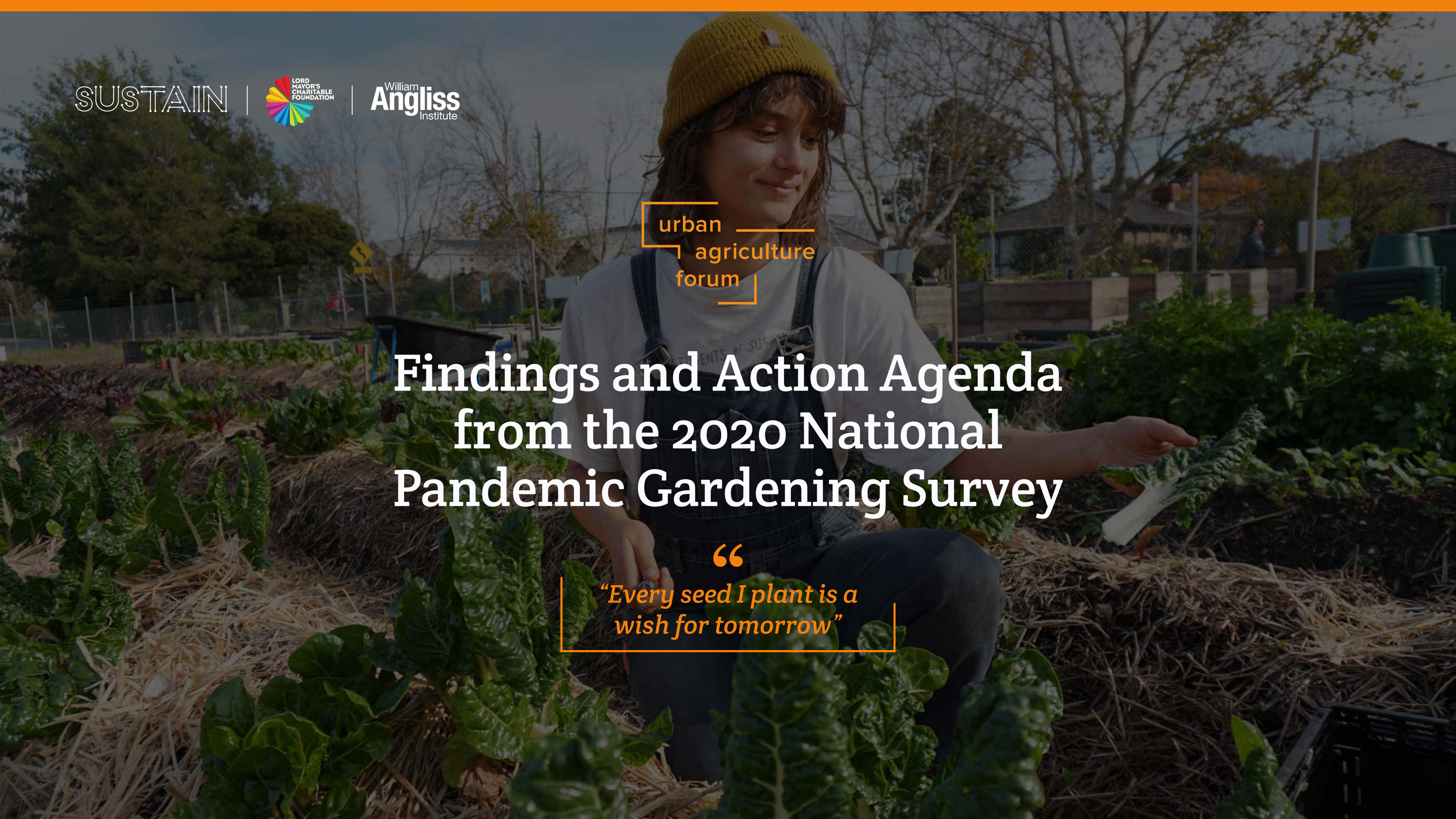

SUSTAIN | LORD MAYOR'S CHARITABLE FOUNDATION | William Angliss Institute

urban agriculture forum

Findings and Action Agenda from the 2020 National Pandemic Gardening Survey

"Every seed I plant is a wish for tomorrow"

Funder

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Project partners

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Contents

Costa Georgiadis

Landscape architect and co-host of ABC Gardening Australia

We only need to turn to nature to see the impact that disturbance has. Shifts and changes occur when the status quo is shaken up, and light reaches places that it may never have been able to in the past: agitating, aggravating, encouraging and inspiring people to new outlooks and adjusted perspectives.

The COVID-19 pandemic was that tree that fell in the forest. It cleared new paths and opportunities around the very reactions that initially bubbled to the surface: a fear about the food supply chain and its ability to cope in such uncertain times.

The Pandemic Gardening Survey was an invitation. It put out the welcome mat and asked the community where gardening fit into their world, using 2020 as the catalyst. Read just a handful of the responses submitted and you realise how deeply people engaged with tasks otherwise taken for granted, such as buying food that was expected to be convenient and available 24/7. People have walked more, observed their local landscapes more, and appreciated their importance on a daily basis. Layer onto this the hope and focus that growing your own food and plants can bring during times of adversity, and the survey became a very concise barometer from which the therapeutic importance of gardening and horticulture could be expressed.

Gardening is the metronome of life that brings rhythm, familiarity, hope and action to the day to day.

Andrea Gaynor

Associate Professor of Environmental History

It is clearer than ever that edible gardening has multiple social, economic, health and environmental benefits. Some of these benefits have long attracted people to edible gardening, while others are growing in significance in the unique circumstances of the early 21st century. The evidence points to the crucial role edible gardening can play in achieving a more resilient, just and sustainable society.

For example, people have often turned to edible gardening in times of crisis – whether war or economic depression or oil shocks. Not only does it provide greater food security – and the psychological security of self-provision – but it can also be an important means of stretching a strained household budget. Indeed, while 20th century gardening magazines often debated whether it was possible to grow one's own food for less than buying it, the Pandemic Gardening Survey reveals that in the 21st century there is a sector of society reliant on edible gardening to make ends meet. While edible gardening should not be a substitute for effective income support, it certainly can make an important contribution to food security, where households have access to sufficient knowledge, land and inputs.

Just as important as economy is the contribution of edible gardening to health and wellbeing. In the early 20th century, a home vegetable garden was seen as an ideal way for men – who were increasingly working in sedentary occupations – to get good, wholesome exercise. In the early 21st century, fewer than half of all adults in Australia are sufficiently active for good health, and productive gardening provides a form of exercise available to all ages and abilities. Other physical health benefits include access to fresh and healthy food, as well as exposure to health-giving soil microbes.

The Sustain survey also starkly illuminates the growing importance of edible gardening for mental health and wellbeing in the context of increasing personal stress and social disconnectedness. Respondents provided rare and valuable first-hand insights into how gardening helped them feel calm, gave them hope, and connected them to the Earth and to each other as they shared produce, knowledge, and stories. Whereas edible gardening has historically been adversarial – gardener vs bugs – the survey reveals a growing understanding that edible gardening can help to support biodiversity and ecosystem resilience.

Future historians will sing the praises of the Sustain team for producing a unique and precious insight into productive gardening in a time of crisis. One hopes those same historians will also describe the way in which the Pandemic Gardening Survey, and the policy prescription it has informed, helped to nudge our society down a more fair, humane, and sustainable path.

