Chapter 16
Food from Somewhere: School Kitchen Garden Programs, Food Sovereignty and Food System Resilience

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Abstract This research demonstrates how small, inexpensive programs can contribute to sustainable development while also building household and community resilience. The relationship between the engagement of primary school aged children in urban agriculture through School Kitchen Garden (SKG) programs and household food sourcing habits was explored. The research highlighted the ability of SKG activities undertaken by children to inform changes towards more sustainable food sourcing habits. This paper draws on a thesis written as part of the requirements of a master's degree in Environmental Management. The methods included the use of surveys and interviews of parents and caregivers of children participating in SKG programs at two Australian primary schools. The research findings indicated changes to food sourcing habits, diets and attitudes towards food that contribute to increased household and community food resilience and food sovereignty, as well as increased concern for social-ecological challenges. This study highlights how small investments can have positive multiple-layered social impacts that contribute to sustainable development innovations and transitions to more sustainable lifestyles. Increased understanding of such programs allow researchers and policymakers to better design and implement programs that increase awareness of the importance of food, water and energy and also contribute to sustainable development and household resilience.

Themes: Sustainable development, Urban agriculture, School kitchen gardens, Food sovereignty, Water Energy Food nexus

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Introduction

Food from Nowhere

Social justice, culture, economics, international aid and trade, poverty, and biodiversity are all directly or indirectly related to food: its production, its consumption, who gets what food, when, where and how. As stressed in the recent paper from the IPCC (2019) focusing on climate change and land, every aspect of the food system - how, where and what is grown, distribution and wastage - is linked to the climate crisis, and as such, so is any action undertaken to mitigate and adapt to it. As attempts to transition to a more sustainable society gather pace, it is important not to overlook potential impacts that changes have on food access and food sovereignty. Food, together with water and energy, is located at the center of our daily experience. Given this centrality, it is also important not to overlook the contribution that food-related interventions may contribute to the needed transition to a sustainable and just future.

We live in a world that produces enough food for the current population; yet nearly one in six people on the planet suffer from chronic hunger, while one in six are overweight or obese (Ehrlich et al. 1993; McMichael 2009). More than half the global population now lives in urban areas and with a spatial and temporal disconnection between where food is produced and where it is consumed. Control over production and distribution of what we eat is increasingly being concentrated; food, plants, animals, and their genetics are being altered and commodified (Holt-Giménez et al. 2009). The current global food system has removed much of the individual consumer's control of what is eaten and how it is produced and distributed. The ability for urban agriculture to provide multiple social, environmental and economic outcomes is well documented. School Kitchen Garden (SKG) programs,—the use of urban agriculture within the academic environment—have been shown to provide a unique teaching and learning environment (Graham 2005). This environment has the potential to enable a wide range of positive outcomes not just for students, but also for teachers, volunteers and school communities. These benefits include improving students' attitudes towards food and food literacy (Townsend et al. 2014), improving parents' confidence, social skills and sense of community (Blair 2009), increasing local biodiversity (Fischer et al. 2019), improving the sense of family and community (Knapp et al. 2018), challenging 'traditional' gender roles, and increasing practical life skills for students and parents (Narayan et al. 2019, Townsend et al. 2014).

SKG programs are being increasingly adopted in countries such as Australia and in U.S. states such as California due to their relatively low cost and the benefits they provide to student and school communities (Burt et al. 2017).

Food Sovereignty and Food Systems

Food sovereignty is a concept that looks at democratizing and restoring control of our food space, including the many areas that it interacts with. Food sovereignty recognizes the multi-faceted and interconnected relationships between people, the greater environment and food. Using a food sovereignty lens to analyze the current food system allows for greater understanding and provides a fuller context for analysis and actions in this arena (Patel 2009, Schiavoni 2009). Together with an increased understanding of the interconnected nature of the food system within greater social, economic and ecological environments, there is an emerging recognition of the fragility of the contemporary food system and a call to embed greater resilience within it (McManus 2005, Connelly et al. 2011).

