (except in Chapter 5) covers insects, mites, snails, nematodes, pathogens (diseases) and weeds that have the potential to adversely affect food, fibre, ornamental crops, bees and stored products, as well as environmental flora and fauna. Exotic pests are those not currently present in Australia. Established or regionalised pests are those currently present within Australia.

The importance of plant biosecurity

To maintain this favourable situation, Australia places a high priority on plant biosecurity, a necessity in this age of increased global trade and travel.

Given the enormous number of potential pest incursions by exotic species, Plant Health Australia (PHA) has made assessments of pest threats industry by industry to develop a list of high priority pests that warrant special biosecurity efforts. Each of the 370 species on the list would thrive in Australian conditions, with the potential to cause ongoing damage to native flora and plant production systems.

While the activities of the Australian Government, such as restrictions on what comes in at international arrival points, are often the most visible aspects of the plant biosecurity system, in fact, all Australians have a role to play in keeping Australia free from new pests.

Other key stakeholders with important roles to prevent the spread of weeds and pests include peak industry bodies and their growers, state government agencies, local councils, grower groups, transporters, research organisations, international and domestic travellers, gardeners and anyone who visits a farm including utility providers such as electricity and water service staff.

Almost half of Australia's total land area is used for agriculture. In 2015–16, around 371 million hectares was farmed by 85,681 crop and livestock businesses, all of whom depend on plant production to some extent. Of all the states and territories, Queensland has the highest proportion of agricultural land².

Due to wide climate variability across Australia (see Figure 1), producers grow a variety of crop species, each of which has a set of pests that pose a threat to production. Bananas, sugarcane, pineapples, mangoes and ginger are grown in the tropical and sub-tropical north, while pome and stone fruits, grapes, nuts, onions and potatoes can be cultivated in more southern temperate zones. Vast areas with grassland climate are suited to broadacre production of grains, pulses, cotton, forestry, and pasture for livestock production, and vegetables are grown in many areas. Thirty nine crop industries, from grains to passionfruit, are featured in the next chapter.

Plant production makes a significant contribution to the Australian economy with an increasing amount of produce, particularly grains, cotton and higher value premium horticultural crops, being exported overseas.

1. Savary, S, Ficke, A, Aubertot, J-N and Hollier, C (2012). Crop losses due to diseases and their implications for global food production losses and food security. *Food Security*, 4(4): 519-537

2. Australian Bureau of Statistics, 2017, 7121.0 - Agricultural Commodities, Australia, 2015-16

Figure 1. Australia's climate zones allow for the production of many types of crops

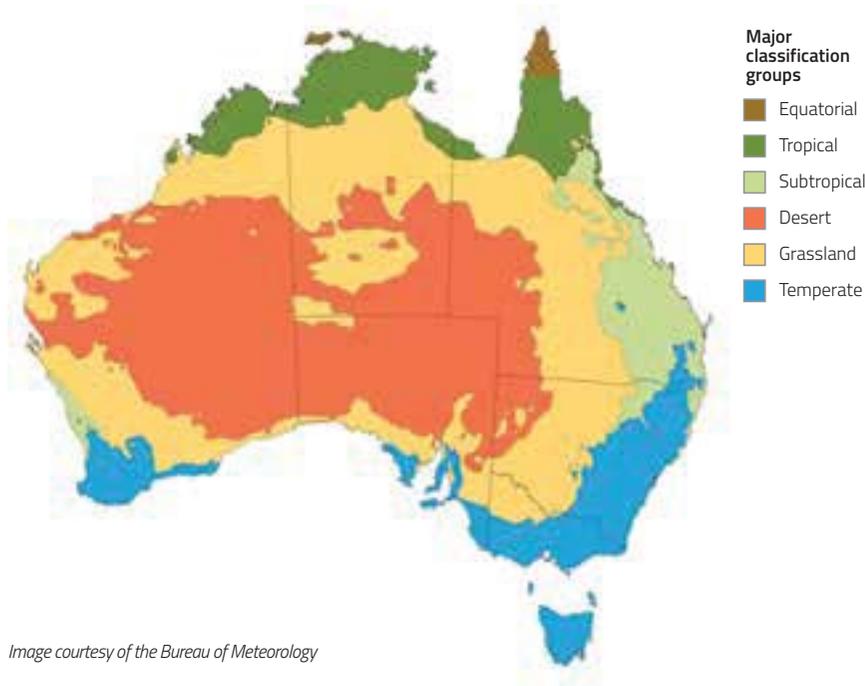
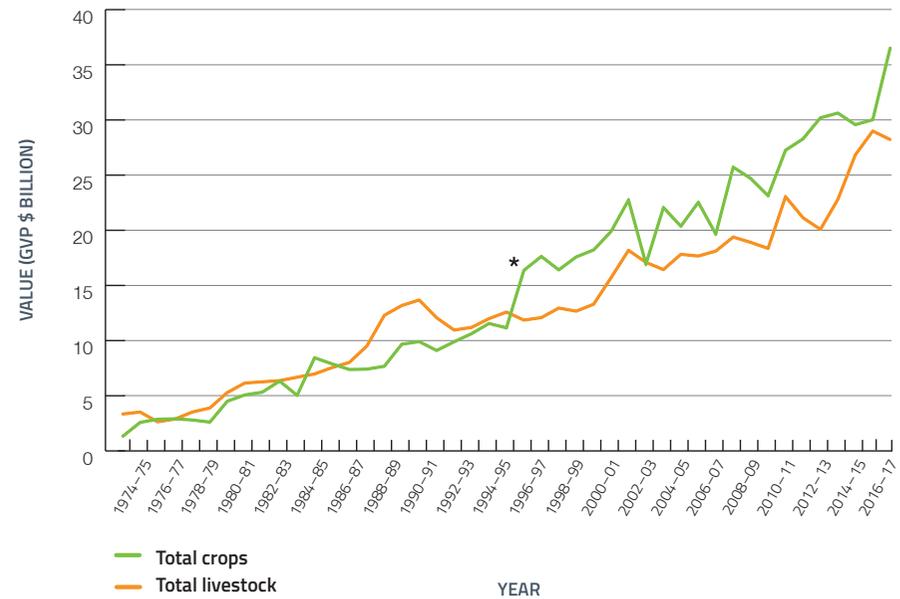


