

**Submission
No 31**

FOOD PRODUCTION AND SUPPLY IN NSW

Organisation: Community Gardens Australia

Date Received: 28 February 2022



NSW inquiry into food production and supply

Submission by Community Gardens Australia Inc

February 2022

Introduction

Community Gardens Australia (CGA) is a not-for-profit, volunteer-run organisation that exists to support, provide resources to, network and advocate for community gardening activities. Established in 1996, we currently have over 700 gardens listed in our online [directory](#) with approximately one third of these being in NSW.

The most recent survey of community gardens conducted by CGA in 2020 shows that an average of 20,425 Australians a week visit and participate in their local community garden, contributing an average of 15,718 hours of volunteer time per week. These numbers are not small and show that community gardening is very important to many people with 83% of survey respondents stating that they had experienced an increase in their health and wellbeing since they became involved in their garden.

Our goals in supporting community gardens include:

- Running gatherings to enable gardens to connect and share with each other
- Providing a group insurance policy to ensure quality and affordable insurance specific to the needs of community gardens
- Creating a whole suite of up to date and current resources to be made available online
- Providing regular educational workshops to all gardens
- Building relationships with all levels of government in order to advocate for community gardens

The Management Committee's vision for CGA is to build the organisation into one that supports the growth and needs of community gardens around Australia, providing them with education, support, resources and sustenance to continue their work and therefore their positive impact on the communities and environments they reside in.

We know that the number of community gardens in NSW has grown significantly in the past 10 years, offering an expansion of local food systems and as a result have become a popular representation of local food culture whilst demonstrating and promoting sustainable food systems. There are numerous examples where community gardens are offering or could offer best practice food production with additional resources as outlined below.

Addressing the terms of reference

Reference 1 - Improving food security and equitable access to food.

Community gardens are a part of the broader urban agriculture sector. While urban agriculture uses 3 per cent of total agricultural land it accounts for 25 per cent of the gross value of agriculture. The Sydney region produces 20 per cent of NSW vegetable production (and a higher proportion of its perishable vegetables) ([Ismael 2015](#)).

As a highly urbanised country, Australia has seen a long-term decline in people growing their own food, leading to disconnection between the consumer and the source of production. However there is “a renewed interest in the quality, provenance, freshness and price of food, driving a companion interest in Australians growing their own food at home or in community gardens”. More than half (52 per cent) of all Australian households are now growing some of their own food, citing health, taste and cost savings as the main drivers ([Wise 2014](#)).

Community gardens contribute to food security by:

- mitigating some of the problems of supply chains
- contributing to the sense of security and self-reliance of the gardeners/consumers
- reducing costs
- adding locally grown, nutritional, fresh food to the diet
- offering a wide access to all members of the community
- providing a source of food with dignity, avoiding the stigma that causes many people to avoid food relief agencies

The emergence of COVID-19 in Australia, and the attendant lockdowns and business disruptions, has shone a light on our food security and supply chains, including issues such as panic buying, price rises, disrupted supply, lack of seasonal workers, sickness and exposure among food distribution workers, and food wastage as producers find it hard selling into beleaguered hospitality and tourism markets. In 2020 the edible gardening sector in Australia undertook a national survey of 9140 community and home gardeners. The [National Pandemic Gardening Survey](#) (2020) found: “Edible gardening can, and does, contribute to food security and dietary diversity for low-income households who have knowledge, space and support to grow food.”

In particular it found:

- most gardeners (62%) had increased their food-growing activities during COVID,

- Poorer households were more likely to grow their food than wealthier ones
- 73% of growers shared their harvest with family and friends
- 52% of growers preserved food for the future

Remote Indigenous communities face extreme circumstances when it comes to food security, given lengthy supply chains, seasonal weather effects, high prices and lack of appropriate storage. These were pointed out in a [submission by the National Rural Health Alliance](#) in 2020 to the House of Representatives Standing Committee on Indigenous Affairs *Inquiry into food pricing and food security in remote Indigenous communities*. It also noted that community gardens could improve food security in remote Aboriginal settings by:

- Making more locally-produced fruit and vegetables available to the community
- Providing more nutritious food, unspoilt by the problems of supply and storage.

Examples of where community gardens are significantly contributing to improving community access to local food are [South Eveleigh Community Building Rooftop Garden](#) and [Walgett Community Garden](#).

[Studies](#) suggest community gardening improves the participants' consumption of **nutritious food**.