Executive Summary

> *I think the pandemic has exposed the many inadequacies of the socio-political status quo. The emphasis on infinite growth at the expense of the wellbeing of people and nature [has been] made clear. The massive decrease in air pollutants when traffic and industrial processes suddenly reduced was a clear image of what climate action could potentially achieve. I hope that humanity, in general, uses this opportunity to reflect on how positive action can cause immense change. Whether it actually happens is another question."*
>
> **Female gardener, Anglo-Australian, 35-44, Melbourne**

Key findings

This report identifies the key findings and recommendations of the Pandemic Gardening Survey conducted from mid-June to mid-July 2020. The response was overwhelming with 9,140 respondents and tens of thousands of comments in which people shared their stories, experiences, ideas and feelings.

The findings of the survey were clear and powerful

01 Edible gardening matters immensely to many thousands of Australians and made a significant positive difference for people during lockdown.

02 Edible gardening can, and does, contribute to food security and dietary diversity for low-income households who have knowledge, space and support to grow food.

03 The overwhelming majority of respondents stated that edible gardening substantially improved their mental wellbeing.

04 Growing food, particularly in visible or public spaces, has a powerful capacity to bring people together, create new friendships and foster social connectedness.

These are major reasons why growing food in or near towns and cities deserves greater recognition and support.

An Action Agenda for Edible Towns and Cities

Accordingly, on the basis of these findings and associated research, practice and policy from Australia and internationally, we have developed an action agenda in the form of a Roadmap for Transformation. This Roadmap has six key elements, each of which reinforce and mutually support each other.

01 **Urban planning and land use:** Make much more land available for edible gardening.

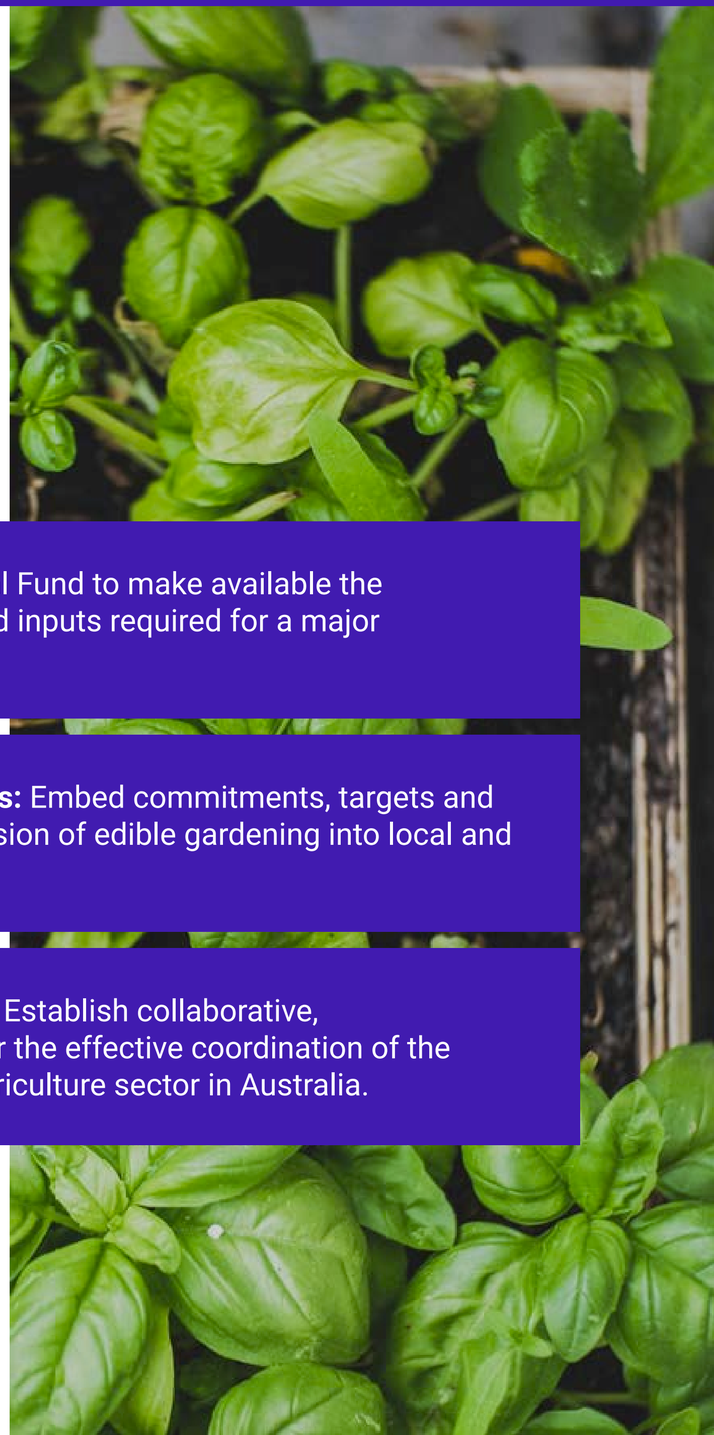
02 **Capacity building:** Resource organisations and networks to provide the advice, information, mentoring and guidance that new gardeners in particular are asking for.

03 **Finance:** Create a major annual national Edible Gardening Fund, co-financed by the federal and state governments and the development industry, and collaboratively managed by the sector itself, to resource a mass expansion of edible gardening.

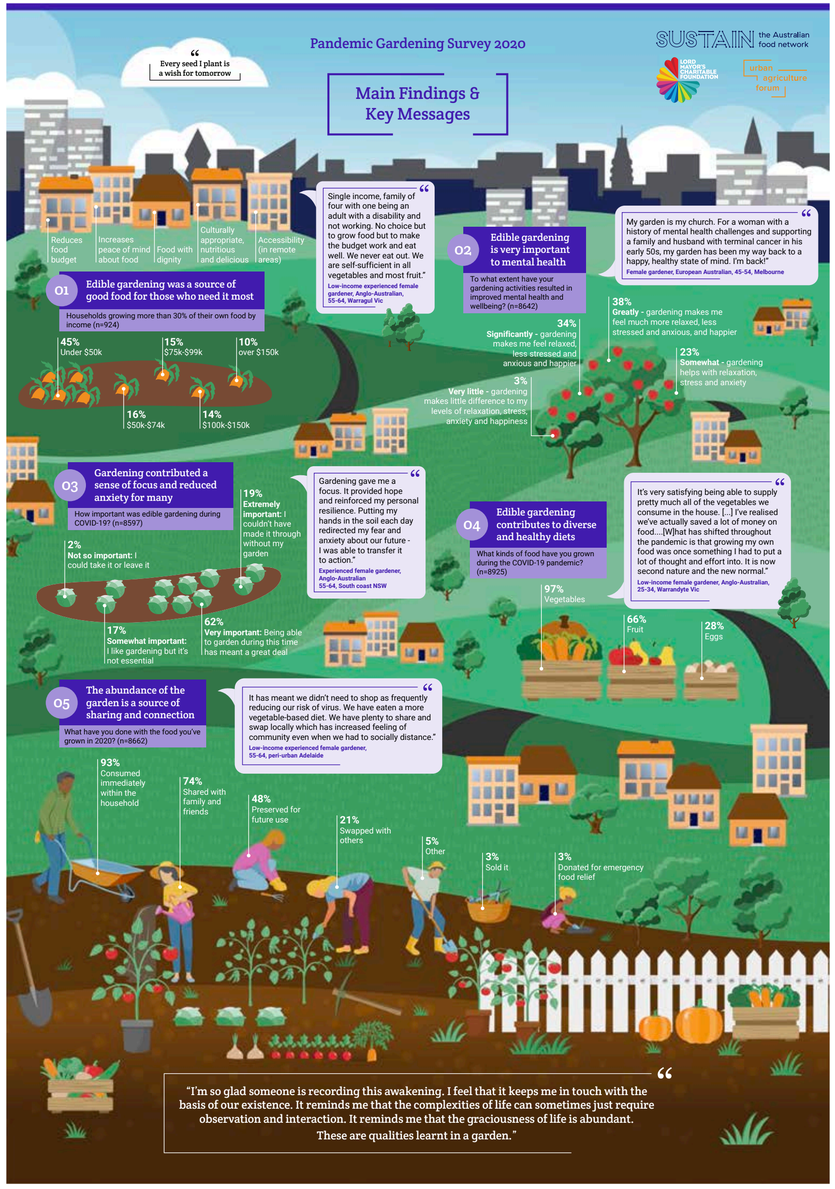
04 **Infrastructure:** Use the national Fund to make available the materials, equipment, tools and inputs required for a major expansion of edible gardening.

