



Know-how for Horticulture™

Fruit and vegetable market monitor

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**Fruit and Vegetable
Market Monitor
Project AH 02010**

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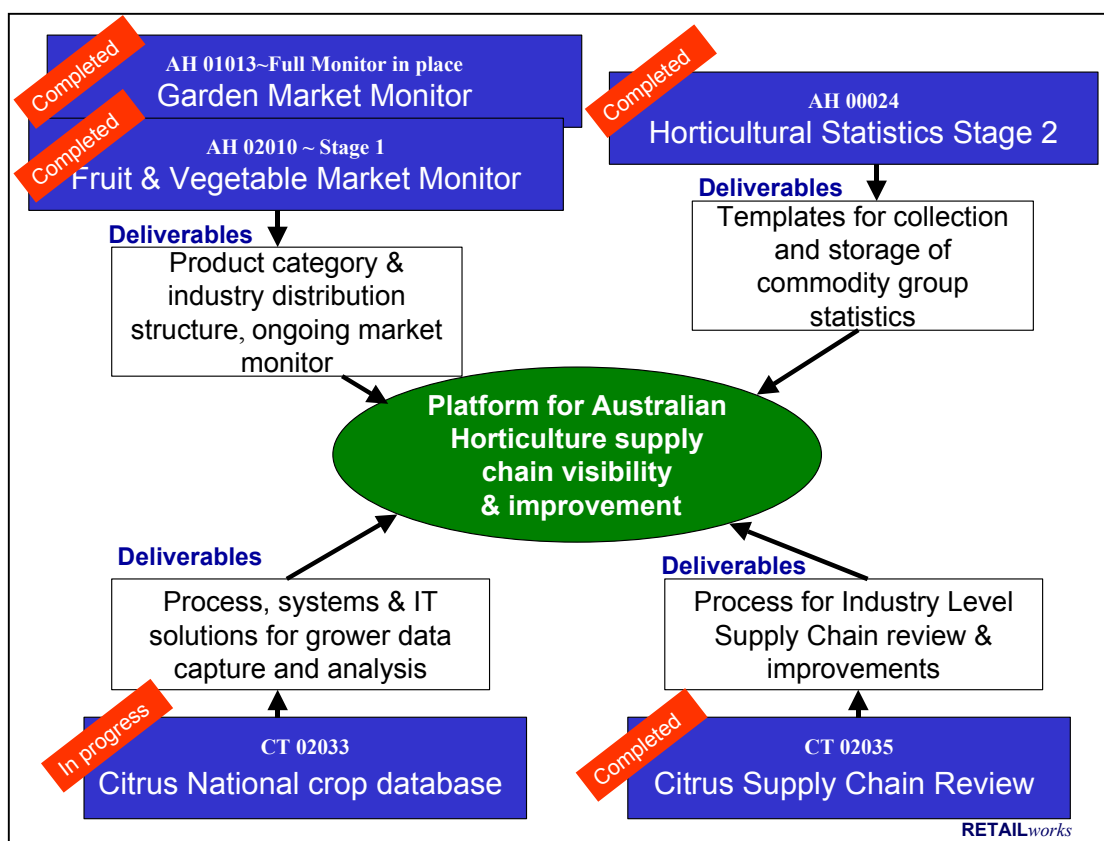
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1.0 Introduction

This project is about creating a tool to monitor the market growth and market share trends for Fruit and Vegetables across both categories of product and distribution channels. This project uses the findings of project AH 00026, which profiled the current statistical collection methods and uses, across all horticultural commodity groups.

This project draws on the learnings of the Garden Market Monitor Project NY 01013, which provides a market monitor the Australian Garden Industry. It also serves to identify the scope to align complimentary R & D projects to meet the goal of a more informed supply chain for Australian Horticulture. This is reflected in Figure 1.

Figure 1



This project has created the tools for stage 1 of the Fruit and Vegetable market monitor.

