Department of Agriculture

NATIONAL HORTICULTURAL CENTRE FEASIBILITY STUDY

- Report No. 1 -

Economic Potential in Horticulture in Victoria and the Potential Role of a National Horticultural Centre at Wantirna in Improving Horticultural Industry Performance

Coopers and Lybrand Consultants

May 1991

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I EXECUTIVE SUMMARY

101. This report is the first of a series of three concerned with the feasiblity of a National Horticulture Centre ("NHC") at Wantirna. The broad aim of the consultancy is to assess the financial viability of the concept and its component activites and develop, if appropriate, a strategy and structure whereby they can be drawn together on the one site at Wantirna. The location and design of the NHC will integrate with the surrounding Dandenong Valley Metropolitan Park. The potential components of the NHC are as follows:

1. Original Home for Horticulture Proposal
2. Horticulture Retail Facilities
3. Hospitality Facilities (Food and Beverages)
4. Education Facilities
5. Horticultural Industry Park
6. Wholesale Flower Market and Distribution Centre
7. Government Horticultural Services
8. Advanced Horticultural Research Facility.

102. This report first analyses Victorian horticultural industry market opportunities and economic potential, the role of government and key success factors and barriers relevant to the exploitation of these opportunities. From this basis, the report identifies the potential roles and contributions of NHC and attempts to estimate the potential benefit to the industry and to the State of Victoria from the establishment of such a centre. The scope for the NHC as set out in our brief is set out on pages 9 and 10, and **Appendix A** and in Exhibit 2.1.

Industry Definition

103. The horticulture industry has been defined widely to include amenity horticulture, home gardening, cut flowers, ornamental and other industry products, fruit, vegetables and support industries.

Industry Structure

104. Horticulture is a complex and fragmented industry with no real focus for the industry as a whole or for many of its sectors. Farm size is small (less than 11 percent of nurseries and 20 percent of orchards larger than 50 hectares) and average farm gross income as a consequence is low (25 percent less than $50,000 per annum gross). However the added value ratio to production value is relatively high (55 to 64 percent): in 1987/88, sales revenue of $755 million in Victoria generated $419 million of added value from inputs of $336 million.

Economic Potential

105. Economic potential is greater in the domestic market than in export. The two major market opportunities not adequately exploited at present both lie in the Australian domestic market:

(a) Australia's low level of cut flower consumption by world standards;

(b) Australia's relatively low past growth rate in vegetable consumption, given the increase in consumer concern about nutrition and food safety.

106. In both of these situations there is overseas evidence that consumption can be dramatically increased by more effective marketing, promotion and consumer education.

107. In the case of cut flowers, the industry in Victoria is seriously handicapped at present in both domestic and export markets by the lack of an adequate wholesale market and export consolidation centre.

108. The importance of domestic markets in horticulture relates not only to increased revenue potential but also to the importance of discriminating and quality conscious domestic buyers in improving overall industry standards and performance which will also enhance global comparative advantage. To achieve the required concentration on increasing and meeting domestic consumer expectations in such a complex and fragmented industry requires both a geographical focus and greatly improved sectoral leadership and commitment.

109. To quote Mr J van Doesburg, Chairman of the Flower Council of Holland, speaking at the 1990 Australian National Flower Show:

> "Don't neglect the home market. The Home Market is the most important market".

110. A similar situation applies in relation to ornamentals and other nursery products. Over half of total industry revenue contribution ($1.6 billion including exports) relates to amenity horticulture ($979 million estimated) and home gardening (over $200 million annual household expenditure - Exhibit 4.2). Achieving even small increases in this can mean very significant economic benefit to nursery operators. The key to this again relates to increasing and satisfying consumer expectations as the driver for the development of new and better plant varieties. However, the major potential for increased benefit is intangible, coming from increased public participation and other intangible benefits such as visual pleasure, improved environment, therapy opportunities.

111. There is less economic potential and scope for dramatic domestic market growth in the fruit sector, except possibly for nashi pears and some berries and nuts. Rather there is a need to protect existing markets by cost reduction and improved varieties in terms of flavour, appearance and post harvest attributes. A further most urgent need is to put much greater effort into consumer education on nutrition and product safety issues, such as chemical residues.

112. Economic potential in domestic markets is large with estimated total domestic market growth opportunities by 1994/95 of the order of $140 million per annum.

113. While export opportunities are significant, these are of lower additional potential total sales and economic value than domestic opportunities. The key constraint is Australia's relatively much higher production costs and greater transport inefficiencies than those of its other major Southern Hemisphere competitors (South Africa, Zimbabwe, Brazil, Chile) for out-of-season Northern Hemisphere markets.

114. Australia and Victoria's comparative advantage in world markets relates to:

(a) out of season temperate and to some extent semi-tropical production capabilities;

(b) proximity to Asian and Pacific markets including the West Coast of America;

(c) relative freedom from diseases and pests;

(d) unique native plant species;

(e) international research standing in molecular biology.

115. Identified export market growth opportunities relate to:

(a) cut flowers:
  (i) based on Northern Hemisphere established varieties produced out of season;
  (ii) Australian native cut flowers all year round;

(b) ornamentals, particularly unique Australian flora:
  (i) propagation rights for PVR protected new varieties;
  (ii) niche markets for bare root plants unique to Australia.

(c) fruit: high quality Asian, North American and possibly European markets for out of season supplies of grapes, peaches, pears, nashi, citrus and some berries. The key issues are quarantine constraints, quality and post harvest management. Increased exports for fruit sectors are a must, not just an opportunity, to dispose of surplus production from recent new plantings in sectors such as pome fruit, nashi, cherries, citrus, blueberries, avocados.

116. Economic potential from export is significantly less than for domestic markets with total export growth potential by 1994/95 estimated to be of the order of $40 million per annum.

Key Success Factors and Barriers

117. The industry sectors with the greatest needs to strengthen key success factors and remove or reduce barriers across almost all success factor groups are the cut flowers and ornamentals sectors. There are at the same time, more specific needs in the home gardening, fruit and vegetables sectors.

118. The key domestic market needs relate to better marketing and promotion backed up by more effective use of existing knowledge rather than to generation of new knowledge. Failure to exploit identified market opportunities derives significantly from industry lack of focus, leadership and cohesion. This failure has been exacerbated by a similar fragmentation and lack of cohesion in services provided by government and by a divergence of industry and research manager views on the nature of government service needs and hence objectives. Research managers see themselves as committed to longer term strategic improvement of competitive advantage; industry participants see themselves as having a myriad of small problems with no one place to go for help and see government resource allocation as having moved away from helping with both their small problems such as diagnostic and extension services and their longer term needs in post harvest management improvement.

119. Specific industry priority needs identified are:

(a) for the cut flowers and ornamentals sector, a geographical focus in the Melbourne metropolitan area based on a dedicated wholesale market (ie a place where growers go regularly for sound commercial reasons);

(b) generally better and more responsive access to information, diagnostic and testing services with greater emphasis on interpretation of test results;

(c) much greater research and technical resource commitment to post harvest research in all its forms, including new variety development, and to research on alternative treatments to pesticides for export;

(d) independent centre for PVR related new variety identification and certification;

(e) a single horticulture research unit to support these needs;

(f) better access to and more practically oriented and industry specific education programmes at all levels, but with specific need to improve access to short courses (management, marketing and technical) and facilities for post graduate programmes in horticulture;

(g) for the fruit and vegetables sectors, better opportunities and resources for consumer education on food safety and chemical residues and for display of new varieties;

(h) for the ornamentals sector, availability of garden displays including both mature plants and newly developed varieties with associated extension and consumer education facilities;

(i) for home gardeners, access on the one site to display gardens of differing styles, to mature plants and to information and library services.

Potential Role of NHC

120. Analysis of success factors, barriers and industry needs in relation to the activities proposed for the NHC at Wantirna show that from the industry viewpoint the wholesale market is the key to the ability to attract flower and ornamental growers regularly to the site. If such a market is viable, then the NHC role expands logically and easily to include diagnostic, testing, extension and other information related services, facilitating industry education programmes, variety certification, export order consolidation and

containerisation together with export support services such as transport and quarantine, a horticulture research institute. The site might possibly also include advanced biotechnology research and tertiary education facilities particularly for higher degree students.

121. If to this wholesale industry base is added a group of very well maintained gardens, associated exhibition facilities and activity displays which can attract several hundred thousand visitors per annum, NHC will provide to the industry as a whole and to individual sectors greatly increased opportunities for display and testing consumer reactions to new developments and varieties and for consumer education.

122. For the visitors to NHC, such facilities offer both a pleasurable experience and an opportunity at the same time to obtain information about gardening and plant related issues. It would provide the logical site for relocation of the Burnley Garden Advisory Service and the Royal Horticultural Society library material.

123. This analysis has been centred on the NHC site at Wantirna but many or all of these needs could as well be met on other similar sites.

124. Report No 2 which is concerned with business plans for these and related activities assesses the financial viability of these NHC role options.

Relevance to Identified NHC Components

125. Industry needs and NHC possibilities have been considered in relation to NHC components identified in the consultant brief (paragraph 101).

Original Home For Horticulture Proposal

126. As conceived, this component involves:

(a) display and recreational gardens;
(b) exhibition facilities;
(c) accommodation for societies;
(d) public information and education facilities.

127. Melbourne has no one place where a home gardener can see a wide range of mature plants in real garden settings. Melbourne also lacks a central point with public access to a horticultural library and information facilities. The industry lacks a central point at which it can display both plants and other related products in real garden and mature growth situations under conditions which allow continuing changes to be made to reflect changing market opportunities and new product development. Other venues such as the Botanical Gardens comprise relatively more permanent and unchanging material.

128. Certain sectors of the industry have specific needs to display new varieties, including ornamentals and fruit. Other sectors need increased and cost effective opportunities for consumer education both in the scope and effective use of their products and on health and nutrition issues, including chemical residues. Generally the industry needs a focus for its interaction with its various publics.

129. The importance of these focussed public access horticulture facilities relates first to the importance of raising the quality expectations of the domestic consumer earlier identified as central to improving competitive advantage. At the same time it recognises that the major growth opportunities in horticulture and some of the major threats relate to domestic rather than export markets.

130. The gardens and trialling areas will also provide a very valuable facility for practical training both of apprentices and of VCAH higher degree students. This is of great interest to Outer Eastern TAFE. They thus contribute to an important educational objective.

Horticulture Retail Facilities

131. While the industry, given the number of retail nurseries already operating in Victoria, does not see the need for a major plant retailing facility at NHC, the revenue potential from such a facility needs to be considered as a contribution to the underwriting of "Home For Horticulture" facilities and activities.

132. Apart from such commercial realities, there are specialist retailing needs that can contribute more directly to primary industry objectives:

(a) a specialist garden shop, as at Wisley in the UK, which sells books and other media material, educational videos, specialist garden tools, clothing etc;

(b) specialist plant retail facilities associated with specific permanent or temporary displays oriented to the promotion of new varieties;

(c) order taking facilities eg for bulk bulb orders.

Hospitality Facilities (Food and Beverages)

133. Primarily these will produce revenue from servicing the needs of the visiting public or industry people on business at the site.

134. There is at the same time an opportunity to use the public related facilities to demonstrate new fruit and vegetable products and new ways of preparing them eg a top vegetarian restaurant.

Education Facilities

135. We have already commented on the value of the gardens for practical apprenticeship training.

136. The other educational needs to which NHC will contribute include:

(a) industry education:
  (i) facilities for the practical component of supervisor and specialist technical short course training;
  (ii) co-ordination and marketing of specialist industry continuing education;
  (iii) if a major research facility is included, as a base to support VCAH Masters and other higher degree programmes;

(b) consumer education:

(i) as a venue for practically oriented, one or two day or shorter specialist courses for home gardeners;

(ii) in association with neighbouring facilities, as the venue for weekend courses;

(iii) by providing opportunities for industry sectors to communicate on health, nutrition and safety issues with the large volume of visitors to the NHC.

Horticultural Industry Park

137. This facility can be considered under two headings:

(a) permanent or semi-permanent product display;

(b) industry office and/or trading facilities.

138. The commercial contributions of both types of park relate to broad domestic and export industry support objectives. Such facilities need to be addressed in terms both of industry need and commercial and financial contribution. They derive from primary general public and industry related facilities at the site and have little self standing justification in their own right.

Wholesale Flower (and Plant) Market and Distribution Centre

139. This is the core attractive element for the commercial industry. Without this facility there will be little to attract growers and industry suppliers to the NHC. It is a high priority need of the cut flower sector (including flowering pots and indoor plants) and has a similar potential to replace existing wholesale plant and nursery product markets both as an attractive NHC revenue earner and as an improved market facility.

140. A wholesale market will make a very significant contribution to priority needs of the cut flower sector:

(a) a dedicated market with an environment conducive to the development of domestic markets for cut flowers - a major market opportunity;

(b) as a point of consolidation for containerised export shipments of cut flowers: this role is supported both by flower growers and by transport industry flower specialists;

(c) "a place where industry people go regularly for meaningful commercial reasons".

141. NHC role in plant wholesaling is essentially an add-on to the flower market. It is attractive as much for the revenue that it generates and retains to support overall industry needs as for the need for better market facilities.

Government Horticulture Services

142. Industry needs are clearly focussed on:

(a) **more responsive diagnostic services**, supported by problem solving and applied research where necessary;

(b) more responsive approaches to **quarantine**;

(c) support for **new variety development**, identification and certification for PVR purposes;

(d) **post harvest improvement**, including packaging and development of new varieties with better post harvest attributes;

(e) **information access** (involving where necessary skilled intermediaries) and assistance in its use (extension);

(f) research supportive to the development of **new procedures to meet overseas quarantine and general access requirements.**

143. A key concern is that government activities in these areas are excessively fragmented. Therefore we interpret the industry's first preference is to have one point of access to the full range of these services. This is certainly of relevance to the proposed NHC site:

(a) sufficient land is available;

(b) if the Home For Horiculture and the wholesale market go ahead, it will become the focus for growers, support industries and consumers.

144. However if the wholesale market does not go ahead, there will be much less attraction to growers to come to NHC. The relevance of the NHC site is then restricted to land availability and possibly to "Home For Horticulture" gardens. In these latter circumstances, other locations may be more attractive.

145. The main NHC focus on the needs of consumers and the general public as opposed to industry will be on government services involved in information, testing and education. This points to the potential benefits of relocating the Burnley Garden Advisory Service to NHC.

Advanced Horticultural Research Facilities

146. Even if the full NHC proposal goes ahead and it becomes the focus for government services to horticulture listed above, there are divided views about the relevance of NHC as the site for an advanced horticultural research facility. The industry sees a need for this and has a preference for its juxtaposition to diagnostic and other applied R&D facilities if they are to be located at NHC. However DARA research managers are concerned about the viability of a more limited "horticulture research institute" as opposed to a larger "plant research institute".

147. An alternative could be to develop a horticulture research institute as an add-on to VCAH eg a satellite of VCAH on the NHC site, upgrading VCAH research and higher degree capabilities.

148. We conclude that the NHC site is relevant and the space is available. Ultimately, however, decisions on what to locate where will involve much broader public policy issues than this study can address.

Potential Benefits From NHC

149. Finally we have attempted to assess the potential additional benefits which might be directly related to the establishment of NHC. This assessment assumes that both grower and general public related facilities are established at NHC. The more direct benefits are likely to accrue to the amenity horticulture, home gardening, cut flowers and nursery sectors. Our judgemental assessments indicate potential benefits from NHC to these sectors in the medium term of $5 to $7 million per annum in revenue, representing added value possibly of the order of $3 to $5 million.

150. Potential benefits to the fruit and vegetable sectors are less direct and will be more dependent on the establishment of a full range of technical support, plant research and some related educational facilities on the one site at NHC. If this occurs, our judgemental assessments suggest an additional potential benefit to the fruit and vegetable sectors of the order of $6 million per annum in revenue representing added value of the order of $3 million.

151. There will clearly also be very significant additional benefits to the home gardeners and to the public generally who visit the Home For Horticulture elements. These cannot be quantified.

152. However if the market centred grower related facilities are not located at NHC, then the potential benefits to the commercial side of horticulture will be significantly reduced.

Estimated Potential Benefits

153. The estimation of potential economic benefit is always difficult and largely a matter of judgement and conjecture. It has been particularly difficult in this present situation due to:

(a) the lack of reliable and internally consistent output data and the limited availability of sectoral value added statistics;

(b) the conceptual nature of the issues at stake.

154. We have therefore judgementally assessed likely benefits on an industry sector-by-sector basis as a percentage improvement in current output, resulting from strengthening of key success factors and/or removal of barriers identified in other chapters. Where possible, this has been done in two parts: in total and where the major impact could be attributed to the establishment of the NHC.

Amenity Horticulture

155. This is the sector where there is least obvious and immediate financial benefit from NHC since its input needs are reasonably well met at present.

156. We have assessed the total potential benefit as 1 percent and the benefit attributable to NHC as only 0.1 percent of its Victorian output value estimated at $1 billion (being the 1982 value adjusted to March 1990 prices). This suggests a potential annual benefit from NHC of $1 million to this sector.

Home Gardening

157. The benefits in home gardening (as also in Amenity Horticulture) will primarily relate to non-tangible issues like increased participation and outdoor activity, pleasure, therapy and visual and social quality of life generally. Such increased participation will certainly result in increased inputs.

158. We suggest 1 percent per annum as a reasonable expectation of NHC generated contribution estimated on a total Victorian input value of $226 million; this represents an annual money benefit of the order of $2 million.

Cut Flowers

159. For cut flowers, a more systematic and sustainable approach to benefit estimation is possible.

160. The economic benefit has been assessed on the basis of the increase in production value likely to be achieved in Australian domestic and overseas markets as a result of establishing the NHC. Productivity improvements will also be important to the sector if the projected growth is to be sustained but are difficult to quantify.

161. The Market, Export, Quarantine and Promotions Workshop along with industry interviews established as priorities the access to and availablility of reliable industry data, maintenance of quality, suitable wholesale markets, reliable transport and promotion. These key elements were assessed in terms of the percentage increase which could be achieved if the NHC Wantirna project proceeded. These increases were based on the best informed judgements and seen to be icreases "over and above" the industry estimated expansion.

162. Whilst the NHC project will create a focus for horticulture, it is the linkages between the market place and grower, the market place and research worker, the market place and the support industries as well as the market place and educational training which will create the additional benefit per annum to the sector. There is a multiplier effect created through improved infrastructure and industry culture. To achieve the benefits, each of the NHC grower attractions and consumer public attractions will be essential. It is a case of all or nothing.

163. Conservative estimates of contribution specifically and potentially attributable to NHC as added sales value are set out in **Exhibit 1.1.**

Exhibit 1.1

Potential Benefits to Cut Flowers Sector

Key Success Factors	1988/89 Production Value $ Million PA	Improvement Per Annum in Production Value Short Term (2 to 5 yrs)	Long Term (6 to 10 yrs)
Market Data)		0.3%	0.5%
Production Data)		0.1%	0.2%
Data Evaluation)		0.2%	0.5%
Quality Assurance)	$51M	0.3%	0.3%
Post Harvest)		0.3%	0.4%
Transport)		0.2%	0.5%
Wholesale Market)		0.5%	0.7%
Promotion)		0.5%	0.5%
		2.4%	3.6%

164. This suggests a contribution at 1988/89 prices from NHC of 2.4 percent or $1.2 million per annum increase in sales value (domestic and export) in the short term rising to 3.6 percent or $1.8 million per annum in the longer term. This represents additional added value to the industry of $0.8 million rising to $1.2 million per annum (assuming Added Value is 65% of Production Value).

Ornamentals and Other Nursery Products

165. We have estimated the potential benefits to the "ornamentals and other nursery products" sector (**Exhibit 1.2**) in a similar manner to those for the cut flower sector.

Exhibit 1.2

Potential Benefits to Ornamentals and Other Nursery Products Sector

Key Success Factors	Current Production Value $ Million PA	Improvement in Production Value Per Annum Short Term (2 to 5 yrs)	Long Term (6 to 10 yrs)
Applied Research)		0.2%	0.7%
Training & Education)	$98M	0.3%	0.7%
Promotion)		0.5%	0.5%
		1.0%	1.9%

166. Based on the current value of the ornamentals and other nursery products sector of $98 million, an increase of the order of $1 million in annual value may be expected in the short term from improved applied research, promotion of current products and consumer education. In the longer term an annual value increase of up to $2 million may be expected from the added benefits of new product development, trialling and demonstration. This represents increased added value of $0.65 million rising to $1.3 million (assuming Added Value represents 65% of Production Value).

Fruit and Vegetables

167. Benefits to the fruit and vegetables sectors from NHC will generally be less direct than for the home gardening, cut flower and ornamental sectors. These benefits will derive essentially from:

(a) the concentration in the NHC catchment area of temperate fruit tree propagators who will benefit directly from access to NHC facilities;

(b) the potential impact of NHC in reducing fragmentation of such a diverse industry.

168. Extension of NHC facilities to include technical support and plant research facilities on the one site as discussed earlier can be expected to improve the attractive power and relevance of NHC to the fruit and vegetable sectors.

169. However the potential benefits are likely to be very limited if NHC scope is restricted to "Home For Horticulture" and wholesale flower market facilities.

170. Under the "full range of facilities" scenario for NHC, analysis of the potential benefits from the establishment of a centre at Wantirna that could address key success factors or barriers within the fruit and vegetable industry shows that the greatest benefits can be derived from:

(a) servicing knowledge-related needs;
(b) improving marketing and distribution;
(c) promotion of food safety and nutrition.

171. Knowledge related benefits can flow both to:

(a) the fruit and vegetable industries;

(b) the consumers.

172. Potential increases in current value of fruit and vegetable production which can be expected from the establishment of the NHC are small in percentage terms but quite large in total dollars **(Exhibit 1.3)**.

Exhibit 1.3

Potential Additional Economic Benefits to Victoria From NHC

	Production Value PA Victoria ($ Million) 1988/89	1994/95	Benefit Source and Assessed Potential Resulting % Increase in Production Value: Knowledge Related	Quality Assurance	Promotion	Applied Research	Potential Additional Sales Value $ p.a.
Pome fruit	65	63	0.2%	0.4%	0.5%	0.5%	1.04
Stone fruit	38	41	0.4%	0.5%	0.5%	0.5%	0.72
Citrus	27	32	0.2%	0.4%	0.4%	0.3%	0.35
Table Grapes (1)	29	NA(2)	0.2%	0.2%	0.3%	0.2%	0.26
Nuts and Berries	10	NA(2)	0.4%	0.2%	0.5%	0.5%	0.16
Kiwifruit	NA(2)	NA(2)	-	0.1%	0.4%	0.2%	NA
Potatoes	72	70	0.2%	0.1%	0.1%	0.1%	0.36
Other Vegetables	131	135	0.5%	0.4%	0.5%	0.8%	2.881
	372	341(3)					5.77 (4)

Notes: (1) Dried and wine grapes have been excluded as not being directly relevant to this study.

(2) Inadequate disaggregated data for Victoria.

(3) Excludes grapes, nuts and berries and Kiwi fruit.

(4) Excludes Kiwi fruit.

Source: ATA Analysis.

173. While these gains are extremely difficult to quantify, it is expected that the principal increases will come from increased domestic consumption of fruit and vegetables through consumer education and a heightened awareness of the nutritional aspects of good diet and the willingness of producers to meet the consumers' wants for safe attractive products. It is not expected that initiatives at NHC would have as significant a potential to enhance export earnings from fruit and vegetables as much as from cut flowers and nursery products.

174. Potential % increases in production value expected from the establishment of the above facilities at NHC were assessed for each of the four identified sources (knowledge related, quality, promotion, research) by applying the sum of assessed potential percentage increases to estimated present Victorian production value.

175. The short to medium term gains can be expected to be of the order of $5.8 million or 2 percent of forecast 1995 annual revenue, with an added value of $3.1 million (assuming Added Value is 53% of Production Value).

Horticultural Inputs

176. No attempts have been made to assess separately the benefits of NHC to suppliers of goods and services to the industry. As these will be generated as a result of industry ouput increases, separate estimates could result in double counting.

177. There will however be real benefits to suppliers from NHC in the improved opportunities to produce, educate about the use of and sell their products, quite apart from those that derive from any improved sectoral activity.

Transport

178. Clearly a wholesale flower market with a key export role at NHC offers both new market and cost management opportunities in the transport of cut flowers particularly to interstate and export markets. We are however unable to quantify these in a meaningful way.

Summary of NHC Potential Benefits

179. Potential quantifiable benefits to Victoria that may be expected from NHC summarised in **Exhibit 1.4.**

Exhibit 1.4

Potential NHC Generated Benefit

(At 1989/90 Prices)

Sector	Forecast 1994/95		NHC Potentially Generated Additional Value	
	Production Value Victoria $M	Added Value $M	Production Value Victoria $M	Added Value $M
Amenity Horticulture	1,039(1)	N/A	1.0	N/A
Home Gardening	225(1)	N/A	2.0	N/A
Cut Flowers	84(2)	54(5)	1.2 - 1.8	0.8 - 1.2
Ornamentals	144(3)	94(5)	1.0 - 2.0	0.7 - 1.3
Fruit and Vegetables	380(4)	201(6)	5.8	3.1
Estimated Total Values	1,872	N/A	11.0 to 12.6	N/A

Notes:
(1) Table 4.2.
(2) Exhibit 7.1.
(3) Exhibit 8.1.
(4) Exhibit 20.3: total adjusted to include 1988/89 production value for table grapes ($29 million) and nuts and berries ($10 million) as no forecast data available for these products. No Victorian recent production data is available for Kiwi fruit.
(5) Assumes added value as 65% of production value (Exhibit 4.1).
(6) Assumes added value as 53% of production value (Exhibit 4.1).

Source: C&LC and ATA Analysis.

180. In addition to these benefits that we have attempted to quantify, there are, as indicated in paragraph 2006, very large potential social, recreational and educational potential benefits from the NHC "Home For Horticulture" and associated facilities. These cannot be quantified but must not be overlooked.

Conclusion

181. We conclude that there are likely to be very significant quantifiable and non-quantifiable social, recreational and educational benefits to Victoria from the establishment of the NHC.

182. Our analysis of the potential benefits that derive directly from increased production, productivity and added value suggests that these quantifiable benefits may represent $11 to $13 million per annum additional production value and possibly more than half of this amount in added value. This figure, given the uncertainties in the analysis involved, must be seen as an indicative figure on the assumption that all proposed NHC facilities are provided.

183. Quite apart from the provision of the NHC facilities, better mobilisation of the industry's own resources will be essential if these potential benefits from NHC are to be achieved.

II PROJECT DEFINITION AND SCOPE

201. The Department of Agriculture and Rural Affairs ("DARA") has retained Coopers & Lybrand Consultants ("C&LC") to examine the proposal to develop a National Horticultural Centre ("NHC") at Wantirna in Melbourne.

