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**Tomatoes - Review of consumer
behaviour & attitudes**

M Olsen

Durham Kelly & Olsen



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Fax: (02) 9418 1352
E-Mail: hrdc@hrdc.gov.au

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**HORTICULTURAL
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**Partnership in
horticulture**

Qualitative Report

Tomatoes

Review of Consumer Behaviour and Attitudes

**Prepared in September 1999 for
Horticultural Research & Development Corporation
and Queensland Fruit & Vegetable Growers**

Margaret Olsen

Durham Kelly & Olsen 
Market & Advertising Research

Phone & Fax (07) 3870 1995
61 Hillsdon Rd Taringa
Queensland 4068

Executive Summary

Role of Tomatoes

Response to the quality of tomatoes is **significantly more positive** in this research than in the project conducted five years ago. Purchasers have negligible direct complaints about any aspects of the current varieties on sale. The occasional short period where quality drops in one variety is of little consequence, because another tomato variety is automatically used fill the gap so the purchaser notices no obvious inconvenience.

Purchasers appear to be **buying similar quantities** of tomatoes as in the earlier research - 4-6 at a time - and to be buying this quantity as a matter of habit. Tomatoes are **still used in all three meal situations and as between meal snacks**. Main meal usage is primarily confined to a mixed salad and to use, fresh or cooked, as an accompaniment to grills or BBQ, places where meat and vegetables are served in their separate components. Other common usage situations include sandwiches and the use of tomatoes with cheese or eggs on toast or biscuits and in quick meal situations.

As purchasers quickly adapt to improvements in quality as their expected right, it is the **variety of tomatoes** now available which is a main focus of tomato attention. Most of these participants have tried Cherry and Roma tomatoes as well as the standard varieties. These two have distinct images which separate them from standards. Cherry tomatoes are the salad tomato - visually appealing, easy to use and loved by children. Romas are said to have a firmer flesh and a slightly better flavour, on the negative side however, their shape is a disadvantage in many usage situations. The premium varieties - trusses, vine ripened, hydroponics and any others of higher than normal price are differentiated from standard tomatoes by an image of being more reliable. They are considered to be a consistently more reliable. They are thought of as a better colour throughout, of better flavour and to have a more reliable, firmer texture when cut. The minority purchasing these premium fruit do not clearly differentiate between the premium varieties. Many are limiting their purchase to around two premiums, and if they buy more, choosing the rest of their purchase as standard tomatoes.

Although consumers are more satisfied with their tomato purchases, in overall terms the broader **competitive situation has tightened** for tomatoes. Canned tomato products have almost entirely usurped the cooking situation when food preparers are making stews, casseroles, curries or sauces which feature tomato as a sauce ingredient. It is unlikely that this ground can be regained. Food preparers are now more familiar with the wide variety of Asian and other paste and sauces which can be used to make a meal and are thus less dependent on the unique tomato flavour to add flavour variety to their cooking.

This takes some of the advantages from tomato which gave them a generally wider role in food preparation and puts them back in a directly competitive position with other vegetables.

In this situation tomatoes have some natural advantages over many vegetables. These include:

- A unique positioning in that they are not a “green” or a “yellow” vegetable and thus seen as directly substitutable - they have their own usage pattern
- Convenience of preparation- they require no peeling and little chopping
- Ease of use - they can be used fresh or cooked very quickly
- Distinctive and different vegetable flavour
- They are the only vegetables commonly used in all three meal situations and at midmeals

This positioning and advantage should be exploited in **promotion**. As a vegetable, it is also important to highlight the competitive advantages of the nutritional aspects of tomatoes. The vitamin C component will have particular meaning in the Queensland winter tomato season. The other aspect of promotion should focus on recipes and food ideas using tomatoes as easy meals and snacks. This is an area of growing importance to food preparers. They know less about what to do in such cases, and tomatoes are a natural choice for these situations.

Growers need to realise that tomato varieties are internally competitive. It is in the interests of growers supplying the same sources with the same variety to act to insure their product maintains quality to avoid dissatisfied consumers straying to an alternative variety and staying with it.

Environmental and Food Safety Issues

Farm related **environmental issues** are no longer a concern to the female city participants in these groups. It is unlikely that such people will initiate or actively support any action on these “green” issues.

The issue of most importance is still long term **effects of crop spraying** on health, but such concerns have not risen in the past five years. The current position is that people prefer to avoid thinking about the issue, because they see no alternative to eating sprayed fruit and vegetables. Should a major and sustained media issue be generated on this topic, the research indicates that information on Farmcare activities, particularly integrated pest management, is a good method of restoring consumer confidence. At present few consumers have any idea of the advances in farm management currently evolving.

Genetic Modification

Knowledge of the stage of introduction of genetically modified products into Australia is very low. Indeed, consumers do not even recognise the term “genetic modification” and only a minority have some perceptions of what it might mean. It is assumed that Australia has no such products at present and that the public will be informed if such products are introduced.

While there is no developed consumer attitude to the subject, first perceptions are almost entirely negative and at a level where a significant minority of participants voiced spontaneous concerns about the concept based on information gleaned from media sources.

Three underlying perceptions will effect consumer attitudes to genetically modified food products.

Firstly, consumers currently **feel powerless** in regard to both their food sources and other social issues. They feel that more and more decisions are being made on only economic grounds which take insufficient note of all the consequences. They cite many cases where the long term consequences have proved adverse. In the health area the cancer examples are most prevalent. They feel placed in a position of having to trust authorities who have let them down in the past. This means there will be no natural respect of authority advise in regard to genetically modified food products and a high level of underlying suspicion which can easily be activated.

In the food area the competing health messages, in regard to what is the best thing to do, are contributing to **information overload** which in turn leads to trying to find quick solutions to perceived problems. They look for a quick, workable solution - for example "eat low fat or fat free products" - without any idea of the underlying scientific reasoning involved. This quickly allows an issue to be dismissed from thought as "solved", because most people feel their life to be too stressed to spend any real time on other than direct work or family related issues. In regard to genetically modified food products the simple solution is to avoid them where possible.

The third consumer issue which will effect subsequent behaviour in regard to genetically modified food products is directly related to specific attitudes to fruit and vegetables. In Australia, consumers regard **fruit and vegetables as the ultimate health product**. Eating fruit and vegetables is the way to naturally maintain one's own health and the health of the family. Fruit and vegetables have a mystique of their own. Most of all they are seen a natural product, a bounty of mother nature. Genetic modification is regarded as the opposite of natural, indeed many consumers have a deep fear of man tampering with nature and the long term effects this could cause. A genetically modified fruit or vegetable thus becomes the ultimate invasion of nature and evokes an emotional distaste which could lead to complete avoidance.

Against such a background, this research suggests that a majority of purchasers will decide to take no risks and **consciously avoid genetically modified fruit and vegetables** if they become aware of the presence of such foods in Australia, and while ever they have an alternative available.

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Introduction

It has been 5 years since the last research conducted on consumer attitudes to tomatoes. There have been many changes during this period, both in the standard and variety of tomatoes available, and more general changes in consumer attitudes to fruit and vegetables, cooking and eating habits.

The QFVG Tomato Committee decided that it was time to update their information so they are better placed to make marketing and R & D decisions important to the future of the tomato industry.

Of particular importance in such decision making is an assessment of consumer attitudes to general environmental and food safety issues which could impact on growers. Genetic modifications are the most prominent of these issues and as this work was being conducted, some media articles and programs were concentrating attention in this area.

In the previous research concentration was specifically on tomatoes. In the current project this work is updated and set in a context which gives a fuller understanding of how consumer trends and attitudes will effect the tomato industry.

This project was jointly funded by HRDC and QFVG.

Research Objectives

The research has two main objectives:

Firstly, there is a need to update knowledge of how consumers currently regard tomatoes.

Secondly, there is a need to explore emerging consumer attitudes to environmental and food safety which are likely to be the next major issue in the food area.

Specifically, consumer information will be provided to:

- Define the role of fruit and vegetables in consumer thinking
- Identify changes in behaviour and thinking in regard to tomatoes in the broader context of food choices and food issues
- Explore consumer attitudes to tomatoes
- Determine current usage patterns
- Examine purchase patterns, triggers and barriers to purchase
- Explore the environmental and food safety issues of which consumers are aware and concerned

- Determine the level of consumer concern and provide some indication of potential problem in the following areas:

Pesticide spray residues in fruit and vegetables

Micro organisms causing illness

Use of chemicals as fertilisers and in weed control

Water issues

Eco system issues including land and soil management, biodiversity and integrated pest management

Waste management and disposal including fertiliser run off

Genetic modification

Methodology

Because the nature of the information sought in this study requires consumers to respond more deeply than they might in standard question and answer methodology, the focus group method was chosen for the consumer research.