Many people are familiar with the concept of food sovereignty via the work of the 'La Via Campesina,' the international peasants' movement which fights for the rights of small producers and the right for people to have some control over their food and an awareness of those that produce it. As such, it is understandable that some may not immediately link the importance of food sovereignty with urban area populations. However, the currently dominant neo-liberal model of capitalism—the source of many of the risks to food sovereignty—has adverse outcomes for food systems, producers and consumers at the global and local level. This includes urban populations in the global north and south alike.

The concept of food sovereignty has been growing in importance. While much of the discourse on hunger and food systems has generally revolved around food security, there is a crucial difference between food security and food sovereignty. Food security is achieved when all people at all times have access to sufficient, safe and nutritious food (FAO 2002; Rehber 2012). Food sovereignty, however, is also concerned with the means, not just the end. Via Campesina concerns itself with the many areas that intersect with food, and can be summarized as the "*right for people to define their own food agriculture; to protect and regulate domestic agricultural production and trade in order to achieve sustainable development objectives; to determine the extent to which they want to be self-reliant*" (Campesina 2009).

Food from Nowhere

Traditionally, food is one of the most primal connections people had with their environment. In hunting and gathering times the sourcing of food probably accounted for a large portion of necessary activity; the adoption of agriculture and the resulting changes to the nature of civilization brought about physiological and psychological changes (Wells 2010; Pereira 2005). Until relatively recently, the cultivation and preparation of food still provided individuals and communities with an intimate connection to their environment, the seasons and ecological processes. The contemporary food system of the global north, rapidly being replicated and refined in the

global south together with the technologies it relies upon (such as input intensive industrial agriculture and global scale logistic networks), has contributed to a large degree to the breaking down of connections with food (Litt et al. 2011; Bhatti and Church 2001).

It is understandable that some would view favourably the situation that allows for an apparent cornucopia of choices in regards to food: all foods at all times, independent of season or locale as a ringing endorsement of the current food system (Patel 2007). However, when viewed through a food sovereignty lens, the picture is not as rosy. The structures and relationships that enable the current food system are marked by concentrations of control and power, exclusion and damage to public health and the environment (IAASTD 2009; Garnaut 2008; PMSEIC 2010; Olshansky 2005; Pollan 2008; Holt-Giménez et al. 2009). In the global north and increasingly in the global south, almost all food types are available all year round; albeit at a price, a food's availability is no longer linked to the local environment, seasons or weather events (Patel 2007). Much of the supermarket's apparent bounty could be classed as 'food from nowhere,' only made possible through a temporal spatial separation between the source of the food and its consumption; this results in potential for what Friedmann (2008) describes as the destructive power of distanciated and socially disembedded food relations, both hallmarks of the greater contemporary food system (Campbell 2009). In addition to this dislocation and separation, a paradox has occurred in which the 'consumer' has a seemingly ever growing amount of choice as to what foods they select, yet there is a continuing reduction in the diversity of suppliers with much of the food passing through what Holt-Giménez et al. (2009), Carolan (2018) and other authors have referred to as the hourglass of the food system (IAASTD 2009). Even amongst countries of the global south, the concentration of grocery sales in Australia is very high, with the top four supermarket chains accounting for 96% of sales and the largest two chains for 70% of food sales alone (Bartos et al. 2012; Hambur and La Cava 2019; Pulker et al. 2018). The resulting concentration of power over production and distribution not only leads to a reduction in choice and food sovereignty for the consumer, but, more importantly, it puts pressure on primary producers and suppliers by those at the narrows of the hourglass, resulting in a loss of resilience in the food system as a whole (Grimmer 2018; Clapp and Scott 2018).

The Urbanization of Australian's Relationship with Food

An enduring myth of Australia is that it is a rural nation, largely composed of and reliant on outback stations, farms and mining. However, Australia has long been a mostly urban country, with over 80% of the population residing in urban centers since 1960, a level forecasted to keep increasing from the current 90% + (ABS 2019). In addition to the increasingly urban nature of the modern Australian experience, the last thirty-plus years have seen a change in the structure of urban areas as well, with a decrease in residential plot sizes towards smaller plots often with larger houses on them (Baker et al. 2000). The reduction of yard sizes for urban and suburban dwellings

has not only seen the productive potential of yards decline but has also witnessed decreased potential exposure to ecological processes. These changes, together with the increase in people relying almost solely on supermarkets for their food, and in concert with expanding suburbs, have brought about an urbanization of the population and their relationship with food.