202. The primary objective of the NHC is to provide a focus for Victoria's multi-faceted horticultural industry and to support the State's extensive gardening and landscaping interests. The consultants' brief for DARA is included as **Appendix A.**

Additions to Consultant's Brief

203. The original brief as set out stated:

> "The broad aim of the consultancy is to assess the financial viability of the concept and its component activites and develop, if appropriate, a strategy and structure whereby they can be drawn together on the one site at Wantirna. The location and design of the NHC will integrate with the surrounding Dandenong Valley Metropolitan Park. The potential components of the NHC are as follows:
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> 8. Advanced Horticultural Research Facility".

204. The Clarification of the Brief (Appendix A) added to these aims requirements for:

(a) a summary of market opportunities and economic potential for horticulture in Victoria;

(b) reasons for limited success in exploiting this economic potential;

(c) potential contribution of NHC to improving the performance of the horticultural industry, with attention focussed on structural issues within the industry and government services provided to the industry which could be positively influenced by the NHC proposal;

(d) advising the government on research and service activities which could be relocated to the NHC site and the consequences of relocation in terms of the improved interaction with industry.

Reports

205. The study will generate three separate reports:

- **Report No 1 - Economic Potential in Horticulture in Victoria and the Potential Role of A National Horticultural Centre at Wantirna in Improving Horticultural Industry Performance,** (completed by C&LC, with assistance from ATA Services Ltd in collection and analysis of industry data) examines market opportunities, economic potential and structural issues within the horticultural industry which could be positively influenced by the NHC proposal.

- **Report No 2 - Business Plans For NHC Elements,** completed by C&LC, sets out business plans and financial feasibility studies for each component and of the overall concept and an assessment of alternative land tenure arrangements.

- **Report No 3 - Government Research and Service Activities at NHC,** also completed by C&LC, advises the government on research and service activities which could be relocated to the NHC site.

This Report

206. This report is Report No 1, "Economic Potential In Horticulture in Victoria and Potential Role of a National Horticulture Centre at Wantirna in Improving Horticultural Industry Performance".

Background

207. The Home for Horticulture Committee has promoted a proposal for the development of a horticultural centre in a variety of forms since the mid-1980s. The Committee put a proposal, prepared by IBIS Strategy Consultants, to the Victorian Government early in 1989. This proposal involved the development of a large public garden focussing on new developments in the horticultural industry, together with a series of specialist gardens and ancillary exhibition and other facilities.

208. Whilst the potential benefits of the proposal were recognised, concerns were raised within Government regarding financial viability. Considerably more planning and evaluation of commercial options was considered necessary before any commitment could be made by Government.

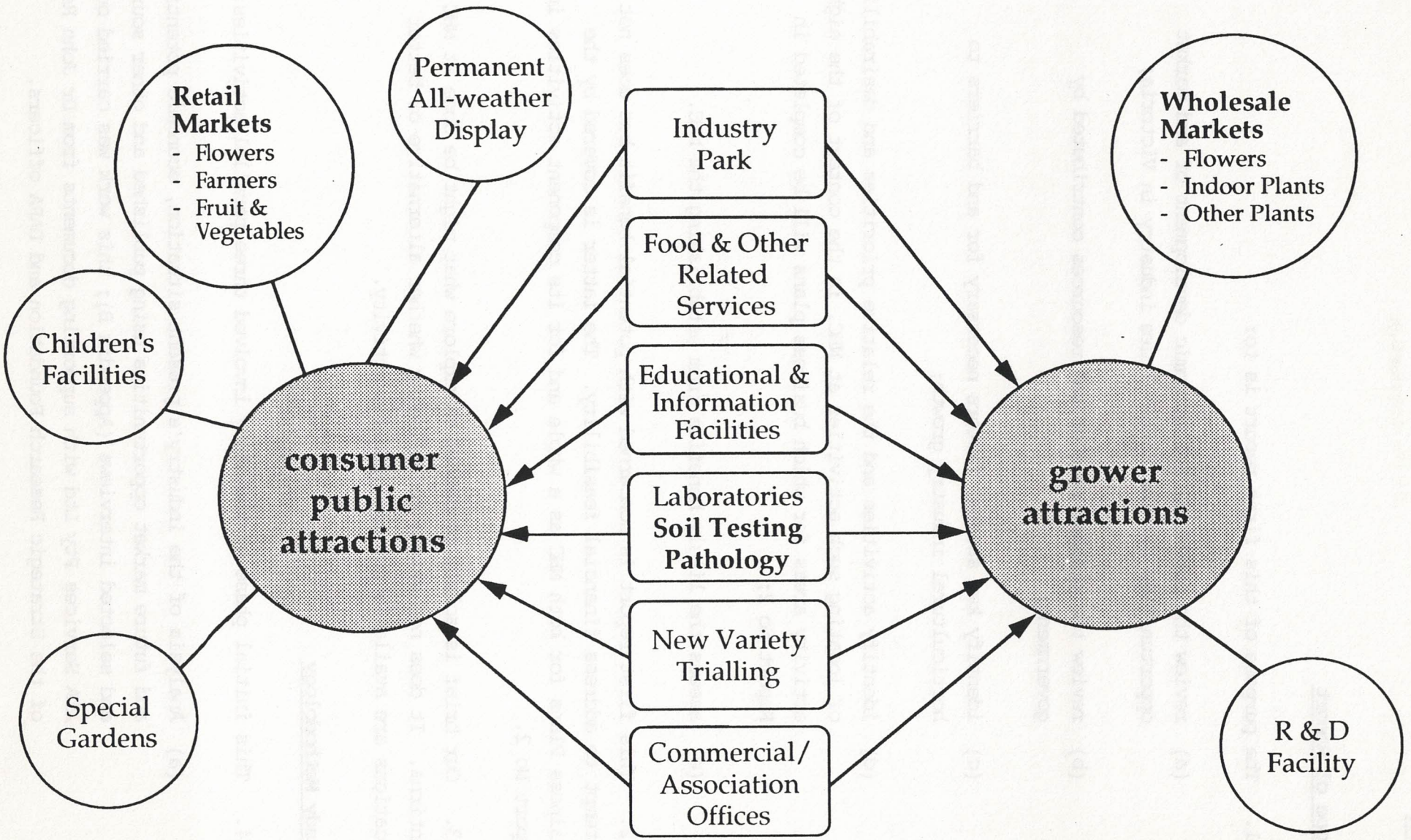
209. It has now been proposed that a number of activities could be added to the original Home for Horticulture concept. The relevant activities include the following:

- Expanded horticultural retail facilities
- Hospitality facilities (food and beverages)
- Educational facilities
- Wholesale Flower Market
- Horticultural Industry Park
- Government Horticultural Activities
- Advanced Horticultural Research Facility.

210. It has been suggested that the inclusion of some, or all, of the above elements would help consolidate the Victorian horticultural industry and would contribute to the financial feasibility of the NHC concept. The interrelationship of these various elements is illustrated in **Exhibit 2.1.**

NHC Activity Interrelationships

Exhibit 2.1



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Scope of Report

211. The purpose of this first report is to:

(a) review the potential for economic development of and market opportunities for the horticulture industry in Victoria;

(b) review the present role of and resources contributed by government;

(c) identify key success factors necessary for and barriers to horticultural industry growth;

(d) identify activities and the relative priorities and desirability of locating such activities at NHC, in the context of the eight activity areas for which business plans will be completed in Report No 2;

(e) assess the likely benefits from establishing the NHC.

212. This first report is concerned with potential benefit but does not attempt to address financial feasibility. The latter is covered by the Business Plans for both NHC as a whole and for its component activities in Report No 2.

213. Our brief is solely concerned to explore what might be done at NHC at Wantirna. It does not extend to exploring whether alternative or better locations are available for any specific activity.

Study Methodology

214. This initial phase of the study involved three parallel activities:

(a) Analysis of the industry's present situation, economic potential and future market opportunities using published and other sources and selected interviews (Appendix B); this work was carried out by ATA Services Pty Ltd with supporting documents from Dr John Raff of the Strategic Research Foundation and DARA officers.

(b) A consultation process involving:

(i) meetings with an Industry Consultative Group with wide industry coverage (Appendix B) established by DARA;

(ii) four workshops on sectoral needs and specific issues:
- fruit and vegetables;
- markets and distribution;
- parks and gardens;
- research, testing and information services;

(iii) interviews with key individuals (Appendix B).

(c) A review based on DARA's VAMIS information system of DARA programmes relating to horticulture (Appendix E) carried out by Dr John Raff with supporting documents provided by DARA officers.

215. This was followed by:

(a) assessment of industry needs that could potentially be wholly or partially met by one or more of the eight activity areas for which business plans are required;

(b) an assessment of the potential benefits to be expected from the establishment of new facilities at Wantirna, based on the data collected in the analysis of industry economic potential and needs.

III INDUSTRY DEFINITION, SCOPE AND DISTRIBUTION

Definition

301. The Shorter Oxford Dictionary defines horticulture as "the cultivation of a garden; the act or science of cultivating or managing gardens, including the growing of flowers, fruit and vegetables".

302. By contrast, agriculture is defined as:

> "tillage of the soil; the science and art of cultivating the soil; including the gathering in of the crops and the rearing of livestock; farming (in the widest sense)".

303. There is clearly some overlap in the definitions in relation to fruit and vegetables.

304. Within the industry, horticulture is perceived differently by different interest groups. City gardeners may see it structured primarily to ornamentals, trees and turf. Irrigated fruit growers may see themselves as commercially more related to agriculture than to home gardening.

Industry Scope

305. Our first task therefore was to seek agreement about the scope of the horticulture industry in terms of this present study. This required development of an appropriate segmentation of the industry. The segmentation so developed has been based on Australian Standard Industry Classification ("ASIC") codes and is illustrated in **Exhibit 3.1**. This exhibit also indicates sectors of importance to Victoria.

Horticultural Industry Segmentation

D = Domestic
E = Export ✓ = Important to Victoria ?. = Possibly Important to Victoria

Markets			Ornamental		Table		Fermented		Juice		Other Processed (canning, drying, freezing, etc)	
Product/Activity		Asic Code	D	E	D	E	D	E	D	E	D	E
Amenity Horticulture			✓									
Home Gardening			✓									
Cut Flowers & Foliage		0195	✓	✓								
Retail growing/wholesale		4754	✓	✓								
Fruit:	apples and pears	0136			✓	✓	✓	?	✓	✓	✓	?
	berries	0136			✓	✓			✓	?	✓	?
	citrus	0136			✓	✓			✓	?	✓	
	grapes	0134			✓	✓	✓	✓	✓	?	✓	✓✓
	nuts	2131			✓	✓						
	stone fruit	0136			✓	✓			✓	?		
	other eg avocados	0136			✓	✓						
Nurseries:	retail	0145	✓	✓								
	wholesaling	4754	✓									
	forest	0304	✓									
Vegetables:	potatoes	0143			✓						✓	
	other	0144			✓	✓			✓	?	✓	
Landscape Gardening		4122	✓	?								
Horticultural Services nei		0206	✓	?	✓	?	✓		✓		✓	

Segmentation

306. To allow effective analysis of economic potential, the following broad segmentation has been used in this report:

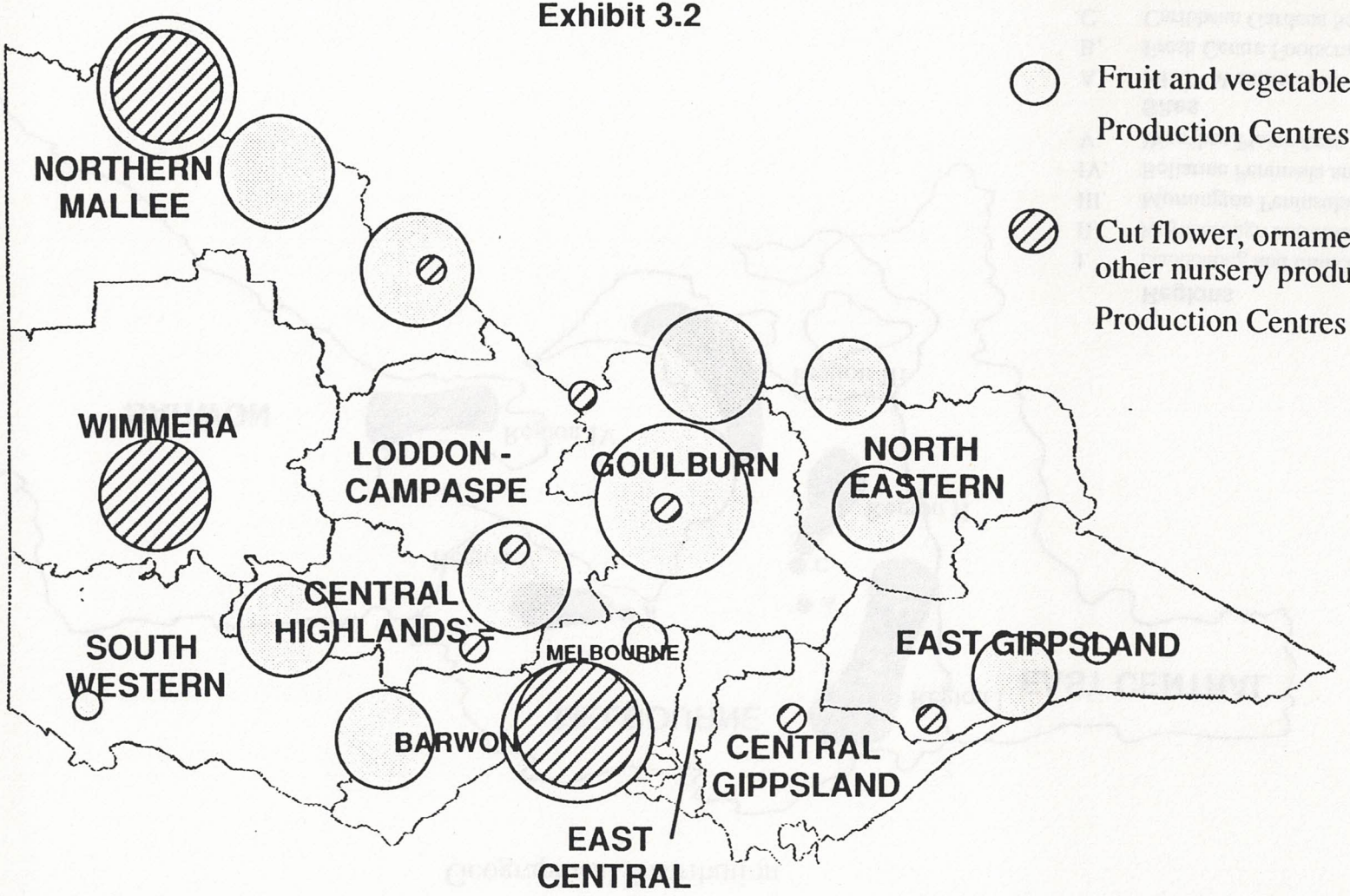
(a) home gardening;
(b) amenity horticulture (public gardens, city and office building gardens, sport facilities etc);
(c) cut flowers;
(d) ornamental and other nursery plant products;
(e) fruit;
(f) vegetables;
(g) industry inputs and services.

Geographic Distribution

307. **Exhibits 3.2** and **3.3** show the present general geographical distribution of major centres of commercial horticulture in Victoria and in the Melbourne Metropolitan Region respectively. Relevant sites (NHC, Fresh Centre at Footscray, Caribbean Gardens, Tullamarine Airport) which have relevance to domestic or export horticultural activity in the Melbourne region are also indicated.

VICTORIA - STATISTICAL DIVISIONS

Exhibit 3.2



Note: 1. Size of circles are illustrative only of relative importance and are not drawn to scale.

2. Exhibit has been based on current (1990) understanding of the industry

Source: ATA Analysis

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MELBOURNE REGION

Exhibit 3.3

Cutflower, Ornamental and Other Nursery Products

Geographical Distribution

Regions

I. Dandenong and immediate area
II. Keysborough and Cranbourne area
III. Mornington Peninsula area
IV. Bellarine Peninsula area
V. Werribee Plains Area

Sites

A. NHC - Wantirna Site
B. Fresh Centre Footscray
C. Caribbean Gardens Scoresby
D. Melbourne International Airport Tullamarine

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SECTION A

ECONOMIC POTENTIAL

IV SUMMARY OF MARKET OPPORTUNITIES AND ECONOMIC POTENTIAL

401. Horticulture is Australia's fourth largest rural industry. In 1988/89, 14,000 farms produced a wide range of fruits and vegetables, flowers and other ornamentals with an annual gross value of about $2.9 billion. Gross value has been growing steadily at over 10% per annum (industry information) in dollar value in recent years. This suggests a real growth rate of about 3 percent, well in excess of population growth rate which is at present 1.9 percent for Victoria and 1.5 percent for Australia as a whole (Australian Bureau of Statistics, Catalogue No. 7330.0 Summary of Crops).

402. Victorian horticulture covers both temperate and subtropical production and has an annual value of $678 million from 2600 farms (ABS loc.cit).

403. In the year ended June 1989, Australia exported $591 million of horticultural products of which Victoria's contribution was $301 million (51 percent). In the same period, Australia imported $728 million of horticultural products. Imports have been increasing over recent years especially in processed and preserved products. (ABS Foreign Trade Statistics June 1989).

404. With some risk of double counting, two "consumer" sectors also are responsible for very high levels of expenditure:

(a) amenity horticulture, estimated at $979 million per annum after adjusting 1982 data (all that is available) to 1990 prices;

(b) home gardens, $220 million in the 1988/89 Household Expenditure Survey.

Statistical Data Availability and Integrity

405. A diversity of operations and market outlets make horticulture a difficult industry on which to collect statistical data. Further, the variety of holdings makes adequate statistical description difficult.

406. Attempts to correlate statistics between commodities in horticulture are at best frustrating. Direct comparisons between years are rarely possible as virtually every year changes are made to the manner in which totals are aggregated. Large sections are included in the category group, "all other crops", to the point where statistical analysis becomes almost meaningless.

407. Exports from Victoria cannot be assumed as having been produced in Victoria. A variable proportion of all exports from Victorian ports are produced interstate and for economies of shipping aggregated at Port Melbourne, Geelong or Portland for loading. This results in ABS figures for exports from Victoria being a poor estimator for the proportion of Victorian produce exported.

408. A further example of the statistical uncertainties is that of the 14,000 farms in Australia in March 1988 with horticulture as their principal farm enterprise, 5200 were producing orchard and other fruit and 2109 were operating as nurseries. Data do not show how many were engaged in both enterprises. (Source: ABS Catalogue No 7102.0, Agricultural Industries 1989).

Industry Structure

409. Farm size in horticulture is relatively small. In Victoria less than 11% of nurseries and 20% of orchards are larger than 50 hectares. (Source: ABS loc. cit.).

410. Average farm gross income is low as a consequence of size. In Victoria over 25% of nurseries and 25% of orchards had gross values of production less than $50,000. (Source: ABS loc. cit.).

411. Farm gross value of production (GVP) for horticulture in Victoria is however higher than the overall Australian average. In 1988/89, average GVP for nurseries in Australia was $125,000 compared with the Victorian average of $140,000. For orchards the Australian figure was $123,000 compared with $178,000 in Victoria. In each case the increased GVP was matched by larger enterprise area and greater intensity of production in Victoria. (Source: ABS loc. cit.).

The Industry Turnover and Value Added

412. The total added value of horticulture in Victoria in the years 1986/87 and 1987/88 is shown in **Exhibit 4.1.**

Exhibit 4.1
Added Value in Horticulture

	Turnover ($ million)		Value Added ($ million)		Value Added (% of turnover)	
	Aust	Vic	Aust	Vic	Aust	Vic
Nurseries						
1986/87	235.9	83.5	149.0	56.5	63.2	67.7
1987/88	271.5	108.6	171.3	70.9	63.1	65.3
Fruit						
1986/87	970.7	327.1	512.8	195.3	52.8	59.7
1987/88	1,171.1	398.9	588.2	210.9	50.2	52.9
Vegetables						
1986/87	799.0	195.7	405.4	109.4	50.7	55.9
1987/88	1,004.1	247.7	529.7	136.9	52.8	55.3
Totals						
1986/87	2,005.6	606.3	1,067.2	361.2	53.2	59.6
1987/88	2,446.7	755.2	1,289.2	418.7	52.7	55.4

Source: ABS Catalogue No. 7507.0 Agricultural Industries, Financial Statistics, Australia
ABS Catalogue No. 7508.0 Agricultural Industries, Financial Statistics Preliminary
ABS Catalogue No. 7501.2 Value of Agricultural Commodities Produced, Victoria

413. A more detailed breakdown of inputs is shown in **Appendix D.** However the base used differs from that of Exhibit 4.1.

414. In Victoria in 1987/88, horticulture added value of $418.7 million with the balance as inputs of $336.5 million. Added value was highest for the nursery industries at 65.3 percent of turnover and lowest for fruit at 52.9 percent. Any activity which boosts overall sales volume can be expected to have a directly proportional effect on the value of horticultural inputs. Conversely research activities which result in raising productivity or unit price will have a smaller increasing effect on inputs.

415. Unlike the cutflower sector where increased sales will create substantial value added potential, the ornamental and other Nursery Products sector face limited sales potential. Productivity improvements through applied research could in fact, decrease the value added benefit in relative terms.

416. In each case between 1986/87 and 1987/88 value added in Victoria decreased as a percentage of turnover. While the two year comparison is insufficient to draw a strong conclusion, the trend shows a concern that the cost of inputs in horticulture is rising faster than turnover value.

National Comparative Competitive Advantage

417. Improvement of economic potential and particularly export market growth opportunities, will inevitably require enhancement or even just establishment of some level of sustainable comparative competitive advantage internationally.

418. This first will involve consideration of the natural strengths of the horticulture industry in Victoria. In this context the recent Invetech study on biotechnology research strategies and the Pappas Carter Evans and Koop manufacturing industry study concluded that research and industry development strategies should both focus on business activities that derived from areas where Australia has a comparative and sustainable competitive advantage.

419. Analysis of identified market opportunities suggests that in the case of horticulture in Victoria these relate to:

(a) out of season temperate and to some extent, semi-tropical production capabilities;

(b) proximity to Asian and Pacific markets including the West Coast of America;

(c) relative freedom from diseases and pests;

(d) unique native plant species;

(e) international research standing in molecular biology.

Market Opportunities and Economic Potential

420. The most critical constraint on the Victorian and Australian horticulture industry's growth and future economic potential is high local cost of production and freight costs and handling inefficiencies by comparison with its Southern Hemisphere competitors for the large Northern Hemisphere markets for flowers, fruit and vegetables. These competitors include countries like South Africa, Brazil and Chile with both low labour costs and well developed, multinational supported production and distribution infrastructure.

421. While these cost constraints apply less to Australian domestic markets, it is worth noting that in the year ended June 1989 Australia imported $4 million worth of flowers, $115 million of fruit and nuts and $51 million of vegetables, a total $170 million by comparison with horticulture exports of $591 million (Source: ABS Trade Statistics).

422. Australia in the medium term is most unlikely to change its relative cost competitiveness. Therefore, the economic potential of the industry is tied to:

(a) expansion of domestic markets, particularly exploring the potential to double per capita consumption of cut flowers and increase vegetable consumption;

(b) out of season production of familiar Northern Hemisphere varieties particularly cut flowers;

(c) high quality and/or unique products into niche export markets.

423. As Porter of Harvard University (as discussed in later analysis of Chapter XIII) has pointed out, performance in high quality export markets is closely linked to the level of quality expectations in the domestic market.

424. In the cut flowers sector, changes in inwards quarantine regulations are starting to open up North Hemisphere out-of-season markets that require access to familiar and well established Northern Hemisphere cultivars.

425. Australian Biotechnology research already under way in Victoria has the potential to achieve a major commercial breakthrough into international markets with PVR protected products of sales potential up to and possibly over $10 million per annum.

426. In the fruit sector particularly, Australia must increase exports to be able to dispose of production from new plantings in key sectors, such as pome fruit, cherries, citrus, blueberries, avocadoes. These are the sectors therefore where greater attention to post harvest and quality management and to alleviating freight cost disadvantages are essential.

427. While inputs to horticulture from support industries and services were valued at $336 million for Victoria (paragraph 414), their growth and economic potential is closely related to that of horticulture production. No separate assessment has been made for support industries and services to avoid risks of double counting.

Sectoral Analysis

428. Present situation and market opportunities are analysed by sectors in Chapters V to XI under the following headings:

(a) amenity horticulture;
(b) home gardening;
(c) cut flowers;
(d) ornamental and other nursery products;
(e) fruit;
(f) vegetables;
(g) industry inputs and services.

Summary of Market Opportunities

429. **Exhibit 4.2** sets out in summary estimates of present market situation and potential increases in sales value from market opportunities and potential for economic growth identified in the later sectoral analysis (Chapters V to XI). No attempt has been made to assess separately growth in industry inputs and services as they will derive from growth in primary sectors. Their inclusion could lead to double counting.

430. This shows total market growth opportunities by 1995 at 1988/89 prices as of the order of:

- domestic - $140 million;
- export - $40 million.

As indicated, successful outcomes from flower related biotechnology research could increase significantly this forecast export value.

HORTICULTURE MARKET OPPORTUNITIES

Exhibit 4.2

	Domestic Market				Export Market			
Sector	Present Production Value to Vic A$Mpa.	Natural Growth Rate % pa	Market Opportunity	Potential Additional Increase in Value pa. 1995	Present Production Value to Vic A$Mpa.	Market Size	Market Opportunity	Potential Additional Increase in Value $pa.1995
Amenity Horticulture	979	About 3%	Environmental concerns eg. more trees. Garden city attitudes.	Possibly 1%, up to $12M p.a. $60 M by 1995	Neg.	Small	Small, professional services only.	Small
Home Gardens	220	Population: 1%	Better awareness creation & marketing. Reduce % who do not buy plants.	2-5%, $4-10M	Not Relevant	-	Not Relevant	Not Relevant
Cut Flowers	50	Population: 1%	Low domestic consumption by world standards eg. impact of Dutch, UK market development.	100% $50 M	$1.1 M	Large	1. Out of season export of proven Northern Hemisphere varieties 2. All the year export of Australian unique varieties.	$8 M
Ornamental & Other Nursery Products	98	Population Plus: 1-2%	Growth in Amenity Horticulture Home Gardening Growth in Commercial Production	5% of $12M 40% of 4-10M Total: ~ $3M	$30,000	Large	1. Bare root plants of unique Australian species 2. Rights to propagate PVR protected new species	$0.1 M $1 M
Fruit:								
Pome Fruit	31	Population Minus: 0-1%	More modern varieties Consumer education	$ 0.5 M (Prevention of decline)	$17 M	Large	Better varieties	$3 M
Nashi	3	Population Plus 1-2 %	Better promotion	$13-15 M	Small	Medium	Export essential to dispose of production	$5-10 M
Stone Fruit	19	Population: 1%	Breeding & post harvest research to prolong shelf life Increased planting based on better varieties Improved post harvest performance	$1-2 M	$28 M	Medium	Breeding & post harvest research Better organised production and marketing	$2-5 M
Citrus	21	Population: 1%	Better quality and promotion of fresh fruit	$1-2 M	$6 M	Large	Concentration on quality for top end of Asian market. Overcome infestation issues	$5 M
Grapes:								
Drying	N/A	Population: 1%	Consumer education and marketing	2%	NA	Large	Depends on A$exchange rate	Small
Wine	NA	Static or Decline	Greater production flexibility Counteracting anti-alcohol & beer excise lobbies	1%	NA	Medium	Higher quality variaties High capital, high risk	Unknown
Table	15	Population: 1%	Improved quality and marketing	Possibly $1-2 M	$14 M	Medium	Improved quality control } Better organised marketing }	$5-15 M
Berry Fruit	9	Population: 1%	Marketing of new varieties with better post-harvest quality	10% $1 M	0.1 M		Improved quality & post harvest attributes	500% $0.5 M
Vegetables	70	Population: 1%	Better promotion of nutritional benefits and food safety	10% $7 M	10M		Onions and leafy vegetables Improved marketing and freight savings. Export commitment.	500% $10 M
Total (1)	1515	-	-	142-153	76.5			40-58

Note (1) Excludes sectors where NA indicates no data available.
Figures are A$M

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Focus for Interventions

431. In summary, the foci for intervention through public funded and industry cooperative programs to achieve the economic potential of the Victorian horticulture industry need to be:

(a) raising the quality and diversity expectations in the domestic market from better informed, more quality conscious consumers and better market arrangements;

(b) encouraging larger scale commercial production of flowers, fruit and vegetables where such scale is essential to meet export market production quantity and quality management;

(c) increased resources for post harvest management where there is export necessity or new export potential;

(d) improving processes for import of cut flower cultivars required for out of season Northern Hemisphere markets;

(e) facilitating export handling and freight cost reduction;

(f) facilitating the development and overseas sale of intellectual property rights to cultivate PVR protected new varieties based on Australia's unique plant resources and established biotechnology research capabilities.

