



SCOPING STUDY OF COMMUNITY INTERVENTIONS THAT PROMOTE VEGETABLE CONSUMPTION

FINAL REPORT



**Sue Noy, Dr Rebecca Patrick, Isabella Ryan,
Sonia Nuttman, Dr Claire Henderson-Wilson (2017)**

Health, Nature and Sustainability Research Group, Deakin University, Victoria.
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1. Executive summary

Most Australians consume less than the recommended daily intake (RDI) of vegetables. This trend is associated with multiple health, environmental and economic impacts including increased chronic disease, meat-heavy diets and reduced sales of vegetables. Community interventions, such as community gardens, kitchen gardens, community supported agriculture programs and farmers' markets, have the potential to counteract this trend and promote increased vegetable consumption and lead to enhanced health and wellbeing.

The strategic levy investment project VG16025: Increase consumption and sales by developing community awareness and benefits of vegetables is part of the Hort Innovation vegetable Fund and provided the funding for this project. The objective of this scoping project was to provide research based information to inform Hort Innovation's and its members' understanding of community interventions and how these interventions may increase vegetable consumption. A comprehensive review of existing Australian and overseas literature (over 180 peer reviewed articles and 200 grey literature articles/reports) and consultations with leaders (n = 10) of community interventions in Australia have been undertaken to explore existing knowledge of community intervention impacts and to identify areas requiring further research and evaluation.

Key findings suggest:

- Some of the most promising interventions are characterised by a holistic approach to production, consumption and food security, and by closer relationships between consumers and producers.
- Community based or local food systems, combined with policy and tax incentives to increase access, may be better suited to supporting vegetable consumption and food security among vulnerable populations.
- Trends toward natural foods, settings-based and participatory programs, celebrity driven and online media food initiatives may provide opportunities for the development of current and future strategies to promote vegetable consumption.

Key recommendations include:

- Given an aging population, the elderly warrant more attention in regards to research and intervention design.
- The growing trend among a proportion of Millennials and people with young families toward values driven food choices warrants further consideration in research and intervention development as these preferences are likely to disrupt conventional approaches to food supply and intervention design in Australia.
- Longitudinal research into the relationship between vegetable consumption, childhood experiences and adult attitudes/behaviors is still required, as are studies that evaluate the impact of multi-setting and multi-scale interventions.

Acknowledging this was not a systematic review of community interventions, this scoping study provides a snapshot of promising community interventions for vegetable consumption in Australia that may benefit from further investment. This is the short version of the study. Please contact Rebecca Patrick (rebecca.patrick@deakin.edu.au) if you wish to obtain the full report.

2. Introduction

Maintaining a healthy diet is fundamental to chronic disease prevention (1). Evidence continues to support that adequate vegetable consumption is protective against heart disease, stroke, diabetes, eye degeneration, cancer and weight gain (1). Current guidelines recommend at least five vegetable servings daily for adults (1 serve = 75g), whilst recommendations for children vary according to age (1) (Table 1). Australian vegetable intake is well below the recommended levels for good health. Data from the Australian Bureau of Statistics (ABS) in 2014–2015 revealed that over 90% of adults are not eating enough vegetables (2).

Table 1: Australian dietary guidelines: recommended intake of vegetables for adults and children

Age	Servings
1–2 years	2–3
2–3 years	2.5
4–8 years	4.5
9–18 years	5–5.5
18 + years	5–6

Source: Nutrition Australia n.d.

As well as negative impacts on health, decreased vegetable consumption presents challenges to the Australian economy. In 2015–2016, the cost of low vegetable consumption was estimated to be \$978 million in government health expenditure (3). Increasing vegetable consumption would also result in economic benefits for Australian vegetable producers. If consumption increased by 10%, the vegetable industry would increase profits by \$22.3 million annually (3).

Reasons for low vegetable intake are multifaceted. Some population groups may face issues in terms of cost and accessibility. For example, lack of availability (i.e. due to a lack of fresh food outlets or transport options) and the expense of fresh produce, were cited as barriers to vegetable intake in a study of middle-aged men based in regional Australia (4). Studies also show that societal changes in Australia and other Western countries have altered cultural norms around meal preparation and eating which may account for a reduction in vegetable consumption. Households may be less likely to prepare meals at home due to long work hours and busy schedules dominating their time (5, 6). Convenience foods, pre-prepared meals and dining out of home have grown in prominence, with the average Australian household dining out two to three times per week (7).

There is a small amount of evidence from one study suggesting that exposure to a wide range of fruit and vegetables in childhood correlates with more vegetable eating in adulthood (8). This study of 1200 lower income African American women found that women who estimated they ate a lot of vegetables as a child, had positive attitudes to fruit and vegetables in adulthood, were more inclined to try new food as an adult, and had a wider variety in their diet.

