

# The role of community gardens in urban agriculture

**David Pearson & Kai Hodgkin**

*David is an Associate Professor at the University of Canberra where he is responsible for the Advertising and Marketing Communication discipline as well as setting up their Global Studies and Sustainable Food Futures Research Cluster. Previously he was at the Fenner School of Environment at The Australian National University and the University of Reading (UK). He has extensive international experience in sustainable consumption with expertise in food security. This has been developed through leading research projects in the sustainable provision of a healthy diet and the practical application of his research through extensive community engagement activities including being a Trustee of Garden Organic (formerly HDRA) and a director of Canberra Organic Growers Society.*

## Abstract

Urban agriculture involves the production of food in space that is within and immediately surrounding cities. There are many motivations for this kind of production. These encompass environmental advantages (reducing ‘food miles’ and the impact of ‘urban heat islands’), social benefits (increasing food security and agricultural education of city-dwellers), and human health perks (eating fresher, often organically grown, seasonal food).

Current food systems involve many organisations that operate at different scales of production and in different geographic locations. In many developed countries this is dominated by supermarkets and the food service sector that source products globally. However, there are many initiatives working towards increasing local food production and distribution to complement these global food networks. Community gardens are one such activity. They provide many benefits, particularly in the social arena of increased interactions in neighbourhoods. However, to prosper, there are many barriers that they must overcome, including negative attitudes towards gardening from some of members of society, the market domination by large agricultural producers, food processors and retail supermarkets, and unsupportive government policies.

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## Introduction

Around the world food is produced within cities and the areas immediately surrounding them. These practices have become known as urban agriculture. Hence it encompasses some broadacre farmland, small community gardens, personally managed allotments, home gardens, portions of parks, fruit trees along roadside reserves, greenhouses, green roofs and even green walls (Pearson, 2007). As such the focus for the productive output from urban agriculture ranges from subsistence living to commercial enterprises.

Urban agriculture has a natural advantage, as most major cities in the world tend to be located in productive agricultural areas. Historically, in the absence of effective transportation and storage of food, the necessities of producing food close to home led to settlements prospering where water was readily available, the climate was mild and the soil was good for growing (Edwards and Mercer 2010). Additionally, the vector of urban growth has tended to follow the clearing and partial development of good quality agricultural land around these cities (Mason and Knowl 2010).

The motivations for individuals to engage in urban agricultural activities are many and diverse. These include meeting environmental challenges, human health benefits, social agendas, food security and economic reasons. As Gaynor (2006) states:

The food-producing spaces in Australian cities have been diverse and complex, springing from a wide range of motivations and contained by varied and shifting contexts—cultural, economic, legal and

environmental. They have produced food valued for its taste, freshness, variety, healthiness, and distinction from the commercial product. They have represented a way of making ends meet, a virtuous form of recreation, a patriotic duty, an integral part of an ecological lifestyle, and a canvas on which people have projected their dreams of independence. (p. 191).

Thus the production of food in urban areas has a number of direct and indirect benefits for consumers and residents. Prior to focusing on community gardens, these potential benefits from urban agriculture will be discussed from the environmental, social, economic and health perspectives.

## **Environmental benefits of urban agriculture**

The transportation of food creates a significant environmental cost. There are often large distances between where a product is grown through to where it is eventually consumed. Long distance transportation adds to air pollution and greenhouse gas emissions through air freight, shipping, trucking, some of which includes the additional energy requirements of refrigerated transportation. This distance food travels from initial production to processing, packaging and finally to consumer has been termed 'food miles'. Concern about this impact of the food system on the environment has led to emergence of a movement that attempts to avoid large food miles, known as 'localism' (Edwards & Mercer, 2010).

The natural flow of many goods into urban areas tends to lead to a geographic concentration of certain materials. Thus many cities face the additional environmental issues of coping with waste which may include recycling some materials. Agricultural production in and around cities can support the logistics of composting. This enables the reuse the high nutrient organic waste from food processing and consumption (Mougeot, 2005; Pearson, 2007). This compost is very useful for the intensive methods of production often adopted in urban agriculture (Pearson et al., 2010) and may lead to an increase in the quality of soil in urban areas. With water scarcity being a major issue for many cities, such as those in Australia, the utilisation of waste water within urban areas for food production can provide an additional environmental benefit. And finally, urban agriculture can also add to water use efficiency by providing a valuable use for storm-water runoff (Barker-Reid et al., 2010).

