

**Crisis Gardening: Addressing Barriers to Home Gardening during the COVID-19
Pandemic.**

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ABSTRACT

The outbreak of the COVID-19 pandemic across the world has significantly upended society, creating a world health, economic and societal crisis. In the wake of previous crises across the world, gardening has been an important means to provide food security, economic relief and mental and physical wellbeing. This paper aims to determine and address barriers to gardening during the current COVID-19 crisis through providing resources and advice to gardeners during this time. I compiled this information through a literature review of the history of crisis gardening, interviews with twelve active gardeners and a participant observation of gardening during the COVID-19 crisis. I identified the main common barriers as issues arising from renting, lack of community gardening knowledge, and accessing basic gardening information. I identified main barriers during the COVID crisis as accessing the community and accessing resources such as seeds and seedlings.

I used this information to locate, evaluate and compile resources and advice to address these barriers. I located resources and advice through suggestions from interviewees and my own personal experiences. The most appropriate resources and advice for common barriers included accessing community gardens, local gardening groups and institutions, talking to community growers such as neighbors or nursery associates, and taking classes offered by local gardening institutions. Due to social distancing and travel restrictions, the most appropriate resources and advice for barriers during the COVID crisis include referencing gardening websites, joining a Facebook group, or taking an online class. I used the resources and advice to create two pamphlets to provide easy access to support gardeners. One pamphlet addresses common barriers to gardening, while the other addresses barriers during the COVID pandemic. These pamphlets will be distributed to my partner organization, Sustain, and to participants in the study for greater distribution. This study was able to address some of the barriers related to gardening in times of crises. However, more studies and programs are needed to increase local food production and community resilience during times of crises.

Keywords: Crisis gardening, gardening, barriers, resources

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INTRODUCTION

1.1 Justification and focus of the study

The outbreak of the COVID-19 pandemic has drastically affected almost every aspect of global, national, and local societies. The main strategies for reducing and containing the spread of the coronavirus, published by the World Health Organization, are practicing social distancing and good hygiene, and staying home as much as possible (WHO, 2020, para. 1). In Australia, as with much of the rest of the world, these guidelines manifested in closing non-essential workplaces, telecommuting, and discouraging travel whenever possible. As cases begin to stabilize or decrease, many places around the world, including Australia, are talking about easing restrictions to begin reopening the economy. However, Chief Medical Officer Professor Brendan Murphy says that social distancing and hygiene procedures need to remain in effect as long as the COVID-19 virus continues to be a threat (Rose et al., 2020, para. 2). With estimates that a vaccine will emerge by mid-2021 (Gallagher, 2020, para. 4), it is important that we are able to operate effectively as a society during this long-term upheaval.

Although social distancing and staying home have been beneficial in helping reduce the spread of the virus, these practices have caused secondary effects in society such as panic buying and food hoarding, physical and mental health challenges, and shifts in environmental practices (Cannavo, 2020; Laing 2020, para 17). Social distancing and staying at home are essential to the health and wellbeing of society. However, food access, mental and physical health, and environmental sustainability are also essential to a functional society. Throughout large scale crises of the past such as World Wars I and II, the Cuban economic collapse, the Great Recession of 2008, and today in refugee camps in Iraq, gardening has provided access to food and community, physical and mental health benefits, and more sustainable communities (Čepić and Tomičević-Dubljević, 2017, pp. 192-193; Laing, 2020 para, 17; Oxfam America, 2020,; Tomikns at al., 2019, pp. 106-113).

This paper will focus on exploring the benefits of gardening to individuals and society during crises. It will identify common barriers to gardening and address these barriers as they relate to the COVID-19 pandemic, by providing resources to reduce these barriers. This study is relevant to the current state of the world because it aims to help people and societies work through the COVID-19 pandemic. It also provides information for increasing community

resilience during other extreme events, which are likely to become more common due to climate change (IPCC, 2014, pp.13-15)

1.2 Sustainability and gardening

Gardening and growing your own food are highly beneficial to individuals and societies because of many positive mental, social, physical and environmental effects, which are especially important in times of crisis (Čepić and Tomičević-Dubljević, 2017, pp. 192-193; Laing, 2020 para, 17; Tomikns at al., 2019, pp. 106-113; Tuton, 2020). In terms of sustainability, encouraging individuals to grow their own food cuts down significantly on carbon emissions from transportation, packaging and excessive water and chemical use (Fletcher et al., 2012, pp. 218-223; Tuton, 2020, para. 10). Small-scale gardening also provides health and nutritional benefits to individuals, opportunities to strengthen communities, and various land management benefits including reducing the urban heat island effect and better management of storm water (Fletcher et al., 2012, pp. 218-223). Because of the opportunities gardening provides for creating a strong, sustainable communities, gardening may be beneficial to communities during the COVID pandemic and in the future.

For the purposes of this study, my working definition of **a sustainable community is one that uses a long-term perspective to ensure a healthy environment, strong economy and equitable wellbeing of its people while ensuring adequate resources remain for future generations to do the same.** This definition was adapted from The Institute for Sustainability (2020) and Star Communities (2020) as well as my own studies of the topic. In order to create this definition, I took what I thought were the best ideas from both sources and combined them while adding my own values of equity and the capability of future generations to be able to fulfill the same criteria.

My focus on personal gardening in the COVID-19 crisis addresses all three of the criteria for sustainable communities – healthy environment, strong economy and equitable wellbeing of its people. Gardening promotes healthy environments by providing greenspace within communities which are important to maintain healthy ecosystems and individuals. Greenspaces also allow areas for individuals to come together and form strong communities. Strong economies are promoted by providing individuals the opportunity to save money by growing their own food, and increasing the ability to keep dollars local. Equitable wellbeing of

community members is promoted because many people can benefit from community and health benefits associated with gardening.

1.3 Connection to urban gardening

This paper focuses on crisis gardening which includes urban, suburban and rural gardening during times of crises. However, urban gardening is important to specifically address in this study because of the number of people living within cities as well the structural barriers and potential benefits it can offer (Fletcher et al., 2013, pp.218-230; Population Division, 2018, para.1). Many of the findings are relevant to all settings of crisis gardening. However, some are only relevant to gardening in urban settings. In terms of social distancing and accessing nature in the COVID-19 pandemic, the urban setting poses additional difficulties, which include population density, physical and cultural distance from agricultural practices, and general lack of greenery. In addition, it is most likely that food access may become an issue due to the pandemic or future crises in urban areas, which makes scaling-up local food production important in order to increase resilience of communities (Radix, 2020). However, Cannavo (2020) suggests that this pandemic provides the opportunity to fix problems within our society. Introducing the sustainable and beneficial practice of personal gardening during this pandemic creates the possibility for environmental and human wellbeing to be at the center of a new society.

1.4 Partners

I will be working with Georgia Karavis and Dr. Nick Rose from Sustain, a Melbourne based organization that identifies as Australia's meta food network. Sustain's mission is to "catalyze meaningful and powerful connections to enable the emergence of a flourishing and healthy food system, realized through food systems events, research, network-building and consultancy services." (Sustain, 2020, para. 1). Following the outbreak of the COVID-19 pandemic, Rose reached out to me about working on a project aimed at educating and encouraging individuals to start gardening during this global crisis.

1.5 Literature Review

The popularity of gardening has increased significantly in recent decades, and is generally tied to wealth and abundance. However, looking back over its history in Western society, it is closely intertwined with times of crisis and hardship. Historically, gardening has

emerged across the globe to ensure food security in times of economic and humanitarian crisis (Čepić and Tomićević-Dubljević, 2017, pp. 192-193). The first sprouts of what we recognize today as urban gardening rose in the mid-1800s in Europe and quickly spread to the U.S., both going through times of humanitarian crises in the Industrial Revolution (Čepić and Tomićević-Dubljević, 2017, pp.192). Though this is generally accepted as the first urban gardening, it is important to acknowledge that many indigenous and early European peoples had gardens interwoven within their communities for tens of thousands of years prior. The nineteenth century was the first time that humans came together to live in such great numbers and created modern day cities which were generally removed from the natural environment. During these times, industrial workers were taken advantage of by manufacturers and faced many economic and health hardships. Urban gardens during this time may have offered benefits including fresh, healthy food, escaping from dirty conditions, and self-determination. These have all been cited as benefits to individuals during other times of crisis (Laing, 2020; Tomkins et al., 2019, Radix, 2020).

The next surge in crisis gardening was during WWII in the United States and Europe in the form of victory gardens in urban, suburban, and rural settings. Victory gardens were brought into fashion by the Eleanor Roosevelt – the first lady of the United States during this time (Tuton, 2020, para. 5). The surge in victory gardens (up to 20 million in a country of about 135 million) was largely in response to food insecurity brought on by the rationing of canned food (Čepić and Tomićević-Dubljević, 2017). These gardens were extremely successful and offered some economic relief while supplying 40% of all vegetables consumed in the US during this time (Čepić and Tomićević-Dubljević, 2017, pp.192-193). The victory gardens of the mid 1900s popped up on rooftops, abandoned lots, public parks and gardens, windowsills and yards all across America. This showed the world that even the urban setting has many areas to be used to produce food closer to home (Tuton, 2020, para. 8).

Throughout the late 1900s and early 2000s, gardens seemed to follow crises across the world. There was a resurgence of gardens during the oil crisis in the 1970s in the U.S., in Cuba following the collapse of the Soviet Union in the 1980s, after the 2008 financial crisis in Greece, Portugal, Spain, and Cypress, and in refugee camps in the Middle East today (Oxfam America, 2001, Čepić and Tomićević-Dubljević, 2019; Tomikns at al., 2019). In Cuba, food security

decreased due to an 80% drop in food imports (Worldwatch Institute, 2013, p.341). This forced a federal and local response to the crisis which resulted in 383,000 urban farms on otherwise unused land. These urban farms produced more than 70% of vegetables consumed in cities (Worldwatch Institute, 2013, p. 341; Oxfam America, pp. 2-7). As the number of gardeners increased threefold, Cuba produced 60% of all vegetables consumed in the country domestically (Oxfam America, 2001, pp. 2-7).