V AMENITY HORTICULTURE

501. The amenity horticulture section can be defined as "those people and organisations who are engaged in the production, sale and management of plants used for environmental, recreational and leisure purposes" (Rowe, 1979).

502. Amenity horticulture is concerned with facilities that are available to and enjoyed by the public, particularly those participating in various recreational and leisure activities (both active and passive).

503. All property owners pay rates to various bodies (Melbourne and Metropolitan Board of Works ("MMBW"), Local councils). A portion of these rates is allocated to the provision of recreational facilities (parks and gardens, sports grounds, etc) and beautification of the surrounding environs (streetscape tree planting).

504. Unfortunately, information relating to the various segments of the amenity horticulture sector is spread across various Government agencies and authorities and is thus not available from any central source. Current statistics are thus difficult to obtain. Further, private companies with varying degrees of activity in amenity horticulture derive varying proportions of their total revenues from this source.

505. Therefore, unless otherwise specified, statistics provided are based on research conducted in 1982 on the size of this sector of the amenity horticulture industry in Victoria (based on research by the Victorian College of Agriculture and Horticulture, 1983).

506. Although nursery and seed production, plant retailing, floriculture and floristry are important inputs to amenity horticulture, these segments are discussed in later sections of the report and will not be covered here.

Economic Importance

507. Available 1982 data on the various amenity horticulture segments are summarised below in **Exhibit 5.1.**

Exhibit 5.1
Amenity Horticulture Industry:
Estimates of The Number of Establishments,
People Employed and The Value of Each Segment in Victoria, 1982

Industry Segment	No of Establishments	No of people Employed	Value of Sales & Service $ M (1982 prices)	Estimated Growth Rate %
Arboriculture	80	300	12	8
Turf Production	5	20	1	12
Turf Management	1219	2225	80	8
Parks & Gardens	250	7200	250	3
Landscape Des & Const	405	1500	100	12
Maintenance Gardening	1400	2000	40	12
Materials Supplies	215	1300	150	8
Research & Extension	15	50	1.5	8
Total	3,589	14,395	634.5	

Source: Victorian College of Agriculture and Horticulture, 1983.

508. Adjusted to 1990 prices, this in total represents an estimated $979 million of sales and service value in 1990 without any provision for real growth (in the absence of any more accurate published data). It is clearly a major sector of the industry.

Open Space

509. The total area of open space in the Melbourne metropolitan area in 1987 was 24,166 hectares.

510. The percentage of open space, by area type, is shown overleaf in **Exhibit 5.2** under the following categories:

Informal: Areas designed for non-competitive use and "managed" in some way (eg mowing, fencing, weed control).

Sporting: Areas designed primarily for competitive sport, many of which may be unavailable, at certain times, for general public use.

Undeveloped: Areas which are not developed or managed in any systematic way, but are accessible to the public.

511. Ownership of Melbourne's open space is shown overleaf in **Exhibit 5.3.**

512. The amenity horticulture industry provides materials and services towards the development and maintenance of 19,332 hectares being 80.58% (sporting and informal area types) of Melbourne's 24,166 hectares of open space.

513. Various government bodies and private organisations are involved in the management and maintenance of Melbourne's open space:

(a) local government;
(b) Department of Conservation, Forests and Lands;
(c) MMBW and Dandenong Valley Authority ("DVA");
(d) educational institutions;
(e) hospitals;
(f) private gardening contractors;
(g) private recreational and sporting clubs.

Arboriculture

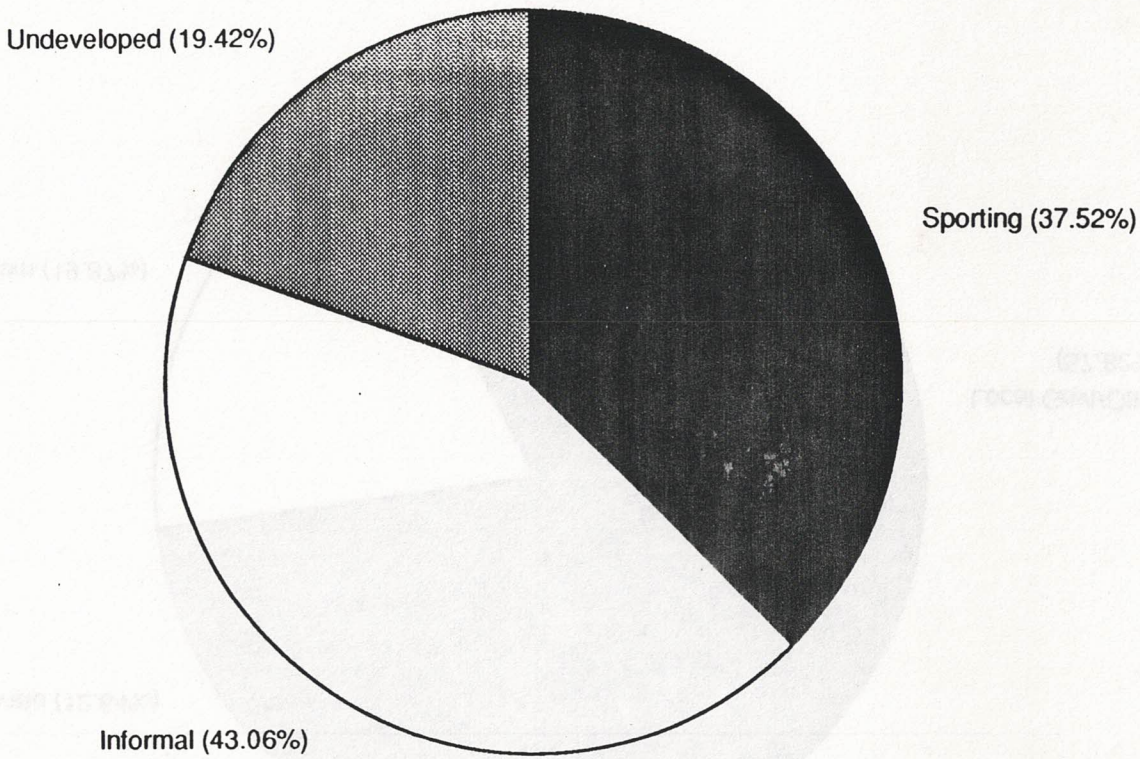
514. A definition of arboriculture is the care, maintenance and management of trees and woody plants.

515. In the private sector this comprises individuals and companies involved in tree care consulting, tree felling and grubbing, and tree "surgery".

516. The private sector in 1982 provided $12 million worth of services, employed approximately 300 people and had an estimated growth rate of 8% per annum.

Nature of Open Space in Melbourne - 1987

Exhibit 5.2



Source: Melbourne Metropolitan Recreation and Open Space Inventory 1988

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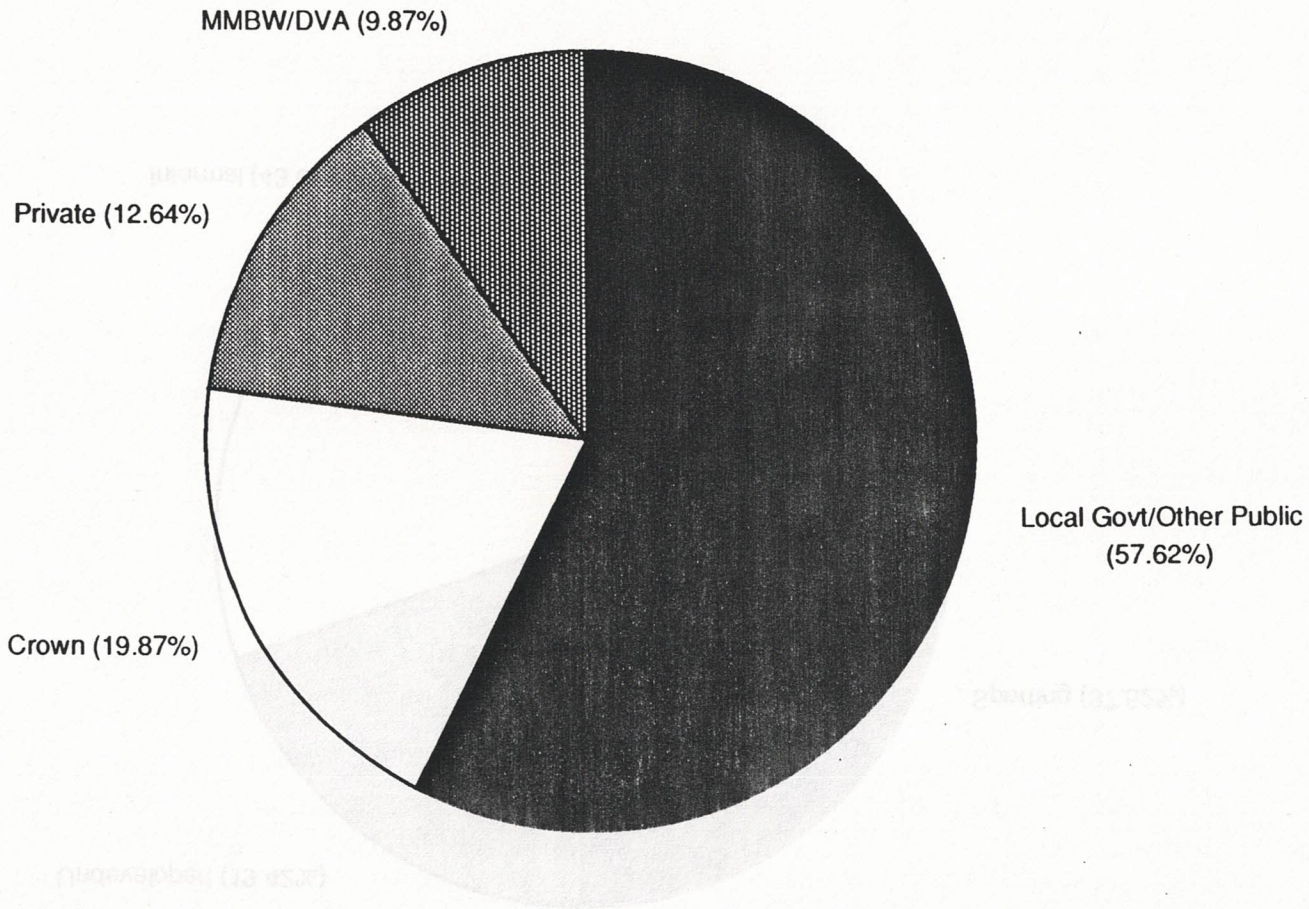
Ownership of Open Space in Melbourne - 1987

Exhibit 5.3



Source: Melbourne Metropolitan Recreation and Open Space Inventory 1988

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517. Public bodies involved in the management and maintenance of Victoria's parks and gardens also contribute significantly to this segment of amenity horticulture; their contributions are included under the Parks and Gardens segment.

Turf Production

518. This segment of the amenity horticulture industry is relatively small in terms of the number of private establishments involved (five in 1982) and the value of sales and service ($1 million).

519. The number of persons employed in the segment in 1982 was estimated to be 20 and a growth rate of 12% per annum was envisaged.

520. Potential was stated by industry sources to exist in this segment for the development for export of superior turf types where high resistance to wear is required. We have not sought to validate these comments.

Turf Management

521. This segment is concerned with the development and maintenance of turf for commercial outdoor sporting facilities.

522. Facilities comprising this segment are:

(a) bowling club greens;
(b) golf courses, driving ranges, putting greens;
(c) race courses;
(d) tennis clubs with grass courts;
(e) independent school, college and university sporting fields;
(f) commercial sports fields;
(g) boccee alleys, croquet greens trugo rinks.

523. Value of sales and service for this industry segment was estimated to be $80 million in 1982. The number of establishments (clubs & organisations) involved in turf management was 1,219, employing 2,225 people with a growth rate of 8% per annum.

Parks and Gardens

524. The majority of people involved in the planning and maintenance of Victoria's parks and gardens are employed by Government and local bodies.

525. In 1982 the size of this industry segment was estimated at 250 establishments (includes 54 metropolitan and 156 country councils), employing 7,200 people with expenditure of $250 million and an anticipated growth rate of 3% per annum.

526. An indication of current expenditure on parks and gardens is provided for the following two bodies:

(a) The MMBW spent an estimated $15 million on maintenance, $2 million on capital expenditure, and $1.3 million in local government assistance grants in 1989 (pers comm). The MMBW employs some 274 people (20 planning staff and 254 field staff) in the area of parks and gardens, (MMBW - pers. comm.).

(b) The Melbourne City Council (MCC) employs 330 staff involved in the administration and maintenance of parks and gardens under its jurisdiction (an area of 600 hectares). An amount of $11 million was spent by the MCC in 1989 on capital expenditure and maintenance of parks and gardens (pers comm).

527. Persons employed in this, the largest, segment of amenity horticulture include parks and gardens directors, superintendents and managers, botanists, foresters, landscape architects and designers, curators, rangers, tradesmen, apprentices, gardeners and other labourers (Aldous 1982).

Landscape Design and Construction

528. The landscaping segment of the amenity horticultural industry was valued at $100 million in sales and service in 1982.

529. The number of establishments operating was 405, the majority of which were private sector businesses.

530. Anticipated growth rate for this industry segment was 12% per annum.

Maintenance Gardening

531. The provision of lawn mowing and general garden services was carried out by some 2,000 people in 1982. The majority of people employed in this segment move in and out of employment on a seasonal basis.

532. Estimated value of this segment was $40 million and a 12% growth rate per annum was anticipated.

533. There may be some overlap of activities in this segment, albeit at an unskilled level, with other areas of amenity horticulture such as arboriculture and landscape construction.

Materials Supplies

534. This segment of amenity horticulture is concerned with the provision of materials required in the production, storage, distribution and utilisation of plants.

535. The number of commercial suppliers of horticultural materials was estimated to be 215 in 1982.

536. These suppliers employed approximately 1,300 researchers, designers, technicians, tradespersons, business managers, marketers and technical representatives.

537. Value of sales and service per annum was estimated at $150 million, with an anticipated growth rate of 8% per annum. A comparison with household expenditure data suggests as a reasonable assumption that 30 percent of this or $50 million was for purchase of trees, shrubs and plants.

Research and Extension

538. The extent and number of people involved in research and extension in the amenity horticulture section is difficult to determine, given that Government controlled research units or researchers may not fully devote their time to ornamental species and may cover other areas of the horticulture industry such as fruit and vegetables. DARA research inputs are discussed in Chapter XII.

539. Nevertheless, quantification of this segment was estimated in 1982 as comprising 15 establishments, employing 50 people, with expenditure on salaries, wages and support services of approximately $1.5 million.

Economic Potential

540. The increasing awareness of environment and quality of life issues by the general public will put pressure on the various segments of the amenity horticulture industry to increase the provision of services currently available:

(a) The area of arboriculture has already experienced increased activity following concern over the "green-house" effect and important issues of soil degradation and salinity in rural areas.

(b) People appear to be more aware of their environment and issues that affect it.

(c) The importance of holistic health has increased the public's awareness of preventative activities such as regular exercise and a balance of leisure time.

(d) The last 10 to 20 years has seen many more people participating in a range of activities from walking to more physically demanding sports such as basketball.

(e) Participation in recreational activities is likely to increase, particularly considering the advent of more flexible working hours and the greater amount of leisure time enjoyed by most members of the population.

541. Recent initiatives have gone some way to improving the cohesiveness in terms of research and marketing activities of a vastly disaggregated industry. However, the lack of and difficulty in obtaining current data for the amenity horticulture industry exemplifies the current diversity which exists between public and private interests and across the segments of the industry.

542. The 1982 data quoted earlier indicated relatively high growth rates for this sector, 3 percent up to 12 percent according to segment. It is reasonable to assume that this growth rate has been and will be maintained or even increased. In terms of market opportunities, export opportunities relate to limited segments of turf and professional services where there is probably only limited potential.

543. However, even a 1 percent increase in the value of domestic sales and services into amenity horticulture in Victoria value is worth $1 million at 1990 prices.

VI HOME GARDENING

601. Home gardening cannot easily be defined as an industry sector. Almost no statistical data is available on this area. Home gardeners consume or use an overwhelming proportion of nursery production. This in 1985/86 (the latest year for which data is available) accounted for $658 million at 1989/90 prices in nursery retail turnover in Australia. On a per capita basis, Victorians on average spend more on home gardening requisites than residents of other States (**Exhibit 6.1**); the Australian Capital Territory however has the highest expenditure per capita. Despite this, the potential for growth in the home gardening sector is considerable. There is an almost insatiable appetite for new and different plants, particularly those that can be grown as understorey or shaded plants or as indoor plants. To service this market there is a need for plant breeding and improvement and for promotion and demonstration of these innovations.

Participation in Gardening

602. There is considerable literature on participation in gardening for leisure, recreational and therapeutic purposes. This is discussed in **Appendix C**. Key issues include:

(a) in a major survey, 44.8% of respondents listed gardening as a recreational activity;

(b) recognition by the Victorian government of the therapeutic value of gardening through the secondment of a social services officer to the Garden Advisory Service and the success of the Kevin Heinze Garden Centre for handicapped people;

(c) the successful Victoria's Garden Scheme run by ABC/Royal Horticultural Society ("RHS") which is now self funding with 122 gardens open for viewing and an annual attendance rate of 160,000;

(d) 25 gardening courses run by Council of Adult Education ("CAE");

(e) high level of "Life Be In It" gardening activity;

(f) 262 clubs and societies affiliated to the RHS;

(g) the success of Garden Week in Victoria with attendance up 20% to 70,000 in 1990;

(h) 16,000 enquiries in 1989 to the Burnley Garden Advisory Service.

(i) high rating of garden programmes on television and radio.

Garden Statistics

603. The number of households in 1986 in Melbourne with separate gardens accounted for 80% of all households in the Melbourne metropolitan area. Units and flats made up a further 16.8% of dwellings.

604. A conservative estimate of the area of residential gardens in Melbourne is 21,120 hectares. This figure is arrived at by taking the ABS 1986 census figures for dwellings with separate gardens, calculating a one percent growth rate per annum and multiplying the number of dwellings by one third of the average sized block. The estimated area of residential gardens does not include gardens surrounding units and flat blocks.

605. A large proportion of Melbourne's dwellings have gardens, or an area that could be developed as a garden. This converts to a large proportion of Melbournians participating in home/amateur gardening.

606. Home gardeners have become more demanding in the quality of plants they purchase and more discriminating in their choice of plant varieties. The increasing demand for new plant varieties has produced some 3,000 ornamental species (Peate, 1988).

Exhibit 6.1

Nurserymen and Florists

Retail Turnover and Number of Establishments

	Turnover $M 85/86	Turnover(1) $1990	$ Per Capita	Number of Establishments (1985/86)
South Australia	43.8	56.0	39.1	348
Tasmania	11.5	14.7	32.4	113
Northern Territory	3.3	4.2	26.9	27
Victoria	161.6	206.6	47.5	1,145
Western Australia	49.3	63.0	39.0	381
New South Wales	171.7	219.6	37.8	1,318
Queensland	62.2	79.5	27.6	659
Aust. Capital Territory	11.3	14.4	51.2	44
Australia	514.7	658.2	38.8	4,035

Note (1): ABS Price Index used for adjustment 1985/86 78.2 to 1989/90 100

Source: ABS Catalogue No. 8622.1 through to 8622.8, Retail Industry: Details of Operations, 1985/86.

Garden Expenditure

607. The most recent household expenditure statistics (1988/89) indicate that each Melbourne household spends on average $220.79 per annum on garden development and maintenance.

608. **Exhibit 6.2** gives a breakdown of household expenditure on garden products for 1984/85 and 1988/89.

Exhibit 6.2

Annual Household Expenditure on Garden-Related Products - Melbourne

	1984/85 ($1990)	1988/89 ($1990)	% Change
Outdoor and Garden Furniture	20.45	24.79	21.2
Gardening Tools	22.03	19.60	(11.0)
Trees, Shrubs and Plants (1)	73.16	107.80	47.3
Gardening Services	33.83	14.99	(55.7)
Gardening Products n.e.c.	40.12	53.61	33.6
Total Annual Expenditure	189.59	220.79	16.5

Notes: (1) includes bulbs and lawn seed.

Source: ABS, Catalogue No. 6535.0, Household Expenditure Survey, Australia: Detailed Expenditure Items
ABS, Canberra - Unpublished Data

609. Total expenditure has increased from $189.59 per annum in 1984/85 to $220.79 per annum in 1988/89, with expenditure on trees, shrubs and plants having the greatest increase (47 percent). Overall this shows a compound growth rate of almost 4 percent per annum.

610. Annual expenditure on garden-related products for the total number of Melbourne households (999,588) is $220.7 million. A more conservative figure of $175.7 million is estimated by including only those dwellings with separate gardens (796,006 separate, semi-detached and row/terrace dwellings). Therefore, average Melbourne household expenditure is entitled to be between $175.7 to $220.7 million. (Household numbers are based on 1986 Census figures, plus a one percetage growth rate per annum).

611. Commercial property owners also expend money on gardening products for the beautification of building surrounds and the purchase and/or maintenance of indoor plants. This last area has grown rapidly in the past ten to fifteen years. It is now commonplace to walk into an office and see indoor plants.

612. Another way of establishing how much is spent on gardening products is to analyse retail sales figures. **Exhibit 6.3** indicates the value of nursery product retail sales and the number of establishments in Victoria in 1985/86.

Exhibit 6.3
Estimated Nursery Product Retail Sales (1), Victoria
and the Number of Establishments

	Value $'000 (2)	Number of Establishments (1985/86)
Nurserymen and Florists	214,075	1,145
Department Stores	50,122	67
Other Establishments	129,592	1,061
Total	393,789	2,272

Note: 1. Nursery product retail sales includes flowers, plants, garden and pool chemicals, seeds, lawn mowers, but excludes agricultural supplies and garden furniture.

2. Values have been indexed to reflect 1990 prices.

Source: ABS, Cat. No. 8622.2 Retail Industry: Details of Operations, Victoria, 1985-86.

613. Retail nursery product sales of $394 million cannot be directly compared with household expenditure of $175.7 to $220.7 million because of differences in categorisation of product and the different areas for which statistics were gathered (household expenditure - Melbourne; retail sales - Victoria).

Plant Buying Trends

614. A market research survey of residential gardening habits in Melbourne was conducted by a group of six students undertaking the Further Certificate of Management at RMIT. The survey was endorsed by the Nurserymen's Association of Victoria. The group operated under the name of Hortisearch '88.

615. A questionnaire was administered to a random sample of 600 Melbourne metropolitan residents via telephone and face-to-face interviews.

616. Results for plant buying trends for total dwellings in the Melbourne metropolitan area and by type of dwelling, ie house, flats and units, are shown in **Exhibit 6.4**.

617. Indoor plants are the most popular type of plant purchased for all dwelling types, particularly flat dwellers. Other popular plant types are shrubs, natives, annuals and ferns for house dwellers, and vegetables, shrubs, ferns and annuals (in order of popularity) for unit dwellers.