Health Impacts of Decreased Food Sovereignty and the Current Food Environment

Morgan et al. have shown that many school-aged children lack a practical knowledge of food, often unable to name even common vegetables (Morgan 2010). Often children not only lack an ability to identify many common vegetables, but also an understanding of the origins of much of the food they eat (Somerset and Markwell 2009). The amount of vegetables and fruit a child consumes can be influenced by their ability to recognize those foods (Bere and Klepp 2005). This lack of food literacy has the effect of compounding a move towards the 'Western diet' (Cordain et al. 2005). The Western diet is hallmarked by monetarily cheap, calorie-rich convenience foods, often with high levels of salt, sugars and fats which, in addition to changes in lifestyle, have resulted in a large increase in the prevalence of diet related diseases such as type 2 Diabetes and cardiovascular conditions (Olshansky 2005; Pollan 2008; Pereira 2005; Melaku et al. 2019; Zadka et al. 2019).

Globally, a positive link has been identified between the level of overweight/obese residents and the level of disadvantages of an area, with income levels as well as environmental factors and access to food choices as contributing factors (King et al. 2006, p. 286; Kimbro et al. 2017). Given that more than half the Australian population is now overweight or obese, with an increase in categories across all social economic groups, diet-linked maladies are not solely due to economic restrictions of access to healthy food, but to the Australian population's changing relationship with food (Bambrick et al. 2008).

Resilience Within Food Systems—Strength Through Diversity

The level of resilience within a system can be measured by the system's ability to withstand and recover from shocks and provide the same or similar outcomes, even if that is achieved through re-organization of the system. In a food system, the primary desired outcome or service is the provision of food for a population. If the food system has a high level of resilience, it could be expected to withstand shocks and still maintain this outcome or be able to quickly recover this outcome after or during a shock. System shocks can be acute or long-term in nature and effect, and

can be natural, manmade or a combination of both; economic disruption, prolonged drought, anthropogenic climate change and geopolitical events have the potential to act as shocks to food systems.

Sustainability Transitions and Food System Resilience

Just as food is intertwined with a wide range of social, ecological, and economic issues, food, water and energy are intertwined with each other and with the efforts to transition to a sustainable future. Given the many challenges facing current food systems, as outlined above, there is a recognition of increasing levels of uncertainty in food system resilience. The ability to identify activities that simultaneously embed resilience in a community's food system while improving levels of food sovereignty should be encouraged.

An indicator of resilience in food systems can be found in the level of diversity of food sources and distribution networks; all other things being equal, the greater the diversity, the greater resilience of the system. With the trend for consolidation of food supply and distribution as the hallmark of global food systems, some national and sub-national governments have recognized this change as an area of vulnerability and are making efforts to address it through actions designed to result in increases in food chain and consumer resilience (Stephen et al. 2012). Such efforts can include reinforcing the current food system architecture through multiplicity, including decentralization of distribution points and transport routes; however this approach runs counter to the prevailing idea of economic rationalization (Hendrickson and Heffernan 2002). This deep concern in relation to weaknesses in the food system due to the increasing possibility of a no-deal Brexit—a political, intentional event—underlines the potential fragility of food systems.

Research Aim and Methodology

Involvement in SKG programs has the potential to influence the participants' epistemological view in relation to food: how they view food and what they hold as "truths" in regard to food. The nature of these 'truths' informs their relationship with food. By exploring the change in food-sourcing habits and the motivations, drivers and barriers of change, while building an understanding of the utilization or development of alternate food sources at the household level, there is potential to indicate changes in households' perception of food. Changes in the food-sourcing habits, demonstrated by a greater recognition and utilization of potential food source points, has the potential to affect the level of food sovereignty at both the household and community level. Changes that occur provide an indication of the ability of school-based programs such as SKG to enable children to be vehicles of behavioral change at a household and community level.

