Horticulture Australia Limited Response to Productivity Commission Inquiry into Rural Research and Development Corporations Issues Paper

Horticulture Australia Limited

Review of Rural Research & Development Corporations
Response to the Productivity Commission Issues Paper

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Contents

Tables and Figures

Executive Summary

About HAL and the Australian Horticulture Sector

Horticulture Australia Limited (HAL) is an industry owned rural research and development corporation for the horticulture sector. HAL is accountable for the efficient and effective investment of industry and government funds in R&D, and industry investment in marketing. Horticulture consists of a variety of industries including fruit, nuts, vegetables, fungi, nursery, turf, cut flowers and extractive crops. HAL manages more than 40 horticulture industries investments in marketing, research, development and extension activities. In 2009/10 it is forecast that HAL will invest $96.8 million in levy payer, industry and government matching funds.

The horticulture sector is the third largest agricultural sector in Australia. ABARE estimated the Gross Value of Production (GVP) of horticulture sector was $8.6 billion in 2008/09, up from $6.5 billion in 2004/05. ABARE is forecasting the GVP of the sector in 2010/11 will be $9.24 billion. The sector accounts for approximately 23% of the estimated 305,763 persons working in the agriculture sector in 2007/08 (AEC, 2009).

Horticulture industries have been successful. Future Focus, a comprehensive strategic analysis prepared for the entire sector, found that in terms of the gross value of horticulture production, Australia has experienced a 44% increase over the past 18 years in real terms - with 28% of the increase due to price rises for fruit and vegetables and around 16% due to increases in production.

Horticulture industries provide the domestic supply of clean and green fresh fruits, vegetables, fungi, nuts and amenity horticulture, most produced close to local markets. Horticulture production is mostly consumed within Australia, with about 90% of production destined for the domestic market.

Horticulture industries are forecast to continue growing, and at a more rapid rate. The industry, through Future Focus has identified significant opportunities for growth and increased profitability

Globally, horticulture markets and trade are growing at the equivalent of Australia's entire horticulture output each year. The Australian domestic market alone is projected to expand by 3.9 million consumers by 2020.

Future Focus concluded that refining and enhancing the focus of R&D on the three key R&D programs alone could result in an extra $2.45 billion in industry-wide profit – generated predominantly by harnessing export opportunities. Under a "business as usual" scenario, it was estimated that the value of the sector could increase by $0.9 billion by 2020.

To harness the growth opportunities, Future Focus concluded that the industry will require innovation, and sophisticated products. The areas for R&D focus to underpin future success are in: building consumer demand; meeting consumer expectations; market access; and sustainable resource use.

The majority of HAL's funding has been of an applied nature, which has enhanced productivity in the shorter term. However to sustain good research and underpin domestic R&D capacity there is a need to continue to invest in basic research of a longer term focus.

HAL's RDC Model

The R&D and marketing funds for each industry are administered in individual "buckets". HAL has a collaborative approach to working with each industry to manage their investments. HAL's model and structures for operation provide for structured industry and levy payer involvement in the identification of R&D priorities, programs and projects. Through Industry Advisory Committees (IACs), 422 industry participants are formally involved in HAL R&D planning and delivery.

The HAL Board approves R&D investment recommendations made by Industry Advisory Committees. IACs are provided with guidance on how to respond to and align with Australian Government research and development priorities as well as HAL's R&D priorities. HAL has put in place processes for the Board to efficiently and clearly look across each industry's Annual Investment Plans to gauge the level of alignment with priorities, and the Board actively engages with Peak Industry Bodies (HAL members) and IACs to discuss priorities and offer guidance.

HAL requires industries to invest 1.5% of levy receipts (which is then matched with government funds) in an Across Industry Program which comprises R&D activity for the benefit of all horticulture. This program focuses on matters that are relevant across all horticulture industries, and covers issues such as market access; water use and water use efficiency; weed, pest and disease management; quarantine and biosecurity; and the availability of labour. In the next 4 years, commitment to across industry expenditure will be increased to 5%.

HAL is an integral part of national horticulture R&D

HAL is a member of the National Horticultural Research Network (NHRN), comprising HAL's General Manager of R&D, the State Departments of Primary Industries, CSIRO and University of Tasmania. HAL co-invests with NHRN members, as well as other publically funded institutions including universities. Projects with CSIRO, State Departments and universities comprise about 27% of HAL's total investment in R,D & E. Since 2005, HAL has invested $1.4 million in three CRCs, as either a core, supporting or project partner.

HAL has effectively managed industry and government investment in R&D

HAL's members have demonstrated their support for the company and the RDC model it provides. Many horticulture industries have agreed to either start investing, or increase their investment in the RDC model. Since inception in 2001, HAL's membership has grown from 21 to 39. Eight industries have transitioned from contributing voluntary to statutory levies and a further four have agreed to introduce statutory levies. Three industries have increased the rate of the levy.

HAL's growth in membership and levy funds under management has grown considerably since its inception. HAL has increased efficiency in the management of levy funds. In 2001/02, HAL required 0.72 FTE per million dollars of funds invested. In 2009/10, this has reduced by 16.5% to 0.6 FTE per million dollars. HAL is doing more with the same proportion of corporate overheads to funds invested. HAL has taken an increasingly centralised role in governance, planning and management of R&D funds, with limited variance in corporate expenditure as a percentage of total company expenditure.

HAL has delivered benefits

HAL has delivered outcomes that benefit horticulture industries, and the Australian community more broadly. The beneficiaries of horticulture R&D include:

- Growers, through improvements in productivity and profitability;
- Regional Australia, via employment in sustainable and competitive industries and labour intensive industries located in rural and regional areas;
- The broader community, through improvements in farming practices to better manage the environment and in research to better understand the health and wellbeing attributes of horticultural produce and products;
- Australian consumers, who are able to access quality, safe, fresh products.

HAL's R&D efforts have earned a positive rate of return on investment, and this is expected to continue. Benefit costs analyses conducted on HAL projects demonstrate benefit cost ratios of between 1.7 and 14.6 to one.

HAL's approach enables benefits to be provided to all industry participants. HAL's industry development officers focus on extending the results of HAL's R&D efforts, and the outcomes of investments are made freely available to industry participants. Furthermore, HAL funded activities are focused on supply chains and securing and maintaining access to international markets. These efforts indirectly benefit all growers.

HAL & the RDC model has demonstrated its past success

The horticulture sector has experienced considerable success over the past decade. HAL has played a significant role in this success through its investments in R&D that have: improved on-farm productivity; increased the quality of products to build consumer demand; helped avert biosecurity incursions; and enabled access to international markets.

As an organisation, HAL has delivered on its objects and the intentions of industry and government in establishing it. HAL provides leadership and a point of coordination for the industry. HAL enables collaboration between industries, and economies of scale for the industries who invest their levy funds through the company. This economy of scale means that even small industries are provided professional services and support to ensure R&D is well targeted and efficiently delivered.

Through the RDC model, the Australian Government plays a critical role in providing funds and sharing the investment in R&D. Without this collaboration, growers would be much less willing to pay levies, resulting in substantial underinvestment in innovation in horticulture. Governments would find it much more difficult to achieve the priorities it has identified. In the absence of the government/industry partnership created by RDCs such as HAL, investment in R&D will fall far short of the level and type needed to achieve national objectives and adequate on-farm investment in innovation.

HAL has an institutional role beyond just a research and development corporation

HAL is the only institution that brings together the breadth of the horticulture sector at the national scale. While HAL's members are organisations that represent growers, HAL's voluntary contribution mechanism and links with industries beyond the farm gate means that the company's activities span the horticulture supply chain. Governments rely on HAL as a focal point for the sector. Without HAL,

the industry is diffuse, which creates difficulties when coordination on issues such as market access, trade, biosecurity and food safety is required.

HAL strives to improve the value of industry and Australian Government investment in R&D.

HAL has a culture that is open to constructive and evidence based suggestions for continued improvement. Within the current model, HAL makes the effort to improve the way it does business. The performance review required under the Statutory Funding Agreement identified areas of focus for improvement, and the Company has considered and explored each of these recommendations. Board practices, providing improved guidance and support to industry planning activities, and governance arrangements for the relationship between HAL and Peak Industry Bodies are examples of these. The current RDC model is sufficiently flexible to enable further change and improvement.

HAL has benefitted the industry and the community since its inception

In summary, HAL:

- Has been actively supported by the horticulture sector and the company's members for its commissioning and delivery of R&D
- Has delivered benefits to industry that have contributed to the successful growth of the industry over the past decade
- Has delivered public good outcomes to the Australian community and consumers
- Encourages formal participation by industry in the planning and management of R&D
- Enables collaboration between the diverse industries of the horticulture sector, through formal programs of across industry investment and informal learning and sharing opportunities
- Has enabled collaboration with key R&D stakeholders including State Departments, CSIRO, CRCs and universities
- In addition to its role in delivery of marketing and R&D services, provides the only focal point for national coordination across the horticulture sector;
- Is somewhat constrained by the current 0.5% GVP cap
- Is sufficiently flexible to enable continuous improvement to respond to key government concerns including governance, alignment with national priorities, and collaboration with other RDCs

In conclusion

HAL is keen to actively engage with the Productivity Commission and the Australian Government in this review of investment in agriculture R&D. HAL is eager to contribute to the robust examination of the range of future options available, and willing to provide further information to the Productivity Commission to support its analysis.

In providing this information to the review, HAL hopes that it assists the Productivity Commission in articulating options for evaluation. It is also hoped that the information serves as an outline of the current R&D operating environment when considering the pros and cons of alternative approaches. Recognition of the achievement and improvements made by the RDCs over the recent past will enable a constructive discussion with all stakeholders regarding the Australian Government Research and Development Corporations Model.

1 Introduction

Horticulture Australia Limited is pleased to provide a response to the Productivity Commission's Issues Paper to inform the current inquiry into the Australian Government Research and Development Corporations Model.

This response is to provide the Productivity Commission with information about the Australian horticulture sector, and the role of research and development (R&D) and HAL in underpinning the past, and projected future success of horticulture industries.

The paper is organised in the following sections:

- Section 2 – ***About HAL***, provides a brief overview of the company.
- Section 3 - ***The Australian horticulture sector***, describes the sector, it's past success and future outlook.
- Section 4 - ***R&D in the Australian horticulture sector***, describes the investors and beneficiaries of horticulture R&D, the reasons for market failure in R&D delivery in the sector and the rational for public investment through RDCs.
- Section 5 - ***The evolving role of HAL in horticulture R&D***. This section documents HAL's past investments, its approach R&D planning and the engagement of stakeholders, and collaboration with other agencies involved in horticulture R&D.
- Section 6 - ***HAL has delivered positive outcomes for industry & community*** describes the industry and public benefits arising from HAL's activities.
- Section 7 - ***HAL's role in the broader Industry and Government Community*** describes HAL's role beyond R&D, and its approach to collaborating with other research and development corporations
- Section 8 - ***Improving the value of HAL***, describes some of the key changes HAL has made, within the context of the RDC model, to improve the value it provides levy payers, industry more broadly, and the Australian community.

The paper contains data and case studies to support the discussion. HAL would be pleased to provide the Productivity Commission with further information or analysis to support the inquiry.

2 About HAL

2.1 Overview

Horticulture Australia Limited (HAL), as the rural research and development corporation (RDC) for the horticulture sector, is the service organisation for more than 40 horticulture industries, providing the capability to invest in research, development and marketing programs that provide benefit to industry and the wider community.

HAL manages an annual investment of more than $95 million in horticulture sector marketing and R&D. Horticulture consists of a variety of industries including fruit, nuts, vegetables, nursery, turf, cut flowers and extractive crops.

Funds for this investment are received from a range of sources, and includes:

- statutory levies received from growers in member industries;
- voluntary contributions from grower associations, commercial enterprises and individuals;
- Australian Government matching funding for the R&D component of statutory levies and voluntary contributions (up to 0.5 per cent of the gross value of production for the total horticulture industry); and
- interest, royalties, sale of publications and other sources of income.

In the context of the broader RDC model, there are three key characteristics of HAL, which are not exhibited by other RDCs. These characteristics are:

- HAL's members, in the main, are grower industry representative bodies;
- HAL has more than 40 different industries on which it focuses; and
- HAL is required to separate each horticulture industry's levy funds into discrete 'buckets' and account for each accordingly. Thus, HAL's efforts are focused on facilitating industry involvement in planning and prioritisation, and providing coordination and project management services to the industry.

2.2 History of HAL

HAL was established in 2001 following the abolition of three statutory authorities: the Australian Horticulture Corporation (AHC); the Horticulture Research & Development Corporation (HRDC); and the Australian Dried Fruits Board.

The Horticulture Marketing and Research Development Services Act 2000 was enacted by the Commonwealth Parliament to enable the Commonwealth Government to enter into a deed of agreement (statutory funding agreement) with HAL to pass through levy contributions and make matching payments for eligible research and development expenditure. This statutory funding agreement (SFA) specifies that HAL must only spend funds on approved activities. These activities must be consistent with the Company's strategic and operating plans, and the Commonwealth Government's guidelines including its R&D priorities.

2.3 Structure and Membership

HAL is an industry owned, not for profit company, limited by guarantee. HAL has three classes of membership. A Class members are those organisations which are Industry Representative Bodies whose constituents contribute statutory levy funds to the company and are recognised by the Commonwealth as the prescribed industry body for each horticulture industry. HAL has 27 A Class Members.