Community gardens allow families and individuals without land of their own to produce food. Since it started in 1999, the [Community Greening](#) program in NSW has provided spaces to grow food for 100,000 residents in social housing estates. The program established 627 communal gardens in Sydney and country centres, including Bourke, Kempsey, Illawarra, Taree, Albury, Griffith, Lismore and Inverell. [Research showed](#) that the residents felt healthier and 61% were eating better as a result of their gardening.

As not-for-profit community organisations, most community gardens have broad membership rules, and objectives that encourage community involvement. **Access** is in community gardens' DNA. Fees tend to be affordable (few would charge more than \$25 a year). Some have allotments rented by individuals, but more have either communal gardening or a mix of allotments and communal beds. Many are literally open (unfenced).

Their public profile encourages engagement. Here's a typical statement from one garden on the CGA national directory: *"Every Saturday morning 9am – 12 noon everyone is welcome and invited to come and do some gardening with other members of the community."* (Mid-Mountains CG, Lawson, NSW)

The number of gardens and their spread across urban and regional Australia mean that the vast majority of people are close to and within walking distance to their nearest community garden.

Community Gardens also make an effort to include marginalised members of the community - unemployed people (sometimes through formal [work for the dole projects](#)), [people with disabilities](#), [refugees](#), etc.

Community gardens can be a source of **familiar and culturally acceptable food** for communities of diverse cultural backgrounds. There are good examples in Australia of gardens meeting the need of culturally diverse communities:

- Through local gardening, African refugees were able to access healthy foods and utilise familiar and culturally acceptable foods. [African refugees study 2014](#)
- The [Karen Community Garden Project](#), in south-western Sydney assisted the community to address issues related to trauma, unemployment and access to familiar food.
- The Amazing Northern Multicultural Service established a [community garden in Adelaide](#) to grow vegetables, herbs and plants that are popular in Africa and Asia, such as African eggplant and roselle.

Community gardens are one facet of the community food movement, which also includes farmers' markets, stalls at fairs and fetes and the like, where consumers can buy direct from the grower or producer. These are characterised by the sale of fresh, seasonal produce, often certified organic, that is grown locally and presented unpackaged. Buyers value the fact they know the provenance of the produce, and often form a loyal relationship with the producer. In this system the supply chain is shortened and strengthened. The recent Omicron wave of the Covid-19 pandemic has [highlighted](#) the contribution markets make to food security in NSW ([South Coast](#); [Byron Bay](#)).

Some community gardens not only contribute to markets throughout the year, but host weekly/monthly markets in their community (eg [SAGE](#) Moruya and Kangaroo Valley in NSW, CERES in Melbourne and Perth City Farm to name a few).

Reference 2 - Reducing food waste and destruction

People who grow their own food, waste less of it. An [Australia Institute report 2014](#) found that 52% of Australian households grow some food either at their home or community garden.

“The link between food waste and greenhouse gas emissions is real. Many people make a connection between growing their own food and food waste. By reducing food waste, less food waste is sent to landfill and fewer greenhouse gases are emitted. If 45 per cent of the 4.7 million households growing food wasted only half as much food as the average household, there is a potential saving of two million tonnes of greenhouse gas emissions.”

The principles and practices of the vast majority of community gardens dictate that waste is minimised and reused through:

- Picking only the produce that is ready, in the quantity required and eaten immediately
- Preserving excess produce - jams, preserves, pickling
- Adding food waste to on-site compost systems and worm farms

Gardens also save and creatively repurpose physical materials associated with the commercial food system, including such things as egg cartons, bottles, jars, food containers, crates etc.

Each week in NSW, community gardens host workshops and other educational activities on a range of subjects, including managing waste, composting and soil building. These are usually free or at a minimal cost and provide practical advice about minimising and using waste as a resource.

Community gardens have always led the way with organic waste management in urban spaces through the use of composting, worm farms etc. The [2020 National Community Garden Survey](#) in Australia found:

- 78% of community gardens conduct composting and/or worm-farming
- 23% have large scale composting or green waste processing

Some gardens go further and take food waste from their nearby community such as [Mort Bay Community Garden](#). Another successful example in NSW is the long-running Food Scrap Friday scheme at Camdenville Paddock Community Garden in Newtown. Families from the local school are encouraged to bring their kitchen scraps to the Paddock on Friday mornings. Each week more than 50 families contribute, diverting on average between 100kg and 200kg of food waste from landfill. [They estimate](#) that between October 2016 (when it started) and the end of 2020, the scheme collected and composted over 22 tonnes of kitchen waste - “enriching our gardens, keeping food out of landfill and preventing an estimated 32 tonnes of CO2 emissions”.

