Evaluating the success of VG12045/069/070 : Understanding the Attributes that Drive and Inhibit Purchase and Consumption of Vegetables

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AUSVEG Project VG12092

Evaluating the Success of VG12045, VG12069 & VG12070: Understanding the Attributes that Drive and Inhibit Purchase and Consumption of Vegetables

(Capsicum, Asian greens, pumpkin, broccoli, cauliflower & green beans)

Prepared for Horticulture Australia by
Review Partners Pty Ltd

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1. INTRODUCTION

1.1 Purpose of the current project

This project reviews the effectiveness of three projects titled 'Understanding the attributes that drive and inhibit the purchase and consumption of vegetables' commissioned by Horticulture Australia Ltd (HAL) in 2013. The study was piloted with six vegetable commodities

- VG12045: Broccoli and pumpkin – Colmar Brunton.
- VG12069: Cauliflower and green beans – CSIRO.
- VG12070: Capsicum and Asian greens – Sprout Research.

The objectives of this project is to:

- Evaluate the success of VG12045, VG12069 and VG12070 six months after completion.
- Provide direction to Industry on the value of undertaking similar studies for additional Vegetable commodities.
- If the recommendation is to proceed with other commodities, provide direction on improving methodology and other aspects of the project to ensure benefit to industry.

1.2 Purpose of the three projects under review

The three projects were commissioned to identify the attributes that drive and inhibit vegetable purchase and consumption among Australian consumers, and devise prioritised recommendations for industry.

This research is in line with the HAL strategy to increase its activity in consumer alignment research, to increase demand for vegetables, and Australian vegetable products.

The brief from HAL for the three projects set out a suggested but non-prescriptive task list which included the following stages:

1. **Desktop study:** A comprehensive review of domestic and international literature.
2. **Stop/Go point:** Review and analysis to confirm or adjust the future direction of the project including any in-market research required.
3. **Market Research:** To validate or enhance findings or insights.
4. **Documentation and prioritisation:** Documenting and prioritising barriers and drivers in consultation with steering committee.
5. **Response plans:** Development and documentation of response plans including recommended further research and development activity to address barriers and drivers.
6. **Communication to industry:** Communication of findings to industry through existing and new industry development and communication programs.
7. **Final report:** Including recommendations for further research if appropriate.

2. EXECUTIVE SUMMARY

2.1 Key conclusions

Each of the three research projects under consideration were carried out by their respective consultants **broadly in accordance with the requirements of the brief** and in a professional manner using a range of appropriate market research techniques.

While there were similarities in the approaches adopted by each consultant, there were also **substantial differences in the methodology and reporting** style and formats adopted by each. This had a number of implications for the outcome of the projects. However, the most significant consequence was that growers of different commodities received **very different levels of analysis and reporting** of the barriers and drivers to consumption of their vegetables.

Each of the three projects used some form of contact with consumers to explore the potential barriers and drivers – qualitative, quantitative or both. Despite substantial variation in the detail of their approach, the three consultants broadly identified a **similar set of barriers and drivers** to consumption for each vegetable under consideration.

The outcome of this was that each project **confirmed that a range of already well-known barriers and drivers apply** to the each of the commodities under investigation. However, the studies revealed only a **limited number of new and practical outcomes** that could form the basis of investment decisions by growers and other parties in the vegetable supply chain to overcome the barriers or capitalise on the drivers.

This also had implications for the **response plans,** which mainly, in most cases focussed on the **broad generic principles** with a potential influence on consumption

According to grower partners, the **process of reporting to grower partners** and their capacity to interpret and review the research was variable, partly because of a **lack of consistent process and rigour in consulting with them** during the projects. In some cases this was made more challenging because of the need to help growers to understand some of the technical research approaches undertaken (eg statistical modelling of responses).

Consequently there is **considerable scope for a more uniform approach** and one that is focussed more clearly on arriving a **practical outcomes** which can be implemented by various parties in the growing and supply chain.

There is also scope for a more defined **process of project management and review** to ensure that projects deliver an outcome that is considered valuable to at least some part of the vegetable supply chain.

2.2 Key findings from the three reports

The top 10 findings from the three reports across all vegetables

Vegetable	Opportunities / Response plans
All vegetables 	1. Ensure vegetables sold at peak condition (maintain freshness and display) 2. Communicate vegetable preparation recipes and storage 3. Communicate health benefits 4. Communicate versatility 5. Communicate reliable/staple vegetable status 6. Communicate provenance 7. Offer new ways vegetable is offered and packaged (e.g., pre-packaged, ready to eat) 8. Offer new varieties of the vegetable (different taste, colour, texture) 9. Seek marketing advice to develop emotional involvement for vegetables 10. Change arrangement and style of retail vegetable displays

Summary recommendations from the three reports for each of six vegetables

Vegetable	Drivers	Barriers	Opportunities / Response plans
Broccoli **(Colmar Brunton)** 	✓ Taste ✓ Freshness ✓ Ease of preparation ✓ Perceived health benefits ✓ Perceived longevity of storage.	× Price × Inconsistent quality × Freshness × Poor longevity of storage	• Maintain and improve care in merchandising and preserving peak freshness • Develop market new varieties offering different tastes, textures and appearance • Prepare education on preparation techniques and recipes • Prepare POS education around utilisation of whole vegetable – promote summertime vegetable • Launch advertising campaigns highlighting unique health benefits and how to store to maintain freshness • Investigate the possibility of pre-packaged options and ready to eat packaged solutions • Increase perception of value through provenance • Grouping varieties together at retail • More ideas around recipes, ways to use stems/ stalks and methods such as roasting
Pumpkin **(Colmar Brunton)** 	✓ Versatile: used in both sweet and savoury ✓ Flavour ✓ Colour ✓ Taste ✓ Health benefits ✓ Long shelf life ✓ Tradition: associated with winter	× Weight and size × Difficulty in preparing × Inconvenience in preparing × Portion sizes	• Develop and market of new varieties offering different sizes (esp smaller), tastes, textures and appearance ensuring provenance is displayed • Provide pre-packaged and 'ready to eat/cook' options • Begin consumer education campaigns on preparation techniques and recipes • Increase consumer knowledge on using whole vegetable including seeds, skin and oil • Promote consumer understanding of the unique health benefits pumpkin may provide, and ideal storage environments to maintain health benefits, optimal freshness and longevity.

Vegetable	Drivers	Barriers	Opportunities / Response plans
Capsicum (Sprout) 	✓ I use it in a specific meal ✓ I like the taste/flavour ✓ I buy it as a staple vegetable ✓ They are good for you ✓ They are versatile	× Doesn't suit the meals cooked regularly by consumers × Dislike the taste × Others in the household don't like it × Have not thought about buying	• Communicate the versatility: Highlight the ways capsicums and Asian greens can be used in different meals and recipes. • Ensure that the 'flavourfulness' of capsicums is maintained throughout the supply chain by maintaining a high quality growing process and optimal storage, distribution and retailing • Positioning capsicums as the 'reliable' vegetable that is there when you need it and will last long enough until when you want to use it • Communicating the specific health benefits • Reinforce its role as a highly versatile vegetable
Asian greens (Sprout) 	✓ They are good for you ✓ I use it in a specific meal ✓ I like the taste/flavour ✓ They suit the type of cuisines I like to cook ✓ I buy is as a staple	× Don't suit the meals I cook × I have never thought about buying them × I don't know how to cook them × Others in the household don't like them × They are associated with Asian dishes only	• Communicate that Asian greens are not only suitable for Asian dishes and communicate the ease, taste and health benefits associated with Asian style cooking • Increase awareness through the use of in-store methods, including prominent displays, plentiful and fresh product displays, and take-home brochures and recipe cards educating consumers about the multiple uses for Asian greens • Communicate health related benefits of eating Asian greens. • Communications that are targeted at the most read cooking publications and most watched cooking TV shows / Feature vegetables on master chef, my kitchen rules and food safari / Feature the vegetables in cooking publications –Coles, Woolworths fresh magazine, better home and gardens, taste.com and mobile app • Communicate the methods for cooking Asian greens – particularly in "Australian meals"

Vegetable	Drivers	Barriers	Opportunities / Response plans
Cauliflower (CSIRO) 	✓ White, whole cauliflowers at lowest cost ✓ Some like the snack packs ✓ Healthy ✓ Usually used with potato, carrot and peas	× Labelling; foods with product related attributes were more likely to be chosen × Some feel large cauliflowers are wasteful × Portion and price most influential × Sensitive to monotony × Children dislike × Preparation × Frozen cauliflower × Snack packs could be too large and mixed with unfavoured vegetables × Sensory differences and taste × Quality × Shelf life	• Pre-packaged kits for households with children, including development of white and/or multi-coloured snack packs • Promotion in schools, with homemakers • Advertise towards socialising e.g. roasts, bbq • New cultivars with specific sensory properties • Preparation advice • Communication of heart health claim • Increasing children's acceptance through early exposure • Adults acceptance • Greater vegetable availability • Collaboration with Government and health organisations • Increase emotional involvement • Increase channels of availability.
Green Beans (CSIRO) 	✓ Loose and lowest cost ✓ Healthy ✓ Availability ✓ Labelling and branding of vegetables	× Sensory differences and taste × Varieties available × Frozen are more convenient × Shelf life	• Development of snack packs of green beans • Increase emotional involvement • Increase channels of availability. • Increasing children's acceptance through early exposure • Adults acceptance • Greater vegetable availability • Collaboration with Government and health organisations

2.3 Recommendations

It is recommended to consider the following recommendations before undertaking future projects.

1. Develop a **best practice-model** which will deliver a uniform approach to evaluating practical response plans to deal with important barriers and drivers for each commodity under investigation.

2. Develop a process to ensure that each vegetable is on a "level playing field" by providing consultants with a core level of understanding of the known **barriers and drivers** that apply to all vegetables and provide each consultant with a **comprehensive briefing** on these at the start each project.

3. Develop a process which facilitates the identification of **specific, practical innovations and activities** which could be evaluated as part of the research projects. These would be assessed for their capacity to increase purchase and consumption of vegetables. This would include a process to ensure that:
    - These innovations and activities are identified as **part of the briefing** for the project and/or **discovered** during the conduct of the project.
    - The outcomes would have **clear commercial application**
    - Some estimate of the **likely change in behaviour** that would result from any investment is established.
    - These are **agreed with the industry** as having the potential to be **practically implemented** in the medium term, before being subject to research.

4. Develop a process to **maximise the involvement of industry** in identifying the innovations and potential areas which might yield a return on investment. This would include:
    - Recognising that **success will depend on a collaborative approach** which requires input from parties throughout the supply chain (and not just the internal resources of the consultant).
    - Providing the means for **growers partners to be supported** by other participants in the supply chain and by specialists with marketing expertise.
    - Engaging **participants at relevant stages of the supply chain** who have the ability to identify potential practical steps to improving consumption – which would include people involved in storage, packaging, transport, distribution, marketing and retail roles.
    - Requiring consultants to undertake a formal stage of **industry consultations and review** prior to starting any research (in addition to the current theoretical "literature review").
    - Developing a process where this consultation would be **facilitated for the consultant by AUSVEG/HAL** providing access to relevant individuals in the supply chain who can provide this input.

5. Develop a process to ensure that research into each vegetable is conducted in a uniform manner, with repeatable results. This would be done by standardising a core part of the **methodology employed by each future consultant in assessing the barriers and drivers** and identifying response plans according to an agreed best-practice approach. This would include:

- Developing a consistent literature review methodology which makes a **standard set of literature sources available** to each vegetable being investigated (in addition to the sources currently available to each consultant).
- Developing a standardised research methodology for **benchmarking barriers and drivers** to enable **comparison between vegetables** on equivalent ratings scales and measures.
- Developing a **standard consumer segmentation model** to guide more effective and consistent targeting of activity towards different consumer types.
- Providing consultants with the freedom to use **additional methodologies** as well.

6. Develop a process to ensure that the **outcomes are communicated effectively** to all participants in the supply chain who can implement them for commercial benefit.

- Provide consultants with an appropriate briefing on the roles of participants at **each stage in the supply chain and their potential to contribute** to development and management of the outcomes of each project (eg storage, packaging, transport, distribution, marketing, retailing)..
- Require consultants to **identify recommendations** according to the **stage of the supply chain** at which they are to be implemented.
- Provide consultants with a briefing on a **standardised set of communication tools** for the dissemination of information which set the minimum requirements based on the communication channels known by AusVeg and HAL to be **most effective at reaching each type of stakeholder**.

2.4 Key actions recommended prior to undertaking further projects:

The initial brief for the three projects advised the consultants to avoid duplicating previous work.

> *Quite a considerable amount of work has been done in this area and it is important to ensure that this work is not duplicated but built upon.*

However, despite each consultant undertaking some level of literature review, each project covered similar ground to that covered in previous generic research into vegetables. This resulted in them reaching similar conclusions about the underlying barriers and drivers to purchase and consumption of the six vegetables under consideration.

In some cases this added a level of detail to the already known barriers as far as they applied to the vegetable under investigation, but overall this served to confirm that the commonly known barriers applied.