2.0 Current Situation and Drivers of Market Volatility

The dynamics of the Fruit and Vegetable markets are in a state of high change. These changes are driven a number of variables that stem from both supply and demand influences. These influences include:

1. Whilst per capita consumption of Fruit & Vegetables has grown steadily in the past two decades from 191kg in 1976-9 to 273 kg 1996-9. Over the past 5 years however there has not been any clear indication that this trend is continuing, suggesting that the per capita consumption of fresh fruit and vegetables may have reached its natural limit. This indicates that an increase in the consumption of an

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individual fruit or vegetable is likely to be gained at the cost of sales of another fruit or vegetable. The extent of this transfer of sales between products is unknown.

2. Fresh salads have increased as a main meal dish and all indications are that "Salad Components" have taken share off "Soft Cooked Vegetables"¹. This change has been influenced by convenience quick preparation benefits of salads and was further compounded by the retailers moved away from major changes in summer and winter merchandising layouts in mid 1990's. This approach gave "Salad Components" year round shelf space and supported their further growth as an alternative to "Soft Cooked Vegetables".
3. More diverse uses for the wide range of fruit, particularly the inclusion of fruit into fresh salads. This more diverse use is reflected in changes on restaurant cuisine and recipes made available to mainstream in magazines and at point of sale. This is likely to have impacted the sales of vegetables, and as fruit sells at a higher unit price per kg than vegetables, it is also likely to have positively impacted the total market values. The extent of this impact is known.

4. Changing demographics and household structure plus increasing consumer time demands is leading consumers towards more "meal ready" product. This has led to a loss of share for products like potatoes against "easier to prepare" products like rice and pasta. This marketing of these competing alternatives has included direct comparisons with time preparation benefits. This has been led by aggressive advertising campaigns run by the rice growers. These campaigns they have included using potatoes as the "fall guy" and highlighted the additional preparation required when using potatoes.



Pasta has continued to lead the way in "ready to eat" meals with major processed food manufacturers taking the category into mainstream distribution. Pasta levers off strong convenience benefits and the long term Italian influence on the Australian culture. Additionally the visual form of shelf stable and fresh pasta has also evolved to include colour. It could be argued that the colour feature has moved some pasta into providing colour on the plate and potentially capturing vegetable sales. Even though these trends are backed with mainstream FMCG marketing their historical or forecasted

impact on fresh fruit and vegetables unquantified.

5. The increased quantity of food purchased and consumed outside of the home. In the past decade the number of meals that are prepared out of the home has increased. Research benchmarks² place this at 2 to 3 evening meals a week per average Australian household. Note that comparative figures in the US are 3-4 meals a week. This has drawn more volume through the food service distribution channels. These food service channels, which includes restaurants, cafes, fast food outlets and a large institutional segment, are growing at a faster rate than conventional supermarkets, which suggests more prepared food is being purchased.



¹ These product groups are from the product category structure outlined in section 4.0.

² Such benchmarks are drawn from pooled research. US benchmarks are 3-4 meals per week.

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These sales through food service present an opportunity for Fruit and Vegetables. Whether they will deliver cumulative total market growth is yet to be determined. At the least they represent an opportunity for fruit and vegetables to maintain their share of stomach.

6. Many years of successful R & D has delivered higher yields, new varieties of product, extended seasonal windows and improved capacities to handle product. This has flowed on to increase the overlap between crops and yet these overlaps are not tracked for their actual or projected future impact on market returns. As an example there are 49 different apple varieties on the local market. Many tree crops have moved into maturity and as examples this has delivered substantial increases in volumes of stonefruit and mangos. In some instances the range of new varieties has taken on an R & D momentum of its own without the market profile of the cumulative impact.



7. Processed snack foods has targeted the school lunchbox. Uncle Tobies and Kelloggs have invested heavily in marketing and have grown the value of what is now termed the "Nutritious Snacks Category" from virtually nothing 15 years ago to an annual retail value of \$360mill in 2003. All indications are that a proportion of the growth of this category has come from fresh fruit sales. This loss of market share and or the forecasted growth of these products and their impact on fruit and vegetable sales are unquantified.