Tomkins et al. (2019) focused their research on gardening among refugees in the Kurdistan region of Iraq. They found that home and community gardens provided many benefits for refugees living through a time of crisis. Benefits included mental health improvements, providing fresh and healthy food, and providing a meaningful activity (Tomkins et al., 2019, pp. 106-113). One female respondent said “I live with a lot of pressure here, my daughter is divorced, my husband is sick, I grow my garden and it makes me feel better.” (Tomkins et al., 2019, p.108). Tomkins et al. also found that gardens provide an outlet for meaningful activity, as many in the camp dealt with a lack of employment opportunity (p.108). Responses from other participants labelled gardens as a space for Kurdish people to rationalize and cope with current the crisis, connect with life back in Syria, and inspire emotional healing through connecting with the earth (Tomkins et al., 2019, pp. 107-109).

Currently, we are entering another wave of crisis gardening in response to the climate crisis and the coronavirus pandemic. Green America is calling for a return to WWII productivity with 40 million climate victory gardens to sequester carbon into the soil, reduce transportation and packaging, reduce waste sent to landfills through composting and rebuilding our soil health (Green America, 2020, para. 1-6). Olivia Laing (2020), currently living through the coronavirus pandemic, says that “Ian and I are in self-isolation and in these plague times, the garden is what’s keeping me sane” (para. 17). The Radix Center, in response to both the climate crisis and the COVID-19 pandemic, is calling for pandemic resilience gardens to prepare for food insecurity, especially for those in vulnerable communities or dealing with financial hardship (Radix, 2020, para. 4).

Today, we are in the midst of an economic and health crisis that may bring food insecurity and shortages and mental and physical health challenges – stress, anxiety, depression and physical inactivity. Gardening can provide many individuals and communities with benefits

that can help us adapt to and live through this crisis. The remainder of this study focuses on identifying and addressing barriers to crisis gardening through identifying resources, and creating materials that encourage individuals to create their own gardens.

METHODS & ETHICS

This study was completed in Averill Park, NY. The study was originally supposed to be conducted in Victoria, Australia, but I had to return home to the United States because of the COVID-19 pandemic before my study could begin. This posed some difficulties with interviewing and not being able to do the participant observation in the area of study. Because of these challenges and being based in the United States, I adapted the project to also benefit people around Averill Park.

Before beginning this study, I submitted my methodology to a local review board for their approval. After I received their approval, I wrote up an informed consent form which included information about the focus of the study, risks and benefits to participants (Appendix A). I emailed each interviewee the informed consent form which they read, signed and returned to me before beginning each interview. No ethical issues arose during this study.

2.1 Literature Review – Historical Crisis Gardening

I conducted a literature review of the relevant and accessible information on the topic of crisis gardening to understand the history and current state of crisis gardening. I located articles, websites and blogs by using Google, Google Scholar and Ecosia searches and searching the Agricultural & Environmental Science Collection which I found through Hamilton College's library and IT services. I used different combinations of the terms "urban gardening," "urban agriculture," "victory gardens," and "urban farming" with one of the following, "crisis," "hardship," "economic collapse," "disaster," "emergency," and "catastrophe" to locate relevant information to this study. After locating the articles, I read through and compared each of them to determine similarities and differences among them. I also used them to construct a timeline of surges in crisis gardening in the past.

2.2 Background Research – Barriers to Crisis Gardening

Before conducting my own research into the barriers to crisis gardening, I conducted a literature review to gather information that has already been collected about barriers to crisis gardening. I used Google, Google Scholar, Ecosia and the Agricultural & Environmental Science Collection located through Hamilton College's library and IT services as my search engines. For this literature review I used the terms "gardening," "crisis gardening," "urban gardening,"

“home gardening” and “backyard gardening” in combination with one of the following, “barriers,” “obstacles,” “challenges” or “difficulties” I compiled these studies to gain a better understanding of common barriers to gardening around the world, which I used to create my interview questions to address common barriers identified in previous studies.

2.3 COVID-19 Restrictions – Background Research and Participant Observation

The current coronavirus pandemic has altered the normal functioning of society in both Australia and the United States, as well as the rest of the world. Conducting this study without considering the effect of COVID-19 on society would make this study irrelevant to the present day. In order to incorporate the societal shifts into this study, I consulted the WHO guidelines and my own personal experience of living through the pandemic. I used this information to craft several interview questions about specific shifts in gardening due to the COVID-19 outbreak. I intentionally asked these questions at the end of the interview to gather information relevant to both the current situation and gardening after society has returned to normal.

2.4 Interviews

2.4.1 Preparing for Interviews

I wrote my interview questions based on the common barriers I identified from examining previous studies. Some of the common barriers were, lack of space, time, and motivation, knowledge gaps in different areas of gardening, and availability of resources. In order to remove some of my own biases, I did not mention any of these barriers until the participant had mentioned them first. I did this by crafting my interview questions to revolve around each participant’s own experience with gardening and asking broad questions. I asked the participants eight questions. Questions included how participants began gardening, what resources and support systems they rely on, barriers to their gardening successes, advice they would give to beginning gardeners, and challenges they have faced with their gardening because of the COVID-19 pandemic. These questions provided me with information about each individual’s motivation for gardening, barriers they have faced gardening, how they have or have not overcome these barriers, and how all of these factors relate to the COVID-19 pandemic.

I found willing participants through personal contacts, Facebook gardening groups, Google searches and suggestions from Georgia Karavis from Sustain. I joined five Facebook

groups including three found through my own searches (Melbourne's West Best Gardening Group, Isolation Gardening and Beginning Gardeners) and two at Georgia Karavis' suggestion (Permaculture Crisis Response Group and Eat Think Talk). I posted in three groups (Melbourne's West Best Gardening Group, Permaculture Crisis Response Group and Eat Think Talk) with details of my study and an invitation for anyone who was interested in being interviewed to contact me by commenting on the post or by private messaging me. Using all of my outreach methods, I contacted and interviewed 12 participants who varied in age, location, and experiences across Australia with one interviewee in the United States. After I contacted each participant, I sent them an informed consent form to read and sign before the interview.

2.4.2 Conducting the Interviews

I conducted interviews between April 15th and April 30th, 2020. All but one interview took place over Zoom, a video conferencing platform, the remaining interview took place through Facebook chat call. The interviews lasted between 30 and 60 minutes. I began each interview by asking if I could record the interviews for my own personal record and asking how each participant would like to be identified. Then I asked if the participants had any other questions before we began the interview. After answering any questions from participants, I began the interviews. I modified the questions on a case-by-case basis based on the conversation and the flow of the interview. Interviewees were allowed to answer all questions in full, but were not forced to answer any questions they did not want to. At the end of each interview, I asked the interviewees again if they had any other questions or if there was anything they wanted to add. To close the interview, I informed them that they were welcome to reach out to me with any questions or concerns relating to the study. I informed them that if I used their name for a quote, I would reach out to have them approve it before the paper was made publicly accessible.

2.4.3 Qualitative Analysis of Interviews

After completing the interviews, I developed a qualitative analysis framework to organize the information I gathered from the interviews. To organize the analysis, I created categories based on the questions I asked each interviewee: Getting Involved in Gardening, Barriers, Resources/Support, Advice/Helpful Information for Beginners, Personal Experiences with Gardening, Effects of COVID-19, and Personal Effects of Gardening during COVID-19. Under each heading, I added emerging themes that stuck out to me during the interview process, with

two additional columns for times mentioned and quotes. Below is a section of my Getting Involved in Gardening category (Figure 1).

Getting Involved in Gardening

Theme	Times Mentioned	Quotes
Garden at childhood home/ parent involved	9 (Participants 1, 2, 4, 6, 8, 7, 9, 11, 12)	“I remember the gardens of my childhood” – Participant 9
Other childhood experience	6 (Participants 2, 3, 4, 6, 10, 11)	
Community Influence	9 (Participants 1, 2, 4, 6, 8, 7, 9, 11, 12)	

Figure 1. Excerpt from the qualitative analysis under the heading Getting involved in Gardening. For full qualitative analysis see Appendix D.

One important change to note is that I replaced name abbreviations I used in my analysis with participant numbers for this paper. During my analysis I recorded interviewees’ responses in the times mentioned column, so I could go back and listen again later. I removed these abbreviations to maintain the privacy of participants.

After creating the qualitative analysis framework, I listened to each recorded interview and made note of each theme I encountered. When a theme was already listed, I increased the “times mentioned” by one and recorded the name abbreviation next to it. When I encountered a new theme, I added the theme and then recorded one response. I also recorded powerful quotes that would be useful to mention in the results section. Again, during my qualitative analysis, I used name abbreviations after each quote, but I replaced them above with numbers to protect privacy of the participants.

After I completed the qualitative analysis, I created seven figures to portray the information. To create the figures, I used Microsoft Excel. I used the themes with the most responses to create each of the seven figures. Focusing mainly on the most popular themes allowed me to focus more deeply on common themes affecting many gardeners. It also allowed me to create more easily digestible figures. In addition, I included interesting or unique thoughts outside of the top themes in the Results/Discussion section.

2.5 Compiling and Evaluating Resources

2.5.1 Resources from Internet Searching

One of the main goals of this study was to compile useful resources for beginning gardeners and present them in an easily accessible format. I began looking for resources by Googling the phrases “beginning gardening 101,” “everything you need to know about backyard gardening,” and “how to garden.” Through these searches I found several websites with lots of information about gardening dos and don’ts and some introductory materials. I spent some time looking through these resources. Those I found to be easily accessible and relevant were added to the list of resources for beginning gardeners. I found many resources for Australia, but because I was based in the United States during the study, I may not have had access to all the internet resources that are more easily available in Australia.

2.5.2 Resources from Interviewees

During the interview process I asked each participant about what resources and support systems they have used during their gardening experiences. Because I was not in Australia and did not have experience gardening in Australia, I determined that asking the participants for the resources and support systems they used would be most appropriate. I compiled these resources in my qualitative analysis. I looked into each resource and support system mentioned to determine if it should be added to the Gardening for Beginners guide (Appendix F). Criteria included ease of accessibility, information available, relevance to the gardening community as a whole and relevance during the COVID-19 pandemic.