Whilst vegetable intake is low for all adults, men are more at risk of inadequate intake. According to a 2017 CSIRO report on fruit and vegetable intake in Australian adults, 77% of males and 61% of females are not meeting the recommended vegetable intake (9). Vegetable intake is also low among Australian

children, with only 5.4% consuming recommended amounts in 2014–2015 (10). It was also noted urban dwellers (89.4% of the population (11)) were at risk of low intake (9). Young Australians (millennials) in the 18–30 age bracket had low intake levels, with only 32% meeting vegetable guidelines (9). Recent research conducted for Hort Innovation on Millennials’ consumption behaviours (12), including attitudes to organic food t, suggests that this population group has different motivations and purchasing behaviours to older generations.

Observable Trends

Several Western countries, including Australia, are experiencing a growing socio-cultural trend whereby consumers are consciously becoming more engaged with producers and food production. Examples of engagement include community-based initiatives such as community gardens, community supported agriculture (CSA), farmers’ markets, school-based kitchen garden programs and fresh food box subscriptions (e.g. food hubs). The distinction between these interventions is often muddled by the fact that they are multi-dimensional and for example, a community garden may also contribute to a farmers’ market. Together these initiatives form local food networks which align with the increased interest in locally produced food, albeit with a small but significant percentage of the population.

The tangible outcomes of this trend towards engagement with food producers and food production are impressive. In Victoria alone, there are at least 746 local community food initiatives (13). Australia wide there are over 800 kitchen garden programs in schools (Stephanie Alexander Kitchen Garden Program), over a dozen farms that practise community supported agriculture (CSA), and 576 registered community gardens (14). Reasons for participating in local community food systems in Australia and abroad are varied for consumers and producers. Recurring motivations for consumers include accessibility to fresh, good quality produce and community engagement, and for producers, engagement with buyers and greater profits (15–17). Research supports positive changes to vegetable intake and associated food-related choices (18–20). There is evidence to suggest that engagement with food and exposure to the process of harvesting and production has a positive impact on children’s willingness to eat a wider range of vegetables (21). Projects that involve children and adults in growing food appear to have a positive effect on consumption, especially where there is an element of food preparation.

Federal and state policies have an impact on community interventions around food and may foster synergies between agriculture, nutrition, environmental health and local food security. In Australia, health policy focused on disease prevention and healthy eating shapes the way interventions are designed and funded at the community level. Strategies for increasing vegetable consumption among the community include the reinforcement of dietary guidelines and behavioural change programs (22)—strategies that this report has found to be less effective than community based interventions connecting production and consumption more closely. Importantly, agricultural and economic policies focused on export growth generate entirely different strategies to policies focused on supporting small to medium scale farming and providing access for vulnerable communities, as US policy has demonstrated (23). The US approach has demonstrated the opportunities for stimulating the local economy, supporting farmers and improving health through increased access to, and consumption of, fresh produce. The Farm Bill provides support for smaller scale local food production linked to addressing food security in low income and other vulnerable populations (24) as well as support for horticultural and organic food production, and conservation initiatives by farmers (25). Similar policy could be implemented in Australia to support coordinated and inter-sectoral policy.

Across the range of community interventions reviewed for this report, the partnerships between community and industry is a recurring theme. In food security initiatives, short supply chain enterprises like farmers' markets and food hubs, and mass media campaigns, collaboration is a key element of success. It seems that this model could be expanded to support emerging community interventions that have potential for increasing vegetable consumption. There is clearly potential for the vegetable industry to advocate (through AUSVEG) for stronger policy and economic support from government to build synergies around local community food systems that will facilitate a range of fruit and vegetable production initiatives that benefit producers as well as consumers.

This report provides a summary of community based interventions in Australia and Western countries, discusses their impact on vegetable intake and the opportunities that this presents for Hort Innovation and the vegetable industry.



3. Methodology

Introduction

The aim of the scoping study was to increase Hort Innovation's understanding of community interventions and how these interventions can increase vegetable consumption in Australia. A comprehensive synthesis of peer reviewed and grey literature, along with stakeholder consultations with leaders of community interventions in Australia, was undertaken.

There were three research questions guiding this scoping study:

Research Question [RQ] 1: What community interventions are being implemented in Australia and abroad to promote vegetable consumption?

RQ 2: What (if any) impacts have community interventions had on vegetable consumption including the behaviours, attitudes, knowledge and skills that support vegetable consumption, particularly among at risk groups?

RQ 3: Which Australian community interventions require further research and evaluation to measure real and potential impacts on vegetable consumption?

In this scoping study, ‘community intervention’ was characterised by a multi-faceted set of activities that engage communities, including individuals, families and organisations, in the promotion of a phenomenon. The notion of community encompassed geographical location (e.g. urban, regional, rural), population profile (e.g. socioeconomic status, age group), setting (e.g. school, prison) and/or a community defined by a common interest (e.g. ethical consumption). The scoping study deliberately combined traditional community interventions (i.e. agency initiated activities that target risk factors to change individual attitudes and behaviours) with contemporary/emergent notions of community interventions (i.e. participatory, citizen-generated activities or social movements that aim for system level change with multiple outcomes). This definition ensured the scoping study was able to: 1/ reflect the breadth of activities relevant to the research questions; 2/ respond to new trends; and 3/ differentiate itself from a study of dietary (one dimensional) interventions.