One threshold question arising from industry from this outcome is:

> ***Did the relatively minor additional detail about barriers and drivers relating to each vegetable under consideration justify the investment in the three project?***

If AUSVEG believes that the additional detail alone did not justify the investment, then it is important to find ways to reduce the likelihood of this happening in future.

The following five key actions are recommended to take place before future projects as part of delivering more actionable findings that can be taken up at different stages of the vegetable supply chain to increase purchase and consumption of vegetables.

1. Develop a comprehensive summary of the known barriers and drivers to the consumption of vegetables.

Each consultant was required to "start from scratch" with developing their own literature review of the known information about barriers and drivers to vegetable consumption. However, in addition to other parties, AUSVEG and HAL have previously commissioned research which has revealed many of the barriers and drivers.

The literature available for vegetables shows that many drivers and barriers have been explored in previous research. The broad range of factors already known to influence consumers purchase and consumption include shape, taste, colour, freshness, convenience, usage, availability, size and price. Studies have also found that consumers generally have specific ways of categorising vegetables by their colour, what they are used for, how they can be eaten and preparation methods. In light of the generic findings, a summary list can be expanded and included in background for future studies.

There would be merit in undertaking a process of bringing this information together into a consolidated document which could be available to consultants conducting all future research into barriers and drivers. Such a document would also provide generic guidance to growers and other parties in the supply chain about the common barriers and drivers and the current thinking on response plans to overcome them.

Consequently it is recommended that a comprehensive summary is developed, based on previous research (including these three reports) which sets out the existing knowledge of barriers and drivers.

This would include:

- Reviewing all previous research reports that have identified barriers and drivers to vegetable consumption, either all vegetables or specific vegetables.
- Reviewing the findings of the current three projects under consideration, including the important and relevant findings from their literature reviews.
- Compiling a set of barriers and drivers that are generic – that is, which apply to all or most vegetables – and summarising the known background and application of these.
    - Where difference between specific vegetables or groups of vegetables are known, this would include identifying differences in how these apply to individual vegetables or groups of vegetables.
- Compiling a set of barriers and drivers that are specific to individual vegetables (if such barriers exist) – and summarising the known background and application of these.

2. Develop an agreed segmentation that describes consumer attitudes and behaviour towards purchase and consumption of vegetables.

All three studies recognised the value of consumer segmentation and each made some steps towards identifying segments that might describe consumers attitudes towards purchasing and consuming vegetables. For example, Sprout Research conducted factor analysis to identify segments for capsicum and green bean segments and CSIRO used choice modelling to identify consumer segments, to which segments were found to exist for cauliflower only.

Sprout reported on new attitudinal and behavioural segments based on factor analysis, but noted that these needed further investigation these were:

- Vegephiles
- Basic cook
- Entertainer
- Choosy buyer
- On the go
- Year round
- Price conscious

Previous projects have found segments that apply to all vegetables. Brandstory (2010) segmented Australian adult consumers into the following categories and analysed the behaviours of these groups:

- Convenience seekers
- Experimental gourmets
- Pragmatist
- True vegetable lover

This highlights the lack of an agreed segmentation within the industry that can be applied either to vegetables in general or specific vegetables in particular.

These and other studies have compared a range of factors that influence the consumption of vegetables – which may form the basis of a market segmentation. These included:

- Demographics (age, gender, educational attainment)
- National origin and influences
- Knowledge and awareness of health and recommended consumption rates
- Interest in cooking and level of capability
- Attitudes towards social/family role of vegetables
- Habits and other pressures in life
- History of involvement with vegetables

Consequently, it is recommended that consideration is given to developing an agreed segmentation that can be applied to each vegetable. Future studies could assess how the segments vary in relation to each vegetable under consideration and the implications this may have for identifying the core target markets with the greatest potential.

3. Develop a standard set of measures to provide the basis for a uniform method of comparing the relative importance of each barrier and driver to each vegetable.

Each of the three consultants used different methods to establish the importance of barriers and drivers in relation to each vegetable under investigation. This included using different test material, research scales, attitude statements and other measures.

This means that growers of each product have received a different view of how similar barriers and drivers apply to their vegetable. It has also made it extremely difficult to compare the findings of each study to each other.

The following types of variables recorded in the quantitative survey were used across studies and could be developed into a uniform set of measures for all future studies:

- Respondent demographics
- Grocery purchase and consumption characteristics
- Grocery consumption and purchase as influenced by the media
- Purchase and consumption of vegetables in general
- Categories regarding the measured vegetable:
- Purchase and consumption of the measured vegetable
- Children and the measured vegetable
- Drivers and inhibitors of the measured vegetable purchase and consumption
- Health benefits of measured vegetable
- Cooking with the measured vegetable
- Variety available of the measured vegetable
- Expense of measured vegetable
- Attitudinal scales

Consequently, it is recommended that a standard set of measures be developed which can be applied to each vegetable. This would take the form of:

- Establish a list of the core drivers and barriers and potential responses that are known to exist for vegetable consumption.
- Establish a standard method of describing how these apply to vegetables.
- Establish a uniform scale that can allow comparison between vegetables.

For example, a common barrier identified for vegetables is *"lack of knowledge of how to prepare the vegetable"*. For future projects it would be valuable to understand the extent to which this barrier applies to different vegetables. This would make it possible, for example, to compare if consumers are more or less familiar with how to prepare cauliflower or broccoli and the degree to which is it critical to improve their understanding. A index or rating could be applied to this to help each industry understand how important this barrier is relative to other barriers affecting their vegetable or in comparison to other vegetables.

This would allow the development of a "league table" of vegetables according to each barrier and driver. Repeating this for other barriers and drivers would allow the industry to identify the most important barriers and drivers to overcome and those which are of lesser importance. This could then be used to guide investment decisions with a higher degree of confidence.

4. Develop a formal process for facilitating providing future consultants with contacts and introductions to industry participants throughout the supply chain.

An important recommendation of this review is that future projects should identify practical solutions to overcome barriers which are drawn from current developments throughout the supply chain.

The current three projects relied on a range of sources to identify potential initiatives. While some consultants did engage with industry, this was limited to the contacts that they were able to identify from their own resources. In other cases, consultants did not consult with industry at all, relying only on a literature review as the source of research areas, which did not necessarily yield practical and relevant topics for investigation.

It is well known that there is a relatively complex set of participants in the supply chain who could have a substantial influence on the success of any strategies and that these will vary depending on the vegetable being produced. Understanding the potential role of these participants chain requires a substantial understanding of the operation of each vegetable's supply chain – which is likely to be beyond the current knowledge of many expert research consultants.

To help address this, it is recommended that AUSVEG /HAL develop a formal process of identifying potentially useful participants in the supply chain who can contribute to the development of the research and the initiatives considered.

This would include:

- Describing to industry participants the potential benefits available to them from being involved in AUSVEG/HAL funded research programs – which could include research support to investigate ways to overcome barriers beyond their own commercial activities.
- Inviting participants in the supply chain to be involved in providing input and assistance to future research projects.
- Providing successful consultants with a list of participants who have indicated their willingness to assist.
- Facilitating contact between the consultant and the industry participant through a letter of introduction from AUSVEG / HAL.

5. Develop a standard reporting template and format for presentation of findings.

Each of the current three studies reported their findings in completely different ways. Some of the variations included:

- There was no consistency in the categories of information reported, which meant that each consultant included different topics and descriptions in their reporting
- There was no consistency in the style of reporting. One of the three consultants made heavy use of graphic design in their presentation of findings. The other two provided written summaries that did not have a design element.
- There was variation in the ways in which barriers, drivers and response plans were described.
- The reports covered different topics with different methods of allocating priorities and making recommendations for future action.
- There was variation in the degree to which findings were reported according to their relevance to different stages of the supply chain.

This has important implications for the intended audiences of the studies and the likelihood of the results leading to increased purchase and consumption:

- Growers of each of the commodities under investigation received very different reporting formats.
- Some growers would have found it easier than others to read and understand the findings relevant to them.
- It was not clear if individual recommendations were applicable to growers, processors or to some other party in the supply chain.
- It made it very difficult for those with an interest across different vegetables (including HAL and AUSVEG) to compare the findings of each study.

Consequently, there would be merit in develop a best practice set of requirements for reporting which each consultant knows that they need to deliver at the end of the project.

Mandatory reporting could require the consultant to:

- Investigate an agreed minimum set of topics in each study, with direction as to the depth of information required for each of these. (Recognising that consultants may add to this to enhance their findings if appropriate).
- Distinguish between findings that relate to known barriers and drivers to purchase and consumption and new barriers and drivers which may have been revealed as part of further studies.
- Identify the relative importance of each barrier and driver in restricting or promoting purchase and consumption.
- Prioritise response plans according to their potential to deliver a return on investment to industry.
- Relate each conclusion to a stage of the supply chain.
- Identify those findings which are directly applicable to industry without further investigation and those findings which would require further research to clarify or prove their applicability.

AUSVEG/HAL could also develop one or more proforma templates (eg a grid which requires each barrier and driver to be identified according to an agreed set of criteria). Each consultant to be required to complete these templates to a defined level of detail.

These templates could then be used to present findings in a common manner across any vegetables under consideration.

- Ideally a high level of graphic design would be applied to these to ensure that they are easily read and understood by their intended audiences.
- Recognising that research consultants may have varying levels of capacity to deliver high quality graphic design, AUSVEG/HAL could consider engaging an external graphic design/publication expert to present the findings in a common, appealing format.

6. Develop a comprehensive description of the current communication channels that are available for communicating the results of future projects to growers and to other participants in the supply chain.

There was considerable variation in the communication methods and channels used by each consultant to present the findings of their research to industry. In some cases it was not clear the extent of this communication or its effectiveness. However, it appeared that the communication depended on the normal channels available to the consultant as well as guidance provided by industry on the opportunities available.

Consequently, as part of developing a "best practice" approach to future projects, it is recommended that a comprehensive description of the current communication channels available to the vegetable industry is made available to successful consultants.

This would include:

- Compiling information about the communication channels under the control of AUSVEG and HAL, their editorial requirements and deadlines.
- Compiling information about other communication channels available through other industry parties which could be used to reach participants in the relevant supply chains, their editorial requirements and deadlines.
- Identifying mailing lists that could be used for direct communication and the conditions which would apply to their use.
- Compiling information about events and other direct means of communicating with industry and supply chain participants, including field days, conferences etc
- Defining a set of mandatory requirements that would be expected of each consultant in terms of the nature of information that would be required and the channels that should be used. This would be supported by examples of previous extension work that may have been undertaken for other studies.

3. COMPARATIVE EVALUATION OF PROJECTS

3.1 Key differences

Similarities and differences of each study

In summary, each consultant responded to the brief in a manner which was consistent with the broad requirements of the brief. This was apparently done in a professional manner using technically sound research methodologies

However, there was substantial variation in most aspects of how each project was undertaken at each stage, which meant that producers received substantially different reports depending on approach taken by each consultant. This included substantial variation in:

- The level of detail and relevance of the literature review
- The qualitative research approach
- The type of quantitative research used
- The alternative product scenarios explored
- The variables evaluated in relation to purchase, consumption and attitudes
- The nature, detail and relevance of response plans
- The level and detail of reporting and analysis
- The quality of summaries prepared for communication to industry

Some of the key aspects of each project are set out below:

CSIRO	• CSIRO provided an extensive and detailed literature review covering over 150 references sourced from local and international academic literature. • A formal choice model was employed to attempt to establish the relative influence of a range of attributes on purchase and consumption behaviour • This included the analysis of commodities as snack and main meals. • The attributes were selected from the literature review and not from engaging with consumers through qualitative research (which was not conducted as part of the project). • The literature review also identified attitudinal scales to be used in the quantitative research.
Colmar Brunton	• Colmar Brunton undertook a detailed literature review which included an international Mintel report from which they drew a trend analysis of vegetable products which could be used to provide background for new processed product development. The reporting included the presentation of a large number of examples of processed products (food, drink, cosmetics, etc) which used the nominated commodities at some point in their manufacture. • The primary research included industry interviews, qualitative and quantitative research among consumers for both broccoli and pumpkin. • Each of these stages of research informed the development of the options and attitudes tested. • Reporting utilised a high level of graphic design including and “infographic” style presentation of the final summary response plans.
Capsicum and Asian greens **Sprout Research**	• The literature review was very limited, including only a small number of publically available documents. • Sprout Research conducted qualitative and quantitative research, including a newspoll telephone survey to assess the incidence of purchasers and consumers. • It also included assisted shopping visits which offered the potential to provide an additional perspective on the engagement that consumers have with the products at the point of sale.