B class members are those organisations whose members make a voluntary levy or contribution. HAL has 12 B Class Members. The company's constitution contains provision for C Class membership. This would enable a person who pays voluntary industry contributions to be a member of the company. HAL has no C Class members.

A Class Members (Statutory Levies)	
Almond Board of Australia	Australian Passionfruit Industry Association
Apple and Pear Australia Ltd	Australian Rubus Growers' Association
Australian Banana Growers' Council Inc	Australian Table Grape Association Inc
Australian Custard Apple Growers' Association	AUSVEG
Australian Dried Fruits Association Inc	Avocados Australia Ltd
Australia Lychee Growers' Association	Cherry Growers of Australia Inc
Australian Macadamia Society Ltd	Chestnuts Australia Inc
Australian Mango Industry Association Ltd	Citrus Australia
Australian Mushroom Growers'Association Ltd	Nursery & Garden Industry Australia
Australian Nashi Growers' Association Ltd	Persimmons Australia Inc
Growcom Australia (as representatives of the Pineapple Grower's Association)	Potato Processing Association of Australia
Onions Australia	Strawberries Australia In
Papaya Australia	Summerfruit Australia Ltd
Turf Producers' Association Ltd	

B Class Members (Voluntary levies or contributions)	
Australian Asparagus Council	Australian Garlic Industry Association Inc
Australian Melon Association	Australian Nut Industry Council Inc
Australian Processing Tomato Research Council Inc	Australian Sugar Plum Industry Association
Australian Walnut Industry Association	Canned Fruits Industry Council of Australia
Growcom Australia	Pistachio Growers Association Inc
Tasmanian Farmers and Graziers Association – Pyrethrum Growers Group	Australian Blueberry Growers Association

3 The Australian Horticulture Sector

3.1 Overview of the Sector

3.1.1 Overview

The horticulture sector is the third largest agricultural sector in Australia. ABARE is forecasting the Gross Value of Production (GVP) of the sector to be $9.24 billion in 2009/10, up from $6.5 billion in 2004/05.

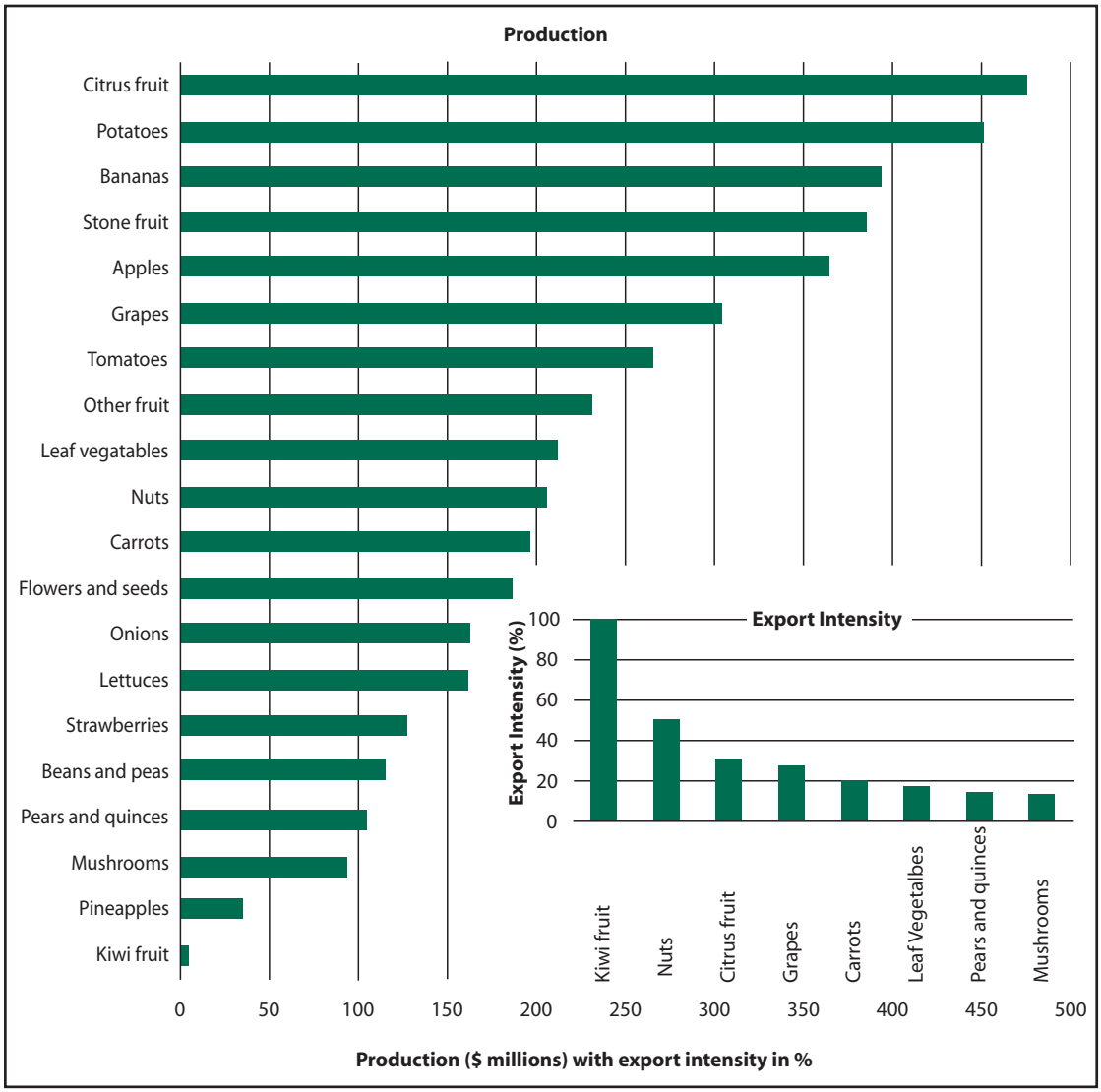
Australian horticulture industries are generally labour intensive and seasonal, traditionally populated by small-scale family farms, which are increasingly becoming medium to large operations. ABS (2008) estimates there were 12,745 horticulture farms in 2008/09, with an average size of 192 hectares.

It is important to note that horticulture industries vary in their degree of development and the maturity. Some industries have been well established in terms of both production, supply chain integration, and have a thorough understanding of R&D needs and industry capability in terms of institutional structures. Examples of these industries are the citrus, vegetable and apple and pear industries. Others such some of the tropical fruits and nuts are emerging industries, where production and supply chains are in the early stages of development.

3.1.2 Commodities & Products

The horticulture sector is diverse. In addition to edible produce, the sector includes non-edible products such as turf, cut flowers and nursery and garden plants. The production value of main edible products is shown in Figure 1.

Figure 1 Production value and export intensity of main edible products



Data source: ABS input-Output Product Details 2001-02, Catalogue No.5215.0

3.1.3 Production Areas

Australia has a wide range of climatic zones making it possible to produce almost every imaginable horticultural product. Horticulture industries are located in every state and territory of Australia. The major crops are distributed amongst the states as follows:

- banana, pineapple, mandarin, avocado, mango and fresh tomato production, concentrated in Queensland;
- stonefruit, oranges and grapes in New South Wales, Victoria and South Australia;
- processing potatoes in Tasmania;
- fresh pears, canning fruit and processing tomatoes in Victoria; and
- apples and fresh vegetables in all states.

Table 1 shows the estimated share of horticulture production output (volume) and value by State.

Table 1 Share of horticulture production by State, 2007/08

	Value		Volume	
State	$ million	Share %	Tonnes	Share %
Queensland	$2,088	27%	1,304,937	25%
Victoria	$1,850	24%	1,277,570	25%
South Australia	$1,596	20%	851,614	17%
NSW	$1,244	16%	849,274	16%
Western Australia	$643	8%	339,208	7%
Tasmania	$331	4%	492,730	10%
Northern Territory	$61	1%	36,194	1%
ACT	$1	0%	5	0%
TOTAL	**$7,814**	**100%**	**5,156,233**	**100%**

Source: AEC (2009), based on ABS Value of Australian Agricultural Commodities 2007-08, cat. no. 7503.0.

The share of horticulture production by statistical division shows the major growing areas for horticulture in Australia are the major irrigation regions of the Murray Darling Basin and Queensland and the peri-urban areas of Melbourne, Adelaide, Brisbane and Sydney.

Key regions include the Goulburn Valley of Victoria; the Murrumbidgee Irrigation Area of New South Wales; the Sunraysia district of Victoria/NSW; the Riverland region of South Australia; northern Tasmania; southwest Western Australia and the coastal strip of both northern New South Wales and Queensland. Nursery production generally occurs close to the capital cities.

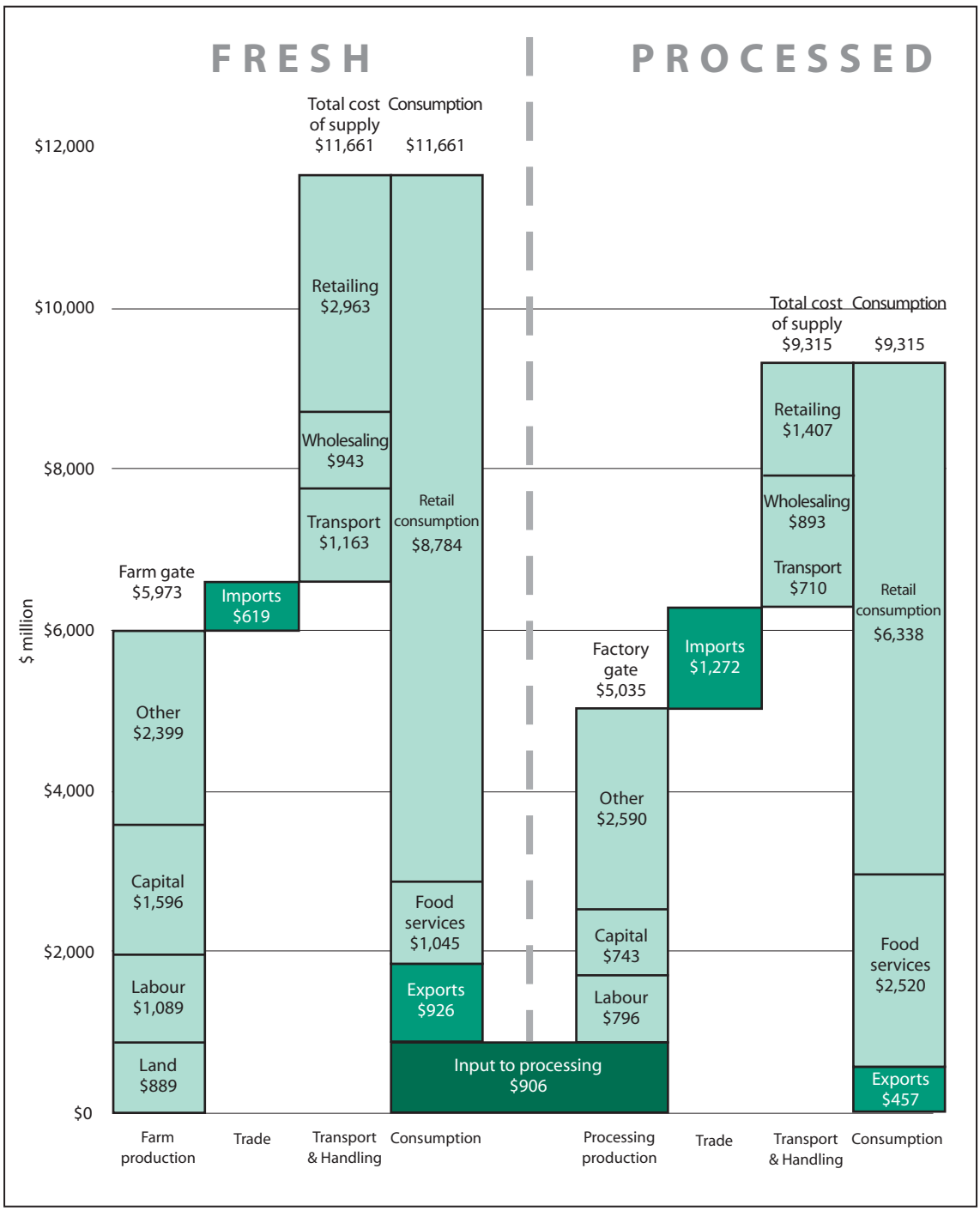
Horticulture is the most labour intensive of all agricultural industries and is a major source of employment in many regional and rural communities. The sector accounts for an estimated 23% of the estimated 305,763 persons working in the agriculture sector in 2007/08 (AEC, 2009).

3.1.4 The Value Chain

The structure of the value chain for edible fresh and processed horticulture is shown in Figure 2. Future Focus (2007a) estimated the total value of fresh consumption to be $11.6 billion and processed consumption to be $9.3 billion. Key components of the edible value chain are:

- farm production – which depends on a range of inputs including land, capital, labour and purchased inputs;
- exports and imports of both fresh and processed products (trade barriers are important);
- processing sector production using both locally produced and imported inputs – and also capital and labour;
- storage, transport, packaging and retailing; and
- consumption of fresh and processed products purchased by households at retail and through food service and by other processing industries.