8. Processed "extended shelf life" fruit and vegetable products have increased in recent years and these increases have potentially taken share off Fresh Fruit and Vegetables. These are defined as products that have maintained their fresh appeal but have been processed to deliver extended shelf life. They include range from the SPC-Ardmona fruit packs to new frozen vegetables that have included sauces and mixed stir-fry packs. These products have delivered convenience benefits and have increased steadily in the last 3-5 years. Fresh Salad packs that have now reached economies of scale, and quantities of herbs and spices are now available in ready to use jars. The common denominator in these products is that they have met the increasing demand for convenience. However, the impacts on the fresh Fruit and Vegetables alternatives and or the financial returns to producers are unquantified.



9. Despite ongoing export support programs, the proportion of total fruit and vegetable production that is exported, has remained in the region of 15% of total production. Therefore, while the export markets remain attractive, they also remain elusive and unlikely to be a short-term solution for the projected increases in production volume.



10. Fresh Fruit Juice has been supported by "FMCG marketing" and has increased steadily over the period. This is highly likely to have impacted the demand for fresh product that is sold for home juicing. Over a similar time frame there has also been a substantial quantity of home juicing appliances sold, and these machines must have created a demand for juicing fruit. The sum impact of these two developments is unknown.

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11. The domestic market consumer is regularly exposed to fluctuations in the value of product and in response to these fluctuations they “trade off” between like products. A leading example of this with apples and bananas, where incremental quantities of each will be purchased based on the relative price of the other fruit. While this propensity for consumers to trade off is known and accepted, the impact on Fruit and Vegetable market growth and on the returns in other crops is not quantified.
12. The growth of the domestic retail supermarket sector has led to concentrations of buying power and the evolution of shorter supply chains. This has brought pressure to the wholesale sector as retailers have “skipped” around this channel and an estimated 25-40% percent of what was wholesale sales have been lost to the direct dealing arrangements. The impact of these changes on the growth of categories and on the various distribution channels is unknown.
13. This Fruit and Vegetable Industry has a history of selling lower or smaller grade product in pre-packs. Some of these pre-packed products are positioned at substantially lower per kg prices than the whole loose alternative. There are instances where the sales of the pre-packs have increased to the point where they represent the majority of the volume. This is the case with oranges where the 3kg pre-pack now represent 58% of the volume sales in kilo’s but only 36% of the value in dollars. Potentially as the sales of orange pre-packs increase, as they have been in recent years, the value of the Orange category is reduced. The impact of these transfers is not quantified and yet there would appear to be a substantial impact on grower returns.

Previous attempts to capture Fruit and Vegetable statistics have involved Government agencies and have been challenged by the high number of producers and a tendency to provide corrupt data. Good data on some categories have been captured with this method, but they are in the minority. Other attempts to capture data and monitor markets by capturing samples of consumer data and projecting totals are highly vulnerable to forecasting on the basis of a set of conditions at a point in time. The conditions alter and the forecasts or models are inaccurate. There are also challenges with the timeliness and frequency of both of these methods. Especially when the tactical nature of decision making, in the Fruit and Vegetable Industry is considered, as a driver of information needs.

3.0 Commercial Rationale for a Market Monitor

The commercial rationale for a Market Monitor is based on the benefits that will be delivered from a better understanding of these changes and a more informed market. It is proposed that from this understanding flows the capacity to impact the variables and or better invest to the advantage of the Fruit & Vegetable Industry stakeholders. It is expected that the benefits will be reflected in:

- Higher quality Commodity Group and Enterprise Strategic Planning.
- The capacity to target and measure R & D investments and therefore a higher return on these investments.
- Bringing the full range of competitors into perspective, including other fresh products and processed foods. Plus an improved understanding of the impact of consumer switching between alternative products.
- Capacities to measure marketing effectiveness against in hard actual data and therefore better guide investments in these programs.
- Input into distribution strategy and ultimately the combination with crop forecasting models to improve the management of volumes supplied to the market.

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- More accurate data to calculate Gross and Farm Gate Values, and therefore potential to guide Federal Government Industry funding, in line with policy on percentages of these values.
- Increases in export activity due to an improved understanding of the volume and price impact of supply to the domestic market.
- The consolidation of other research expenditure and activity, in particular research expenditure on marketing effectiveness and the collection of industry statistics.