Given this definition of community interventions, three strategies of inquiry were combined to answer the research questions.

- 1) Desktop review of Australian and international literature: a comprehensive review of peer reviewed literature (Australian and international) was combined with a review of grey literature to answer research questions 1&2. To guide the literature searches, a typology of community interventions was developed (refer Table 2 on page 7) that spanned traditional/behaviour change approaches through to new frontiers, with the intent of increasing vegetable consumption. The typology boundaries are arbitrary and in practice these interventions both overlap and are interacting in time and space.*
- 2) Expert stakeholder consultations: consultations were conducted with leaders of relevant Australian community interventions and organisations.
- 3) Preliminary mapping of Australian community interventions: a search for existing information and maps that visually demonstrate the number and type of community interventions that address vegetable consumption across Australia was conducted.

* The left-hand axis of the table reflects the idea that community interventions have been informed by different food paradigms (e.g. nutrition, food security, food sovereignty) that are interconnected and are evolving over time. The middle column—name of community intervention—corresponds with the section headings within the publishable report. The right-hand axis provides a snapshot of the population profiles and examples of interventions.

Table 2: Australian Food Landscape—Typology of Community Interventions for increasing vegetable consumption

Status	Motivation/aims/key players	Name of community intervention	Settings or target populations	Example/s	
Conventional Large scale or Settings-based Interventions	Behaviour change/health promotion/cultural change Initiated by agency/state/national scale; some industry partnerships Distant relationships between producer and consumer	Mass media and social marketing campaigns [nutrition/dietary education campaigns]	General population	2 Fruit, 5 Veg; Go for 2 & 5; Measure Up; Pick Right, Feel Bright campaign	
		Edutainment and social media activity [food/cooking education]	General population Children	MasterChef; My Kitchen Rules; Facebook	
		Settings or target group based interventions	Indigenous communities; LSES; children & parents; supermarkets	WA FOODcents; Traffic Light Programs; Jamie Oliver's Ministry of Food	
Established Community Interventions	FOOD SECURITY	Food security (access and availability)/social justice/waste reduction/community building/connection to production Initiated by agency or community driven	Emergency food programs	LSES; culturally & linguistically diverse; migrants & refugees St Vincent de Pauls; Salvation Army; OzHarvest; Second Bite; Soup Kitchens	
		Reconnection to food Initiated by local government, agency/social enterprise; some partnerships	Community gardens	LSES; culturally & linguistically diverse; migrants & refugees Urban; healthcare; education; prisons Australian City Farms and Community Gardens Network; Kooweerup regional health service community garden; Deakin University Community Garden	
		Reconnection to food, cooking and social eating Initiated by agency/social enterprise; some partnerships	Kitchen gardens (expanded food program including kitchen garden)	Children Primary schools all over Australia	Stephanie Alexander Kitchen Garden Foundation Program; Cultivating Community; Australian Organic Schools; Raw Garden
		Reconnection to rural landscapes and experiences Initiated by small to medium-scale producers, local government and community	Agritourism and farm tourism (including city farms)	Families with young children; experience-seekers	Hawkesbury Harvest Trails and Markets; demonstration and city farms

Status	Motivation/aims/key players	Name of community intervention	Settings or target populations	Example/s
Established Community Interventions	<p>Local or regional food systems/ fair return to producer/ quality food</p> <p>Direct marketing: initiated by small to medium-scale producers; farmers, local councils, community organisations and service clubs</p>	Farmers' markets	<p>General population mainly educated & financially secure; tourists and day trippers</p> <p>Urban, peri-urban & regional</p>	Victorian Farmers' Markets Association; Melbourne Farmers' Markets
	<p>Food quality/ producer sustainability/ food systems change/food sovereignty/ sustainability</p> <p>Initiated by consumers, environmental and sustainability agencies, cultural organisations</p>	Values driven food choices	Young adults; older educated adults	Sustainable Table; Slow Food; Kinfolk Cafe; Lentil as Anything; Sorghum Sisters catering; STREAT
New Frontiers	<p>Values based supply chains</p> <p>Localised food systems: initiated by consumers and producers or individuals, community and local council</p>	Localised food supplies Community based or social enterprises e.g. food hubs, cooperatives predominantly in urban settings	Local community	Food Connect Sydney and Brisbane; verge gardens; rooftop gardens; edible streetscapes; bartering and food swaps
	<p>Direct relationship between consumer and producer</p> <p>Diverse produce/small scale: initiated by producers</p>	Community Supported Agriculture (CSA) —single farm (another form of localised food supply)	Peri-urban, educated; mainly women & financially secure	Transition Farm; PEACE Farm; 2&5 Geelong; Purple Pear Farm

FOOD SECURITY

SECTION 1: Large Scale or Settings-Based Interventions

Mass Media and Settings-Based Campaigns

This section considers large-scale and associated settings-based campaigns including mass media, social marketing, social media and celebrity-initiated interventions. It also considers the role of emerging media such as cooking shows and social media. Whilst not necessarily meeting all the criteria for a community intervention (i.e. characterised by multifaceted activities at the community level), these emerging media are included in this review as forms of communication with the potential to influence behaviour around vegetable consumption.