2.5.3 Pairing Resources with Barriers

After analyzing the barriers faced by the twelve Australian gardeners during normal times and during the COVID-19 pandemic, I attempted to match barriers the participants were facing with resources I had compiled. Not all of the barriers could be addressed by available resources, as some barriers were systematic in nature. Those that could be addressed were compiled into the Gardening for Beginners guide (Appendix F)

2.6 Participant Observation in Beginning Gardening

In order to understand barriers to beginning gardening during COVID-19 and to evaluate the resources suggested by the interviewees, I used a participant observation framework throughout my own gardening. I conducted this participant observation in Averill Park, NY, U.S. Because I completed my participant observation in the United States, some of the information gathered may not be relevant to gardeners in Australia. However, barriers involving the COVID-19 pandemic are likely to be similar, because the United States and Australia are following the same WHO COVID-19 guidelines. Many of the barriers regarding community knowledge and accessibility, and community resources are also likely to be similar because the United States and Australia share similar cultures and societal structures.

For my participant observation I started from square one and kept an electronic journal of barriers I encountered during my own gardening experience. As we are entering spring in New York, I completed the participant observation from the planning and preparation stage through preparing to transplant seedlings outdoors. I also used this participant analysis to address the resources I collected from participants such as Googling gardening problems, accessing local nursery employees for knowledge about growing seedlings, and accessing community as a knowledge and support system.

2.7 Seeding Hope Facebook Group

One of the more popular resources mentioned during the COVID-19 pandemic was to join a Facebook group. In order to evaluate the need and utility of a Facebook group in New York, I created a group called Seeding Hope and shared it through my personal Facebook page.

2.8 Gardening Guides

Using the information from my interviews, resource literature review, and participant observation, I created three one-page easily accessible guides for gardeners during COVID-19 using Canva. The most useful resources were assembled in a visually accessible way. After the guides were completed, I sent them to Sustain through Georgia Karavis and all of the study participants to share through their networks.

RESULTS/DISCUSSION

3.1 Interviewee Demographics

Of the 12 interviewees, 11 lived in Australia and one lived in the United States. Most of the interviewees lived in Victoria, around Melbourne. Due to the location of the partner organization Sustain and their connections within Melbourne, this was not surprising. Both the Permaculture Crisis Response Group and the Melbourne West Best Gardening Group are based in Melbourne. I contacted more than half of the interviewees through these two platforms. It is also important to note that all of the interviewees had a significant background in gardening, both in years and activity. All of the interviewees were contacted through gardening groups, Google searches for Melbourne gardeners, or suggestions from my contacts. Suggestions from my contacts generally pointed me towards organizations or individuals who were quite experienced in gardening. Interviewees reported having 3 - 45 years of experience gardening. My study sample was neither representative nor random because I reached out through existing gardening networks and interviewees responded online, most commonly through their Facebook group.

3.2 Qualitative Analysis

The results from the qualitative analysis of the interviews are presented in seven figures below. Using the qualitative analysis, I recorded how many participants mentioned each theme during their interview. Since the goal was to determine the prevalence of these themes across the sample, each interviewee was only counted once, regardless of perceived importance.

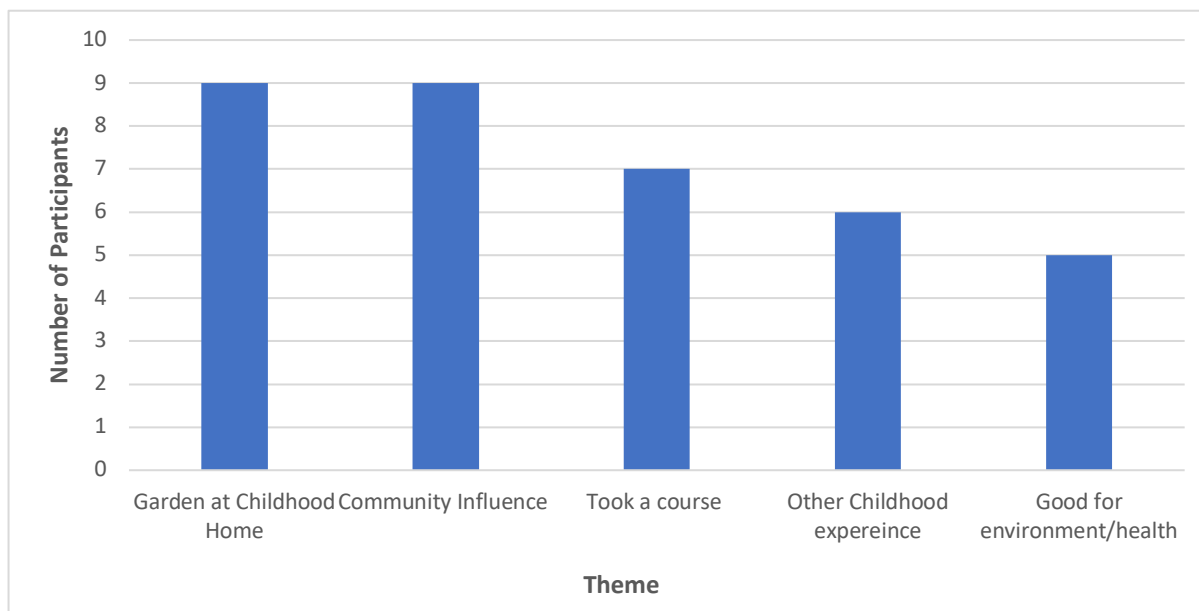


Figure 2. Factors influencing involvement with gardening.

The most frequent responses to how participants got involved in gardening included that they had a garden in their childhood home or that later in life they were influenced by a community they were actively involved in (Fig. 2). However, combining themes of childhood home garden and another childhood experience, 11 of the 12 participants attribute their current gardening, at least in part with experiences in their childhood. This is consistent with findings by Lohr and Pearson-Mims (2005) who found that those who had childhood experiences with nature or gardens are more likely to participate in some form of gardening as adults (p. 474). One participant responded “I remember the gardens of my childhood... I remember the greenhouse; I remember the smell of the greenhouse and the tomatoes growing” (Eshana Bragg). The responses as a whole suggest that childhood experiences can be very powerful and have a great influence on adults later in life.

The other three highest responses, “community influence”, “took a course” and “good for health/environment,” (Fig. 2) all involve contact with others who have interests in gardening. These responses suggest that people are more likely to get involved with gardening when they are drawing support, inspiration and information from others around them. The fifth response, that gardening is a good thing to do, is also consistent with being influenced by the community, because those ideas are likely coming from a community that supports gardening. This point is additionally supported by responses from interviewees to the question “is there any support or

resources you wish you had” which was asked later in the interview. Six interviewees responded that they wished they had a mentor or a buddy to garden with.

“Having a buddy is so much more motivating... just having that other person can give you that push... I can build a garden bed, I can saw wood, I know I have wood around the place, but I wouldn’t make myself do it” (Bec Talbot).

Overall, the data suggests that childhood experiences and being around gardeners are the two main reasons the participants began gardening. In terms of the COVID-19 pandemic, social distancing and travel bans may restrict access to communities and experiences that support gardeners. See the Resources section of the Results for suggestions for staying in contact with these communities and experiences during the COVID-19 pandemic.

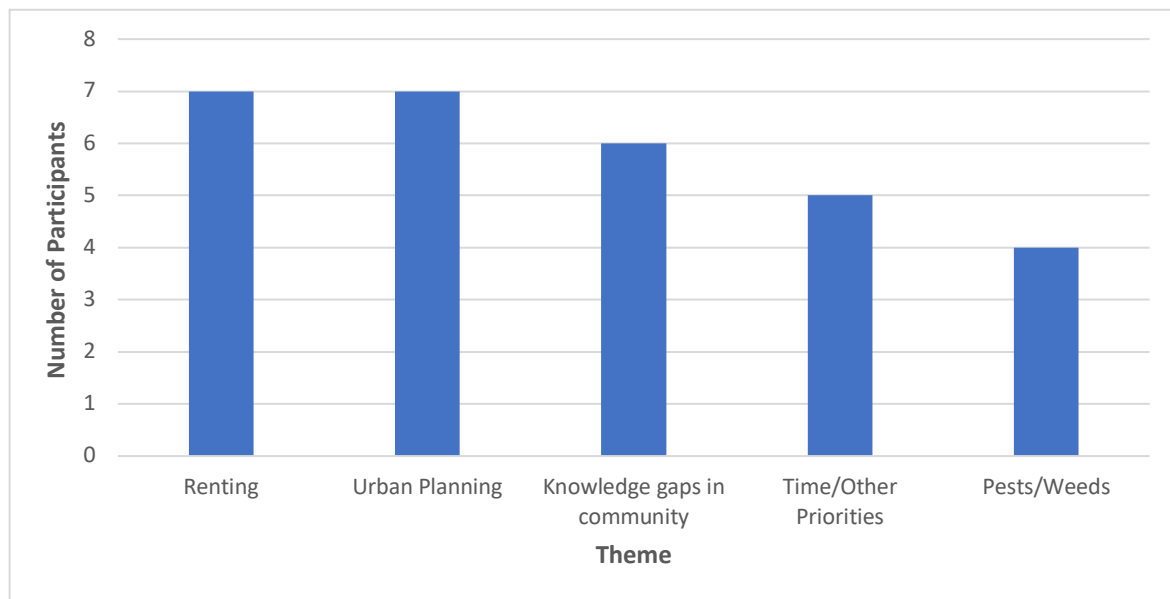


Figure 3. Main barriers to gardening.