The aim of this research was to investigate the potential of activities at the school and household level, such as the SKG program's ability to influence evolving food system architecture, and by doing so, assist in the identification of points of potential intervention and leverage for change within the evolving food system.

This research involved the use of a mixed methodology research design consisting of the collection of quantitative and qualitative data; the analysis of that data was conducted with relativist ontology. Data was collected through the use of a questionnaire, with follow-up phone interviews with households. The questionnaires were completed by the parents or caregivers of the students; no data was collected from the students themselves. Questionnaires, participant information sheets and consent forms were provided to approximately 280 households across two schools where children participate in SKG programs. The research packs were provided to the households via their children's school. The completed questionnaires of the parents/caregivers were returned to the schools in the envelope provided, along with the consent forms.

The research consists of two sections. A literature review explored links between the greater food environment, food sovereignty, food regime theory and the social and ecological context of the current food system. The second part of this research was designed to explore the potential for students' involvement in SKG programs to affect change to their household's food sourcing habits. The research design sought to identify both the extent and motivation for changes in food sourcing habits that relate to students' involvement in SKG programs, and the development of an understanding of the influences, drivers and barriers to change. Given the limitations of this research, it is important to note that this study did not intend to answer these questions definitively, but rather to explore the potential for interventions. Specifically, the research tests in a very limited manner whether influence exists in the context of SKG programs and household food sourcing habits.

Results and Findings

Increased Diversity of Households' Food Source Points

The surveys were distributed to households by the schools and were returned to the schools in sealed envelopes. A delay in receiving permission from the state education department resulted in a very short window between distribution and collection. Of the 280 surveys distributed to the schools, 42 were returned. The questionnaire focused on food sourcing habits, with the respondents asked to indicate their household's food source points prior to having their child involved with the SKG program (Fig. 16.1) and to indicate current food source points (Fig. 16.2).

Changes were indicated in all categories except for the use of supermarkets; all households reported use of supermarkets prior to and during their child's SKG program involvement. A significant increase was indicated in households that identified growing some food at home, increasing from 26.5 to 54.5%. A mild increase

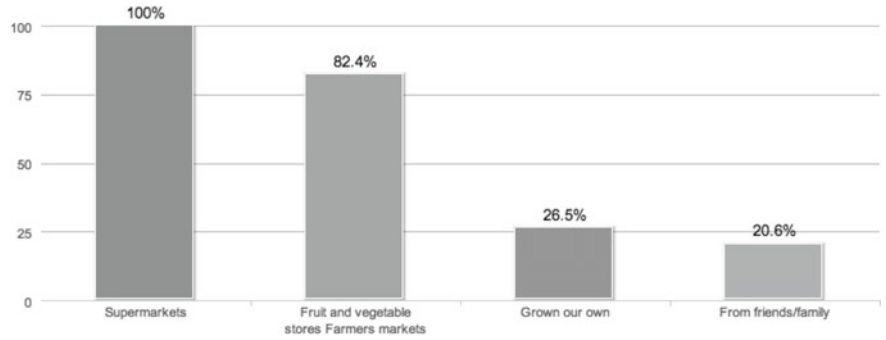

Fig. 16.1 Food source point % for households, prior to child's involvement in SKG program

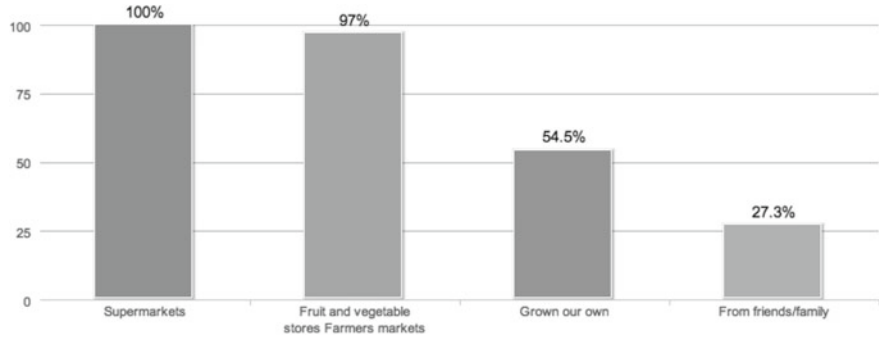

Fig. 16.2 Food source point % for households, at time of survey with child/children involved in SKG program