Background

Over the past thirty years, health authorities in Europe, Australia and the Americas have initiated public health interventions to address the low rates of vegetable consumption across all age groups. Local, state and national campaigns have used a range of social marketing approaches including mass media advertising activities focused on target groups such as low SES groups, local community activities and individually targeted communications. Rekhy and McConchie's (2014) recent review of large-scale health interventions to increase vegetable consumption highlights the difficulty and complexity involved in changing behaviour and the need for sophisticated, multi-stakeholder approaches. Despite millions of dollars being spent, results in most cases have been disappointing or modest (26). Not surprisingly, in Australia in 2017, there is no known large-scale mass media campaign targeting fruit and vegetable consumption, and limited evidence of well-coordinated community campaigns at state level.

Edutainment and social media are emerging as alternative communication sources. There is currently no evidence to support the role of edutainment for promoting vegetable consumption. However, there may be possibilities for future strategies around social media, smart phones and sites linked to brand/source.

Key Findings

- Mass media or social marketing campaigns have limited impact on long-term vegetable consumption. There appears to be a declining appetite for mass media nutrition campaigns in Australia. The most promising results seem to be from the Danish 6 A Day intervention but there is limited documentation and evaluation in English.
- Interventions are more likely to succeed when they are founded in collaboration between stakeholders.
- Target-group-specific interventions with an interactive personalised component, such as phone calls or practical classes, have shown the most promising results. Jamie Oliver's Ministry of Food program model is the most promising in terms of increased fruit and vegetable consumption. A recent intervention using smart phones to provide regular prompts showed encouraging results.
- There is significant interest in food-focused communication and entertainment, but limited evidence of it increasing vegetable consumption.
- Social media, online recipes and linked branding are increasingly popular. There may be an opportunity for promoting vegetables through some of these avenues.

Knowledge and Research Gaps

- Given the limited success of social marketing and mass media campaigns to increase vegetable consumption, there is a need to study alternative approaches.
- Further research is needed to explore the potential of emerging communication networks such as interactive social media interventions.
- There is little research on celebrity cooks/chefs and cooking shows and their relationship to fruit and vegetable intake. Research needs to consider the relationship between the purpose of the program or activity as well as the outcomes.
- Most campaigns focus on fruit and vegetables together. The public is closer to meeting daily guidelines for fruit rather than vegetables. There may be opportunities to undertake specific interventions and associated research focused on increasing vegetable consumption.

Policy and regulatory measures have been identified as important. More research is required around government policy and regulation that support increased vegetable consumption. Further research is needed that explores if, and how, government policies related to food (e.g. tourism, agriculture, planning) could better align with government policy around healthy eating/public health.



SECTION 2: Established Community Interventions

This section considers established community interventions that aim to combat food insecurity and to improve vegetable consumption for vulnerable populations. Examples include: emergency food relief services, community gardens and kitchen gardens, some of which have existed for years throughout Australia. This section also touches on the use of agritourism and farmers' markets for promoting vegetable consumption amongst food insecure communities.

Emergency Food

Emergency relief services have traditionally been delivered by community organisations and help people address immediate basic needs in times of crisis. Emergency relief can act as a safety net for people experiencing financial distress or hardship and who have limited means or resources to help them alleviate their financial crisis (27). Emergency food relief is one type of assistance offered and can take several forms including: food parcels/hampers, soup kitchens, community meals, food vouchers, homeless street food vans and school breakfast programs.

Key Findings

- There is a spectrum of emergency food agencies and approaches in Australia.
- There is evidence of effective cooperation between agencies in this area, including primary producers.
- There is increasing awareness of the importance of fresh fruit and vegetables as part of the food provided to people in need.
- Some agencies are recognising the effectiveness of local food interventions such as community gardens linked to kitchens for fostering better nutrition and food security.
- Several large agencies are concerned with reducing food waste as well as providing emergency food.

Knowledge and Research Gaps

More research is required to understand how local food system initiatives improve food security, including vegetable consumption, for vulnerable populations.

Community Gardens

This section looks at the development and emerging role of community gardens in small scale local food production. It attempts to tease out the relationship between participation in community gardens and increased vegetable consumption. Like many areas of community interventions, there is a lack of quantitative research and a stronger focus on community development rather than vegetable consumption.

Community gardens can be generally described as a form of urban gardening (although they are also found in rural towns and regional settings), characterised by open spaces in which food or flowers are cultivated and that are managed and operated by members of the local community, mostly on public land. They vary in size from small vacant parcels of land to city farms. The first Australian community gardens

were established in the seventies in Victoria (28). Since the 1990s there has been increasing interest in community gardens. In 2016, there were at least 557 community gardens in Australia (14). In addition to establishing gardens to meet food security and environmental goals in lower SES communities, garden organisers are often motivated by an interest in building community connection and psycho-social health.

