Know-how for Horticulture™

Second stage of information scoping study for Australian horticulture

Martin Kneebone
RETAILworks Pty Ltd

Project Number: AH02014

AH02014

This report is published by Horticulture Australia Ltd to pass on information concerning horticultural research and development undertaken for Australian Horticulture.

The research contained in this report was funded by Horticulture Australia Ltd with the financial support of all levy paying industries.

ISBN 0 7341 0602 5

Published and distributed by:
Horticultural Australia Ltd
Level 1
50 Carrington Street
Sydney NSW 2000
Telephone: (02) 8295 2300
Fax: (02) 8295 2399
E-Mail: horticulture@horticulture.com.au

Horticulture Australia

Horticultural Statistics Scoping Study Stage 2

Project HA 02014

RETAILworks
205/89 High St
Kew, Vic 3101

Ph 03 9853 8733
E-mail info@retailworks.com.au

February 2002

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1.0 Executive Summary

This project has revisited and confirmed the value of improved horticultural industry statistics. In the first stage of work on Horticultural Statistics, completed in November 01, the industry feedback summarised the current situation with horticultural industry statistics as:

- Ineffective in collecting data.
- Not accurate enough inspire confident use.
- Not timely enough to be used in commercial decision-making.

This second stage of this project has concluded there are benefits to be captured by improving the current methods for collection and distribution of statistics. The improvements can be enabled using more efficient information technology tools, which will flow onto to capture accurate data and allow more timely distribution. The commercial benefits will then flow from more informed decision-making.

The benefits are industry wide and centred on a creating a platform for increased visibility and a supply chain improvements, which will flow on allow value to be added. There are clear indications that the producer sector stands will benefit strongly from a more visible supply chain.

This project has defined data inputs and developed templates for the collection and storage of data. These templates accommodate input from individual producers, producer groups as well as wholesalers and retailers. They are in a form that will allow data to be input on a PC or in hard copy. They can also function as the front interface for an online database. The data collection templates frame the database storage framework. These tools can be easily adjusted and or extended to meet specific commodity group needs.

The Citrus Almonds and Strawberries are used as the three examples to reflect the variations in available data inputs. The Citrus Industry is leading the way with moves to establish a national crop database and with that the ability to create crop forecasts. This work will create processes and pier precedents for other commodity groups and as a result, there is scope for intellectual property transfer from the Citrus developments to other commodity groups.

The provision and accuracy of data inputs has to be assured. This can be aided by using technology to make it easier to provide data. However it is concluded that the provision and accuracy of data inputs will only be secure, when statistical outputs of commercial value, are made available in return to those who are providing data. In short there has to be a tangible incentive place.

The recommendations include adopting these tools for use in a group of commodity groups, costing their use over all horticulture, developing a strategy to secure inputs from the dominant players in the supply chain and aligning the projects dealing with information needs and supply chain improvements.

2.0 Background

In April 2002 the AusHort R&D Committee were presented with the findings of AH00026 Statistical scoping study for the Australian horticultural industries. This presentation included key outcomes, conclusions and recommendations for future collections.

The project recommendations were:

- Create structures to analyse & pool data. Too include distribution channels, product categories, consumption occasions.
- Identify Supply Chain inputs and in doing so stimulate the information sharing principle.
- Categorise commodity groups into users. Then set out to acquire common data inputs required by each commodity group & create the first pooling benefits.
- Support other data collection that links to adding tangible value
- Promote the use of information outputs.

The Committee discussed and agreed to commission a second stage information scoping study. The purpose being to develop information storing templates using 2-3 individual industries with existing information as case studies.

A further teleconference with Libby Abraham, Leo Cirillo and Martin Kneebone was held on the 18th of July 2002 to further define the detail of stage 2. It was determined that 3 commodity groups are used as examples to profile the benefits of better availability of data and the use of information. These 3 commodities too include 1 large, 1 with higher levels of information and 1 with lower levels of information.

3.0 Project Deliverables

1. Profile of the available data inputs for each of the three commodity groups.
2. Templates for data collection and storage.
3. Potential information outcomes if all data available.
4. The value that the information outcomes could bring to stakeholders.