05 **Policies, plans and frameworks:** Embed commitments, targets and action plans for a mass expansion of edible gardening into local and state government policies.

06 **Governance and coordination:** Establish collaborative, multi-stakeholder platforms for the effective coordination of the edible gardening and urban agriculture sector in Australia.

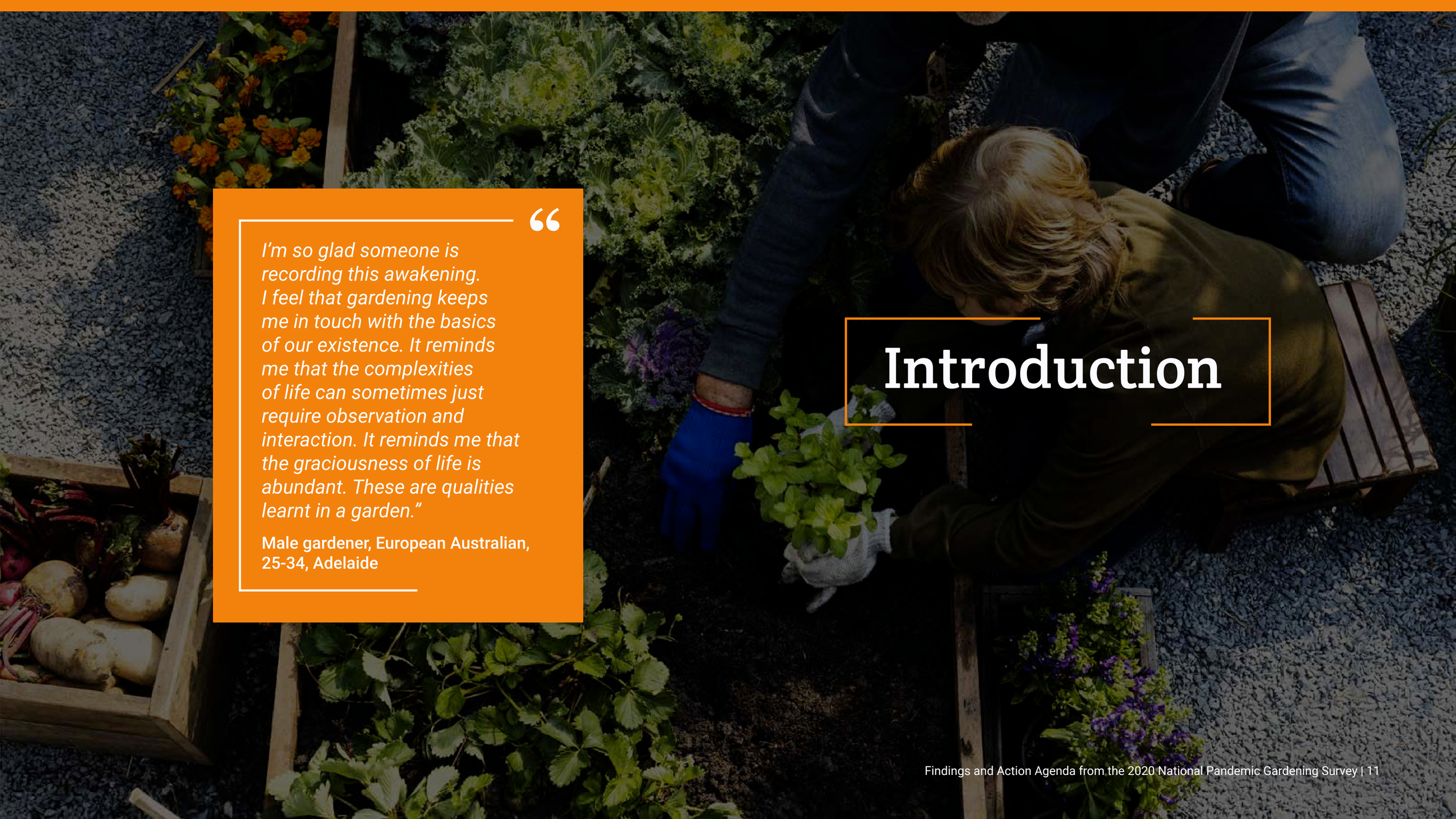


This is an ambitious yet achievable agenda which, if even partly implemented, would go a long way towards realising the vision shared by hundreds of thousands: to make Australian towns and cities edible.



View the infographic in full, visit https://sustain.org.au/projects/pandemic-gardening-survey-infographic-key-messages

View the infographic in full, visit https://sustain.org.au/projects/pandemic-gardening-survey-infographic-action-agenda



Introduction

I'm so glad someone is recording this awakening. I feel that gardening keeps me in touch with the basics of our existence. It reminds me that the complexities of life can sometimes just require observation and interaction. It reminds me that the graciousness of life is abundant. These are qualities learnt in a garden."

Male gardener, European Australian, 25-34, Adelaide

COVID-19 and the food system

The crises in our food system have their roots in the imperative for short-term profit and productivity at the expense of human and ecological health and wellbeing.

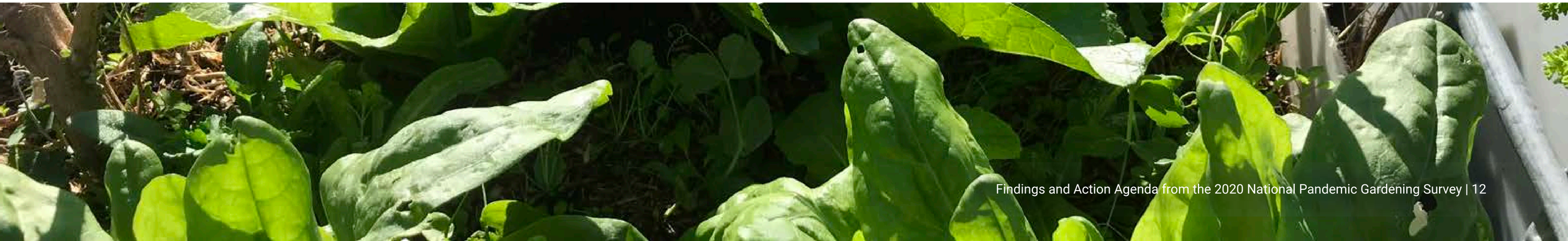
The third decade of the 21st century began in a dramatic and unprecedented manner. In the early days of January large swathes of Australia's east coast were ablaze in the most catastrophic bushfires the country had ever witnessed. The deaths of dozens of people, the destruction of thousands of homes and the loss of an estimated 3 billion insects, birds and mammals announced in unmistakable terms that we have fully entered the era of the climate emergency.