Key Findings

- Australia has more than 550 community gardens.
- Evaluation of community gardens suggests that belonging to a community garden is associated with increased consumption of fruit and vegetables, but the research is largely anecdotal.
- Evaluation of school programs in Australia and overseas has found positive influences on food-related behaviours such as increased ability to identify different fruit and vegetables, greater interest in cooking and increased accessibility to fresh produce.
- Community garden membership includes a range of ages and cultural backgrounds.
- Motivation to join includes the desire to eat fresh, locally produced food and to engage with the broader community, to save money and improve health, and to address concerns for environmental impacts of the modern food system.

Knowledge and Research Gaps

- There is very little research on Australian community gardens in non-school settings. For the period 1985–2011 Guitart et al. (2012) found only 12 Australian journal articles.
- More research is needed into the potential value of involvement in community gardens for ‘at risk groups’ in Australia.
- There is a role for research that explores the impact of community garden participation on vegetable and fruit consumption, including consumption of food from the garden as well as other food purchasing/cooking.

Kitchen Gardens

This section describes kitchen gardens, a form of community garden generally designed to enable a community to engage in the ‘paddock to plate’ concept of growing and subsequently cooking and sharing food from a community garden. They are most commonly found in primary schools, and link food production, cooking and social eating to the classroom curriculum. The Stephanie Alexander Kitchen Garden Foundation program (SAKGF) is the most well known in Australia. It has generated widespread interest and hundreds of projects across Australia, and has extended its reach to provide resources to preschool, secondary, health and community based garden projects. A small number of Indigenous programs exist, notably EON Foundation in WA. Gardens may be sponsored by local councils or state governments, sometimes partnering with a not for profit community organisation (e.g. Cultivating Community).

A common finding in evaluations of kitchen gardens is positive changes in food related behaviours, for example an increased willingness to try new vegetables, improved attitude and knowledge, and increased confidence in cooking and food preparation skills (29). Some programs also report increased vegetable consumption (30). These results are more positive than for community gardens that concentrate primarily on food production.

Key Findings

- Student involvement in all aspects of kitchen gardens from planting and harvesting to food preparation and integration into school subjects has the most positive impact. This holistic approach, exemplified by the SAKGF, tends to be more successful than programs that only involve one aspect i.e. only gardening or only cooking.
- Participation in kitchen gardens leads to positive changes in food related behaviors, for example an increased willingness to try new vegetables, improved attitude and knowledge, and increased confidence in cooking and food preparation skills.
- In Indigenous communities with limited access to fresh food, community kitchen gardens provide fresh food and healthy eating education to children and other community members.

Knowledge and Research Gaps

- More research is needed to establish the factors/strategies that most successfully develop positive attitudes and behaviours that specifically support increased vegetable consumption.
- More is known about kitchen gardens in school settings. Primary research is needed to develop a more comprehensive picture of kitchen gardens and their impacts in other Australian settings, including programs targeting vulnerable communities.
- There is a lack of longitudinal research into the relationship between vegetable consumption, childhood experiences and adult attitudes/behaviours.

Agritourism and Farm Tourism

Background

Agritourism, farm or food tourism involves people visiting a region specifically to visit a farm or food-related business for pleasure, education or to participate in events. The most common activities relevant to fruit and vegetable growers are on-farm activities such as farm gate sales or pick your own, food/produce trails, farm tours and demonstration farms. Over the last five years, the number of tourists visiting farms (including farm gate) in Australia has grown significantly, suggesting increased public interest in this form of recreation and education. Overall, there is limited research about participant groups and the quality of their experiences, and the impact of their visits on long-term vegetable consumption.

Key Findings

- There is significant public appetite for food tourism and connection to primary production, and this provides an opportunity for growers.
- On-farm consumer education as part of farm tourism is an under-developed area in Australia.
- Well-managed and coordinated local/regional agritourism with a diverse range of products is the most successful in attracting visitors.
- Most agritourism in Australia and the US is driven by the need for additional income sources and therefore motivated by economic rather than educational factors.

- Few regions have a centrally coordinated platform for accessing agritourism offerings, or existing digital platforms etc. are out of date.
- State and federal government priorities in relation to agritourism reflect the focus on generating additional income for farmers in economically struggling regions rather than strategic tourism or health.

Knowledge and Research Gaps

- There is no primary research into the potential of agritourism for educating consumers and promoting increased vegetable consumption.
- This is an understudied area in both the urban and rural contexts and there is a need for research into the demographics of Australian agritourists.
- Research is needed into visitor interests especially whether visitor behaviour is linked to preference for eco-agricultural farming approaches and natural products.