This demonstration project has inspired many other community gardens to adopt similar or adjusted composting projects. These medium size community-led composting projects have the potential to expand and incorporate larger volumes of food waste particularly in major cities. These systems do however require regular labour and skill which could be achieved through ongoing targeted funding for such projects as most currently rely on volunteers for ongoing success and grant funding for equipment.

RECOMMENDATIONS:

- Create a fund for specific composting projects that allow for paid labour to develop and maintain successful community composting projects.
- Change regulations in order to ban food waste from landfill
- Encourage small businesses to link with community gardens in projects that direct food waste to gardens (include subsidies for this service).

Reference 3 - Developing technologies to bring food production into cities.

Please see the attachment, which outlines the benefits of modern wicking systems for urban settings.

RECOMMENDATION: The NSW Government’s metropolitan planning strategies and policies should encourage:

- All new developments to include spaces for growing food

- The use of undeveloped or vacant areas for food production (even on temporary terms)
- Protect peri-urban food bowls

RECOMMENDATION: The NSW Government should establish a fund to support research into new technology and best practices that will improve food production and security, and widen people’s access to the food supply.

RECOMMENDATION: Echoing the National Pandemic Gardening Survey (2020) recommendations, the NSW Government should, along with the Federal Government and development industry, establish an Edible Gardening Fund that would:

- resource a mass expansion of edible gardening;
- contribute to materials, equipment, tools and inputs required for a major expansion of edible gardening; and
- resource organisations and networks to provide the advice, information, mentoring and guidance that new gardeners in particular are asking for.

Reference 5 - Managing the impact of climate change.

Community gardens contribute to managing the impact of climate change by:

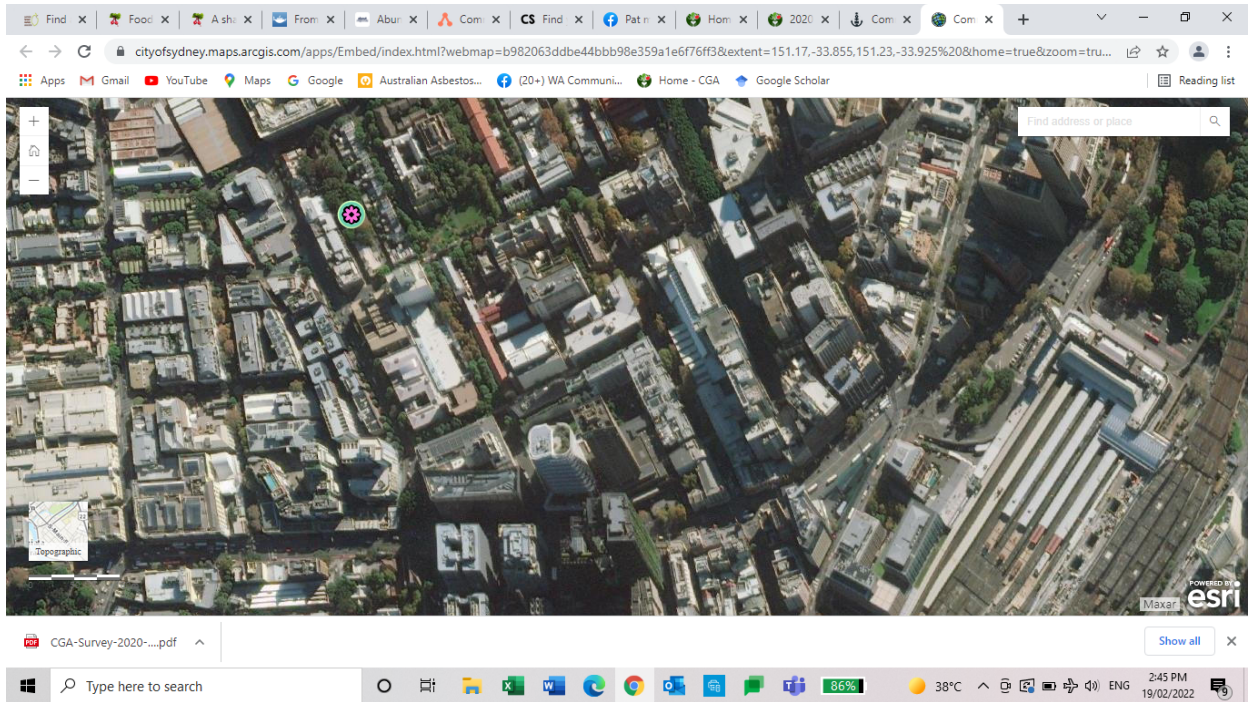
- Providing green spaces that cool the urban heat sink
- Improving the soil - better water-holding capacity, carbon sequestration, filtering pollutants
- Educating and promoting sustainable gardening and low-carbon living
- Building resilience in the local food system
- Less food miles and re