Image courtesy of the Bureau of Meteorology

Produce destined for overseas markets must meet the standards set for market access, which often includes evidence that production areas are free from certain pests. Production and trade could be jeopardised by an incursion of a new pest that makes its way into our fields, orchards and plantations.

According to the Australian Bureau of Agricultural and Resource Economics in 2016–17, plant production industries had a gross value of \$36.5 billion (see Figure 2)³. This is higher than the value of livestock production industries, a situation that has existed for a decade.

Figure 2. Gross value of plant and animal production industries in Australia, 1972–2017*



* Includes forestry from 1995–96

Our unique ecosystems need protection from invasive exotic plant pests, some of which could change the face of the landscape, disrupt ecosystems and threaten native species. There is much to protect. Australia has huge biodiversity including many native plants and animals that occur nowhere else on Earth. Parklands and other public amenities too are threatened by the introduction of particular exotic plant pests.

It takes a great amount of effort to keep exotic pests out. With a total coastline stretching almost 60,000 km, Australia's borders can only be protected from plant pests by a collaborative partnership, and by coordinated activities that occur pre-border (overseas), at the border and within Australia (post-border).

3. Agricultural commodities: March quarter 2018 - Statistics - data tables 13A and 13B. Australian Bureau of Agricultural and Resource Economics, Canberra. Accessed online 31 May 2018 Agriculture.gov.au/abares/research-topics/agricultural-commodities/report



About this book

The National Plant Biosecurity Status Report 2017 describes the major activities that make up Australia's extensive plant biosecurity system and identifies the main stakeholder groups with greatest responsibility for each.

Chapter 1 provides an overview of the layers of Australia's plant biosecurity system and the roles and responsibilities of key organisations as well as agreed frameworks that guide and govern the system including biosecurity legislation and policy statements. It provides details of the government departments and agencies with key responsibilities.

Chapter 2 describes Australia's plant industries, including their value and where the produce is grown. Peak plant industry bodies for each industry are identified, and key pests and risk mitigation measures are identified.

Chapters 3 and 4 explain the complex web of activities that make up the biosecurity system, structured around the layers of protection: pre-border and at the border.

Chapter 5 explains the system for responding to incursions of new plant pests.

Chapter 6 features pest management within Australia including managing established pests and containing regionalised pests with domestic quarantine measures, on-farm biosecurity, the general biosecurity duty of everyday Australians, as well as weeds.

Chapter 7 describes the diagnostic and surveillance systems. Together, these function to provide an early warning system of any new exotic plant pest incursion or breach of containment of regionalised pests as well as to facilitate market access.

Australian plant biosecurity research, development and extension (RD&E) is covered in Chapter 8, with information on the hundreds of research projects undertaken in 2017, aimed at providing a better understanding of plant pests and how to deal with them.