The fact that urban agriculture is made up of many small producers provides and tends to lead to an increase in biodiversity (Feagan, 2007). There is spatial diversity with a patchwork of productive areas across the landscape, as well as biological diversity through the numerous ecosystems associated with the different varieties of plants grown. In addition, these relatively small-scale food producers tend to avoid high input monocultures and hence their production methods are often more environmentally friendly and may incorporate the principles of certified organic production, either by default or desire.

And finally, many cities face amplified temperature extremes. This is because living green spaces tend to contribute to modulating temperatures more than buildings and roads. For example, during a hot day buildings and roads radiate more heat than green spaces. These green spaces may reduce the energy required to cool buildings and vehicles (Skinner, 2006).

Despite the obvious environmental advantages to encouraging local food production, it is also important to take into account the ecological appropriateness of growing particular foods in a particular area. For example, it may not be appropriate, from an environmental perspective, to grow crops that require a lot of water, such as lettuces and melons, in areas where there tend to be water shortages (Edwards & Mercer, 2010).

## **Social benefits of urban agriculture**

A variety of more social reasons exist for growing food around populations, including education, a sense of independence and food security.

Open days and tours to urban farms are a way for consumers to learn about where their food comes from and who produces it (Knowld, 2006). In addition, this land dedicated to urban

agriculture acts as buffer against urban expansion and infill (Merson et al., 2009), which provides local visibility and potential access to green space for residents.

In some countries, such as Australia, a sense of independence is important to individuals, and is embodied in the ambition of owning a free-standing house with its small area of privately-owned land. Food production is important in building and supporting this sense of independence, which can be very socially empowering (Gaynor, 2006).

Although food security is not a problem that most people in developed countries face on a regular basis, it is a big issue globally, and people who live in cities are usually more vulnerable than those in rural areas. It has been estimated that around one billion people around the world are food-insecure and hence at risk of under-nutrition. Most of these people live in developing countries. However, food security also has impacts in developed countries. This includes some indigenous and elderly people as well as migrants and larger sections of the population during times of significant stress, such as drought or war (Dixon et al., 2007).

Some developed countries, particularly those that rely heavily on importing food, are vulnerable to food shortages that may be triggered by economic or political instability as well as production shortages (Millstone & Lang, 2008). Hence, the production of food in cities contributes to national food security.

## **Economic benefits of urban agriculture**

There are economic benefits from producing food in urban areas. Significant income can be made from both working on farms and from selling one's own produce (Mougeot, 2005). Even if a person is not producing food for sale, but for personal use, significant reductions in a food bill may be achieved. Additionally, small-scale urban agriculture may be more efficient, in terms of the productive output per unit of land area, as it may produce higher yields due to more intensive practices than larger rural farms. For example, in Australia, estimates put the value of peri-urban farms at up to 25 per cent of Australia's total gross agricultural production, while using only 3 per cent of the agricultural land (Houston, 2005).

And finally, the recent increase in food prices may have contributed to the widespread participation in some form of urban agriculture. However, over the long-term the relative price of food has fallen significantly, which suggests that the direct economic advantage of urban agriculture may be diminishing.

## **Health benefits of urban agriculture**

In addition to the potential environmental and social benefits of urban agriculture there are potential advantages for human health. As some transport and storage systems, such as long-term refrigeration, have been shown to decrease the nutrient content of many fresh fruits and vegetables, eating a fresher more seasonal diet, which is sympathetic with the ecology and economics of urban agriculture, may provide benefits (Feagan, 2007); Pearson, 2007). In addition, the diet-related human health risks of under-nutrition (malnutrition) or over nutrition (obesity) are reduced when individuals have access to producing some of their own food and the amount of highly processed food in their diets is reduced (Dixon et al., 2007).

## **Food systems**

The current food system involves global sourcing of a plethora of products in which the business model developed by large retailers has proven to be extremely effective.