Providing green spaces that cool the urban heat sink

Community gardens and city farms range in size and design. Some have food forests or habitat gardens. Some have planted shady trees or native plants. But one thing they have in common - they’re all **green** and have a large diversity of plants. Those in industrial areas or urban settings offer sharp relief from the built environment around them. Open gardens can provide a haven for local residents and workers, not to mention an ecosystem for birds, insects and other creatures.

There are many examples of community gardens located on transport corridors and reclaimed land turning unproductive spaces into valuable and active sites such as [Newtown Station Kitchen Garden](#), Thornton Estate, Penrith and the PIG at Randwick Sustainability Hub. This is an area that has much more potential for development.

Ultimo Community Garden is nestled in a built-up area close to the CBD. (Aerial and ground views)



Improving the soil - better water-holding capacity, more carbon

Community gardeners care for their soil. The [2020 National Community Garden Survey](#) in Australia found:

- 78% of community gardens conduct composting and/or worm-farming
- 23% have large scale composting or green waste processing
- 92% mulch the garden
- 72% improve the soil to increase its water-holding capacity

There has been very little scientific study of community garden soils. CGA is partnering with researchers at University of WA to provide scientific confirmation of the improvements (nutrients, carbon, microbes, particle size etc) that community gardens are making to soil.

The use of composts from municipal solid waste can improve the restoration of degraded soils and allow for better nutrient transfer, slowing down water and locking in nutrients, thereby reducing the leaching of nutrients from stormwater runoff. By improving the soils capacity to both hold more water and to slow down flows, community gardens are able to impact the changes of water cycles and support the growth of food during dry periods. Many community gardens collect rainwater in tanks for later use and focus on water-wise techniques resulting in less water needed for growing some crops. This focus on soil building not only results in less use of water but more importantly less need for additional artificial fertilisers and pesticides. When observing from a systems perspective this reduces the amount of carbon dioxide produced from production, transportation and packaging of such products but also pollution from their effects.

Education and promotion of sustainable living

"It's bringing people together around food and sustainable living, so it's beyond food."

[Port Macquarie gardener.](#)

Each week community gardens across NSW are hosting workshops and other events that inform and educate people about sustainable living. Most community gardens (56%) conduct workshops and informal training ([2020 National Community Garden Survey](#))

These sessions cover gardening skills, technical knowledge about plants and soil, worm-farming, bee-keeping, aquaponics, reducing and reusing waste, cooking and food preserving, and so on. These are commonly delivered in association with other community groups (multicultural, schools, environmental, etc) and often with government support.

Building resilience in the local food system

Ultimately, it is not just food that is grown in community gardens but also community. These community connections are important in tackling the challenges in a changing climate and allow for an environment that fosters the sharing of excess produce, swapping crops and exchanging seed. All this is contributing to a more resilient and sustainable local food system that can weather disturbance and bounce back readily due to its diversity and scale.

RECOMMENDATIONS:

Encourage planners of new developments and redevelopments to include green spaces, such as community gardens.

Encourage - through sympathetic planning regulations and subsidies - the installation of small-scale garden systems (wicking pods etc) for urban businesses and public buildings.

Make Community Gardens exempt from water restrictions during times of draught

Reference 6 - Limiting the impact food production has on the environment, including overfishing.

Intensive urban food production uses less land to produce food than other forms of agriculture, according to Australian research. A [2018 study](#) of the inputs and yields of 13 small-scale organic farms and gardens in Sydney found yields to be 5.94 kg/sqm, around twice the yield of typical Australian commercial vegetable farms.

Community gardens use **organic and regenerative growing**, which have a number of environmental benefits. Data from the [2020 National Community Garden Survey](#) shows that Australian community gardens overwhelming (78%) adopt organic practices.