The top barriers to gardening during normal times in society are generally structural barriers that are difficult to address. Many participants mentioned that renting is detrimental to their gardening effort. Renters cannot fully invest in one place due to short-term leases, and landlords who impose increasingly strict restrictions about planting in backyards or other shared spaces. Urban planning poses a problem to many of the participants because their communities have no undeveloped spaces that can be used as community or allotment gardens. This forces residents to use pots on small balconies or windows that may only get a few hours of direct sun each day. This is consistent with findings of Castillo et al. (2013) and Zahin-Ramos (2013) that

renting and urban planning is a popular barrier for gardeners (p.6; p.65) Six participants mentioned the lack of knowledge in the community as a barrier because they do not have intuitive knowledge and cannot ask friends or family members how to start their garden. John Ditchburn, one of the participants, explained this as what he calls “The Great Severing of Knowledge”.

“At the turn of the (20th) century people were spending 30% (of their money) on food. Growing veggies in your backyard was a really cost-effective thing to do ... most people learned directly from their parents, extend family or neighbors, there was a knowledge in the society of how to grow vegetables. My parents were children of the depression and they had to grow vegetables, we went into the second world war and we had to grow vegetables because there was a shortage... (the baby boomer) generation abandoned gardening because they saw it as a part of poverty they experienced ... my generation is what I call The Great Severing of Knowledge, if you wanted to grow veggies you couldn't rely on that knowledge pool from your parents and grandparents, you had to look for a book as I did... I come across very often people who do not have any idea of how to grow vegetables.” (John Ditchburn).

“The Great Severing of Knowledge” as well as the cultural shift Ditchburn alludes to in other parts of his interview may explain several of the other popular barriers. These include lack of time, other priorities, pests and weeds, structure of the food system, and the ideals of a postindustrial society, which participants also mentioned. The problem of pests and weeds may have been perpetuated by the loss of knowledge in the community. As people stopped gardening, communities likely lost home remedies for dealing with these issues in their area as well as the ability to ask their neighbors and community for help. Of the five people who mentioned time as a barrier, they all claimed to have enough time, but that there are others things they are doing – working, taking care of kids, and having other hobbies. Three participants said that our current system of having access to cheap, fresh, convenient and seemingly endless supplies of food in the grocery store removes the societal interest in home grown food. Zahin- Ramos (2013) mentions lack of knowledge and time as barriers to gardening as well as the idea that food is much easier to buy at the store (p. 63).

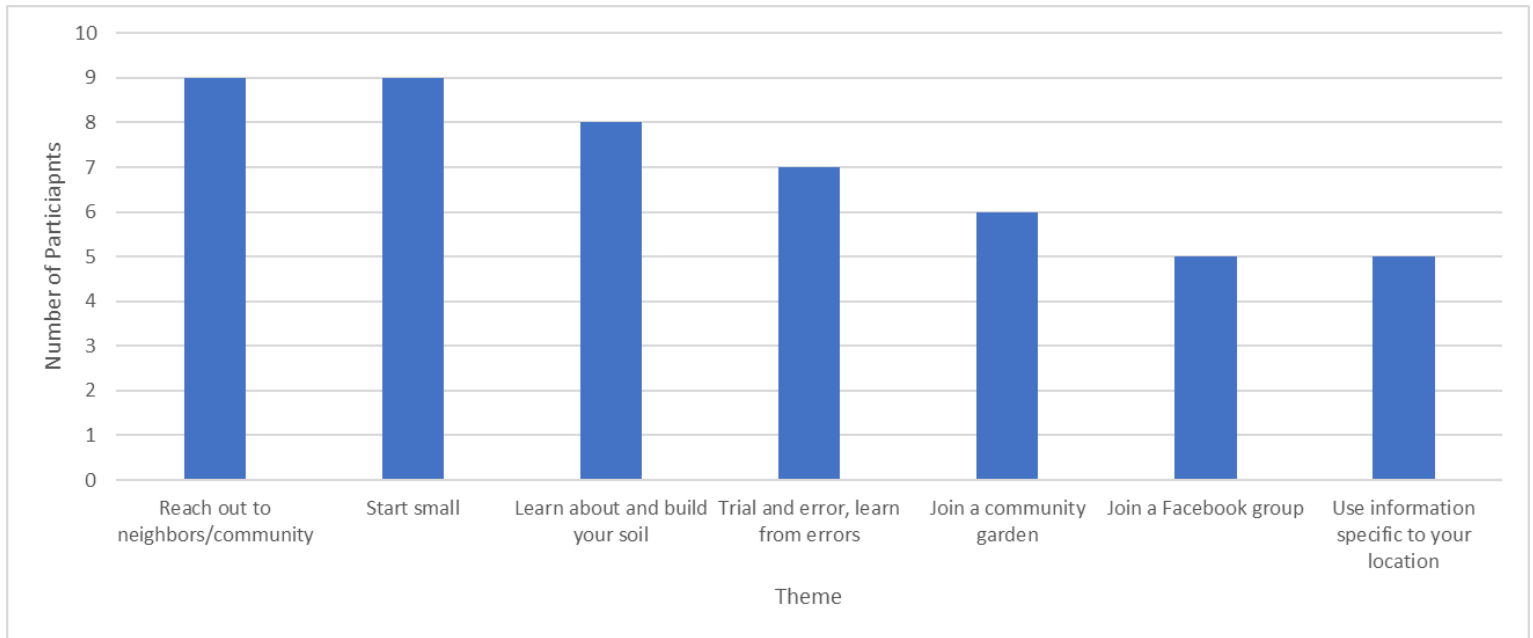


Figure 4. Advice for beginning gardeners.

Nine of the participants suggested that an important thing to do, especially during the coronavirus, was to reach out to your neighbors and community for resources and advice. Some examples included joining a community garden or a Facebook group. Bryony Callander commented on Facebook groups, “It’s great to have access to people who have a lot of experience in gardening,” while Kat Moore said, “Join a Facebook group and ask questions, people love to feel like they can help.” Another popular suggestion in terms of community that did not make the top seven list was to talk to people at your local nursery, farmer’s market or wherever you get your seedlings from. See Barriers - accessing community during COVID-19 in the Results/Discussion section. Many participants also emphasized enjoying the learning process by starting small and learning from their mistakes, or using a trial and error approach. Ditchburn suggested,

“It’s better to start off with a small garden that’s running efficiently than a large one overrun with weeds. If you can handle a small one and work it into your life then you can expand it.”

Simeon Ash, an urban gardener and said,

“I’m not sure anyone is a green thumb or a brown thumb, it’s kind of just practice and actually commitment. I learned that I wasn’t a good gardener but if you want to do it it’s a learning process, like drawing or any other skill.”

In terms of practical knowledge, popular advice was to know your soil and location well. Talbot said, “If you look after the soil, that’s it, you’re done, if you get the soil right, you don’t have to worry about pests and watering.” Participants suggested using pH and simple ribbon tests to get a basic understanding of your soil. Two urban gardeners stressed the importance of getting a heavy metal contaminant test done before plating in the ground. These tests are cheap in Australia, through VegeSafe run by Macquarie University. One other interesting result was the contradiction between the necessity of planning and just giving it a go. Sharron Pfueller, President and Manager of Sustainable Gardening Australia, said, “it’s important to do some planning and research first rather than just jumping right in. Without planning beginners will get disappointed because things aren’t going to grow” she also suggested people seek out a little bit of advice. Everyone agrees that some basic knowledge is definitely important for beginners, but Talbot recommends,

“Just give it a go. I probably held myself back from doing more things because I wanted it to be good. Sometimes perfect is the enemy of good, just get it in the ground, if it’s going to grow it will probably grow anyway”.

One final piece of advice worth mentioning was to “grow what you eat!” Three participants said that growing what you eat seems simple enough, but many people grow things because they buy good looking seedlings and once it’s ready for harvest have no idea what to do with it. Overall, the advice for beginners is to start small, with things you like to eat and some basic knowledge from people in your community. Then, if it goes well, expand it. If not, stay positive and learn from your mistakes.

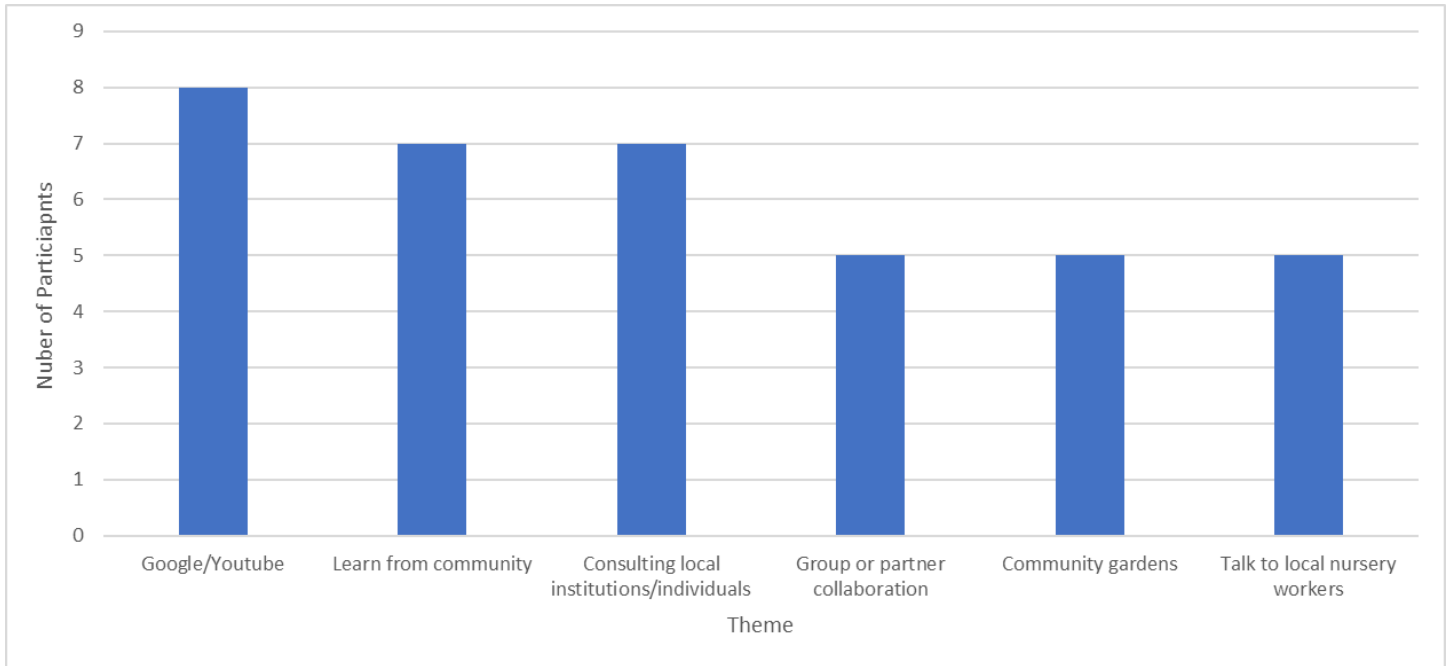


Figure 5. Useful resources and support systems.