Comparison of the methodologies in each study

The similarities and differences in the methodologies of each study are set out in more detail in the table on the following page:

Project code	Author	Measured vegetable	Literature review	Industry interviews	Telephone survey	Qualitative research	Consumer lens	Quantitative survey
VG12045	Colmar Brunton	Broccoli and pumpkin	Academic journals, government reports, trade publications, company report sales data, industry reports, online, product databases, trend reports, library resources, knowledge sharing and commercial resources (e.g., Retail World) which indicate declining vegetable markets in Australia. Heavy use of Mintel international report on processed product opportunities for the products.	Broccoli: Interviews N=8 (with selected growers, personnel from Coles, dieticians/ nutritionists, and market retailers). Pumpkin: Interviews N=9 (with selected growers, personnel from Coles, dieticians/nutritionists, and market retailers)	-	Qualitative research focus groups N=6. (3 states, 1 metro, 1 rural per state, 8 participants per group)	-	Survey N=1000. To be eligible survey respondents must have consumed Broccoli/ pumpkin at least once in the last 2 months. Quotas were placed to ensure a representation across age, gender, consumer types, and households.
VG12070	CSIRO	Cauliflower and green beans	Extensive literature review. Several academic and international university databases. Peer-review articles and reviews, HAL/AUSVEG reports and book chapters/reviews. Bibliographies and 'cited by' papers examined where relevant.	-	-	-	-	Survey. N= 1000 per vegetable. Conjoint analysis. Following inclusion criteria: Australian vegetable consumers, aged 18-65, main grocery buyers, users of cauliflower and green beans (consume at least once every 3 mon), spread in gender and family situation.
VG12069	Sprout	Capsicum and Asian Greens	Limited literature review, 2005 John Burt of South Perth, provided a review on growing capsicums October 2005, the NSW Department of Primary Industries (NSW DPI)	-	Telephone survey (N=1200). 2 questions per vegetable	Qualitative research (focus groups). Total 12 groups (6 groups x 9 respondents, 3 cities x2 for each vegetable)	Assisted shops and online consumer lens N=10	Survey N=900. Data was post-weighted to latest ABS Census for age and gender as well as incidence of vegetable buying as defined by the Omnibus survey.

Variables and measures used in each study

Each study measured consumer behaviour and attitudes in relation to a different set of variables. The following table shows which variables were considered in each study.

		Colmar Brunton		CSIRO		Sprout	
Variable	**Measures**	**Broccoli**	**Pumpkin**	**Cauli-flower**	**Green Beans**	**Capsi-cum**	**Asian Greens**
Respondent demographics	Gender	Y	Y	Y	Y	Y	Y
	Age	Y	Y	Y	Y	Y	Y
	Cultural identity	Y	Y	Y	Y	Y	Y
	Education			Y	Y		
	Household income	Y	Y	Y	Y	Y	Y
	Household size			Y	Y		
	Household composition	Y	Y	Y	Y	Y	Y
	State/territory of residence					Y	Y
	State capital/regional area					Y	Y
	Age of children in household					Y	Y
	Dietary requirements of respondent or household members					Y	Y
Grocery purchase and consumption characteristics	Role in buying groceries	Y	Y				
	Type of groceries purchase over the course of a year	Y	Y				
	General grocery shopping behaviour (pick statement that matches your buying habits)	Y	Y				
	Your children's interest in grocery shopping and meal planning			Y	Y		
Grocery consumption influenced by media	Favourite cooking program					Y	Y
	Regularly read cooking publications					Y	Y
	Point of purchase of vegetable			Y	Y		
Purchase and consumption of measured vegetable	Consumption/purchase frequency of measured vegetable	Y	Y	Y	Y	Y	Y
	Regularity of purchasing measured vegetable?	Y	Y	Y	Y		
	Likelihood of retaining or increasing level of measured vegetable purchase. Why?	Y	Y				
	Point of purchase for measured vegetable	Y	Y			Y	Y
Children and measured vegetable	Acceptance of measured vegetable by family children			Y	Y		
	Influence of children's acceptance of measured vegetable on purchase frequency			Y	Y		
Drivers and inhibitors of measured vegetable purchase and consumption	Drivers of measured vegetable purchase	Y	Y			Y	Y
	Inhibitors of measured vegetable purchase	Y	Y			Y	Y
	Rank of drivers of measured vegetable purchase	Y	Y				
	Triggers to purchasing more of the measured vegetable	Y	Y				

		Colmar Brunton		CSIRO		Sprout	
Variable	**Measures**	**Broccoli**	**Pumpkin**	**Cauli-flower**	**Green Beans**	**Capsi-cum**	**Asian Greens**
	Likelihood of buying measured vegetable for a main meal or snack			Y	Y	Y	Y
Health benefits	Perceived health benefits of measured vegetable	Y	Y			Y	Y
Cooking with measured vegetable	Meals measured vegetable used for					Y	Y
	Simple cooking method of measured vegetable	Y	Y				
	Context of dish measured vegetable used in (e.g., side dish)	Y	Y				
	Serve measured vegetable alongside which other vegetables?	Y	Y				
	Use measured vegetable as an ingredient in which cuisine types	Y	Y				
Variety of measured vegetable	Knowledge of measured vegetable varieties available?	Y	Y				
	Variety importance	Y	Y				
	Variety satisfaction	Y	Y				
	Measured vegetable variety endorsement to family and friends	Y	Y				
	Interest in new varieties	Y	Y				
	Interest in new offers/solutions	Y	Y				
	Portion preference	Y	Y				
	Varieties ever purchased	Y	Y				
	Measured vegetable varieties regularly purchased	Y	Y				
	Measured vegetable variety most often purchased. Why?	Y	Y				
	Premium quality vegetable	Y	Y				
	New products purchase likelihood	Y	Y	Y	Y		
Expense of measured vegetable	Average monthly spend	Y	Y				
	Opinion of measured vegetable price	Y	Y				
Attitudinal scales	Food involvement attitudes			Y	Y		
	Health and taste attitudes			Y	Y		
	Influence of children on food purchase decisions			Y	Y		
	Health and lifestyle					Y	Y
	Cooking attitudes					Y	Y
	Price attitudes					Y	Y
	Fruit and vegetable attitudes					Y	Y

Driver and barriers identified for each of the six vegetables and across all vegetables

In summary, the following table sets out the drivers of and barriers to purchase and consumption of each measured vegetable:

Project code	Author	Vegetable	Drivers of purchase and consumption	Barriers to purchase and consumption
All	**All**	**All vegetables**	Taste / flavour, Tradition / habit / buy as a staple, Health benefits	Taste (others in household don't like, children don't like) Poor shelf life / storage, Time / lack of knowledge, Cost
VG12045	**Colmar Brunton**	**Broccoli**	Taste, freshness, ease of preparation, perceived health benefits, perceived storage longevity	Expense, quality and freshness inconsistency, poor storage longevity
		Pumpkin	Colour, taste, tradition and habit, versatility, and perceived health benefits	Product weight, preparation difficultly, and preparation inconvenience
VG12070	**CSIRO**	**Cauli-flower**	**High priority:** Familiarity; liking; early exposure in childhood. **Medium / low priority:** Atypical colour; convenience; labelling / branding; health benefits.	**High priority:** Low acceptance; children's dislike; dislike of flavour; lack of consumption contexts; high price. **Medium priority:** Inconvenience; lack of variety; lack of emotional involvement in decision making; health benefits; poor quality/visible defects. Low priority barriers: portion size too large; packaging size; lack of understanding of vegetable type.
		Green Beans	**High priority:** Familiarity; liking; early exposure in childhood. **Medium/low priority:** atypical colour; convenience; labelling/branding; health benefits.	**High priority:** Low acceptance; children's dislike; lack of consumption contexts; perceived price. **Medium priority:** lack of emotional involvement in decision making; lack of variety available; poor quality/short shelf-life; inconvenience. Low priority barriers: health benefits; segments taste preferences; lack of understanding of vegetable type.
VG12069	**Sprout Research**	**Capsicum**	In order of importance: use in specific meal; like taste/flavour; buy as staple vegetable; good for you; versatile.	In order of importance: doesn't suit meals I cook; dislike taste; others in household don't like; never thought of buying.
		Asian Greens	In order of importance: good for you; use in specific meal; like taste/flavour; suit type of cuisine I like to cook; buy as staple vegetable.	In order of importance: doesn't suit meals I cook; never thought of buying; don't know how to cook them; others in household don't like.

Response plans for each vegetable commodity

In summary, the response plans to address the barriers and drivers are set out below:

Vegetable	Response plan
Relating to all vegetables	• Ensure vegetables are sold at peak season to optimise taste and freshness • Communicate versatility and staple vegetable status • Price promotions • Develop new varieties • Communicate recipes and ways to use whole vegetable • Educate consumers on multiple uses • Communicate ways to store • Communicate health benefits / colour variety in diet • Communicate provenance of vegetables
Broccoli	• Maintain and improve care in merchandising and preserving peak freshness- revise logistics • Develop/market new varieties offering different tastes, textures and appearance • Prepare education on preparation techniques and recipes • Prepare POS education around utilisation of whole vegetable – promote summertime vegetable • Show versatility of broccoli/ broccoli slight premium vegetable • Launch advertising campaigns highlighting unique health benefits and how to store to maintain freshness • Investigate pre-packaged and 'ready to eat' options • Perceptions value can be increased with communication of provenance.
Pumpkin	• Develop and market of new varieties offering different sizes (esp smaller), tastes, textures and appearance ensuring provenance is displayed • Provide pre-packaged and 'ready to eat/cook' options • Consumer education campaigns on preparation techniques and recipes • Increase consumer knowledge on using whole vegetable including seeds, skin and oil • Promote consumer understanding of the unique health benefits pumpkin may provide, and ideal storage environments to maintain health benefits, optimal freshness and longevity.
Cauliflower	• Pre-packaged kits for households with children, including development of white and/or multi-coloured snack packs • Promotion in schools, with homemakers • Advertise towards socialising e.g. roasts, bbq • New cultivars with specific sensory properties • Preparation advice • Communication of heart health claim • Increasing children's acceptance through early exposure • Adults acceptance • Greater vegetable availability • Collaboration with Government and health organisations • Increase emotional involvement • Increase channels of availability.
Green Beans	• Development of snack packs of green beans • Increase emotional involvement • Increase channels of availability. • Increasing children's acceptance through early exposure • Adults acceptance • Greater vegetable availability • Collaboration with Government and health organisations
Capsicum	• Communicate the versatility • Ensure that the 'flavourfulness' of capsicums is maintained throughout the supply chain by maintaining a high quality growing process and optimal storage, distribution and retailing • Positioning capsicums as the 'reliable' vegetable that is there when you need it and will last long enough until when you want to use it • Communicating the specific health benefits • Reinforce its role as a highly versatile vegetable

Vegetable	Response plan
Asian Greens	• Communicate that Asian greens are not only suitable for Asian dishes and communicate the ease, taste and health benefits associated with Asian style cooking • Increase awareness through the use of in-store methods, including prominent displays, plentiful and fresh product displays, and take-home brochures and recipe cards educating consumers about the multiple uses for Asian greens • Communicate health related benefits of eating Asian greens. • Communications that are targeted at the most read cooking publications and most watched cooking TV shows / Feature vegetables on master chef, my kitchen rules and food safari / Feature the vegetables in cooking publications –Coles, Woolworths fresh magazine, better home and gardens, taste.com and mobile app • Communicate the methods for cooking Asian greens – particularly in “Australian meals”

Recommended responses linked to barriers and drivers (table)

Measured vegetable	*DRIVERS OF PURCHASE AND CONSUMPTION*	Response to address driver	*BARRIERS TO PURCHASE AND CONSUPTION*	Response to address barrier 1	Response to address barrier 2	Response to address barrier 3
PROJECT VG12045: Broccolli and Pumpkin [Colmar Brunton]						
Broccoli	***Taste***	Ensure vegetables sold at peak condition	***Expense***	Offer new varieties of the vegetable	Communicate health benefits	-
Broccoli	***Freshness***	Ensure vegetables sold at peak condition	***Quality and freshness inconsistency***	Ensure vegetables sold at peak condition	Offer new ways vegetable is offered (e.g., pre-packaged)	-
Broccoli	***Ease of preparation***	Communicate vegetable preparation and recipes	***Poor storage longevity***	Ensure vegetables sold at peak condition	-	-
Broccoli	***Perceived health benefits***	Communicate health benefits	**-**	-	-	-
Broccoli	***Perceived storage longevity***	Ensure vegetables sold at peak condition	**-**	-	-	-
Pumpkin	***Colour***	Ensure vegetables sold at peak condition	***Product weight***	Offer new ways vegetable is offered (e.g., pre-packaged)	Offer new varieties of the vegetable	-
Pumpkin	***Taste***	Ensure vegetables sold at peak condition	***Preparation difficulty***	Offer new ways vegetable is offered (e.g., pre-packaged)	Communicate vegetable preparation and recipes	-
Pumpkin	***Tradition and habit***	Communicate provenance	***Preparation inconvenience***	Offer new ways vegetable is offered (e.g., pre-packaged)	Communicate vegetable preparation and recipes	-
Pumpkin	***Versatility***	Communicate versatility	**-**	-	-	-
Pumpkin	***Perceived health benefits***	Communicate health benefits	**-**	-	-	-