While these benefits will be new to many parts of the Fruit and Vegetable Industry, they are the norm in all other fast moving consumer goods categories.

4.0 Proposed Solution and Data Collection

This project proposes the development of a “Fruit and Vegetable Market Monitor” to map and track market growth and share across product categories and distribution channels. This is not a once off project, it will need to be repeated regularly to be of value. As the collection and processing of data is repeated the capacity to profile trends and provide meaningful forecast improves.

There are clear learning’s from how other categories of FMCGs (Fast Moving Consumer Goods) monitor and profile the market trends. In essence they capture actual trading data from Industry participants and analyse this data into the outcomes required. This service is provided for the FMCG sector by research organisations like AC Nielsen and Aztec. These organisations use retail scan data sales as their primary data. However, while retail scan data is a valuable profile of one large channel, it does not provide enough data to monitor the whole Fruit and Vegetable Market. Data from other sources is required.

This project recommends sourcing actual trading data from the major sectors of the Supply Chain Industry, as the basis for a Fruit and Vegetable Market Monitor. Other methods of researching and collating data based on manual questionnaires are viewed as ineffective.

It is proposed that data be collected from Industry participants based on a share and receive basis. That is, those who share data are given access to the analysed information outcomes in time frames that best suit their management needs. Headline summary data will be made available to the total industry.

The key industry participants that could provide trading data and the type of data that they could provide are as follows:

Industry Participants	Data
▪ Individual Producers	▪ Crop quality and forecast ▪ Wholesale Farm Gate income
▪ Producer groups and Industry Organisations	▪ Crop volumes and forecast ▪ Seasonal timing ▪ Wholesale market prices
▪ Food Processors	▪ Crop volume purchased ▪ Wholesale cost
▪ Packers and ripeners	▪ Crop volumes ▪ Crop quality
▪ Wholesalers, providores, exporters brokers (all selling agents)	▪ Wholesale price ▪ Wholesale volumes ▪ Wholesale inventory ▪ Distribution Channel share

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▪ Central Market Information services	▪ Wholesale volume ▪ Wholesale inventory
▪ Retailers	▪ Retail sales ▪ Retail shrinkage
▪ Levy Collection units	▪ Production volumes

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Figure 2

5.0 Product Category Structure

Fruit & Vegetable Product Category Structure			
Product Group		Category	
1	Cooked Hard Vegetables	101	Carrots
		102	Other CH Veg
		103	Parsnips
		104	Potatoes
		105	Pumkin/Hard Squash
		106	Soup Vegetables
		107	Swedes
		108	Taro
		109	Turnip
		110	Yams
2	Cooked Soft Vegetables	201	Artichoke
		202	Asparagus
		203	Beans
		204	Beetroot
		205	Broccoli
		206	Brussel Sprouts
		207	Cabbage
		208	Cauliflower
		209	Celeriac
		210	Choy
		211	Egg Plant
		212	Kohlrabi
		213	Leeks
		214	Mushrooms
		215	Other S C Veg
		216	Okra
		217	Peas
		218	Rubarb
219	Silverbeet		
220	Squash		
221	Sweet Corn		
222	Zucchini		
3	Seasonings	301	Chillies
		302	Garlic
		303	Ginger
		304	Onion
		305	Herbs
4	Salad Components	401	Avocado
		402	Capsicum
		403	Celery
		404	Cucumber
		405	Endive
		406	Gerkins
		407	Lettuce
		408	Lettuce Salad Mix
		409	Olives
		410	Radish
		411	Salads pre-packed
		412	Spinach
		413	Sprouts
		414	Tomatoes
		415	Whitloof
5	Fruit Snacks	501	Apples
		502	Bananas
		503	Citrus
		504	Dates
		505	Grapes
		506	Kiwifruit
		507	Mangoes
		508	Melons
		509	Nuts
		510	Other Fruit Snacks
511	Pears		
512	Pineapples		
513	Stonefruit		
514	Tropicals		
6	Desserts	601	Berries

A product category structure is a way of grouping the wide range of products available in the fruit and vegetable industry.

