Urban farming: What is the potential for adoption in Singapore?

text and images by
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Overview

Last year, I completed my PhD thesis on the adoption and integration of care farming principles for older people in dense cities. A large part of my project was based on an extensive case study in Singapore. The time I spent in Singapore and analyzing my data afterwards provided me with unique insights into the restorative potential of horticulture-based activities for older urban dwellers. This article briefly sums up the key findings of my project.

Potential Impacts of Urban Care Farming

In my analysis, I focused on three main aspects of urban care farming implementation:

• Social and therapeutic aspects

• Environmental impacts

• Urban planning aspects

These main aspects were further divided into subtopics that defined the details of my study, as seen in Figure 1.

Social and therapeutic aspects of urban care farming

This part of my project primarily aimed at older Singaporeans (aged 65+) and explored the level of their interest in horticultural activities. Additionally, I wanted to identify any specific demands and needs this age group would have in pursuing horticultural facilities, as these would affect their planning and design. As I interviewed a group of 30 older residents of an HDB block in Whampoa, three main findings on user preferences were crystallized:

• High level of interest in horticulture

• Location close to their home

• Presence of a leader/manager

Indeed, almost all participating residents expressed an interest in horticulture, ranging from a curiosity to try a new activity, to eagerness in starting as soon as possible. The level of interest often coincided with the level of previous experience with horticulture, as those with existing experience were generally more eager to engage, while those with less experience were more concerned about the way it would be organized, as they would need guidance.

Fig 1.
Three main aspects of urban care farming and
their subtopics (Developed by the author)

Fig 2.
Urban ecosystem classification with highlighted prioritized
services in Singapore (Based on Gómez-Baggethun et al., 2013)

Similarly, a virtually unanimous response was given to the question regarding the participants' preferred location for horticultural activities. With only one single exception, participants stated that proximity to their homes was crucial, and that a location requiring any form of transportation was prohibitive.

Complete unanimity was then reached in the matter of leadership. While a few participants expressed their preference to work individually (as opposed to the majority who would prefer group work), the presence of a leader or mentor was preferred without exceptions.

Environmental aspects

My environmental analysis of the impact of urban care farming was done through an assessment of urban ecosystem services provision. I used the classification introduced by Gómez-Baggethun et al. In 2013 and focused on three top prioritized urban ecosystem services in Singapore, as identified by Drillet et al. (2020) and Sieber and Pons (2015). Figure 2 shows an overview of all urban ecosystem services, with the three prioritized services in bold.

The air purification potential of urban care farms appears as the lowest of the three. As trees are the vegetation type with the highest air purifying capacity (which is still relatively low in the scope of a whole city), care farms growing plants would not create a huge environmental impact.

However, the recreational and aesthetic potential of urban care farms is a completely different issue. In both cases, urban care farms would add to the diversity of facilities already available in Singapore. In the case of recreation, urban care farms, similar to its existing community gardens, would offer a meaningful way for seniors to spend time outside, and, following the preferences mentioned above, they would spend farming time in their neighborhood with people from the same community. If we consider that a vast majority of respondents would prefer to work in a group, urban care farms could become a new kind of social platform in Singaporean neighborhoods with the potential to build and strengthen social contacts of local older residents.