Figure 2 Aggregate value chain for edible horticulture 2005-06 ($ million, excludes wine)

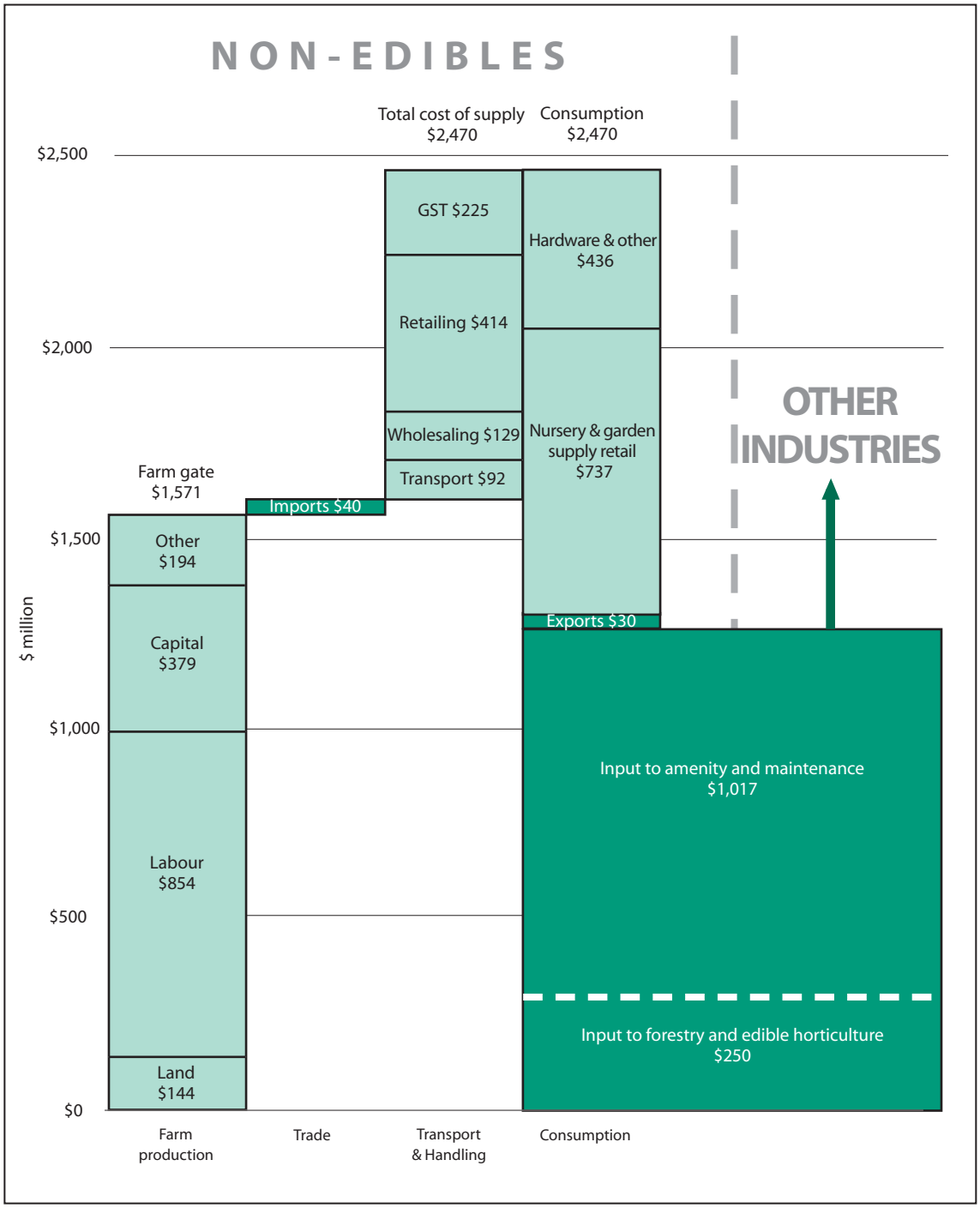


[a]Exports valued at free-on-board (fob) basis and imports on a cost insurance freight (cif) basis.
Data source ABS, ABARE, HAL and CIE estimates.

Source: Future Focus (2007a)

The non-edible value chain is shown in Figure 3. Total value of consumption is estimated at around $2.5 billion a year and is made up of $1.75 billion plant sales, $0.45 turf and $0.3 billion of cut flowers (Future Focus, 2007b).

Figure 3 Aggregate value chain for non-edible horticulture 2006 ($ million)



Data source ABS, ABARE, freshlogic (2006) HAL and CIE estimates.

Source: Future Focus (2007b)

3.1.5 Markets

Horticulture production is mostly consumed within Australia, with about 90% of production destined for the domestic market.

Australia, by world standards, is not a large exporter of either fresh or processed horticulture products. Australia exports about 12 per cent of total horticulture output, and horticultural exports for 2009 were estimated to be valued at $952 million. Key export markets are described in Table 2.

Table 2 Australian horticulture exports by market

Rank	Market	Key products	2009 Value $
1	Hong Kong	Grapes Citrus Summerfruit	$147 million
2	European Union Almonds Onions Summerfruit Apples	Macadamias	$111 million
3	Middle East Grapes Vegetables	Citrus	$100 million
4	Japan Macadamias Asparagus	Citrus	$76 million
5	Singapore	Various fruits and vegetables	$69 million

Source: ABS data.

3.2 Performance of the Sector

3.2.1 Past Improvements in Productivity

Australia's agricultural productivity has been reported as growing but the rate of growth is declining (Kokic et. al. 2006). It should be noted that many of the studies examining productivity have been based on data available through ABARE surveys that concentrate on broadacre industries such as cereals and livestock production.

There are many factors that can affect productivity growth including: cultivar development; advances in practices; and utilisation of machinery. A comprehensive assessment of productivity across the horticulture sector is confounded by the diverse range of products and practices and constrained by the lack of available time series data.

Much of the analysis of productivity drivers is carried out at an industry planning level. The critical drivers of future productivity growth are specific to industries and also their stage of development.

The lack of co-ordination and regional focus in past R&D efforts means there remains substantial opportunities within the sector generally to make rapid advances in productivity with appropriately targeted R&D.

Uptake of R&D over the past decade has resulted in identifiable improvements in productivity in horticulture industries. Specific examples of technology improvements include:

- better trellising in dried fruit industries;
- improved irrigation techniques, to maximise water use efficiency and product quality;
- new rootstocks that are higher yielding and disease resistant;

Technology changes in the supply chain, such as controlled atmosphere storage have also improved the productivity and competitiveness of horticulture industries.

The large gains in productivity can be captured if backed by careful and astute planning, appropriate R&D resourcing and robust linkages to existing extension services and information pathways.

Case Study 1 - PIPS Orchard Productivity Program

With limited funds available and increasing potential of foreign apples and pears coming into Australia, there was a need to make a concerted effort to significantly improve the productivity in Australian orchards.

In 2007, with funding from HAL and the apple and pear levy, an Apple and Pear Orchard Productivity Development Plan for the Apple and Pear Industry Advisory Committee (APIAC) was developed. This process identified three priority areas of research: integrated pest management; water management; and tree structure. An integrated Orchard Productivity R&D program, PIPS involves three sub-programs of Integrated Pest Management, Tree Structure, and Soil and Water. It is a $9.3 million program delivered though a range of partners.

The program aims to:

- Improve the productivity and quality of orchard production through, reduced pesticide use, increased use of biological controls and improved tree efficiency.
- Minimise the impacts of activities on the environment through minimising water use and matching nutrients to tree needs.
- Focus on continuing the trend in production technologies to high density orchards

The program is designed to impact at farm level. An ex-ante benefit cost analysis done has predicted a conservative benefit to cost ration of around 2.8.

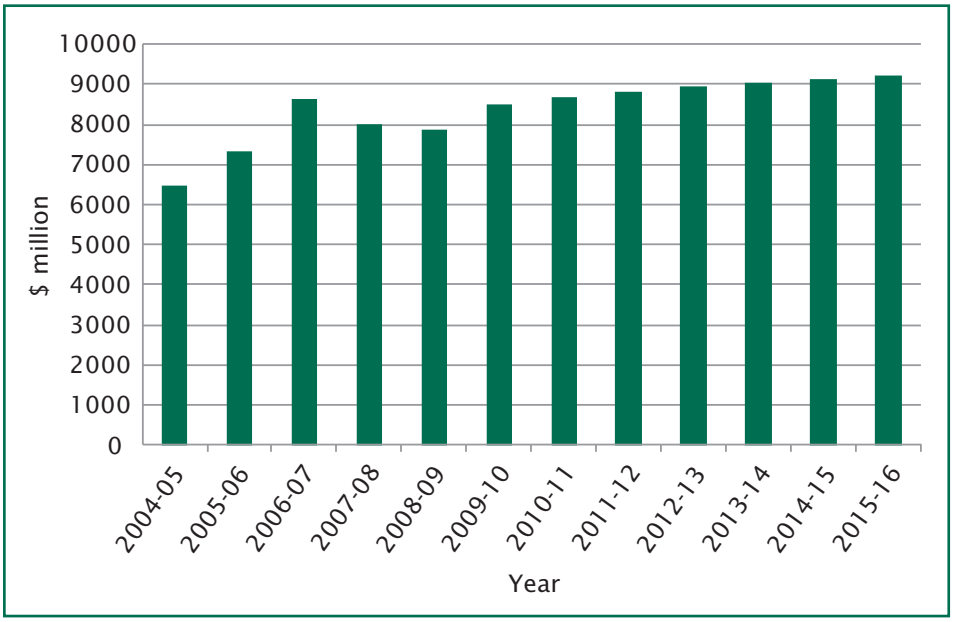
3.2.2 Improvements in Productivity

ABARE estimates that the horticulture sector has grown on average 7.6% per annum between 2003 and 2009 (ABARE, Australian Commodities March Quarter 2007 and March Quarter 2010).

Future Focus (2007) found that in terms of the gross value of production, Australia has experienced a 44% increase over the past 18 years in real terms. It attributed 28% of the increase due to price rises for fruit and vegetables and around 16% due to increases in production.

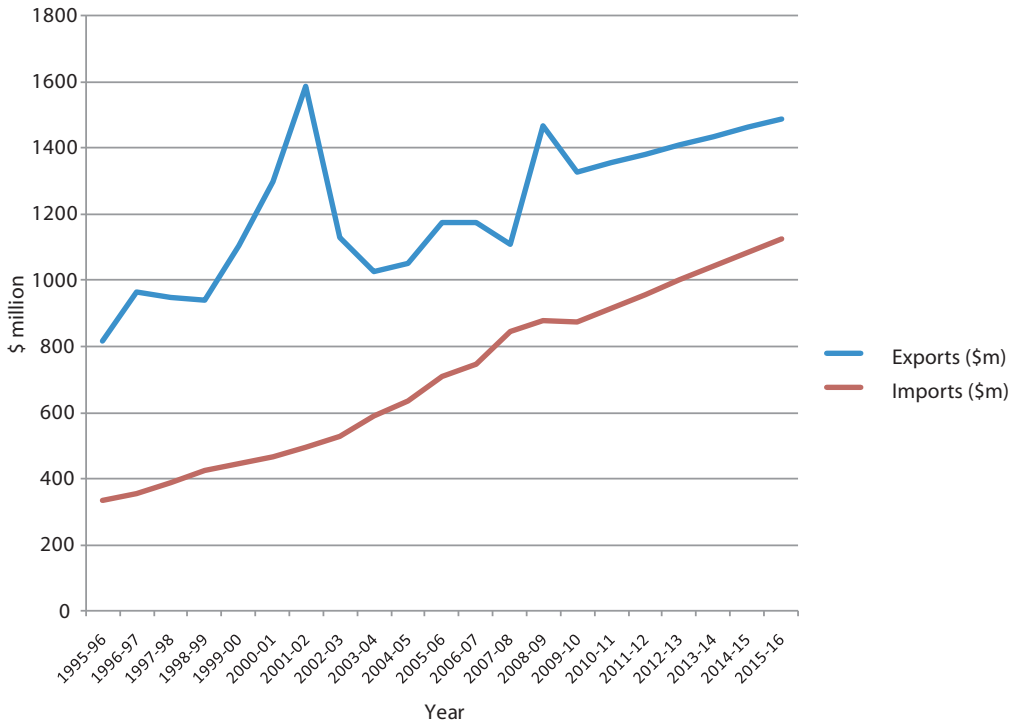
The value of the Australian horticulture sector in 2010/11 is forecast by ABARE to be $9.24 billion. This represents a 26% growth since 2005/6. The gross value of the horticulture sector, and predicted future outlook is shown in Figure 4.

Figure 4 Gross value of horticulture production



Per capita consumption of most fruit and vegetables products has been climbing slowly and more so than for some other important food categories. Future Focus (2008) estimated that there is potential for household demand to increase by about 10%. There continues to be growth in the imports of horticulture products (particularly processed vegetables), signalling an opportunity for the Australian industry to better meet domestic consumer demands.

Figure 5 Value of Horticulture imports and exports



3.2.3 The Future Outlook

Horticulture Australia Limited (HAL), in partnership with fifty four horticulture industry stakeholders in 2007 invested in an industry stocktake and strategic planning process called Future Focus.