In terms of group characteristics, the concentration is on women with families who are the main purchasers and determinants of tomato usage. All participants had purchased fresh tomatoes at least three times in the previous month and were themselves tomato consumers.

A two city approach was chosen for this research with four groups being conducted in Sydney and two in Brisbane. The emphasis is placed on Sydney as this is the first city in Australia where any changes in consumer thinking are identified. These trends subsequently extend through Australia. The selection of Brisbane relates to a check on a secondary city.

Because environmental and food safety issues are a focus of attention in this research, the Sydney sample is further divided by socio demographic criteria to include two groups recruited from middle to upper middle class suburbs. These women from inner Sydney harbour and northern suburbs may have more activist ideas on these topics if such attitudes are at all prevalent. The other two Sydney groups are a broad middle class recruitment centred on Parramatta.

As with the Parramatta selection, the Brisbane groups include a broad middle class recruitment.

In terms of age and family stage characteristics the following selection applies:

- Women 18 - 30 years who run their own households - no children and all working full time (Conducted at Crows Nest, Sydney)
- Women with eldest children 3 -7 years - working part time or home duties (Conducted in Brisbane City)
- Women with eldest children 8 - 12 years - working full time, part time or home duties (Conducted at Crows Nest, Sydney)
- Women with eldest children 13 - 16 years - all working full time (Conducted at Parramatta, Sydney)
- Women with children 17 - 20 years - all working full time (Conducted in Brisbane City)
- Women 55 - 65 years with no dependent children - half working and half retired (Conducted at Parramatta, Sydney)

In Sydney, groups were conducted at Cowper Cottage, 9 Cowper St, Parramatta and Tallygate Research, Pacific Highway, Crows Nest.

In Brisbane, groups were conducted at River City, Holman St, Kangaroo Point.

Groups were conducted in June 1999 and the weather at the time had been fine and of average temperature for the period.

In total, 53 people attended the discussions. Each group lasted over one and one half hours and participants were paid to attend.

The discussion agenda used was designed in association with QFVG and is included as an appendix to this report.

A full briefing on the specifics of environmental and food safety issues important to this research was supplied by QFVG staff.

Detailed Findings

1. Role of Fruit and Vegetables

Consumers consider fresh fruit and vegetables as important today as they were five years ago when the previous tomato project was conducted. All participants concur that they always buy fresh fruit and vegetables as a main part of their family shopping and consider fruit and vegetables to be a most important component of a healthy diet. As in previous work, fruit and vegetables are thought of interchangeably, with mothers who have difficulty persuading children to eat vegetables ensuring they eat as much fruit as possible in compensation. In one way or another women feel they and their families are consuming large quantities of fruit and vegetables and receiving adequate nutrition in this area. As they explain:

"We eat tons of fruit and vegetables."

"I spend most of my money on fruit and vegetables, its the biggest part of my shop. It is worth it to keep us healthy. We eat them all the time."

This is what they believe, but what is actually happening is somewhat different. Certainly people are eating fruit and vegetables a majority of days of the week, particularly the weekdays, but there are a growing number of families skipping the occasional day or two and having "easy" meals, low in vegetable content, in an attempt to give themselves a break from the routine of thinking of food and food preparation. Many mothers, and the younger women without children running their own households, try to have time out at weekends and take a rest from what they regard as the intense pressures of the working week. This attitude is as common to part time working women and the few women involved in full time home duties as it is to those in the full time work force. All regard their lives as a constant juggling of commitments with little time left for deep thought on food or food preparation.

Weekday Evening Meal

The weekday evening meal is when mothers try to ensure their family gains the **main nutritional benefits**. For many women this is a constant pressure at the end of their day.

"I think if you make sure they have a good meal at night you are taking care of their nutrition."

"Mine do so much during the day, and they can be too busy to eat, so I try to make sure they eat well at night."

As it has applied for the past five years at least, **speed and convenience** dominate, and a weekday evening meal must be able to be prepared in half an hour from ingredients available from the frig and pantry. The female preparer must know how to make the dish without needing to follow a recipe. Women also regard it as important to offer a **variety** of meals across the week. Meals must also be to the tastes of those eating with some mothers providing minor variations to suit individual tastes or choosing meals according to which family members will be eating together that particular evening.

As in earlier work, first consideration usually **centres on which meat** to serve, if a meal involving both meat and vegetables is on the menu. Items such as pastas, pizzas, soups and quiche are treated to the same thinking as a meat decision and here the style dominates because the meat is unimportant or not present. The vegetables to be included in the meal are usually of secondary importance and selected from what is on hand. Many families eat the same or from a similar selection of vegetables with every meal. These are dictated by what a majority of family members like and many women constantly repeat the vegetables they serve to suit the patterns of difficult children. In occasional families, younger children prefer raw vegetables and are served these while adults eat cooked vegetables. Most families eat a mixture of cooked and salad vegetables with cooked vegetables dominating consumption and thinking.

Some meal preparers, around one third of the participants in these groups, try to prepare some evening meals ahead to help them cope on those evenings when the family is particularly busy or late home. This method is also used by women who work in jobs where the pressure of the day can vary so that there are occasions when they feel unable to do anything more at night. As they say:

"My work is hectic and sometimes I just can't face cooking. Its good to know there is something already there to fall back on."

"I try and get some time over the weekend to make a couple of meals ahead. I often do a big lasagne or a curry and we get two meals off them. Its toward the end of the week when I seem to be the most tired."

This requires some planning. The actual degree varies between those who plan three or four meals in advance, and buy accordingly, to those who consider variety at the purchase stage and keep a well stocked frig so they can make decisions on a daily basis.

As the extremes suggest:

"I always make a menu for the week and then we stick to it as much as possible. It makes your shopping cheaper too if you only buy from a list."

"I'm not a big planner. I grab some meat and the usual vegetables and get some sauces and work it out as I go along."

Planning often requires more advanced cooking skills. Women seem to acquire these once they have a family to feed. While around a third of the younger women in these groups feel they have more to learn about cooking, most of the women over 35 years are able to offer the family food in accordance with developed cooking skills. Interest varies between women and is often related to the time considered to be available. In general those who are not working full time seem to give more consideration to food preparation. Women generally agree that part time work is the ideal status for mothers at the present time.

Main Meals Prepared

There appears to be no major change in the overall main meal pattern during the past five years. Most families still prepare five meals a week, have one meal which is take away or eaten out, often at the home of family or friends, and have one "easy" meal. The "easy" meal is most usually on Sunday evening. It is frequently the Australian traditional toasted sandwiches, something hot on toast or eggs. If children are capable they may each prepare a meal for themselves.

The changes in recent times are within the five home prepared meals. Participants feel there is an increasing incidence of stir fry preparation and of pasta and sauce meals.

All women now consider themselves competent preparers of **stir fry**. On the one hand the chopping is considered more time consuming than other preparation methods. On the other the short cooking time and lack of necessity to think much ahead is a bonus. The standard stir fry is frequently described as:

"Lots of different vegetables, carrots, broccoli, capsicum, mushroom, everything, and less meat. Then you finish it off with a different sauce."

"Sometimes we put in pasta too. And we always use a curry paste or sauce or something."

All recent research has identified **pasta dishes** as an ideal quick meal with high child appeal. Again most families use some prepared sauces or tomato products in the preparation of such dishes.

In discussion, most women speak of using "lots of vegetables" in these pasta sauces. In the two quantitative measures made on this subject the actual fresh vegetables used in pasta dishes is lower than the meal average.

As always, it is the thinking what to prepare, together with the juggling of individual family likes and dislikes, which is of greater concern than the actual preparation itself. As it often explained:

"I hate having to decide all the time, that's the hardest part of all."

The main meal concern is with the family evening meal. Few households are doing much entertaining. Thought of entertaining is so remote that it is infrequently mentioned spontaneously in any group. What entertaining occurs is now described as:

"More spontaneous and less planned."

"Just casual style. A BBQ and everyone brings something."

Some partners, particularly the younger men, share some of the cooking. This is more common among full time working women where the necessity of late hours seems to dictate that men will often prepare or commence the family meal at least one night a week. In this case the thinking still seems to be the responsibility of women who ensure that something is available which is within the capabilities of their partner. This often involves BBQ meat which is more frequently associated with male than female cooking. There are occasional teenage children cooking or starting meals before their mothers arrive home.

Meals and Life Stage

This research confirms that the combination of age of participant and whether or not the main meal preparer is responsible for feeding children, plays an important part in attitudes to preparing the evening meal. Young women without children are still the least organised in their evening meal patterns. Where there are no permanent partners these people eat away from home or have takeaway up to three or more times a week. Young women with permanent partners show a point of change. These people are often saving for a home deposit or to reduce their mortgage in order to commence a family and regard buying prepared meals as an unnecessary expense. Those with children feel a greater responsibility toward meal preparation, particularly while children are young or in early school years. Around the time children become teenagers mothers relinquish some of their nutritional responsibilities and children are expected to do more toward ensuring their own nutrition. Among the empty nesters, whose children are no longer a responsibility, people are concerned with ensuring that what they eat is a sound preparation for the preventable and diet modified diseases and problems of old age. Many women over 55 years seem to be protective of their husband's diets in particular. One or more with diet modifications due to heart disease is the norm in any focus group within this age range.