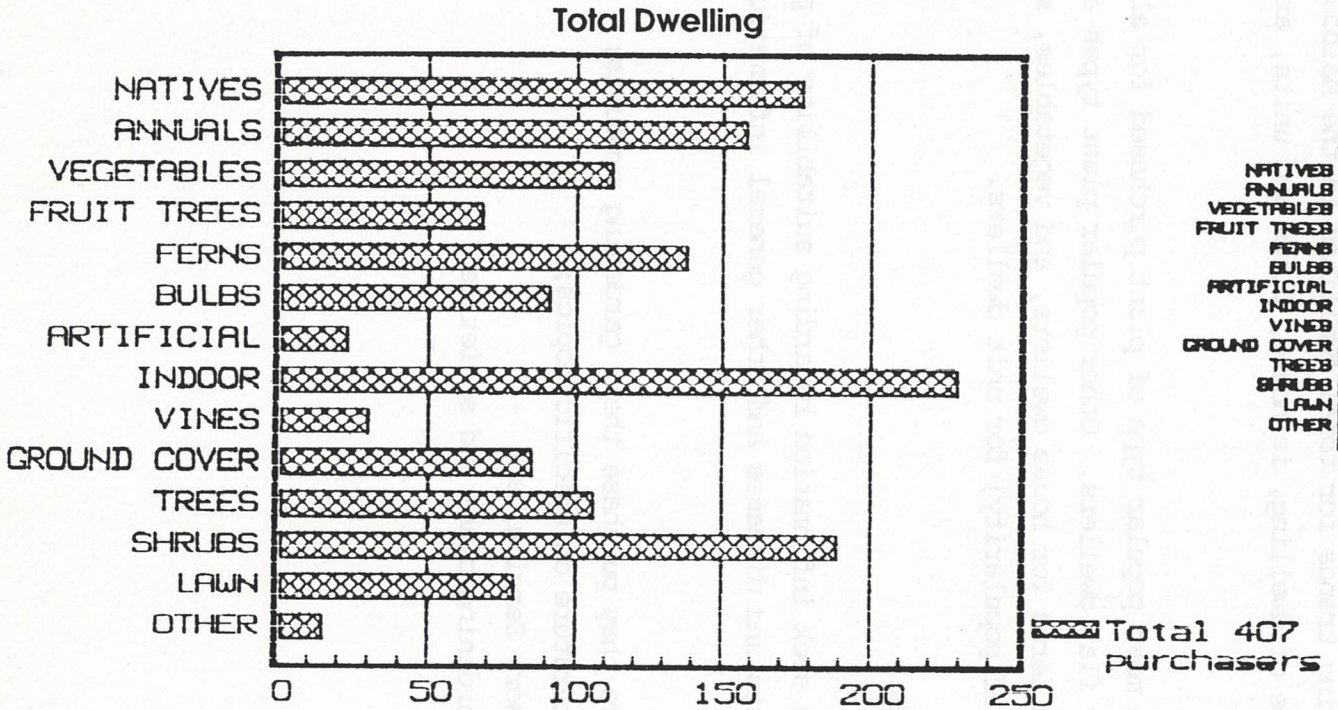
Information Sources and Needs

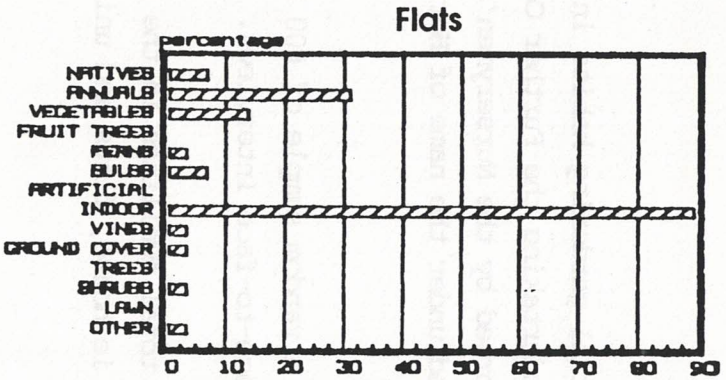
618. Amateur gardeners can seek information regarding suitability of plant types, identification of pests and diseases and other general information from various sources:

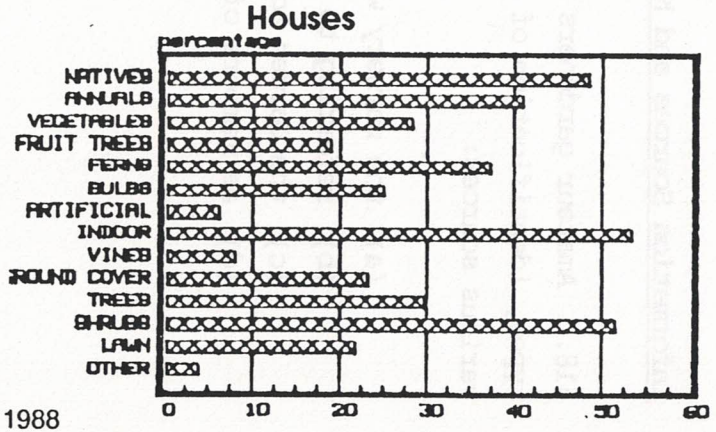
(a) the nursery where they purchase their gardening products;
(b) referring to literature on specific topics;
(c) the Garden Advisory Service; and
(d) as members of gardening clubs and societies.

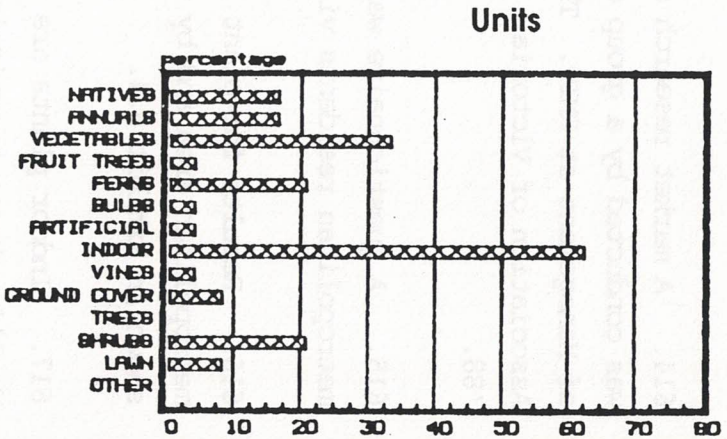
Plant Buying Trends by Type of Dwelling and for Total Dwellings Melbourne, 1988

Exhibit 6.4









Source: Hortisearch, 1988

CM0693IA/mp

619. This would seem a broad range of advice agents. However the amateur gardener still has difficulty in obtaining specific information. For instance, it may be difficult to determine how a plant will look in ten years time, whether the plant purchased is really suited to the location for which it is intended, how to correctly prune a rose bush, etc. There are many queries amateur gardeners have regarding a broad range of topics which need to be satisfied. They need to be able to go somewhere to look at new plant varieties, to learn "how to" and see permanent display gardens. The Melbourne urban area does not currently offer such a concept to home gardeners. The United Kingdom, on the other hand, has several such horticultural gardens: for example, the Royal Horticultural Society at its gardens at Wisley runs demonstrations, provides advice, offers products for sale and exhibits various kinds of display/model gardens. Wisley in 1973 had an annual attendance of 217,000 people.

Economic Potential

620. Results of the Hortisearch '88 survey also indicated that of the people surveyed 31% did not purchase plants. This suggests there still is an untapped potential local market for the nursery and plant retailing sector, aside from export potential.

621. The level of interest in gardening is demonstrated by the popularity of garden-related television and radio shows, the proliferation of magazines and garden columns, membership of clubs and recreational participation rates.

622. This level of interest is not likely to decline given the increasing emphasis on leisure activities and the strongly entrenched Australian dream of "home and garden".

623. In addition, with 31.3% of Melbourne respondents identified as being non-plant purchasers, any in-roads made into this potential market will increase both the level of interest in gardening and the value of nursery product sales.

624. Hortisearch '88 found that the major factor influencing plant purchasing was the exhibition of plants (other factors surveyed were magazines, leaflets, newspapers, word of mouth, radio and television). The range of plants exhibited at nurseries varies from nursery to nursery, depending on the available display area.

625. The display gardens incorporated in the proposed National Horticulture Centre will give amateur gardeners the opportunity to view a much larger range of home garden plants than is elsewhere provided in the Melbourne metropolitan area. The Centre will also provide practical information by way of advisory services and demonstrations for all people interested in gardening.

626. The potential for increased economic contribution through better education, demonstration, promotion and new product development is clearly huge. Even a 1% increase in 1988/89 annual expenditure adjusted to 1990 dollars is in the range $1.8 and $2.2 million per annum.

627. Even more importantly, increased participation will provide increased intangible and tangible benefits in terms of pleasure, health and fitness, therapy and social benefits generally. These are impossible to quantify.

VII CUT FLOWERS

701. World trade in cut flowers and house plants was ranked in 1987 by the Flower Council of Holland at $US 2.5 billion. It is estimated that Australia's share of this is approximately 0.01 percent (A$161 million domestic consumption). However the cut flower industry in Victoria and throughout Australia has grown rapidly in the past ten years. The industry predicts a continued expansion particularly with speciality items grown for the export market. The growth of the industry is detailed in **Exhibit 7.1.**

Exhibit 7.1
Total Value Australian Cut Flower Industry

Measure	Year 1980 Aust $M	1980 Vic $M	1980 % (2)	1987/88 Aust $M	1987/88 Vic $M	1987/88 % (2)	1995 (1) Aust $M	1995 (1) Vic $M	1995 (1) % (2)
Value									
Domestic	20.09	8.60	43	161.00	50.00	31	250	75	30
Export	2.59	-	-	10.61	1.11	11	45	9	20
Import	1.08	-	-	4.28	1.20	28	16	4	25

Notes: (1) Figures have been adjusted to 1988/89 dollar prices.
(2) Victorian share as percentage of total industry.
Source: ABS, Foreign Trade Statistics 1989.
Catalogue No 7309.0 Nurseries and Cut Flowers 1989.
Austrade - Address by P Hansford Australian Flower Show 1989.
NFF Australian Agricultural Yearbook 1987
VFF Flower Growers Group Private Communication

702. The Victorian Cutflower sector whilst showing an expansion in real terms has declined in terms of percentage share of the total Australian market. This is a result of increased production in NSW, QLD and TAS for the domestic market-place and WA principally for the export market. However, Victoria is still the biggest producing state and likely to remain so for some time.

Flower Consumption Patterns

703. Australia's consumption of cut flowers is very low by world standards (**Exhibit 7.2**), 50% of that in the USA and only 20% of that in Japan.

Exhibit 7.2

Cut Flowers - Per Capita Consumption

Country	US$
Japan	40
Holland	37
Italy	34
Switzerland	34
West Germany	32
Belgium	26
Sweden	25
Austria	21
France	20
USA	16
United Kingdom	12
Australia	8
Spain	6
Norway	6

Source: Flower Council of Holland and Australian Agriculture 1989

704. Carnations, chrysanthemums and roses are still the major cut flowers used throughout the world. The dominance of these three cut flowers varies from market to market as shown in **Exhibit 7.3.** The Victorian consumption of these cut flowers compares to the Italian and USA markets which are traditional markets by world standards, the Italian market due to cultural background and the USA market as a result of product development and market maturity.

Exhibit 7.3

Major Sellers - Cut Flowers

Country	Roses/Carnations/ Chrysanthemums	Non Traditionals
Spain	90%	10%
USA	80%	20%
Italy	70%	30%
Germany	55%	45%
The Netherlands	55%	45%
Japan	50%	50%

Source: Association of Dutch Importers and Wholesalers, Aalsmeer, The Netherlands, 1989.

705. There is an association between the consumption of the three major cut flowers and market maturity as measured by consumption per head of population. The high cut flowers consumption countries of Japan, Holland and Germany as detailed in Exhibit 7.3, are much more developed in product usage with non traditional flowers such as summer flowers, bulbs, specialty flowers and exotics being an important segment of the market structure.

706. In Victoria and Australia as well, the market structure for cut flowers is following world trends. This is inevitable since fashion trends, colour co-ordination and floral design are influenced significantly by overseas industries. For instance, the Dutch flower sales trends reflect the changing consumption patterns of cut flowers throughout Holland and Western Europe. **Exhibit 7.4** shows a trend between 1987 and 1988 to increased consumption of certain "non traditional" cut flowers. Further analysis of the Dutch market structure shows trends in particular cutflower colours for the majority of varieties. Unfortunately this degree of analysis is not available in Australia due to poor market data.

Exhibit 7.4

Major (Top Ten) Bloom Sales, Holland Auctions

(Millions of Blooms)

	1987	1988	1987/88 % Change
"Traditional"			
Rose	542	605	+11.6%
Chrysanthemum	452	487	+7.7%
Carnation	266	277	+3.8%
"Non-Traditional"			
Tulip	185	208	+12.4%
Lily	153	180	+17.6%
Freesia	153	154	+0.7%
Gerbera	139	133	-4.5%
Gypsophila	94	104	+10.6%
Cymbidium	98	100	+2.0%
Iris	52	60	+15.4%

Source: Flower Council of Holland Year Book 1989 Summary

707. There has been increasing interest by the Victorian retail sector in new flower types over recent years (as evidenced by data on plant material imports set out later in Exhibit 7.9). **Exhibit 7.5** sets out the percentages of major flowers grown in Victoria in 1987. Whilst these production estimates may reflect the consumption pattern in Victoria and Australia at the time, there is a trend amongst retailers (florists, flower vendors and supermarkets) towards new flowers and designs. These trends will be reflected in the production of "non-traditional" cutflowers such as Lily, Freesia, Gerbera, Alstroemeria, Australian natives.

Exhibit 7.5

Types of Flowers Grown in Victoria by Estimated Share

Product	Percentage of Flowers Grown
Carnations	40
Chrysanthemums	15
Roses	15
Bulbs	15
Other	15

Source: DARA The Victorian Cut Flower Industry: Issues and Opportunities, July 1987

Victorian Production Environment

708. Victoria offers an ideal climate for the production of traditional flowers, many fillers and speciality items (such as proteas) and Australian natives. The distinct seasons enable the commercial production of many varieties and species of flowers. The major production centres in Victoria tend to grow later maturing flowers, thus remaining out of phase with other production areas in Australia and elsewhere in the Southern hemisphere. This advantage is lessened in environmentally controlled production units compared to field crops and plantation cut flowers.

Costs and Prices

709. Comparative production advantages have led to price advantages for Victorian cutflowers in Australia. The Melbourne trade, in particular, has enjoyed reasonable prices in recent years with seasonal prices in the spring and summer of 1989 being very competitive with other state markets. However, by comparison to overseas competitors the cost of production is much higher. This has restricted export opportunity.

710. The cost of production of major cutflower crops in Victoria is set out in **Exhibit 7.6.** In a recent industry discussion paper (The Victorian Cutflower Industry: Issues and Opportunities - a Discussion Paper, July 1987), these costs are claimed to be higher than our overseas competitors. Whilst Victoria may have certain climatic and production advantages, the cost of labour is certainly the main concern as well as other cost of production inputs. Inefficiency in production techniques for many of the cut flowers grown in Victoria and Australia is also an issue. The yield of cut flowers per square metre on many farms is low by world standards. The past buoyant domestic market has allowed this inefficiency to exist. This situation is changing rapidly.

Exhibit 7.6

Cost of Production of Major Cut Flowers

	Cost (A$ Per Bloom)
Carnation - Sims	0.14 to 0.22
- Field	0.10 to 0.16
Roses (Glasshouse)	0.25 to 0.45
Chrysanthemum	0.12 to 0.24
Protea	0.20 to 0.38

Source: DARA The Victorian Cutflower Industry: Issues and Opportunities, July 1987.

711. As returns continue to fall in relative terms, growers will continue to look for more technical information in an attempt to improve their position and remain competitive. Even the price pressure of imported flowers is contributing to this trend. Carnations from Asia, Africa and Central America are now regularly imported during the winter months. This trend is likely to continue and bring the Australian industry into the global scene.

Distribution

712. In Victoria, proximity to the major domestic markets and access to domestic and international airline carriers has helped in the development of the present industry, but other states of Australia are catching-up very quickly. Better technology, more efficient distribution and improved marketing programs will be required to maintain Victoria's advantages.

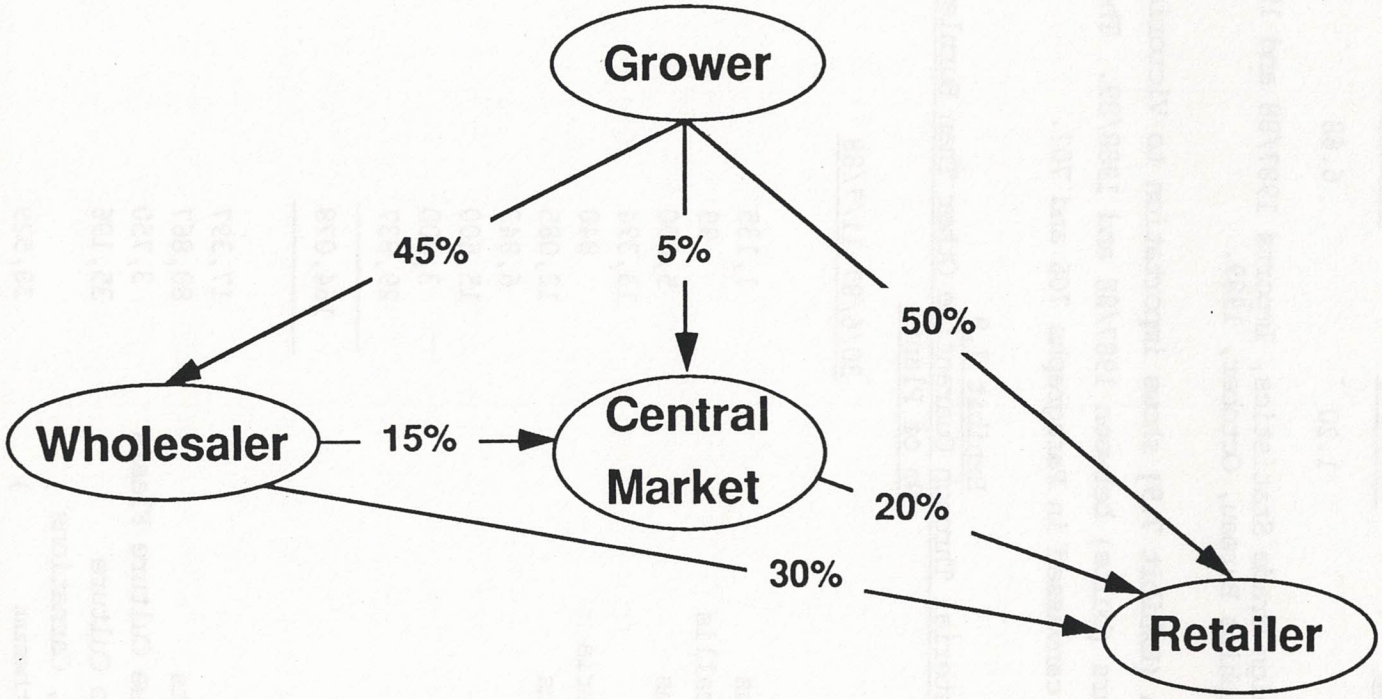
713. To a large extent the Victorian cutflower sector is currently bypassing the Melbourne market with many wholesalers and wholesale/growers delivering flowers direct to the trade. The channels of distribution for the Victorian marketplace are shown in **Exhibit 7.7.** This contrasts substantially with the Sydney marketplace where grower/wholesalers at the central market at Flemington are estimated to handle 70 to 80% of the flowers sold to the trade. The Victorian sector recognizes the deficiencies in the present distribution system; and, whilst the majority wish to see improvements, not all people are in favour of a more centralized system.

Imports

714. The importation of cutflowers into Australia and Victoria has continued to increase in recent years (**Exhibit 7.8**). Whilst the major importation period is during the winter months when local production is at its lowest, the trend does reflect the expanding market and trade's interest in quality, presentation and new varieties.

Exhibit 7.7

Victorian Marketplace Channel of Distribution



Source: DARA Industry Investigation, 1987.

Exhibit 7.8
Australian Imports Cutflowers

1987/88 $M		1988/1989 $M	
Australia	Victoria	Australia	Victoria
4.28	1.20	6.68	1.76

Source: ABS Foreign Trade Statistics, Imports 1987/88 and 1988/89, Micrographics Bureau, October, 1989.

715. Data from DARA **(Exhibit 7.9)** shows importation to Victoria of "non traditional" cutflowers (bulbs) between 1987/88 and 1988/89. These data reinforce the trends canvassed in Paragraphs 706 and 707.

Exhibit 7.9
Plant Material Through Quarantine Other Than Burnley
No of Plants

	30/6/87-11/7/88	30/6/88-1/7/89
Bulbs		
Gladiolus	1,135	-
Hermerocallis	99	-
Galanthus	5,000	-
Iris	13,394	569,123
Alstromeria	840	4,960
Narcissus	12,085	20,228
Lilium	6,843	462,594
Freesia	15,500	250,000
Crocus	3,000	5,000
Other	29,837	3,729
TOTAL	164,078	1,387,944
Ornamentals	17,397	10,108
Orchid Plants	80,867	7,182
Orchid Tissue Culture Flasks	3,750	1,330
Other Tissue Culture	35,196	20,206
Elite Stock, Carnations) Chrysanthemum) Gypsophila) Cacti & Succulents)	38,529	192,185
TOTAL	177,084	232,115

Source: DARA, Plant Standards Agricultural Quarantine 1988/89 Annual Report.

Economic Potential and Market Opportunities

716. The Victorian cutflower sector will remain a significant production centre and Victoria an important market. The fact that other states are growing in importance has helped the development of the Victorian sector. The continued growth of the Australian sector will further refine the Victorian sector's product base and market share through the 1990's.

717. Victoria's strength is in the production of temperate traditional flowers, Australian natives and proteas. The later production cycle of these crops will be a significant factor in the export potential of Australian natives and proteas, in terms of competition both from other Australian states and from other Southern Hemisphere countries. The overall quality of traditional flowers produced in Victoria is a major factor in positioning the sector in the future.

718. Whilst the Victorian sector is historically concentrated in the outer Melbourne Metropolitan area, it is still physically decentralised. This is a limitation to its development. Industry organisations and Government services providers have recognised this, but they cite improvement in technology, distribution and marketing services as required.

719. The relatively low consumption per head of population of cut flowers by Australian consumers in comparison to other western economies is said to be a result of the developed Amenity Horticulture and Home Gardening sectors in Australia. The changing lifestyle and cultural background of Australia is likely to present a different consumption pattern in the future.

720. The Australian consumption pattern has been compared to the UK pattern, possibly as a result of earlier cultural similarities. It is significant that the UK market has been experiencing a 25 to 30 percent increase in consumption in recent years due to marketing and promotion initiatives by the Flower Council of Holland. It is estimated that UK consumption of cut flowers is likely to rise to US$25 per head although the rate of increase declined in 1989 due to a downturn in the economy. (Source: Personal Communication, Editor, UK Flower Trades Journal May, 1989). It is not unreasonable to suggest that Australian consumption could double to US$16 per head of

population by the year 1995 provided production and marketing techniques are improved. This would represent an additional sales value for Victoria of the order of $50 million and for Australia as a whole of the order of $160 million at 1990 prices and is higher than the ABARE estimates in Exhibit 7.1. However we believe that if the industry is to have any hope of reasonable success in export, it must tackle its home market first. Doubling domestic consumption is a reasonable target provided the industry is prepared to make resources available to support the required promotional campaigns to the consumer and to the trade.

721. Australian Cut Flower exports increased over 600 percent from 1986 to 1989 (1988/89 - Australia, A$13.0 million and Victoria A$1.22 million). Whilst this trend is likely to slow, the volume of export cut flowers will increase significantly through to 1995. The main growth will occur in Australian native flowers from Western Australia, New South Wales and even Victoria as new projects come into full production, although traditional flower exports and bulb flowers will increase from Victoria. The recent relaxation of quarantine limits on bulb cut flowers resulted in new varieties better suited to the Northern Hemisphere out of season markets such as Japan, becoming available. As production and market development for these varieties is refined, increased export opportunities will arise.

722. The value added potential of cut flowers, ornamentals and other nursery products was 64 percent in 1987/88 (Appendix - Financial Statistics, Nurseries Australia, 1986/87 and 1987/88; turnover $198.4 million, value-added $127.1 million). The potential benefits likely to accrue from the development of these sectors is substantial if domestic and export sales are achieved. Whilst productivity improvements will be gained through new technology, experience overseas in countries such as Holland and Germany still support significant value-added benefits.

VIII ORNAMENTAL AND OTHER NURSERY PRODUCTS

801. In this sector, we have included:

(a) seed and seedling growing;
(b) fruit and tree propagation;
(c) ornamental and other nursery stock propagation and growing;
(d) bulb growing.

Present Situation

802. The overall nursery sector is expanding rapidly domestically and to a lesser extent on export markets. **Exhibit 8.1** sets out the past performance and future industry estimates for Australia and the Victorian sector.

Exhibit 8.1
Total Value Australian Nursery Industry Production
(Wholesale Value in $ Million)

Measure	Year								
	1980/81			1988/89			1995 (1)		
	Aust	Vic	%(2)	Aust	Vic	%(2)	Aust	Vic	%(2)
Value									
Domestic	145.0	41.0	28	360.00	98.0	27	298	143	49
Export	3.53	-	-	1.92	0.03	2	3	1	33
Import	2.91	-	-	1.18	0.46	39	5	2	40

Notes: (1) Figures have been deflated to 1988/89 prices
(2) Victorian Share as Percentage of Total

Source: ABS, Foreign Trade Statistics October 1989
Victorian Nurserymens Association, Private communication.

803. The State and Australian industry values for 1988/89 are shown in **Exhibit 8.2.**

Exhibit 8.2

Value of Nursery Production 1988/89

	$ Million
New South Wales	94.7
Victoria	98.0
Queensland	68.1
South Australia	31.0
Western Australia	46.5
Tasmania	19.1
Northern Territory	2.6
ACT	N/A
Australia	359.9

Source: ABS Catalogue No. 7502.0 Value of Selected Agricultural Commodities

804. Overall the nursery industry's own estimate of Australian retail sales is higher, in excess of $1,000 million, based on retail sales of plants in excess of $550 million and other nursery and gardening hardware sales of $450 million.

Structure

805. The ornamental sector of the horticultural industry includes those organisations involved in the production and sale of plants and plant materials used for commercial, environmental, recreational and leisure purposes. It also includes those businesses involved in commercial plant production and sale.

806. The ornamental horticulture sector can be seen as having these sub-sectors:

(a) plant nursery propagators, producers and wholesalers;
(b) nursery retailing;
(c) suppliers of nursery and landscape materials.

807. There are difficulties in establishing the exact details of the structure of the ornamental horticultural sector. In the private business or commercial part of the amenity horticulture sector, there is a wide gap between the larger professional businesses and the smaller one person/part time or occasional producers or operators. This latter group may enter or leave the industry with relative ease. This creates difficulty in measuring industry size or structure with accuracy at any particular time.

808. The ornamental horticulture sector in Australia suffers the same problems as other sectors of the horticulture industry, particularly lack of cohesiveness in regard to marketing, promotion and research. Frequently, research is misdirected and does not relate to what the nursery and plant retailing sectors see as needed to improve the efficiency of their businesses.

809. A recent initiative, introduced at the request of the Nursery Industry Association of Australia, has been the 2.5% pot levy. The levy is collected from nurseries on retail sales of pots and is ultimately forwarded to the Australian Horticultural Corporation to assist in industry market development, and to the Horticultural Research and Development Corporation ("HRDC") for research (1.25% going to each corporation). The portion of the levy forwarded to the HRDC for research is matched on a dollar-for-dollar basis by the Commonwealth Government.

810. However, as the levy was only introduced in October 1989, the benefits are yet to be seen.

Economic Contribution

811. The community benefits extensively from the variety and abundance of fresh fruit, vegetables and plants available domestically and also from the quality and quantity of trees and plants which are now a developing export commodity. The nursery industry is a "trigger industry", in that its products are the beginning of other major Australian primary industries such as market gardens, orchards, landscaping, amenity and conservation horticulture generally. It has been estimated that some 40,000 different species and varieties are produced in Australian nurseries. (Source: Submission to Committee Reviewing Agricultural and Relating Education, Jan Davis, Nursery Industry Association of Australia, updated).

812. The significant role played by the nursery industry in the national economy is often underrated. With some 45,000 people employed in the industry nationally, it is a major production sector. The industry also has the potential to become a major export industry, although problems in shipment of bare root plants have restricted this potential to date.

813. The nursery industry is an innovative industry, eager to adapt to new technologies and marketing opportunities. The industry has potential to develop further in economic importance given the proper conditions.

Market Opportunities and Economic Potential

814. The ornamental and other products sector of the horticultural industry has come a long way over the past 20 years. However, the next 10 years will be a major challenge in product and market development.

815. The diversity of production in terms of climate and products has been a real strength of the sector. It has met the consumer needs created by the sector's promotional activities directed at the productive and commercial landscaping market sector.

816. We discuss market opoprtunities under three headings:

(a) seed production and propogation for commercial flower, fruit and vegetable production;

(b) ornamentals for domestic markets;

(c) export.

Seed Production and Propagation for Commercial Flower, Fruit and Vegetable Production

817. The supply of seeds, plants and propagation materials to commercial producers tends to be a cyclic market with growth where it occurs driven by the market needs of these producers in terms of:

(a) regular production;

(b) expansion of production by increased plantings;

(c) replacement with new or improved varieties.