Organic farming has less impact on the environment than conventional farming. The longest-running US study of side-by-side agriculture, comparing conventional with organic farm practices, has shown a number of environmental benefits to organic farming ([Rodale Institute](#)):

- uses less chemicals
- improves the soil, including carbon content
- uses 45% less energy and is more efficient
- conventional systems produce 40% more greenhouse gases
- increases groundwater recharge and reduces runoff
- reduces herbicide and nutrient leaching

Reference 7 - Addressing complex challenges to food production including declining pollinating species and productive fertilisers.

Community gardens address many of the challenges to food production such as pest & disease issues (by increasing diversity and not growing monocrops), increasing food/habitat sources for beneficial insects and pollinators and, importantly, access to fertilisers (through making own composts/soil improvers). Many community gardens (particularly those located in the Sydney region) are an oasis for invertebrates that are so important to pest control and pollination. This is achieved through a large diversity of plants (particularly flowering) compared to surrounding areas.

There has been an increased trend in beekeeping with 19% of community gardens participating in beekeeping according to the [2020 National Community Garden Survey](#). Some community gardens such as [Rose Bay Community Garden](#) in Sydney's East have a thriving European Bee colony with several hives alongside local native bee hives for the social bee *Tetragonula carbonaria*. Not only does this allow for increased pollinator success, there is of course the benefit of locally produced honey.

In addition, there is a greater knowledge across community garden participants of the need for providing conditions for pollinators such as ensuring flowers are available throughout the seasons, planting a

diverse number of plants mixed throughout the space and not using harmful pesticides. Fortunately, a community garden is the perfect place to achieve such needs for these much needed refuges.

Researchers studying bee, frog and bat behaviour across NSW often target community gardens as measuring sites to compare to other locations such as bushland and parklands. Studies of microbat monitoring and measuring presence of native bees are examples. A large number of community gardens across NSW contribute to citizen science surveys such as [Australian Pollinator Week](#) and regular Frog counts (using [FrodID](#) App designed by Australian Museum). Participation in such projects have identified community gardens as nature hotspots within urban environments with stories shared through the [Urban Field Naturalist project](#). The Pandemic survey(2020) referenced previously noted that research on edible gardens has demonstrated their significant potential to contribute to healthy and biodiverse urban environments(p.30).

Community garden spaces are generally managed using permaculture (which has a principle of care of the earth with a focus on biodiversity) or at a minimum Integrated Pest Management (IPM) with some local councils only approving licenses with an adherence to organic gardening methods - therefore the use of synthetic pesticides are generally or required to be avoided.

It is widely accepted that natural resources of phosphorus and potassium are becoming increasingly scarce and therefore more expensive. In addition, the production of artificial fertilisers use large quantities of petroleum oil which as a non-renewable resource needs to change. Therefore the creation of soil locally, using accessible waste resources is both beneficial for the local environment whilst reducing carbon emissions.If coordinated and supported through resources and staff funding, this could be achieved across NSW.

RECOMMENDATIONS:

That the use of glyphosate, all neonicotinoids, endosulfan and chlorpyrifos be immediately banned throughout NSW and a full investigation be conducted into other potentially harmful agricultural pesticides to protect our pollinators.

Encourage a more localised focus on building soil to grow food in urban environments.

Reference 8 - Consideration of workforce challenges and skills development

Community gardens are usually not-for-profit, incorporated community organisations. Work in community gardens is typically carried out by members of the garden and others in the local community. The number of members and participants working in community gardens in Australia is difficult to measure precisely. The most recently published [CGA National Annual Survey](#), in 2020, revealed some information about this workforce:

- Most gardens (65%) have between 10 and 49 members;

- Most gardens (57%) have at least 10 of them work in the garden each week, contributing up to 10 hours of work. Some gardens generate more than 500 hours work each week.
- Gardens commonly put on special events, amounting to additional volunteer work.
- Most gardens (up to 80%) have no paid staff.

If the survey results were reflected across the 200+ gardens in NSW, then the contribution from the community sector to local food production is significant.

The infrastructure underpinning this statewide volunteer effort is provided by community gardens themselves. This includes insurance (for volunteers, and visitors' public liability), provision of personal protective equipment, induction and training, safety oversight and supervision (where appropriate). With big gardens (more than 25 regular participants) these costs would amount to thousands of dollars a year, including the employment of a paid garden manager. But even small ones need insurance and other safety nets for their members. These workforce expenses usually fall within a garden's annual running costs, which need to be covered by income or other contributions.