was reported in households sourcing food from 'fruit and vegetable stores/farmers' markets', and 'from friends/family' of 11.7 and 13.4%, respectively. An increase in diversity in the households' food source points is shown. There was also a reported increase in the type and diversity of food produced at home; most common were herbs (73.5%), then fruit (39.4%), vegetables (36.4%) and finally eggs (6.1%); no households indicated they produced meat at home (Fig. 16.3).

Motivations and Barriers to Growing Food at Home

Another central finding was the significant increase in the number of households practicing urban agriculture (Fig. 16.4). A recognized obstacle to a greater uptake of urban agriculture is the lack of access due to time constraints and/or a suitable space (Kantor 2001), a finding that was replicated in this research. School-based kitchen garden programs negate (at least in part) this lack of access for children attending the schools with SKG programs.

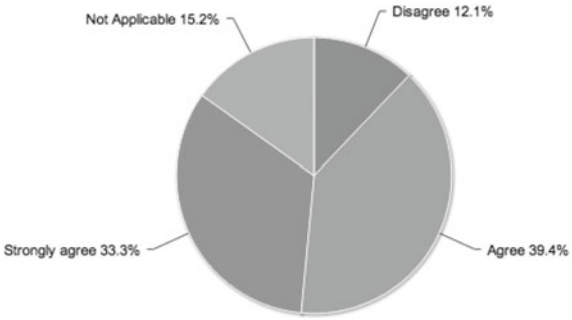

Fig. 16.3 Households agreeing with the statement: 'Since our child/children has been participating in the SKG program they have asked to grow food at home'

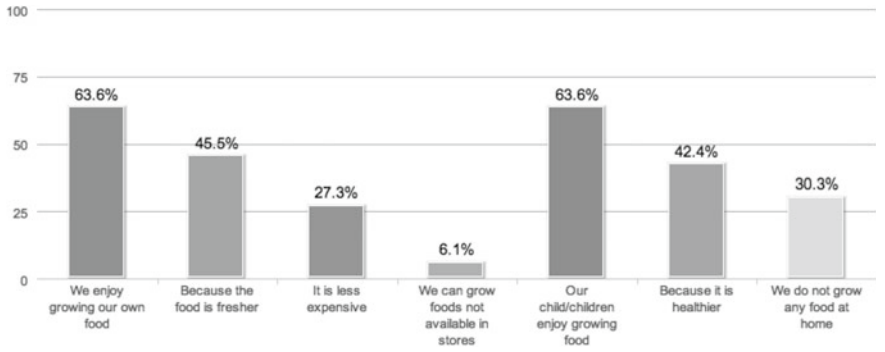

Fig. 16.4 Household's responses to: 'Our household grows food at home because:'

Enjoyment was the most prominent motivation self-identified by research participants, including enjoyment for themselves as well as the enjoyment of the household's child/children. Freshness of food and health are the next most common reasons given, and more than a quarter of respondents indicating that the decrease in expense is a motivation. The high recognition of enjoyment as a motivator for growing food at home may indicate the parents/caregivers' ability to be influenced by their children's enjoyment of the activities at school. Primary barriers to growing food at home were also identified (Fig. 16.5).

Very few of the participants reported no desire to grow food at home. However, given the increasing visibility and popularity of urban agriculture in Australia, it is important to acknowledge the potential for perceived social desirability to bias results (Bertrand and Mullainathan 2001).

Influencing the Participants' Relationship with Food

Previous research has suggested that education in conjunction with enjoyable activities has the potential to enable desirable changes in behavior (Orams 1998).