4.0 Available data inputs

The available data inputs for the three commodity groups of Almonds, Citrus, and Strawberries are profiled in figure 1. There are some issues specific to each group and they are as follows.

Almonds: This group uses a number of information sources. They use industry levy collections data, which are considered to have high compliance and also obtain figures from some processors. ABS figures are considered a problem unless it is a full survey. The sample surveys are viewed as inaccurate. ABS collect tree numbers not area cultivated, and this causes errors as planting distances change. ABS also assumes that only trees over 6 yrs are productive, when the Industry has reduced this to 3-4 yrs, although not fully productive until 5

or 6. There is a problem is obtaining accurate export data, as the exporters are sensitive to publicising their activities.

Citrus: Industry views the current situation with statistics as being too focused on production/cost of production rather than whole of market approach. Statistics are only as good as the data provided and analysis/interpretation, they need some commercial input and economic analysis. There is a need to make statistics relevant to individuals and timelier in availability. Due to concerns over ABS data accuracy and outputs a number of inputs are being collated from various sources to create export and domestic market intelligence systems. To support both these initiatives a citrus grower database has commenced in late 2002. This is the first step in being able to forecast crops. Where ABS collection methods involved local input the accuracy was substantially enhanced. The Citrus commodity has embraced the need to secure ongoing grower data inputs by linking the distribution of statistical outputs to the provision of inputs. In short if you provide data you get access to the outputs, in this case aerial maps of your property, when you need them.

Figure 1

	Current Data Inputs available for sample commodity groups	Almonds	Citrus	Strawberries
1.0	**What is produced**			
1.1	Production volumes	X	X	X
1.2	Production by varieties		X	X
1.3	Production value	X	X	X
1.4	Varieties & Seasonality		X	X
2.0	**What are the production assets & resources**			
2.1	Land area in use		X	X
2.2	Number of Enterprises	X	X	X
2.3	Production material (Trees, Vines, Plantings)	X	X	X
2.4	People Employed	X		X
3.0	**What form it is sold in**			
3.1	Whole or part (IE Nut or kernels)	X		
3.2	Fresh market or processed	X	X	X
4.0	**Where it is sold**			
4.1	Domestic volumes	X	X	X
4.2	Export volume by variety		X	X
4.3	Export markets volume by Importing country		X	X
5.0	**Consumption**			
5.1	Per capita domestic	X	X	X
6.0	**Import Replacement**			
6.1	Competing Imports	X	X	X
7.0	**Export Market Profiles**			
7.1	Competiting export volumes		X	
7.2	Production Supply & Distribution Selected Countries		X	
7.3	Global production output		X	X

Strawberries: This group has no confidence in ABS production figures, which they view as 2-3 times understated for strawberries. Growers are reluctant to provide accurate production figures to federal organisations like the ABS due to a perception that these figures will be made available to the ATO. In essence ABS collected figures for strawberries, which are impacted by inaccurate data, are of

little value to this commodity group. Data are gathered at the point of producing runners. This approach works because of the concentrated production base for strawberry runners. One organisation produces 88% of runners, and another 10% is produced three other organisations. There is a high level of confidence in the accuracy and forecasting potential of this data input.

Figure 1 profiles the range of data inputs that are required from producers to create meaningful statistics. It also shows the availability of these inputs from the three sample commodity groups.

The conclusions drawn from the profile of the three commodity groups are:

- The range of inputs required is clear, and despite diverse collection methods, the majority if these inputs are being obtained.
- There are knowledgeable individuals in various positions within these commodity groups that can support the collection of accurate data. Furthermore local input into data collection has proven links with more accurate data.
- Accuracy of data has to be assured, if statistical outputs are to be of commercial value, and or positioned as incentives to provide data.
- Statistical Outputs need to be distributed faster so they can be used to guide commercial decisions. Outputs that add up annual totals and are made available months after the year ended are of minimal commercial value to industry participants.
- There is scope for technology transfer between the various commodity groups in how they collect data and create statistical outcomes.