Measured vegetable	*DRIVERS OF PURCHASE AND CONSUMPTION*	Response to address driver	*BARRIERS TO PURCHASE AND CONSUPTION*	Response to address barrier 1	Response to address barrier 2	Response to address barrier 3
PROJECT VG12070: Cauliflower and Green Beans [CSIRO]						
Cauliflower	***Liking***	Communicate health benefits	***Low acceptance***	Communicate health benefits	-	-
Cauliflower	***Early exposure in childhood***	Communicate health benefits	***Children's dislike***	Communicate health benefits	Communicate vegetable preparation and recipes	-
Cauliflower	***Atypical colour***	-	***Dislike of flavour***	Communicate health benefits	Communicate vegetable preparation and recipes	-
Cauliflower	***Convenience***	-	***Lack of consumption contexts***	Communicate vegetable preparation and recipes	-	-
Cauliflower	***Labelling/branding***	-	***High price***	?	-	-
Cauliflower	***Health benefits***	Communicate health benefits	***Inconvenience***	Offer new ways vegetable is offered (e.g., pre-packaged)	-	-
Cauliflower	-	-	***Lack of variety***	Offer new varieties of the vegetable	-	-
Cauliflower	-	-	***Lack of emotional involvement in decision making***	?	-	-
Cauliflower	-	-	***Health benefits***	Communicate health benefits	-	-
Cauliflower	-	-	***Poor quality/visible defects***	?	-	-
Cauliflower	-	-	***Portion size too large***	Offer new ways vegetable is offered (e.g., pre-packaged)	-	-
Cauliflower	-	-	***Packaging size***	Offer new ways vegetable is offered (e.g., pre-packaged)	-	-
Cauliflower	-	-	***Lack of understanding of vegetable type***	Communicate vegetable preparation and recipes	-	-
Green Beans	***Familiarity***	Communicate health benefits	***Low acceptance***	Communicate health benefits	-	-

Measured vegetable	*DRIVERS OF PURCHASE AND CONSUMPTION*	Response to address driver	*BARRIERS TO PURCHASE AND CONSUPTION*	Response to address barrier 1	Response to address barrier 2	Response to address barrier 3
Green Beans	***Liking***	Expand retail outlets for vegetable	***Children's dislike***	Communicate repeated exposure of vegetable to children	Communicate health benefits	-
Green Beans	***Early exposure in childhood***	Communicate repeated exposure of vegetable to children	***Lack of consumption contexts***	Expand retail outlets for vegetable	-	-
Green Beans	***Atypical colour***	Expand retail outlets for vegetable	***Perceived price***	?	-	-
Green Beans	***Convenience***	Expand retail outlets for vegetable	***Lack of emotional involvement in decision making***	Vegetable industry to seek marketing advice to develop emotional involement enhancing concepts for vegetable	-	-
Green Beans	***Labelling/branding***	?	***Lack of variety available***	?	-	-
Green Beans	***Health benefits***	Communicate health benefits	***Poor quality/short shelf life***	?	-	-
Green Beans	-	-	***Inconvenience***	Offer new ways vegetable is offered (e.g., pre-packaged)	-	-
Green Beans	-	-	***Health benefits***	Communicate health benefits	-	-
Green Beans	-	-	***Segment taste preferences***	Communicate health benefits	-	-
Green Beans	-	-	***Lack of understanding of vegetable type***	?	-	-

Measured vegetable	*DRIVERS OF PURCHASE AND CONSUMPTION*	Response to address driver	*BARRIERS TO PURCHASE AND CONSUPTION*	Response to address barrier 1	Response to address barrier 2	Response to address barrier 3
PROJECT VG12069: Capsicum and Asian Greens [CSIRO]						
Capsicum	***Use in specific meal***	Ensure vegetables sold at peak condition	***Doesn't suit the meals I cook***	Communicate vegetable preparation and recipes	Communicate versatility	-
Capsicum	***Like taste/flavour***	Ensure vegetables sold at peak condition	***Dislike taste***	Communicate health benefits	-	-
Capsicum	***Buy as staple vegetable***	Communicate reliable/staple vegetable status	***Others in household don't like***	Communicate health benefits	-	-
Capsicum	***Good for you***	Communicate health benefits	***Never thought of buying***	Communicate vegetable preparation and recipes	Communicate versatility	Communicate reliable/staple vegetable status
Capsicum	***Versatile***	Communicate versatility			-	-
Asian Greens	***Good for you***	Communicate health benefits	***Doesn't suit the meals I cook***	Communicate vegetable preparation and recipes	Communicate versatility	
Asian Greens	***Use in specific meal***	Communicate versatility	***Never thought of buying***	Change style of vegetable displays in shops	Communicate versatility	Communicate vegetable preparation and recipes
Asian Greens	***Like taste/flavour***	Communicate health benefits	***Don't know how to cook them***	Communicate vegetable preparation and recipes	-	-
Asian Greens	***Suit type of cuisine I cook***	Communicate versatility	***Others in household don't like***	Communicate health benefits	Communicate vegetable preparation and recipes	-
Asian Greens	***Buy as staple vegetable***	Communicate vegetable preparation and recipes	-	-	-	-

The response plans relating to all six vegetables

The detailed response plans could be distilled down to a smaller set of activities which are generally common to all vegetables, even though the detail of their application will be different for different vegetables. There appeared to be generic response plans that could be applied to all vegetable commodities. The areas of opportunity identified in each study can be broadly categorised under the following areas relating to all vegetables:

Common areas of opportunity / response plans relevant to all vegetables
Marketing and communications/ cross communication channels • Communicate versatility • Communicate provenance • Communicate reliable/staple vegetable status • Communicate vegetable preparation and recipes • Communicate health benefits • Collaborations/ partnerships with public health
Media, advertising, ambassadors • Advertising - generate emotional involvement • Target Masterchef, My Kitchen Rules, Magazines, Jamie Oliver
New product development / product innovation / new varieties Packaging, branding, labelling, new cultivars • Offer new ways vegetable is offered (e.g., pre-packaged, ready to eat) • Offer new varieties of the vegetable (taste, colour, texture)
Transport, packaging, handling and storage • Ensure vegetables sold at peak condition • Eye appeal and retail display • Expand retail outlets for vegetable • Change style of vegetable displays in shops

Comparison of the response plans identified across the six vegetables

		Colmar Brunton		CSIRO		Sprout	
		Broccoli	**Pumpkin**	**Cauliflower**	**Green Beans**	**Capsicum**	**Asian Greens**
Transport/ packaging / handling / processing	Ensure vegetable sold at peak condition (maintain freshness and display)	Y	Y	Y	Y	Y	Y
Communication and marketing/ cross communication channels	Seek marketing advice to develop emotional involvement enhancing concepts for vegetable	N	N	Y	Y	N	N
	Media channels and retail stores to target and communicate to shopper e.g. Masterchef, My Kitchen Rules, Food Safari, retailer magazines	N	N	N	N	Y	Y
	Collaborations/ partnerships e.g. public health	N	N	Y	Y	N	N
	Promote repeated exposure of vegetable to children	N	N	Y	Y	N	N
Promote benefits	Communicate health benefits	Y	Y	Y	Y	Y	Y
	Communicate versatility	N	Y	N	N	Y	Y
	Communicate taste	N	N	N	N	Y	Y
	Communicate provenance	Y	Y	Y	Y	Y	Y
	Communicate reliable/ staple vegetable status	N	N	N	N	Y	N
	Communicate vegetable preparation and recipes	Y	Y	Y	Y	Y	Y
New product development (packaging, branding, labelling, new cultivars)	Offer new varieties of the vegetable (taste, colour, texture)	Y	Y	Y	N	N	N
	Offer new ways vegetable is offered (e.g., pre-packaged)	Y	Y	Y	Y	Y	Y
Retail display / storage	Change style of vegetable displays in shops	N	Y	N	N	N	Y
	Consider expanding retail outlets for vegetable	N	N	N	Y	N	N

The supply chain involved in response plans

Although was not specified in each report, the areas of opportunity from each study can be understood by their involvement with the following areas in the supply chain:

Supply chain involved in recommendations/ response plans
• Retailers and distributors (marketing and communications) • Processors, transport (packaging and handling) • Central markets / distributors (display, retail, communication) • Growers (development, varieties) • Research and development (new cultivars/ product development and testing, market research)

What were the unique features of each study?

CSIRO	• The literature review was extremely comprehensive with over 150 references cited. • The conjoint analysis attempted to test some of the barriers and drivers and the finding that the heart health claim was found to have a small but positive influence on purchase intention.
Colmar Brunton	• The inclusion of the Mintel Global, new product database reports for broccoli and pumpkin products, provided a new perspective and an insight into the latest broccoli and pumpkin food trends. • The use of the detailed infographics to present the data was clear, easy to read and succinct. Each section was clearly displayed and summarised. • Colmar Brunton attempted to tailor the response plans into consumer driven opportunities.
Sprout Research	• A simple method (factor analysis) was used in the quantitative research to identify some possible segments for future investigation. • Non-buyers were included to help understand reasons for non-purchase. • Assisted shops were used to explore consumer behaviour at the point of sale.

What were the limitations of each study?

Each agency has different core areas of expertise and access to resources (e.g. CSIRO appears to be able to access international scientific databases and Colmar Brunton appears to have access to Mintel new product databases). Therefore each company conducted the research in a professional manner and in line with the usual nature of their work however this approach lead to inconsistency in the reports produced for each vegetable.

CSIRO	• The report only included those who regularly purchase each commodity in the research. Recruitment for the quantitative research was that consumers needed to consume the vegetable at least once per three months. • The literature review, which extremely detailed, did not necessarily highlight clear opportunities for further investment to overcome barriers and drivers. • The attributes selected for the conjoint included some which were relatively unusual (e.g colour of cauliflower) and did not reflect a choice which was realistically available to consumers.
Colmar Brunton	• The market research only included regular vegetable buyers and as such non consumers were not included. • The inclusion of the Mintel report provided information about potential new processed food opportunities but did not cover fresh food innovation in detail. Consequently, this has limited application to the fresh food supply chain.
Sprout Research	• Sprout research had a somewhat limited literature review and as such lead to Asian greens and capsicums missing some background information based on academic sources. • Also the inclusion of the consumer lens was unique and innovative but it does not appear to have been reported on in any detail. • The presentation of segments based on factor analysis did not include sufficient depth to confirm their validity – which was identified as a potential area of further research.

4. STAKEHOLDER CONSULTATIONS

4.1 Consultations with grower representatives

Contact was made with all the grower representatives associated with each one of the three projects. Most provided detailed comments. Some were unavailable or no longer involved in the industry.

The following is a summary of their views about the outcome and process of the research. These comments have been taken into account in the recommendations made in this report.

Outcome – positive

At least one grower representative was positive about the outcome of the research. He felt that the conclusions were useful, even though they largely confirmed a view that was already suspected within the industry.

- In this case, it appeared that only one or a very small number of findings had any real impact on the perceptions of the grower (demand for smaller broccoli).

Information was very useful. Growers are now more willing to provide what the marketplace wants. The anecdotal evidence is that it is easier to sell smaller broccoli. But this helps us understands what the reasons were. It confirmed the directions we were heading in – make smaller broccoli.

Freshness is always a key finding – which is a take away message for producers and distributors – both parties need to keep working on.

Age old chestnuts of don't like it and don't know how to cook it. Don't know if research will fix that. Probably best to address this through those terrible cooking shows.

Outcome - negative

Some grower representatives were not positive about the outcome of the process, mainly because they didn't feel that it added substantially to the industry's understanding of consumer requirements for the products.

- They expressed the view that they had "seen this before" and that the projects duplicated findings they felt would remain unchanged in the future.
- They felt that the projects should be designed to add to the existing understanding of growers, not just (as they saw it), confirm what was already known.

Only problem I have with all these processes – the amount I see over the years are all the same. A report has already been done that has told us the same thing.

Seems to be that there is a lot of money spent telling us what someone has told us before.

We know that consumers have to understand the product to buy it – but people have got to understand what to do with it. At the management point of view over the last 20 yrs, it seems to be rehashing the same stuff over and over again.

The reports are handy, but once they've done a report they should be utilising it and moving it forward. In five years' time the report will say the same thing. The demographics might change, but there are a lot of different factors that make people decide what to buy.

Process – positive

At least one grower felt that their involvement in the process was satisfactory. However, he recognised that he had not had a high level of input beyond a few points of contact.

- He felt that he could have added more value if there had been an opportunity for him to provide more feedback at an earlier stage in the process.
- At least one other grower was very disengaged from the process and was relatively unable to provide comments about the process.

I didn't have much influence on them. I provided feedback on the finals. My opportunity for input was minimal. I should have been more involved earlier.

Ideally they would have a video or telephone hook up with more than one grower and with other people like wholesalers and consumers. We got a bit of a presentation of the findings at the preliminary stage with an opportunity to influence the direction of them.

Process – negative

Some growers felt that the process of managing the survey and its eventual output did not deliver valuable findings for the industry. This was largely because they felt the research was not based on a good understanding of the realities of the product and the market.

- There was also a view that the process did not identify strong areas of investigation which could lead to new and innovative ways of increasing consumption.
- Some growers had negative views about the process because they felt:
  - They were not given an adequate opportunity to provide an input
  - The consultations with them were not well planned or organised
  - Their views were not taken adequately into account despite being clear about what they felt was required

I was not very impressed by the process.

I agreed to be part of the process. [The consultant] lacked understanding of the products. They actually lacked understanding of how the product was grown and manufactured. So if you don't understand this, how can you provide information on the marketing of the product? Their understanding was appalling.