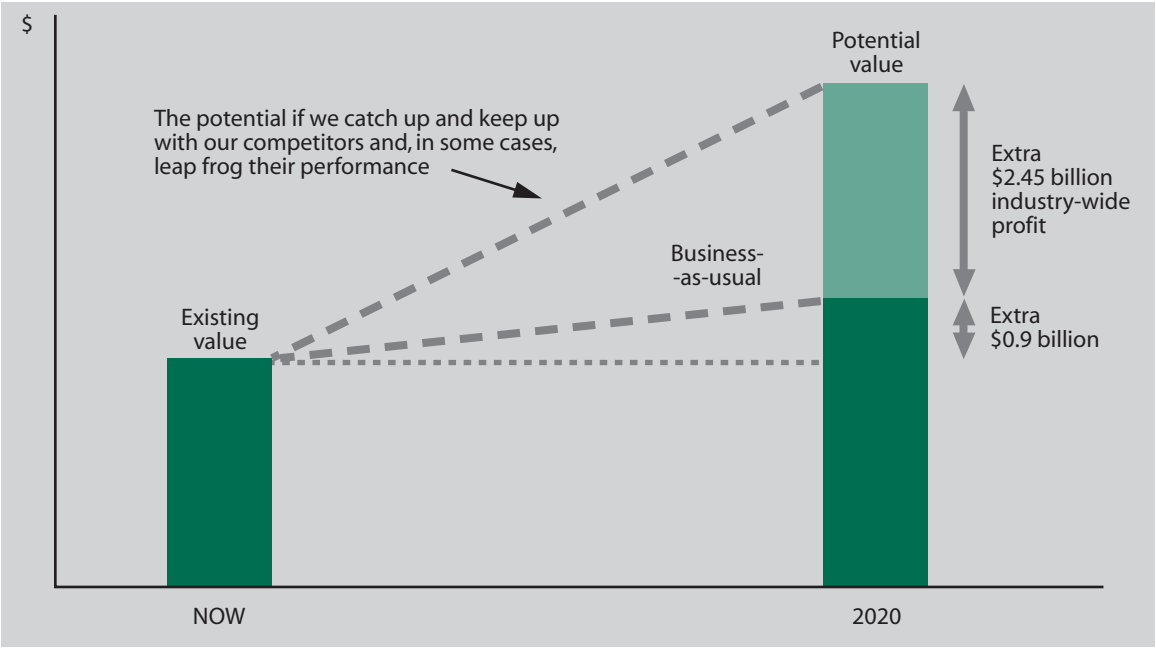
Future Focus concluded that Australian horticulture faces enormous opportunities for growth and increased profitability. Globally, horticulture markets and trade are growing at the equivalent of Australia's entire horticulture output each year. The Australian domestic market alone is projected to expand, through population growth by the equivalent of Melbourne (3.9 million people) by 2020.

Future Focus found that globally horticultural markets and trade are growing at the equivalent of Australia's entire horticultural output each year. Key drivers of international growth are the expanding markets in Asia due to the growing wealth and westernisation of food preferences in Asian markets.

This global growth presents opportunities for Australia, and the most innovative producers are the ones most likely to succeed in globalised markets. To date, Australia has not performed as well as competing southern hemisphere producers (eg Chile, New Zealand) in capturing the remarkable growth that is occurring.

Future Focus concluded that, by 2020 in a "business as usual" scenario, the value of the Australian horticulture sector would increase by $0.9 billion. Focusing R&D on the three key R&D programs (see Section 5.4) would result in an extra $2.45 billion in industry-wide profit – generated predominantly by harnessing export opportunities (Figure 6).

Figure 6 Potential future growth of the horticulture sector



Source: THECIE

4 R&D in the Australian Horticulture Sector

4.1 Investors in Horticulture R&D

Future Focus (2008) estimated that the investment in horticulture innovation by HAL and government agencies was approximately $105 million per year. This comprised of $73.5 million in levies, voluntary contributions and matched funding, and a further $30 million by Departments of Agriculture and similar institutions.

Another estimate is provided by the National Horticulture Research Network (NHRN). NHRN conducted a stocktake of the investment by HAL and public agencies in horticulture R&D for the 2008/09 financial year. This stocktake showed that HAL and state agencies, together with other partners invested a total of $130 million in fruit, vegetable, lifestyle and nut R&D, or approximately 1.5% of the gross value of production of the sector.

Table 3 Investment in Horticulture R&D in 2008/09 ($ million)

Crop	State Agencies[1]	CSIRO[2]	HAL with others[3]	Universities[4]	Total
Fruit R&D	33,511	2,375	18,021	1,163	55,070
Vegetables R&D	36,162	1,808	13,773	3,373	55,116
Lifestyle R&D	2,286	0	5,957	1,120	9,363
Nuts R&D	4,750	1,043	1,516	724	8,033
Unassigned				2,909	2,909
All of horticulture	76,709	5,226	39,267	9,289	130,491

1 This includes investments by State Governments and HAL.
2 This includes investments by HAL/CSIRO.
3 This includes HAL investments with industry, private companies and individual growers.
4 This includes HAL ARC and CRC investments through university sector.

The exact level of private sector R&D effort specific to horticulture is unknown. This effort is made primarily by seed and chemical companies aiming to sell specific products, and within the context of medium to large individual businesses. To capture returns on this investment, private investors seek to protect and exploit IP. Analysis conducted for Future Focus showed that new plant and seed rights are being exploited in managed supply chains, where production volumes are planned and aligned with targeted markets and typically additional value is captured.

Anecdotally, the level of private R&D investment remains isolated and small across all industries even those who have recently moved to a levy system. This is an indication that the crowding out of R&D is not a significant issue in the sector.

HAL's investment in R&D in 2008/09 was in the order of $74.4 million (see Table 5). In the absence of RDC investment, only $56 million (0.65% of GVP) would have been invested by government and other public institutions in horticulture R&D in Australia in that year (see Table 3). This estimate, of course, makes no allowance for the consequent loss of incentive for producers to support and participate in levy funded R&D arrangements. Matching government funding has been a powerful incentive for the strong and increasing support for these levies.

4.2 Market Failure

As outlined in many discussions on R&D the conventional rationale for mandatory levies and matching government funding of Rural R&D is the existence of failures in the market for R&D goods and services. The presence of these failures, if not attended to, will cause national investment in rural R&D to be substantially less than the economic optimum.

Producers are typically reluctant to engage in mandatory levying arrangements, but are encouraged by matching government funding arrangements.

Additionally, governments seek to promote the achievement of national policy objectives that are additionally identified. Currently these include productivity improvements throughout the economy, growth in regional economies and employment, improved global food security, better environmental stewardship including adjusting to climate change, and enhanced food safety and nutrition. Most, but not all, of these are identified to RDCs via the National Rural R&D Priorities in funding agreements. The achievement of these objectives with respect to horticulture industries is best accomplished through the co-funding partnership arrangement provided by RDCs. This arrangement has demonstrated that the commercial interests of producers and the broader community/public interests can be achieved synergistically. Evidence of this is presented in following sections

The market failures potentially affecting the level of Horticultural R&D include non-excludability/ non-exhaustion and the non-divisibility of research costs and 'small firms'. These are explained in further detail below.

Non-excludability / Non-exhaustion. This failure is particularly relevant in concentrated and region specific industries that are common in the horticulture sector. Over the past decade a vast majority of HAL's R&D expenditure has been on improving techniques for managing production processes. R&D outcomes have been deliberately focussed on outputs that enable the transfer to many individual growers, and this is promoted through investment in consultation and industry development.

The levy system enables the horticulture sector to make R&D outcomes accessible to all members of an industry without the risks of free riding. Even a small number of free riders will quickly encourage others to withdraw from any voluntary arrangements with the scale needed to undertake most R&D projects.

The current system entails low costs for levy collection and compliance and hence maximises expenditure on R&D.

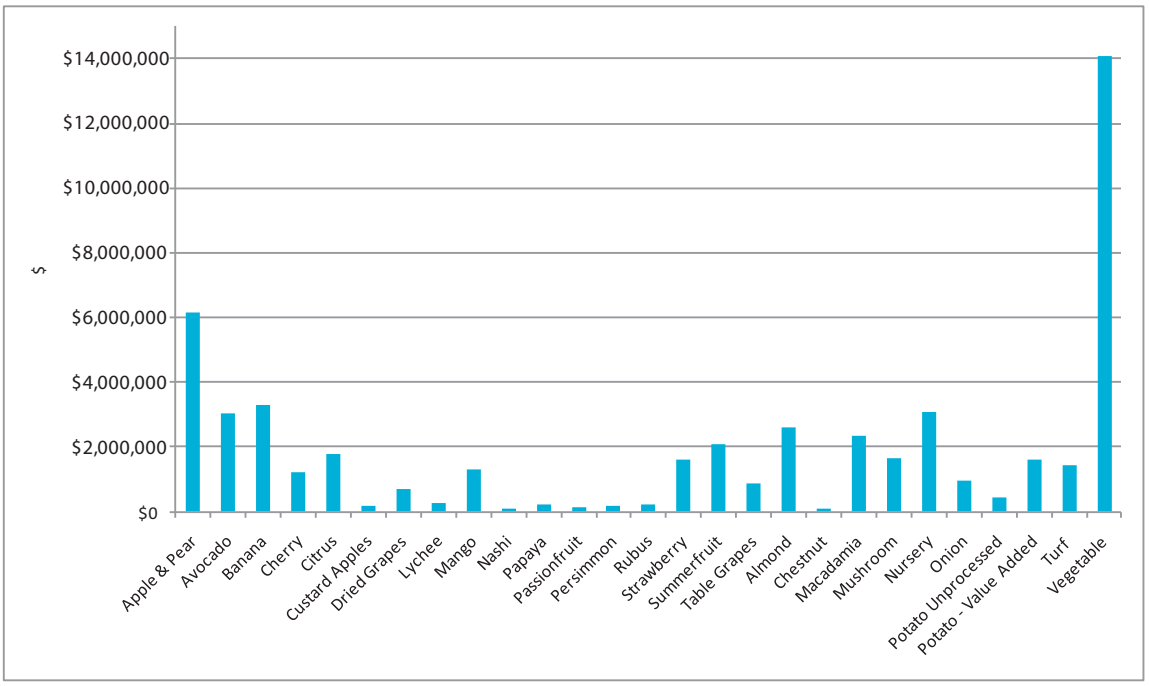
Further, production-based levies fund activities where the benefits to individuals are generally in the same proportion as the contribution they have made in levies, or, should the R&D not produce the desired result, the risk and lack of return have also been shared proportionately.

Non-divisibility of research costs and 'small firms'. Research and development projects tend to require specialist skills and equipment, are costly to undertake, and thus cannot be undertaken by small to medium businesses. Further, such businesses are unable to benefit from the tax incentives and investment allowances available to larger firms able to undertake R&D in-house.

The average net capital value of horticulture farms in Australia is around $1.4 million and the typical business had a profit of around $68,000 per year in 2007 (ABARE 2009). This level of profit represented a return of 3.6% and the average Gross Value of Production (GVP) is less than for farms in grains, cotton, poultry, eggs and pig production.

ABS estimates the average expenditure on R&D (all funding sources) on a per horticultural farm basis is $708 . Figure 7 highlights the economies of scale that can be achieved across the individual industry R&D programs conducted by HAL. In 2010/11 the total planned R&D spend ranges from $79,000 (chestnuts) to $14 million (vegetables). The average industry investment is forecast to be $1.9 million.

Figure 7 Value of individual industry investments in R&D (2010/11)



In 2009/10 the average size of all HAL projects size was $77,000. When smaller projects such as study tours, conferences, and industry annual communications are excluded, this increases to $150,430. Investments of this magnitude are beyond the resources of most farm businesses in these industries. This level of investment is also beyond the scale of what was achieved by the regional R&D committees and groups that existed prior to the introduction of levies.

In the absence of the government/industry partnership created by RDCs such as HAL, investment in R&D will fall far short of the level and type needed to achieve national objectives and adequate on-farm investment in innovation.

4.3 Beneficiaries of Horticulture R&D

The beneficiaries of horticulture R&D include:

- Growers, through improvements in productivity and profitability;
- Regional Australia, via employment in sustainable and competitive industries and labour intensive industries located in rural and regional areas;
- The broader community, through improvements in farming practices to better manage the environment and in research to better understand the health and wellbeing attributes of horticultural produce and products; and
- Australian consumers, who are able to access quality, safe, fresh products.

A more detailed discussion on the benefits of R&D to growers and the community is provided in Section 7.

Case Study: Strawberry - Breaking the critical-use barriers preventing Australian horticulture from phasing out methyl bromide:

Methyl Bromide (MB) has been used to disinfest soils of pathogens, weeds and pests and to maximize yields in the Strawberry industry. It was an issue due to its ozone depleting properties.

The project involved a collaboration of strawberry levy funds, voluntary contributions from 3 private entities within the industry, matching Commonwealth funds and co investment by the Victorian Department of Primary Industries.

The project examined novel production methods to alleviate the need to use MB in addition to alternative fumigants. As a result of this work, numbers of industries applying for Critical Use Exemptions dropped by 80% since the commencement of the project and MB use in Australia decreased by 110 tonnes per annum. Ozone depletion gas removed / reduced.

The identification of alternatives to MB through this and previous projects has prevented economic losses in Australian Horticulture worth over $100 million annually.