In recent years participants in many focus groups express their personal **problems with fatigue** and how this can alter otherwise good intentions to prepare adequate nutritional meals. Young women express the fatigue problems of juggling long working hours with a busy social life. They often complain of coming home from work too exhausted to think of eating properly. The solution is usually some fast alternative which is often low in vegetables.

Many women with children are now working full or part time and this also brings fatigue problems as they struggle with competing responsibilities. Fatigue at the end of the working day is having considerable effect on what is prepared. Women themselves often explain that they get a meal in circumstances where they themselves feel too tired to eat and do not really care what is provided. This fatigue is a real problem throughout the community, as one woman expresses the attitude of members in most groups:

"You never hear of anyone who feels great. Everybody is tired all the time now and there is always someone sick."

The older women, although freed from the burden of providing meals for children, often express their own problems with fatigue after a day of work. These women still carry the responsibility of providing for partners, most of whom are not proficient meal preparers. In some cases the partnership has reached a compromise where easy meals, eating out or take away is used to offset evenings of worst fatigue. In other cases women see it as a duty to provide a meal in keeping with their husband's expectations, regardless of their own feelings. All in this lifestyle group agree that the burden of meal preparation is much easier with children no longer a consideration. Their cooking skills are sufficient to carry them easily through meal preparation, once the menu decision has been made.

In the current project, women in Sydney are also very conscious of winter illnesses. These are said to be more severe and to last longer than they remember from the past. As they see it:

"There is always one or two people in our office away sick. It puts a lot on the rest of us to carry the load."

"Just recently my family seem to be sick all the time. First one and then the next. Its the same at work too."

"You really hear lots more about people getting sick now. I don't think it was the same a few years back. And the flus and colds are worse and seem to last for ever."

There is no natural thought of fruit and vegetables, and nutrition, as a method of combating these problems. They are presented as beyond the control of the individual.

Use of Recipes

Many women still enjoy new recipes and about half the women in these groups had read or considered a recipe idea in the past two or three weeks. Recipes are mainly used to get menu ideas which offer variety. They are also a source of information on how to use less familiar vegetables. While the occasional younger participant follows recipes exactly, most use them as a stimulus for their own family likes and dislikes. As it is explained:

"I use them all the time, but as ideas rather than following exactly."

"I read them and think 'Oh yes, that's a good idea' and then I do it my own way."

2. Perceptions of Changes in Fruit and Vegetables

Positive Changes

These consumers and purchasers have noticed significant changes in fruit and vegetables over the past five years or so.

The most significant change mentioned is the **rise in variety** now available. This rise is seen as both the introduction of new items - Chinese vegetables is the most commonly mentioned example - and changes within specific fruit and vegetable groups. The category which is the broadest is apples. Most people have tried some of the more recent entries but many are no longer making an attempt to keep up with the new additions.

Among the vegetables, **tomatoes**, lettuce, potatoes and to a lesser extent squash are all mentioned as examples where a particular vegetable is now available in a much **wider variety of choices**. Trial of new varieties is relatively high if the price difference is not too wide. Where change is considered to offer an advantage, women seem to have quickly modified their purchase patterns. If the change is not considered significant or to offer any advantages over the standard purchase the new addition is ignored, unless the standard product available is of inferior quality or undergoes a significant rise in price. At this stage the alternatives are again considered to determine whether they offer a better choice than the standard.

All groups also speak of the **extended availability** of fruit and vegetables. As they describe it:

"Everything is available all the time."

"It may be better in season but you can still get it most of the year."

This lack of marked seasonal variation brings its own concerns. While most participants are happy to accept that this ready availability is a convenience which they enjoy, a minority of women are concerned that the quality of the produce is impaired by long periods of storage. Brown inside cold storage apples is the commonest example given.

Participants are aware of **changes in packaging**, particularly the variety of ready prepared lettuces and vegetables (Freshcuts). Most of the middle market participants in these groups do not use such products. The occasional person finds them good in an emergency or special situation such as camping or taking a salad to a friend's BBQ. There are three main objections to the category, as participants explain their concerns:

"I worry about how well they are washed. You would have to do it yourself to be sure."

"They don't last once the pack is open. They go quite slimy."

"The price is ridiculous. I could never justify paying all that just to get a few vegetables peeled and cut up."

However, fresh prepared products will find a place over time, entering the household for specialist or emergency reasons. As one woman well captures the feeling in her group:

"Its better than take away food, but it still has the convenience."

There is a slight increase in **awareness of frozen vegetables** as a possible alternative to fresh within this group. It is still only at a low level, but definitely more positive than in earlier research. It appears to be triggered by an awareness of the greater variety now available in this form, apart from the traditional peas, beans and corn. The advantage of frozen vegetables, is the convenience of having them on hand in situations where you cannot predict your meal pattern or where you need preparation convenience. Frozen vegetables also have the advantage of being able to be returned to the freezer so freshness is maintained. Frozen vegetables are usually accepted as products which are as nutritious as fresh vegetables. As it is typically explained:

"They are just as nutritious. They say if you can't buy fresh buy frozen."

Their major disadvantage is that most recall frozen vegetables as soft and mushy compared to fresh vegetables.

Queensland women mention the **increase in air conditioned premises** as a means of keeping fruit and vegetables fresher.

Negative Concerns

There is a general belief that fruit and vegetables are **not always as fresh** now. Most participants have some awareness that fruit and vegetables are kept in cold storage and suspect that this is being done for longer periods than is ideal. Picking before ripening and "gassing" to ripen are other aspects these women feel are attributing to the problem of freshness. As always, consumers, first observe the problem and then try to explain it. The proof of the problem is the number of vegetables which no longer keep their freshness across the week. This concern started to increase in research around two years ago and results in participants saying they need to shop more frequently for fresh fruit and vegetables. Green vegetables, bananas, avocados and apples are the most frequently criticised products in this research. Freshness concerns are rationally associated with nutritional loss, so concerns in this area could impact on tomatoes if consumers started to vary their focus on shopping for fresh fruit and vegetables or cut down in volume purchased to avoid wastage.

An adjunct to the freshness problem is the difficulty one has in determining from the outside whether or not the product inside is of good quality. As consumers have noticed:

"They all look terrific from the outside but this doesn't mean anything any more."

A small minority of participants are trying to identify the better products from stickers and try to purchase these again. If purchasers find they have bought a particularly good selection, of fruit in particular, it is common to go back to the same shop soon afterward in the hope of buying equivalent product. When the reverse occurs and they inadvertently buy a poor quality product, purchasers stop buying the offending item for two or three weeks and then commence again with small quantities.

There is still spontaneous mention of the possible **dangers of spraying** fruit and vegetables with pesticides. Because of imprecise recall of media on this subject, pesticides are often linked and confused with processes applied to the outside to keep fruit looking fresh.

Quest for Fat Free and Low Fat

While consumers know there is no fat in fruit and vegetables, the marked change to low fat products is a further general change which could impact on fresh fruit and vegetables and particularly tomatoes.

Participants see this as one of the most marked changes of the past five years. A majority of people in each group are very aware of the problems of consuming fat and have made changes in their eating patterns to reduce fat in their diet. As they explain:

“One of the biggest changes is the way we cook without fat. My mother used to fry everything in a greasy fry pan.”

“I am very careful of how much fat we have. I always look for the amount of fat in products.”

“I look at the ingredients now, and compare percentages, because you can't trust the words on the front.”

While the older women are more fully aware of the association between fat and heart disease, this is a lesser concern to younger women. Among many, the trend to low fat products is fuelled by a belief in a direct association between fat consumption and fat tissue gained by the body and the desire to avoid gaining weight.

Take Away Food

While not a major issue in this research, it is important to record that participant attitudes to the traditional multinational fast foods appear to be changing. In past research such fast foods, although condemned, had a place in the family diet. Participants spoke of buying them occasionally in emergency situations. This appears to be changing. It is possible that concern about levels of fat in fast foods have reached a stage where families are reducing, or considering reducing the amount they eat of such items. The main retailers involved are MacDonalds, KFC and other chicken places and perhaps also pizza. Among these participants Thai and Indian food are filling the fast food gap created by avoidance of multinational fast food chains.

There is also a suggestion among young families that any fast foods are now too expensive for all but those with two full time incomes.

Attitudes to Canned Tomatoes

Women have little interest in the idea of canned vegetables generally. A number still use the long established can defined products such as baked and kidney beans, corn, beetroot and asparagus, but these were often first experienced in a canned form and thus are not directly comparable with fresh.