There were supposed to be follow up meetings and KPIs met. I went to one meeting and the project was finished. This was potentially a very important project, but I do not believe that the researchers behaved very professionally in their management of the project.

I told them I don't think colour is an issue. A lot of the regions can't grow the different colours at that time of year – it is not feasible or important – they should have been looking at what the consumer didn't understand about the crop.

Uptake of research

The growers themselves were only generally familiar with the outcome of the research, focussing on certain key aspects and being unsure about other findings.

- They also were not strongly aware of other steps that may have been undertaken by the consultant (and/or HAL) to promote the findings of the studies more widely to industry.

They were generally not overly optimistic that the findings of the reports would have been known and understood by industry or would have been applied by growers or other parties in the supply chain.

- More than one grower expressed the view that growers should not be seen as the only audience for these reports because of the importance of other players in the supply chain.
- They felt that the audience for the reports should be more clearly defined and targeted.

Need to find ways of producing reports that are not intended to be read by growers – they need to be written for the public to read.

10% of research projects would actually get read by producers and 2% would be acted upon.

The finished project should be clearly defined about who it is intended for. Eg new chemicals – needs to be 70% producers, but if it is for marketing, then it is intended 20% for producers – but 80% for other users. The steering committees should involve other experts as well as growers.

There is no real measure of how effective these are.

There is a place for R&D but they need to get out of the science lab – there is too much rubbish done and not a good enough understanding about what already exists.

Industry consultations / Future research

There was a common view that the best outcome in the future would be achieved by a higher level of collaboration which extends outside the network of growers that are normally involved in AUSVEG/HAL research projects.

- This would include other grower bodies which may have relevant experience across the same or other products and other people involved at different stages in the supply chain.
- This would include engaging with the eventual product retailers.

No need to ask growers because they will have a production issue.

You cannot dismiss 80% of Australian consumers by not including Coles and Woolworths.

Would be relevant to get a core group together even once a year eg Andrew Young from Brisbane markets and others – help them to understand what is going on. We have set up a partnership with the Brisbane markets – agents and others can pay a fee to get access to the growers to add to their knowledge – we can interact with them and understand how to do business with each other better.

Need to interlink everyone so that we can share information better and find out how everyone works and we can work better together and give the consumer what they want. Otherwise it is a waste of time for all parties.

Have a focus group among the organisations and peak bodies – so that we are not overlapping each other. Education for the growers are important – need to help them understand the level of demand for a market – how many people consume it and what does it mean for production.

4.2 Central markets

Awareness of project and AUSVEG information

Only one out of central markets marketing officer was confident that they had seen one report (Sprout) which had been brought to their attention by a source other than AUSVEG/HAL (possible State Dept of Ag).

- They were aware of the AUSVEG Magazine and the Project Harvest updates and considered these to provide them with valuable information.
- At least one marketing person believed they had seen the Colmar Brunton report, but they were actually confusing this with the Project Harvest report – which they considered to have some value.

Marketing people at the Central Markets have access to a fairly consistent flow of market information in addition to the information from AUSVEG.

- They are aware they do not have access to the AUSVEG database and rely on receiving information about AUSVEG that is sent to them directly by AUSVEG or material which comes from third parties (eg State Depts of Ag)
- The AUSVEG material they reported seeing included:
  - Vegetables Australia Magazine
  - Vegenotes
  - Veginsights
  - Ausveg website weekly report
  - Project Harvest
  - Weekly reports
  - Annual Resport
  - Quarterly Summary of Projects

"I've seen the report on the info produced about fruit and veg consumption. That is interesting for us - providing to green grocers, indications and trends purchased at green grocer. That's good news for green grocers, it's interesting and shared.

Am not too familiar with the CSIRO and Colmar Brunton but the Sprout project I read for a pilot campaign we undertook in QLD on winter vege – it may have come from the Dept. Ag or was in documentation or receive from different sources sometimes market research comes from the wholesaler it isn't always a direct link.

Perception of reports

Central markets marketing officers felt that the main findings in all three reports did not add anything substantial to their existing understanding. They felt that it confirmed some of the things that they already knew to be true, but the findings did not provide them with any new information that they could use.

- They felt that the research could have looked deeper, including and exploration of the reasons why do not buy vegetables.
- They also saw merit in presenting practical suggestions to consumers to see if they made a difference to their buying intention.

It is relevant but is it new and exciting and would make me change the way we are marketing? It is relevant because it is vegetables but it only backs up what we already

knew or guessed or had read in other market research - but it is what we already knew. I don't find it exciting.

All of that is nothing new and it's been that way forever. I'm sure there was a report 10 yrs ago that said the same thing.

It has got to be interesting. Unless it's knew and makes you think that we need to tell people this then don't tell them, we all know barriers to consumption we all work in the industry so telling us that isn't going to turn us on!

Let's not do this every year, we know barriers, we know what to do it.. Let's not do this again in 12 months time.

Need to drill down to understand the answers to the hard questions - like why don't they buy it. Offer them suggestions and see if that makes a difference to their interest in buying them.

Application of findings

State marketing people felt that the findings needed to be tailored to each market. For example green grocers were not interested in the pre-packaged options and would not do anything with them.

- Their primary focus was to find ways to drive consumers towards green grocers, with a secondary focus on influencing overall consumption of vegetables.

The reports to me are just confirming perceptions and something that jumps out is the contradictory ideas to green grocers for example pre-packaging doesn't work in our industry it has been perceived as inferior quality product in our network (naïve insights). It's interesting but depends on the market our retailers don't need it and can't really do anything with it.

To know what is going on, my focus is to drive consumers to green grocer who buy from central market. Secondary objective increase consumption of fruit and veges.

Future contributions

- Marketing people were very willing to be involved in assisting with the development of the research process and helping with the operation of research that involved retailers. They were not involved in any of these projects but would have been interested in doing so.

Really like to see the format for the project sent round to the central markets for consideration and comment prior to engaging the survey. We would be a clean pair of eyes at the coal face and we deal with all aspects of industry. We would be happy to assist and provide constructive comments wherever possible. We deal with retailers, growers, marketers - we cover the broad spectrum of industry.

HAL should contact us to say they have X amount of dollars, and need some retailers to conduct research. We provide the retailers for research and then help with trials and put research into these stores. Retailers like that sort of thing as well, it's a win win situation. We can help and set it up for retailers. AUSVEG should approach it in the same way.

5. SUMMARY OF THE THREE PROJECTS

This section provides a summary of each of the three projects, outlining:

- The methodology used by each consultant
- The summary outcomes of each project stage
- Barriers and drivers identified
- Response plans recommended

5.1 Colmar Brunton / Broccoli and pumpkin / VG12045

Colmar Brunton was commissioned to undertake the project for the vegetable commodities **broccoli** and **pumpkin**.

Methods used

The project undertook:

- A literature review,
- Nine industry interviews,
- Trends analysis of Mintel reports,
- Six qualitative focus groups N=48
- An online National survey N=1000.

Outcomes from literature review

The literature review was conducted for both broccoli and pumpkin and included a comprehensive list of references from academic journals, government reports, trade publications, company report sales data, industry reports, online product databases, trend reports, library resources, and knowledge sharing and commercial resources (e.g., Retail World).

The literature review concluded that for both commodities considerable knowledge gaps exist, particularly in relation to research available on Australian consumers, and in some areas the literature is no longer relevant and needs to be updated, particularly commodity specific research.

The main topics covered in the literature review were:

- Background to the vegetable
- Australian production
- Australian consumption
- Processing and innovations
- Health and nutritional properties
- Environmental information
- Economic information

Outcomes from trends analysis

As part of the literature review, Colmar Brunton supplied a trends analysis using **Mintel's Global New Product Databases** (MAT Jan 2013), to identify new products on the domestic and international markets of packaged goods (paying particular attention to the successful products).

The analysis concluded that new products are increasingly becoming orientated towards convenience, health, reduced allergen and natural foods.

The commonly used packaged claims were:

- **Health benefits:** e.g. all natural product, high or added fibre, organic, no additives / preservatives
- **Functionality and convenience:** e.g. microwaveable, eco friendly
- **Suitability for specific consumers**: e.g. vegetarian, vegan, kosher, gluten free

Outcomes of industry interviews

Consultations with industry (retail buyers, growers, health consultants and green grocers) were conducted to further define the motivations and consequences of the key inhibitors for both vegetables. Key points arising from these were:

Vegetable	Industry interviews
Broccoli	• Each industry consultation provided different observations of consumer behaviour. Retailers suggested that sales of broccoli had grown in line with population and suggested the effectiveness of cooking programs such as MasterChef and My Kitchen Rules and other promotional features of vegetables and home cooking. • Green grocers were cognisant of broccoli prices fluctuating over the past five years, and the nutritionist suggested a lack of consumer understanding on the nutritional benefits of the vegetable as a significant barrier to consumption.
Pumpkin	• The pumpkin grower suggested a driver for pumpkin is its staple vegetable status, and retailers suggested that a key inhibitor is preparation time. • The nutritionist suggested that some misconceptions exist among some consumers who believe that pumpkin is too starchy.

Outcomes from focus groups

The six focus groups each included eight participants and were conducted in rural and metropolitan locations around VIC, NSW and WA. The participants were either the main or joint grocery buyer and had to purchase fresh vegetables at least once a week, including either fresh broccoli or pumpkin at least fortnightly.

In summary, the outcome for each vegetable was:

Vegetable	Focus groups
Broccoli	• For regular buyers, broccoli is perceived as a staple everyday vegetable and its health benefits and quick preparation methods added to the appeal. • Evidence suggested that the store layout made it difficult to locate the different varieties However, broccoli consumers generally displayed strong awareness of the Broccolini but confusion about other varieties. • Nutritional benefits of the vegetable were the overwhelming purchase and consumption trigger. • Barriers included hollow or browning stem, too much stem, open florets and yellow head colour.
Pumpkin	• Strong awareness of a range of different pumpkin varieties. • Poor perception of health benefits and most common preparation was roasted or mashed. • Flavour was prime attraction, leading a range of other drivers, including versatile, value, availability, long shelf life, traditional, hearty, and filling. • Reasons not to purchase pumpkin included limited knowledge of alternative methods of preparation and use, whole pumpkin weight, too many seeds, hollow sound..

Outcomes from online survey

A 25 minute national online survey was conducted with 1000 respondents, who were drawn from a market research panel data base and were invited to participate via email.

To be eligible to participate, the participants must have consumed broccoli or pumpkin at least once in the last 2 months. Additional quotas were implemented to ensure a representation across age, gender, consumer types, and households.

Survey data collected
• Consumers understanding of health claims and nutritional benefits • Awareness of vegetable varieties • Purchase and usage of vegetables • Triggers and barriers to purchase • Price perceptions and average spend.

Key drivers and barriers of broccoli and pumpkin

Colmar Brunton identified the following drivers of pumpkin and broccoli as being consistent across all demographics:

Note: Table is a simplified summary

Vegetable	Barriers	Drivers
Both vegetables	• Preparation • Cost • Storage	• Taste • Freshness • Local produce • Promotions/ discounts • To add variety • Healthy / good nutrition • Good for the whole family • To add colour to a meal • To complement other food • Habit • Versatile
Pumpkin (specific)	• Weight of product • Portion size • Difficulty and inconvenience of preparation	• Flavour • Versatility • Availability • Colour • Tradition
Broccoli (specific)	• Expense • Inconsistency in quality • Freshness • Poor longevity of storage	• Ease of preparation • Longevity of storage • Staple • Readily available • Everyday • Affordable

Response plans identified for pumpkin and broccoli

	Barriers	Response plan
Pumpkin	• Taste	• Should be supplied and sold at its peak • New varieties offering different tastes
	• Inconvenient to peel/ prepare/ cook	• Investigate the possibility of pre-packaged and ready to eat options
	• Better quality	• Ensure sold at peak season
	• Kids don't like it	• Sweet sauces • Add fun/ colour
	• Texture	• Recipe ideas • New varieties
	• Difficult to store	• Educate consumers • Reduce time between harvest and POS
	• Portion size	• Harvest smaller pumpkin varieties
	• Grow own	• Harvesting and selling new and different varieties that wouldn't typically be grown by consumers at home. Selling product during seasons that wouldn't usually yield home grown produce. • Convey provenance.
Broccoli	• Cost	• Price promotions • Organic at a reasonable price • Communicate nutritional value, recipe and preparation idea at POS • Point of sale education using the whole vegetable • Advertising campaigns highlighting the unique health benefits and storage • More information about health benefits and specific nutrients
	• Versatility	• Grouping varieties together at retail • More ideas around recipes, ways to use stems/ stalks
	• Don't like the taste • Kids don't like it	• Make it playful, complement with sweet sauces • More varieties • New varieties that offer a different taste, new preparation methods
	• Quality	• Sell at peak condition and freshness, maintaining and improving care in merchandising and preserving peak freshness, avoid covering and stock on ice

Areas of opportunity identified

In summary, the recommendations can be categorised under the following areas of opportunity:

- Communications and marketing
- Product development and packaging
- Consumer education / marketing and advertising

Areas identified for future research

- With consumer lifestyles changing and new trends emerging, the study proposed that further research should validate whether these are still some of the driving factors in the purchase of broccoli and pumpkin, as well as identifying any others that may exist.