HAL facilitated initial discussions and workshops and finalised the complex funding arrangements from five different sources and ensured ongoing liaison with government regulators.

4.4 Future Role of R&D

Future Focus concluded that although the scope for building demand is large, achieving that growth will require innovation, and sophisticated products and delivery platforms. While Australia's Southern Hemisphere competitors have captured much of the growth that is occurring, Australia does not appear to have performed as well.

The Future Focus process coordinated by HAL identified three key R&D programs for the future success of the industry:

- Building consumer demand, and meeting consumer expectations;
- Market access; and
- Resource use.

Building consumer demand will be critical to the future success of the industry. There is a need to better understand what consumers want; to identify the particular quality attributes (eg eating quality) required to meet consumer needs; and to consistently supply and promote those attributes. 'Clean and green' aspects of horticultural products offer opportunities to satisfy consumers' changing needs. The industry needs competitive products that are consistently and reliably produced to market requirements. Getting products to consumers efficiently in the future will be important.

Market access is needed if exports are to be successful. This involves securing better access to world markets for Australian horticulture products and identifying the export opportunities and intelligence on markets and what Australia's competitors are doing. Good science to support quarantine determinations is required.

Use of resources including water and labour is a key challenge for horticulture businesses. Climate change poses a particular challenge, mainly for tree crops where breeding and adaptation times can be long. Projected increases in average day and seasonal temperatures could adversely affect yields requiring a concerted response across agronomic systems research. Water is a key resource for horticulture. R&D is required to assist industries adapt to and take advantage of a future with less water, and to contribute to ongoing policy debates about water resource access. A 2010 stocktake of horticulture industry environmental contributions highlighted the ongoing need for research to better understand the links between practices and water quality, air quality, biodiversity and waste generation. This would enable industries to generate greater environmental benefit from their investments in R&D. In a modern high-wage, fully-employed economy, the industry has to make effective use of its labour as well as ensuring policies are in place to ensure the best availability of people with the desired range of skills.

Future Focus concluded that the critical minimum funding required to fully fund the capabilities identified is $35 million per year. This is an additional 30 to 35 per cent of current levels of investment. Achieving this funding would mean the industry would be investing about $140 million a year in innovation activities.

5 The Evolving Role of HAL in Horticulture R&D

5.1 HAL R&D Investments

5.1.1 Funding Sources

Funds for HAL's investments are sourced from statutory levies, voluntary contributions, matching government funds and other sources.

Table 4 HAL's R&D Income

	2007/08	2008/09	2009/10
Levy Income - R&D	$18,788,024	$20,350,911	$20,365,509
Voluntary Contribution Income - R&D	$22,760,552	$20,558,652	$20,295,792
Matching Funds - R&D	$34,509,602	$39,803,018	$40,500,000
Other Income[1]	$2,538,314	$2,487,400	$1,251,779
TOTAL (before reserves)	$78,596,492	$83,199,981	$82,413,080

[1] Other includes interest and royalties

In the case of smaller industries that would otherwise not have the ability to raise a levy, the access to the matching dollar for voluntary contributions has resulted in opportunity for significant investment in R&D. Voluntary contributions are also able to be made to HAL by supply chain participants. This provides a key mechanism to attract the participation of the supply chain in industry wide activities, and increases the connection between the farm gate and the consumer.

5.1.2 Alignment with National Priorities

HAL aligns activities with the National Rural R&D Priorities. A breakdown of HAL investment across each of the seven priorities is shown in Table 5. HAL has responded to the Australian Government's increased focus on climate variability and climate change and increased investment in extension and adoption (innovation skills).

Table 5 Alignment of HAL investment in National Rural R&D Priorities

Priority	2007/08 $000	2008/09 $000	2009/10 $000
Productivity and Adding Value	28,781	21,509	23,571
Supply Chain and Markets	18,290	17,524	20,655
Natural Resource Management	10,007	8,762	6,966
Climate Variability and Climate Change	6,902	6,372	5,265
Biosecurity	4,969	4,779	5,022
Innovation skills	-	11,948	7,128
Technology	-	8,762	12,393
TOTAL	**69,019**	**79,656**	**81,000**

HAL contends that national R&D priorities, as well as other national objectives identified in 5.2, are most effectively and efficiently achieved collaboratively via the RDC organisations such as HAL already in place and strongly aligned with its constituents.

5.1.3 Range of Project Types

HAL invests in R&D programs that address issues across different segments of the typical supply chain for horticulture industries. Table 6 categorises the research activity funded by HAL over the last three years.

Table 6 HAL's portfolio of research activity

Portfolios of R&D Investment	2007/08 $000	2008/09 $000	2009/10 $000
Biosecurity & market access R&D	5,223	5,599	4,724
Breeding & biotechnology	9,497	7,431	6,765
Commercialisation	969	5,352	6,932
Consumer research, market analysis	590	428	633
Crop production	2,601	2,500	1,276
Emerging technologies	1,711	2,590	2,807
Environment	5,563	6,642	5,122
Export market development	615	464	1,736
Human nutrition	816	968	1,411
Industry analysis	1,181	1,758	2,449

Portfolios of R&D Investment	2007/08 $000	2008/09 $000	2009/10 $000
Industry communication	1,850	3,250	4,326
Industry development, study tours, conferences & training	12,353	15,413	16,644
Marketing - domestic (R&D projects)	2,695	2,112	2,832
Partnership agreements	3,156	3,177	3,977
Plant health: entomology, chemicals & general integrated pest management	8,313	8,990	6,236
Plant health: pathology, nematodes & weeds	7,772	7,705	7,626
Postharvest	2,625	3,726	3,076
Quality assurance and food safety	1,473	1,140	1,664
Strategy & program	16	411	764
TOTAL	**69,019**	**79,656**	**81,000**

The five areas of greatest investments over the past 3 years were:

1. Plant health;
2. Industry development, study tours, conferences & training;
3. Breeding & biotechnology;
4. Environment; and
5. Biosecurity & market access R&D.

These areas of R&D have:

- significant aspects of market failure in the provision of these types of R&D; or
- large spillover benefits to society when considering the benefits to the environment or to consumers through improvement in chemical and biosecurity management.

It is important to note the priority placed on environment and also on post harvest R&D. Industries have increased their focus on environmental challenges such as water use and climate change. Through their planning processes industries are increasingly aware of the importance of the supply chain and integration of efforts to ensure that fragile products are transferred to the consumer in an acceptable state. R&D and institutional arrangements supported by HAL play a critical role in ensuring that this joint focus on beyond the farm gate is possible.

Case Study: Avocado Supply Chain Program

Research has determined what quality of fresh avocado is acceptable to consumers.

Once this was established, various projects have been implemented to analyse the deficiencies and improve the supply chain responsiveness to achieve the desired quality sought by consumers at

retail shelf. Following this, other projects have been implemented to monitor retail fruit quality over time.

One of the most successful projects within the program is Infocado, a web-based supply chain information system. The buildup of fruit in the supply chain leads to old, inferior fruit marketed to consumers. Infocado has provided high quality market information to suppliers to help them make better decisions so as to even out supply by minimizing peaks and troughs in supply. It has been adopted by 85% of industry and has resulted in better fruit quality.

There has been an improvement in fruit quality, reliability of supply and reduced waste providing greater value for consumers. The return to this work that has been targeted and responsive to consumer needs has been significant with an estimate of a benefit cost ratio of 12 to 1. HAL's planning framework has assisted in providing a focus on the supply chain and ensuring that this is seen as a benefit by levy payers.

5.2 Planning, Program and Project Selection

5.2.1 Approach to Planning

Overview

Planning, strategy and priority setting in HAL occurs at two levels:

- HAL corporate and horticulture industry strategies and priorities; and
- Industry Strategic Plans and Annual Investment Plans.

Industry Advisory Committees play a key role in the development of industry strategic and annual investment plans. These plans are ultimately approved by the HAL Board. The positioning of HAL's Board some distance from levy payers enables the company to balance the often competing industry priorities, and those of government.

Furthermore, by participating in the planning activities of all industries, HAL is able to facilitate the learning and sharing of lessons between industries, and to identify overlaps or gaps in overall portfolio investment. An example of shared learnings across industries is the Time by Temperature Cold Infestation Projects. The Citrus industry set up a project to examine the eradication of fruit fly. Following the completion of the initial project, the table grape and summerfruit industries applied the research to their own industries.

Strategic planning and the project selection and approvals processes are the key mechanisms implemented within HAL that ensure that government priorities and market failure are considered.

Guiding Industry Planning Activities

HAL has developed guidelines to assist horticulture industries in the preparation and review of their industry Strategic Plans. Each A Class member industry that has or seeks to have a levy (statutory or voluntary) to fund R&D or marketing activities must have a current Strategic Investment Plan.

HAL has developed a uniform approach and format for planning. Key elements include:

- The Situation Analysis;
- 'Report Card' on our current strategic plan;
- Strengths, Weaknesses, Opportunities and Threats;
- the 'Vision'; and
- Justifying and prioritising the Objectives (The 'analytical business case').

Market failure is outlined in the guidelines and it is based in the description incorporated in the Deed between government and HAL. It describes market failure as:

1. *"where a particular R & D project would not otherwise receive funds sufficient to achieve an industry objective; or*
2. *there is an identifiable benefit to the industry broadly and/or the Australian community after taking into account all costs."*

An analytical business case is a clearly explained rationale that supports the proposed investments identified in the plan. This business case includes why the problem exists and defining a range of potential solutions. This step includes considering the issues of crowding out and potential for other suppliers to provide the solution. Beneficiaries of research are also identified.

An example at a strategic level of widening the beneficiaries of research is the horticulture climate research, development and extension matrix. It will be released in 2010 in order to describe, prioritise and drive industry investment into urgent climate research at both national and industry-specific levels.

Ensuring Alignment with Priorities & Focus on Market Failure

The Board of HAL has the formal and legislated responsibility to ensure that all expenditure of levy and government matching funds is in accordance with and directed to achieve the objectives laid down in the relevant industry's Strategic Investment Plan. The Board plays an active role in the approvals of Strategic Investment Plans and significant projects. Projects funded with voluntary contributions are subject to the same level of scrutiny and VC industries are also encouraged to consider strategic investment plans.

The HAL Board has recently rejected proposed projects on the basis of aspects of market failure. The basis for recent project rejections have included:

- limited benefit to the whole of industry;
- benefit focused on a small group of growers or supply chain partners, with these parties controlling IP and project outputs for a considerable amount of time;
- professional advisers or services are available in all related areas in Australia and provided on a fee for service basis;
- extension and sales personnel are readily available in the market.

It is not common that the HAL Board rejects projects on the basis of lack of market failure as the recommending IAC, through its charter, is the primary mechanism to apply this standard. The rationale for a rejection is provided via written communication which in some cases is followed up verbally to the industry concerned.

5.3 Managing Intellectual Property

The projects in which HAL invests generally do not generate significant Intellectual Property (IP). This is due to the consistent emphasis on outputs that either have intrinsic market failure issues that confound that ability to capture private benefits or are focused on issues that have significant public benefits.

Many of the environmental management systems (EMS) and retail premiums are not yet developed in Australia for growers to capture the benefits of many of initiatives in the environment sector.

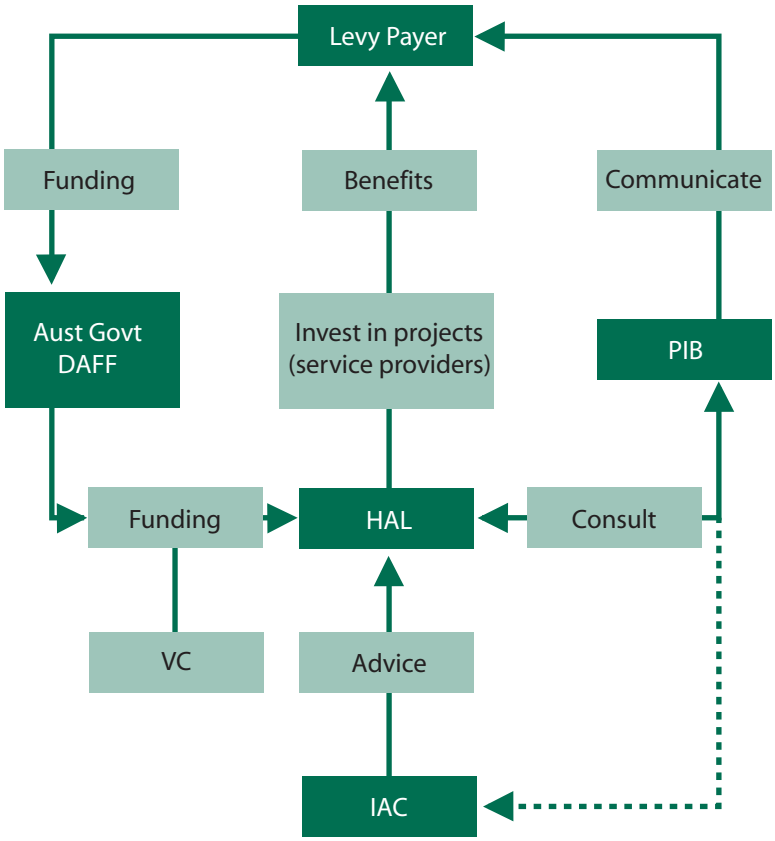
Since inception, HAL's income generated from royalties and licensing is less than $40,000 per annum, and the net value of IP is nil. Although the company has expertise and IP systems in place, this lack of IP demonstrates that much of the R&D that HAL invests in cannot easily be captured and exploited by the horticulture industry, let alone individual producers or groups. Thus, HAL's research activities are unlikely to be crowding out of private investment which seeks to capture IP to generate profits.