The number one response was accessing Google or YouTube. Participants mostly mentioned Google or YouTube in the context of looking a very specific answer, such as how to do something or what a specific fungus looks like. Many participants echoed Talbot’s disclaimer that, “I wouldn’t want to push someone just to the internet,” but that it can be good for looking specific things up. However, many participants did say that there are good videos and lessons on Morag Gamble’s YouTube and Gardening Australia’s website.

For more general learning, participants suggested getting involved through many different avenues such as talking to neighbors, visiting local institutions, joining a group or a community garden, and talking to nursery workers. Callander says,

“I’ve just put my snow peas out in hopes of running into my neighbors and talking to them about what they’re growing... It’d be great to have a common place to gather and learn and talk about things.”

Although the community is a great place to gather knowledge, the COVID restriction of social distancing and closing non-essential places are drastically decreasing the access many people have to their communities. For more information on this, see the Barriers – accessing your community during COVID section.

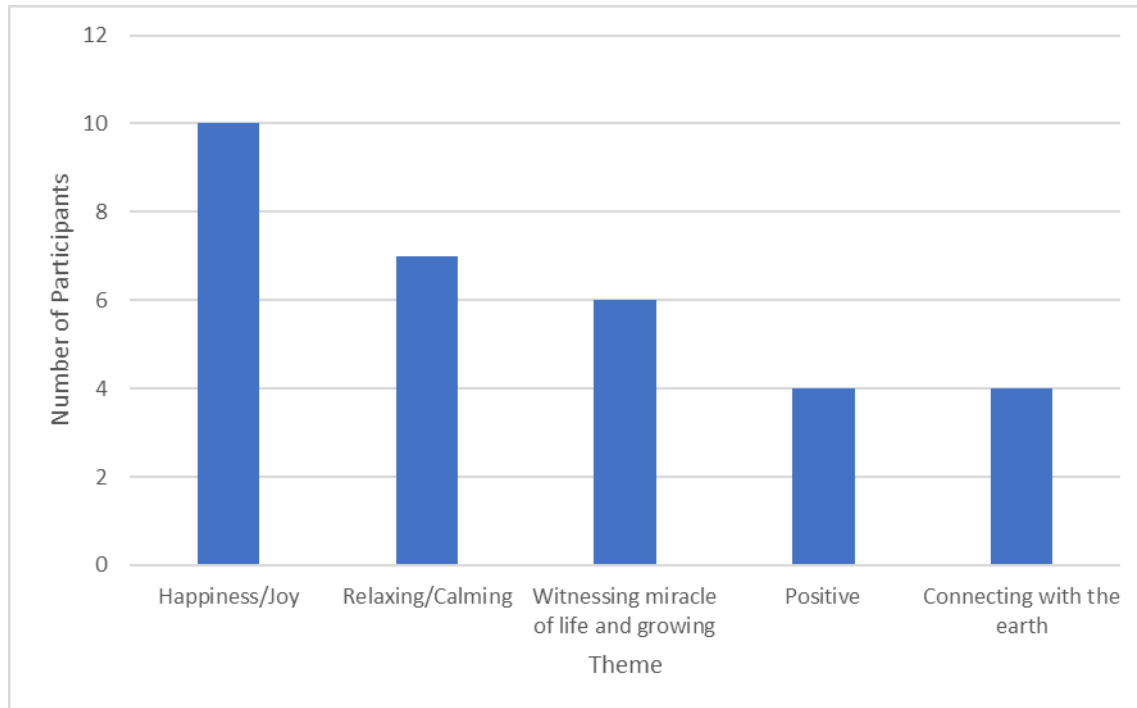


Figure 6. Personal experiences with gardening.

All of the participants responded positively when discussing their experiences with gardening. Participant’s responses varied from expressing wonder and fascination at watching plants grow, to “a grand chess game” (Ash), to a meditative time to “switch off your emotions” (Erin Macfarlane). Others said gardening is “the perfect antidote to everything that’s wrong” (Bragg) and a place to “connect with people, community and nature” (Ditchburn). While discussing witnessing the miracle of growth, Pfueller said,

“The experience of growing something and seeing it develop and finally bear fruit or something edible, it’s the sort of satisfaction you get out of raising children, I guess. Where you’re creating something that’s making a contribution, it’s a very positive reinforcement of life”.

These finding are consistent with others that support that gardening positively affects individuals in many ways (Reilly, 1988, p.2; Tomkins et al. 2019).

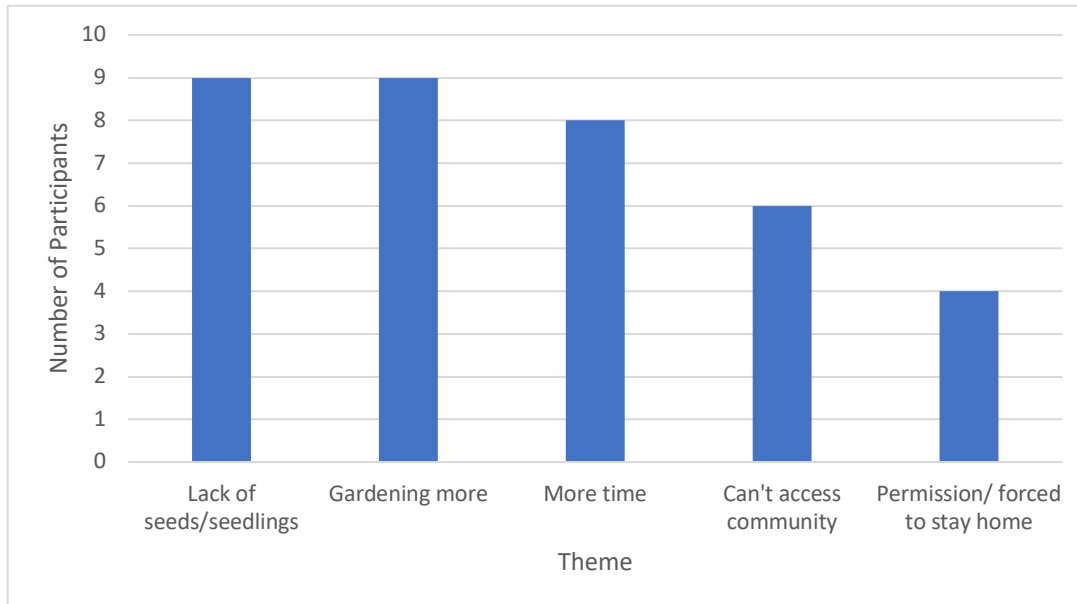


Figure 7. Effects of COVID-19 on gardening.

Participants reported both positive and negative effects of COVID-19 on their ability to garden. One of the most popular responses was that all of the seeds and seedlings were sold out. Although many of the participants were not directly affected by the rush on seeds and seedlings, everyone seemed to know about the shelves being empty. The only participant who was affected by the lack of seedlings at Bunnings went to a local institution and was able to buy seedlings there. Macfarlane reported that the seed website she usually uses to order seeds; Diggers, had to close ordering they had too much demand. The main negative effect was the inability to access the community in the form of groups, community gardens, nurseries or casually in the garden. The previous results (Fig. 2-5) show that community is extremely important even to home gardening which is typically viewed as a solitary activity. Due to social distancing and the closing of non-essential businesses, many networks of communication, support and resources have been cut off in the gardening community. See Barrier – accessing community during COVID in the Resources section for more information about this topic.

Most of the other effects reported were positive relating to the participants' gardening experiences. These included having more time to spend in the garden, having being forced to or granted permission to stay at home, and having a meaningful and exciting hobby during a time of uncertainty. Overall, it appears that for anyone who already had a system or equipment in place, the COVID-19 pandemic has not created too many barriers, but that it may have posed

significant barriers to new gardeners looking for community resources, seeds and seedlings and tools.

One other point two of the participants mentioned was the idea of the lack of food security. Ditchburn said,

“people have always had a mindset, at least generationally that you could always go to the supermarket and buy whatever you like ... and for the first time we’ve been confronted with, ‘Ah we might not be able to get whatever we want when we go to the supermarket’, now as I’ve said there was no real shortage it was just panic buying but it would have changed the mindset of society that there could be shortages down the track”

Ditchburn later goes on to say that he thinks people will garden more now because they have seen that the food system is fragile in times of crisis. In the coming years, food systems across the world will be threatened by climate change and food shortages may become more common (Gregory et al. 2005, p. 2414). As Ditchburn alluded to, one of the ways community resilience and sustainability may be increased is through local community participation in food production (Beddington et al., 2005, p.5; Callanan, 2018, para. 7) like home gardening or community gardens.