Some gardens host work-for-the-dole programs as a way to assist local unemployed workers gain new skills and opportunities. This also contributes to the weekly garden labour. Where gardens undertake work-for-the-dole programs, the costs of supervision at the garden are funded through the scheme.

Community gardens see their role not just as producing food, but to promote the benefits of, and skills needed for, sustainable gardening and living. To this end, community gardens run **training** workshops at their gardens. These can cover a vast range of topics, such as composting, waste management, reducing water consumption, permaculture, cooking, food preservation, beekeeping, administration for not-for profits, fundraising and so on. Some of this is informal sharing of practical knowledge, particularly the passing of know-how from one generation to the next. Other training is associated with formal certification. For instance, some TAFEs and Universities have links with their local community garden as a site for practical exercises and to demonstrate models of local food systems.

The training contribution that gardens make is sometimes subsidised by grant programs, but otherwise it is borne by the gardens' own operating budgets.

One of the biggest annual costs for community gardens is public liability and volunteer insurance. In Queensland the state government, under its land care scheme, assists by paying the insurance for organisations involved in land care, such as community gardens. Likewise Green Adelaide covers gardens in the 17 local government areas in the scheme.

RECOMMENDATIONS:

That the NSW Government subsidise volunteer and public liability insurance for community gardens.

That the NSW Government provide a funding source for training within and for the community garden sector.

Reference 11 - Consideration of Indigenous food and land management practices.

Aboriginal communities are often isolated geographically and are vulnerable to supply chain shortages. This was exacerbated by [panic buying](#) during the COVID-19 outbreaks. However [community gardens in remote areas](#) can do much towards mitigating the problems caused by supply issues.

Planting appropriate food plants is an important way of securing food in remote areas. Xenoscaping (use of plants in their native environment) reduces the need for watering, pesticide use etc and gives the community access to the healthy foods that they prefer and know best.

Community gardens across NSW have also been developed by Aboriginal organisations, and community organisations with strong Indigenous representation, with the view to community building, improving health outcomes and connecting to country.

Examples of these include:

- [Waminda](#) South Coast Women's Health and Welfare Aboriginal Corporation.
- [Brungle](#) Bush Tucker Garden
- The [Karamand Koori Community Kitchen](#) in Airds holds weekly sessions that "share their knowledge and skills in food preparation, food budgeting, nutrition and healthier choices and connect with the community".
- The community garden at [Walgett](#) Aboriginal Medical Services
- [Armidale](#) Aboriginal Community Garden

Many other community gardens that are not operated by First Nations organisations also dedicate space to growing indigenous bush foods and medicine plants. The Community Greening program strongly encourages [bush tucker gardens](#) and employs an Aboriginal Education Officer to do this.

RECOMMENDATIONS:

That the NSW Government provide a funding source for training for the community garden sector in regards to indigenous food sources and land management practices with particular emphasis on funding more Aboriginal Education Officers.

OTHER RECOMMENDATIONS:

Consider giving over some state owned land and mapping open spaces to specifically identify areas for the purpose of urban food growing.

Incentives and funding to encourage local councils to support and develop CG sites and activity

NSW to create a coherent policy to assist local governments and other land managers in enabling the establishment of community gardens.

Help improve the food-growing performance of community gardens by supporting training for community gardeners in urban agricultural practices.

Recognise community gardens as a viable means of food growing and include them in agricultural research.

Consider changes to residential tenancy laws to include the presumption that landlords permit tenants to grow food on the property.

Developing technologies to bring food production into cities

Normalizing the integration of food production in city and urban environments necessitates a diversion from traditional agricultural methods. This discussion paper examines emerging technologies and methods currently being used to integrate food production into city architecture. This paper will refer specifically to food production in cities; however, the same concepts are compatible with suburban environments. As such, this paper will often refer to cities and suburban environments under the banner of urban agriculture.

Traditional, rural, monocultural agricultural methods have been successful in providing urban and city-based societies with food surpluses. However, in doing so, people have lost their connection with the food they eat, nature and their community. Furthermore, traditional agriculture has often been shown to have a detrimental effect on surrounding natural ecosystems. Urban agriculture, the growing of food in cities and urban environments, now stands to remedy this disconnection with nature and community. Cities provide all that agriculture necessitates by the way of water, electricity, human resources, growing space, nutrient and sunlight.