5.4 Engaging with Stakeholders through the R&D Lifecycle

5.4.1 Overview

HAL has a collaborative approach to managing investment in horticulture R&D. Figure 8 shows the relationships between stakeholders in relation to the investment of Government and levy payer funds.

Figure 8 HAL's stakeholder relationships



HAL's model and structures for operation provide for structured industry and levy payer involvement in the identification of R&D priorities, programs and projects. The key structures that involve industry stakeholders are Industry Advisory Committees (IACs) and Peak Industry Bodies (PIBs). For some industries, IACs also have an R&D sub-committee that delve into the specific detail of research programs. The roles of these structures are outlined in more detail in the following sections.

Table 7 shows the breakdown of the 422 people involved in a formal capacity for influencing HAL and individual industry strategy and planning.

Table 7 Stakeholder involved in formal interactions

	Number of people
IAC Members	276
R&D Sub committees	108
Ex officio members	38
Total	**422**

HAL, like all RDCs, provides the connection between growers and researchers. Unlike other investors in horticulture R&D, the participation of industry stakeholders in HAL's R&D planning and project delivery maximises the relevance of R&D to growers. This increases the likelihood of the uptake of R&D innovations by growers, and in turn the overall benefits to the community of investment in R&D activity.

5.4.2 Industry Advisory Committees

An Industry Advisory Committee (IAC) is established, under HAL's constitution, for each industry with a statutory levy with annual income exceeding $150,000. The Industry Management Committee (IMC) is the IAC for the across industry program.

IAC's key roles are to:

- develop a Strategic Investment Plan (3–5 years) for an industry's investment;
- Prepare an Annual Investment Plan for submission to HAL; and
- Prepare an Annual Report for submission to HAL detailing the outcomes achieved from the expenditure outlined in the Annual Investment Plan.

The role of an IAC is extremely important in capturing the expertise of industry in shaping industry investment. IACs make recommendations to HAL. IACs do not have the power to make decisions relating to the expenditure of levy funds or management of projects. However, IAC advice to HAL during the life of a project through project champions or project reference committees greatly assists HAL management of industry projects.

For members that are not required under HAL's constitution to have an IAC, HAL policy requires these industries to have an advisory committee structure. These structures comprise industry participants who advise HAL on the industry program of activities. In some instances, these advisory committees have an independent chair.

5.4.3 Peak Industry Bodies

PIBs represent the interests of their members and the development of their respective industries. In the context of their interactions with HAL, PIBs:

- are members of HAL, and as such they vote for the directors of HAL at the AGM each November.

- are responsible for all processes relating to consultation, voting and preparation of the submission on the establishment or amendment of a levy; and
- responsible for recommending to HAL appointments to the IAC and must demonstrate how the skills required on an IAC are met.

HAL supports PIBs through the provision of consultation funding. HAL has an obligation to ensure that consultation funding is spent in accordance with the Minister's Guidelines, is done on an arms length basis and is value for money.

5.4.4 Investment in Industry Consultation

HAL is able to provide PIBs with consultation funding, in line with strict guidelines issued by DAFF. This consultation funding is to cover costs for IAC meetings, annual levy payers' meetings, consultation on R&D and marketing program priorities and other costs agreed within partnership agreements.

In 2008/09, HAL invested $3.1 million with Peak Industry Bodies to facilitate consultation with levy payers.

5.5 Collaboration within Horticulture

5.5.1 The Across Industry Program

HAL's Across Industry Contribution is a compulsory contribution to the Across Industry Program which comprises R&D activity for the benefit of all horticulture. HAL requires 1.5% of levy receipts (which is then matched with government funds) to be directed to this program. This contribution is collected on all statutory levy, voluntary levy and voluntary contribution funded R&D projects. This has increased from 1% in previous years.

The Across Industry Program focuses on matters that are relevant across all horticulture industries, and covers issues such as:

- Market access;
- Water use and water use efficiency;
- Weed, pest and disease management;
- Quarantine and biosecurity; and
- Availability of labour.

HAL has an Across Industry Advisory Committee which provides recommendations and advice to the HAL Board. This committee comprises a mix of representatives from A and B Class members, and small and large industries.

In 2009/10 HAL's total forecast investment in the across industry program is $1.1 million. In the next 4 years, industry's contributions will be increased to 5% under agreed changes to HAL's Across Industry Program.

5.5.2 Multi-Industry Projects

In addition to HAL's compulsory across industry program, many industries combine to establish multi-industry projects. In 2009/10, the value of HAL's thirteen multi-industry projects was almost $0.5 million.

Examples of HAL's multi-industry projects are shown in Table 8.

Table 8 Examples of HAL multi industry projects.

Project	Collaborating industries
Improving China Market Access for Australian horticultural products	Apple and Pear Table grapes Citrus Cherries Summerfruits
Fruit Fly and Market Access into Taiwan	Cherries Summerfruits

5.5.3 Collaboration with External Investors and Providers

National Horticultural Research Network

HAL was involved in the formation of the National Horticultural Research Network (NHRN) which was established in 2001. NHRN comprises the Horticultural R&D managers from the State Departments of Primary Industries, CSIRO and University of Tasmania.

The key roles of NHRN are to:

- Collaborate – co-ordinate national R&D programs;
- Partner – with industry to help set strategic R&D priorities;
- Identify – step change innovative R&D;
- Share – information and resources;
- Develop – national and international networks to access science; and
- Promote – value of horticulture to industry and government.

NHRN has played a key role in the preparation of the National Framework for Horticulture RD&E for the Primary Industries Ministerial Council.

CSIRO, DPIs and Universities

HAL invests funds with a range of R&D collaborators and providers. Key stakeholders include CSIRO, State Departments of Agriculture or Primary Industries and Universities. Table 10 shows a breakdown of HAL's investment in projects delivered by these key stakeholders for the past three years.

Table 9 Summary of HAL investments in projects delivered by key providers

	Investment ($)			Number of projects		
	2007/08	2008/09	2009/10	2007/08	2008/09	2009/10
CSIRO[1]	$2,685,406	$2,644,932	$1,294,437	16	17	12
Departments of Agriculture / Primary Industries[2]	$14,767,287	$16,896,001	$15,043,296	235	228	224
Universities[3]	$4,684,938	$4,384,193	$5,324,448	57	53	53

[1] Includes investments in Divisions of Food and Nutritional Sciences, Entomology and Plant Industry [2] Includes investments in Department of Agriculture & Food Western Australia, Department of Employment, Economic Development & Innovation, NSW Department of Industry and Investment, South Australia Research & Development Institute, Victorian Department of Primary Industries. [3] Central Queensland University, Curtin University of Technology, Griffith University, Macquarie University, Queensland University of Technology, RMIT University, Southern Cross University, Swinburne University, The University of Adelaide, The University of Queensland, The University of Sydney, The University of Western Australia, University of Ballarat, University of Melbourne, University of South Australia, University of Sydney Glycemic Index Research Service, University of Tasmania, University of Technology Sydney, University of Western Sydney, and the University of Wollongong.

Investment with these key stakeholders now comprises approximately 27% of HAL's total investment in RD & E. Key reasons for the overall reductions in funds to these providers are:

- A strategic shift with HAL funding less blue sky/pure science research;
- An increase in industry development and extension supplied locally by private providers;
- An increased investment in the supply chain; and
- The internationalisation of R&D, with some projects now being conducted offshore.

The capability of HAL's member organisations to deliver some programs has also increased over time. It should be noted that, in some cases, members manage levy funded projects and commission State agencies or CSIRO as service providers. These investments are not included in the figures below.

Table 10 HAL investments in projects delivered by key providers as a proportion of overall R&D Levy Investment

% total R&D levy investment			
	2007/08	2008/09	2009/10
CSIRO	4%	4%	2%
Departments of Agriculture / Primary Industries	23%	23%	19%
Universities	7%	6%	7%
TOTAL	**35%**	**32%**	**27%**

Cooperative Research Centres

HAL involvement in CRCs since its inception has included the following roles:

- a supporting participant of the Cooperative Research Centre for National Plant Biosecurity (since 2005);
- a potential foundation partner for the new CRC for Biosecurity;
- project based support for the CRC for Irrigation Futures (2003-2010);
- a core participant in the CRC for Viticulture (1999-2007);
- project support for the CRC for Weed Management (2001-2008); and
- support for the CRC for International Food Manufacture & Packaging Science (ended 2002).

Table 11 HAL investments in CRCs since 2005/06 ($ million)

	HAL investment
National Plant Biosecurity	$1,191,366
Irrigation Futures	$51,751
Viticulture	$160,258
TOTAL	**$1,403,375**

Case Study: Coordination of market access - Horticultural Market Access Committee (HMAC)

Many international markets remain either closed, phytosanitary restrictive or uncompetitive to Australian horticulture. Horticulture Market Access Committee (HMAC) was the peak industry/ government committee for market access covering new market access and top level issues of market maintenance. Opening new markets and maintaining access to existing markets is a critical success factor to increasing horticultural exports.

To enable market access progress HAL facilitated the development of an Across Industry Project the Market Access Coordination project. In addition HAL played an important role in the development of market access R&D and data packages to assist government negotiators in country to country, bi-lateral trade and market access meetings.

The beneficiaries were Australian horticulture industries, exporters and the supply chain which benefited from new market access, improved market access or the maintenance of existing market access. An example of a key outcome is

- the case of Taiwan and summerfruit where good progress was made in the case for reinstatement of access for Australian summerfruit.

6 HAL has delivered Positive Outcomes for Industry & Community

6.1 The Horticulture Sector Values HAL's Contribution

Since inception in 2001, HAL has seen a significant growth in the number of industries that have become members of the company. These industries have chosen to invest industry R&D and marketing funds through the RDC model that HAL offers.

HAL's A Class (Statutory Levies) and B Class (Voluntary levies and contributions) industry membership structure means that over time, some members transitioned from being B Class to A Class members. A summary of HAL's growth in membership is shown in Table 12.

Table 12 Change in HAL membership since inception

	2001	2003	2005	2007	2009	2010
A Class	15	19	23	25	26	27
B Class	14	11	10	11	11	12
TOTAL	**29**	**30**	**33**	**36**	**37**	**39**

Since HAL's inception, eight industries have transitioned from contributing voluntary levies to statutory levies (Table 13) and four industries have introduced statutory levies for both R&D and marketing purposes (Table 14). This transition to the statutory levy model demonstrates that industries value investment in R&D and value the R&D investment model and management that HAL provides.

Table 13 Transitioned from Voluntary to Statutory levies

Member	Date statutory levy was introduced	Notes
Australian Passionfruit Industry Association	1 July 2002	To introduced a marketing levy in July 2010
Australian Mushroom Growers' Association Ltd	1 Jan 2002	Currently exploring an increase in the levy rate with growers
Australian Mango Industry Association Ltd	1 July 2003	Currently exploring an increase in the levy rate with growers
Australian Onion Industry Association Inc	1 July 2002	Currently exploring an increase in the levy rate with growers
Australian Banana Growers Council Inc	1 July 2008	
Australian Rubus Growers Association	1 July 2006	
Turf Producers Australia Ltd	1 October 2006	
Growcom (Pineapples)	1 July 2009	

Table 14 Members who have introduced statutory levies

Member	Date statutory levy was introduced	Levy Details
Australian Table Grape Association Inc	1 October 2002	0.5 cents/kg Marketing 0.5 cents/kg R&D
Papaya Australia	1 January 2004	1 cent/kg Marketing 1 cent/kg R&D 0.25 cents/kg R&D (Processing)
Australia Lychee Growers' Association	1 February 2004	2.5 cents/kg Marketing 5.5 cents/kg RD 1 cent/kg R&D (Processing)
Persimmons Australia Inc Association Inc	1 July 2004	2.5 cents/kg Marketing 3.75 cents/kg R&D

Three industries with statutory levies have, within the lifetime of HAL agreed with growers to increase the rate of the levy (Table 15). In addition, four industries are actively discussing possible increases to the levy rate with their growers.

Table 15 Increases in the Statutory Levy Rate

Member	Date statutory levy was increased	Notes
Avocados Australia Ltd	1 April 2007	This industry decision doubled the rate of the levy.
Australian Macadamia Society Ltd	1 January 2010	This industry decision changed the levy split to increase the proportion of R&D investment compared to marketing.
Cherry Growers of Australia Inc	1 September 2007	The industry decision resulted in a levy seven times the original rate.

6.2 HAL has demonstrated Value for Money

6.2.1 Increasing Administrative Efficiency and Effectiveness for R&D Management

HAL's corporate cost recovery is determined on program expenditure rather than program income. The model provides for:

- equity across all members and equity between R&D and marketing programs.
- the least cost option to members collectively.
- an amortised not activity based approach.