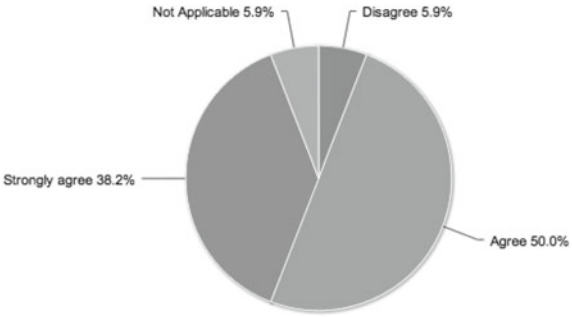

Fig. 16.5 Agreement with the statement: 'Since our child/children have been participating in the SKG they are: more likely to try different foods'

The number of households that reported an increase in the likelihood of their child/children trying different foods since their involvement in the kitchen garden program was very high, with 88.2% of households either agreeing, 50% strongly agreeing, and 38.2% agreeing that their child/children were more likely to try different foods since being involved in the program. This mirrors the results of a garden-enhanced nutrition program for primary school students in California (Morris et al. 2001). Confidence that the changes are due to the SKG program is reinforced by comments that the parents/caregivers provided on the returned questionnaires and interviews such as, "*The program has been extremely beneficial in encouraging the kids to try new foods & to participate at home in its creation*". "*They love the it [the KGP], we don't have space at home, but they learn all the things there.*" All respondents indicated their children as talking positively about the SKG program; see Fig. 16.6. A single mother of two, with one child in the program, explained how she doesn't let her children eat sweets unless they make them themselves. Now instead of asking for sweets and lollies, "They just give me a list of the ingredients they need (Fig. 16.5)."

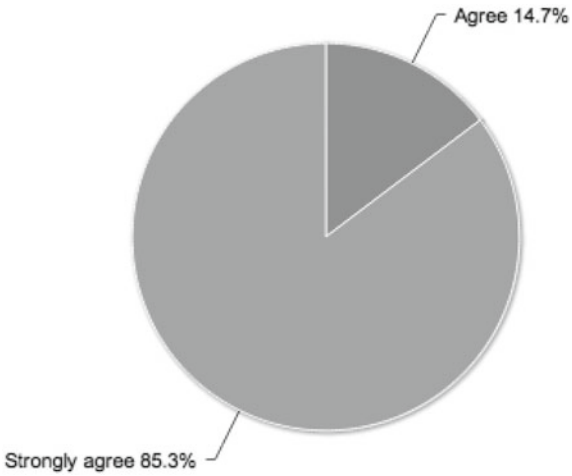

Fig. 16.6 Agreement with the statement: 'Our child/children talk positively about the SKG program'

Conclusion

The particular experiential and participatory learning environment offered by well-designed SKG programs allows for educational outcomes that would otherwise not be possible. Some research has also been undertaken to explore the outcomes of urban agriculture and SKG programs on environmental attitudes (Skelly and Zajicek 1998).

The research findings indicated changes to food sourcing habits, diets and attitudes towards food that contribute to increased food sovereignty, household and community food resilience, as well as increased concern for social-ecological challenges. Participants reported changes to their children's attitudes towards food and their knowledge of it. These changes where often marked by a reported increased interest in food in general—different types, where it comes from, and a desire to grow food at home in particular. Participants also reported a general increase in knowledge of and concern for environmental issues, a change that participants associated with the SKG program.

The changes identified included increased diversity in household food source points and the willingness for participants in the SKG program to try different foods, suggesting that households are either aware of new source points or now recognize them as viable and/or valuable choices. This suggests a greater level of food sovereignty at the household level, as well as a potential strengthening of food system resilience. The level of change suggested in the households' food source habits indicate that SKG programs have the significant ability to provide spaces for the development of different relationships and alternative experiences with food, changes that have potential consequences for food sovereignty and food system resilience.

By increasing knowledge, concern and awareness of the importance of food, well-designed SKG programs have the potential to positively influence the food, water and energy nexus. Increased understanding of how many different aspects of food are interlinked with water and energy, as well as countless current and emerging social and environmental challenges, provide for a more aware, conscientious and informed community which may be more open to other interventions and less likely to act in detrimental ways. The low cost of SKG programs provides local governments and policy makers with a foundation on which other interventions can be built.

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