Aesthetically speaking, urban care farms would also add to the visual diversity of outdoor elements in Singaporean neighborhoods. As entities with a leader/manager (this may be a renumerated employee) who would oversee not only the day-to-day operations but be also involved in the overall design of the facilities, a variety of simple layout principles could ensure that an urban care farm would be visually pleasing. Figure 3 below shows one example. Here, a concentric layout of an urban farm with a vegetation gradient starting as lowest on the edges and growing taller towards the center would enable passers-by to observe multiple vegetation types, while technical equipment and storage facilities would be tucked away in the center.
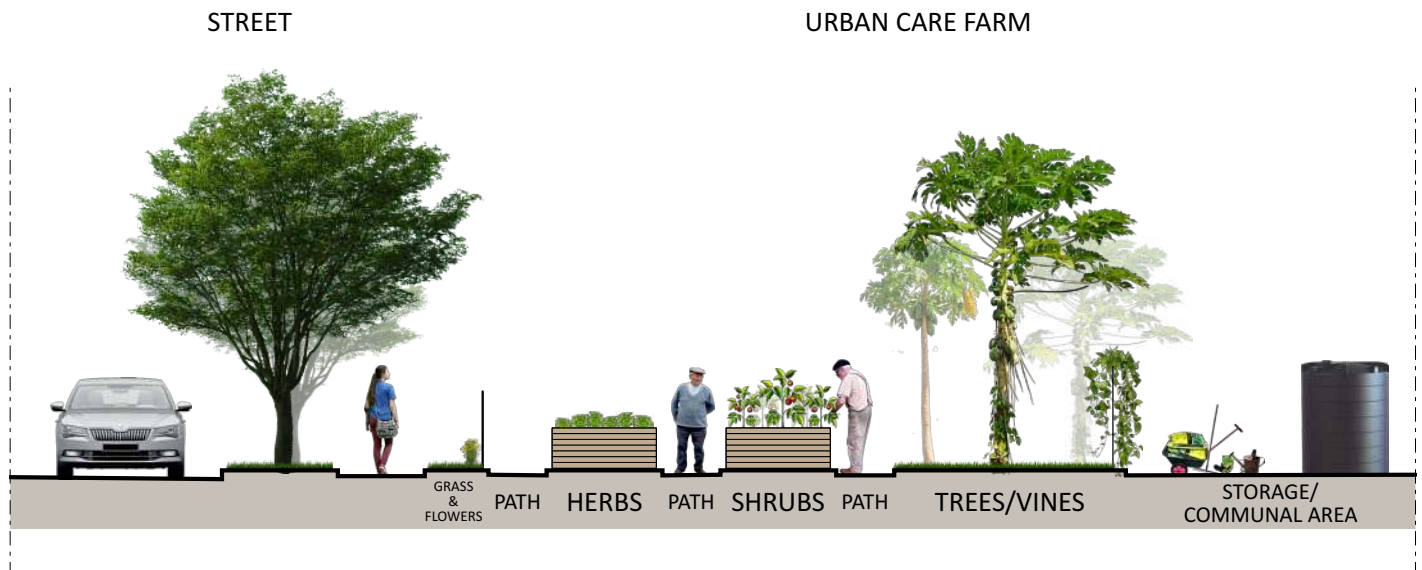
Planning aspects

Before I start talking about my findings around the planning aspects of urban care farming, I need to point out that my research was conducted before the Covid-19 pandemic. This is an important fact to consider, as it depicts the situation before the pandemic impacted the aims and priorities of urban planning in Singapore.

I studied the spatial and formal planning situation in Singapore on two levels – at city level and local level of one neighborhood. The main message resulting from the study is that Singapore is at the forefront in support of urban greenery and food production.

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Fig 3.
A cross section of one side of an urban care farm with a concentric layout (Developed by the author)

STREET   URBAN CARE FARM

GRASS & FLOWERS   PATH   HERBS   PATH   SHRUBS   PATH   TREES/VINES   STORAGE/COMMUNAL AREA

FLAT TYPE	HOUSEHOLD MEMBERS	% OF THOSE AGED 65+ IN 2020	NO. OF THOSE AGED 65+ IN 2020
1-room	2.00	46.11	**0.92**
2-room	2.60	27.99	**0.73**
3-room	2.80	24.94	**0.70**
4-room	3.60	13.78	**0.50**
5-room	3.90	11.31	**0.44**
Executive	4.10	10.73	**0.44**

Table 1.
Numbers of people aged 65+ in different types of HDB flats in 2020
(Developed by the author, based on data.gov.sg)

FLAT TYPE	NO. OF FLATS	NO. OF THOSE AGED 65+ PER FLAT IN 2020	NO. OF THOSE AGED 65+ IN 2020
1-room	77	0.92	**70.84**
2-room	79	0.73	**57.67**
3-room		0.70	**0.00**
4-room	249	0.50	**124.50**
5-room		0.44	**0.00**
Executive		0.44	**0.00**
TOTAL			**253.01**

Table 2.
Estimated number of senior residents in a sample HDB block in Whampoa
(Developed by the author)

The amount of physical space and formal support of urban greenery through initiatives such as Landscaping for Urban Spaces and High-Rises (LUSH) cannot be matched. Moreover, the intensified emphasis on local food production that would alleviate Singapore's dependency on food imports further supports the idea of urban care farms.