The proposed product structure is shown in the Figure 2. The full structure is included with this report as Appendix A.

It has required identifying the existing and projected data inputs and ensuring they can be used in the structure. Defining this structure has also required some sensibility checks with major players in the supply chain. This has included organisations dealing in the central market data, the major Horticultural R & D Organisations, plus the Supermarket and Food Service retail sectors.

The criteria for forming this product category structure is as follows:

1. Accommodate the wide range of data inputs including production based and consumer based data without compromising either.
2. Be easily understood by all potential users.
3. Present a profile of the market with minimal data processing.
4. Allow for the easy integration of as many existing data inputs as possible and provide a clear and unambiguous structure for data to be collated at lower levels.
5. If every user consideration cannot be accommodated in all levels of the structure then ensure that at least one level of the structure is workable to all users.
6. Capture the trade offs between products so the sum effect on the category and the overall market can be profiled.

This proposed product structure has 6 groups and a total of 67

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categories. Each category then extends out to product varieties, and then prepacked and or loose. The detail of these extensions is profiled in Appendix A.

6.0 Distribution Channel Structure

This has required the definition of the Distribution Channel structure that currently distributes or could evolve to distribute, Fruit and Vegetables. It needs need to capture all potential distribution paths from farm gate to consumer for the categories of product defined.

There are four paths to distribute product. In this structure they are referred to as "Channel Groups" and they are Export, Food Service, Retail and Processing. All indications are that the largest volume is distributed through Retail. Extending from these 4 channel groups are the 23 Distribution Channels. This is shown in Figure 3. Each Channel is then further divided into sub channels and this detail is included in Appendix A.

Figure 3

Fruit and Vegetable Distribution Channel Structure		
Channel Group		Channel
D 1	Export - Fresh	D101 Asia
		D102 Europe
		D103 North America
		D104 Pacific
D 2	Food Service -Fresh	D201 Airlines
		D202 Canteens & Sporting Venues
		D203 Education Institutes
		D204 Fast Food Restaurants
		D205 Function Centres & Social Clubs
		D206 Hotels & Motels
		D207 Institutional Care
		D208 Other Food service
		D209 Pubs, Bars, Casinos & Clubs
		D210 Restaurants, Cafes & Lunchbars
D 3	Retail - Fresh	D310 Fresh Markets
		D302 Independent Fruiterers
		D303 Supermarkets
D 4	Processing	D401 Canned
		D402 Dried
		D403 Frozen
		D404 Juiced
		D405 Other Processed
		D406 Shelled

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7.0 Data and Output Accuracy

Given the fragmented and volatile nature of the Fruit and Vegetable Industry there is a need to ensure data accuracy. This project proposes that data is reconciled between distribution channel and product category. This will require all data that is received to be reconciled with performance in category or distribution channel performance. It serves to reduce the risk of one data input corrupting data accuracy.