A decided change, however, is seen in the way in which they respond to **canned tomato products**. All groups are aware that these products have changed to include chopped and flavoured varieties. Many have tried these alternatives to the extent that canned tomatoes are now purchased regularly in most of these tomato purchasing households. Only a very small minority of these participants are still using any fresh tomatoes in cooking casseroles, curries or sauces. This area of usage is now dominated by canned products.

There are a number of advantages of canned tomatoes over fresh.

Firstly, and most importantly they are **convenient**. They are there if you need them and do not spoil if they are not used. They are ready prepared for use with many consumers preferring the further convenience of chopped, peeled and pre cooked tomatoes for general sauce and cooking use.

Canned tomatoes are described as more suitable for cooking. They are seen as a thicker and of a more sauce consistency than fresh tomatoes. They are often described as richer or redder in colour. They are considered of **more reliable** quality than fresh tomatoes.

A number of participants also consider canned tomato products to be cheaper than buying fresh tomatoes.

As participants explain:

"Tinned tomatoes are much quicker and the flavour is better."

"They are just much better for cooking, thicker and less watery."

"I think it is cheaper to used tinned tomatoes. And you can keep them on hand if you decide not to use them."

While the earlier research indications were that it would be difficult to reestablish fresh tomatoes as dominant in cooking situations, this current research confirms that the trend is now so well established that it would seem to be impossible to regain this usage situation.

Of most concern is the way in which canned tomatoes have come to be regarded as **a further tomato variety choice** along with standards, cherries, Romas and the premium products. They are thought of and spoken of as another equal tomato alternative.

3. Attitudes to and Usage of Tomatoes

Role of Tomatoes

Attitudes and usage of tomato are tied together. How a product is considered often dictates the way it is used.

Tomatoes still retain their image position as a **unique vegetable** with no direct substitute which can offer the same taste sensation. What has altered, however, is cooking skills and familiarity with many more flavour alternatives which enable women to offer something equally acceptable to the family if tomatoes are not present in the household.

A majority of women in this research are unaware of the subtle change in their attitude toward tomatoes. Most buy and use as a matter of habit. To their eye usage is the same or similar and they are buying equivalent numbers of tomatoes at a time. The change is one of value. Their importance has slightly declined. No one worries if they run out of tomatoes. As one woman explains:

"Its not something I would make an effort to replace immediately, the next time I'm in the shops would be soon enough. I would just give them something else."

At one stage tomatoes were one of the most valuable flavourings in the cooking repertoire, with the introduction of so many prepared sauces and greater familiarity with herbs and spices, tomatoes take their place as another equal product whose usage is often determined by variety and convenience.

Strengths

While there is a slight change in the way food preparers regard tomatoes, they are still considered to be a very **versatile** and useful product. As they say:

"Tomatoes are so versatile, you can use them in so many ways."

"I love tomatoes, you can always make a meal if you have them."

They are prized for the **colour** they add to a plate of food, both in bowls of food and in the individual serve situation.

Flavour is an important attribute of tomatoes. In every group there are individuals who really enjoy the specific flavour of tomatoes. Some of these women have changed from standard tomatoes to premium priced products to obtain a better flavour. As they say:

"I really love the flavour of tomatoes, there is nothing like a really good tomato."

"I buy the vine ripened ones now, they are usually a much better flavour even though they are so expensive."

The majority of participants like the tomato flavour but value the other two strengths as equally or more important than flavour per se, because their main use of tomatoes is in combination with other foods.

Negatives

Criticism of tomatoes has **dropped significantly** since the earlier research. When asked directly at the end of the discussion segment, most people feel that they are satisfied with the current quality of tomatoes and have few problems finding good quality fruit.

In this research the commonest criticism of tomatoes centred on the **variation in internal firmness** of the fruit. **Flavour** was also criticised but this was a secondary concern to firmness.

Because fresh tomatoes are used in a fresh or quickly cooked variation, it is important that they be able to retain their shape when cut. The biggest criticism of tomatoes now is the occasional fruit which falls apart to spill out watery liquid when it is cut. As several participants explain and all recognise:

"I had one the other day and when I cut it there was nothing inside, no substance, just watery."

"I've gone over to buying the Romas because they are always nice and hard. They're fleshy inside."

"Its a funny fruit. We use it so often but you are still disappointed if you get a floury one or one that is all watery."

Flavour is still occasionally criticised and this takes two forms. Firstly, in most groups someone still mentions the comparative lack of flavour compared to home grown tomatoes, very occasionally Grosse Lisse is mentioned by name. Secondly, the occasional purchase choice can still result in a lack of flavour which is as much associated with texture as specifically flavour itself. As an example:

"You do get one that tastes funny occasionally, sort of floury rather than smooth."

"I don't think the ordinary ones are as good as some of the new ones. Those hydroponic ones are much better flavour and they cut better too."

Colour/Ripeness

There is no longer any spontaneous mention of difficulties in finding ripe, well coloured tomatoes, a common criticism in earlier research.

Tomatoes are still predominantly kept in the frig. For most young women the only tomatoes left out are those they may have selected as slightly less ripe and these are chosen to ensure that the tomato purchase lasts though the week.

Once they redden these too are placed in the frig. Among the group of older women, around half were keeping their tomatoes out of the frig.

The bench ripening process for tomatoes has not improved since the earlier research. Refrigerated storage is an entrenched habit. It is reinforced by the fact that shop storage is known to be cold storage and the generally held belief that fruit and vegetables are not keeping as long as previously. There is a fear that without refrigeration they will keep even more poorly.

Methods of Usage

With the increase in usage of canned tomatoes in cooking, fresh tomatoes are now used even more exclusively as salad or flavour accompaniments.

Salads are the common usage with mixed salad predominating in this situation. In Brisbane and Sydney there is little thought of preparing a tomato salad as such although this is sometimes mentioned in Melbourne food work. As a salad vegetable, tomatoes are most prized for their colour advantage. As they say:

"You wouldn't make a salad without tomatoes, all that green would look so plain. The tomato gives it colour."

In the mixed salad the flavour of tomatoes is a lesser concern. Most women take pride in using such a variety of vegetables in this circumstance that the flavour of one individual ingredient is not important. As an example of this thinking:

"In a way it doesn't matter if the tomatoes are not particularly special in a salad. You use so much else. They just need to be firm and red."

A similar attitude applies to salad sandwiches, another common mentioned usage of tomatoes. Again it is firmness which is the primary requirement.

Many women stress that they have more salads in summer than through the winter months.

The other main situation of tomatoes is an **accompaniment** to other foods for both colour and flavour reasons. This usage is widespread. Sometimes the tomato is cooked as part of the meal and sometimes it is a raw accompaniment. The common examples are tomato on toast or biscuits or in toasted sandwiches, in this usage it is frequently associated with cheese, and tomato grilled or microwaved as an accompaniment to a grill or "easy" meal such as eggs.

As participants describe these usage situations:

"We use them mostly in salads and in toasted sandwiches."

"We have tomatoes every day, tomato and low fat cheese on toast at breakfast or biscuits at lunch."

“With steak or chops, along with other vegetables we always have tomatoes.”

“I use them fresh for salads and sandwiches at lunch, but I use all different varieties of canned ones in cooking.”

“I don’t eat them on their own, always with other things.”

As well as this habitual pattern of usage, many families seem to have some ritual usage situations where tomatoes are always used. As they explain:

“My husband has tomatoes on toast for breakfast every morning.”

“When we have tacos or nachos you always have tomatoes.”

“Tomato omelettes, every Sunday night.”

With processed tomatoes assuming the main cooking role for tomatoes and the fresh tomato role at the main meal being mainly salads or grill and “easy” meal accompaniments, it is evident that the lesser meals are becoming an important territory for tomatoes to maintain a very relevant presence.

Nutritional Value

In common with all fruit and vegetables, tomatoes are seen as a “good for you” product. There is no evidence that more value is attributed to tomatoes than to any other fruit or vegetable at this stage. People generally believe that the best method of ensuring nutrition is to eat a wide range of fruit and vegetables.

Most participants specifically associate **Vitamin C** with tomatoes. This is the vitamin associated with some prevention against winter illnesses.

Several participants also mention that tomatoes are high in:

“Sodium or potassium, one of those two.”

This association is with better brain function.

In three groups, participants associated tomatoes with cancer prevention properties. This is a positive attribute for fruit and vegetables and when participants are aware of such a claim some do try to include the specific food in their diet.

4. Tomato Purchase

Participants were recruited on the basis of have purchased tomatoes at least three times in the past month. This criteria fits over 80% of households. In actuality, the average purchase pattern across the six groups is 1.5 times a week. This is similar to the situation in the previous research. Similarly, 4-6 tomatoes is still the common purchase made. The occasional purchaser buys a one kilo bag as a regular purchase. This is often because a riper tomato is preferred and these are only available in bags.