The COVID-19 pandemic arrived almost immediately in the wake of the fires. By late March, many parts of the world, Australia included, were in lockdown. In the case of Melbourne, this lockdown only paused briefly for a few weeks in the middle of the year, and at the time of writing (November 2020) has only just begun to be eased.

The pandemic starkly revealed the inequities and fragilities of the food system, both in Australia and globally. We saw sharp rises in food insecurity, and at the same time significant increases in food waste as farmers selling into hospitality and tourism markets could find no outlet for their produce.[1] Disturbing stories and images portrayed farmers in the United States pouring millions of litres of milk down drains, destroying animals, leaving vegetables to rot or ploughing them back into fields.[2] Many of the workers most exposed to the virus were part of the food system: farm workers - many of them migrants; abattoir workers; and warehouse and packing workers.[3, 4] Dependency on migrant and backpacker workers, now significantly decreased due to the pandemic, revealed further vulnerabilities within the food system.[5] Globally, the World Food Programme has warned of a doubling in levels of extreme hunger and malnutrition in coming months.[6]

Foodbank Australia's annual Hunger Report documented a 47% increase in demand for emergency food relief during COVID-19.[7] This demand is expected to continue to increase into 2021.[8] Renters in particular are experiencing significant hardship, with a recent study showing that just over 40% struggled to make ends meet with paying rent and so did not have enough money left to 'afford bills, clothing, transport and food during the pandemic.'[9]

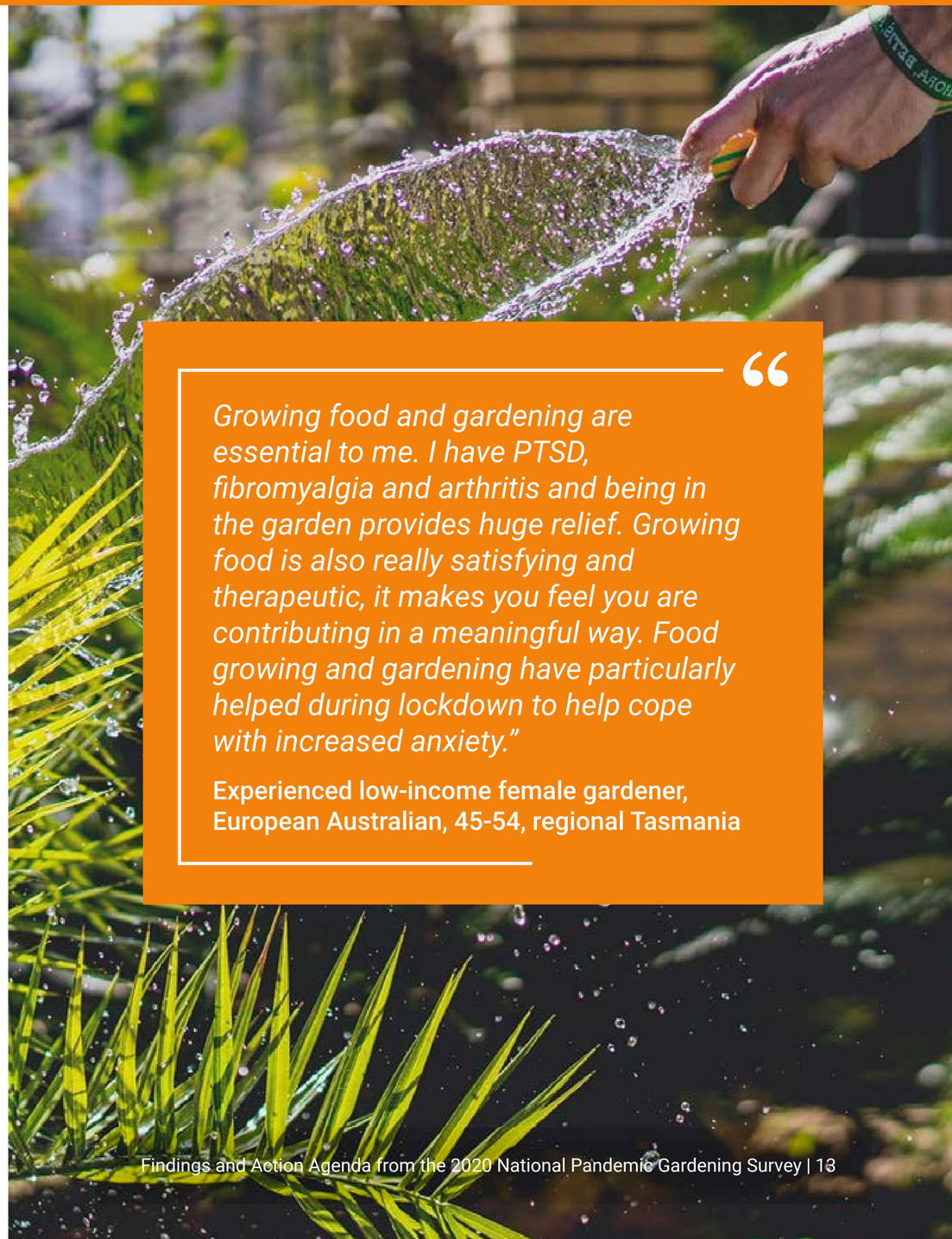
Locally, nationally and globally, the pandemic has been 'a wake-up call for food systems that must be heeded', in the words of the International Panel of Experts' Communique on COVID-19 and food systems issued in April 2020.[10] At the same time, as the authors noted, 'the crisis has offered a glimpse of new and more resilient food systems', heralding a path towards a food system transformation 'that could deliver huge benefits for human and planetary health'. The findings of our survey certainly confirm this assessment: major change is needed urgently, and survey respondents overwhelmingly agreed that the crisis has created the opportunity for such change to occur.



The burden of chronic disease and mental illness in Australia

As the cliche goes, “we are what we eat”, and increasingly, what Australians eat is making us sick and shortening our lives. Chronic disease, much of it related to poor diet and lack of physical activity and thus preventable, affects half of Australian adults and costs the country $70 billion per year.[12, 13] This disease burden has risen rapidly in the past 30 years. In 1989-90 the Australian Institute of Health and Welfare (AIHW) reported that the direct cost of dietary-related disease and ill-health was $1.52 billion, rising to $2.267 factoring in indirect costs.[14] By 2011, with a quarter of Australian children and two-thirds of adults classified as overweight or obese, the AIHW reported that the economic costs had risen to $8.6 billion.[15] Last year, the Dieticians Association of Australia estimated the direct and indirect costs of obesity, heart disease and Type-2 diabetes at close to $60 billion annually.[16]

Even this enormous burden is dwarfed by the costs of mental illness. Last year the Productivity Commission estimated these costs to be $180 billion annually, or $500 million every day, with 8 million working days lost.[17] The combined costs of mental illness and obesity, at $240 billion annually, exceed Australia’s total healthcare spending ($185 billion) by about a third. Yet our spending on preventive healthcare is only $2 billion, or 1.34% of total health spending - less than half the amount spent by the UK, the US, Canada and New Zealand.[18] The shockingly low priority given to preventive health spending over many years was characterised as ‘disastrous’ by the Public Health Association of Australia in their response to the October 2020 pandemic federal budget.[19]



> *Growing food and gardening are essential to me. I have PTSD, fibromyalgia and arthritis and being in the garden provides huge relief. Growing food is also really satisfying and therapeutic, it makes you feel you are contributing in a meaningful way. Food growing and gardening have particularly helped during lockdown to help cope with increased anxiety.”*
>
> **Experienced low-income female gardener, European Australian, 45-54, regional Tasmania**

About the Pandemic Gardening Survey

The significance and impact of the COVID-19 pandemic will take years, if not decades, to fully appreciate. The good news is that recognition of food system crises and fragilities is growing and efforts to transform the food system to being life-sustaining rather than life-destroying are rapidly gathering pace.