Farmers' Markets

Background

Farmers' markets provide a space where producers and consumers meet to sell and buy produce. They are held on a regular basis and may have rules relating to the distance that the produce has travelled from the place it was produced, and the methods of production (e.g. organic) although these vary from market to market. A feature of farmers' markets is the opportunity for personal connections that create mutual benefits for local farmers, shoppers and communities, and for educational opportunities for shoppers to learn about unfamiliar and seasonal local food. Recent years have witnessed significant growth in the prevalence and popularity of local farmers' markets and associated direct food purchasing by consumers (23), however they are still a relatively recent phenomenon in Australia, and there is a paucity of research into the impacts of market shopping on consumers' vegetable consumption. Most of the research is from the US, where subsidies to low income shoppers are a feature of the market picture.

Key Findings

- Farmers'/food markets are increasing in prevalence and popularity in Australia as well as in the US.
- A body of US evidence finds that shopping at farmers' markets leads to increased vegetable intake.
- US research into shoppers from low SES backgrounds supports long term increased vegetable intake especially where this is linked to subsidised purchases.
- Australian research shows an increase in vegetable consumption in one rural community.
- Shoppers at farmers' markets, in general, shop more frequently than other shoppers including at supermarkets.

Knowledge and Research Gaps

- There is minimal research about farmers' markets in Australia and how they support healthy eating, particularly vegetable consumption. Baseline research is required to build a picture that includes demographics, consumer behaviours and producer motivations.
- There is an opportunity to explore strategies that ensure access for a broad cross section of the community.

SECTION 3: New Frontiers

Values-driven Food Choices

Background

This section explores the connection between ethical attitudes and food purchases, with a focus on organic produce, and local or community-based food systems that are considered 'new frontiers'. This section focuses on the increased interest in organic food, three quarters of which is purchased from supermarkets, and the implications for vegetable consumption (31). Examples covered include: local food networks, food hubs, City Farms, home gardens and food networking and community supported agriculture.

Key Findings

- There is a growing trend toward food choices that are perceived to enhance health and encompass environmental and social justice goals.
- Consumers' preference for natural food (i.e. free of chemicals and pesticides and genetic modification (GMO) was a strong predictor of their willingness to eat seasonal fruits and vegetables.
- The strongest motivation for purchase is health benefit, followed by wanting food without additives, chemicals or pesticides etc. as demonstrated by overseas studies.
- 'Local' was valued more than 'organic' across all studies, which may be linked to distrust or lack of knowledge of certification systems.
- Young adults (Millennials and Gen Y) are the largest group of organic purchasers, and families with young children are strong supporters of organic food. Some research suggests that this interest in food attributes may lead to increased vegetable eating.
- Most people purchase organic food at supermarkets, but there is a trend among younger people toward purchasing from a broader range of more specialized outlets including organic specialists, farmers' markets and greengrocers.
- There is a significant increase in the percentage of people giving high importance to fair prices for farmers (51% up from 40% in 2014).

Research and Knowledge Gaps

- More research is required into the motivations and behaviours of millennials, who feature as low consumers of fruit and vegetables, as well as supporters of local food.
- Apart from the recent Organics Report, there is a lack of information about Australian consumers overall and value-driven food choices.

Opportunities

- Ethical consumers list locally produced food as a priority in their fresh food purchases. This concern will support increasing purchase of Australian rather than imported produce.
- There are opportunities for producers to work with alternative networks and smaller retailers who have greater credibility with the young, adult shopper.

Local Food Networks

Background

- The focus for this section is local food systems, short supply food chains and community food enterprises. This section uses the term 'local food system' to include local and regional community food enterprises as well as short supply food chains. Several local enterprises, such as farmers' markets and community and kitchen gardens, are described in detail elsewhere in this report. A local food system is characterised by:
 - relationships where trust and authenticity are established through personal connection;
 - spatial proximity which overlaps with face to face but relates to the defined area of production (e.g. Hawkesbury Harvest); and
 - a diverse range of activities and relationships that together make up a resilient local food system. This can include local food hubs, food cooperatives, city farms, community gardens, home gardeners and neighbourhood share networks, and complementary hospitality ventures.

Key Findings

- A total of 746 community local food system enterprises were identified across the 79 councils and shires of Victoria.
- Food hubs are a relatively recent arrival on the local food scene. In the US, their popularity is growing, and so is the number of small-medium size growers entering the industry.
- Participation in local food systems is motivated by concerns to support the local economy and to develop closer relationships between producers and consumers, in part as a guarantee of valued aspects of food quality such as pesticide-free vegetables.
- A body of evidence supports the positive impact on vegetable consumption of participation in CSAs, farmers' markets and kitchen gardens.
- There is some evidence to suggest that people interested in local food systems use a range of avenues for their food purchases including supermarkets.
- Half of Australian households participate in some food growing.

Knowledge and Research Gaps

- Some published research has specifically investigated farmers' markets, CSAs and kitchen gardens and increased vegetable consumption in each case. There is a need for more research around other local food interventions such as community gardens, food hubs and city/demonstration farms.
- There is a need for research on how local food systems are developing and how that affects vegetable consumption.
- There is a need for research into where local food systems sit within a broader Australian context in terms of fruit and vegetable consumption

Community Supported Agriculture

Community supported agriculture (CSA) is a small-scale farming approach generally based on use of agroecological methods and linking producers and consumers directly through a contractual relationship which provides farmers with a guaranteed income. Importantly, most research suggests that CSA membership leads to an increase in variety and in most cases amount of vegetables consumed. CSAs attract a younger cohort of farmers, and new entrants to the industry. Services such as food hubs that bring together the produce of a range of farmers may prove a more suitable model for Australian conditions, and provide opportunities to address social inequity. This niche form of agriculture fits within the conservation agriculture approach being adopted increasingly in Australia.