818. To sustain growth it is critical that the breeders in this sector adopt market oriented strategies in terms of consumer preferences (appearance, taste etc), production performance (ie cost) and post harvest management. There is a clearly indicated need to support these strategies with good access to:

(a) production technical support and diagnostic services;

(b) best available plant breeding techniques;

(c) ability to obtain PVR protection by variety certification.

819. Quantification of market opportunities must derive from that for fruit and vegetables as discussed in the next two chapters.

Ornamentals For Domestic Market

820. The size of the Victorian marketplace is now a limitation to the sector. Expansion into interstate markets has occurred with small export programs undertaken with mixed results. Future growth is likely to come from restructuring the sector to focus on product differentiation and market segmentation.

821. For the individual grower, access to best technical and diagnostic support is essential to maintain his productivity. Access to modern plant breeding technology is essential to maintain market share in competition with other innovative breeders here and overseas. Similarly, variety certification is essential for PVR protection for plant breeding successes.

822. A breeder must also be able to demonstrate varieties growing under garden conditions. Many breeders' innovations will result in replacement and substitution within the existing market and only indirectly in market growth.

823. The major growth opportunity appears to be in the expansion of plant use in amenity horticulture (earlier valued in Paragraph 537 at $50 million per annum) and home gardening (earlier valued in Exhibit 6.2 at $108 million per annum). An increase of 1 percent of those expenditures combined could result in additional revenue of the order of $1.5 million per annum to the nursery industry.

Export

824. The vexed question of export potential has received a lot of attention in the past. Difficult distribution techniques (bare rooted plants) and quarantine conditions have limited the export of ornamentals and other products of the nursery sector. The future appears to lie in tissue cultured material and small plants for growing-on in overseas markets. Several firms are expanding in these activities and see an increased potential in the future for specific plants.

825. Major barriers are:

(a) high Australian costs of production;

(b) costs and risks involved in air freight of bare rooted plants, as required by major markets.

826. While there are small opportunities for growth in niche markets for plants for direct sale to consumers, there is potentially a much greater market for the sale of propagation rights to new varieties protected by PVR. This as indicated earlier requires access to internationally accepted and independent variety identification and certification facilities.

827. With the current work being undertaken on tissue culture and genetic engineering developments, a reasonable target of $1 million in exports of plants and PVR royalties could be expected for Victoria out of a national total of $5 million. If one or more of the current major research programmes is/are successful, this export potential could exceed $10 million per annum.

IX FRUIT

901. Fruit producing sectors are major contributors to the horticultural industry of Victoria in the form of domestic and export production of fresh and processed products.

902. The fruit industry is discussed under the following headings:

(a) Pome Fruit
(b) Nashi
(c) Stone Fruit
(d) Citrus
(e) Grapes
(f) Nuts & Berries

Pome Fruit

903. Forecasts of future contribution are shown in **Exhibit 9.1.**

Exhibit 9.1
Future Contribution From Pome Fruit
Value $ Million (1)

	Gross Value		Export Value		Apparent Domestic Consumption (2)	
	Aust	Vic	Aust	Vic	Aust	Vic
1988/89	257	65	35	17	222	48
1994/95	250	63	46	20	204	43
% Change	-2.7	-3.1	+31.4	+17.6	-8.1	-10.4

Year	Gross Production (000s tonnes)		Exports (000s tonnes)		Apparent Domestic Consumption (2)	
	Aust	Vic	Aust	Vic	Aust	Vic
1988/89	484.0	219	42	21	442	198
1994/95	534.0	242	65	33	469	209
% Change	+10.3	+10.3	+54.8	+54.8	+6.1	+5.6

Note: (1) All values have been adjusted to 1988/89 prices.
(2) Estimated as difference between Gross Value and Export Value

Source: ABARE Outlook 1990, National Agriculture and Resources Outlook Conference. Horticultural Industries: Outlook and Issues

904. Over the medium term production is forecast to increase by only 10 percent. However the quantity of fruit is expected to be in excess of domestic requirements and will need to be marketed on the export market. Competition from other competing countries will place extra pressure on producers to improve product quality.

905. Assuming the necessary initiatives outlined later in this report are taken, then the volume of pome fruit production is expected to increase by 1995 by 23,000 tonnes per annum in Victoria but show no real increase in value; while Victorian exports are expected to increase by 12,000 tonnes with a $3 million increase in real value.

Apples

906. Apples are produced commercially in every State and Territory of Australia except the Northern Territory. Farm gate value of production is approximately $200 million, but fluctuates owing to biennial cropping as seen in **Exhibit 9.2.** Victoria is the second largest producer behind New South Wales.

907. Australian exports are now principally to Singapore/Malaysia with some European exports.

Exhibit 9.2

Apple Industry Statistics

Year	Production (000s tonnes)		Gross Value ($ million)		Exports (000s tonnes)	
	Aust	Vic	Aust	Vic	Aust	Vic
1985/86	288.0	85.0	139.0	39.6		
1986/87	325.0	100.0	204.7	62.18	33.6	4.6
1987/88	300.0	83.0	185.8	49.5	32.1	2.1
1988/89		100.0	214.4	30.9	18.6	1.0

Source: ABS:

Catalogue No. 7322.2 - Fruit Victoria 1988/89

Catalogue No. 7501.0 - Principal Agricultural Commodities Australia 1988/89

Catalogue No. 7330.0 - Summary of Crops in Australia 1988/89

Catalogue No. 5424.0 - Exports Australia 1988/89 and earlier

908. The apple industry has relied heavily on traditional techniques and varieties. Dwarfing rootstocks and newer varieties have been slow to become established. Quarantine restrictions operating to prevent introduction of Fireblight (Erwinia amylovora) and other pathogenic diseases have in the past slowed access to the newer varieties of Red Delicious apples and other patented varieties from overseas. In fact, as production of the newer strains of Red Delicious are reaching economic bearing in Australia, overseas countries such as the US are promoting removal schemes for these same varieties. Breeding programmes within Australia, particularly in Western Australia, have produced varieties with significant potential which have been planted and are currently being commercially evaluated.

909. Imports of fresh apples are not permitted into Australia. However, imports of apple juice concentrate are permitted and are increasing, particularly from Chile. A quarter of the domestic juice market is now supplied by imports. The low price of such imports is now having a depressing effect on prices paid to Australian growers for processing fruit.

910. Emotively charged statements on the possible carcinogenic effects of the growth regulator Daminozide ("Alar") have depressed red apple sales and raised general concerns about chemical residues.

Market Opportunities and Economic Potential

911. Growth in this section is limited by a poor perception of apples as being produced using large quantities of chemicals. Breeding programmes which develop resistant strains and consumer education are needed to redress this.

912. The industry has been slowly concentrating plantings on the Red Delicious types in response to market returns for the variety. Consumers are now looking for apples with better flavour and shelf life than these varieties generally provide. A number of new red apple varieties which have been locally bred or imported have great potential to complement traditional apple varieties and increase overall sales.

Pears

913. The major producing area for pears is the Goulburn Valley where 80-85% of Australia's production occurs. The two large canneries there process approximately 40,000 tonnes of the WBC variety. About half the canned production is sold domestically, the balance being exported. Industry production is detailed in **Exhibit 9.3.**

Exhibit 9.3

Total Pear Industry Output

Year	Production (000s tonnes)		Gross Value ($ million)		Exports (000s tonnes)	
	Aust	Vic	Aust	Vic	Aust	Vic
1985/86	142.0	121.0	63.70	51.2		
1986/87	145.0	124.0	76.87	63.7	72.1	69.1
1987/88	162.0	139.0		62.5	22.4	19.6
1988/89		119.0	44.6	35.9	23.3	20.2

Source: ABS:
Catalogue No. 7322.2 - Fruit Victoria 1988/89
Catalogue No. 7501.0 - Principal Agricultural Commodities Australia 1988/89
Catalogue No. 7330.0 - Summary of Crops in Australia 1988/89
Catalogue No. 5424.0 - Exports Australia 1988/89 and Earlier

914. Fresh pear production principally of the Packham variety has been Victoria's largest horticultural export for many years. Fresh pears make up over a third of Victoria's fresh fruit and vegetable exports. Markets include Singapore, Hong Kong, the EEC, and US/Canada. The total volume exported over the past few years has declined dramatically.

Market Opportunities and Economic Potential

915. Although pears have been Victoria's principal export horticultural crop, competition from other southern hemisphere producers is threatening this position. The time taken and quality of carriage conditions during shipping is regularly quoted as the principal limitation to the industry. Exports have contracted over the past few years with a greater proportion of the crop being marketed locally during the later half of the year.

916. To realise further potential in this sector, improvements in post harvest storage techniques are needed for both the export and later local markets. Improved promotion of pears would assist their sales in the same way as apples.

Nashi

917. Substantial plantings of nashi, a group of Asian pear varieties, have been made in the Goulburn Valley and in northern NSW. Production is now set to increase exponentially, reaching 8,000 tonnes by 1992. Promotion has increased the domestic market size but substantial export sales are required to balance the projected production.

Stone fruit

918. Estimated future contribution is shown in **Exhibit 9.4**.

Exhibit 9.4
Future Contribution From Stone Fruit
Value ($ Million) (1)

	Gross Value		Export Value		Apparent Domestic Consumption (2)	
	Aust	Vic	Aust	Vic	Aust	Vic
1988/89	120	38	26	19	94	19
1994/95	128	41	30	28	98	13
% Change	+6.7	+7	+15.0	+47.4	+4.0	-32.0

Quantity (000s Tonnes)

Year	Gross Production		Exports		Apparent Domestic Consumption (2)	
	Aust	Vic	Aust	Vic	Aust	Vic
1988/89	128	44	27	23	101	21
1994/95	134	49	35	30	99	19
% Change	+5.0	+11.4	+29.6	+30.4	-1.6	-9.5

Note: (1) All values have been adjusted to 1988/89 prices.
(2) Estimated as difference between Gross Value and Export Value.

Source: ABARE Outlook Conference 1990 (loc. cit.)

919. The majority of peaches and apricots are grown in the Goulburn, Murray and Murrimbidgee Valleys. Canning peach production is slowly declining despite the ready domestic and export market for the product. **Exhibit 9.5** shows current canning intake. Fresh domestic production has increased with the longer season of local availability and the improved range of varieties. **Exhibit 9.6** shows both fresh and canning production. **Exhibit 9.7** shows the market shares by type of fruit.

Exhibit 9.5
Processing Stone Fruit Statistics

Fruit Intake 1990 Season
(000s Tonnes)

	Australia	Victoria
Apricots	8.9	7.5
Pears *	40.3	37.5
Peaches	41.5	29.5
	90.7	74.5

* Excludes juice fruit.

Source: Direct Communication, Australian Canning Fruit Growers Association ("ACFA")

Exhibit 9.6
Stone Fruit Industry Statistics

Year	Production (000s tonnes)		Gross Value ($ million)		Exports (000s tonnes)	
	Aust	Vic	Aust	Vic (1)	Aust	Vic (2)
1985/86	120.0	44.0	86.8	25.2		
1986/87	121.0	45.0	103.5	35.2	5.9	0.7
1987/88	125.0	54.0		40.9	4.9	0.5
1988/89		44.0		38.1	3.3	0.6

Notes:

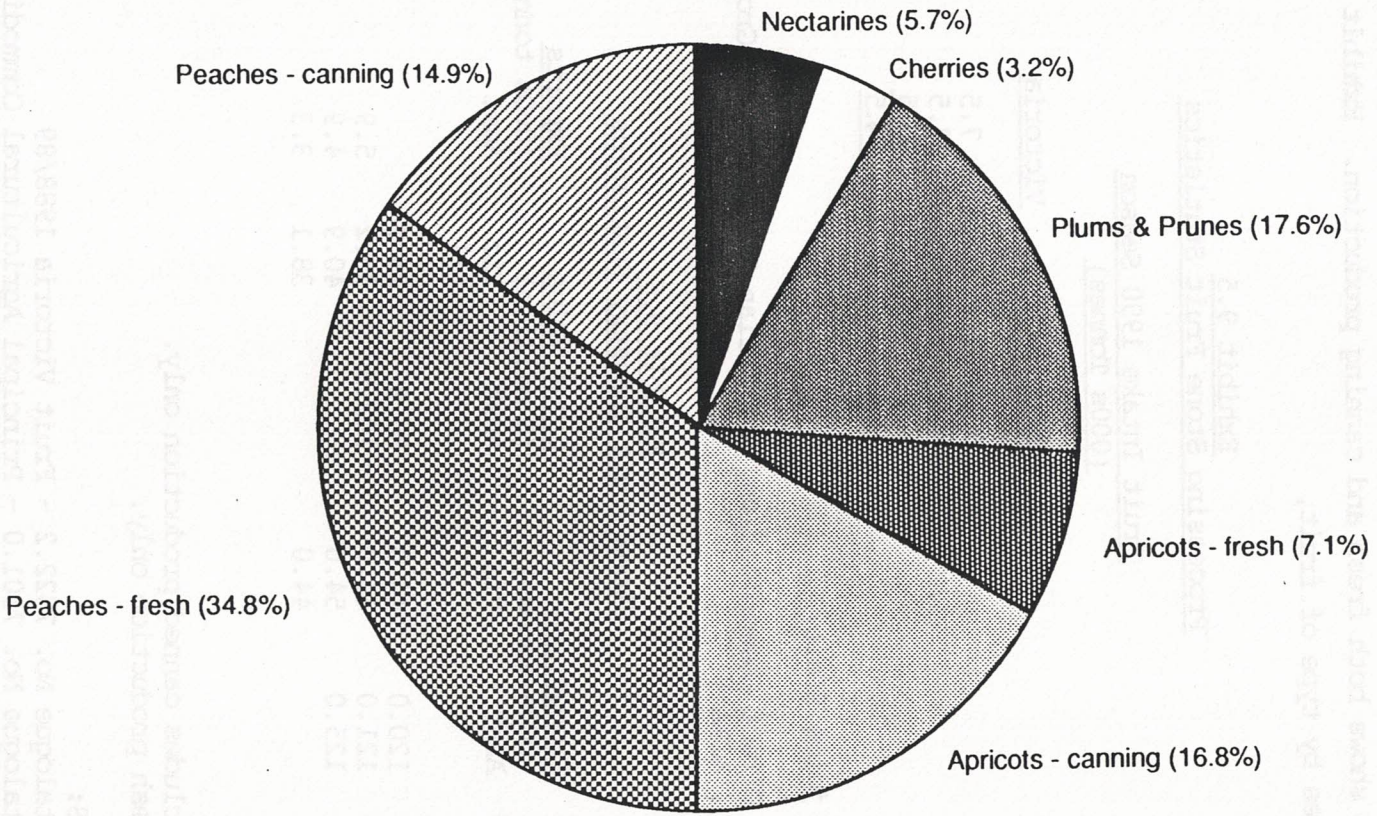
(1) includes canned production only.
(2) fresh production only.

Source: ABS:
Catalogue No. 7322.2 - Fruit Victoria 1988/89
Catalogue No. 7501.0 - Principal Agricultural Commodity Produced 1988/89
Catalogue No. 7330.0 - Summary of Crops in Australia 1988/89
Catalogue No. 5424.0 - Exports Australia 1988/89 and earlier

Stone Fruit Production by Type

Australian production (in tonnes)

1986/87



Source: ABS Cat. No 7501.0 Principal Agricultural Commodities 1988/89

Cat. No. 7330.0 Summary of Crops in Australia

ACFA Research Communication

CM0647JY/np

920. There is a ready market for apricots, both for canning and fresh, although the high costs of production, particularly harvesting costs, make apricots a limited crop. Plums, both Asian and European varieties, are grown for fresh and jam markets. The sugar plum variety, D'Agen, is highly regarded in Asia and plantings are increasing.

921. Cherries are predominantly grown around the metropolitan areas, along the Eastern ranges, and at Young, NSW. Virus testing, better varieties and close planting technologies have improved cherry production potential despite the very high harvest labour costs. Current plantings will increase Australian cherry production by 20-30 percent once plantings are in production.

Market Opportunities and Economic Potential

922. Stone fruit domestic markets require products with a reliable shelf life. This can be achieved through a combination of breeding programmes and post-harvest research. Much of the fruit currently reaching the consumer has deteriorated considerably in the market and distribution chain. Better distribution quality assurance systems would automatically improve the industry's economic potential and overall sales and profitability for the retailers. The three input factors of breeding programmes, post harvest research and quality assurance programmes are also needed to capitalise on export opportunities.

923. Breeding programmes have currently increased productivity of a number of canning peach varieties; this should lead to a greater ability to maintain competitive canned fruit prices on export markets.

924. While the production of canning fruit is slowly declining, fresh production of peaches, apricots, plums and cherries is expected to increase. Although 40 percent of stone fruit trees are under 6 years of age, production increases are not expected to be dramatic except in the case of cherries.

925. After allowing for inflation, both domestic and export contributions are expected to remain fairly stagnant with the increase in fresh production revenue being cancelled out by the fall in canned fruit revenue.

926. The cherry industry has excellent potential to supply Asian export markets by air. These markets require consistent grades of high quality fruit on a regular basis. In the past these markets have been supplied by opportunity without a marketing plan. Much of this fruit has been supplied directly from wholesale fruit markets where little or no export preparation has been undertaken.

927. Potential also exists for cherries to be marketed beyond the major capital cities. Much of the fruit is currently sold within 1 to 2 days of wholesale purchase by city and suburban fruiterers. Country fruiterers are not keen to purchase high cost short shelf life produce due to the high risk involved. Better storage and handling training for retailers and varieties with better shelf life would rapidly increase the overall domestic market beyond the major capital city markets.

Citrus

928. Estimated future contribution of citrus is shown in **Exhibit 9.8.**

Exhibit 9.8

Estimated Future Contribution from Citrus Fruit

Value ($ Million) (1)

	Gross Value		Export Value		Apparent Domestic Consumption (2)	
	Aust	Vic	Aust	Vic	Aust	Vic
1988/89	234	27	32	6	202	21
1994/95	277	32	60	11	218	21
% Change	+18.5	+18.5	+85.9	+85.9	+7.8	+0.8

Quantity (000s tonnes)

Year	Gross Production		Exports		Apparent Domestic Consumption (2)	
	Aust	Vic	Aust	Vic	Aust	Vic
1988/89	498	74	37	7	461	67
1994/95	678	101	80	15	598	86
% Change	+36.1	+36.1%	+116.2	+116.2	+29.7	+127.8

Note: (1) All values adjusted to 1988/89 prices.
(2) Estimated as difference between Gross Value and Export Value.

Source: ABARE Outlook Conference 1990 (loc. cit.)

929. Citrus forms a substantial part of horticultural production in Australia - almost 600,000 tonnes in average seasons as shown in **Exhibit 9.9**. Australia grows 1.5% of world production.

930. Despite Australia's production, imports of oranges from California and orange juice concentrate, particularly from Brazil, make up 25% of Australia's consumption. High total soluble solids (TSS) achieved with the tropical production of citrus and the cheap labour in Brazil allow very low import prices to be maintained.

Exhibit 9.9

Citrus Industry Statistics

Year	Production (000s tonnes)		Gross Value ($ million)		Exports (000s tonnes)	
	Aust	Vic	Aust	Vic	Aust	Vic
1985/86	559.0	77.0	178.6	25.0		
1986/87	611.0	85.0	175.3	25.4	65.5	13.0
1987/88	582.0	79.0		27.0	57.1	9.9
1988/89		74.0		26.6	36.7	6.8

Source: ABS:
Catalogue No. 7322.2 - Fruit Victoria 1988/89
Catalogue No. 7501.0 - Principal Agricultural Commodities 1988/89
Catalogue No. 7333.0 - Summary of Crops in Australia
Catalogue No. 5424.0 Exports Australia 1988/89

931. Domestic production is forecast to rise to 678,000 tonnes in 1994-95 (ABARE Outlook Conference 1990 loc. cit) due largely to the number of trees coming into production. Initially, most production will be absorbed by the processors. As production from the younger trees improves, the fresh fruit domestic market is forecast to absorb a proportion of the increase, principally at the high quality end. A significant proportion of the production increase will ultimately have to be exported.

Market Opportunities and Economic Potential

932. Exports of citrus fruit are projected to increase by 116 percent by 1994-95. These will be at the high quality end of the market (Singapore, Malaysia, Hong Kong, Japan and the US/Canada).

933. With forecast increase in Australian production, citrus is expected to contribute $11 million to Victoria's horticultural earnings, almost doubling the value of citrus. Most growth in citrus value however will occur outside Victoria in the States of New South Wales and South Australia, where Australian production is principally located.

934. Quarantine restrictions in the USA and Japan must be managed at the three levels:

(a) pest and disease centered in groves;
(b) refined disinfestation techniques;
(c) improved government to government procedures.

935. Potential exists for newer tropical varieties, such as pomelos and limes, to be grown in the hotter areas of Australia. Queensland fruitfly (Dacus tyroni) however limits export potential at present.

936. Research into pest and disease control, control of skin disorders, and post harvest treatments for disinfestation are needed to realise the economic potential for citrus.

937. Australia's southern hemisphere location gives it a seasonal advantage in the production of citrus fruit. This facilitates access to the North American and South-East Asian markets. However, only the high quality, high value markets within these countries return costs of production due to high harvesting and transport costs.

938. Mechanical harvesting developments are most likely to be triggered where there is no access to imported (North America) or local (Brazil or South Africa) cheap labour. This makes Australia the most likely venue for development of robotic harvesting.

Grapes

939. Grape production falls into three categories:

- Drying grapes
- Wine grapes
- Table grapes

940. Each of these are dealt with separately.

941. A summary of current and future contributions for grapes is shown in **Exhibit 9.10.**

Exhibit 9.10

Summary of Contributions From Grapes

$ Million

Year	Gross Value		Export Value		Apparent Domestic Consumption (1)	
	Aust	Vic	Aust	Vic	Aust	Vic
Drying:						
1988/89	113		67		46	
1994/95	131		66		65	
Wine:						
1988/89	274	47	116		158	
1994/95	272		222		50	
Table:						
1988/89	50	29	21		29	
1994/95	117		70		47	

Note: (1) Apparent domestic consumption has been deduced from gross value less exports. No allowance has been made for the value of imports of dried grapes or wine.
(2) Values are at actual year prices including inflation.

Source: ABARE Outlook Conference 1990 (loc. cit.)

942. Australian grape production is forecast to increase by 17 percent by 1994/95, with most of the increase being used for wine production. Wine exports are forecast to increase by 36 percent. Prices paid for both wine and drying grapes are likely to decline in real terms over the period. As Victoria produces only 17 percent of Australia's wine grapes, but 60 percent of table grapes, overall contributions from grapes are expected to increase provided quality assurance and competitiveness of table grape exports can be maintained.

Drying Grapes

943. The industry is located principally along the Murray and Murrumbidgee rivers. World markets are static with profitability depending on crop failure in one of the other main producing countries - the U.S.A., Turkey or Greece. Sultanas make up 80% of dried grape production.

Market Opportunities

944. Production is forecast to increase only slightly by 1994-95 to 75,000 tonnes dried weight (ABARE).

945. The export market for dried fruit remains dependent on the value of the Australian dollar. While over 2/3 of the crop has been exported in the past, a change to new productive seedless varieties is likely to increasingly target the domestic market for manufactured foods.

946. Potential will be limited by salinity and water quality. Productive yields from drying grapes must be maintained despite changes in growing environment if their export potential is to be maintained.

Wine Grapes

947. Production in Victoria has traditionally been in the north of the state with a dependence on sweet and fortified styles. More recently the southern parts of the state have been favoured allowing drier, more complex aromatic styles to be produced. New grape varieties including Chardonnay and Pinot Noir have increased the range of wine styles produced. Planting trends are now swinging back to specific grape varieties.

948. Mechanical pruning and harvesting and modified pruning methods have helped contain growing costs.

949. Prices for wine grapes have reached record levels in the past two years. Domestic wine sales, however, fell by 23 million litres in 1988-89 as wine prices outstripped beer prices. Domestic and export markets for wine are expected to plateau, but there is still some potential for the higher quality varieties and specialist export market niches.

950. Rapid vine replacements and techniques to minimise the period from capital outlay to economic harvest are required in order to capitalise on changes in market demand and consumer preferences. These areas will need considerable refinement in the future. The capital cost of plantings is high. With consumer tastes continually changing, albeit slowly, there is a significant element of risk in committing capital. All horticulture with lead times from capital committed to economic pay back faces this risk.

Table Grapes

951. Improvements in post harvest handling, the use of gibberellic acid to produce large adherent berries of the Thompson Seedless variety and bunch thinning combined to produce a rapid growth in fresh exports between 1983 and 1986. Since then, adverse weather and consequent quality control problems have hampered the continued growth.

952. Production has expanded from along the Murray River to central Australia and far north Queensland increasing the period when fresh table grapes are available to the domestic market and the range of varieties available. Effective quality management and marketing has doubled domestic consumption.

953. Production figures for all grapes are set out in **Exhibit 9.11.** Table grape consumption in 1988/89 was assessed by ATA Services at $29 million in Victoria, $14 million domestic and $15 million export.

Exhibit 9.11

Total Grape Industry Output

Year	Production (000s tonnes)		Gross Value ($ million)		Exports (1) (000s tonnes)	
	Aust	Vic	Aust	Vic	Aust	Vic
1985/86	883.1	356.5	270.0	123.0		
1986/87	782.6	288.6	272.2	117.8	18.4	12.6
1987/88	798.7	329.2	353.7	149.3	19.7	15.1
1988/89		326.0	359.5	153.0	12.5	9.8

Note (1): Fresh table grapes only.

Source: ABS:
Catalogue No. 7322.2 - Fruit Victoria 1988/89
Catalogue No. 7501.0 - Principal Agricultural Commodities 1988/89
Catalogue No. 7330.0 - Summary of Crops in Australia
Catalogue No. 5424.0 - Exports Australia 1988/89 and earlier

Nuts

954. Almonds are the principal nut crop grown in Australia with production of 4,600 tonnes valued at $11.2 million. Most production is located in South Australia and the Murray Valley in Victoria.

955. Macadamia is the second largest crop. Production is still increasing with over 1 million trees in the ground. Present production is over 3,000 tonnes, but despite being an Australian native there are no local varieties giving high yields.

956. Pistachios and cashews are increasing in demand. Pistachios are well suited to the northern irrigation areas in Victoria. Chestnuts which are really a fruit rather than nut are well suited to the eastern ranges and cooler climates of Victoria. Walnuts are grown in similar areas to chestnuts with quality production increasing for both these products.

957. Of the 2,000 hectares of nut trees planted in Victoria, over 65 percent of plantings have not yet reached bearing age. Statistics on current and future crop value are sparse.