The concept of alternative, or complementary, food networks involves developing ways to grow and distribute food on a smaller, more local scale. There are many approaches to this, including improving the information available to consumers through additional labels on products, increasing access to agricultural land and creating complementary food distribution systems.

Additional information may be used to enable consumers to make more informed choices. Labels on products that incorporate food miles and/or a carbon footprint is one such example. The development of maps which show where food is currently being grown and the location of vacant spaces in urban areas that offer opportunities to grow food, such as the VEIL project in Melbourne (Edwards & Mercer, 2010), also provide information for consumers. 'Terroir' is the name for specialty foods which are valued by consumers because of their association with a certain region (Feagan, 2007). This has been common in certain products, such as wine, and is expanding into other products.

One example of a complementary food distribution system are farmer's markets which bring consumers in contact with local producers and encourages seasonal consumption (Mason & Knowd, 2010). Another is a community-based model that connects small, local producers to purchasers through a website and collecting centres (homes, schools etc.) around the city (e.g. Food Connect in Australia).

'Gleaning', which means collecting fruit from street trees, and 'guerilla gardening', where public spaces are cultivated without official approval, also add to the potential from urban agriculture. Other approaches focus on increasing the accessibility of local foods. These include food-sharing schemes which may occur at community gardens, swaps at fairs or simply giving excess backyard produce to neighbours (Edwards & Mercer, 2010).

Other approaches are designed to increase urban production by utilising innovative ideas to increase access to suitable areas for growing food. Rooftop gardens have been suggested as not only a way of accessing unused space, but also to conserve energy by acting as insulation for the building (Skinner, 2006). Vertical farming involves production in climate-controlled skyscrapers that are custom-built for food production (Sullivan, 2009).

Rather than finding space in existing urban landscapes, addressing the issue of increasing access to agricultural land within cities is also considered in the planning of urban areas. The concept of 'eco-city design' is described as cities that produce their own food and energy; source, treat and reuse their water; and treat and reuse their wastes. Cohousing is one such idea to achieve this, where a group of houses are located in close proximity with a shared space that includes gardens and composting areas (e.g. Pinakarri in Western Australia) (Crabtree, 2005).

Farms on the edge of urban areas, known as peri-urban agriculture, are not a new concept in urban food systems, but are in fact the traditional source of food for cities, before transportation became cheap and commonplace, thus enabling distant production. These farms now face the issue of urban encroachment. As previously mentioned, these farms may still make a considerable contribution to agricultural production as well as creating a barrier between urban edges and valuable ecological environments (Merson et al., 2009).

Despite all of this there are very few policies in place to protect and support urban agriculture (Mason & Knowd, 2010). Some argue that urban farmers need incentives to stay and that the value of farming in urban areas needs to be increased (Knowd, 2006; Sullivan, 2009). In some regions, the community has successfully used tourism as a mechanism to economically support the peri-urban farms (e.g. the Hawkesbury Harvest Farm Gate Trail on the edge of the Sydney urban area in Australia).

And, finally, there are gardening activities. Considering that gardens have been reported to make a noticeable contribution to production, at around 5 per cent (Australian Bureau of Statistics, 1992), they are not well represented in the literature. However, it may be that a particular type of garden, namely community gardens, provides the best social benefits of all components of food systems as well as a valuable combination of the environmental, economic and health benefits.

## **Community gardens**

Community gardens are distinct within the wide variety of activities undertaken in urban agriculture. Whilst they contribute to the environmental, health and economic advantages of urban agriculture in general, their special contribution is in contributing to community. This social

contribution emerges from their unique structure, a structure which is also the major source of the challenges that they face.

Community gardens have been defined by Somerset et.al. (2005) as spaces that

provide an agricultural environment within city limits, where vegetables and fruit are produced, and in some cases livestock is cultivated. They are either owned and farmed by members of the community or subdivided into allotments cultivated by individuals. (p. 26)

The list of environmental benefits to community gardening is extensive, including those already mentioned in relation to the wider set of activities associated with urban agriculture. However, these environmental motives are not seen as being important to many of those participating in community gardening activities. For example, Hujber (2008) reports that

environmental issues were not highly represented among gardeners. People growing their food in their households or in community gardens are not doing this activity primarily because of environmental considerations. (p. 66)

However, the act of gardening and resulting engagement with the environment may in itself have a large impact, perhaps that gardeners themselves are not aware of. It may be that, as DeLind (2002) states, 'it is in the inhabitation of a tangible and shared place, in the confluence of nature and culture, that environmental responsibility and sustainability take shape' (p. 220).