As in earlier research, much tomato **purchase is a matter of habit** with purchasers buying the same number and type of tomatoes each time they shop. Most buy standard tomatoes as their main purchase, but there were also members of these groups who bought Roma or one of the premium products as their main shopping purchase on a regular basis. Cherry tomatoes are usually bought along with a more regular size.

It is interesting to consider how purchasers came to try the alternative varieties of tomatoes. While a few try each new variety in a search for a better flavoured tomato, most continue to buy standard until they get a disappointing period with standard tomatoes. Then some may choose two or three of the premium priced tomatoes and try these. A minority convert to these premium varieties. The majority return to mainly purchasing standard tomatoes on a value for money basis and only buy the premiums if the price difference between standards and premiums drops so the premiums look better value for money. As it is well explained:

"I get the ordinary ones most of the time, so I just go over to that variety, and I only look about if they are no good."

Varieties

The increase in varieties of tomatoes is one of the most important developments of the last few years. While the extra varieties are not challenging the dominance of standard tomatoes, they are adding choice and interest to the tomato category.

The majority of women in these groups used two types of fresh tomatoes. The commonest combination are standards and cherry tomatoes. Most begin to use their tomatoes on the day of purchase.

Standard Tomatoes

These are the benchmark of fresh tomatoes. They are the all purpose tomato which can be used to fulfil the versatility component of tomato usage. Most participants buy some of these every time they shop.

The image of standards in the tomato range is of a value for money choice. They are generally considered to be of acceptable quality in terms of colour,

texture and flavour. Many people do not consider that they will gain more for paying a premium for other similar size tomatoes so continue to choose the standard product while ever it continues to appear acceptable and retain acceptable firmness when cut.

In price terms this is a difficult time to judge perceptions, because prices in the previous period had been as high as \$3.99 and the week of research dropped to below \$2.00. In rational terms purchasers do not appear to consider whether to reduce the number purchased until the price rises above \$3.50.

Cherry Tomatoes

These are the new variety of most general interest to participants because of their size and suitability for salad usage. Children are said to love cherry tomatoes. Their size and redness satisfies aesthetic considerations in salad preparation. Some participants are aware of a yellow alternative which are seen as an ultimate purchase for salads prepared in entertaining. As they explain:

“Cherries are a lot sweeter. They’re the best ones for salads.”

Cherries have found a place because their size clearly differentiates them for a specific usage. They provide variety. They also have an advantage of not needing preparation and this is a bonus in all meal making.

Cherry tomatoes are said to be more used in summer than winter. This is in part because they are associated with salads and less salad is used in winter. It is also related to price. A dollar or under is seen to be the optimum price to pay for cherry tomatoes. Once the price rises above \$1.50 a number of purchasers leave the market. Over \$1.99 they are little purchased except for special entertaining purposes.

Roma/Egg Tomatoes

Roma, or as they are sometimes called, egg tomatoes, are used as a main purchase by a small number of women in these groups. Approximately 10% of participants are involved and there is no apparent age differences. Participants who prefer Roma tomatoes are very loyal in their choice and seem to have replaced standard tomato purchases with this choice.

“I buy Romas mostly, as long as they are not yellow looking.”

“I buy the eggplant ones. They are a bit more expensive but they taste so much better.”

Those who favour Romas describe them in ways which shows they are thought of as a more **reliable** tomato. Their composition is said to be firmer so that they hold together better when cut. A few Roma preferrers consider them to be a better flavour to standard tomatoes. For most people they are of at least comparable flavour appeal. It is difficult to get an exact measure of flavour differences among the more expensive varieties of tomatoes because flavour is used as the justification for paying the increased price.

As they describe:

"They are fleshier than ordinary ones. They don't go all squishy and watery if you cut them."

As a category the distinctive shape of these tomatoes is a defining feature. This is not however a particular positive as many find the size too small for their bread based usage requirements.

There is little thought of Roma being an acid free variety, only one participant seemed to be aware of this feature.

The actual price of Roma tomatoes is little mentioned. It is said to be usually over \$3.00 and mostly around 50 cents higher than standard tomatoes.

Premium Standard Shaped Tomatoes

There seems to be considerable confusion among the offerings in this segment of the market. Participants speak of hydroponics, vine ripened, vine ripened with the stems and gourmets relatively interchangeably. They see them as a more reliable quality fruit which usually has a better texture and flavour than standard tomatoes.

There is some agreement that the ones "with the stems" are the best flavour, but there is also good recognition of these being the highest in price. This price is defined as regularly over \$5.00. Several participants mention that these have come down from an original price closer to \$8.00.

For the rest of the segment, the price is described as "over \$4.00" and there is no clear differentiation between the individual types.

It is obvious from discussion that the appearance of these premium fruit is very attractive to consumers. While those purchasing maintain that they are a superior flavour, it is not clear that all agree that the flavour is significantly superior enough to warrant regular purchase over the better priced standards. Certainly, the traditional family benchmark, children, are just as satisfied with standard tomatoes. As they say of the premiums:

"I like the ones with the little green stems you can tell they have been nurtured to become a tomato."

"They had the vine ripened ones in the shop yesterday. They looked so beautiful I just wanted to buy them. They were \$4.99 or \$5.99 a kilo and I didn't know how much more expensive that was."

In these groups the main purchasers of premium tomatoes were older women and those who particularly like the flavour of tomatoes. These two groups often overlap.

It is also evident that at least half of those purchasing premium varieties do so in restricted numbers and limit their usage to situations where the flavour of the raw tomato is all important. In other situations they use standard tomatoes bought at the same time.

Selection Criteria

Tomatoes, regardless of variety are selected on well developed choice criteria.

They must be **blemish free** to even be selected for consideration. Most tomatoes fulfil this criteria on most occasions. So much so that participants rarely mention this aspect as a choice consideration until questioned in more detail.

Degree of **redness** is important. Most purchasers want a red tomato which is ready to use. A minority try to get a range of colours so some ripen a little later than the rest. The width of colour selection only includes fruit which have **no green** tinge.

The third method of selection is to gently feel the fruit to determine that it is **firm** but not rock hard.

Some purchasers also look for fruit of a **particular size**. The standard size currently available is thought to be an ideal medium. A few purchasers also try to buy several smaller fruit for those occasions when only a small amount is needed. Participants say they do not like to store cut tomato.

As participants explain their behaviour:

"I go for red first."

"I look to the colour, I like red, and then the size."

"They need to be firm but not rock hard."

"I don't like hard but I do like firm."

"I never buy if they have any green on them."

Trigger to Purchase

There are few occasions where participants remember buying more than their usual number of tomatoes.

Particularly low prices do stimulate some extra purchase, but this increase purchase does not continue if low prices continue. Patterns of usage are well developed and extra tomatoes can become a problem to use.

Two participants also mention purchasing extra tomatoes occasionally in summer when the tomato smell has been dominant.

Barriers to Purchase

There are two main barriers to purchase.

When a particular variety of tomatoes is unappealing in appearance purchasers tend to look to another variety, or buy less than their regular number and try again later in the week.

Significant rises in price can also cause some purchasers to reduce the number of tomatoes they purchase.

A minority of purchasers notice that rises in price are often associated with a drop in appearance quality. They do not comprehend why.

Level of Satisfaction with Quality

Purchasers are satisfied with the quality of standard tomatoes available to them at this time. This is a decided contrast to the situation in the earlier research where a majority of participants were dissatisfied with the quality of tomatoes available.

On the whole, this quality is seen to be maintained throughout the year. It does not occur to purchasers to imagine that they will not be able to find good tomatoes whenever they want them.

5. Attitudes to Environmental Issues

Research into consumer attitudes to food safety and environmental issues followed three pathways. In the early stage of the discussion, when speaking of changes which had been noticed in food and specifically fruit and vegetables, a note was taken of the frequency with which such issues were mentioned spontaneously and the concern such mentions generated in discussion. At the end of this segment participants were asked specifically if there were any areas of change which caused them concern. If issues arose at this stage they were left open for discussion until the subject was finished. These particular issues were again raised specifically in the third stage of the research where the discussion was directed to environmental and food safety issues and other mentions encouraged. Finally if a specific area on the research agenda was not raised by participants, this topic was introduced to determine the level of concern with the topic. Where some progress has been made in the way fruit and vegetable growers address problems, eg integrated pest management, water and land care projects, these solutions were mentioned to the groups as ways in which issues were being addressed.