Berry Fruit

958. Berry fruits include strawberries, blueberries, raspberries, blackberries, currants and minor berry fruit crops such as youngberries, boysenberries etc. The production details of the industry are set out in **Exhibit 9.12.**

Exhibit 9.12
Berry Fruit Industry Statistics

Year	Production (000s tonnes)		Gross Value ($ million)		Exports (000s tonnes)	
	Aust	Vic	Aust	Vic	Aust	Vic
1985/86	4.7	1.7	15.8	7.3		
1986/87	5.8	2.1	20.3	7.8	0.5	0.2
1987/88	5.4	2.2		11.5	0.7	0.3
1988/89		3.7		9.4	0.4	0.1

Source: ABS:
Catalogue No. 7322.2 - Fruit Victoria 1988/89
Catalogue No. 7501.0 - Principal Agricultural Commodities 1988/89
Catalogue No. 7330.0 - Summary of Crops Australia
Catalogue No. 5424.0 - Exports Australia

959. **Exhibit 9.13** overleaf shows the relative production of berry fruit. Strawberries are the dominant crop in this group with major production occurring around the metropolitan area. Strawberries, like cherries and blueberries, have very high harvest labour costs for handpicking.

960. Blueberry plantings are estimated at 345 hectares with a potential to yield over 2500 tonnes by 1995-96. Forecast export quantities are 600 to 700 tonnes, in effect doubling present berry fruit exports, but sales still rely heavily on achieving a large per capita increase in domestic consumption.

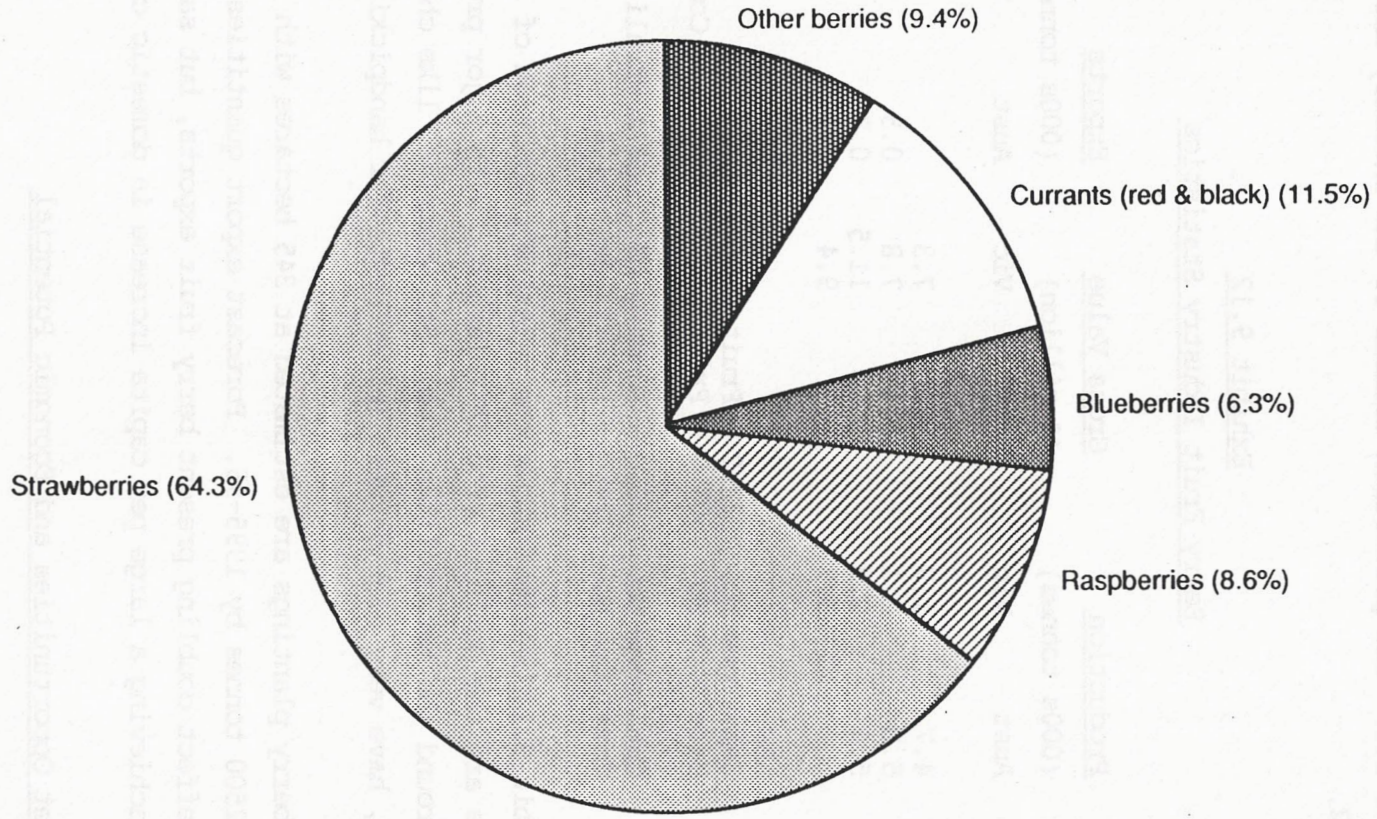
Market Opportunities and Economic Potential

961. Strawberry production which makes up over 80 percent of total berry fruit production in Victoria, is relatively stable with little increase in production forecast.

Berryfruit Production by Type

Australian production (in tonnes)

1986/87



Source: ABS Cat. No 7501.0 Principal Agricultural Conditions 1988/89

Cat. No. 7330.0 Summary of Crops in Australia

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962. The Victorian berryfruit sector has significant economic potential which has not been fully realised to date. Berryfruit products will continue to be in high demand due to their convenience fruit status, but market limitations due to their high perishability exist. Improved distribution and post harvest techniques and improved varieties to lessen labour inputs are still key needs. These factors have also restrained export potential which is evident in South East Asia. The potential in North East Asia has been restricted by quarantine conditions, particularly in Japan.

Tropical Fruits

963. Bananas, pineapples, avocadoes and mangos form an integral part of Australia's horticultural production as set out in **Exhibit 9.14.**

Exhibit 9.14

Australian Tropical Fruit Production

Product	Year			
	Actual		Forecast	
	1985-86 (000s tonnes)	1988-89 (000s tonnes)	1989-90 (000s tonnes)	1994-95 (000s tonnes)
Bananas	134.4	195.7		
Pineapples	131.6	154.4		
Avocadoes	7.5	28	31	48
Mangoes	4.9	23	28	53
Kiwi fruit	-	11	13	18

Source: ABS:
Catalogue No. 7501.0 - Principal Agricultural Commodity Australia 1988/89
Catalogue No. 7330.0 - Summary of Crops Australia
ABARE Outlook Conference 1990 (loc. cit.)

964. Banana and pineapple are the major fruits produced and production is relatively stable. Significant areas planted to avocadoes, mangos and kiwifruit are forecast to reach full production by 1994-95 with combined yields of 120,000 tonnes. Estimated future contribution for avocadoes is shown in **Exhibit 9.15.** Other tropical fruits such as lychee, rambutan, mangosteen, longan, pomelos and pawpaw are increasing in importance as horticultural crops and are competing with temperate fruits for a share of the domestic consumer's dollar.

965. Avocado production is also forecast to increase by 70 percent by 1994/95. Unless problems with export conditions can be overcome, strong downard pressure on unit prices due to oversupply will result in Victoria's crop value decreasing by almost 15 percent to $39 million by 1994/95.

Exhibit 9.15

Estimated Future Contribution From Avocado Production in Australia (2)

Year	Gross Value (1) ($ million)	Gross Production (000s tonnes)
1988/89	46	28
1994/95	39	48
% Change	-14.5%	+71.4%

Notes: (1) All values have been adjusted to 1988/89 prices.
(2) No separate data is available for Victoria.

Source: ABARE Outlook Conference 1990 (loc. cit.)

966. Kiwi fruit production is also expected to increase by 60 percent, but due to increased competition from New Zealand imports, overall revenue is expected to fall to $26 million in current dollar values for Australia, reflecting a 45 percent fall in unit prices.

967. The potential for tropical fruits is significant to the Victorian temperate and subtropical horticultural sectors. They are likely to make inroads into the traditional consumer fruit market place. Whilst this development is dependent on the tropical fruit sector's limited promotional capabilities, it will occur over the next 10 years, particularly from the Queensland sectors.

Summary of Economic Potential

968. The overall economic potential in terms of increased value for fruit horticulture in Victoria is considerable. Realising this potential in the light of large forecast increases from recent plantings of fruit trees and vines is vital to avoid declining average unit values.

969. Much of the potential value can be realised by utilising current knowledge developed by DARA over recent years of research. To compete effectively on overseas markets, Victorian exports must be either competitive with and/or well differentiated from those of other producing countries.

X VEGETABLES

1001. The vegetable industry is a major horticulture industry as detailed in **Exhibit 10.1.** However statistics on vegetables are very limited and almost useless. The data given therefore needs to be treated with great caution.

Exhibit 10.1

Vegetable Production

Product	Production (000s tonnes)		Gross Value ($ million)		Exports (000s tonnes)	
	Aust	Vic	Aust	Vic	Aust	Vic
	1985/6	1985/6	1988/9	1988/89	1986/87	1986/87
Potatoes	965.9	376.0	279.5	71.5	8.2	2.9
Tomatoes	252.6)		147.3	20.1		
Onions	159.7)		36.7	4.5		
Carrots	127.6)		66.4	17.6		
Cauliflowers	103.8)	279.3	45.7	9.0	97.0	7.4
Cabbages, Sprouts	79.1)		30.4	11.6		
Lettuce	76.7)		50.9	12.0		
Pumpkins	68.4)		28.9	2.3		
Peas and Beans	72.5)		28.9	12.3		
Other	555.0)		291.3	53.9		
Total	2461.3	655.3	1006.0	214.8	105.2	10.3

Source: ABS:

Catalogue No. 7501.0 - Principal Agricultural Commodity 1988/89

Catalogue No. 7330.0 - Summary of Crops in Australia

Catalogue No. 5424.0 - Exports Australia 1988/89 and earlier

1002. Total vegetable production has risen slowly in Australia, congruent with population growth and per capita consumption. At the same time, the range, price and quality of these vegetables is better than virtually anywhere else in the world.

1003. Australia's climatic range allows many vegetables to be produced throughout the year. Potatoes are by far the largest crop with tomatoes, onions, carrots and cauliflower the next largest crops respectively.

1004. Onions form the largest volume of exported vegetables, particularly from Tasmania to UK/Europe. In 1988/89, Australian onion exports were valued at $44.1 million (ABS Catalogue No. 5424.0 - Exports Australia). Western Australia is a major exporter of various vegetables to Singapore, Malaysia, Hong Kong and Japan. Victorian vegetable exports are restricted to onions to Europe, asparagus, principally to Japan, and small quantities of fresh vegetables airfreighted to many Asian and Pacific markets.

Market Opportunities

1005. The vegetable industry generally meets domestic demand well and avoids exposure to the risk of oversupply by planting in line with known market outlets. However, shortfalls in the supply of winter vegetables have occurred in the last two seasons as heavy rains and continuing bad weather ruined many plantings.

1006. The interest in healthy diet and increasing consumption of fresh vegetables (and fruits) promoted by the Australian Council of Good Nutrition has not been translated into marked increases in consumption as shown in **Exhibit 10.2.** There is a clear opportunity for joint promotion between producers and public health bodies to achieve increased sales and better community diet. For example, an increase of 10 percent in domestic consumption would represent increased value of $65 million for the Australian industry.

1007. Export opportunities for vegetables to the Asian markets are largely being met from Western Australia due to the shorter transit times. Specialist vegetables lines (asparagus, leafy vegetables, broccoli, etc) have excellent potential provided freight arrangements can be made which preserve quality without overpricing the product.

Exhibit 10.2

Apparent Per Capita Consumption of Vegetables Australia

	Kgs Per Annum Per Capita
1981/82	130.8
1982/83	124.9
1983/84	138.8
1984/85	142.4
1985/86	136.2
1986/87	139.3

Source: ABS, Catalogue 4306.0 - Apparent Consumption of Foodstuffs Australia 1946/7 onwards

Economic Potential

1008. A summary of current and future contribution from vegetables is shown in **Exhibit 10.3.**

Exhibit 10.3

Forecast of Contributions From Vegetables

$ Million (2)

Year	Gross Value		Export Value		Apparent Domestic Consumption (1)	
	Aust	Vic	Aust	Vic	Aust	Vic
Potatoes:						
1988/89	279	72	4	2	275	N/A
1994/95	288	70	6	2	282	N/A
Other Vegetables:						
1988/89	748	131	79	-	669	118
1994/95	780	135	89	-	691	121

Note: (1) Apparent domestic consumption has been deduced from gross value less exports. No allowance has been made for the value of imports.

(2) All values have been adjusted to 1988/89 prices.

Source: ABARE Outlook Conference 1990 loc. cit.

1009. The value of vegetables produced has been increasing in real terms at about 3 percent per annum over the past few years, but ABARE forecasts suggests very little growth in real value in the next 5 years. Exports of onions and leafy vegetables from Victoria are expected to increase export earnings by $9 million and overall State production value by 60 percent to $324 million.

1010. While there are opportunities in export, the real challenge in an increasingly health conscious and vegetarian society is to increase domestic consumption of fresh vegetables. This will require a well co-ordinated industry approach to:

(a) improve consumer expectations of quality;

(b) production and post harvest management to ensure delivery of an improved quality product to meet these expectations;

(c) promotion of the benefits of increased vegetable consumption.

XI SUPPORT INDUSTRIES AND SERVICES

1101. Horticulture is supported by a wide range of inputs, both products (chemicals, pots, equipment large and small, glasshouses etc) and services (diagnostic, research, information, accounting, marketing etc). In 1987/88, these inputs were valued at $336 million (paragraph 413, page 22)

1102. Growth opportunities for support industries and services to horticulture have not been separately assessed; nor have we attempted to assess separately private sector deficiencies in products and services that might be barriers to exploitation of indicated growth opportunities.

1103. Growth opportunities in support activities and services will be primarily dependent on what happens in the key sectors of horticulture. These have already been discussed in detail.

SECTION B

THE GOVERNMENT ROLE AND CONTRIBUTION

XII THE GOVERNMENT'S ROLE AND CONTRIBUTION TO THE HORTICULTURAL INDUSTRY

Summary and Comment

1201. The diverse range of activities and locations where the State Government has involvement in the horticultural industry indicates the diversity of its traditional roles in the industry. Many of the roles are due to responsibilities specified by acts of parliament, particularly in the area of regulation. DARA has undertaken most of the industry's research functions and until recently has attempted to provide a personalised advisory service to individual farmers. The government has also attempted to lead the horticultural industry into new crops and develop new export initiatives. Success in the promotion of horticultural exports has been limited although the potential for significant export growth is widely accepted in a number of industries (eg cut flower exports).

1202. In recent years there has been a reassessment of the Government's role in the horticultural industry and there is currently a transition towards new objectives and approaches.

1203. The horticultural industry is being encouraged to be more self reliant and many of the personalised farmer services have been withdrawn. Where appropriate private agribusiness groups are encouraged to provide some of the farmer services which have been traditionally provided by Government.

1204. The total budget for DARA horticultural activities is $19 million per annum and has been progressively increasing. Non state-vote funding accounts for 24 percent of DARA's horticultural activities and this contribution is increasing.

1205. New attempts are being made by DARA to develop a commercial approach and also enter into commercial relationships for the exploitation of DARA research outcomes with industry participants who have the capability of developing export opportunities.

1206. The emphasis of DARA is to provide support to commercial groups and the specific users are to pay for the support.

1207. DARA's research activities and the organisation of research institutes are in part due to historical factors and are very much in transition. Recent reviews of DARA research have recommended the focussing of advanced research activities into well resourced central institutions.

1208. The industry workshops initiated by the National Horticultural Centre consultancy have highlighted many of the current difficulties resulting from the existing research structure. The industry groups are seeking expert assistance in solving their immediate problems and make the claim that longer term research will be more relevant if it is co-located with problem-solving research and diagnostic services.

1209. An analysis of expenditure on specific horticultural research activities demonstrates that research expenditure is currently not focussed on the industry's priorities. There are also fundamental difficulties in communication and technology transfer to industry under the current research structure.

1210. The National Horticultural Centre provides the potential to modify research management structures and co-locate groups to provide significant focussed research relevant to the horticultural industry's development.

1211. It also may have the potential to encourage a spirit of collaboration and partnership between industry and Government in the advancement of the horticultural industry.

1212. The majority of State Government resources provided to the Horticultural Industry are managed and expended by the Victorian Department of Agriculture and Rural Affairs (DARA). The total estimated expenditure by individual DARA units on horticultural projects is approximately $19 million per annum (1990). DARA has also established a large infrastructure resource including six major research institutions undertaking horticultural research.

1213. The CSIRO's only direct involvement in servicing the Victorian Horticultural Industry is through the Horticultural Research Station at Merbein. The research station is part of the CSIRO Division of Horticulture which has a head office in Adelaide, South Australia. Horticultural activities, particularly ornamental horticulture, are also undertaken by local governments and agencies such as the Board of Works and the Department of Conservation and Environment.

1214. The diverse range of activities and locations of horticultural projects in DARA is demonstrated in **Exhibit 12.1.** The activities include research, extension, regulation and analytical and diagnostic services. The activities are largely centred at Research Institutes and District Offices. A complete list of DARA Horticultural Projects is shown in Appendix E.

Estimated Expenditure on Specific Horticultural Crops

1215. DARA's estimated expenditure on horticultural activities in individual crops is outlined in **Exhibit 12.2.** The staff allocation to each crop and classification of activity areas is shown in **Exhibit 12.3.** Research is the major area of expenditure; however DARA also has a large resource allocation to areas such as regulation. Activities are spread over the full range of Horticultural Crops but expenditure does not directly relate to the relative value and production of individual crops.

1216. The estimated expenditure in Exhibit 12.1 on Horticultural Crops is not directly comparable to the expenditure outlined in Exhibit 12.2. Exhibit 12.1 is the more current and complete list of expenditure on DARA's horticulture projects.

Exhibit 12.1

DARA Horticultural Projects March 1990

Estimated Expenditure by Individual DARA Units

CONTROLLING UNIT	FUNDS $
Ag Engineering Centre, Werribee	77,540
Benalla District Centre	67,556
Bendigo District Centre	165,248
Biometrics	56,335
Chemical Standards	22,555
Colac District Centre	160,649
Commercial Operation Unit	6,552
East Gippsland Agriculture Centre	61,025
Food Research Institute, Werribee	808,511
Gippsland Agriculture Centre	53,340
Hamilton District Centre	45,183
Horticulture Research Centre, Knoxfield	2,404,665
IISR, Tatura	1,126,475
Leongatha District Centre	37,288
Marketing and Strategic Development	798,893
Melbourne District Centre	21,520
Ovens Research Station, Myrtleford	174,952
Pastoral Research Institute, Burnley	1,846,918
Plant Standards	3,429,859
Policy Analysis	246,564
Potato Research Station, Toolangi	770,106
Regional Vet Lab, Benalla	496,362
Regional Manager Gippsland/general	2,068,771
Regional Manager I-Melbourne/general	50,684
Shepparton District Centre	135,803
State Chemistry Laboratory	695,477
Sunraysia Horticultural Centre	2,163,254
Swan Hill District Centre	144,826
Turf Research Institute, Frankston	367,565
Vegetable Research Station, Frankston	488,102
Warrnambool District Centre	35,175
Total	19,488,619

Notes: (1) The figures are based on aggregation of project funds by each controlling unit. Therefore the funds shown at the unit level are not necessarily representative of each specific unit's horticultural expenditure.

(2) The figures contained in the VAMIS database are collected each year at project level in a "Snap Shot" as at the 1st December, therefore are estimations of actual expenditure. However the errors are less than 2 percent when compared to DARA financing figures.

Source: Victorian Agricultural Management Information System, DARA (VAMIS).

Exhibit 12.2

Department of Agriculture and Rural Affairs

Horticultural Crops Activity, 1988/89

Expenditure (Estimated)

	Research $	Extension $	Regulation $	Analytical Diagnostic $	Scientific Support $	Admin. Support $	TOTAL $
HORTICULTURAL CROPS							
Pome fruit	804,413	233,496	380,945	21,792	138,318	291,719	1,870,683
Stone fruit	596,664	173,918	237,888	69,057	134,920	420,715	1,633,162
Citrus	132,743	170,253	226,902	26,164	8,689	171,521	736,272
Grapes	549,942	611,975	294,906	72,993	109,257	649,514	2,288,587
Nuts & berries	525,031	259,464	137,581	5,151	22,325	51,502	1,001,054
Potatoes	735,365	379,255	222,184	78,696	92,624	262,738	1,770,862
Other vegetables	1,025,649	574,879	523,786	24,115	13,203	277,580	2,439,212
Ornamental plants	950,617	207,733	320,254	72,238	73,156	68,261	1,692,259
Turf	175,674	129,037	2,109	31,713	4,343	186,221	529,097
TOTAL	$5,496,098	$2,740,010	$2,346,555	$401,919	$596,835	$2,379,771	$13,961,188

Source: Victorian Agricultural Management Information System, DARA.

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Department of Agriculture and Rural Affairs

Horticultural Crops Activity, 1988/89

Staff Years (Estimated)

	Research	Extension	Regulation	Analytical Diagnostic	Scientific Support	Admin. Support	TOTAL
HORTICULTURAL CROPS							
Pome fruit	17.31	5.13	7.85	0.50	3.18	5.41	39.38
Stone fruit	13.23	3.98	5.83	1.15	3.35	7.78	35.32
Citrus	3.44	4.11	4.72	0.48	0.17	4.99	17.91
Grapes	12.95	15.84	6.47	1.44	3.13	13.93	53.76
Nuts & berries	13.23	5.06	3.32	0.13	0.41	1.06	23.21
Potatoes	18.71	9.24	5.10	1.28	2.81	4.61	41.75
Other vegetables	23.37	12.12	11.49	0.63	0.39	5.06	53.06
Ornamental plants	22.46	4.71	7.56	1.69	1.34	1.79	39.55
Turf	3.75	2.91	0.06	0.74	0.16	3.72	11.34
TOTAL	128.45	63.10	52..40	8.04	14.94	48.35	315.28

Source: Victorian Agricultural Management Information System, DARA.

Funding Sources for DARA Horticultural Projects

1217. The funding of Horticultural Projects in DARA is obtained from the State Government Vote, Commonwealth Funding Programs, Industry Associations and specific contract research with private organisations. The relative contribution of the State Vote is shown in **Exhibits 12.4 and 12.5.** Approximately 74% of the funding of horticultural projects is provided from the State Vote. The non-State Vote contribution to horticultural projects is lower than that to field crops, but is similar to that of the livestock industries.

1218. There is also considerable variation in non-State Vote funding of different horticultural crops. For example, nuts and berries have a very low non-state contribution (12%), whilst that for ornamental plants is relatively high (33%).

Estimated Expenditure on Specific Programmes Targetted at Commercial Horticulture

1219. An analysis of resource inputs in different discipline areas is shown in **Exhibit 12.6.** In programs targetted at commercial horticulture, most expenditure is on improving production efficiency. Improving post harvest treatment of horticultural crops and chemical and plant diagnostic services are relatively small areas of expenditure (ie less than 25% of that on production oriented projects).

Research Institutions

1220. DARA maintains six major research institutes involved in Horticultural Research. A complete list of projects and current estimated funding controlled by each Research Institute is available in **Appendix E.**

Exhibit 12.4
Department of Agriculture & Rural Affairs
Commodity by Activity 1988/89
Estimated Staff Years

COMMODITY	STATE VOTE	NON-STATE VOTE	%	TOTAL
Field Crops				
Wheat	80.11	39.52	33	119.63
Oats	7.28	4.50	38	11.78
Barley	26.58	9.56	38	36.14
Other cereals	8.17	4.35	34	12.52
Coarse grains	6.02	3.33	35	9.35
Oil Seeds	20.43	6.12	18	32.55
Grain legumes	30.17	12.77	30	42.94
Tobacco and hops	3.44	11.69	77	15.13
Field Crops ST	**188.20**	**91.84**	**32**	**280.04**
Horticultural Crops				
Pome fruit	30.75	8.11	21	38.86
Stone fruit	29.30	4.59	14	33.89
Citrus	15.25	2.65	15	17.90
Grapes	46.16	7.61	14	53.77
Nuts and berries	21.40	1.72	7	23.12
Potatoes	35.05	6.76	16	41.81
Other vegetables	40.87	12.34	23	53.21
Ornamental plants	29.71	9.99	25	39.70
Turf	6.99	4.35	38	11.34
Horticultural Crops ST	**255.48**	**58.12**	**19**	**313.60**
Extensive Livestock				
Pasture	103.00	14.08	12	117.08
Dairy	118.88	21.01	15	139.89
Beef	103.44	19.61	16	123.05
Sheep	166.48	28.65	15	195.13
Horses	10.98	0.96	8	11.94
Goats	11.13	0.68	6	11.81
Deer	2.58	0.19	68	2.77
Extensive Stock ST	**516.49**	**85.18**	**14**	**601.67**
Intensive Livestock				
Pigs	64.68	11.94	16	76.62
Poultry	47.34	6.60	12	53.94
Apiary	3.98	1.01	20	4.99
Fish	6.02	4.26	41	10.28
Intensive Livestock ST	**122.02**	**23.81**	**16**	**145.83**
Other				
Agroforestry	12.64	2.34	16	14.98
Other commodities	52.96	6.45	11	59.41
Misc ST	**65.60**	**8.79**	**12**	**74.39**
No commodities	558.17	100.07	18	658.24
DEPARTMENTAL TOTAL	**1,705.96**	**367.81**	**18**	**2,073.77**

Source: Victorian Agricultural Management Information System, DARA.

Exhibit 12.5
Department of Agriculture & Rural Affairs
Commodity by Activity 1988/89

COMMODITY	ESTIMATED EXPENDITURE State Vote $	Non-State Vote $	%	Total $
Field Crops				
Wheat	3,286,101	2,016,269	38.03	5,302,370
Oats	312,415	211,613	40.38	524,028
Barley	1,020,254	493,667	32.61	1,513,921
Other cereals	334,804	205,473	38.03	540,277
Coarse grains	211,662	121,177	36.41	332,839
Oilseeds	1,024,522	431,987	29.66	1,456,509
Grain legumes	1,258,455	702,153	35.81	1,960,608
Tobacco and hops	159,458	451,357	73.89	610,815
Field Crops ST	**7,607,671**	**4,633,696**	**37.85**	**12,241,367**
Horticultural Crops				
Pome fruit	1,280,457	547,930	29.97	1,828,387
Stone fruit	1,244,552	335,757	21.25	1,580,309
Citrus	555,871	180,398	24.50	736,269
Grapes	1,716,781	571,804	24.99	2,288,585
Nuts and berries	871,477	123,039	12.37	994,516
Potatoes	1,352,783	418,073	23.61	1,770,856
Other vegetables	1,827,628	611,587	25.07	2,439,215
Ornamental plants	1,131,598	560,655	33.13	1,692,253
Turf	302,798	226,300	42.77	529,098
Horticultural Crops ST	**10,283,945**	**3,575,543**	**25.80**	**13,859,488**
Extensive livestock				
Pasture	4,403,347	756,298	14.66	5,159,645
Dairy	5,349,818	1,733,684	24.47	7,083,502
Beef	4,432,611	1,607,704	26.62	6,040,315
Sheep	6,564,978	2,287,921	25.84	8,852,899
Horses	432,951	60,500	12.26	493,451
Goats	435,143	47,999	9.93	483,142
Deer	109,544	11,250	9.31	120,794
Extensive Stock ST	**21,728,392**	**6,505,356**	**23.04**	**28,233,748**
Intensive Livestock				
Pigs	2,515,676	733,289	22.57	3,248,965
Poultry	1,918,628	411,391	17.66	2,330,019
Apiary	174,290	29,351	14.41	203,641
Fish	181,518	289,896	61.49	471,414
Intensive Livestock ST	**4,790,112**	**1,463,927**	**23.41**	**6,254,039**
Other				
Agroforestry	545,399	173,497	24.13	718,896
Other commodities	2,458,346	479,953	16.33	2,938,299
Miscellaneous ST	**3,003,745**	**653,450**	**17.87**	**3,657,195**
No commodities	32,229,529	3,371,516	9.47	35,601,045
DEPARTMENTAL TOTAL	**79,643,394**	**20,203,488**	**20.23**	**99,846,882**

SOURCE: Victorian Agricultural Management Information System, DARA.