In order to integrate agriculture into city architecture, agriculture itself must be reimagined. Traditional monocultural agriculture is typically composed of isolated farms which produce only a single crop which requires vast amounts of water and fertilizer, is prone to pest infestation, which is then transported great distances before it reaches its point of consumption. Whereas urban agriculture is typically comprised of multi-crop growing techniques, requiring significantly less inputs, limiting the densification of pests and disease, and travelling far less distance between where it is grown and its point of consumption.

The reimagining of agricultural methods to suit urban growing conditions is well under way, with multiple private companies researching and developing products and growing techniques appropriately suited to growing food in cities. Among the most prevalent and popular products and growing methods is wicking-bed technology. Among the various inefficiencies of traditional agriculture is the concept of *run-off*. When water, fertilizers and pesticides are applied to traditional agricultural crops, often only a minuscule portion of these inputs is actually absorbed by the target plant species. The remaining inputs run-off into the surrounding environments, wasting water and degrading surrounding natural ecosystems with pesticides and excess nutrient. Wicking-bed technology overcomes the issue of run-off by capturing water and other inputs in reservoirs located beneath the soil or growing medium. The nutrient laden water then wicks upwards through the soil, providing plants with an abundant source of water and nutrient whilst also eliminating run-off, reducing input costs and eliminating environmental degradation.

In order to ensure the success of urban agriculture projects, growing infrastructure must be visually appealing and complement the overall look of cities. As such, wicking-beds are now being used in modern, stylish and visually appealing ways which integrate them into their surrounding environments, turning once unused and unsightly spaces into green, food producing oasis.



Figure 1: Wicking-bed system with cladding and capping. Holds 700-litres of water.

The pictures present in this discussion paper all depict various ways in which the Biofilta FoodCube wicking-bed can be built upon to tailor growing infrastructure to surrounding city and urban environments. As can be seen, a range of cladding and capping options are available which can be used to integrate growing infrastructures into pre-existing motifs and architectural themes. Figure 2 also provides an example of how growing infrastructure and furniture, in this case seating, can be merged in order to bring public users into the growing space which acts to break down the disconnect between people, nature and food production.



Figure 2: Permanent wicking-bed feature located in the Melbourne Convention Exhibition Centre



Figure 3: Edible outdoor seating and dining space located at the rear of a cafe/restaurant.

Edible outdoor seating areas provide inviting spaces for people to enjoy, as can be seen in Figure 3. In this instance, wicking-beds were used to create an edible outdoor seating and eating area in a previously unused area located at the rear of a café/restaurant. This allowed the business owners to not only make greater use of their space, but to also harvest fresh produce from their garden which is then used to produce the food which is served to their customers, simultaneously decreasing costs and increasing revenue whilst also breaking down knowledge gaps as patrons incidentally learn about food

production merely by enjoying the space. Patrons are served food and drink in this space and the garden beds themselves constitute the table. In this way, patrons learn about the development of edible plants as they enjoy the space.



Figure 4: Wicking-beds built in a suburban community garden. Each of the two garden beds hold 800-litres of water.

Previous images have shown how wicking-bed systems can be geared towards beautification, however Figure 4 shows how wicking-beds can be geared towards production volume whilst still remaining aesthetically pleasing.

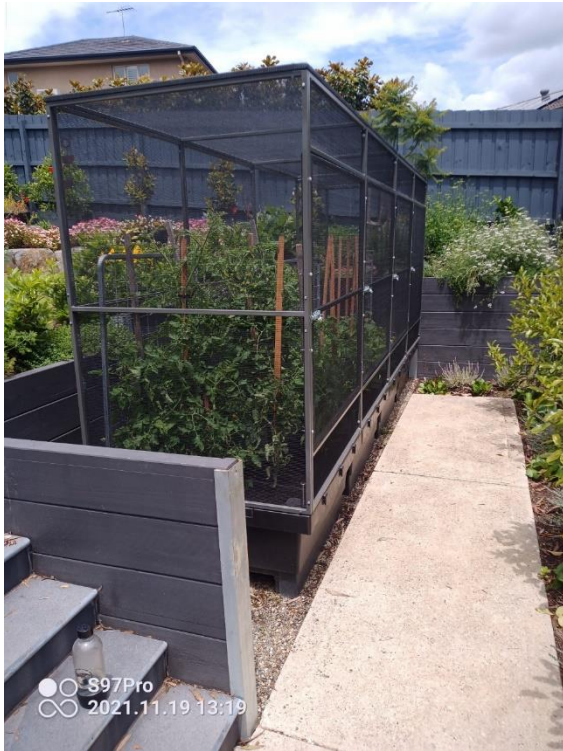


Figure 5: Wicking-bed system fitted with shade-house physical barrier system.