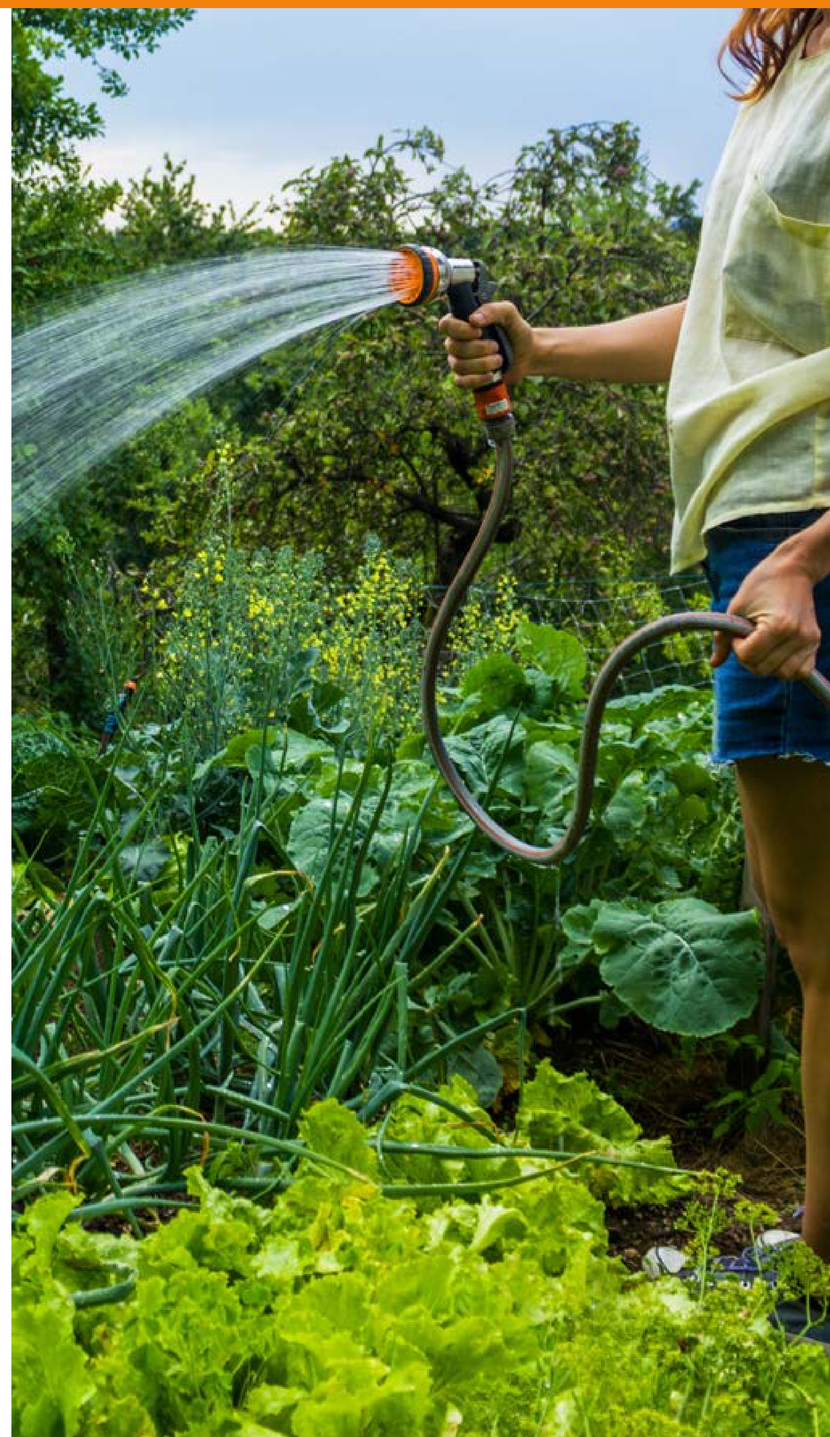
The Pandemic Gardening Survey, conducted by Sustain on behalf of the members of the Steering Committee for the 3rd National Urban Agriculture Forum, takes its place amongst these efforts at transformation. We already know that edible gardening is of great value and meaning for thousands of Australians. In conducting the survey, we sought to understand the experience of these gardeners during the pandemic with a particular focus on the contribution of edible gardening to mental and physical health and wellbeing. More specifically, what importance did people place on growing their own food? Where did people grow their own food, and what did they do with it? What forms of support do gardeners need?

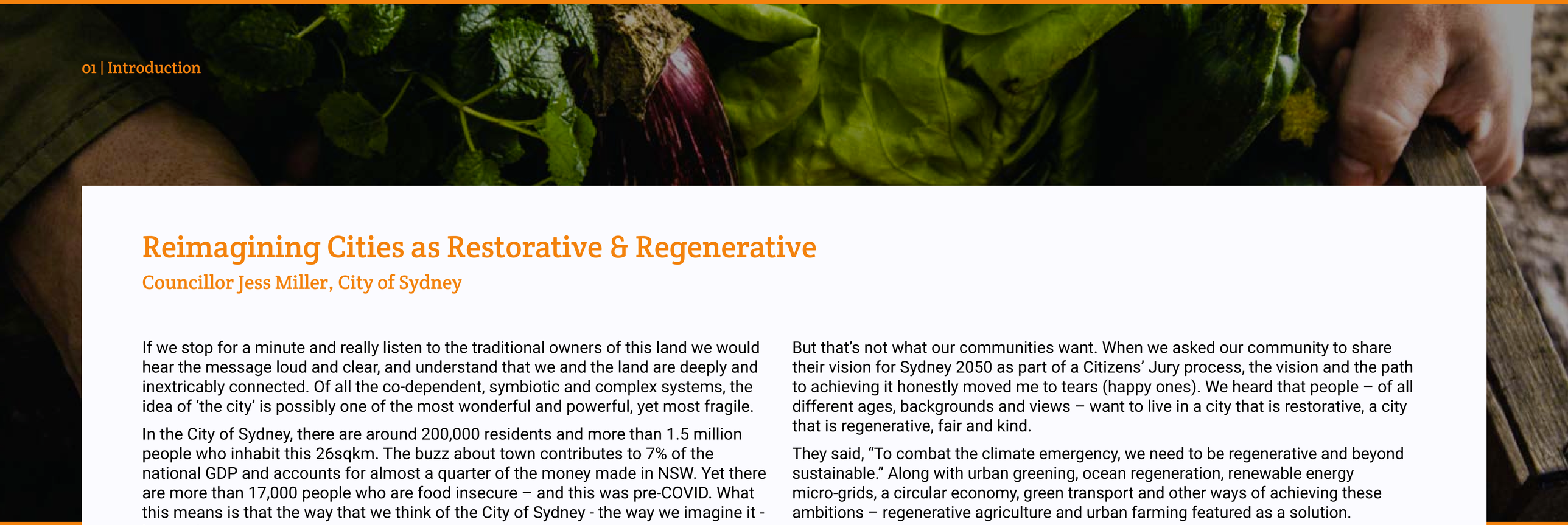
The survey results make a powerful case for much greater resourcing and support for edible gardening. Respondents consistently reported that edible gardening makes a major contribution to their improved physical and mental health and wellbeing as well as creating greater social connectedness and stronger communities.