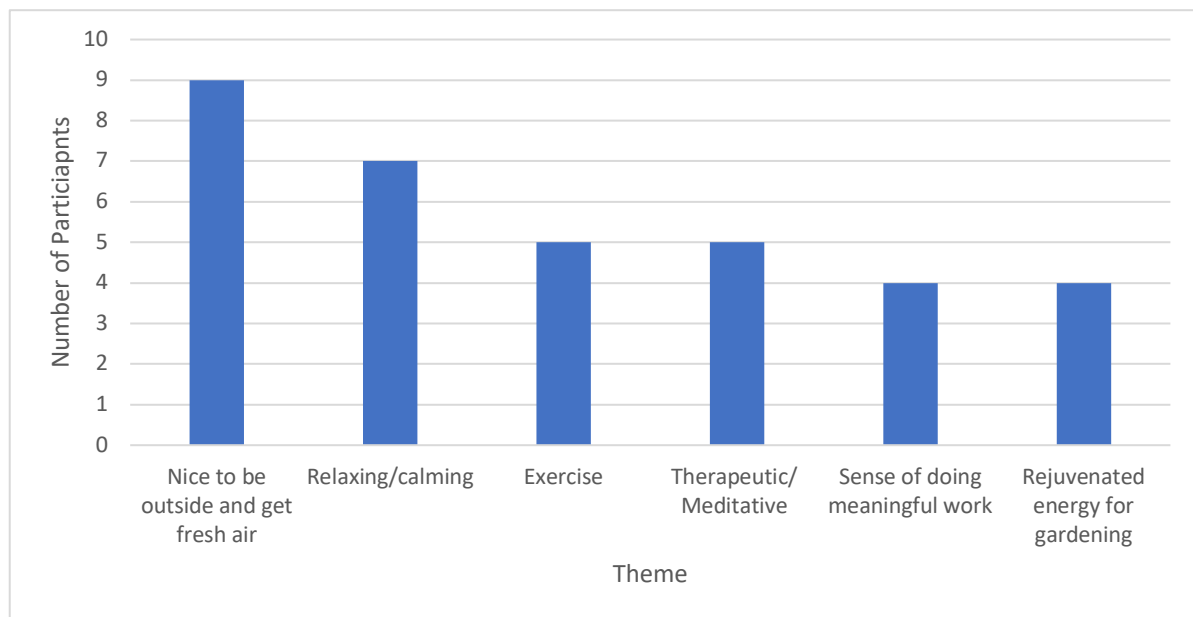


Figure 8. Personal experiences with gardening during the COVID-19 crisis.

All of the participants reported that gardening has benefitted them during the societal upheaval of the COVID-19 pandemic. Most participants expressed positive feelings related to

being outside in the fresh air while gardening. Two participants dove further into this. Macfarlane explained her happiness by saying “touching the soil has the potential to release dopamine” while Carol said, “when we dig in soil, we inhale bacteria from the soil and this bacteria releases serotonin in the brain”. As well as breathing in fresh air, participants mentioned physical benefits from exercise when pulling weeds, planting and harvesting. In terms of mental states, many participants mentioned the relaxation and calming effects of gardening which may be particularly beneficial to offset some of the stress associated with large shifts in society. Participants also reported meditative and therapeutic effects of gardening and Ben Atwood stated “gardening is like cheap therapy, and you get tomatoes!” Finally, participants reported on their rejuvenated energy for gardening and the feeling that they were doing something meaningful and life-giving during this time. There appear to be many varied benefits from gardening during the COVID-19 pandemic. The rest of the study focuses on experiences during COVID-19 and how we can overcome some of the normal and COVID-19 specific barriers to encourage people to garden more during this stressful and uncertain time.

One unexpected finding is that seven out of the twelve interviewees mentioned permaculture during their interviews. Of those participants, three were members of the Permaculture Crisis Response Group. All seven of these participants had positive attitudes towards permaculture as a means of gardening.

3.3 Participant Observation during the COVID-19 pandemic (from the US)

I used a participant observation framework to understand what it’s like to be a beginning gardener during the COVID-19 pandemic. It is important to note that these experiences all took place in the United States and may differ from circumstances in Australia. While I was conducting this part of the study, I paid close attention to barriers, resources and benefits the interviewees reported, and my own experience with them. I kept a journal (Appendix E) which allowed me to compare my experiences with those reported in the interviews. My main findings were:

1. Difficulty of accessing community during COVID-19
2. Facebook groups can be helpful
3. Gardening as a source of happiness and engagement
4. Leaning into my household community

5. The garden as a space for peace and quiet

3.3.1 Difficulty of accessing community during COVID-19

Due to social distancing restrictions and the closing of all non-essential businesses, I like many of my interviewees, found it hard to access the community. This most affected me when I was buying seeds and seedlings. I wanted to talk to the employees about how to best care for the seeds and seedlings, but felt like I was unable to, due to the social distancing practices and the increased difficulty and discomfort of having conversations through face masks. I also found that the local farm store I bought seeds at was fairly crowded and I tried to spend as little time as I could there. Unfortunately, from my own experience I found access to the community, which typically offers support, knowledge and resources, was significantly restricted due to the prevention measures necessary to reduce the spread of the coronavirus.

3.3.2 Facebook groups as a virtual community?

While setting up interviews I discovered several Facebook groups focused gardening. In Australia, and Melbourne especially, Facebook groups such as the Permaculture Crisis Response Group, Melbourne West Best Garden Group, Eat Think Talk, Isolation Gardening and the Good Karma Network provide sufficient resources to people looking to have a gardening community. These groups shared resources such as workshops and tips, answered questions asked by other members, organized resource and plant swaps, and overall provided an encouraging and supportive setting for gardeners. Although some of the benefits of physically being in a community may be lost, this platform provides support and information. It is also available to many more people. Many of these groups have several hundred members and are fairly active with at least 10 posts or exchanges every day. In my opinion, Facebook groups seem to be the best option for maintaining an active and engaging gardening community during this time, even if the resources and style of support is a little different.

3.3.3 Gardening as a source of happiness and engagement

During this time of increased stress and decreased entertainment and activities I found the garden as a place of happiness and engagement. Most importantly it has given me something to think about in the back of my mind. Like Ash said, it's like a "grand chess game". I found that when my mind wanders it now wanders to problem solving in the garden. I enjoy being

physically in the garden, being out in the fresh air and digging in the soil, checking in on my seedlings. It's like an experiment, there for me to observe, ponder, improve and engage with.

3.3.4 The garden as my space of peace and quiet

Staying at home and social distancing for me means having other household members around all the time. Usually this means 1-2 work calls at a time, as well as people moving around making noise, eating, talking to each other and constantly overwhelming my visual and auditory senses. I find that going into my garden has been a safe haven for me – a place where I can find peace and quiet. It is a nice reset and I find it helps me be more patient with and appreciative of my household members. I suspect the interviewees who identified the garden as relaxing and calming share some similar feelings.

3.3.5 Leaning into my household community

Although gardening is generally considered a solitary activity, I found that it brought my household together. My mom and I have been planning, problem solving, and completing garden activities together. The garden has become our shared project. Like several interviewees mentioned, having a buddy to garden with can be helpful. Collective problem solving led to more success than either of us likely would have achieved on our own. Especially during quarantine when there aren't many new activities to do, gardening has given us a project to work on together. Since I cannot access the larger community, I am finding resources and support within my own household community

3.4 Resources for COVID-19

To address the barriers to gardening, I compiled resources from interviews and my own searches and experiences. The resources are organized below by the barriers they address. Only barriers that I could provide resources or advice for overcoming are listed below. These resources (and some advice from our experienced interviewees) are also available in visually accessible posters for ease of distribution and access (Appendix F).

Barrier – Accessing the community

Resources/advice during normal times

- Join or visit a community garden

- Plant in a community allotment garden
- Join a local gardening group

Resources/advice during the COVID pandemic

- Join a Facebook Group
 - Melbourne's West Best Gardening Group
 - Permaculture Crisis Response Group
 - Good Karma Network
 - Isolation Gardening Melbourne
 - Seedify – Melbourne online community garden
- Plant in a community allotment garden but make sure to keep 2m from others
- Talk to neighbors and community members
 - Call friends and neighbors involved in gardening

Barrier – Accessing gardening information

Resources/advice during normal times

- Join a community garden
- Take a course offered by a local institution (CERES, SGA)
- Visit a local nursery and talk to sales associate
- Visit and talk to members of local gardening institution
- Visit farmers markets and talk to farmers

Resources/advice during COVID pandemic

- Take an online class
 - SGA, OSU Intro to Permaculture course, Morag Gamble YouTube master classes
- Gardening websites
 - Gardening Australia, Deep Green Permaculture, SGA, The Plummery by Kat Lavers, Urban Food Garden by John Ditchburn, Backyard Garden Lover
- Facebook Live chats

- Many gardening organizations are hosting Facebook Live chats around mid-day during this crisis. Check out Kat Lavers on Fridays in Melbourne and the Radix Center and Soul Fire Farm in New York.
- Internet searching
 - Google, YouTube (specific searches only)
- Books/Pamphlets
 - *Retrosuburbia* – David Holmgren, Storey Country Wisdom Bulletins, *Weedless gardening* – Lee Reich, *Grow Good Grub* – Gayla Trail

Barrier – Accessing Resources (seeds, tools)

Resources/advice during normal times

- Visit any nursery or hardware store
- Contact your local community gardens
- Order online
 - Diggers, Garden Express

Resources/advice during COVID pandemic

- Visit small, local and independent nurseries and hardware stores
- Ask your community and neighbors if they have resources to share
- Join a seed swapping group near you on Facebook

Barrier – Time/Other Priorities

Resources/advice during normal times

- Join a community garden to split up the work
- Involve the whole family

Resources/advice during COVID pandemic

- If you are working from home or working less, use that extra time to spend more time in your garden

3.5 Seeding Hope – A Gardening Focused Facebook Group for Averill Park

After examining barriers and resources involved in gardening during the COVID-19 pandemic, I concluded that Facebook groups can be extremely helpful during this time to create a virtual gardening community which offers support, resources and information. I started a Facebook group called Seeding Hope two weeks ago. The group currently has 14 members and seven posts. Most of the posts have been members showing their spring gardening progress and the posts have been met with some supportive comments from others. One post and one comment asked questions that were answered by another member of the group. It does not seem like there was an urgent need in the community, as not many people joined but I have found it helpful through my own personal experience.