In contrast, health benefits are reported to be important to gardeners and are one of the most common reasons for cited for growing fruit and vegetables (Hujber, 2008). The physical activity of gardening is also a significant health benefit (Pearson et al., 2010). However, in addition to these physical health benefits from gardening in general, the unique health benefit from community gardens is the psychosocial health satisfaction that emerges from the social interactions between those involved (Somerset et al., 2005).

Thus the social advantages emerging from community gardens are many. They provide focal points for bringing people together. They can contribute to feelings of belonging and hence a positive sense of community (Corkery, 2004). This may enhance people's connections with a place, through a shared sense of responsibility that builds cultural attachment and citizenship (DeLind, 2002).

Community gardens are also a place for inclusion within urban areas that allow people from a variety of backgrounds, cultures and socioeconomic status to meet (Smit & Bailkey, 2006). As a consequence of bringing people together, there is the possibility of reducing intergenerational differences when family members gather and knowledge is shared between the generations. Bringing people together also creates the possibility of reducing formation of racist attitudes. Sharing of culture and developing an appreciation of differences may be developed through sharing plants, cultivation techniques and recipes. This is of particular benefit for recent immigrants where a community garden can give them a sense of belonging as well as access to foods from their home country that are not readily available in retail settings (Corkery, 2004).

Community gardens also provide an opportunity for education. Many include sessions for members to learn about horticulture, composting and recycling, whilst open days allow other community members to learn about food and gardening (Corkery, 2004).

In spite of the multiple reasons for maintaining and, arguably, increasing the number of community gardening activities, these unique contributors to the mosaic of urban agriculture face numerous challenges.

## **Challenges for community gardens in the urban agricultural landscape**

There are many challenges to the continuation of vibrant urban agricultural activities. These include availability of land to grow on, support from local government to allow land to be used for growing food, attitudes of neighbours and general public to this land use, as well as the domination of the food market by large farms and supermarkets.

The attitudes of society can be a big barrier to urban food production. Gardens may be seen as unconventional, sometimes the food that they grow is stolen or vandalised, and neighbours may complain about unsightly areas and unusual smells (Hujber, 2008). Younger populations in cities are often socialised to variety and novelty, which is not always compatible with eating within the limits of local and seasonal production from community gardens (Dixon et al., 2007). There is often resistance to things outside of the norm, which may lead to a separation between those involved in urban agriculture and the rest of society (Feagan, 2007).

Much of the literature suggests that government policies are not supportive of urban agriculture. Many authors argue that applying appropriate zoning to maintain land for food production and thus protect it from urban and industrial encroachment, in both new green-field developments as well as urban infill on existing brown-field sites, is essential to maintain the capacity for urban food production (Pearson, 2010; Pearson et al., 2010). Certain government policies, such as water restrictions, animal laws and rental agreements are seen by some to be unsupportive towards urban food growing. In part this may be because the food system has a low priority on the public agenda relative to other urban issues such as housing, transportation and employment (Pothukuchi & Kaufman, 1999).

In relation to the unique challenges faced by community gardens, it has been stated that the limited amount of land available with reasonable tenure is the most important issue that was restricting their expansion. In addition, access to funds for garden establishment, ongoing insurance and restrictions on the use of water are also seen as challenges (Hujber, 2008). At an individual level, finding the time for making participation in food production at the community garden a priority and the relatively cheap price of mass produced food were seen as a challenges.

## Conclusion

The current food system in many developed countries is dominated by large-scale agricultural production and global sourcing through supermarkets and the food service sector. Collectively the wide range of activities undertaken in urban agriculture provide an important supplementary source of food, which adds to national food security. These complementary food systems also provide additional environmental and health benefits. Within this productive urban agricultural landscape, community gardens provide unique social contributions. The importance and magnitude of these justify continued policy support from government to overcome the market domination by large organisations as well as negative attitudes towards gardening from some members of society.

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