Points of difference - positive

- The inclusion of the Mintel Global, new product database reports for broccoli and pumpkin products, provided a new perspective and an insight into the latest broccoli and pumpkin food trends.
- Colmar Brunton produced reports which had a high level of graphic design. This included the response plans which presented clear summaries in response to each main barrier

Communication to industry

- Response plans were designed for industry highlighting areas that required future research and development activity to increase consumption, sales, and volume of produce in the Australian Markets.
- Infographic presentations were formulated with summaries of the drivers and barriers for each vegetable.

Points of difference – potential issues

- The market research only included regular vegetable buyers and as such non consumers were not included.
- The inclusion of findings from the Mintel Report provided a large amount of information, mainly in the form of examples of processed products (food, drink, cosmetics, etc) on international markets which used the nominated commodities in their production. The vast majority of this did not cover fresh food innovation. Consequently it had questionable value to the meeting the objectives of AUSVEG.

5.2 CSIRO / Cauliflower and Green Beans / Vg12070

CSIRO was commissioned to undertake the project to understand the drivers and barriers to purchase and consumption of **cauliflower** and **green beans**.

Methods used

The study undertook:

- A literature review
- Industry stakeholder consultations
- An online quantitative survey with the use of choice modelling (conjoint) N=1000.

Outcomes of literature review

The literature review was extremely comprehensive with over 150 documents referenced. References were sourced from online peer reviewed journals, HAL and AUSVEG reports and book chapters/reviews (last 20 years), computerised literature search of databases (Agecon search, web of knowledge (Medline web of science food science and technology abstracts CAB abstracts) Scopus, science direct, summon (CSIRO search engine). Bibliographies and cited by' papers were also examined where relevant.

CSIRO concluded that there was a considerable knowledge gap in the literature available for cauliflowers and green beans, particularly commodity specific studies, and studies about Australian consumers.

The literature review however identified validated attitudinal scales and key attributes to be tested in a choice model as part of their quantitative survey.

In summary, the main topics identified through the literature review are set out on the next page:

Main topics identified in literature review

Vegetable	Literature available
Cauliflower	• Varieties available • Sensory differences and consumer preference between varieties • Cost • Health claims/ benefits • Labelling/branding • Consumer segmentation • Country of product origin • Emotional involvement in decision making
Green beans	• Varieties available • Convenience • Quality attributes and shelf life • Labelling/branding • Consumer segmentation • Context/ availability • Country of product origin
Vegetables	**Segmentation studies:** • Lifestyle or behaviour factors • Gender • High low vegetable consumers • Household characteristics • Geographic location • Children and family status • Education level and occupation • Genetic variation in taste and preferences **Context (food consumed and purchased)** • Workplaces • Schools • Childcare • Foodservice • Supermarkets • Online shopping

Topline findings from quantitative survey

Following the literature review a comprehensive online survey with the use of conjoint analysis was conducted with a sample of 1000 participants per vegetable.

- The participants included Australian vegetable consumers aged 18-65, who were either the main or joint grocery buyer and had purchased either cauliflower or green beans in the last month.
- The study was designed to provide an improved understanding of the importance of characteristics that inhibit the purchase and consumption of cauliflower and green beans and to support the development of a practical response plan.
- The conjoint was designed to include factors deriving from the literature review that could be changed either within the product or the communication or marketing of the product.

The main points of data collected in the survey were:

Survey data collected

• Demographics
• Vegetable purchase consumption and acceptance
• Food involvement scale that consisted of 12 items that measured
• **Activities relating to food**
  • Grocery purchase and consumption characteristics
  • Grocery consumption and purchase as influenced by the media
  • Purchase and consumption of vegetables in general
  • Categories regarding the measured vegetable:
  • Child influence and the measured vegetable
  • Drivers and inhibitors of the measured vegetable purchase and consumption
  • Health benefits of measured vegetable
  • Cooking with the measured vegetable
  • Variety available of the measured vegetable
  • Expense of measured vegetable
• **Attitudinal scales (three validated attitudinal scales were used, see appendix).**
  • Health and taste attitude scale (3 subscales were used by Roininen, Lahteenmaki et al 1999)
  • General health interest, using food as a reward, pleasure
  • Influence of children on food purchase decisions (Norgaard et al 2007).

Topline findings from choice model

The literature review identified the following attributes that influence vegetable purchase intention and were included in the choice model, and the key findings are listed below:

Attributes identified in literature review influencing purchase intention
• Colour • Communication of sensory properties • Health claims • Price • Convenience • Portion size

N.B See appendix for factors included in the conjoint choice model.

Vegetable	Choice model key findings
Cauliflower	• Consumers were found to prefer white, whole cauliflowers at lowest cost • Some interest in snack packs • Heart health claim had positive but small influence on cauliflower purchase intention • Consumers with a high health awareness showed more interest in the heart health claim for cauliflower • The communication of sensory properties had no positive influence on consumers' buying behaviour. • Segmentation was found for cauliflower, families with children showed interest in snack packs and consumers seeking high pleasure when eating food, and those with a high health awareness showed more interest in products with a heart health claim for cauliflower
Green beans	• Green beans loose at lowest cost • Some interest in snack packs

Key drivers of purchase of cauliflower and green beans

The study identified the key drivers of purchase and consumption of green beans:

High Priority	
Cauliflower and green beans	• Familiarity • Liking • Early exposure in childhood (related to vegetables)
Medium/ low priority	
Cauliflower and green beans	• Atypical colour • Convenience • Labelling/ branding (related to vegetables) • Health benefits

Barriers to purchase and consumption for cauliflower and green beans

The study suggested that some barriers are unique to specific vegetables, and some relate to all vegetables commodities. The barriers are presented below in response plan priority:

Barriers - High priority	
Cauliflower	• Low acceptance ** • Children's dislike * • Taste, flavour * • Lack of consumption contexts * • Perceived price / cost*
Green beans	• Low acceptance** • Children's dislike* • Lack of consumption contexts* • Perceived price/ cost *
Barriers - Medium priority	
Cauliflower	• Lack of emotional involvement** • Inconvenience* • Lack of variety* • Health benefits * • Poor quality/ defects visible*
Green beans	• Lack of emotional involvement** • Lack of variety* • Poor quality/ shelf life * • Inconvenience
Barriers - Low priority	
Cauliflower	• Portion size too large * • Packaging size * • Lack of understanding *
Green beans	• Health benefits * • Segmented texture preferences* • Lack of understanding*

Barriers specific to vegetable (*)
Barriers identified as related to vegetables (**)

Response plans identified for cauliflower and green beans

The project concluded that there were some barriers that relate to all vegetables and some that were commodity specific, therefore the response plans were broken into three areas, cauliflower, green beans and both commodities, listed below:

Vegetable	Response plan
Cauliflower	• Develop white and or multi coloured snack packs, • Develop cultivars with specific sensory properties • Communicate preparation advice have increased availability through other channels • Communicate heart health claim
Green beans	• Develop snack packs
Both vegetables	• Change consumer behaviour towards vegetables • Increase children's acceptance • Increase adults acceptance through early exposure • Increase emotional involvement • Increase availability through other channels • Stronger collaborations with Australian Governments with public health interests be formed to leverage investments into research to increase vegetable consumption and enhance the adoption of outcomes on a national scale • Collaboration with others that have a similar interest in changing consumers food choices from a public health perspective was also recommended. • Suggested investigating how marketing intelligence generated through the various projects can be consolidated for the benefit of the vegetable industry

Areas of opportunity identified

- Change consumer behaviour towards vegetables
- Stronger collaborations with Australian Governments with public health interests be formed to leverage investments into research to increase vegetable consumption and enhance the adoption of outcomes on a national scale
- Collaboration with others that have a similar interest in changing consumers' food choices from a public health perspective was also recommended.
- Suggested investigating how marketing intelligence generated through the various projects can be consolidated for the benefit of the vegetable industry

Communication to industry

The consultants reported a number of communication activities.

- Presentation of preliminary results
- Reports to HAL
- End of project communications summary
- Presentation given to Mulgowie growers
- Presentation to design team
- Case study delivered to Nutritional society of Australia scientific meeting, published in Vegetables Australia, conferences and peer reviewed scientific journal.

Areas for future research

- The study only focused on regular vegetable consumers, therefore CSIRO recommended to expand the study to explore the barriers to consumption for non-consumers because it may provide additional information to grow consumption of the commodities.
- It was recommended to start with qualitative research to develop hypotheses that can be tested in quantitative research
- The study also recommended that the vegetable industry could greatly benefit from a systematic review into the effectiveness of the interventions to increase vegetable consumption.
- This would allow for flow on projects to predict consumer preferences under specific conditions e.g different price points, being out of stock, different labelling, different retail display or layout etc.

Points of difference - positive

- The literature review was extremely comprehensive with over 150 references cited.
- The study undertook a formal conjoint analysis to evaluate the relative contribution that some attributes made to purchase and consumption intention.

Points of difference – potential issues

- The literature review was the longest and most detailed of the three reports, and provided a reference source on the academic and technical literature available for each commodity. While this may have academic value, it was less clear how this provided growers and the supply chain with a better practical understanding of the previous knowledge and options available to them for the future.
- The report only included those who regularly purchase each commodity in the research.
- CSIRO did not engage directly with consumers in qualitative research, which meant they relied on previous research, which apparently was mainly academic. This reduced the capacity of the consultant to understand the current realities of the way that consumers perceive and engage with the products.
- The attributes selected for the conjoint included some which were relatively unusual (e.g. colour of cauliflower) and did not reflect a choice which was realistically available to consumers. Consequently the conclusions of this part of the study had questionable value.

5.3 Sprout Research / Capsicum and Asian greens / VG12069

Sprout research was commissioned to undertake the project on capsicum and Asian greens.

Methods used

Sprout Research undertook:

- An omnibus telephone survey N=1200
- 12 facilitated focus groups
- Ten assisted shops
- An online consumer lens (community blog)
- A quantitative online survey N=900.

Outcomes of literature review

The sources provided by Sprout were limited to:

- A review of Asian greens (2005 NSW Department of Primary industries)
- A study by Burt (2005) who provided a review on growing capsicums and chillies
- A report commissioned by AUSVEG on capsicum.

The literature review concluded that there had been little previous research taken into investigating the barriers and drivers for capsicum and Asian green purchase, particularly for capsicums.

The main industry issues identified for Asian greens from the (NSW DPI) were:

- Confusion about product names among the supply chain, and therefore a national naming system for vegetables was developed.
- Consumers are generally unwilling to try out new products, due to low awareness and product knowledge.

Studies on capsicum from Burt (2005) revealed that there is an increasing demand in Australia regarding new ways for culinary use of capsicum, however AUSVEG has revealed consumption of capsicums have risen in recent years but have hit a peak.

Outcomes from qualitative research

The capsicum/Asian greens study held a total of 12 focus groups which consisted of six groups for each vegetable across three cities with nine participants per group (N = 108), assisted shops(N-10) and an online “consumer lens” were also undertaken to record consumers’ actual buying habits.

Sprout did not report in detail on the outcome of the qualitative phase, with these findings presumably forming part of the overall qualitative and quantitative report.

Outcomes from quantitative research

Newspoll, omnibus telephone survey
A Newspoll omnibus survey was undertaken to assess incidence of purchase and consumption frequency of both vegetables. 1,200 Australians, 18 years and over, were surveyed, with two questions per commodity. Data was post-weighted to the latest ABS Census for age and gender as well as incidence of vegetable buying.

Online quantitative
An online quantitative survey was conducted to identify the impact of barriers and drivers to purchase of capsicum and Asian greens. The full list of drivers developed from the qualitative study was related to the choice of the commodity.

Key outcomes – drivers and barriers

The summary barriers and drivers identified for capsicums and Asian greens were:

Drivers	Barriers
CAPSICUMS	
1. I use it in a specific meal 2. I like the taste/flavour 3. I buy it as a staple vegetable 4. They are good for you 5. They are versatile	1. Capsicum doesn't suit the meals I cook 2. I dislike the taste 3. Others in the household don't like them 4. I never thought about buying it
ASIAN GREENS	
1. They are good for you 2. I use it in a specific meal 3. I like the taste/flavour 4. They suit the type of cuisines I like to cook 5. I buy it as a staple vegetable	1. Asian greens don't suit the meals I cook 2. I never thought about buying them 3. I don't know how to cook them 4. Others in the household don't like them

Consumption and usage

The questionnaire included four sets of attitudinal measures covering the following areas:

Survey data collected
• Health • Lifestyle • Cooking habits • Price • Attitudes towards fruit and vegetables

NB: See appendix for attitudinal scale used.