The data required from wholesale distributors and retailers is a replication of the inputs listed from 1.1 to 1.4. Rather than what is produced it would be requested under the broad headings of ”What is sold or purchased.” This replication of similar question content is the key to market modelling and supply chain data alignment. The data inputs required from wholesalers and or retailers are shown in form HISD 3.0 that is included in Appendix 1.

5.0 Data Collection Templates

The data collection templates have a number of requirements that impact their design if they are too work effectively. These requirements are grouped below under the headings of collection and analysis requirements and have been factored into the design of the templates.

5.1. Collection requirements

- Accommodating manual, and electronic forms of data collection to accommodate the range of technology skills and capabilities.
- Allowing for parts of an Industry sector to provided data over a period of time.
- Allowing for different entities within the industry to provide different levels of data. This range could include individual enterprise, industry organisation, government department and research provider.
- Cost effectiveness of collection method.
- Confidentiality of individual enterprise data.
- Making the supply of data as user friendly as possible to stimulate wide spread industry involvement.

- Incorporating once off external research findings.
- Collection the following data inputs:
  - What is produced. Volumes, varieties, Value, Seasonality
  - Production Assets & resources.
    - Land area
    - Number of enterprises
    - Production material
    - People employed
  - What form is product sold. Whole or part, fresh market or processed
  - Consumption: population, crop volume.
  - Import replacement. Imported product volumes
  - Export Market profiles.
    - Competing export volumes
    - Production and supply in selected export markets
    - Global production output

5.2. Analysis requirements

- Enabling the scaling of data if only a representative sample is collected.
- Enabling the automatic processing of data inputs into outputs.
- Reconciling and confirming data accuracy.
- Delivering the following outputs:
  - Total crop $ value & volume by state & national
    - Export totals
    - Domestic market totals
    - Value and volume trends on previous years
  - Industry employment profile
  - Market conditions & stock on hand
  - Industry & enterprise benchmarks
  - Per capita consumption
  - Like “fruit & vegetable product” consumption crossover
  - Industry ROI
  - Production and yield forecasting
  - R & D priorities
  - Market price forecasting

5.3. Implications of collection and analysis requirements

The following parameters have been adopted for the data collection templates.

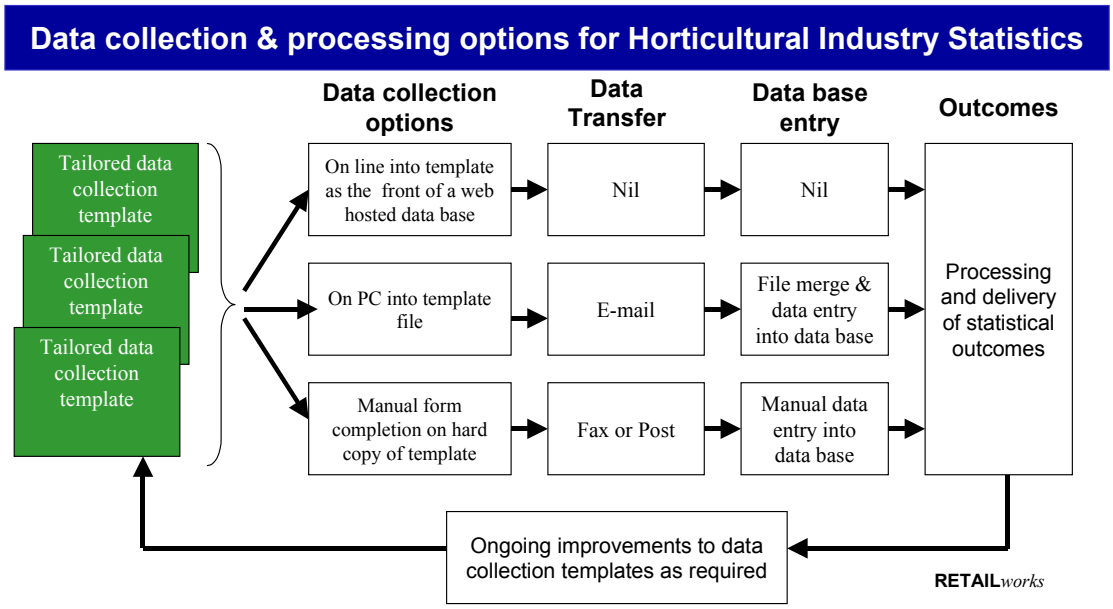
1. One style will be used for all templates including manual forms, electronic forms and any future web data entry.
2. The data collection templates will be designed to receive data from three types of organisations who are providing data.
   - Enterprises who are providing data on their own business. This would suit producers.
   - Organisations who have data for a group of enterprises. This will suite National or State Industry Bodies and or groups of producers.
   - Organisations who have data at an Industry or market level. This will suit those in the supply chain that capture large quantities of data like wholesale markets or larger retailers. It