CONCLUSION

The data suggest that common barriers to gardening include renting issues such as space and landlord regulations, lack of community knowledge, lack of time allocated for gardening, and managing pests and weeds (Fig. 3). Resources and advice collected from the interviewees (Fig. 4-5) adequately address the lack of community knowledge and managing pests and weeds. The most helpful resources and advice include reaching out to your community through local garden clubs or community gardens, or talking to local growers at nurseries, referencing easy access websites or online classes, and starting small to let yourself learn by trial and error (Fig. 4-5). The main barriers during the COVID-19 crisis include accessing the community and reduced availability of seeds and seedlings (Fig. 7). Helpful resources for accessing the community during the crisis include joining a Facebook gardening group, accessing community gardening spaces while maintaining social distancing and calling community members instead of talking with them in person. I do not believe these resources adequately address the loss of personal interaction, or learning and fulfillment mentioned by the interviewees, but they might offer some solace. However, despite the lack of access to the community and some resources, participants noted they are gardening more because they are staying at home more. All twelve participants also reported positive benefits they are receiving from gardening during the pandemic, such as being outside and getting fresh air, exercising, and doing meaningful work (Fig. 8). Participants also reported gardening having relaxing, calming, meditative and therapeutic effects (Fig. 8).

Overall, this study was able to address some of the barriers to gardening during the COVID-19 crisis, such as accessing general information, the community, and resources. There were several barriers the study was not able to fully address, which included renting issues and in-person access to community during the COVID-19 crisis. The finding that gardening increases during times of crisis is consistent several other studies including Čepić and Tomićević-Dubljević (2017); Tomkins et al. (2019) and Tuton (2020). To my knowledge, there have been no other studies focusing on addressing barriers to gardening during the COVID-19 pandemic. Since climate change is likely to cause more frequent local and global crises in the coming years (IPCC, 2014, p.5), future studies should focus on increasing local food production in order to increase community resilience during times of crisis.

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APPENDICIES

Appendix A: Informed Consent Form

Informed Consent form for Participation in Study

Title of Study: Addressing barriers to urban gardening during the COVID-19 pandemic.

Researcher: Hannah Katz

I. Background/Purpose

The researcher (Hannah Katz) is an American university student studying with the School of International Training (SIT) through their Australia: Sustainability and Environment Action program. As part of the course, students are required to complete a 4-week research project on a topic related to sustainability in Australia. The goal of this study is to identify barriers to traditional and crisis gardening (gardening in the COVID-19 pandemic). The study will be completed using a literature review of past research and by interviewing Australian gardeners. This information will be used to 1) help the researcher compile resources which will be made public to those involved in traditional or crisis gardening, 2) evaluate the completeness of resources available for those looking to begin crisis gardening and 3) develop any missing materials that will help beginning gardeners be successful. *Before you agree to participate in this study, you should know enough about it to make an informed decision. If you have any questions, ask me.*

II. Information about participating

Participants in the study will be asked to

- 1) Complete a 40-minute interview over Zoom in which they will be asked about
 - a. Their gardening experiences
 - b. Personal barriers to gardening and solutions
 - c. Personal barriers to gardening in the COVID-19 pandemic
 - d. Resources they used or produced for beginning gardeners
 - e. Structural or systematic barriers to successful gardening
 - f. Experiences and anecdotal benefits from gardening
 - g. Advice to beginning gardeners especially during the COVID-19 upheaval

III. Risks of participating

Interview Risks

- 1) Discomfort related to talking about personal experiences and times of struggle/hardship
- 2) Discomfort related to talking about living in the COVID-19 pandemic.

IV. Benefits to participating

This study may benefit the participants in several ways including:

- 1) Opportunity to share their learned knowledge about urban gardening with those looking to get involved
- 2) Opportunity to have materials dispersed and used by others
- 3) Easy access to the resources compiled through this study

This study may benefit others in several ways including:

- 1) Access to resources and advice from other urban gardeners
- 2) Inspiring others with successful urban gardening stories
- 3) Spreading information about the benefits of gardening during a time of crisis

V. Confidentiality

You have the option of either remaining anonymous or of having your contribution to the study acknowledged. If you choose to remain anonymous, all personal information will be kept strictly confidential and will be only available to myself. No reference will be made in oral or written reports which could link you to the study. If you choose to have your contribution acknowledged, you have the right to choose how you would like to be referred to in the study.

VI. Participation

Your participation in this study is voluntary; you may decline to participate. If you decide to participate, you may withdraw from the study at any time. You may also decline to answer any specific question. If you withdraw from the study at any time, the information already obtained from you will be destroyed.

VII. Informed consent of participation

Sign below if you agree to participate in this research study

Subject's signature _____ **Date** _____

Researcher's signature: Hannah Katz

Date: April 20, 2020

Appendix B: Interview Questions

*Note – questions were adapted based on individual interviews.

- 1. How did you get involved in gardening?**
 - a. Did you have childhood experiences?
 - b. Did anyone influence you?
 - c. How long have you been gardening?

- 2. How would you describe your gardening experience?**
 - a. What emotions are tied with your gardening?
 - b. What are the successful parts of your garden?

- 3. What are the main reasons for the successful aspects of your garden?**
 - a. Have you received any support?
 - b. Is your location well suited for gardening?
 - c. What resources did you find helpful?

- 4. What are the main barriers you have encountered in your gardening experience?**
 - a. Is there any information you wish you had?
 - b. Is there any support you wish you had?
 - c. Do you think there are any structural or systematic barriers that affected your gardening success?

- 5. What advice would you give to those beginning a garden?**
 - a. What do you wish you knew?
 - b. What were the things you found most helpful in your experience?
 - c. Do you have any helpful resources?

- 6. Has the COVID-19 pandemic affected your gardening? If so, in what ways?**
 - a. Have any of the government suggestions – staying home, social distancing, traveling less, etc. affected your gardening?
 - b. Have any of your personal habits changed that affect your gardening?
 - c. Are you still able to access tools and resources you need to garden?

- 7. Has gardening benefitted you in any ways during the COVID-19 pandemic?**
 - a. Fresh air? Providing food to travel to the store less? Mental escape? Exercise?

- 8. What advice would you give to beginning gardeners during the pandemic?**
 - a. What kind of support do you think they would find useful?

Appendix C: List of Interviewees and Affiliations

Bec Talbot – SIT Study Abroad

Ben Atwood – Radix Center

Bryony Callander – Permaculture Crisis Response Group

Carol [requested to use first name only] – Permaculture Crisis Response Group

Erin Macfarlane – Permaculture Crisis Response Group

Eshana Bragg – Sustainable Futures Australia, SIT Sustainability and Environmental Action

Jess Harrison – Referred through Georgia Karavis of Sustain

John Ditchburn – Urban Food Garden

Kat Moore – Permaculture Crisis Response Group

Kegan Daly – Permaculture Crisis Response Group

Sharron Pfeuller – Sustainable Gardening Australia

Simeon Ash – Spoke and Spade

Appendix D: Qualitative Analysis

Emerging Themes:

Getting Involved in Gardening

Reason for beginning gardening	Times Mentioned	Quotes
Garden at childhood home/ parent involved	9	I remember the gardens of my childhood
Other childhood experience	6	
Community Influence	9	
Mentor/ Buddy	6	I can build a garden bed, but I wouldn't make myself do it. Having that buddy to help push you along, even if you have the skills or don't
Seen as a good thing to do, environment, health	5	
Took a course	7	
Culture/ Media	1	

Barriers

Barrier	Times Mentioned	Quotes
Renting/ strict/overbearing landlords/ council	6	
Urban Planning, Restrictions, Accessibility	7	
Going too hard too fast	2	
Knowledge gap – community knowledge, first steps/ point of purchase	6	I think a lot of people buy things without necessarily knowing what they're going to do with it when they get it home – Br I don't think I knew what I needed to know" Couldn't identify what was important
Time/Priorities	5	
Space	3	
Food System/ Stores	3	At turn of century people were spending 30% on food, veggies in the backyard was an efficient thing to do, as a result

		most people learned to grow from parents, knowledge in society, Great Depression – needed to grow, Baby boomers rejected gardening because it was connected to poverty. The great severing of knowledge
Speed of gardening compared to everyday life → inefficient	2	
Education gap about how to use food	1	
Money	1	
Pests/weeds	4	
Plant maintenance	1	
Gardening/community gardens are for old people	2	
Collaboration/ Nuclearized family – people living alone	2	That cocreation – the chat that comes from working with a buddy – collaboration -

Resources/ Support

Resource	Times Mentioned	Quotes
Nursery Folks	5	
Google/ YouTube Specific searches	8	I wouldn't want to push someone to just the internet -
Joining a group/ collaboration	5	
Community Gardens	5	
Community bringing people together, learning from community	7	I've put my snow peas out in hopes of running into my neighbors and talking to them about what they're growing – Br It'd be great to have some intermediary place to gather and learn and talk about things -
Gardening Aussie	4	
Local Institutions/ Teachers	7	
Garden Express Magazine	1	
SGA – info and courses	1	

Advice/ Helpful Information for Beginners

Advice	Times Mentioned	Quotes
Talk to people at local nursery	4	
Start small/ first easy success	9	It's better to start off with a small garden that's running efficiently than a large one with weeds. If you can handle a small one and work it into your life then you can expand -
Just do it!	4	Just give it a go, I probably held myself back from doing more things because I wanted it to be good Perfect is the enemy of good, just get it in
Planning/Research first	3	
Information specific to your location	5	
Understand/prep your soil	8	If you look after the soil, that's it you're done, if you get the soil right you don't have to worry about pests and watering Soil tests
Be intentional about what you want out of the garden	2	
Reach out to neighbors/ community for advice/ resources	9	
Get into a Facebook Group	5	Having access to people who have a lot of experience in gardening - Join an Facebook group, ask questions, people love to feel like they can help -
Find a book -everyone has one, or online	2	
Basic building blocks, soil, water and sun, set up	2	Soil, Water and Sun I know it sound obvious but really understanding those 3 things. Even though I've learned all this permaculture stuff there's something about the basics I want to focus on-

Meet people where they are	2	
Read a Book(s)	6	
Join a community garden	6	There you get access to a lot of experience and expertise
Trial and Error/ learning from mistakes – it’s a skill. Be kind to yourself when things fail	7	I’m not sure anyone is a green thumb or a brown thumb, it’s just practice and commitment. I wasn’t a good gardener but if you want to do it, it’s a learning process. Learnable skill – We’re always experimenting with developing new crops in our backyards – nothing is a failure – just succession and evolution just nature -
Grow what you eat!	3	There’s no sense growing it if you’re not going to eat it -