Overall, environmental issues are **no longer of any conscious concern** to these participants. There is no spontaneous mention of any environmental issue in discussion and when the topic is raised lip service is paid to the idea with usually only one participant voicing some superficial point and the other members agreeing and then letting the topic drop. This is in direct contrast to research groups conducted five years ago when one or two participants in each fruit or vegetable group would raise some environmental concern. Now groups exhibit almost a reluctance to even consider another problem. It is almost as if they are waiting for the following evening news blip to tell them it has all gone away. In this research knowledge is slightly higher among older participants, but they are no more concerned than any other group.

The change is probably associated with the increasingly insular outlook city women have been exhibiting as this decade proceeds. While those concerned to cause societal change have become more organised and vocal at the political level, individuals seem to have withdrawn from even thinking about issues where they do not feel they can make any difference. Indeed most females currently seen in research regard themselves as powerless to effect any societal issue and believe their level of fatigue so great they are only just keeping up with the immediate demands of their family.

Recruitment of these groups was structured to take into consideration a subsection of women from middle-upper middle range backgrounds, with more time than the average full time working mother, this segment have attitudes similar to the sample as a whole and are no more concerned or active than others.

Consumer concerns are related to personal issues and discussion which begins with the environment quickly comes back to issues which are of more direct concern. Problems in rural Australia are now remote from city thinking. Participants do not even want to think about the environment, they feel they have enough problems in their own lives.

As the following sequence demonstrates:

Moderator: *"What about the environmental issues relating to water usage and the waterways in the farming areas?"*

Participant: *"They're nothing compared to Sydney water."*

This topic is discussed with much more vigour and concern as people compare their reactions and collectively decide their position. The Sydney water scare brings interesting responses which have a direct bearing on how it might be predicted that consumers would relate to a similarly presented environmental issue. First reaction is a direct concern for family health. Everyone in these Sydney groups immediately stopped drinking tap water as directed. Over the next period people paid attention to see if anyone became ill, but none of these participants had any such direct experience. Now a reasonable period of time removed from the instance, participants view it with no real concern. There is general agreement that a degree of media embellishment was involved which at first caused alarm. A proportion of participants are now of the opinion that it was not serious, certainly no one expresses any current concerns with Sydney water and there is no suggestion that such an incident will occur again. Several women agree that a change of testing methods was all that really was involved. The one significant result of this incident is a down grading of trust in the health authorities who were so slow in keeping the public informed.

Eco System Issues

The eco system issues are never raised by participants. Mention by the moderator elicits little response as this is clearly something where participants have no knowledge and little interest.

The **Farmcare** principles of good land and soil management, bio-diversity and integrated pest management do have meaning to participants once they are explained. As they respond:

"That's good. Anything which reduces spraying is good."

"Its good to know they are doing it better now."

The name Farmcare is very effective in its own right and in association with Landcare which is familiar to participants and thought of in a positive manner. The concept is very reassuring and would be an effective communication direction for countering any adverse environmental publicity should it arise.

These groups suggest that it would have to be a major issue with sustained media attention to get even a slight response from city people remote from any direct contact with the situation.

Water Issues

As with the other environmental issues, knowledge and interest in specific water issues is low. It took considerable time for participants to even recall what might be involved. Overall, fertiliser run off into the Barrier Reef is the only issue mentioned. Salinity is recalled once the subject is mentioned by the moderator.

Again the general response is one of remoteness. These participants do not want to even remember the issue.

Chemicals as Fertilisers and in Weed Control

Participants have no idea of the commercial growing process. They never stop to think how weeds might be eliminated nor consciously consider the benefits or disadvantages of fertiliser application. "Spraying" to them is a vision of clouds of spray in the air and associations with food safety and thus personal health risk.

Only a very small minority have any real understanding of the difference between standard and organic growing methods. These groups even included a participant who considered organic vegetables to be more suspect than standard growing techniques.

While others did not share this concern, the imperfect appearance of organic vegetables in the shops is a deterrent to purchase. Most Australian shoppers are so programmed to reject blemish that they are actually inhibited by the appearance of organically grown food which is often described as "limp" or "holey". The price of organic vegetables is also considered to be too high for family usage, without any knowledge of benefits of organic growing, purchasers have no basis for making value for money decisions in regard to organic food. Knowledge of the meaning of organic is so low that it is not a possibility for participants to understand that organically grown food will automatically be likely to exclude genetically modified varieties.

These groups did include one Sydney participant who bought organic vegetables because she had severe allergy problems. Even this individual is unusual in fruit and vegetable groups. Over the past few years the very low number of organic purchasers present in groups would suggest they are an insignificant proportion of purchasers.

Waste Management

There is no comprehension of what could be involved in this issue.

6. Attitudes to Food Safety Issues

Participants are much **more concerned about food safety issues** than they are about environmental issues. The three areas of main concern can be generally defined as possible harmful spraying associated with fruit and vegetables, genetic “engineering” and abnormal growing, ripening and storing processes which are having a deleterious effect on the fruit and vegetables purchased.

These are all concerns which could have a direct effect on the health of participants and their families and thus are of real concern once they are forced to genuinely consider the subject. Currently, the method of coping with these concerns is to **ignore** them unless the issues are raised in a way which arouses personal fear. As participant well express the overall situation:

“I think about it when I see some program and I am concerned, then I think but what can I do?”

“You have to have your fruit and vegetables, what else could we eat?”

Problems with the inherent safety of fruit and vegetables are in the too hard basket. Fruit and vegetables can be washed to remove germs arising from supermarket handling and perhaps some surface spray but anything further is beyond the average food purchaser and preparer when she has been well taught the extreme importance of fresh fruit and vegetables in the family diet.

Chemical Spraying of Fruit and Vegetables

This is the most easily identifiable concern associated with fruit and vegetables and often the first or second voiced in spontaneous discussion. As it is often expressed:

“I worry about all the chemicals they spray on them.”

“It worries me to a certain extent, but what’s the alternative?”

Chemical spraying is a familiar problem to consumers. It has been present in fruit and vegetable research for at least five years and the current project shows no increase in participant concern in this area.

A number of participants do their best to remove such spray with washing, but this process is usually only a cold water wash. Indeed some mothers with older children say they usually leave fruit unwashed and rely on individual family members to wash their own items without policing the issue. In the case of vegetables participants mention that they only wash vegetables which are cooked with skins on. Some consider the boiling process alone to be sufficient to remove the problems. This behaviour demonstrates either low knowledge or low concern with the issue. They function by ignoring the problem association with their fears about fruit and vegetables.

The underlying fear in chemical usage is the problem that it may be associated with cancer. This is little mentioned in direct association, but participants do speak of the increases in cancer. The younger women in particular say:

"There is so much cancer now. You are always hearing of someone else you know getting it. Young people too."

A few of the older participants are aware of the change to safer chemical usage in modern growing as compared to 30 years ago, but this is not appreciated by younger participants who still see sprays as a possible health threat.

There is no direct association of chemical spraying with tomatoes in particular. Their situation is part of an overall concern.

Concerns Associated with Growing, Ripening and Storage Processes

In the past two years there have been growing complaints from discussion participants that fruit and vegetables are no longer keeping as well as they have done previously. Again in this research it is a commonly voiced complaint. As they say:

"Things seem to be going off so quickly now which is very frustrating."

While not focussed on tomatoes there is a chance that this problem could impact on tomatoes sales. **Problems with freshness** are countered by buying less of any one item at a time. This behaviour is exacerbated by the lack of reliable quality of many fruit and vegetables over the previous two poor seasons. The danger in a situation where so much food choice is available is that food preparers learn to do without what they do not have rather than returning to buy more of a fruit and vegetable item they lack.

Participants identify a problem with freshness but they do not know what is causing it. Their suspicions fall on the growing, ripening and storage processes involved. These comments demonstrate the lack of consumer knowledge of growing processes and seem to result in a distrust of the industry. As examples of this thinking:

"I do worry about them doing something to ripen fruits, I think they ripen tomatoes don't they?"

"All that cold storage can't be doing them any good."

"We have such a problem with distance in Australia, they have to come so far they don't stay fresh."

"I think they are spraying them to make them grow bigger now, look at strawberries."

"Aren't they gassing things to make them ripen?"

"Supermarkets are constantly overloading their frigs."

Food Contamination

While this is not a problem directly associated with tomatoes it is interesting to review current thinking in this area for the information it sheds on how consumers assimilate media information.

Both Sydney and Brisbane have had their share of contamination issues reaching the attention of the media. Indeed, this research suggests that such an issue does not enter conscious consideration until it is introduced through a news or news issue program. The best recalled source of information at this time would appear to be "A Current Affair".

The all time successful program on food contamination concerns the salad bars in supermarkets. This is an issue known to all participants and all say they no longer buy such salads.

Of more recent times participants mention an issue about using different chopping blocks for different food items, concerns about Newcastle disease in chickens (Sydney only), peanut butter and the ineffectiveness of bacterial sprays in cleaning kitchens.