will also suit research and development providors who are undertaking industry or market level R & D.

5.4. The templates

- To meet these requirements three collection templates have been developed. They are listed below and copies are included in Appendix 1.
  - HISD 1.0 Individual producer Data Collection
  - HISD 2.0 Industry Level Producer Data Collection
  - HISD 3.0 Distributor Data Collection

Figure 2



- These forms are in software that allows for on screen data entry and e-mail of the completed form or hand written entry by printing the form and then faxing the completed form. These same data collection templates can act as the front end of a web hosted database. The software allows for drop down menus to be used and therefore the ease of data of entry for those providing data and the reduction of data entry errors. In assessing this project it has been clear that the ease with which data can be provided has a major impact on participation and data accuracy. As an alternative to a manual form of many pages, a high proportion of which was irrelevant, this method is viewed a quantum leap.

  Figure 2 shows how these forms can enable different data collection options and impact on the transfer and entry of data, plus the creation of statistical outcomes is outlined in Figure 2. There are clear efficiencies with the increased use of computer technology.

6.0 Data Storage

It is recommended that Open Database Complaint (ODBC) software (IE Microsoft Access) is used to store this data. This will allow leverage of commonly used

software, enable ease improvements, potential access by multiple users and minimise the cost risks associated with specialist software applications.

The data storage options are directly linked to the framework of the collection templates, with each template entry being allocated a data base field. Storage tables have been created for each of the collection templates in MS access software and this is provided with this report.

The table names, which are within the file Hort Stats Storage Database, are:
HISD 1 Individual Producer Data Storage
HISD 2 Industry Level Producer Data Storage
HISD 3 Distributor Data Storage

This series of collection and storage tools will allow for easy updates and enhancements if tailoring for commodity groups is required.

7.0 Data Processing

The processing of the data into the statistical outcomes is possible within the standard set of tools that come with basic data base packages. This analysis could be undertaken with more specific and or tailored statistical analysis software. However, it is recommended that the use of tailored software should be assessed on the value it can add against the complications it may bring.

The indications are that for horticultural industry producers to capture benefits from better statistics then they need the key outcomes quickly. This is an industry were income can be substantially impacted by tactical decisions. Therefore the data processing solution needs to support these decisions with timely and frequent outcomes.

Another issue to be resolved in the data processing is the reconciliation of different inputs. It is unlikely that every producer will provide initial data and therefore some modelling will be required. To assist with this modelling requirement total market data is being sought from industry groups, wholesalers and retailers. These inputs will provide parameters for the modelling. It is expected the modelling will improve, as more data inputs are captured and the commercial value of the statistical outcomes is appreciated.

8.0 Potential Outcomes

If all the targeted data is collected a new level of statistical outcome can be produced. They could include the following outcomes and uses. It is assumed that many, if not all of these outcomes, would be used to support enterprise and industry strategic planning, and therefore this use is not listed next to each statistical outcome.

Statistical Outcomes	Uses
Projected crop volumes	Market development Product development Tactical distribution decisions Volume and price forecasting

	Wholesale price setting and monitoring Risk reduction to encourage adding value Distributor participation in data sharing
Total crop market size & growth	Marketing investments Impact of competing crops & their marketing. Comparative enterprise returns. R & D ROI and priorities. Levy setting and reconciliation
Average price achieved	Volume supply planning & management Measurement of supply chain value added Marketing effectiveness.
Assets utilised	Industry return on investment Capital raising & cost of capital negotiation Natural resource planning Government investment and support
People employed	Training R & D Training implementation Season labour planning

9.0 The value of improved outcomes to industry stakeholders

The value of improved outcomes is framed by both the gaps in accurate statistics and the industry practices and processes that have evolved in the absence of this information. This project concludes that bringing this market to an informed position, and providing the ability to make objective decisions and measure performance, will provide a platform for substantial improvement.