The reporting presented key findings for a number of different consumption measures:

Vegetable	Key measures and findings
Both vegetables	**Key findings** The majority of consumers purchased capsicum and Asian greens from supermarkets. Both vegetables are often used in stir fries or salad(capsicums) and steamed (Asian greens) **Segments found (based on factor analysis)** • Vegephiles • Basic cook • Entertainer • Choosy buyer • On the go • Year round • Price conscious **Communication channels used by consumers** • My Kitchen rules/ Masterchef • Woolworths/ Coles magazines
Capsicums	**Key findings** A high proportion of consumers purchased capsicums regularly (42% at least once a week), a smaller proportion of consumers bought them irregularly (7% less than once a month). Although perceived as healthy, consumers were unsure about the exact health properties in capsicums **Measures collected** • Capsicums: Current market size • Drivers of Capsicum purchase • Health benefits of Capsicums • Capsicum place of purchase • Meals capsicums are used in • Barriers to purchasing capsicums • Communication devices for buyers and non-buyers of Capsicums

Vegetable	Key measures and findings
Asian greens	**Key findings** A small proportion of consumers regularly purchase Asian greens and similar to capsicum consumers were unsure of the exact health properties of the vegetable **Measures collected** • Asian greens: Current market size • Drivers of Asian Greens purchase • Health benefits of Asian Greens • Asian greens place of purchase • Meals Asian greens are used in • Barriers to purchasing Asian greens • Communication devices for buyers and non-buyers of Asian Greens

Areas of opportunity identified for capsicum

The following areas of opportunity were identified for the drivers and barriers of capsicum:

Vegetable	Drivers	Barriers	Response plan
Capsicum	• Planned use • Taste/flavour • Buy as a staple vegetable • Health benefits • Versatile	• Doesn't suit the meals I cook	• Communicate the multitude of meals that capsicums can be used to cook
		• Dislike the taste / Others in household don't like it • I don't know how to cook them	• Communicate flavour, health benefits, versatility and reliable vegetable status • Position capsicums as a reliable vegetable – there when you need it and it will last long enough until you need to use it. • Ensure flavour is maintained throughout the supply chain effective channels of communication.
		• Never thought about buying	• Communicate the health benefits • Highlight its role as a versatile vegetable • Communicate the meals in which capsicum can be used e.g Mexican dishes • In store display
		• Storage	• Maintain high quality growing process and optimal storage/ Distribution and retailing

Areas of opportunity identified for Asian greens

The following areas of opportunity were identified for the drivers and barriers of Asian Greens:

Vegetable	Drivers	Barriers	Response plan
Asian Greens	• Health benefits • Use it in a specific meal • Taste/ flavour • Suit the cuisines I cook • Buy as a staple vegetable	• Asian greens don't suit the meals I cook	• Communicate that Asian greens are not just suitable for Asian meals • Communicate the ease, taste and health benefits associated with Asian style cooking
		• I never thought about buying them • I don't know how to cook them	• Increase awareness through the use of in store POS, incl brochures and recipes and displays • Ensure plentiful and fresh display • Communicate health benefits • Communicate recipes and how to cook • Use media channels and retail stores that the targeted shopper currently frequents as effective channels of communication.
		• Taste/ Others in the household don't like them	• Ensure flavour is maintained throughout the supply chain

Areas for future research?

The report recommends that the proposed consumer segments should be further explored to fully understand the decision making dynamics and attitudes that influence consumer purchase behaviour in relation to vegetables. The segments were identified based on attitudes and beliefs and need to be more robustly analysed to explore meaningful conclusions.

It suggested that this will

- Assist HAL and growers to develop more effective communication strategies that target distinct groups within the population
- Optimise the likelihood of targeted communication strategies resonating with specific segments, thereby increasing the likelihood of altering their purchase behaviours.

Communication to industry

- A stop/go trigger workshop was conducted
- The report also suggested that the outcomes of this research be circulated not only to growers but also to other supply chain participants, including retailers, which they believe play a large part in maximizing the likelihood of consumers purchasing capsicum and Asian greens.

Points of difference - positive

- Factor analysis was used in the quantitative research the project to identify attitudinal consumer segments in relation to the vegetables.
- Sprout Research included a group of non-buyers in the research to gain their perspective on barriers to purchase and consumption of capsicum and green Asian greens. As the report included observations about current non-buyers.
- The use of the consumer lens and accompanied shopping visits offered the potential to provide an additional perspective on the engagement that consumers have with the products at the point of sale.

Points of difference - negative

- The study did not access a wide variety of literature in the review.
- The use of consumer lens was not reported on in any detail and it was not clear how it added depth to the qualitative/ quantitative research.
- The majority of the report was based on the findings drawn from the quantitative online survey, which makes it difficult to identify more descriptive findings drawn from the focus groups and consumer lens/ assisted shops.
- While the document provided a single page summary, the findings were not apparently presented in a more detailed summary form to highlight the main points.

6. APPENDIX

6.1 Attitudes to food scales

Attitudes to food: CSIRO (Cauliflower and green beans)

Set 1

Q12. Please indicate your agreement with the following statements by ticking the appropriate number on the scale.

		Strongly disagree						Strongly agree
Q12_1	I am very particular about the healthiness of food	1	2	3	4	5	6	7
Q12_2	I always follow a healthy and balanced diet	1	2	3	4	5	6	7
Q12_3	It is important for me that my diet is low in fat	1	2	3	4	5	6	7
Q12_4	It is important for me that my daily diet contains a lot of vitamins and minerals	1	2	3	4	5	6	7
Q12_5	I eat what I like and do not care about the healthiness of food	1	2	3	4	5	6	7
Q12_6	I do not avoid any foods, even if they may raise my cholesterol	1	2	3	4	5	6	7
Q12_7	The healthiness of my food has little impact upon my food choices	1	2	3	4	5	6	7
Q12_8	The healthiness of snacks makes no difference to me	1	2	3	4	5	6	7
Q12_9	I do not believe that food should always be a source of pleasure	1	2	3	4	5	6	7
Q12_10	The appearance of a food makes no difference to me	1	2	3	4	5	6	7
Q12_11	It is important for me to eat delicious foods on weekdays as well as weekends	1	2	3	4	5	6	7
Q12_12	When I eat, I concentrate on enjoying the taste of food	1	2	3	4	5	6	7
Q12_13	I finish my meal even when I do not like the taste of food	1	2	3	4	5	6	7
Q12_14	An essential part of the weekend is eating delicious food	1	2	3	4	5	6	7
Q12_15	I reward myself by buying something really tasty	1	2	3	4	5	6	7
Q12_16	I indulge myself by buying something really delicious	1	2	3	4	5	6	7
Q12_17	When I am feeling down I want to treat myself with something really delicious.	1	2	3	4	5	6	7
Q12_18	I avoid rewarding myself with food	1	2	3	4	5	6	7
Q12_19	In my opinion, comforting oneself by eating is self-deception	1	2	3	4	5	6	7
Q12_20	I try to avoid eating delicious food when I am feeling down	1	2	3	4	5	6	7

Set 2

		Strongly disagree						Strongly agree
Q13_1	I don't think much about food each day	1	2	3	4	5	6	7
Q13_2	Cooking or barbequing is not much fun	1	2	3	4	5	6	7
Q13_3	Talking about what I ate or am going to eat is something I like to do	1	2	3	4	5	6	7
Q13_4	Compared with other daily decisions, my food choices are not very important	1	2	3	4	5	6	7
Q13_5	When I travel, one of the things I anticipate most is eating the food there	1	2	3	4	5	6	7
Q13_6	I do most or all of the clean up after eating	1	2	3	4	5	6	7
Q13_7	I enjoy cooking for others and myself	1	2	3	4	5	6	7
Q13_8	When I eat out, I don't think or talk much about how the food tastes	1	2	3	4	5	6	7
Q13_9	I do not like to mix or chop food	1	2	3	4	5	6	7
Q13_10	I do most or all of my own food shopping	1	2	3	4	5	6	7
Q13_11	I do not wash dishes or clean the table	1	2	3	4	5	6	7
Q13_12	I care whether or not a table is nicely set	1	2	3	4	5	6	7

Attitudes to food scale: Sprout Research (Capsicum and Asian greens)

Health and Lifestyle attitudes (Q28)	I have a balanced, healthy diet
	I make sure I eat vegetables everyday
	I eat a wide variety of vegetables
	I take notice of the vegetable "colour pallet"
	Getting enough vitamins and minerals is important to me
	Getting enough antioxidants is important to me
	I am always "on the go"
	I like to entertain at home
	It is important for family to eat together everyday
	I find it hard to find the time to go grocery shopping
Cooking attitudes (Q29)	I find it hard to find the time to cook in the evenings
	I find cooking a chore
	I get enjoyment from preparing and cooking meals
	I tend to stick to the same meals each week
	I like to be adventurous in the kitchen and try new meals
	I like cooking for a big group of people
	It takes too long to cook meals from scratch
	I tend to cook basic meals
	I like to cook a range of cuisines
Price attitudes (Q30)	I always try to buy fruit and vegetables that are on special
	I don't notice the price of fruit and vegetables
	I always stick to a weekly grocery budget
Fruit and Vegetable attitudes (Q31)	I always buy Australian made products when I can
	I always take note of where fruit and vegetables are grown / sourced from
	I don't like fruit and vegetables that have been kept in cold storage
	I always buy fruit and vegetables that are in season
	It bothers me that capsicum is not available year round
	It bothers me that Asian greens is not available year round
	I don't like buying hydroponic fruits and vegetables

Role of children in product selection and purchase: CSIRO (Cauliflower and green beans)

☐ never ☐ seldom ☐ sometimes ☐ often ☐ always

Q16. How often do you

1. Make a positive response to your children's ideas for fruits and vegetables?
2. Make a positive response to your children's ideas for food?

☐ never ☐ seldom ☐ sometimes ☐ often ☐ always

Q17. Who decides on what food products to choose for

1. Eating between meals
2. Breakfast
3. Lunch
4. Dinner

☐ Parents decide ☐ Parents decide more than children ☐ Children and parents decide the same ☐ Children decide more than parents ☐ Children decide

Q18. How often do your children help with

1. Writing items on the shopping list
2. Looking for information in sales materials
3. Finding good food offers
4. Comparing prices on food offers

☐ never ☐ seldom ☐ sometimes ☐ often ☐ always

Q19. In the shop who decides to buy vegetables?

☐ Parents decide (1) ☐ Parents decide more than children (2) ☐ Children and parents decide the same (3) ☐ Children decide more than parents (4) ☐ Children decide (5)

Q20. How much do your children like [cauliflower / green beans]? (if your children differ in their liking for [cauliflower/green beans], indicate for the child that likes it the least)

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Dislike extremely — like extremely

Q21. Would you buy [cauliflower / green beans] more often if (one of) your children would like it more?

☐ ☐ ☐ ☐ ☐

definitely would not | probably would not | not sure | probably would | definitely would

6.2 Barriers and drivers to purchase

Reasons for purchase – questionnaire: Colmar Brunton (Broccoli and pumpkin)

Q19 REASONS FOR PURCHASE
Q19. Which of the following reasons best describes why you purchase **<INSERT VEGETABLE>**?

1. To give me energy for that day
2. To compliment other food
3. Give me energy for the next day
4. As comfort food
5. Reminds me of my childhood
6. It's versatile
7. To add colour to a meal
8. Specific health benefits
9. It's convenient compared to other vegetables
10. They taste great
11. Good for my kids
12. Good for the whole family
13. For a treat
14. As they are healthy
15. To use as an ingredient in other dishes
16. To add variety to my vegetable selection
17. As they are good in nutrition
18. For entertaining/dinner parties
19. Ability to be microwaved makes cooking more efficient
90. Other (please specify)

Drivers of purchase – questionnaire (Colmar Brunton)

PURCHASE DRIVERS IN MAX DIFF

1. Available in a ready to cook format
2. Appearance on shelf
3. Pack size
4. Texture
5. Variety
6. Freshness
7. Stay fresh longer
8. Information on health benefits displayed
9. Convenience of use
10. Convenience to purchase
11. Local Produce
12. Grown Interstate
13. Imported
14. Organic
15. Promotions/Discounts
16. Packaging/Material Type
17. Label Design
18. Position on shelf
19. In store sampling/ opportunity to taste
20. In store cooking recommendations
21. In store recipes and serving suggestions

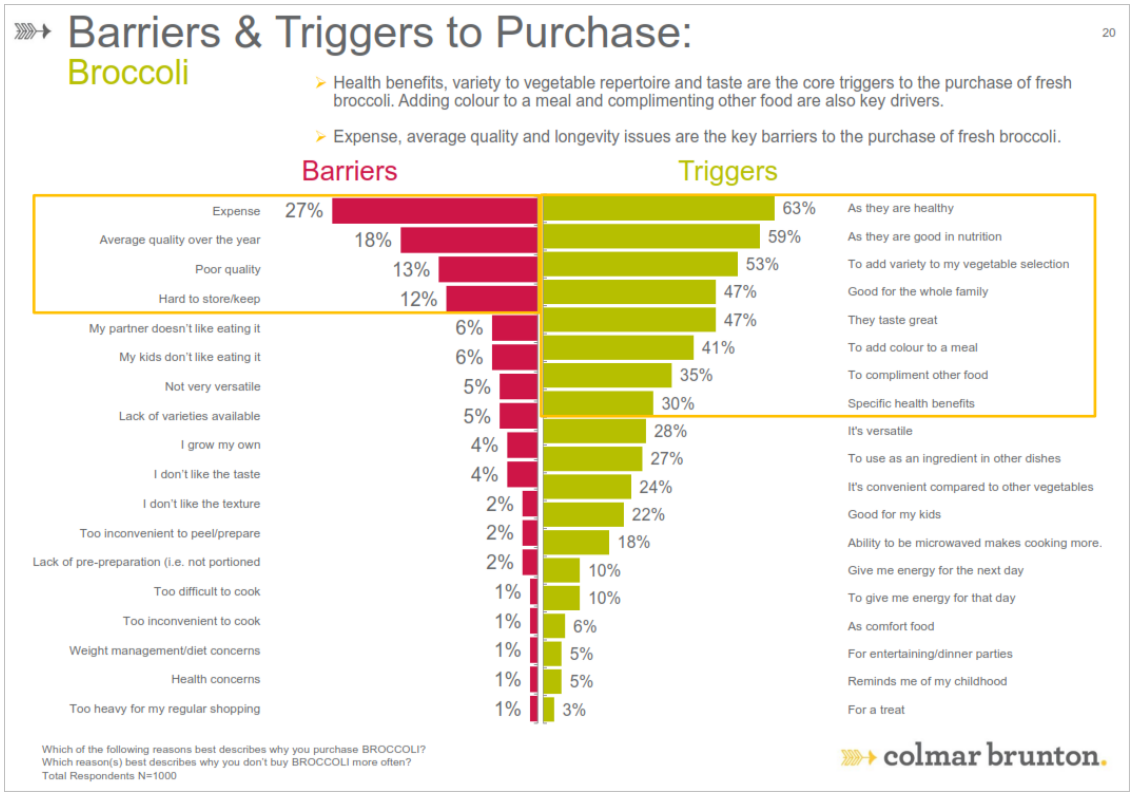
Barriers to purchase – questionnaire: Colmar Brunton (Broccoli and pumpkin)

Q20. BARRIERS TO PURCHASE

Q20. Which reason(s) best describes why you don't buy **<INSERT VEGTABLE>** more often? Please select all that apply.