We believe this report's findings show that, firstly, edible gardening has a transformative potential at the individual and community level and that, secondly, it warrants a major commitment as an urgent matter of preventive public health in Australia. That is why, as set out in the second infographic on page 10, we have laid out an action agenda and roadmap for transformation to make Australian towns and cities edible, the centrepiece of which is the establishment of a $500 million national Edible Gardening Fund. This fund would generate and support thousands of jobs around Australia, bring communities together, support food security in a dignified way, build food-growing skills and ecological literacy of gardeners and contribute to improved mental wellbeing and physical health.

This agenda does not replace the need to tackle the structural inequities and weaknesses of our food system, or for that matter of our society and economy more broadly. It does, however, propose a vision and a roadmap for more liveable, connected and thriving cities and towns.

> **Now is the time to be bold in our vision and our program. The circumstances demand it of us.**





Reimagining Cities as Restorative & Regenerative

Councillor Jess Miller, City of Sydney

If we stop for a minute and really listen to the traditional owners of this land we would hear the message loud and clear, and understand that we and the land are deeply and inextricably connected. Of all the co-dependent, symbiotic and complex systems, the idea of 'the city' is possibly one of the most wonderful and powerful, yet most fragile.

In the City of Sydney, there are around 200,000 residents and more than 1.5 million people who inhabit this 26sqkm. The buzz about town contributes to 7% of the national GDP and accounts for almost a quarter of the money made in NSW. Yet there are more than 17,000 people who are food insecure – and this was pre-COVID. What this means is that the way that we think of the City of Sydney - the way we imagine it - has major consequences.

If we shape our cities and urban places by an idea of 'success' that serves only to extract, consume and discard, then we propagate the notion of a 'parasitic' city, a place of winners and losers. A place that is all about taking – from the land, from nature, and from one another. A place of scarcity, and inevitably misery and loneliness.

But that's not what our communities want. When we asked our community to share their vision for Sydney 2050 as part of a Citizens' Jury process, the vision and the path to achieving it honestly moved me to tears (happy ones). We heard that people – of all different ages, backgrounds and views – want to live in a city that is restorative, a city that is regenerative, fair and kind.

They said, "To combat the climate emergency, we need to be regenerative and beyond sustainable." Along with urban greening, ocean regeneration, renewable energy micro-grids, a circular economy, green transport and other ways of achieving these ambitions – regenerative agriculture and urban farming featured as a solution.

As an elected community representative, with a responsibility to make decisions that have the power to shape the future, there is little that is more empowering than serving a community that shares your ambition for change. A community that is equally sensitive to the truth I know and feel: that the system we have inherited is broken.

I firmly believe that now, more than ever, is the time to re-imagine, re-connect, and transform the delicate system of which we are a part and agree with what this valuable piece of work says: that there is no better place to start this than in a garden.

About the Gardeners

The survey achieved excellent national geographic coverage with the 9,140 respondents representing 62% of postcodes in Australia. Although the majority of respondents were in urban areas, there was good representation from regional, rural and remote parts of Australia.

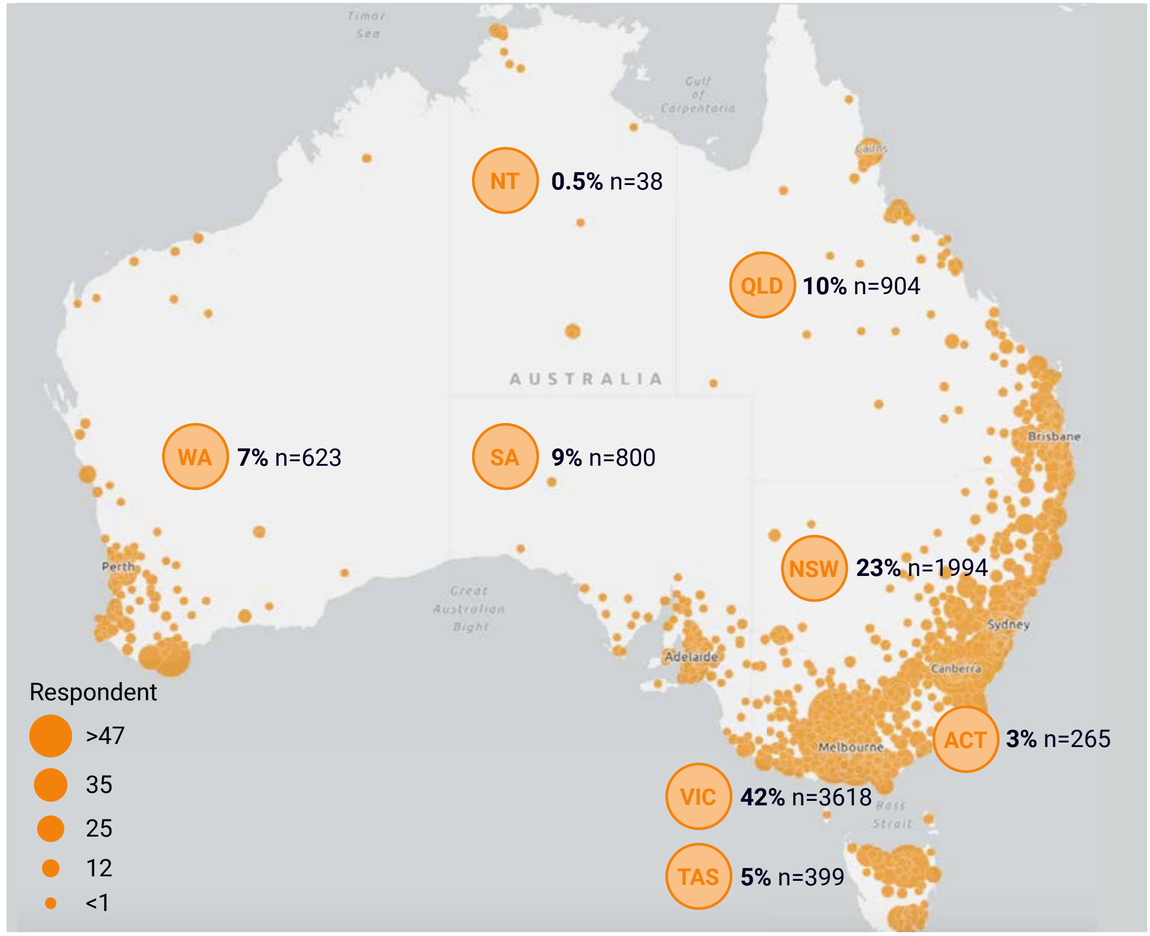
Over half of respondents (52%) were over the age of 55, of which 27% were over the age of 65. The ethnic and cultural background of respondents broadly reflected the wider Australian community, as revealed by the National Census. Respondents were overwhelmingly female (77%).

Most respondents (70%) reported a lower household income than the national average of $117,000 per annum.[11] Approximately a quarter of respondents reported a household income below $50,000, which is the poverty line in Australia for a family of four.