However, an important question is whether enough space for urban care farming is potentially available, as the lack of space is one of the most cited barriers of urban agriculture in general, Singapore's high population density was one of the key factors that led me to identify this city as the right location for my case study. In other words, I wanted to explore the situation in practice, to see whether lack of space is truly a major hindering factor for urban agriculture.

To find out whether enough space exists for urban care farming to cover the needs of older Singaporeans, I used statistical data on the occupancy in Housing Development Board (HDB) flats and applied these on the HDB blocks in my neighborhood case study location.

Table 1 shows the statistical data on flat occupancy by people aged 65+ in HDB flats.

I applied these data in my neighborhood case study location to find out how many older people would need to be catered for by urban care farms. Table 2 serves as an example of one HDB block. I did these calculations for each HDB block in my case study neighborhood and reached the aggregate number of 4,659 older residents.

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Fig 4.
Case study area with numbers of older residents in each HDB block (Developed by the author)

As a next step, I roughly measured open outdoor spaces in the same area, which accounted for 71,700 sqm, and combined these data in one picture, see Figure 4.

However, when I compared this map with the land-use map of the same area, I had to remove the two largest open spaces, as they were zoned for educational facilities or as the subject of detailed planning. Hence, the potential area for urban care farming shrunk to 20,050 sqm.

For further calculations on how many people could be catered for in these spaces, I developed a concept of a basic urban care farm with three different types of layouts, as shown in Figure 5:

• Individual free-standing containers/raised beds

• Linear layouts

• Concentric layouts

In all these layouts, I considered 2 sqm of planting area per user (a common size of planting containers in urban community gardens) and calculated capacity for each layout, i.e., the number of users per sqm of total area. This capacity was lowest in case of the layout with individual containers and highest in case of the concentric layout.

I could then combine these calculations to see whether the existing open space in Whampoa would be enough to provide urban care farming opportunities for the 4,659 local older residents. As a result, it turned out that the space would be enough in case of the linear and concentric layout, though not in case of the layout with individual containers, see Table 3.

One can argue that these calculations are conceptual and lacking details and precision.

However, if we consider that they include all older residents in a given area (while we can hardly expect that full 100% of residents would participate in urban care farming) and they did not include any open spaces that are not on a surface level, such as carpark rooftops, the message they bring is clear: Even in such a densely populated city such as Singapore, there is enough physical open space for urban care farming. The main barrier then seems to be not a physical lack of open spaces, but formal access to their use.
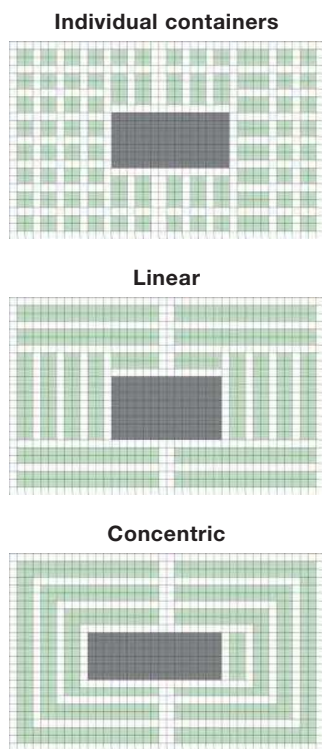
Individual containers

Linear

Concentric

Fig 5.
Three layout options of a conceptual urban care farm: Individual containers (Top), Linear (Middle), Concentric (Bottom) (Developed by the author)

TYPE OF LAYOUT	CAPACITY (users/sqm)	MAXIMUM NO. OF USERS
Individual containers	0.188	3,769
Linear	0.244	4,892
Concentric	0.254	5,093

Table 3.
Urban care farming capacity of the existing open spaces in Whampoa by different types of layout (Developed by the author)

Summary

The topic of urban care farming implementation in dense cities is a very complex topic that cannot be fully contained in one article. Therefore, I chose the main points that carry and show the key findings of my project:

• There is a high demand for guided horticultural activities among older residents in Singapore.

• Location in the neighborhood is crucial.

• Facilities such as local urban care farms have the potential to become a new type of community social platforms that would offer new recreational opportunities to older residents.

• While available space in urban areas is undeniably scarce and precious, it is formal access rather than a physical lack of space that is the main impediment to the growth of urban agriculture. Prioritizing urban care farming or other types of urban agriculture by planning authorities is a key component of the future growth of urban care farming, and urban agriculture in general.

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