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Exhibit 12.6

DARA Expenditure on Specific Programs Targetted at Commercial Horticulture

PROGRAM	ESTIMATED EXPENDITURE $	%
Targetting specific products for markets	226,524	3
Improving post-harvest treatment	879,415	11
Improving marketability of horticultural products	1,424,818	19
Improving production efficiency	4,472,244	58
Chemical/plant diagnostic services	202,774	3
Consultancy services	459,882	6
TOTAL COMMERCIAL HORTICULTURE PROGRAM	**7,665,657**	**100**

Horticultural Research Centre, Knoxfield

1221. The Institute is located in the suburbs of Melbourne, but has Southern Victorian and statewide research responsibilities. The major research activities are:

(a) Post harvest handling; storage, packing and transport of fruits and vegetables.

(b) Ornamental horticulture research.

(c) Fruit and berry crop production research targetted at Southern Victoria.

1222. Knoxfield has also developed an advanced biotechnology research capability studying the genetic manipulation of ornamental and tree species.

1223. The total annual estimated expenditure controlled by Knoxfield is currently $2,404,665.

Institute for Irrigation and Salinity Research, Tatura

1224. The Institute's major activities are in salinity research and irrigated land management. Its horticultural research activities service the large stone and pome fruit production areas of the Goulburn Valley.

1225. The major horticultural projects include export quality control system for packham pears, high density tree training systems (eg Tatura Trellis), and development of improved canning peach varieties.

1226. Total annual estimated expenditure on horticultural projects is currently $1,062,326.

Plant Research Institute, Burnley

1227. Burnley has statewide responsibility for pest and diseases research and management of a number of programs to provide disease free plant material.

1228. The Burnley site also houses the Victorian plant quarantine facility and the Victorian College of Agriculture and Horticulture Burnley campus.

1229. Major horticultural research programs include the management of pest and diseases of ornamentals, berries, nut and fruit species, pathogen tested potato germphasm for Australia and South-East Asia and research on plant viruses including basic biotechnology research.

1230. The current annual estimated expenditure on horticultural projects is $1,853,638.

Potato Research Station, Toolangi

1231. Toolangi is a specialist potato research centre with major activities in potato seed certification programs, potato production technology and the evaluation and breeding of new potato varieties. The Research Station is also involved in a program to improve the quality of nut and berry crops through selection, breeding and certification services.

1232. The current annual estimated expenditure is $770,106.

Sunraysia Horticultural Centre

1233. The research centre is located at Irymple and services the local viticulture, citrus and other fruit industries.

1234. The centre provides an extension service and undertakes research on locally grown major crops. Research activities include disease management, production technology and post harvest technology.

1235. The current annual estimated expenditure is $2,163,254.

Vegetable Research Station, Turf Research Institute, Frankston

1236. The Vegetable Research Station and Turf Research Institute are co-located at the Frankston site. The Vegetable Research Station conducts research on vegetable production in sand belt areas. It has major programs on minimising the use of chemicals in vegetable farming and the use of recycled water.

1237. The current annual estimated expenditure of the Vegetable Research Station is $488,102.

1238. The Turf Research Institute has been transferred to the commercial management of Daratech and provides a commercial advisory service under the business name of "Turfgrass Technology".

1239. The current annual estimated expenditure is $367,565.

SECTION C

KEY SUCCESS FACTORS AND BARRIERS

XIII KEY SUCCESS FACTORS AND BARRIERS TO GROWTH

1301. Key success factors and barriers affecting the industry's ability to exploit the economic potential and market opportunities discussed in Section A were identified from the economic analysis, workshops and interview process. These are analysed in detail in subsequent chapters under the following conceptual headings:

(a) Knowledge Related:
- Information Access
- Training and Education
- Diagnostic and Testing Services
- Research and Extension
- Advanced Biotechnology Research
- New Variety Development, Identification and Certification

(b) Regulatory:
- Quarantine
- Quality Assurance/Certification
- Associated Chemical and Biological Testing

(c) Marketing and Distribution:
- Market Data
- Marketing Philosophy
- Quality
- Post Harvest Handling
- Transport
- Pricing and Cost Competitiveness
- Wholesale and Retail Markets

(d) Promotion:
- Food Safety and Nutrition
- Variety and Quality
- Consumer and User Education

(e) Support Industries:
- Grower Inputs and Services
- Transport
- Retailer Ancilliaries.

Key Issues in Maintaining Comparative Advantage

1302. Professor Michael Porter of Harvard University (Drucker, Ohmae, Porter and Peters Special Report No 1202, Economist Publications UK 1990) in recent months has developed a whole new way of thinking about national competitive advantage. Importantly this suggests that international success involves more than just having specific factor comparative advantage, a better macro economic environment and/or managerial practices. In this analysis he first suggests the need for a change in perspective:

(a) Abandon the notion that a firm will do everything in its home base;

(b) But, understand why a particular nation is a good home base for competing globally in a particular industry.

1303. He points out that successful industries are linked in clusters through vertical and horizontal relationships. "The phenomenon of clustering is so common that it appears to be a central feature of internationally competitive industries".

Factor Conditions

1304. How the nation generates and nurtures its factor creating mechanisms is essential to an advanced industry's ability to sustain competitive advantage. Porter uses the example of the Dutch flower industry:

> "Take the Netherlands. As everyone knows, the Netherlands is the world's leading exporter of cut flowers. As everyone who has ever been there also knows, Dutch weather rivals the British for cold and damp - hardly the ideal climate for growing flowers. That of itself should be an indication that the classical theory of comparative advantage needs modification. The Netherlands possesses four research institutions working on aspects of flower-growing and exporting: one deals with problems of cultivation, the second with packaging, the third with shipping, and fourth with ways of improving flower storage. These kinds of institutions are advantages in international competition, because they create knowledge and knowhow which yield fresh factor advantages.

"Dutch research institutions illustrate another point. Nations must create factors that are specialised: specialised human resources, specialised scientific knowledge, specialised infrastructure. Generalised factor pools are not a source of competitive advantage in sophisticated industries because they are so easily circumvented through global strategy. Simply having a high school education system, or a road system, or a labour pool is not enough to be a competitive advantage in international competition today." (Source: Porter loc cit).

1305. At the same time, the Dutch example shows how apparent factor disadvantages can also be challenges and an incentive to gain advantage by doing things differently.

1306. Australia's factor disadvantages include high production costs, distance and freight costs and other countries' quarantine regulations eg requirement for bare root plant exports. Porter's analysis suggests the horticulture industry should be identifying these disadvantages as challenges and finding solutions to them as means of improving competitive advantage.

Demand Conditions

1307. "With striking regularity, the nation with the most demanding and sophisticated home customers for a product or service also has the most successful producers." (Porter loc. cit).

1308. Porter suggests:

(a) the domestic customer determines the perspective and orientation of top management and research;

(b) adversely, a pliant home customer who accepts anything offered is a considerable disadvantage.

1309. This is well illustrated in experience with Australian horticulture product exports:

(a) export success demands a commitment to quality and meeting overseas consumer expectations well beyond what is required for the domestic market;

(b) penetration of the Southern Californian market for out of season flowers is severely restricted by unacceptable quality as delivered and inadequate packaging (Source: C&LC Interviews at Los Angeles Flower Market).

1310. In the context of this study:

(a) What is the potential role of NHC in lifting domestic market quality standards and expectations both to achieve increased domestic market sales and to improve export potential?

(b) What additional support resources are required to support the industry's ability to meet these improved quality expectations?

1311. Porter's evidence suggests that provision of improved support resources alone will not achieve the increased domestic quality expectations needed to drive export market access.

Related and Supporting Industries

1312. A major new finding from Porter's analysis is that "although in theory everything can be bought on global markets, the presence of home-based suppliers and related industries is an important factor in the ability of a nation's firms to compete in a particular industry." Home based suppliers are found to be fundamental to the process of improvement and innovation.

1313. What is the potential role of NHC in developing related industries and suppliers to horticulture exporters and domestic producers?

Firms' Strategy, Structure and Rivalry

1314. Porter's research shows that "the presence of domestic rivalry in an industry has a powerful impact on that industry's ability to succeed internationally". It also helps to keep government honest in its industrial dealings. Equally, "a group of rivals tends to spawn a specialised supplier industry nearby, something a single customer would be unlikely to achieve".

1315. Certainly, in the Victorian horticulture industry more problems arise from the small size of individual growers firms than from a dominant supplier. However, Porter's finding is a warning that a monopoly marketing agency may not be as effective as a competing group of viable size suppliers.

Education

1316. Porter sees government's role in education as vital: "education policy is fundamental to the capacity of an industry and a nation to achieve competitive advantage." The evidence is that a good general education is not enough; the skills that lead to competitive advantage are specialised. Our study has equally identified deficiencies in specialist education and training as serious barriers in the horticulture industry.

1317. The analysis of success factors and barriers in **Section D** of the study reflects the implications of Porter's analysis.

Industry Priority Needs

1318. From analysis of the industry consultations, interviews and the literature, we have sought to identify industry priorities for additional or enhanced resources and facilities both to strengthen key success factors and to reduce barriers in achieving the industry's growth potential. These are discussed in detail in Chapters XIII to XVII and are summarised in **Exhibit 13.1.**

1319. Priority needs are focussed:

(a) sectorally on cut flowers and ornamentals and to a lesser extent on home gardening and fruit and vegetables;

(b) for cut flowers and ornamentals, there are priority needs ranging across almost all factor groups.

1320. The extent of these priority needs is of course symptomatic of a relatively unorganised industry structure which inhibits constructive dialogue, both with government and internally, to anticipate its needs and to bring effective pressure on providers to have these needs satisfied. It of course also reflects the diversity and disparate nature of technical and commercial needs given the diversity of plant varieties involved.

1321. The first question is how to achieve a better focus and a better co-ordinated industry approach. Our analysis suggests there are two issues:

(a) lack of a geographical or physical focus: "somewhere where industry people go regularly for meaningful commercial reasons";

(b) how to generate the leadership and produce the sectoral commitment to work together on common problems (eg quality) without sacrificing competitive spirit or individual competitive advantage.

INDUSTRY RESOURCE ENHANCEMENT NEEDS

Exhibit 13.1

SHEET 1

Drivers and Barriers	Amenity Horticulture	Home Gardening	Cut Flowers	Ornamental & Other Plants	Fruit & Vegetables	Horticulture Inputs & Services	Horticulture Product Processing
1. Knowledge Related							
1.1 Information Access	✓✓	✓✓	✓✓	✓✓	✓	✓	✓
1.2 Training & Education	✓	✓✓	✓✓	✓✓	✓	✓	✓
1.3 Testing: Soil, Diagnostics etc	✓✓	✓	✓✓	✓✓	✓✓	✓	✓
1.4 New Variety Development	✓	✓	✓✓	✓✓	✓		
1.5 Applied Research	✓	✓	✓✓	✓✓	✓✓	✓	✓
1.6 Advanced Biotechnology Research	✓		✓	✓	✓	✓	✓
2. Regulatory							
2.1 Quality Certification	✓	✓	✓✓	✓✓	✓		
2.2 Variety Testing/Certification		✓	✓✓	✓✓	✓		
2.3 Quarantine: Import	✓		✓✓	✓✓	✓	✓	
Interstate			✓	✓	✓		
Export			✓✓	✓			
2.4 Physical, Chemical, Biological Testing			✓✓	✓✓	✓	✓	
2.5 Supporting Technical Services: eg Pesticides, Fumigation			✓✓	✓✓	✓		

LEGEND:

1. Need for additional activity, facilities and/or resources

✓ some need

✓✓ priority need

This legend also applies to Sheet 2.

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INDUSTRY RESOURCE ENHANCEMENT NEEDS

Exhibit 13.1

SHEET 2

Drivers and Barriers	Amenity Horticulture	Home Gardening	Cut Flowers	Ornamental & Other Plants	Fruit & Vegetables	Horticulture Inputs & Services	Horticulture Product Processing
3. Market & Distribution							
3.1 Market Data							
Domestic		✓	✓✓	✓✓		✓	
Export	✓		✓✓	✓		✓	
3.2 Meeting Market Needs							
Varieties		✓	✓✓	✓✓	✓	✓	✓
Pricing/Cost Competitiveness	✓		✓✓			✓✓	✓✓
Quality			✓✓	✓	✓✓		
Transport			✓✓	✓	✓✓	✓	
3.3 Wholesale Market			✓✓				
3.4 Retail Sales		✓			✓		
4. Promotion							
4.1 Food Safety and Nutrition					✓✓		
4.2 Variety and Quality		✓✓	✓✓	✓✓	✓		
4.3 Demonstration and Consumer Education		✓✓	✓✓	✓	✓✓	✓	
4.4 Improving Consumer Product							
Usage:					✓		
Food		✓					
Ornamentals		✓✓	✓	✓			
5. Support Industries							
5.1 Grower Inputs and Services							
Transport			✓✓				
Retailer Ancilliaries			✓✓				
Other							

Geographical Focus

1322. The proposed NHC provides the opportunity to provide a valuable geographical focus in two ways:

(a) by providing to the flower and possibly also ornamentals sectors their primary wholesale market in Victoria ie a place where industry people go regularly for meaningful commercial reasons;

(b) attractions to the general public and home gardeners to visit the site and provision of improved opportunities for better interaction between industry participants and their publics; hence the opportunity to lift their most important customers' (local people) expectations and help to improve their quality expectations, shown by Porter (loc cit.) to be critically important for competitive advantage.

Commitment to Work As An Industry

1323. Expenditure of many millions of dollars on a wholesale market and associated trading facilities and on beautiful gardens will not in itself produce leadership and commitment. However the process of working together to achieve a practical vision of a National Horticulture Centre at Wantirna, including the funding of it largely from non-government sources, has the potential to produce the leadership and commitment required to ensure the benefits from a more clearly defined geographical focus for the industry.

Shared Values

1324. It has been clear throughout this study that there are wide differences in value priorities between the proponents of the original Home For Horticulture and industry participants who are centrally concerned with questions of markets, promotion and technical support.

1325. It is in our view a pre-requisite for any worthwhile development of a National Horticultral Centre which provides both public facilities and industry commercial facilities based on a wholesale market that one group of people with shared values and commitment is formed which brings together all the various interests involved.

Knowledge Related Needs

1326. Knowledge related needs in all forms are seen as priority areas for attention. There is generally industry concern about the fragmentation of DARA research and technical support resources and the mismatch between research management, resource allocation and industry perceived needs.

1327. The industry priorities are seen to be:

(a) improved technical and market information access;

(b) more responsive diagnostic facilities;

(c) applied R&D more closely related to industry needs;

(d) redistribution of public sector resources to extension and post harvest management in all its forms;

(e) greater attention to practical improvement of education at all levels and more opportunities for short course type learning experience, preferably on business planning and management, marketing of perishable products, specialist production techniques and supervision training;

(f) establishment of an independent, national variety identification and certification facility for other than native plants.

1328. There is recognition of the importance of supporting applied R&D with some strategic research, particularly in advanced biotechnology. There is a need however, for the latter to be better focussed to areas where there is existing or future potential competitive advantage. These areas include:

(a) newer PVR protected varieties based on Australia's unique flora;

(b) production and post harvest management for out of season Northern Hemisphere markets;

(c) improved technical support to (a) and (b) above, eg diagnostics, disinfectation.

Many or indeed all of the facilities to meet these knowledge related needs could be located with benefit at NHC.

Regulatory

1329. In the general area of quarantine, the identified need is for better dialogue with industry and a more practical and less time consuming approach to both inwards and outwards quarantine.

1330. An equally important issue is to resolve government/industry responsibilities for quality assurance/certification and means of industry accepting proper responsibility for quality.

1331. Both these issues clearly relate back to industry focus and commitment issues discussed earlier.

1332. If NHC develops as the point of export consolidation, there will be a need to locate some quarantine and other regulatory resources on the site.

Marketing and Distribution

1333. While there are many export opportunities in out of season supply to the Northern Hemisphere, the biggest single opportunities lie in the Victorian and Australia domestic markets:

(a) cut flowers;

(b) vegetables and to a lesser extent fruit.

1334. In both these cases, the key success factors relate to markets, promotion and consumer education rather than to technical support issues. Overseas experience has shown for example that cut flower consumption in a market like the UK can be significantly increased by effective marketing and promotion. Clearly, however, to achieve the increased levels of sales and production, support in technical and new variety development will also be essential.

1335. A major barrier identified in the industry consultations in relation to domestic cut flower markets is the lack of a dedicated wholesale flower market with an operating environment suitable for quality cut flowers. NHC was indicated as a most suitable location for such a market.

1336. Similarly in export markets, there are growth opportunities for cut flowers which would be facilitated by market associated order consolidation.

1337. The other key barriers relate to:

(a) need for up-to-date and more detailed market information;

(b) post harvest management, including need for varieties with better post harvest attributes;

(c) adequacy of packaging;

(d) for flowers, lack of any facility for air freight container consolidation and packaging, both to maintain quality and to reduce costs;

(e) generally inadequate or inconsistent quality on arrival overseas.

1338. There are smaller and more difficult niche markets for Australian native and possibly other ornamental plants. Australian production and overseas freight costs and the requirement for bare root plant shipment to most major markets limit opportunities both in size and over time. If a plant is successful, it will be propagated closer to the market at lower total cost. A solution to the problem of sea freight of bare rooted plants will alleviate to some extent this cost disadvantage.

1339. The most interesting opportunity is to market propagation rights to PVR protected varieties developed in Australia. Successful participation in this market will require effective use of a whole range of technologies including molecular biology. The rewards are however potentially worthwhile and Australia has a comparative advantage in its unique native flora.

Promotion

1340. Effective promotion will be the key success factor in exploring the two biggest market opportunities identified both domestic:

(a) cut flowers;

(b) vegetables.

1341. There is also a need for greatly improved consumer education on chemical residue issues in relation to fruit and vegetables.

1342. Ornamental producers will benefit from improved presentation and promotion opportunities that would be provided by NHC.

Support Industries

1343. No specific barriers or needs for enhancement were identified for industries supplying inputs and services to horticulture, except those already identified including transport.

1344. Similarly no specific unmet needs were identified in relation to florists' ancilliary products.

1345. However support industries will benefit from the improved opportunities to display and merchandise, where relevant, their products at NHC both to producers and to the general public.

1346. The wholesale flower market will be particularly relevant in this context to suppliers of florists' auxilliary products.

1347. In relation to transport, the industry suffers from the inability to consolidate container loads of cut flowers for export and to a lesser extent for interstate markets. NHC can potentially make a significant contribution to alleviating this deficiency. This has already been discussed.

XIV KNOWLEDGE RELATED FACTORS

1401. Very wide concern was evident across the industry over problems of both availability and access to information. There was also at the Research workshop concern at the lack of effective mechanisms for facilitating the adoption of information available and offered.

1402. There was equally a high level of dissatisfaction with the perceived role and capabilities of DARA Research Institutes. This is well illustrated by the dychotomy between:

(a) The research managers view of their roles "to be futuristic, to anticipate future needs, to be world leaders in new technology to give the industry an international sustainable competitive advantage with the emphasis on export potential";

and

(b) The industry which sees itself as having a huge number of small problems which need prompt and effective solution and does not see comparable benefit from expenditure on longer term strategic or mission oriented research.

1403. Both role expectations are valid. What appears to be lacking is any effective communication and management interface that is credible to both the information provider (eg research worker) and the person who may need the information but may not always know what information he does need. It is clear that those industry sectors (such as berry fruits) which are well structured and are able to articulate their needs have had a much happier experience in dealing with DARA Research Institutes than the less well structured sectors of horticulture.

1404. A further barrier indicated is the geographical fragmentation of DARA research resources which is in turn exacerbated by the regional structure of DARA with for example Burnley and Knoxfield being administered by different regions.

1405. Experience in the development of the Food Research Institute ("FRI") is very relevant. The processed food industry has many similarities to horticulture: it is complex and has many small operators. FRI has clearly seen the need for

(a) change in culture and organisation;

(b) a small commercial interface group which can work easily either with the industry or with FRI and other scientific and technical staff.

1406. The major barriers to more effective use of knowledge by the horticulture industry is the lack of an effective communications and management interface between the knowledge provider and the knowledge user. This lack also points to the need for cultural and organisational change in the government knowledge providers eg the Research Institutes.

1407. We next discuss specific components of these barriers.

Information Access

1408. There is a huge amount of information available on plants, pests diseases and nutrition. At the same time in Victoria alone $5.5 million per annum is spent by DARA in producing more scientific and biotechnical information and understanding. To make use of this information requires several levels of understanding:

(a) what information is needed;

(b) where might that information be available;

(c) how should the information be applied.

1409. This in most but clearly not all cases requires a skilled intermediary. Yet DARA currently only spends $2.8 million on Extension and $0.4 million on Diagnostics (Exhibit 12.2).

1410. A key success factor for all sectors of horticulture is the ability to get prompt and effective help on all of the three aspects of information use listed above. Facilitating this whether or not through access to skilled intermediaries and through access to local and Australian databases is clearly an area on which any new industry facilities might concentrate. The tulip grower who sends his plant samples to Holland effectively satisfies his need in terms of three criteria: he knows where the information and experience lies, he gets prompt service and he gets advice based on experience on how to solve his problem. As indicated in Paragraph 1304, page 101, Holland has no less than four research institutes focussed on disparate aspects of flower production and post harvest management.

1411. Other examples of problem areas of information access include:

(a) the highest priority in the recent Nursery Industry Association review of research needs as "development of a database detailing R&D projects underway and completed, as well as possible funding sources";

(b) the wide industry concern in our workshops on the availability of up-to-date market data: this is paralleled by the experience of ATA Services Limited in their work on the earlier industry analysis (Paragraphs 405-408, Chapter IV) which was seriously restricted by the lack of published, reliable and up-to-date sales and production data.

Training and Education

1412. Our findings indicate a high level of concern about education at all levels: apprenticeships, short specialist courses, tertiary diplomas and degrees.

1413. Basic horticultural education and training is needed to improve skills throughout the production and marketing chain. Porter's analysis quoted earlier (paragraph 1316 page 103) focusses attention on availability of specialist skills as essential to competitive advantage. The education system must be freed up for flexible delivery of specific training programs for the different industry sectors. To allow growth in the industry, improvement in all three levels of basic apprenticeship, technical and further education and diploma and undergraduate courses are required. The area of greatest need at present appears to be:

(a) to provide middle level management who report to owners or principals with the ability to supervise staff with only basic skills;

(b) in business planning and management.

1414. We support the findings of the Nursery Industry Association (Appendix F):

> "The provision of adequate training in ornamental horticulture is essential for the future development of the industry in Australia. Personnel should receive a training that furnishes them with an analytical and investigative approach to horticultural problems such that they are well equipped to solve problems as they arise.
>
> "Training courses need to be flexible and responsive to changing industry conditions.
>
> "The ultimate consumers of the products of training courses are employers. For any credible course structure to be developed and extended, it is important to ensure changes are made in close consultation with the horticultural community. It is only by this means that the problems identified by industry in existing educational structures will be addressed. Involvement of practitioners in the field will ensure more meaningful content, more effective delivery and more cost efficient strategies.
>
> "The nursery industry is an important production sector in the Australian economy. Its potential to develop further is dependent on the manner in which its special training needs are met."

1415. Particular areas of need identified in our workshops included:

(a) access to facilities for practical training at the apprenticeship and supervision level;

(b) training of owners and managers in business planning and marketing as opposed to technical production issues;

(c) specialist short courses on both technical and market related issues.

Tertiary Education

1416. Agricultural and horticultural education and training has had a long history in Australia. The Victorian College of Agriculture and Horticulture ("VCAH") Dookie Campus at Dookie near Shepparton in Northern Victoria was established in 1886. This campus, along with other VCAH Campuses, Universities and various TAFE institutes throughout the State has served the industry with graduates, diplomates, certificate holders and apprentices, but the industry still perceives deficiencies in the quality of services. While relocation of the VCAH Burnley Campus to NHC might at considerable expense bring education physically closer to some growers, the change needed is cultural and attitudinal rather than geographical.

1417. There are many problems in developing specific course and training programs for the various sections of horticulture. Many sectors are not sufficiently large to warrant detailed courses of their own. The courses in the past have been based on general disciplines with specific direction gained through various practical work related programs. This "hands on" approach is considered essential by industry.

1418. VCAH management has drawn attention to the possibility of offering a Master's degree program; the NHC site in possible conjunction with research and industry organisations is worthy of consideration for aspects of this programme. However, the the number of post-graduate candidates is likely to be small. VCAH current estimates are for between six and fifteen equivalent full-time students.

1419. It is essential that a link between the campus, industry and a research organisation be established for the successful operation of a Masters program. The Wantirna site should provide this opportunity.

Management Education Needs

1420. Education and training in business management tailored to the agricultural and horticultural sectors in particular needs much more attention. The complex business environment which has evolved today requires much more formal training at the supervisor and management level within the industry. Financial planning, industrial relations, Government regulations and people management are all seen by the industry as important areas for sustained growth to take place in the various sectors of the horticultural industry.

1421. Skills in marketing, as a key business function, are considered to be under developed in the horticultural industry. Much more attention is required with this discipline so that the industry can compete more successfully, not only on the export market, but domestically as well.

1422. The perishability of fresh horticulture produce adds another dimension to traditional marketing skills training. This is a fact recognised by successful enterprises in the industry, but not always in marketing schools. The fact that many marketing schools are not specifically oriented towards horticulture is understandable as the potential student numbers interested in horticultural careers are not large. The industry has a responsibility in the development of horticultural marketers and cannot continually cite lack of marketing as a problem in the industry.

Future NHC Options

1423. The Victorian College of Agriculture and Horticulture ("VCAH") is seen to well satisfy needs for production expertise in horticulture. While the Burnley facilities might well benefit from being relocated adjacent to NHC, the cost may not be justified by the additional benefits.