1. Too heavy for my regular shopping
2. Hard to store/keep
3. Health concerns
4. Weight management/diet concerns
5. Expense
6. Lack of varieties available
7. Poor quality
8. Lack of pre-preparation (i.e. not portioned)
9. Too inconvenient to peel/prepare
10. Too inconvenient to cook
11. Too difficult to cook
12. I don't like the taste
13. I don't like the texture
14. My kids don't like eating it
15. My partner doesn't like eating it
16. Not very versatile
17. This is average over the year
18. I grow my own
1. Other (please specify)

Barriers and drivers to purchase measured: Colmar Brunton (Broccoli and pumpkin)



Drivers of purchase: Sprout (Capsicum and Asian greens)

5.1.9 Drivers of Asian Greens Purchase

As with capsicums, a list of potential purchase drivers for purchasing Asian greens was developed from initial qualitative investigation across both regular and occasional buyers of (see table below).

Potential drivers for buying Asian greens
Wanted to use in a specific meal
Always buy Asian greens as a staple vege
Was craving Asian greens
I like the taste / flavour
I like the texture
I like the colour(s)
Easy to cook with
They are good for you / healthy
They are versatile (i.e. can be used in a variety of meals / dishes)
They last a long time in the fridge
They suit the type of cuisines I like to cook
They were on special / cheaper than usual
They were good value for money compared to other veges
They looked fresh / high quality

This list was then shown to respondents in an online survey to select which factors influenced them to purchase Asian greens on the last occasion they purchased them. Respondents were asked to rate how important each of the factors they selected was in choosing to buy Asian greens. The table below outlines these results.

Drivers for buying Asian greens	Mean Importance
1. They are good for you / healthy	14.4
2. Wanted to use in a specific meal	14.0
3. I like the taste / flavour	12.5
4. They suit the type of cuisines I like to cook	10.2
5. Always buy Asian greens as a staple vege	9.7

Base: Those who purchase Asian greens in the last two days (n=453)

Barriers to purchase: Sprout (Capsicum and Asian greens)

The barriers to purchase of Asian greens are outlined in the table below.

Barriers to buying Capsicum	Mean Importance
Asian greens doesn't suit the meals I cook	28.2
I never thought about buying them	19.0
I don't know how to cook them	12.0
Others in the household don't like them	10.5

Base: Those who did not purchase Asian greens in the last two days (n=314)

Perceived health benefits: Sprout (Capsicum and Asian greens)

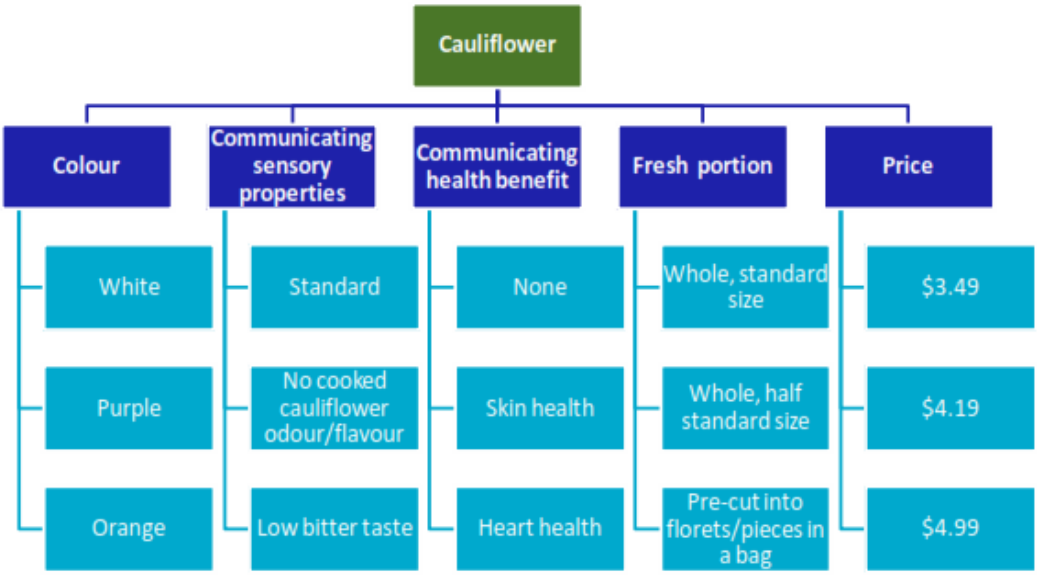
5.2 Health Benefits of Asian Greens

The perceived health related benefits associated with Asian greens was found to be a key purchase driver. When asked specifically what the health benefits of Asian greens were respondents were unsure, with most stating that Asian greens are high in iron – similar to spinach. There were more health benefits associated by consumers with Asian greens than there were for capsicum. The perceived health benefits of Asian greens are listed in the table below.

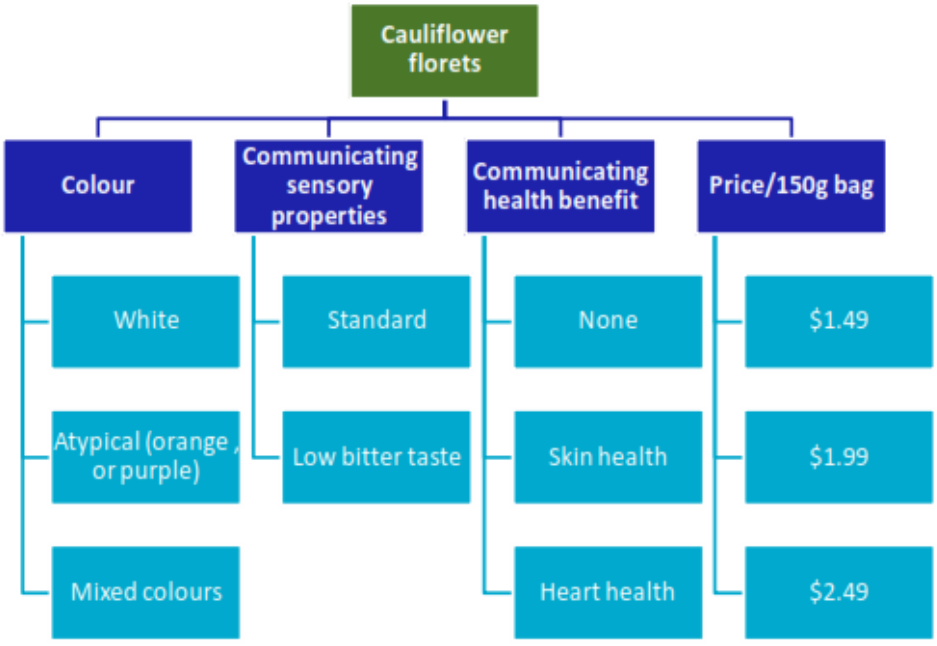
Perceived health benefits	Actual health benefits of Chinese Cabbage	Actual health benefits of Bok Choy	Proportion who associate health benefit with Asian greens
High in anti-oxidants	□	□	39%
High in vitamin C	High in vitamin C	High in vitamin C	□ 36%
High in iron	□	□	35%
High in vitamin A	High in vitamin A	High in vitamin A	□ 28%
High in vitamin B	□	□	27%
They are good for your eyesight	□	□	24%
High in vitamin E	□	□	24%
High in zinc	□	□	22%
High in vitamin D	□	□	20%
	High in folate	High in folate	□
	High in dietary fibre	□	□

Base: Those who purchase Asian greens in the last two days (n=453)

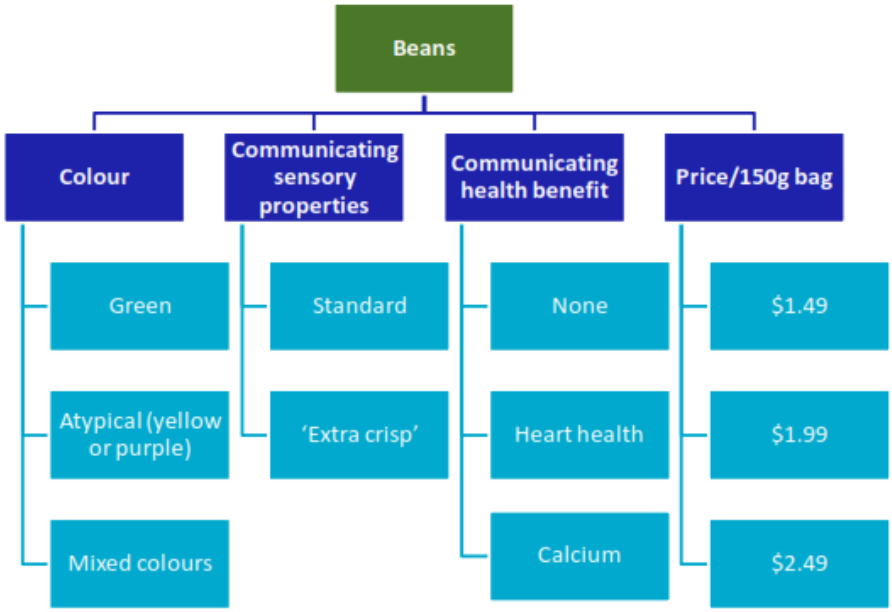
Conjoint variables: CSIRO (Cauliflower)



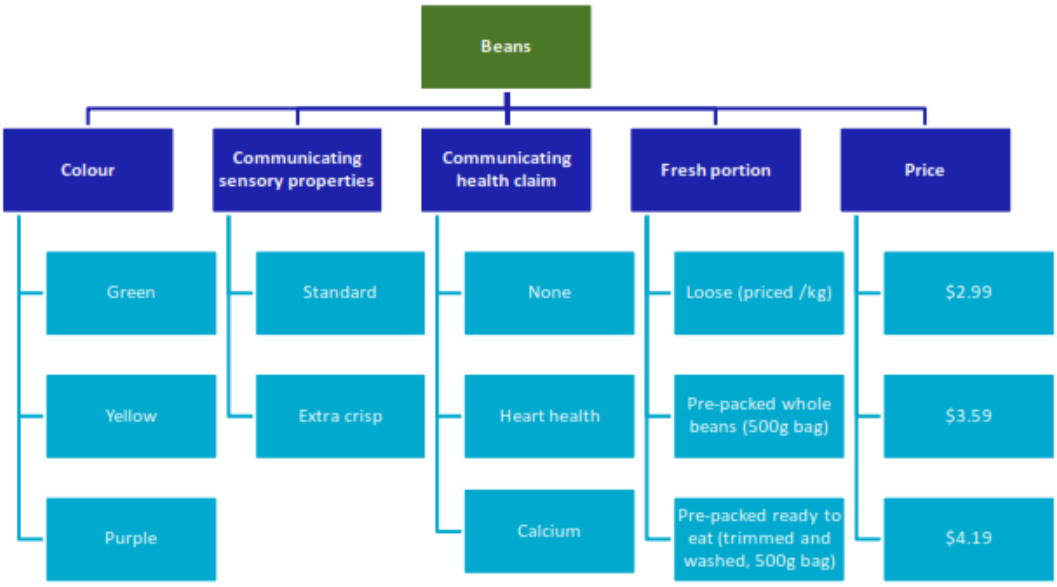
Conjoint variables: CSIRO (Cauliflower florets)



Conjoint variables: CSIRO (Beans: main meal)



Conjoint variables: CSIRO (Beans: snack)



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