Respondents were, on the whole, fairly experienced gardeners, with over half (54%) having more than 10 years' gardening experience. However, a significant minority (n=761) were new gardeners, with less than a year's experience; and of that number, 341 commenced gardening since the COVID-19 pandemic.

> "Being able to garden and have some food security means everything to our small family. For myself, it has allowed me to tackle family life with a healthier mental and physical state. For my family, it meant less risk (going to supermarkets) and less waste. Our community is happier and much closer now we have started swapping vegetables and resources."
>
> **Low income gardener, gender unspecified, southeast Asian, 25-34, outside Hobart**

Almost half (49%) of respondents grew less than 10% of their own food, but more than a third were growing 10-30% of their own food. The remaining 14% grew more 30% of their own food.

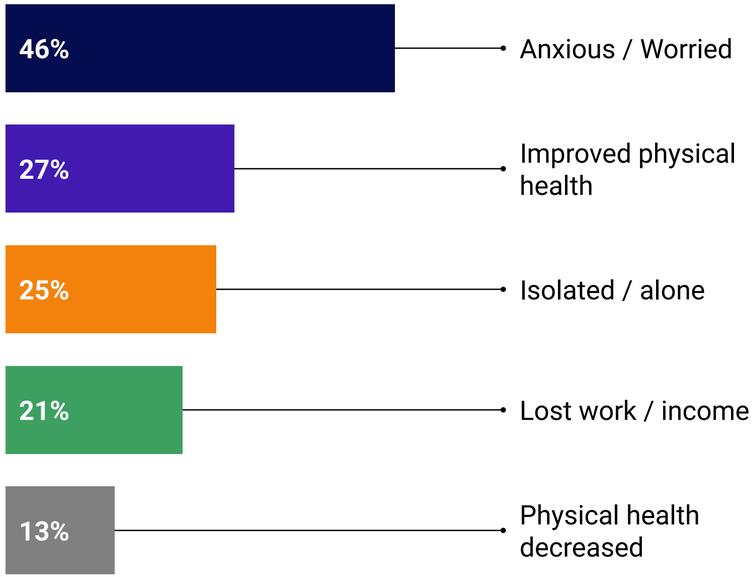


The pandemic experience

A core purpose of this survey, as noted earlier, was to understand the experiences of gardeners during the pandemic, prompted in part by media reports that nurseries were selling out of seeds and seedlings and that, with so many people at home, people were spending more time edible gardening, or taking it up for the first time. We were also aware that the advent of the pandemic itself, together with the restrictions and drastic curtailment of economic and social activity, were having a significant impact on people's mental health and sense of wellbeing.

> I have planted a wide variety of herbs, fruit and vegies that I can cook, eat and share with my close friends. I've never been able to do this as extensively and as well until lockdown."
>
> **Female low-income gardener, Indigenous, 45-54, Cairns**

What impact has the pandemic had on you? (n=8,396)



Unsurprisingly, the pandemic had a negative impact on many gardeners. Almost half (46%) of respondents reported feeling anxious and worried; over a quarter (27%) felt isolated and alone. Unsurprisingly, 21% reported losing work or income. Despite being in the midst of a global pandemic, only 13% described a decrease in physical health. More than quarter (27%) reported that their physical health improved. Many people attributed this to having more time to take care of themselves, spend with family or take up new creative pursuits.

> The pandemic has been positive for our family's mental and physical health. Having a large garden has meant we all spend more time together and with purpose."
>
> **Female gardener, European Australian, 35-44, Bowral NSW**

Some commented that they felt happier during the pandemic, even amongst those that lost work or income.

A common sentiment was having time to focus on what really matters.

Many respondents reflected on an imbalance between the pressures of and time dedicated to their working lives prior to the pandemic compared to the time needed to maintain their health, relationships or, in some cases, to recover from serious illness.

> I have recently completed treatment for cancer. This shutdown has made me do the right thing and rest. Without the shutdown, I feel I would have tried to carry on as usual."
>
> **Low-income new female gardener, European, 65-74, regional SA**

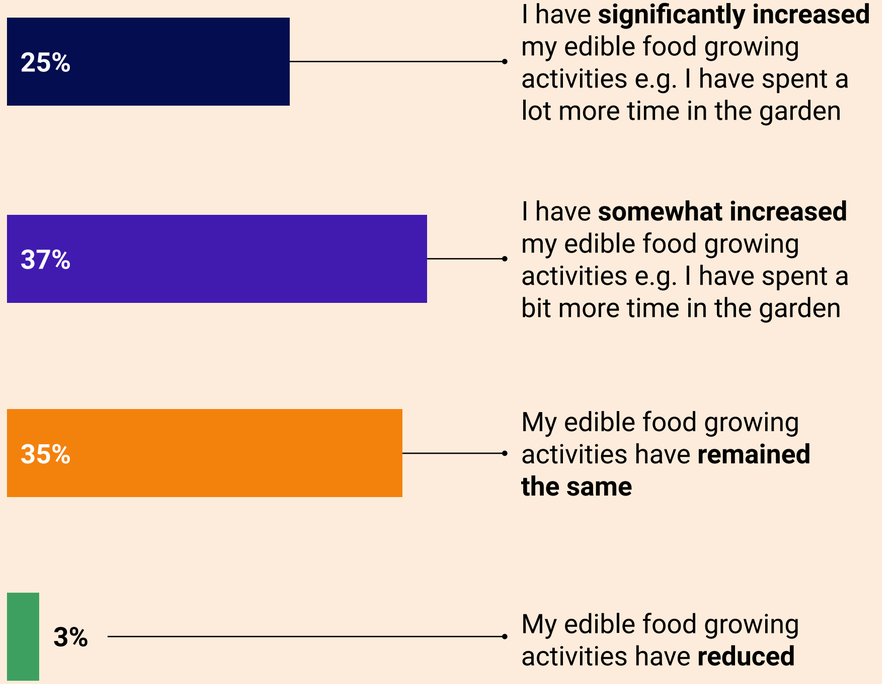
It should be noted, however, that people reported very different experiences of the pandemic, particularly those for whom work actually intensified or those who lost work and were not eligible for government support. Uncertainty about employment added to the anxieties that the pandemic created.

> [It's been] stressful and exhausting. Work intensified these few months for me as a lecturer in higher education. Uncertainty makes it difficult to plan for the future. Concerns with future work. Husband's work also intensified greatly. Working from home is great, but COVID-19 as the driver for working from home is not great."
>
> **Female gardener, Asian Australian. 45-54, Sydney**

Did the pandemic lead to more edible gardening? The short answer is yes.

A quarter of respondents significantly increased their gardening activity, and 37% reported somewhat of an increase. While 35% indicated their gardening activity remained unchanged, 3% reported that the pandemic reduced time spent gardening.