Key Findings

- CSAs are well established overseas, especially in the US and France, but only a handful operate in Australia. In Australia and overseas some programs use the shares/contractual model but source from several local farmers to fill the weekly food boxes.
- There is limited literature explicitly evaluating the impact of CSAs on vegetable consumption, however membership of CSAs (in the USA) encourages consumers to eat more and wider variety of vegetables. British research suggests more home cooking and healthier eating, and replacing some supermarket shopping with locally sourced food.
- Most members of CSAs (USA) are middle aged, white, affluent and well-educated women, however some CSAs have implemented strategies to provide access to lower SES members of the community. British studies report broader SES membership.
- Members have two main motivations—desire for fresh, quality food and concern to support local farmers and farming.
- The age demographics of CSA farmers is significantly younger than the general farmer demographic, and includes newcomers to farming.
- There is a small amount of research on farmers' experience of CSAs. Farmers enjoy guaranteed income and community support, greater ease of production planning and can complete administration in shoulder periods. Despite the challenges of dealing with customers directly, including marketing and education, more than half of CSA farmers intended to keep running a CSA (Canadian study).
- In the USA there are a number of CSA programs at universities usually linked to curriculum activities sometimes including a campus farm.

Knowledge and Research Gaps

- There is a lack of any research or evaluation of Australian CSAs including programs sourcing from several farms or workplace programs (food hubs or food box systems).
- There are limited studies that explicitly evaluate an association between CSAs and increased vegetable consumption. Research is needed to establish vegetable consumption and purchasing behaviours of CSA members.
- The need for a scoping study to ascertain the number of CSAs in Australia, where they are (geographically), who they involve and how they operate.

4. Discussion

The scoping study suggests that there are several trends that are currently informing, or have potential to inform, community interventions now and into the future.

Trends include:

- interest in natural food
- community and corporate concern about waste, and
- initiatives that blur the traditional producer—consumer divide.

The increasing interest in natural food translates into greater interest in where food comes from, as well as who is growing it, and how. Public health and welfare interventions are moving away from large scale mass media and social marketing strategies toward settings based and participatory programs such as community gardens. Celebrity driven food initiatives are gaining traction in targeted settings including within schools (e.g. Stephanie Alexander Kitchen Garden Foundation program and Jamie Oliver's Ministry of Food) and in aged care services (e.g. Maggie Beer Foundation). Online platforms are creating new opportunities for community engagement around food as well as food access. Facebook, website advergammers and free branded apps could be mobilized to support healthy eating messages and to move away from high fat-sugar-salt food brands marketing activity.

Australia has upward of 550 community gardens which are a form of urban garden that engages a diversity of ages and cultural backgrounds. They are primarily managed by members of the community mostly on public land. Anecdotal evaluation suggests that belonging to a community garden is associated with increased fruit and vegetable consumption. Likewise, across Australia there are more than 800 primary schools involved in the largest kitchen garden program, the Stephanie Alexander Kitchen Garden Foundation program, and there are hundreds more in diverse organisations targeting vulnerable communities. Evaluation has found positive influences on food related behaviour including willingness to try new fruit and vegetables, improved attitude and knowledge, and increased confidence in cooking and food preparation skills. Programs that are more holistic (e.g. garden to plate) are more successful than those with a narrow focus (e.g. gardening only).

Agritourism, farm or food tourism, involves people visiting a region specifically to visit a farm or food-related business for pleasure, education or to participate in events. Over the last five years, the number of tourists visiting farms (including farm gate) in Australia has grown significantly. Anecdotally, engagement with food and the rural environment increases people's interest in local, fresh produce including fruit and vegetables. Similarly, farmers' markets are increasing in prevalence and popularity in Australia. Australian research shows an increase in vegetable consumption in one rural community. Shoppers at farmers' markets, in general, shop more frequently than other shoppers including at supermarkets.

There is also a growing trend toward value driven food choices that are perceived to enhance health and encompass environmental and social justice goals. The strongest motivation for purchase is health benefit, followed by wanting food without additives, chemicals or pesticides. Some research suggests that this interest in food attributes may lead to increased vegetable eating. Consumers' preference for natural food (i.e. free of chemicals and pesticides and genetic modification (GMO)) was a strong predictor of their willingness to eat seasonal fruits and vegetables. 'Local' and 'natural' were valued more than 'organic' across studies, which may be linked to distrust or lack of knowledge of certification systems. Young adults (millennials and Gen Y) are the largest group of organic purchasers, and families with young children are strong supporters of organic food.