HAL's growth in membership and levy funds under management has grown considerably since its inception. One indicator of HAL's increased efficiency in the management of levy funds is the staff (FTE) required to manage the company's total investment. In 2001/02, HAL had 0.72 FTE per million dollars of funds invested. In 2009/10, this has reduced to 0.6, a reduction of 16.5%. Another indicator of efficiency is HAL's corporate expenditure as a percentage of total company (R&D and marketing) expenditure. This has not varied considerably since its inception (Table 16). However, as outlined in Section 5.2, HAL has taken an increasingly centralised role in the governance, planning and management of R&D funds. HAL is doing more with the same proportion of corporate overhead.

Table 16 Corporate expenditure

Year	Total expenditure	Corporate expenditure as a % total expenditure	HAL staff (FTE)	FTE per $ million in total expenditure
2001/02	$59,968,948	11.4%	43	0.72
2002/03	$70,101,963	10.6%	42	0.60
2003/04	$68,301,116	11.5%	42	0.61
2004/05	$79,583,301	10.4%	43	0.54
2005/06	$80,067,351	10.8%	43	0.54
2006/07	$84,133,512	11.3%	53	0.63
2007/08	$84,191,555	11.8%	55	0.65
2008/09	$99,212,425	12.1%	55	0.55
2009/10*	$96,818,516	11.4%	58	0.60

*Forecast

In addition to expenditure on administration, HAL invests funds through Peak Industry Bodies for consultation activities (see Section 5.4.3). When combined, these two elements comprise approximately 15% of HAL's total expenditure.

6.2.2 Cost Benefit Studies

HAL has conducted independent cost benefit studies of projects in line with the methodology agreed by the Council of RDC Chairs. Table 17 provides a summary of the ex post benefit cost analyses conducted by HAL on projects. This shows the projects had benefit cost ratios of between 1.7 and 14.6 to one.

Table 17 Summaries of benefit cost analyses of HAL projects

Project	Net Present Value $ million	Benefit Cost Ratio	Notes
Nursery Industry Business Improvement Program	2.84	1.7	Discounted at 5%
Nursery Industry Development Program	4.40	2.2	Discounted at 5%
Nursery Market Information Program	1.28	2.4	Discounted at 5%

Project	Net Present Value $ million	Benefit Cost Ratio	Notes
Nursery Environment Program	8.13	5.6	Discounted at 5%
Avocado Plant Protection	13.06	6.3	Discounted at 5%
Avocado Post Harvest and Fruit Quality	2.10	2.9	Discounted at 5%
Avocado Supply Chain	18.22	12.3	Discounted at 5%
Avocado Market and Consumer Research Plant Protection	5.59	14.6	Discounted at 5%
Potato Seed Production and Seed Quality	8.1	5.1	Discounted at 5%
Potato Processor – disease – soil amendments	12.8	5.0	Discounted at 5%
Potato Agronomy and Production Management	14.3	7.2	Discounted at 5%
Potato Environment and Health	2.2	3.5	Discounted at 5%
Potato Extension	13.9	10.0	Discounted at 5%
Onion Market and Supply Chain	9.3	12.1	Discounted at 5%
Onion Extension and Communication	1.3	3.4	Discounted at 5%
Potato Agronomy and Production Management	14.3	7.2	Discounted at 5%

6.3 HAL Investments Result in Public Benefits

There are a range of beneficiaries (beyond the immediate industry) of horticulture R&D efforts. The broader Australian community is a key beneficiary of our investment in R&D, as it has resulted in:

- A more stable, safe and higher quality food supply;
- Improved understanding and promotion of the health and wellbeing benefits of fruits and vegetables;
- More efficient and effective use of natural resources such as water.

Distinct from many other agricultural industries, the nature of horticulture industries means that stakeholders other than growers are likely to benefit from R&D. Key attributes of the sector include:

- It's location in peri-urban areas. The close proximity of large populations to horticulture production areas means that improvements in farm practices (eg chemical use, noise) benefit a large number of neighbours in terms of improved health, safety and amenity.
- In the main, there is limited processing of horticulture products from the farm gate to the point of sale. Thus, improvements made on-farm in terms of product safety or quality, are directly enjoyed by consumers.

Other examples of benefits to both growers and consumers include research that reduces or eliminates chemical use. Growers benefit through lower input costs and consumers and society benefit from reduced health risks and potential environmental consequences associated with residues.

HAL's whole of chain approach enhances the opportunity to deliver benefits to Australian consumers. The integration of marketing and R&D activities ensures that HAL's R&D investments are highly cognisant of market outcomes.

Specific examples of public benefits and spillovers from HAL projects are provided in Box 1.

Box 1 Spillover and public benefits of horticulture R&D

Industry	Project	Spillover and public benefits
All	Horticulture Water Initiative	More efficient use of water resources
Avocados	Health Benefits of Avocados	Understanding of the role of avocado properties in inhibiting the growth of colon and gastric cancer cells.
All	Horticulture for Tomorrow	Better management of natural resources and environmental issues including soil fertility, irrigation induced soil salinity, soil acidity, native vegetation conservation, weeds, greenhouse gas emissions, water use and water quality.
All	QPod Cool Chain Technology	Improved product quality and more consistent product supply for consumers
Almonds	Developing optimal nutritional and irrigation requirements for almonds	More efficient use of water resources.
Avocados	Avocado Supply Chain Program	Improved product quality and more consistent product supply for consumers Reduced waste providing greater value for consumers
Strawberries	Breaking the critical-use barriers preventing Australian horticulture from phasing out methyl bromide	Established alternatives, to enable the removal of ozone depleting gas

Industry	Project	Spillover and public benefits
Strawberries	Develop an effective IPM Strategy to deal with pests in the Victorian Strawberry industry	IPM practices decrease pesticide use and esidues on strawberries and in the environment in which they are grown
Citrus	New segments for the mandarin category: Commercialisation of seedless mandarin cultivars	Consumers will benefit from the provision of a new, more convenient and easier to use snack food.
Processing Tomato	Nutrition and Soil Management For High Yielding High Soluble Solids Processing Tomatoes	More efficient use of water resources, and a greater return of yield per megalitre of water. Economically the canneries continue to support the local regional economies in the Goulburn Valley.
Walnuts	Control of bacterial blight in walnuts.	Reduced toxicity to the environment from copper leaching into the soil, with benefits to plants and vertebrates (environmental benefit). Increased land use flexibility due to a reduction in the amount of copper (used in previous treatments) leaching into the soil (economic benefit).
Vegetables	Insect pest management in sweet corn	A reduced reliance on broad spectrum pesticides resulting in reduced environmental toxicity (environmental benefit). An improvement in the consistency of supply to the market place due to a reduction in crop losses (social benefit). Re-establishment of the export market due to a reduction in quarantine risk and contamination of products (economic benefit).
Vegetables	Biological control of onion neck rot	The project is expected to eliminate the use of chemical agents, some of which are known to be carcinogenic & mutagenic and are being reviewed by APVMA (e.g. carbendazim). Use of bio-agent does not pose any exposure risks to growers and communities at large, caused by direct contacts (to growers) or exposure by spray drifts (which benefits neighbouring properties) or seepage and pollution of waterways (which benefits communities).

Industry	Project	Spillover and public benefits
Potato	Australian Potato Research Program Phases 1 &2	Increased productivity by increasing awareness of disease management techniques, improved disease detection levels, standardized testing procedures leading to a reduction of inputs. The reduction of chemical usage by earlier detection of disease and novel management techniques has contributed to a less environmental stress and reduced costs.

7 HAL's Role in the Broader Industry and Government Community

7.1 HAL's Role within the Horticulture Sector

7.1.1 Overview

HAL's constitution establishes the objects and role of the company. In addition to delivering R&D services, HAL roles include:

- delivering marketing services to the industry; and
- to harness the industry's collective knowledge of issues that affect the value and supply chains;

In providing leadership, HAL plays a key role in developing and maintaining the capability of the industry. This includes:

- the capability of member organisations to plan strategically and interact with government on key issues affecting the sector; and
- the capability of the service providers (eg scientific agencies) to the industry.

7.1.2 HAL is a point of Coordination for Industry

HAL is the only institution that brings together the breadth of the horticulture sector at the national scale. While HAL's members are organisations that represent growers, HAL's voluntary contribution mechanism and links with the industry mean that the company's activities span the horticulture supply chain.

Future Focus, an industry wide strategic planning process is an example of HAL's ability to coordinate the whole industry. The Future Focus concept was developed, driven and coordinated by HAL. In addition to HAL's members, Future Focus involved co-funding from stakeholders from across the supply chain and governments (Table 18).

Table 18 Non HAL Stakeholders involved in Future Focus.

Adelaide Produce Market	Australian Horticultural Exporters Association
Agriculture Investment Managers Australia	Australian Prunes
Coles	Brisbane Markets
Costa Exchange	Central Market Association of Australia
Commonwealth Scientific & Industrial Research Organisation (CSIRO)	Horticulture Australia Council
Federal Government Department of Agriculture, Fisheries and Forestry	Market City
One Harvest	Melbourne Markets
Oz Taste	Montagues
Panda Ranch	Moraitis
Perfection Fresh	NSW Department of Primary Industries
WA Department of Agriculture and Food	NT Department of Primary Industries, Fisheries and Mines
Woolworths	Sydney Markets Limited
	VIC Department of Primary Industries

7.1.3 HAL provides a Focus for Government Interactions with Industry

In additional to the core business of providing research, development and marketing activities, HAL's position as a point of coordination for the industry means that often Government relies on HAL to provide technical information and support about the industry in a range of forums.

Without HAL, the industry is diffuse, which creates difficulties when coordination on issues such as market access, trade, biosecurity and food safety is required.

Key examples of HAL's formal points of interaction with Governments include the:

- Horticultural Export Consultative Committee, which advises AQIS on export trends, issue and fee structures for export certifications
- Horticulture Market Access Committee, with DAFF, DFAT, Biosecurity Australia and AQIS. This committee evaluates, prioritises, promotes and communicates international market access on behalf of the Australian horticultural industry
- Flying Fox Working Group, with Queensland DPI to prioritise the direction for non-lethal means to manage flying foxes
- CommercialWise, the network of IP Managers in horticulture that includes State Departments of Primary Industry and CSIRO
- National Horticulture Research Network
- Regional Biosecurity Program with DAFF to develop regional biosecurity measures for Australian horticultural industries

- Systems Approach to Market Access working group with DAFF
- WA Hortguard Program – WA Department of Agriculture, a state approach to protect horticultural industries from invasive pests and disease
- Review of Incursion Management Plans with the Office of Chief Crop Protection Officer (DAFF)
- Food Chain Assurance Advisory Group, Convened by DAFF & Australian Food and Grocery Council
- FT-024 Food Products with Standards Australia to develop and manage Australian Standards relating to food.
- Standard Development Committee for a Primary Production and Processing Standard for Seed Sprouts with Food Standards Australian and New Zealand.

7.1.4 Maintaining Industry Capability

HAL's leadership role in the sector has assisted in developing and maintaining capacity within industry organisations. Key mechanisms that develop industry capacity include:

- HAL's structures that facilitate strategic industry planning and the development of strategic capacity;
- Investment in consultation funding;
- Investment in leadership training, study tours and conferences; and
- Investment in industry development officers and managers to promote and extend the outcomes of R&D at a local and regional scale.

In addition to the individual role HAL plays in interacting with government (see Section 7.1.3), capacity development of industry participants enables them to better interact with governments on policy issues.

Maintaining the effective capability of research providers is a key challenge for the horticulture sector. The reduction in public funding of Rural R&D over recent decades has contributed to a loss of current positions in relevant sciences. State DPIs are increasingly dependent on external funding for many projects, and as such many professional staff are employed on short term contracts that reflect funding arrangements. This has substantially diminished the level of job security offered to many professional scientists and significantly diminishes the reputation and attractiveness of the profession. HAL has supported the maintenance of industry wide scientific capability by investing in scholarships at both undergraduate and postgraduate level.

7.2 Collaboration with other RDC's

7.2.1 Overview

HAL is a member and active participant of the Council of Rural Research and Development Corporations (CRRDC). HAL collaborates with other RDCs in three primary ways:

- Strategic collaboration and direction - to set RD&E policy and investment priorities;
- RD&E investment programs – formal contractual co-investment and collaboration that informs planning and operational management of RD&E program managers; and
- The harmonisation of administration.

7.2.2 Strategic RDC Collaboration

HAL, as a member of the National Horticulture Research Network (NHRN), has been an active participant in the development of the National Primary Industries RD&E Framework for Horticulture. HAL has also been a contributor to a number of the PISC cross-industry sectors including climate change and variability, food and nutrition, plant biosecurity and water use in agriculture.

HAL's participation in strategic collaboration includes the National Climate Change Strategy. This is a collaborative partnership established under a mandate from the Primary Industry Ministerial Council (PIMC) and Primary Industry Standing Committee (PISC) and CRRDC to coordinate climate change research in primary industries within the national R&D framework.

HAL, together with DA, MLA, and AECL collaborate as part of the Health Professional Extension Workshops. This involves three workshops a year with public health professionals to share the latest nutritional science and better understand the concerns and issues of health professionals. These same RDCs are also part of the Food Policy Think Tank which reviews the latest food science to identify opportunities for new research and develop policy submissions for Government.

HAL has participated in the CRRDC Evaluation Progam, including the assessment of successful and randomly selected projects and programs.

HAL is currently considering aligning planning cycles with other RDCs. This will help ensure that opportunities for project level collaboration are explored prior to the finalisation of annual budgets. Within HAL, this will include a shift in internal industry planning timeframes to enable consideration of individual, multi and across industry opportunities to collaborate with other RDCs.