1424. Specific training opportunities which an NHC facility at Wantirna might address will include:

(a) working with TAFE Colleges, particularly Outer Eastern College of TAFE nearby at Wantirna, in providing opportunities for practical experience by directly involving them in NHC Home For Horticulture activities including:

(i) garden development and maintenance;

(ii) management of trials of new plant species;

(b) managing and providing an outreach programme of short courses on market, business planning and technical production issues for the cut flower and ornamentals nursery industry.

1425. There have been a number of recent and successful examples of such courses including:

(a) the Marketing Skills Programme For the Horticultural Industry developed by the South Australian Institute of Technology;

(b) a recent and very well attended course for irrigated land fruit growers at Mildura conducted by Austrade.

1426. Industry continuing education could be offered at NHC, but it is difficult to justify given the fine and expensive facilities at nearby TAFE colleges. At present no provider is adequately meeting the continuing education needs of our industry. This is likely to change once the Horticultural Training Council becomes fully operational.

Diagnostic and Testing Services

1427. Good diagnostic services are required for quality production to improve productivity, to prevent disasters and to assist in defining research requirements.

1428. Inorganic analyses of plant tissue and soils are available through State Chemistry Laboratories and Richland Laboratories in Victoria as well as from other laboratories interstate and increasingly sought from overseas (eg Holland) due to perceived lower costs, better interpretation and advice and quick turnaround time (72 hours if necessary).

1429. Industry workshops identified inadequacy of diagnostic services as one of the major barriers to improving performance in horticulture. The analysis of DARA programmes shows the small proportion of resources devoted to diagnostics and research managers indicate that this is not normally a priority area for funding by commodity research funds. The need for improvement is greatest in biological testing although the industry indicated a need for a shorter response time in soil chemical testing.

1430. Organic analysis, in-vivo virus testing, isoyzmes, hybridisation, and ELISA testing all require a high level of scientific expertise. Burnley PRI provides some of these services. However the present Research Institute culture tends to preclude allocation of increased resources to diagnostic and problem solving as opposed to mission oriented research.

1431. There is however a clearly stated industry need for more detailed, rapid-response diagnostic services as the potential losses from pests and diseases, particularly fungal and viral diseases, in horticulture can be devastating. The need is further demonstrated by the significant quantity of test material that is being sent overseas for analysis. Sending samples overseas should and will continue where it is not possible or economic to have access to databases and experience in Australia, as with bulb growers who use Dutch facilities.

Research and Extension

1432. The widely held industry view is that the activities of people doing research work in DARA institutes are remote from and often irrelevant to the industry's needs. The culture of the Institutes is seen to be more oriented to the production of new knowledge, as measured by peer review, rather than to the need for it and its effective utilisation as seen by industry users.

1433. Research Managers on the other hand point to the need for greater funding from industry sources and for greater participation by industry in determining and reviewing research programme needs and objectives. There are clearly serious cultural and communication gaps between research managers and growers in some but not all industry sectors.

1434. In approaching possible solutions, it is necessary to separately identify the various stages of technology creation and transfer as they apply to this industry (**Exhibit 14.1**).

1435. The industry's needs focus starts with the need for better resources and access to Diagnostics, Extension and Industry Implementation facilities but recognises that this must be closely supported by Demonstration, Product/Practice Development and Applied Research which is seen as much as being misdirected as inadequate at present. The industry is concerned about both the lack of resources in these areas and equally about their fragmentation. It strongly supports the concept of one Horticulture Research Institute in the metropolitan area and sees NHC as an acceptable and indeed desireable site for such a facility.

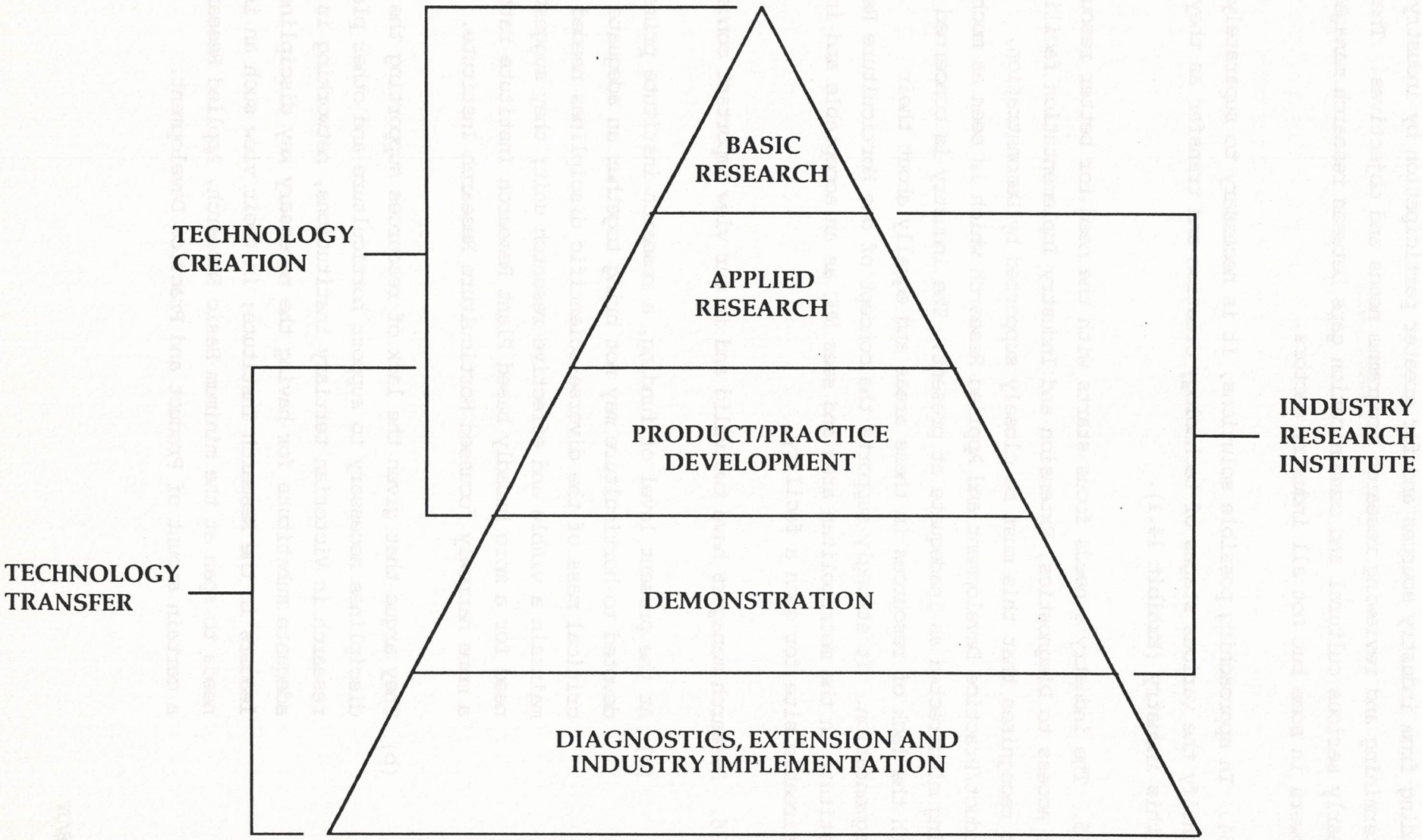
1436. Research managers have two valid and in our view important concerns:

(a) At the present level of funding, a research institute primarily devoted to horticulture may not bring together an adequate critical mass of the diverse scientific disciplines needed to maintain a viable and effective research unit; they suggest the need for a more broadly based Plant Research Institute rather than a more narrowly focussed Horticulture Research Institute.

(b) They argue that given the lack of resources supporting the key disciplines necessary to support horticulture and other plant research in Victorian tertiary institutions, networking is not an adequate substitute for having the necessary key discipline leaders in the Research Institute; in their view such an institute needs to span at the minimum Basic Research, Applied Research and a certain amount of Product and Practice Development.

Elements of Technology Creation and Transfer

Exhibit 14.1



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1437. In our view, more detailed investigation is required before accepting uncritically either of these contentions.

1438. A further issue to consider is the lack of horticulture facilities in Victorian universities. Porter (loc cit) makes the point that research in a government laboratory may produce good technology, but the training and diffusion effects are less likely to take place from a government laboratory than from a University.

1439. This raises the question whether some resources presently committed to DARA research might better be transferred to tertiary institutions or whether like CSIRO, DARA facilities might be better established on or close to university or VCAH campuses.

1440. Our analysis suggests that a number of possible options need to be considered if NHC proceeds:

(a) a Horticultural Research Institute at NHC, focussing on applied and problem solving research and offering very good diagnostic capabilities, drawing on some of its own basic discipline resources but also networking to use others in the State;

(b) a Plant Research Institute, as envisaged by DARA research managers, but with a commercial interface group supported by diagnostics and extension activities on the NHC site;

(c) a Plant Research Institute at some other location primarily concentrating on basic and applied research programmes, including some product development, funded to a greater extent than now by industry and with much greater industry participation in programme selection, objectives and review, with a satellite activity at Wantirna which is concerned with the provision of product and practice development, diagnostics, information and extension services fully industry funded and on a fee for service basis.

1441. Our conclusions are that the fragmentation involved in the status quo is unacceptable and will not adequately support the long term development of the industry.

1442. In terms of research programmes the industry sees a need for increased resource allocation to:

(a) disease related databases;

(b) post harvest research, in all its facets from packaging to genetic modification to produce varieties with better storage and handling attributes;

(c) extension and implementation of knowledge, as opposed to generation of new knowledge;

(d) market and economic research and analysis; this needs to be closely associated with the information, extension and other research facilities rather than located in a city head office.

Advanced Biotechnology Research

1443. There is an appreciation amongst the leaders in the Horticultural Industry that advanced biotechnology research is important and internationally Australia has a high reputation for its molecular biology research output; however because of its long term nature it is appropriate for Government funding. The appreciation appears to be based on the significance that major horticultural countries eg Holland place on biotechnology as an essential component in remaining internationally competitive.

1444. Many of the initial research products of biotechnology and their commercial development will be in horticultural crops. The major areas of research are the genetic improvement of horticultural species and the direct genetic modification of micro-organisms for the biological control of plant pests and diseases. Overseas biotechnology research has been successful in the development of potato varieties resistant to viruses, the modification of flower colour, insect resistance in a range of horticultural crops and herbicide resistance in crops.

1445. There has been a large worldwide private sector investment in biotechnology research. The motives for such investment have been varied. However, a major issue has been the opportunities that biotechnology presents for the commercial protection (via PVR patenting etc) of the resultant product.

1446. In Australia there has been limited private sector investment in plant biotechnology with a few notable exceptions. In Victoria, Calgene Pacific have undertaken considerable investment in plant biotechnology largely focussed at the horticultural industry.

1447. There are a number of strong publicly funded biotechnology research groups based in Victoria, including The Plant Cell Biology Research Centre, Melbourne University, The Horticultural Research Institute, Knoxfield and the Plant Research Institute, Burnley.

1448. In a recent review of research in the Department of Agriculture and Rural Affairs ("DARA"), biotechnology was identified as a priority area and recommendations included centralising the current research efforts to result in a well resourced world class research group.

1449. Priority research areas which have been identified by industry and which have the potential for significant improvement using biotechnology research include post harvest storage and handling characteristics of horticultural crops and the development of exclusive commercial PVR protected varieties with consumer attractive traits eg colour and flavour.

1450. We conclude that there is a need for public sector resource investment in advanced biotechnology research but that it should be focussed in areas that have the potential to improve Australia's international competitive advantage which were identified earlier as:

(a) new PVR protected varieties based on Australia's unique flora;

(b) improvement to the production and post harvest quality of flower, fruit and vegetables directed to out of season Northern Hemisphere markets;

(c) improved diagnostic and disinfestation practices to support (a) and (b) above.

1451. The location of such a facility (eg at NHC) is not as critical as for an applied research facility.

New Variety Development, Identification and Certification

1452. Varietal improvement is an ongoing task and a joint government and private responsibility. General varietal R&D, biotechnological research and large scale breeding programs usually fall to government as payback periods are generally long and not assured. Plant variety rights legislation ("PVR") has the potential to increase the private sector role beyond the bulking up phase back to the development phase. Care must be taken to ensure that duplication by government and private organisations does not lead to poor allocation of scarce resources within horticulture.

1453. Access to the best plant varieties is identified as one of the principal barriers. For example, berry fruit growers require varieties which can extend their harvest season.

1454. Access to new varieties or improvement programs for present varieties can achieve benefits in productivity, disease resistance, storage life, flavour, texture, and eye appeal. The high initial cost of breeding for better product attributes has generally been shown to have a good payback in terms of reducing operating costs and/or increasing revenue, particularly when compared with conventional control or environment modification.

1455. PVR legislation is seen as most important to the future of the industry. It is generally accepted that without patent protection there will be little incentive for the private sector to invest the necessary funds in plant improvement schemes or imports of promising material. However, evaluation under local conditions will be critical to the success of such improvement programs.

1456. Practical issues with development of new varieties have arisen in relation to production, post harvest and marketing. Many growers argue that trialling on farm is most important. Transportation characteristics and consumer acceptance of new varieties are issues not always fully canvassed early in the selection process. The industry recognised the value of the various "clean schemes" in maintaining productivity in the various sectors.

1457. PVR legislation is seen as important to the future of the industry. However, as indicated, evaluation under local conditions is critical to the success of plant improvement programs.

1458. Equally important under PVR is the need for independent identification and certification of existing and new plant varieties. Such independent documentation becomes the basis for establishment of the criteria which will determine breeders' intellectual property rights and for supporting argument over infringement issues.

1459. New Zealand has an independent and national facility for variety identification and certification. In Australia the National Herbarium has this responsibility for Australian native plants. There is however no national facility or reference point for other varieties.

1460. The industry sees this as an important potential national role for the NHC.

XV REGULATORY ISSUES

1501. Regulatory issues are discussed under three headings:

(a) quarantine;

(b) quality assurance/certification;

(c) associated chemical and biotechnological testing.

Quarantine

1502. Whilst Australia is free of many potentially destructive pests and diseases, it does have a unique problem of its own. Due to its isolation, pests and diseases that do occur are relatively unknown to other countries. This creates problems in itself since the virulence and pathological significance of our pests and disease are always under surveillance by overseas countries. Considerable resources have been devoted to quarantine research and development of commodity treatment in the past. This will need to continue in the future with a priority being given to important export sectors of the industry such as citrus, table grapes, pome fruit, stone fruit cut flowers and nursery products.

1503. Quarantine regulations apply in three situations:

(a) imports of plant material;

(b) exports of plant materials and products;

(c) interstate movements.

1504. In each situation, several types of issues need to be considered:

(a) quarantine and trade barriers/opportunities;

(b) the logistics of quarantine inspection and certification;

(c) research and other technical support to the technology needed to meet quarantine requirements eg alternatives to pesticides and fumigation.

Imports

1505. Australia's import quarantine requirements are tough. Possibly some of the most stringent in the world. This has created problems with the cutflower sector in particular. However, recent changes have enabled the bulb cutflower sector to import much more propagation material.

1506. The recent easing of import quarantine restrictions for bulbs has been very important in helping growers obtain access to specific varieties and strains which have established North hemisphere markets but which have not been available in the past in Australia. This has necessitated procedural changes to quarantine management which could impact on the future direction of quarantine in this country.

1507. Some sectors still see the processes involved as very slow. There appears to be a case for ongoing review of these to find means of speeding up approvals supported by research effort to reduce risks of importing disease and/or pests.

1508. Quarantine authorities at the same time need to be alert to the risk that import quarantine constraints are not used as trade barriers.

Exports

1509. All sectors of the industry see some countries still using quarantine regulation as non-tariff trade barriers. As a Commonwealth responsibility, such barriers need to be noted but do not strictly fall within the scope of this study.

1510. Fruit and vegetable producers and the AHC appeared to be generally not unhappy with the present export quarantine arrangements based centrally in the city and at airports and ports. Flower growers however expressed concern at the number of different locations that had to be visited to obtain the necessary approvals and documentation for even small sample export shipments. They saw these logistic problems as time consuming and disincentives to export activity.

1511. At the same time, quarantine officials point to the need to maintain a final point of approval at the port or airport of departure.

1512. We will later indicate a need for a central consolidation point for cut flower exports associated with a major wholesale market. If this eventuates and allows containerisation, a strong case can be made for access to quarantine inspection and documentation at the same site.

1513. Interstate quarantine still needs some attention. Many improvements have been made in recent years although inherent differences do exist between pest and disease regimes in various states which will prevent complete integration. Coordination in management, however, is still perceived as a problem.

1514. Whilst the responsibility for quarantine management remains a Commonwealth Government function, the work is undertaken in most instances by the states. This includes the R&D aspects. The program is obviously large due to the number of sectors in the industry and diversity of locations. However, quarantine needs more attention and management more closely related to sectoral needs.

Quality Assurance/Certification

1515. Product quality is still a major problem for most sectors. Compulsory inspection has not to date rectified this.

1516. Traditionally Government has provided both a quality and quarantine certificate for the horticulture industry. This has led growers to rely too much on such government services for quality control. This is changing as Government is encouraging the industry to become responsible for its own quality assurance. The Horticultural Policy Council has recently commissioned McColl Carey and Associates to carry out a review of quality management and inspection issues. We understand that this review will recommend deregulation ie giving quality responsibility back to the growers.

1517. Quality assurance starts from the very beginning of the production cycle through to the consumer. The concept of a Government inspector certifying quality at some point in the chain is archaic. Quality is a responsibility of ownership of the product throughout the cycle. The key issue is management commitment to build in quality at every stage in the production and distribution process.

1518. DARA has commenced a number of Quality Assurance programs in various sectors of the industry including table grapes and pome fruits. They are now in a position to extend this service and develop new quality assurance programs in other sectors. These will have potentially significant impacts on emerging sectors such as cutflower and berry fruit as well as the horticultural industry generally.

1519. Quality assurance is of necessity a matter for the owner of the product. Because horticultural produce is often in the care and "responsibility" of parts of the market chain which do not have ownership, such responsibility can be degraded.

1520. Quality assurance is properly a private sector responsibility. The research, promotion, demonstration, cost benefit analysis, training and development aspects of quality assurance are a joint responsibility of government and the private sector.

Associated Chemical & Biological Testing

1521. The importance of pre and post harvest chemical residues has emerged in recent years as a threat to the industry. Whilst many sectors of the industry see themselves unable to satisfactorily defend the use of chemicals, the problem is not only one of public relations. The need is for continuing evaluation of pre and post harvest treatments in the best interest of the consumer at the minimum cost to the producer.

1522. The development of new commodity treatments to replace fumigation techniques which are under threat is vital. Cold treatment for citrus fruit to Japan or foreign site inspection programmes for pome fruit to the USA are good examples. These new commodity treatments are likely to be more expensive unless economies of scale can be achieved within the industry. Much more co-ordination between sectors of the industry will be required.

1523. The nursery products industry has particular need of technical and research support to allow the export of bare rooted plants and to improve their ability to survive both air and sea transport.

XVI MARKETING AND DISTRIBUTION

1601. Major constraints to the rapid development of the Australian horticultural industry have been limited marketing skills and inefficient distribution in both domestic and export markets.

1602. The Australian industry has made significant advances over the past 20 years, but not as significant as have other sectors of the Australian economy, nor in comparison to other world horticultural industries, such as New Zealand, Chile and Spain or the established industries of the USA, South Africa and Holland.

1603. The emergence of a commonality between industry and individual business objectives has been a key element in the success of these countries. They start from a market driven approach to profitability by producing a quality product which is able to meet consumer needs right throughout its transport and marketplace distribution. The key is the integration of each step from variety selection, growing techniques, post harvest handling, appropriate transport, efficient market place, efficient distribution to consumer satisfaction.

1604. However, few sectors, or businesses, in Australia and Victoria can continually enact the process. Examples of success include the Victorian table grape and pear sectors, the WA vegetable industry, the Tasmania onion sector and the Tasmanian essential-oils sector. The Australian wine sector has achieved major success in Australia and overseas, but still has some way to go to fulfil its potential. The business direction of the Chilean horticultural industry and New Zealand Kiwi fruit and apple sectors are prime examples of success stories, just as the Dutch cutflower sector, the USA industry generally and the re-emerging industries in Spain, Turkey and South Africa.

Market Data

1605. The first step in an integrated business approach to the sector, or a firm's development, is reliable market information. Without comprehensive data in a form that can be effectively analysed and communicated, the decision making process can become very hazardous.

1606. The horticultural industry and the majority of Victorian sectors are still short of good market data. Despite the years of Government and industry services, the lack of up to date market research, market analysis, price analysis, distribution analysis and even post harvest cost/benefit studies for the Australian market, let alone the export market, is most unsatisfactory. This lack of data has seriously inhibited the economic analysis in this report.

1607. This need is recognised by many people in the industry, but still no consolidated approach is made. The concept of a "Centre of Excellence" to address some of the missing links in the industry is critical to its future development. NHC is a potential location for such a centre.

1608. In many instances considerable market data does exist within the horticultural industry and associated industries. What appears to be missing is effective analysis and application of this material. Whilst questions are always raised about the accuracy of price information, product volumes, production areas, etc, the ongoing analysis for each sector is a problem. Many agencies in Government and even industry organisations are undertaking work, mostly with varying objectives. Unfortunately, a lot of this information is not appropriate for business planning. A further complication is that significant sectors of the market, including to a large extent trading in flowers, involve cash transactions, details of which cannot usually be captured even by wholesale market managers.

1609. The lack of adequate consumer market research is probably the most significant research deficiency in the industry. There have been several important studies undertaken in the pome fruit and stone fruit sectors, as well as in the citrus, nursery and cutflower sectors. However, the majority of producers and service industry people are still primarily production oriented despite the need for greater emphasis on the marketplace. This situation may be exacerbated by the extended market-chain in the industry, but it has been addressed by many associated industries and industrial marketers with similarly complex distribution chains.

1610. Similarly consumer research, in particular tasting panels and focus groups, have not been used extensively in the horticultural industry to help determine consumer needs and quality attributes. Such research is more difficult with perennial crops as opposed to annual crops such as many nursery products, cutflowers and vegetables. Whilst this form of research is expensive and not always conclusive, there is scope for greater use of consumer groups through trade shows, in store demonstrations and public exhibitions as a useful measure generally not pursued by the industry. NHC could provide a focus for such activities. An important immediate need for the cut flower industry is to establish the market data to support a major campaign to increase Australian domestic cut flower consumption which is very low by world standards.

1611. Significant industry resources have been expended in an endeavour to provide export market data. However inadequate data still appear to be a significant problem to the industry and its various sectors. As a result, the push for export development over the past 10 years has not been underpinned by solid market data. An attitude of export at-all-cost seems to have prevailed. Often growers have been criticised for their attitude towards exports. Growers have the biggest capital investments in the industry with a lot of risk and need to be convinced of the opportunities with "cold hard" facts. The lack of export success in many sectors is not only grower related. Hard data is also an issue.

Marketing Philosophy

1612. The limited domestic market and the distance of the large Northern hemisphere markets have restricted the potential of many sectors in the horticultural industry. Equally, the inconsistencies arising from limited market opportunities have created a short term approach to the business. This is understandable in a capital intensive industry such as horticulture.

1613. To build a market takes many years. The market understanding, product development and logistic expertise do not come easily. They involve substantial investment of time and money for an individual firm. The burden can be lessened by a consolidated approach; however, the commercial competitiveness of individual firms must be preserved. "Single desk" selling, such as the New Zealand apple sector, is not the only solution. An industry culture and creative environment within a sector can achieve similar objectives. This has been evident in the Victorian table grapes sector.

1614. An overall marketing philosophy, in addition to specific marketing skills, is important to the future growth and success of the horticultural industry. Short term gains must not be at the expense of medium to long term objectives. It is essential to maximise returns in the short term, but equally important to supply less profitable markets with smaller volumes, if those markets are important to the future directions of the sector. The need is for more and better business planning for the future. If little business planning is undertaken, then the industry and its various sectors are likely to be increasingly restricted.

1615. Unfortunately, the various sectors of the industry and even people involved in each of these sectors are spread throughout Victoria and Australia. The tyranny of distance is real. This makes the establishment of common objectives much more difficult. A core management approach underpinning the fragmented industry organisations and government agencies could assist sustained development in the sector. However, the creative environment required for growth throughout the sector is the key element.

1616. A concerted effort is required to create an industry and/or sector culture. The momentum must be evident within the sector. This will require a dedicated group of people in the sector's organisation to establish the marketing philosophy, subsequent planning and its execution.

1617. The physical facilities of NHC will not solve the industry's marketing problems. However, if as a result of NHC, fragmentation is reduced and cohesiveness at the sectoral level is improved, the potential benefit of having NHC will be great.

Quality

1618. The much used definition of quality "being in the eye of the beholder" is unfortunately true for the horticultural industry as well. In the case of fruits and vegetables, however, internal quality in addition to external quality is important. In export markets such as Japan, the internal eating quality of a piece of fruit is equally as important as the lack of surface skin blemishes.

1619. The diversity of markets and complexity of background nationalities in Australia has created problems in determining and raising quality expectation. The quality requirements of supermarkets as opposed to independent retailers are different even though this difference may be only marginal.

1620. The difference in quality aspects between the local market and the export market is significant, especially in "shelf-life" required with extended distribution. For example, whilst the consumer end result may be the same, the level of maturity as a measure of harvest quality is very different. Managing this is a very difficult skill necessary for successful export management. More generally, almost all case histories of export success show the importance of understanding the quality needs and standards of the buyer and consumer and a total commitment to achieving these.

1621. Our discussions during the course of this study with buyers operating in the Los Angeles Flower Market showed inadequate quality and the associated issue of inadequate packaging as key barriers to greater penetration of this market.

1622. Many sectors have established quantitative and detailed qualitative guidelines for quality. The understanding, practicality and management of these criteria is the real issue. The guidelines are generally taken from international standards and adapted to Australian conditions. However, the necessary training and supervision have not been followed up to the same degree. Quality Assurance and TQC programs are only just becoming a discipline in the business. As already discussed, the reliance of the Australian industry on a Government provided regulatory approach has been a disaster in the past.

1623. Whilst Quality Assurance and TQC programs are now seen as the main direction for the supervision of quality in the various sectors of the industry, the need for a centralised management of Quality Assurance programs is evident. Whether this is to be a Government or industry responsibility, it needs prompt attention.

Post Harvest Handling

1624. Post harvest handling is continually cited as a problem to the development of the industry. The preservation of quality, both surface and internal quality, through storage and distribution, is critical to the business. Many variables exist which can blemish or spoil the product and significantly reduce its price.

1625. Industry groups expressed concern at the apparent fall in resources available for post harvest R&D in Victoria. It was also stated that DARA no longer made extension officers available to advise and assist in educating industry people in good handling and packaging practices.

1626. Over the years, emphasis has been placed on temperature management, chemical treatments, packaging and material handling. This is now being supplemented by genetic manipulation and selection of species with better storage properties, eg strawberries. These interrelated aspects are ever changing and require continuing R&D inputs. Equally, the integration of the post harvest handling functions into sales and marketing programs is fundamental to success in horticulture.