The Australian domestic Fruit and Vegetable market works in commodity market conditions with volume supplied driving product prices. The industry has struggled with grade standards and product consistency and allows poor quality product and large major price variations to regularly flow through to the consumer. These conditions are not conducive to accepting and adding value to products and don't provide full visibility of supply chain activity. These practices are carried through to some export markets and in particularly SE Asia, where many would agree Australian export practices have considerable scope for improvement. This "low informed" status of the Australian market is well behind other developed countries and is identified as an impediment to growth and improvement. A telling statistic is that Australia exported 16.3[1]% of it's horticultural produce in 2000, whilst other southern hemisphere countries, including New Zealand, South African and Chile are exporting well over 50-75% of what they produce.

It is suggested that bringing the Australian Horticulture to a more "informed state" through better information can be likened to establishing a key business principle that has been absent.

Improving the quality and available of Industry statistics is the first step along this path, and it will need to be followed by the business processes to capture

[1] Australia Horticulture Statistics 2002 Export value of $768M as percentage of Farm Gate Value of $4.70B

all the benefits. However, improved business processes cannot achieve the improvements without better information.

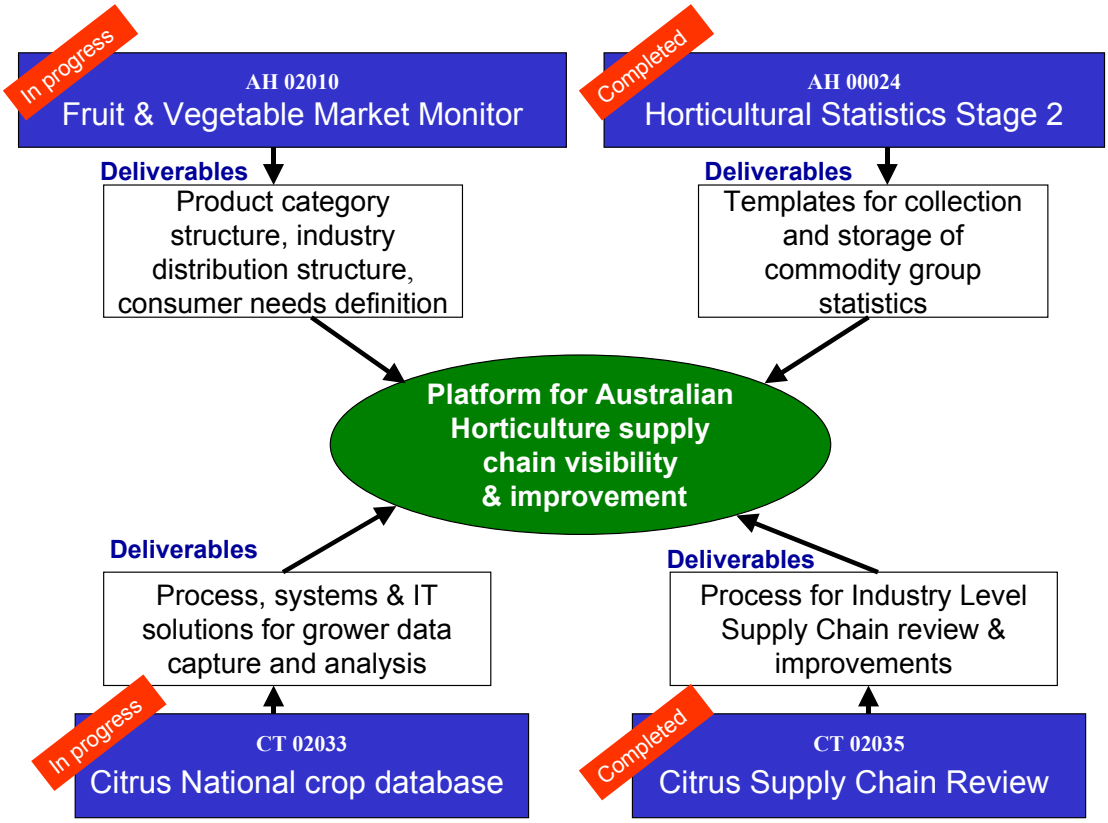
It is expected that the benefits from improved statistics will be seen in the following:

Benefits	Examples	Value Range
Risk reduction by levelling out of the peaks and troughs in pricing increased willingness to accept value added as the risks of being exposed have been reduced.	• Higher average wholesale price • More added value products. Including grades of product at better prices, and with that market acceptance of branded products.	Market value increase 2-5%
Supply chain-partnering programs, enabled by the value of information that can be shared. (In particular crop forecasts)	• Retailer support for new varieties and optimum long term product positioning. • Wholesaler & retailer support for tactical promotions to support optimum product flow and wholesale price management.	Market value increase 2-5%
Visibility and measurement of resource utilisation.	• Objective and informed decisions on irrigation rights.	Reduced lobbying time & expense
Visibility of true supply chain value add	• Grower negotiation with wholesaler. • Objective assessment of wholesalers and retailers. • Combined supply chain focus on waste and shrinkage.	Producer net profit up 1-2%
Improved and more focussed Industry R & D	• More specific R & D priorities • Measurement of R & D	Industry ROI increase 2-5%
Measurement of marketing effectiveness	• More effective marketing spend	Volume growth 2-5%
Objective assessment of industry assets	• Reduced cost of finance • Acknowledgments of all assets by finance providers.	Producer net profit up .5 to 1%

10.0 Project synergies

There are synergies between a number of projects that are completed and or in progress. In Figure 3 below the known projects are identified. The deliverables and the way these projects contribute to the common goal of a "Platform for Australian Horticulture supply chain visibility & improvement" are reflected in this figure. This project concludes that these project deliverables are strongly complimentary and combine to build this platform, which in turn enables many other industry wide improvements. This conclusion is based on the premise that visibility in this supply chain is a precursor to improvement. It is likely there are other projects that can both contribute deliverables to this goal and may also benefit from alignment.

Figure 3



11.0 Conclusions & Recommendations

It is concluded that an improved solution for the collection and dissemination of statistics is required and that this improvement, which will enable other changes, has the potential to deliver economic benefits.

More importantly it will bring Australian horticulture up to operating as an "informed market" with greater visibility of all supply chain activities.

The following specific recommendations are made:

1. That the collection and storage tools, developed in this second stage of this project are put in place for 5-8 commodity groups, so that the operating issues related too the data collection and analysis processes can be confirmed.

2. Assess the application of these tools over all Australian Horticulture. Exploring the economies of scale of all using these tools with all commodity groups, as it is likely there are strong economies of scale, as more groups are included.

3. Develop a strategy to secure the data inputs of all supply chain participants, including retailers, wholesalers and processors. This is to include assessing the incentive of providing commercially valuable statistical outputs to those who provide data.

4. Plan to capture the synergies between the complimentary projects under way or in proposal stage that addresses industry information needs and supply chain improvements. In particular the processes and systems from the Citrus project CT 02033 and project AH 02010 that address a Fruit & Vegetable Market Monitor.

12.0 References

1. Statistical Scoping Study for the Australian Horticultural Industries Project No: AH 00026, RETAILworks, Oct 2001.

2. The Australian Horticultural Statistics Handbook 2002 Edition, Horticulture Australia.

3. Review of the proposal for R & D funds for the Project CT02033: Utilising new technologies to improve national crop forecasting: Stage 2 National planting database. RETAILworks, October 2002.

4. Fruit and Vegetable Market Monitor Project AH 02010, in progress Jan 2002.

5. Cost structures in the supply chain for citrus fruits. Project CT 02035. “An approach to driving improvements into the Australian Citrus domestic supply chain.” RETAILworks, October 2002.

Appendix 1: Data Collection Templates

The following pages contain the 3 data collection templates that have been develop. It should be noted that the electronic versions of these templates have drop down menus for ease of data entry.

Electronic copies of these templates have been provided as part of this project.