7.2.3 Collaboration on Investment Programs

HAL has collaborated with other RDCs on mutually beneficial projects and programs. The following are some examples of these collaborative activities.

- Managing Climate Variability Program is a collaboration with four other RDCs (dairy, meat, cotton, grains and rural industries). This program is providing growers with the tools to incorporate climate information into business decisions. The current phase of the program is focussed on increasing climatic forecasting accuracy, building predictive capability and developing tools which transform climate forecasts into decision support tools for not just farmers but also natural resource managers.
- Climate Change Research Strategy for Primary Industries (CCRSPI) Stakeholder Group.
- Pollination Australia with RIRDC, DAFF Pollination Australia Animal Health Committee and links with Animal Health Australia, to protecting pollination for Australian horticultural industries.
- Cooperative Venture for Capacity Building, a program led by RIRDC.

HAL and the Rural Industries Research and Development Corporation (RIRDC) have signed a MoU, which seeks to avoid replication of research effort and delineates each organisation's role in respect to new and emerging industries.

Box 2 – Rootstock breeding and development for Australian wine and dried grapes

The majority of the Australian plantings for wine, dried and table grape industries are located in the irrigated regions of the Murray Valley that have been subject to restricted water allocations in recent years. As a means of mitigating this production risk in future years HAL and the Grape and Wine Research and Development Corporation have been jointly funding CSIRO research into the breeding and evaluation of rootstocks better suited to Australian growing conditions than the high vigour rootstocks that are commonly used for grafted vines. The specifications for the new rootstocks include: tolerance to root pests phylloxera and nematodes that have a debilitating impact on affected vines; tolerance of adverse soil conditions (salinity, high lime/pH, low nutrients, drought); and possess favourable viticultural characteristics (high propagation rate, graft compatibility, high water use efficiency, appropriate growth and yield traits). The GWRDC project provides resources, including a post doctoral fellow to undertake key breeding and screening studies and gain enhanced knowledge on inheritance of key characteristics. The HAL component ensures evaluation of selections from the program suitable for the dried grape industry. Currently 95 promising genotypes from the GWRDC collaboration are being evaluated in the dried grape production trial with results showing none or less than 10% yield loss in 61% of vines when subject to the very low water application regime of 3.6 Megalitres per hectare which is about half the typical application rate. This aspect of the project has the potential to deliver significant public good in terms of improved water use efficiency.

Total costs of projects over 5 years was $1,569,000.

7.2.4 Harmonisation Activities with other RDC's

In Brisbane, HAL staff are co-located with the Sugar Research and Development Corporation. HAL supports Australian Pork Limited by providing office space for Sydney based APL staff. In Perth, HAL is in discussions with the Western Australia Department of Agriculture and Food and CSIRO to enable the co-location of staff. Forest and Wood Products, Australian Pork Limited and HAL are exploring opportunities to share space and infrastructure for Melbourne based staff.

HAL is an active contributor to formal and informal harmonisation activities. These activities include:

- Interactions with IT managers on formal and informal collaborative activities to share knowledge and expertise across a range of administrative functions;
- Interactions with business managers on matters such as HR policy, procurement, and the impact of legislative changes;
- Interactions between communications managers to share experiences and learnings in relation to meeting reporting requirements and other communications systems and processes; and
- A project to move towards a standard suite of contracts and common terms and conditions for major suppliers including agencies, CSIRO and Universities. This includes the development of common principles to govern IP and commercialisation, insurance, indemnities, and in-kind valuations.

8 Improving Stakeholder Value

8.1 Governance

HAL's constitution provides for a Director Selection Committee, comprising of members elected at the AGM. The role of the Director Selection Committee is to recommend candidates for appointment to the Board, which will result in the Board being a balanced, skills based board, possessing experience and expertise in fields defined in the constitution. This fields include corporate governance; financial management; public policy and administration; commerce; research; marketing; horticultural production; international trade; and environmental management. Directors of HAL hold office for a period of three years, after which time the position becomes vacant. Retiring directors are eligible to renominate on retirement.

Under the company's new Statutory Funding Agreement, the HAL Board has committed to consider the establishment of a truly independent Directors Nomination Committee. This requires a change to the Constitution and so will be raised for consideration by HAL members.

In 2008, HAL undertook a review of its governance framework and implemented several changes. First, using a risk management framework HAL identified key legal, operational, financial, and strategic risks. Having identified and measured those risks it then proceeded to develop measures to manage or eliminate risk and improve operating outcomes. Key measures implemented have included:

- Changes to delegations of authority;
- Changes to the organisation structure to separate marketing from R&D;
- Board subcommittee charters have been rewritten to focus the outcomes of the committees;
- HAL has adopted the ASX Good Governance Principles; and
- Increased its transparency with Member organisations relating to internal cost, structure and performance.

In 2008, based on the recommendations of the Three Year Performance Review, HAL amended its agreement with Peak Industry Bodies around the provision of consultation funding. The purpose of this amendment was to increase accountability for consultation funding budgeting and expenditure by increasing transparency and the consistency of reporting between industries. Consultation budgets for each member are provided at the commencement of the financial year with a half year report to demonstrate that activities are outcomes focussed. At year end, PIBs must provide HAL with a full year report as well as a financial reconciliation of consultation funding expenditure. If funds remain unspent, they are returned to HAL.

8.1 Improvements in R&D Planning and Management

8.2.1 Overview

In the past three years HAL has made a number of changes to improve R&D planning, management and oversight. This has included:

- Adopting new processes to oversee and approve industry investments in line with National Rural RDC Priorities and HAL industry wide priorities;
- Increasing investment and capability in evaluation; and
- Adopting a risk based approach to project management.

8.2.2 Improving Alignment with National and HAL Priorities

A key challenge for all RDC's is the tension between the priorities of levy payers, and the increasing emphasis being placed on National R&D priorities and the delivery of public good outcomes.

In 2010 the Board considered its decision making processes in the context of the HAL project planning cycle, the new strategic plan, and HAL's structural impediments to increase cross sectoral and cross industry investment.

Historically most industries set their own priorities with no formal regard to HAL's strategic priorities or the governments' National or Rural priorities. In 2009 this changed. In the priority setting round of meetings an outline was sent to all IACs for them to consider. IACs were provided with information on National and HAL R&D priorities and guidance notes for considering triple bottom line (public good) outcomes.

In the past two months, HAL has introduced initiatives to improve the oversight of the HAL Board in ensuring the alignment of Industry Strategic Plans, Annual Investment Plans, National R&D Priorities and HAL R&D priorities. A revised process has been recently been put in place that allows the Board to engage in a far more strategic manner. This process has three key elements:

- The HAL Board to efficiently and clearly look across each of the Annual Investment Plans and gauge the level of alignment across Annual Investment Plans, relative to the National R&D priorities and HAL R&D priorities. This involves a high level summary highlighting the alignment (or lack of alignment) that exists. It allows the Board to be more strategic rather than operational in its review of alignment.
- The Board has also put in place a practice of meeting in person with each of the Peak Industry Bodies CEOs to discuss their Strategic Plans and R&D plans.
- The Board has commenced a process of meeting annually with each of the Industry Advisory Committee Chairs to further understand and offer guidance in terms of alignment of R&D priorities.

8.2.3 Increasing Investment in Evaluation

HAL has increased its investment in both ex-ante and ex-post evaluation efforts in both R&D and marketing programs. This improvement is in line with the methodology of the CCRDC, and specific recommendations made in the Review of Performance conducted in accordance with the company's Statutory Funding Agreement. Over the past three years, HAL has evaluated projects that account for approximately 4.5% of total R&D investment.

In the company's new Statutory Funding Agreement, the HAL Board has committed to increase its investment in program evaluation in both R&D and marketing.

8.2.4 Adopting a Risk Based Approach to Project Management

HAL has made a number of organisational changes to improve R&D project management. Three key changes that have been adopted by HAL include:

- Separating the roles of portfolio managers (who assist industries in planning and project design) and R&D contract managers (who are responsible for project administration including milestone approvals). This structural separation enables HAL to appropriately match staff skills (and recruit appropriately), while providing structural separation to improve project based governance.
- Adopting a risk based approach to small projects. Low risk projects are managed in within a framework of formal company policies, and revised internal processes and procedures. This approach has reduced the effort required to manage smaller low risk projects such as those relating to conferences or study tours.
- Process mapping of best practice R&D project management across the organisation. This ensures that there is consistent treatment of project assessment and risk management across the organisation.

8.3 Improvements in Administrative Support Functions

Following a key recommendation of the three year performance review of the company, HAL introduced new systems and reporting procedures to improve the transparency around the investment of R&D funds. This included changes to enable the alignment of investments against national R&D priorities at a whole of company, and individual industry scale. This new reporting system enables industries to identify areas of common investment in national priorities, and seek opportunities for improved collaboration between industries.

8.4 Structural Impediments of the Current Model

Matching co-investment by the Australian Government is currently limited to 0.5% of the gross value of production (GVP) at the farm gate. Unlike any other RDCs, each year HAL's annual investment is constrained by the limit of the cap. A key reason for this pressure on the ceiling is the involvement of supply chain participants in HAL's voluntary contribution program.

HAL's voluntary contribution program is a key mechanism to attract the participation of the supply chain in industry wide planning. Involving supply chain participants increases the connection between the farm gate and the consumer. This aids focus on R&D activities that are market driven, and are focused on delivering benefits to consumers.

For the industry to harness the opportunity for export led growth, Future Focus identified the important role post farm gate supply chain participants will need to have in the R&D landscape. This increased involvement will mean that HAL will need to continue to manage to the GVP ceiling.

9 Conclusion

The horticulture sector has experienced considerable success over the past decade. HAL has played a significant role in this success through its investments in R&D that have: improved on-farm productivity; increased the quality of products to build consumer demand; helped avert biosecurity incursions; and enabled access to international markets.

As an organisation, HAL has delivered on its objects and the intentions of industry and government in establishing it. HAL enables collaboration between industries, and economies of scale for the industries who invest their levy funds through the company. This economy of scales means that even small industries are provided professional services and the support to ensure R&D is well targeted and efficiently delivered.

HAL provides leadership and a point of coordination for the industry. HAL is currently the only institution that brings together the breadth of the horticulture sector at the national scale. The Australian and State Governments rely on HAL as a focal point for the sector. This broader role of the company must be remembered.

Through the RDC model, the Australian Government plays a critical role in providing funds and sharing the investment in R&D. Without this collaboration, growers would be much less willing to pay levies, resulting in substantial underinvestment in innovation in horticulture. Governments would find it much more difficult to achieve the priorities it has identified. In the absence of the government/ industry partnership created by RDCs such as HAL, investment in R&D will fall far short of the level and type needed to achieve national objectives and adequate on-farm investment in innovation.

HAL has a culture that is open to constructive and evidence based suggestions for continued improvement. Within the current model, HAL makes the effort to improve the way it does business. The performance review required under the Statutory Funding Agreement identified areas of focus for improvement, and the Company has considered and explored each of these recommendations. Board practices, providing improved guidance and support to industry planning activities, and governance arrangements for the relationship between HAL and Peak Industry Bodies are examples of these.

HAL is keen to actively engage with the Productivity Commission and the Australian Government in this review of investment in agriculture R&D. HAL is eager to contribute to the robust examination of the range of future options available, and willing to provide further information to the Productivity Commission to support its analysis.

In providing this information to the review, HAL hopes that it assists the Productivity Commission in articulating options for evaluation. It is also hoped that the information serves as an outline of the current R&D operating environment when considering the pros and cons of alternative approaches. Recognition of the achievement and improvements made by the RDCs over the recent past will enable a constructive discussion with all stakeholders regarding the Rural Research and Development Corporations model.

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Abbreviations & Acronyms

ABARE	Australian Bureau of Agricultural and Research Economics
ABS	Australian Bureau of Statistics
ADFB	Australian Dried Fruits Board
AFGC	Australian Food & Grocery Council
AGM	Annual General Meeting
AHA	Animal Health Australia
AHC	Australian Horticulture Corporation
AQIS	Australian Quarantine Inspection Service
AUSVEG	Australian Vegetable & Potato Growers' Federation Ltd
CCRSPI	Climate Change Research Strategy for Primary Industries
CRC	Co-operative Research Centre
CRDC	Cotton Research & Development Corporation
CRRDC	Council of Rural Research & Development Corporations
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAFF	Department of Agriculture, Fisheries & Forestry
DFAT	Department of Foreign Affairs & Trade
DPI	Department of Primary Industries
EMS	Environmental Management System
FTE	Full time equivalent
GRDC	Grains Research & Development Corporation
GVP	Gross Value of Production
HAL	Horticulture Australia Limited
HRDC	Horticulture Research & Development Corporation
IAC	Industry Advisory Committee
IMC	Industry Management Committee
IP	Intellectual Property
NHRN	National Horticultural Research Network
NPV	Net Present Value
PA	Pollination Australia
PIB	Peak Industry Body
PIMC	Primary Industry Ministerial Council
PISC	Primary Industry Standing Committee

Abbreviations & Acronyms

R D & E	Research, Development & Extension
R&D	Research & Development
RDC	Research & Development Corporation
RIRDC	Rural Industries Research & Development Corporation
SFA	Statutory Funding Agreement
SRDC	Sugar Research & Development Corporation