Figure 4

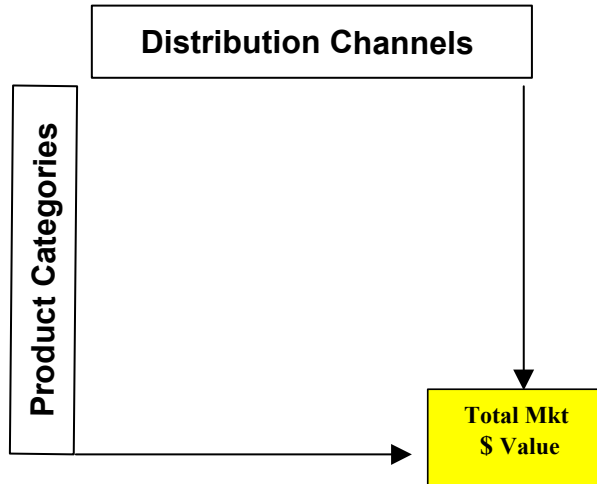
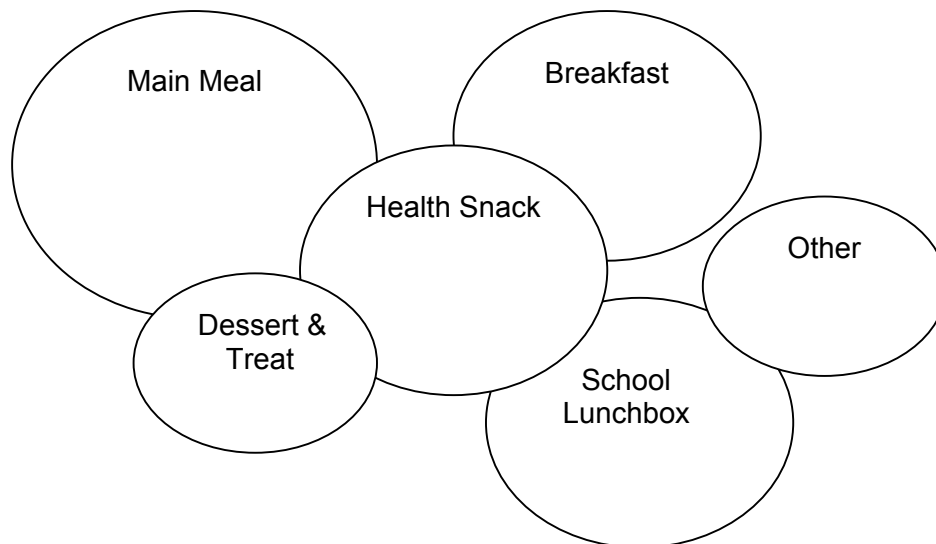


Figure 4 displays how the Distribution Channel structure is then combined with the Product Category Structure to create what is termed a Market Matrix. In all reporting the matrix is reconciled to the total market value. This approach has been adopted with the Garden Market Monitor.

8.0 Profile of Consumption Occasions.

This is about understanding the consumer occasions where fruit and vegetables are consumed. It provides a way to incorporate this type of research findings, which will typically be delivered from consumer research. Figure 5 profiles what are considered the primary consumer occasions where fruit and vegetable are consumed.

Figure 5



By being able to profile and potentially monitor what is being consumed at these occasions it can lead to a better understanding of the range of alternatives and the extent OF overlap and or incremental growth. This could guide more targeted R &D and Marketing programs and in general a more informed profile of the potential to increase the consumption of a product.

9.0 Report Parameters

The Product Category and Distribution Channel structures set the framework for data base construction and the research outcomes produced. They will easily profile the total value and growth of a category and allow comparisons to the total market. This structure will also profile distribution channel share and growth. Combinations and or

Timing is a key issue in framing reports and given the tactical nature of the Industry and the efficiency of technology, some sort of web based deliver seems best the alternative. The range reporting timeframes could go from daily to monthly, seasonal or annual reviews. If the lowest level of data is collected it can be added up to whatever time period is required.

Typical report content for a category of product defined a period is seen as including:

- Market Variables Product Group
 - Supply Volumes and values
 - Product Quality rating
 - Direct alternative product supply volume & values
- By Product Category
 - Volume and value of kg's sold
 - Growth on previous time period
 - Trend data (if available)
 - Distribution Channel share of category sales
 - Wholesale values
 - Farm gate values

10.0 Recommendations

This project is an alternative to other methods of collecting and creating statistics and the costs need to be balanced against the cost and accuracy of other methods.

To be effective this project needs to capture the whole Fruit and Vegetable Industry. The high level of movement between product categories and distribution channels dictates this requirement. If the respective Commodity Groups and or Industry Associations are left to find agreement and pool funds for this project it is unlikely to eventuate. In short it needs a seed funding start with a plan for user based funding to be explored in 2-3 years time.

This project suggested that there is scope for all the horticultural commodity groups to contribute to the funding of a Fruit and Vegetable Market Monitor.

The project recommendations are:

1. Commission the development and ongoing delivery of a Market Monitor for Fruit and Vegetables.
2. Identify and consolidate other research activity that is deemed superseded by an effective Market Monitor.

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Appendix A:

Distribution Channel and Product Category Structure

(See Excel file F & V Prod & Distribution Channel Structure v 2.0)