Some participants consider information and act on it if there is an obvious change which will be beneficial to their family. As an example:

"I stopped buying overseas tins because they have lead joint solder."

"I hardly have any tinned food any more. I've changed this trying to keep my kids healthy. A little way of trying to take care of things."

Others feel that the concern with "germs" is getting out of hand. They say that some contact is necessary for protection and too much avoidance could lead to its own problems. As they express it:

"I think we are trying to get everything sterile and we get more infections because we are susceptible."

"Having natural bacteria keeps your immune system going. If it was like a hospital you would catch everything going."

Food Additives

Only a minority of participants seem to have concerns about food additives. The products of most concern are preservatives and colourings. These are a problem for individuals with allergies or those who have children who tend to be hyperactive.

As they explain:

"I am very careful with 282 preservative."

"There's a lot of things in bread that you don't expect. I had an allergy a while back and had to read everything and I was surprised."

It is not that the rest of the population trust these products, rather they have not been personally warned about problems of concern to their own or their children's health and most people believe that they use such few processed products that it will not be in amounts sufficient to cause problems.

Few participants read food labels in such detail. The biggest concern is fat content and once this is satisfactory most do not check further. A front of pack notice which announces no artificial colourings or preservatives is considered to be a product positive even for those not particularly vigilant in this area.

7. Attitudes to Genetic Modifications

Initial Reaction

At the present time it is the area of genetic modification which is of most concern to participants. Some mention of this issue was made spontaneously in five of the six groups. As with the other issues the details are not well understood as the following spontaneous discussion references demonstrate:

"I worry about that stuff where they can make a food product without it being a food product, like cloning but different."

"I worry that they could do that with our fruit and vegetables."

"I like eating natural things not things prepared from chemicals."

"I'm a bit worried about this genetic engineering. I don't think they are telling us what is involved."

"I've heard of it but I let it go thinking it was never going to take off. It goes against nature and that's not the way it is supposed to be."

As the list above demonstrates, first reaction to the concept is very negative. Around half of each group have some recognition of the subject but most do not even know what it is called. The few who used some term called it "genetic engineering", most have no common terminology at this stage. The term "genetic modification" is unknown although it can be reasoned back to the concept by most participants. The term "modified" used as a label on some current processed products would not be sufficient to allow consumers to connect it with their vague knowledge of genetically modification.

Only three women overall had any positive reaction to the idea of genetically modified plants. This information was gained from the positive case made for genetic modification. Two were aware that GM might result in pest resistant plants which would need less spraying and saw this as a good outcome. The third woman saw it as a method of feeding increasing world populations.

Most **response is negative**. Judgement is based on emotional response. As an example from one group:

"It just goes against my grain."

"Yes."

"I agree."

At this stage most participants are little concerned about GM as they do not imagine such products would be sold in Australia without fully informing the public. As one explains:

"I am sure they would tell us if they were going to do anything like this. Wouldn't they?"

Others are not as sure. As an example:

"It scares me it is like a conspiracy. It comes out for a minute and then its all hushed up again."

A very few women know or suspect that GM products are available in Australia. These women have taken steps to avoid obtaining them by chance. As examples of such thinking:

"I try and see if it is produced locally from the labels."

"I would buy dearer to buy Australian made."

"Sanitarium said they don't have them and we use a lot of soy milk so I buy that one now."

Participants must **rely on their emotions** to judge this issue. Few have any scientific training which even enables them to understand what a gene is or how it could be recombined. It is classed in the "scientific manipulation" category. It has no relationship to what is natural. This could be important in the final decision to act to avoid genetically modified products. Most people have a very high regard for the abilities of nature:

"Nature might have a reason for what she does and doesn't do. Nature is wonderful."

Considered Response

After initial reaction had been obtained, each group were given a quick synopsis of the positive and negative cases for genetic modification in order to see which aspects would make the most impression.

Australians are relatively hardened to the world food supply situation and only one participant remained concerned about using GM to feed world populations. The only benefit that these participants could apply to their own situation was in relation to a reduction in the need to spray. As one participant translated this advantage:

"If it stops them using chemicals that has got to be an advantage."

With a clearer understanding of the case a majority of participants are still against buying food which has been genetically modified. These women quickly express their intention of avoiding such foods by asking for the details of what specific foodstuffs will be involved. It is clear that once they have registered the four main products involved, most will then attempt to avoid any products which obviously use such ingredients. As always they are looking for a quick action based solution to envisaged problems so they can dismiss the issue.

Objection to genetically modified food is based on the fact that long term effects are not known. Scientific reassurance is not considered to be sufficient as this has proven wrong in the past.

As they explain:

"Its twenty years later you find something out. We all got too many pesticides and antibiotics."

"I am always worried about what will happen down the track if you have genetically modified food coming into your body."

The recent case of the cloned sheep Dolly proving to have developed problems is taken as strong proof that this area is one in which care must be taken. As they express this doubt:

"I was so glad when Dolly went wrong. You know they are waiting to try it with babies."

"It turned out they didn't really know it all with Dolly, did they?"

Participants are prepared to be proven wrong. As they say:

"They said all that about microwaves. Remember."

"I tend to be sceptical the other way. I wonder if it is all a beat up. Like the water and the media making a fuss about it."

"There is so much awareness and so much litigation and this is some protection. They have to be reasonably sure."

Few, however, are willing to take the risk with their own or their family health and will be quite willing to postpone trial until a much later time when more is known. As each thought to herself and one woman clearly voiced:

"I admit if there was genetically modified stuff around I would tend to avoid it until much later."

Response to the British Situation

No one had any knowledge of the scientific background to genetic modification. They could partially guess, but were not spontaneously aware, that much of the work had been undertaken in America. This is not a positive. There is no knowledge of the strength of American food laws, an American involvement is more seen as being directed to economical advantage. As one participant expresses it:

"You mean they are going to make us have this so someone will make a profit?"

These Australians are very interested in the British position. The information about the removal of genetically modified products from supermarkets in Britain at the initiative of the supermarkets themselves is taken as very telling evidence of problems. Supermarkets are not a known authority in this area and so their action is taken as significant.

Similarly, the British Medical Association speaking against the release of genetically modified foodstuff is also considered to be important. While the absence of a comment from medical people is not thought to mean anything one way or the other, when they do take a stand they are considered to be an authority in this area.

Participants had no understanding of the different attitudes to agriculture in Europe and America, indeed when the wider political ramifications are suggested it is beyond the comprehension of these participants.

Trustworthy Authorities

There is no ready spokesperson in Australia whose opinion would be trusted on the genetic modification issue. Politicians are totally distrusted. Nor is their any real trust of government authorities such as councils or health departments.

As in Britain the AMA speaking against genetic modification would effectively persuade many people. Some thought they would be interested to hear what the CSIRO have to say on this issue. A few see these people as suspect because of their government association.

The one individual mentioned as a person whose opinion would be given full consideration is Rosemary Stanton.

As with other areas of consumer information, it is the unlikely information which may carry the greatest weight. A company saying they do not use GM ingredients acts to alert the public that GM may be a problem. If supermarkets in Australia were to respond similarly to their British counterparts this would have particular meaning.

The decision to choose or avoid genetically modified foods is seen as a direct responsibility of the purchaser. Each person must learn what they can and make their own judgement. Participants do consider, however, that it the responsibility of authorities to keep them informed. They expect all genetically modified foods to be clearly labelled as such so each person can make their own choice.

Conclusions and Recommendations

Tomato Marketing Implications

Tomatoes, as a product, are in a stronger position in the present research than they were five years ago. Consumer complaints have dropped to negligible. The quality of standard tomatoes on offer has improved and the increase in varieties regularly available has added interest to the category. While these are significant improvements, they keep tomatoes up to date with current consumer expectations of fruit and vegetables, rather than conferring a significant advantage. This has, however, maintained tomatoes in a competitive position within the vegetable category.

Although the actual quality is superior, this research shows the first signs of a **lessening of the image** of fresh tomatoes as a special and unique product. Much of this superiority was based on the flavour advantages of tomato in the meal making situation. Today flavour is a matter of adding prepared pastes and sauces. Knowledge of food preparation has increased and it is much easier for the average food preparer to offer a wide variety of flavours in her weekly menu. This reduces the importance of tomatoes in the flavour adding role.

Fresh tomatoes have also **lost usage situations to canned** tomatoes. While the fresh tomato category has increased in variety, so have the number of different canned products available. Purchasers buy and use these as an adjunct to their fresh purchases. They are regarded as another variety of tomato and no differentiation is made between the food value of fresh tomatoes and canned. "Wet" dishes - casseroles, curries stews, soups and dishes involving tomato sauces are now almost the exclusive domain of canned

tomatoes with little chance of regaining this role for fresh tomatoes. This also reduces the flavour image advantages once the province of fresh tomatoes.