The use of wicking-bed growing systems is arguably amongst the premier emerging technologies which are currently being used to grow food in cities and urban environments. As seen in Figure 8 and 9, wicking-beds and urban agriculture represents a new and untapped frontier in agriculture and food production.

When looking at Figure 8 and 9 one is able to see the vast multitude of unused roof-top spaces present within the city skyline. Wicking-bed technology allows these untapped and underutilized spaces to become green, food producing island oasis. The benefits of this are numerous and includes not only providing fresh, healthy food, but they also provide habitat for flora and fauna, they absorb heat which accumulates in landscapes dominated by concrete and asphalt, as well as helping to connect people with each other, their communities, nature and the food they eat.

In addition to wicking-bed technology, physical barriers are able to be constructed and installed with the purpose of eliminating plant damage and crop loss caused by pest insects whilst also reducing heat, wind and frost exposure as well as eliminating the need for pesticide use. As can be seen in Figure 5, a shade house structure has been constructed atop a column of wicking-beds. Note how the structure remains aesthetically pleasing and is engineered to be consistent with the surrounding landscape.

Wicking-bed systems are also able to be fitted with automatic and hidden irrigation infrastructure further ensuring the success and food production. Figure 6 shows how hidden irrigation systems are able to be fitted to wicking-bed systems which are then cladded, represented in Figure 7.



Figure 6: Integrated irrigation system. Cladding is then used to



Figure 7: Example of how cladding can be used to conceal irrigation system.

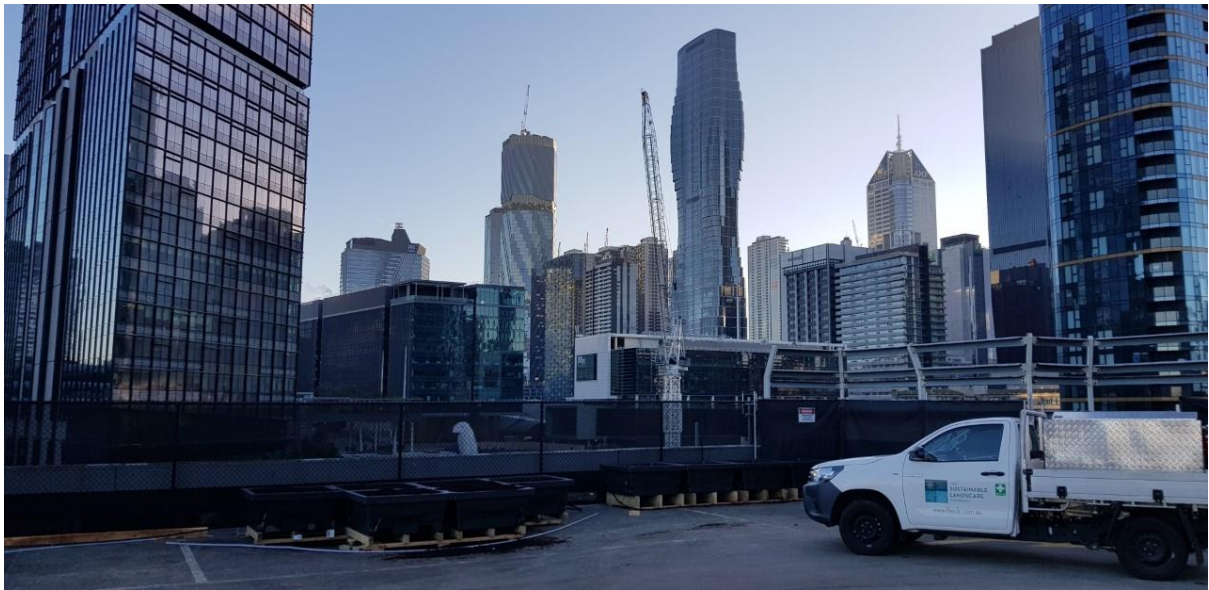


Figure 9: Wicking-beds being installed in a high-profile CBD location.



Figure 8: Wicking-beds being built to incorporate seating and dining areas.

Written by:

Oscar Danvers (January 2022)

Urban Food Revolution – Urban Agriculture Solutions

BA Sustainable Community Development

MA Sustainable Agriculture