Experiences with Gardening

Mindset/ Emotions	Times Mentioned	Quotes
Puzzle, Challenging	2	
Wonder	2	
Happy/Joy	10	
Open to making mistakes/ learning process	3	
Positive	4	
Peace. Mindfulness	3	
Connecting/ in contact with earth	4	
Reenergizing	1	
Miracle of Life/ growing	6	It’s the sort of satisfaction you get out of raising children I guess, it’s making a contribution, a positive benefit to the world -
Interaction with kids and community	3	

Tone

Tone	Times Mentioned	Quotes
Only Positive	5	
Mostly Positive, some hardship	5	
Mix of positive and hardship		
Negative or lots of hardship		
Varied regarding experience	2	
Growth	1	

Effects of COVID

Effects (+/-)	Times Mentioned	Quotes
Lack of seed(lings) (-)	9	Diggers Aussie had to close down because they had too much demand
More time (+)	8	
Permission/ Forced to stay at home (+)	4	
Not going to be able to talk to the people at the farmers market (-)	1	
Something to do, excited and hopeful (+)	2	
Uncertainty of effort able to dedicate to gardening (-)	1	
Increased demand (+)	1	
Gardening More (+)	9	
Reminder that food security isn't always a given (+)	2	We haven't had a shortage, generational mindset that you can go to the supermarket and the choice is always there and for the first time people are saying oh, I might not be able to get everything all the time
Can't access community (-) (volunteers, education, social)	6	

Gardening During COVID

	Times Mentioned	Quotes
Exercise	5	
Nice to be outside/ Fresh air	9	Touching soil has the potential to release dopamine-
Relaxing/ Calming	7	
Sense of achievement	2	
Meaningful work (→ more resilient)	4	
Giving Life	2	
I've got a good hobby/ not bored	1	
Therapeutic/ Meditative	5	Gardening is like cheap therapy and you get tomatoes -
New Energy/ Rejuvenated	4	It's been a good push –

Appendix E: Participant Observation Journal

April 18, 2020 – Buying and planting seeds in COVID-19

I went to my local Ace Hardware store called Tremont's to look for seeds and garden equipment. They had most seeds but were lacking some of the more common ones especially tomatoes and zucchinis. They also did not have any seedlings like the nursery we would normally go to. They seemed to have a normal selection of other things including soil, weed mesh and planters. Last year we got seedlings from our local farm and likely will look there again.

In terms of planting seeds, I did not want to stay in the store to talk to someone about how to plant the seeds so I decided to look it up later. I mostly used the directions on the seed packets for depth of seed planting – though I later found out typically 2-3 times the diameter of the seed is how far it should be planted down to make sure it has enough stored energy to sprout. I planted in containers I already had at home from years of buying other seedlings and potted plants. I used knowledge from my own growing over the years. I also planted with my mom which was nice to have a support system as some people have mentioned. Especially for problem solving we were able to bounce ideas off of each other and have collaborative problem solving.

April 19, 2020 – Prepping soil with weed mesh and compost tea

I used weed mesh last year and it seemed to work fairly well so I tried it again this year. I did not read up on it at all just looked at the instructions on the mesh. In addition, I weeded and raked the garden plots because I thought it would be good to loosen up the soil and mix in some soil bought at the hardware store for nutrients? We have always used store soil to rebuild ours though I don't know if we actually need it or what we are specifically trying to build up. I have a vermiculture at my house and I have read before that it is good to use worm tailings to create a compost tea. I read up on compost tea and found that most places said it should be light brown in color. I diluted the dark brown that I had with water and then poked some holes in a plastic cup to use as a sprinkler head. I covered the garden with the compost tea and will leave it untouched for a couple weeks so it can soak in and isn't so concentrated – my gut tells me this is good and I have read about how pure fertilizer can burn plants so I suspect highly concentrated worm tailings probably aren't the best for the garden.

April 24, 2020 – Volunteering at Regional Food Bank Farm

I went with my mom to volunteer at the Regional Food Bank farm to learn about agricultural seed propagation and give back during this time of high food insecurity. I learned that this had been a cold snowy season and it will be a late planting season. I also learned how to “industrially plant seeds and that they use a mix of 12 parts soil to 1-part compost. They keep their plants drier than I do and I should probably lighten up on the watering since mine tends to grow a little bit of

green algae stuff and some mushrooms. However, theirs are getting a lot more sun in the greenhouse than mine are in the windows so I should probably try to get mine more sun!

April 25, 2020 – Set up Greenhouse and Trellis

After seeing that my plants probably need more light, I set up the greenhouse. I wanted to put it somewhere sunny but not block sun from any of the other plots. I set it up but I'm not sure at what temperature it will have to be before I can move my plants in there. I will need to do some more research. I do have a calendar for when to move stuff outside but that doesn't account for the greenhouse so I'll have to do more research. I have read in the OSU course and the permaculture blog that you can grow lots of things vertically to save space so I also built a trellis for zucchini, cucumbers, summer squash and maybe butternut squash though I will have to figure out how to support those heavy veggies. I will additionally be growing tomatoes in cages because that worked well last year and will be trellising peas and beans as I think have to be done like that. Anyway, I will keep learning about this stuff – especially growing in greenhouses!

April 26, 2020 – Trip to the Nursery and Planting Herbs

I visited a local farm stand and nursery to support local business and see what I could learn at the nursery. Many of my interviewees have commented on how talking to people at nurseries is one of the best ways to gain knowledge about the plants. At my local nursery at Cornell farm stand I found that I was not able to do this very well because of some of the effects of the COVID pandemic. First off, the nursery/farm stand used to be open 7 days a week but now they are only open Saturday and Sunday from 10-2 I suspect this was in part why it was fairly busy. I also assume that they have cut down some of their staffing during this time. Anyway, because of all of this I did not feel that there were associates around that I could ask about the nursery plants. Especially with social distancing, I did not feel comfortable approaching or discussing anything at length with anyone at the farm stand and my main goal was to get in and out as quick as I could. Instead when I got home with my basil and curly parsley, I looked up the varieties online and read about them there. It was sufficient but I'm sure talking to the planter would have been better especially for more localized growing information.

May 2, 2020 – Weeding and Prepping Soil

I don't think I really understand soil. I think it would be great to have a workshop I could go to in order to learn more or a community group that offers support. I also do not feel comfortable asking my neighbors right now even though it's likely that they have similar soils. I did find some good resources online when I looked later and may try learning about the soil again. During my time weeding I noticed that it was nice to be outside enjoying the sun and having a space where I couldn't hear or see other members of my house. Since we have all been cooped

up on top of each other the garden feels like a peaceful, solitary space which is much welcomed. The tension I sometimes feel from being indoors and having my ear space crowded by other household members working or eating or doing anything seems to mellow a little while I was out in the garden. I think I understand the relaxation and therapeutic nature participants mentioned. I also am experiencing joy in watching the seedlings grow and especially now I am finding it a source of hope and excitement.

May 3, 2020

Today I did some various activities around the garden. I retied the trellis to a system I think will work better and tried the soil tests. I found that having something else to do and think about is helping me to have other things to focus on and talk to people about which I think is a welcomed change across the board. I find that I can allow my mind to wander to problem solving in the garden rather than the COVID pandemic which is great. Thinking through things and problem solving what you have control over is helpful and feels like an achievement. Putting together seedling supports has been a social activity for me working with other members of my household. Having something to bring you together during this time and giving us something to do that seems to have real importance is good for us. I am finding that I am able to use my household as a small community during this time when I can't access the outside community as well.

May 5, 2020

Watching the seedlings and fixing all the small problems like light access, fruit flies, and creating supports is giving me sort of a long-term puzzle to figure out. I am reminded of one of the interviews who said that gardening is like a "grand chess game". I think this is helpful especially during COVID because I have a sort of experiment going on which keeps me excited to check in on it, make adjustments and observe the process.



GARDENING FOR BEGINNERS

ADVICE FROM EXPERIENCED GARDENERS

 **Start Simple and grow as you go!**
*Spinach is easy to grow and use

 **Grow what you like to eat!**
*Just make sure it's in season

 **Reach out to your community!**
*Community gardens, Facebook groups and neighbors are full of information

 **JUST DO IT!**
*Scoop some dirt, pop in a seed, water and see what happens

BASIC INFORMATION



Gardening 101

Greatist Gardinging 101, Deep Green Permaculture, Morag Gamble, Friends

Know your Location

Talk to your local nursery or community gardeners, join a local Facebook group

Know your Soil

Gardening Australia "Know your soil", start a compost, don't step on your soil, plant legumes

RESOURCES AND SUPPORT



Melbourne: CERES, Urban Food Garden, Leaf Root Fruit, Sustainable Gardening Australia, Kat Lavers, Melbourne's West Best Gardening Group on Facebook

Online/Anywhere: Facebook- Good Karma Network, OSU Permaculture course, your local nursery and community garden



Gardening Help COVID-19



How can I...

Try This

Access my
Community?



Join a local
Facebook Group

Access gardening
information?

*These resources provide
basic information, lessons,
DIY instructions and trouble
shooting resources



- Gardening Australia,
- Online classes
- Local Institution's
websites/
Facebook live chats
Check out:
SGA, CERES, Urban Food
Garden, the Plummery

Find seeds and
tools?



- Visit local nurseries
- Reach out to neighbors
- Find seed swap

Reasons to Garden during COVID-19



Good for your Mind!

Gardening during COVID-19 can help you...

- Relax and stay calm
- Feel positive and happy emotions
- Develop a skill and passion

***"Gardening is like cheap therapy,
and you get tomatoes"***

Good for your Body!

Gardening during COVID-19 can help you...

- Eat better to boost your immune system
- Exercise and move around
- Breathe in fresh air

All information taken from Katz (2020) Addressing barriers to gardening during the COVID-19 pandemic