These changes now clearly position tomatoes as a **product directly competitive with other vegetables**. Fruit and vegetables maintain their importance as a priority nutritional element in the family diet. While purchasers buy a range of different vegetables, there is little room for increasing the vegetable volume in the average evening meal.

Tomatoes have some natural advantages over many other vegetables:

- A unique positioning in that they are not a "green" or a "yellow" type and thus seen as directly substitutable - they have their own usage pattern
- Convenience of preparation- they require no peeling and little chopping
- Ease of use - they can be used fresh or cooked very quickly
- Distinctive and different vegetable flavour
- They are the only vegetables commonly used in all three meal situations and at midmeals

In marketing terms this situation suggests a two directional promotional effort to keep tomatoes in a strong position.

Firstly, the **nutritional benefits of tomatoes need to be promoted** to remind consumers of their health value. Natural vitamin C is the key because it is instantly recognised as important by a majority of consumers. Vitamin C promotion works particularly well in winter months when Queensland tomatoes dominate the market. The cancer preventative advantages of tomatoes should also be featured if these have a scientifically acceptable basis.

Secondly, consideration should be given to a **recipe and food ideas promotion** for tomatoes based on their ease and convenience in **easy meal and snack** situations. This is a food area which is increasing in importance and one where food preparers are likely to show a response in their quest for more variety. In particular, attention should be given to some microwave ideas as this is an area which many preparers do not fully know how to exploit for ease and speed of preparation. Recipes and ideas must clearly work only with fresh tomatoes as it is all too easy for preparers to substitute canned product in meal situations.

From the **tomato grower perspective** all need to understand that they do not function alone. If quality drops within one variety, purchasers will swing to another. This suggests that with the new preferred supplier situation, it is advisable for those growers sending a particular variety of tomatoes to a single retailer source to find ways of keeping their product of uniformly good quality to avoid a leakage to other varietal types.

While the three varieties, standard, cherry and Roma have clear differentiation in the market, the various premium varieties are more directly competitive. It is likely that appealing appearance and price differences are determining which of these varieties premium purchasers buy on any particular shopping occasion.

Implications Arising from Environmental and Food Safety Issues

Farm related **environmental issues** are no longer a concern to females making their life in the city. It is unlikely that any strong consumer action will arise from this source. Similarly, it is also unlikely that special or political interest group generated concern will raise much city consumer support.

The only area where consumers have a persistent worry is the lack of knowledge of **long term effects of crop spraying**. These concerns are at the same level today as they have been over the past five years. Consumers purposely avoid thinking about the problem, because there is no obvious way they can solve it for the benefit of their own family. They need to eat fruit and vegetables and only sprayed alternatives are readily available.

From the grower perspective it is best to avoid any public relations activity related to this problem at this time. Mentioning such an issue can cause as many doubts as it quells fears. Should media programs decide to target the topic, growers have a strong counter in the principles of Farmcare currently in operation. Integrated pest management is a particularly appealing idea to consumers.

At this point in time, almost no one regards buying **organically grown produce** as a possible solution to crop spray worries. Knowledge of the meaning of organic growing is low, as is true scientific understanding of the implications of such a method. The only way in which organically grown fresh fruit or vegetables could become a threat to product grown by standard methods is for major fruit and vegetable retailers to continuously offer such products as a purchase alternatives. Promoting organic products as "grown without chemical sprays or artificial fertilisers" would be a powerful incentive for a significant minority of purchasers to try using such products. There are at least 15% of households who are able and prepared to pay a premium for what they consider to be better product. Organic produce is unlikely to establish itself as superior on appearance criteria alone. It would need strong promotion to establish the inherent benefits without an obvious superior appearance.

Implications of Consumer Reaction to Genetically Modified Food

This research indicates that it will take only a small amount of adverse media attention to turn consumers away from genetically modified fruit and vegetables as they are very wary of the concept as unknown and unproven. Informing consumers that British supermarkets and the BMA have acted against genetically modified food products would be sufficient to make the difference.

The situation in regard to general attitudes to genetic modification is more intense in regard to fruit and vegetables. These foods carry a high component of what food providers consider to be the important nutritional component of the diet. Thus while an ingredient component in a canned product which is not often used is more easily dismissed, altering the important health mainstay of fruit and vegetables is seen as considerably more threatening. Fresh fruit and vegetables are an ultimate natural product, a bounty of mother nature. Genetically modifying fruit and vegetables is seen as perversion of what is natural and good.

While the scientific principles of genetic modification are not understood, the emotional response is that such change is "against nature" and the overwhelming response is to take no chances with ones own or the family health. The worry is a very personal health concern; there is no thought of the effects that such plant introductions may have on the biosphere.

To the consumer, recent history seems full of scientific "advances" which were fine at the time and proved problems years later. There is a majority belief that the long term effects of genetic modification cannot be known at this stage and for reasons of prudence, as they involve food, such foods should be avoided.

This research concludes that if purchasers **become aware** that genetically modified fruit and vegetables are in the shops, they will purposely avoid buying them at this stage and in the near future. Such a conclusion is based on the premise that media information and labelling rules will inform them of the origins of such food. Without such attention, it is unlikely that consumers would even notice such a change in supply.

If it is advantageous for growers to introduce labelled genetically modified tomatoes onto the Australian market, they will need to be offered at a **considerable price advantage** to standard product to generate trial. Even then it is likely that a significant number of purchasers will not be tempted.

While Australians are usually quick to adopt new products, the area of food safety has a history of relatively slow adoption. A comparable case is the microwave oven, where purchase patterns with Australian electrical appliances predicted that adoption would be very fast, while in actual case it took over twenty years to reach half the expected sales. In focus groups to this day, participants still occasionally mention the possible dangers of microwaves.

Consumers currently feel **powerless to effect** what they see as the increasing economics driven major decisions within their society so they expect that genetically modified products will be introduced into Australia. They also expect that they will be informed of such an important introduction and that all products genetically modified or using genetically modified components will be clearly labelled as such. It is then considered to be up to each person to make a personal decision as to what they will choose to eat.

The findings of this study suggest that most will initially avoid all products with a majority of genetically modified component. Where notice of genetic modification is buried within an ingredient list, only a minority will take the time to make themselves aware of the presence of such ingredients. This could increase if significant media attention is directed toward the issue.

Appendix

Discussion Agenda

1. Introduction to Discussion Procedures and Other Participants
2. Role of Fruit and Vegetables

What is the general role of fruit and vegetables today? How does this compare with 5 years ago? What specific attitudes exist in the following areas and how do tomatoes fit into the general trends?

- Speed and convenience
- Range offered
- Use of recipes
- Involvement of partner/children in cooking
- Eating out
- Role of meat
- Focus on vegetables
- Family member preferences
- Entertaining

3. Changes in Attitudes to Fruit, Vegetables and Tomatoes

- How do participants respond to the mention of change? Do they think in terms of new varieties, new cooking ideas, more convenience food or spontaneously mention safety issues?
- What is the spontaneous level of concern if food safety issues are mentioned?
- Are any changes or concerns specifically linked to tomatoes?

4. Attitudes and Usage of Tomatoes

- How are tomatoes regarded? Has there been an increase in the value and image connotations of tomatoes?
- How are consumers using tomatoes?
- What is the relationship between salad and cooked tomatoes?
- What is the relative importance of main meal and between meal usage?
- How are they defining the increasing variety of tomatoes available? Are different varieties used in different ways?
- Where do **processed and pre-prepared** tomatoes fit in?
- What is known of the nutritional properties of tomatoes? What role does nutrition play in tomato consideration?

5. Tomato Purchase

- How are purchase decisions being made? What are the main decision criteria? Are there any changes?
- How do the main elements variety, quality, flavour, ripeness, size and price fit together and effect the purchase decision?
- When are tomatoes rejected or a different variety sought?
- What part does absolute price or value for money play? Do they know the price differences between varieties? Are they buying by quantity, number of tomatoes or price?
- Is the concentration on shopping or using tomatoes? Does this vary between varieties?
- What is the current level of satisfaction with tomatoes? Are they perceived to be better in summer or through the winter months?

5. Food Safety and Environmental Issues

- Which issues are spontaneously known to consumers?
- Are any issues of actionable concern?
- Can any specific issues be raised to a genuine concern among consumers? If so how will this effect attitudes to tomatoes?
- What are specific consumer reactions to the following issues?

Freshness of fruit and vegetables including tomatoes

Pesticide spray residues in fruit and vegetables

Micro organisms causing illness

Use of chemicals as fertilisers and in weed control/Organic growing

Water issues - river and creek damming, water diversion and quotas

Eco system issues including land and soil management, biodiversity and integrated pest management

Waste management and disposal including fertiliser run off

Genetic engineering

- What are the interrelationships and trade offs?
- How will they judge food on these issues - taste, labelling, media, etc?
- Is there a trusted spokesperson or group?