Finally, like farmers' markets, community supported agriculture (CSA) and local food networks are responses to growing community interest in closer relationships between producers and consumers, and providing smaller farms with better economic returns for their produce. There are currently two large, and a growing number of smaller food hubs, and six CSAs in Australia. Overseas research suggests that membership of CSAs encourages people to eat more and wider variety of vegetables and British research suggests members do more home cooking and healthier eating, and replace some supermarket shopping with locally sourced food, suggesting another mechanism to increase vegetable consumption. There is a lack of data about food hub members in Australia. Whist participants in these short supply food systems are generally white, affluent and well-educated women, some CSAs and food hubs have strategies to provide access to lower socio-economic groups.

The strengths of this scoping study were its expansive definition of community interventions which enabled comparisons that are not normally considered together. To make these comparisons, a wide ranging review of peer-reviewed and grey literature was achieved. In addition, the augmentation of the reviewed literature with new data from interviews with leaders of promising Australian interventions, provided interesting insights regarding community initiatives and the role of influential individuals.

The limitations of the methodology were that it was not a systematic review of all the literature on vegetable consumption and it did not include a lifespan analysis, in part because Hort Innovation has other research agendas around children in particular. In regards to appraising the existing body of evidence, it is limited to short-term evaluations and studies of individual behaviour change. The body of evidence could be enhanced through investment in longitudinal research and studies that examine system level changes that support vegetable consumption. Further efforts to map and profile the range and type of community interventions by state and territory in Australia could support future decisions to invest in pilot or demonstration projects. Map 1 provides an example for Victoria of each of the community intervention types described in the report.

Map 1: Examples of Victorian local community food interventions linked to report sub-sections



5. Conclusion

In conclusion, despite the discouraging official statistics showing that individual vegetable consumption in the general population is well below recommended levels, there are encouraging indications. The research demonstrates that these new forms of community engagement with food, including growing food at home, and food growing and sharing among communities, can contribute to food security and encourage interest in increasing variety and amount of vegetable consumption. There is clearly a need to further explore the potential for these alternative channels to have sufficient scale to make a significant impact on population consumption of vegetables. In comparison to the focus on local food and communities, the growth of social platforms and online technologies offers new opportunities to increase vegetable consumption through investment in research and demonstration projects.

6. Recommendations

Given the limited success of social marketing and mass media campaigns, there is a need to study alternative interventions, including lifestyle entertainment and social media as well as interactive community programs, to increase vegetable consumption. As this was a scoping study, further research is required to determine the proportion of the population that are participating in these types of community interventions. The combination of factors influencing vegetable consumption is increasingly complex and requires sophisticated research approaches that take into account emerging trends as well as established behaviours. The following recommendations are based on the scoping study's key findings in relation to emerging, established and new frontiers of community interventions and are divided into settings-based and behaviour-based categories:

Settings-based

- There is a need for more research on the role of community gardens in promoting increased vegetable consumption in Australia, including how participation links to fruit and vegetable purchasing. Investment in evaluations of existing community gardens, particularly those targeting vulnerable populations, is recommended.
- The report found evidence of a range of interesting kitchen garden interventions throughout Australia but a lack of evaluations of those implemented outside of school settings. Therefore, more research is recommended to understand the key strategies and impacts that influence fruit and vegetable consumption in other kitchen garden and similar multi-faceted programs across Australia.
- There is minimal research about farmers' markets in Australia and how they support healthy eating. Baseline research is required to build a picture that includes demographics, consumer behaviours and producer motivations. Investment in demonstration or pilot projects, particularly in the urban context, is recommended.
- There is a need for a scoping study to ascertain the number of food hubs and CSAs in Australia, where they are (geographically), who they involve and how they operate. Following on is a need for research to establish vegetable consumption and purchasing behaviours of food hub and CSA members.

As most of these settings occur within an urban or urban-fringe context, this suite of recommendations addresses a key priority group for vegetable consumption, namely urban dwellers, whom constitute over 80% of the population.

Priority population-based

- Given there is very little research into the relationship between vegetable consumption, childhood experiences and adult attitudes/behaviors, investment in longitudinal research on the relationship between childhood experiences and preferences for vegetable consumption in later life is recommended.
- Drawing on the research already conducted for Hort Innovation in relation to millennials' consumption behaviours, there is an opportunity to further explore online technologies (i.e. including online communities and social platforms) as mechanisms for increasing their vegetable consumption. The promising results of an app based intervention justify further investment in a larger demonstration study.
- Furthermore, there are opportunities for producers to work with alternative networks and smaller retailers who have greater credibility with millennials, as well as exploit the characteristics of this population group within mainstream retail (i.e. their willingness to try new produce and their assumption that food will be grown naturally).
- The number of older adults is growing in numbers in Australia and deserves more attention to develop strategies to ensure access to, and motivation to consume, fruit and vegetables. Investment in demonstration or pilot projects is recommended.
- Given men have been identified as a priority population for increased vegetable consumption and are less likely to engage with public health interventions, this suite of recommendations would be enhanced by a scoping study to explore alternative approaches to improving men's levels of vegetable consumption.



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