What impact has the COVID-19 pandemic had on your edible food growing activities? (n=8,633)

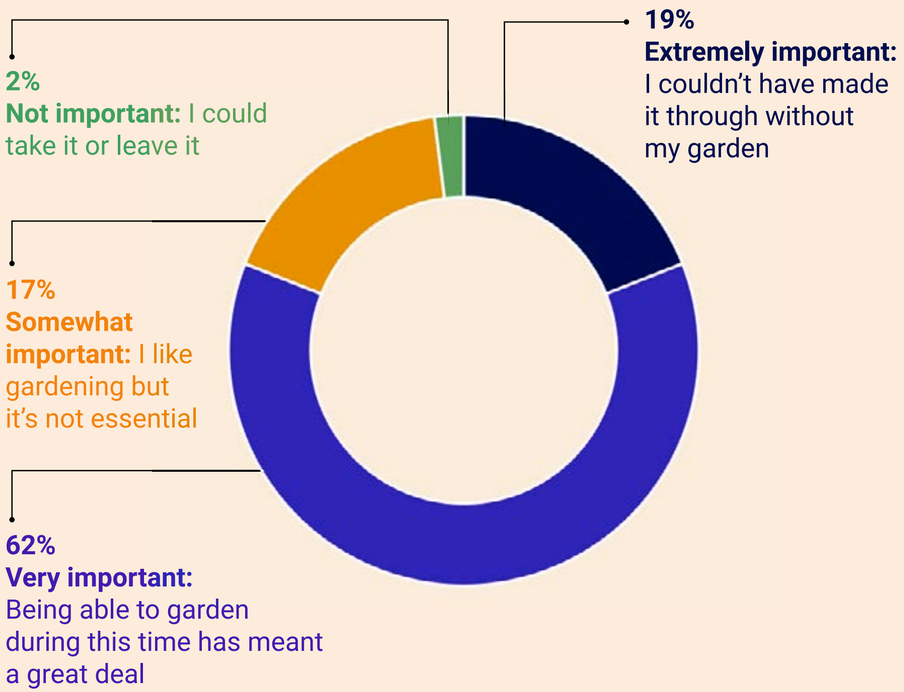


Gardening was clearly very important to people during the pandemic, and this was consistent across age and household income. Close to 20% of respondents said they could not have made it through the pandemic without their garden. An additional 62% stated that the garden meant a great deal to them during the pandemic. Only 2% said they could take or leave their garden.

This data is supported by extensive comments throughout the survey, with many speaking about how the garden brings calm and a focus on the future. A new gardener in NSW described how the garden brought her "peace, happiness, comfort, generosity, connections, health, and nourishment". An older and experienced gardener from the NSW south coast wrote that gardening "provided hope and reinforced my personal resilience. Putting my hands in the soil each day redirected my fear and anxiety about our future", while another respondent from Tasmania stated simply:

> **"There is a future when you garden".**

How important was edible gardening during COVID-19? (n=8,597)



Edible Gardening: A Recipe for Health and Wellbeing

> *My concern is that politicians don't listen to the positive effect on society of activities such as gardening and continue to focus on big business for economic growth. My health is so good now through gardening that I am able to be back in the workplace. Imagine if this effect could be replicated throughout the community. Surely that would be an economic benefit worth having."*
>
> **Female gardener, Anglo-Australian, 45-54, South Gippsland Vic**

Photo credit: Community Gardening Australia

Food security and edible gardening

Australia is now officially in its first recession for 30 years, and hundreds of thousands of people have lost work and income. This comes after four decades where income and wealth inequality has been increasing, both within Australia and globally.

Foodbank Australia and frontline emergency food relief agencies confirm that there has already been surging demand for their services.[20] Food insecurity is anticipated to increase sharply in 2021 with the ending of the JobSeeker supplement and JobKeeper subsidies.

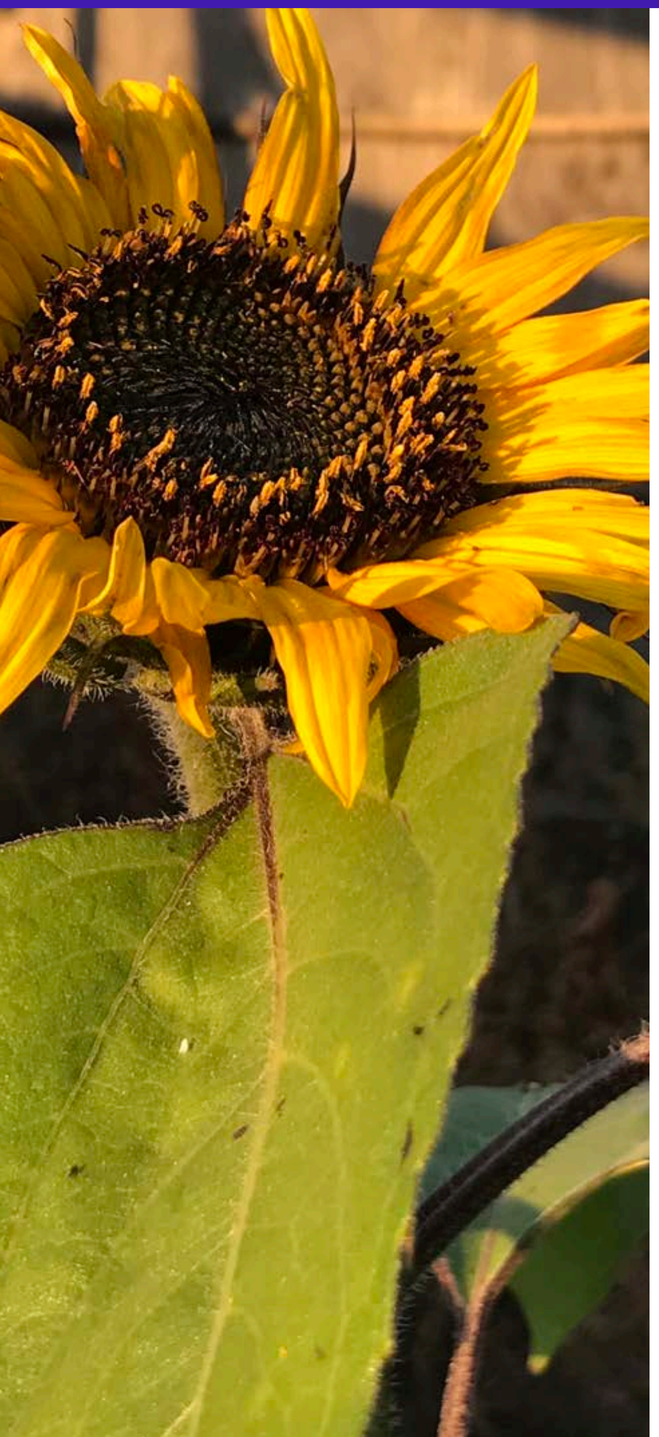
> “[Edible gardening] assured food security for myself and for others as I grow surplus to share.”
>
> **Experienced, low-income female gardener, Anglo-Australian, 55-64, near Goolwa, SA**

Edible gardening is important to food security for a number of reasons. First and most obviously, it can stretch the food budget. Secondly, it provides peace of mind to know there is food in the garden. Thirdly, it provides a source of food with dignity, invoking none of the stigma that causes many people to avoid food relief agencies. Ballarat and other communities have created Food is Free initiatives for anyone who needs access to free food.[21] We do not suggest that these initiatives should replace food relief agencies, but they are one way that communities can, and want to, offer welcome support to those in need. Fourthly, gardeners know that garden produce tastes better and is fresher. A food garden is also an important source of culturally appropriate foods that are not available in supermarkets. Community gardens run by Cultivating Community at public housing estates around Melbourne reveal an astonishing array of fruit and vegetables that are of great cultural value to residents.[22] Lastly, and importantly, many remote communities are hundreds of kilometres away from the nearest supermarket and rely on their gardens for fresh food. In remote Aboriginal communities, fresh food can be extremely expensive and of very poor quality, which does not make it appealing to eat.[23]

Photo credit: Food Is Free Inc.

Edible gardens matter for food security

01. Reduces food budget
02. Increases peace of mind about food
03. Food with dignity
04. Culturally appropriate, nutritious and delicious
05. Accessibility (in remote areas)

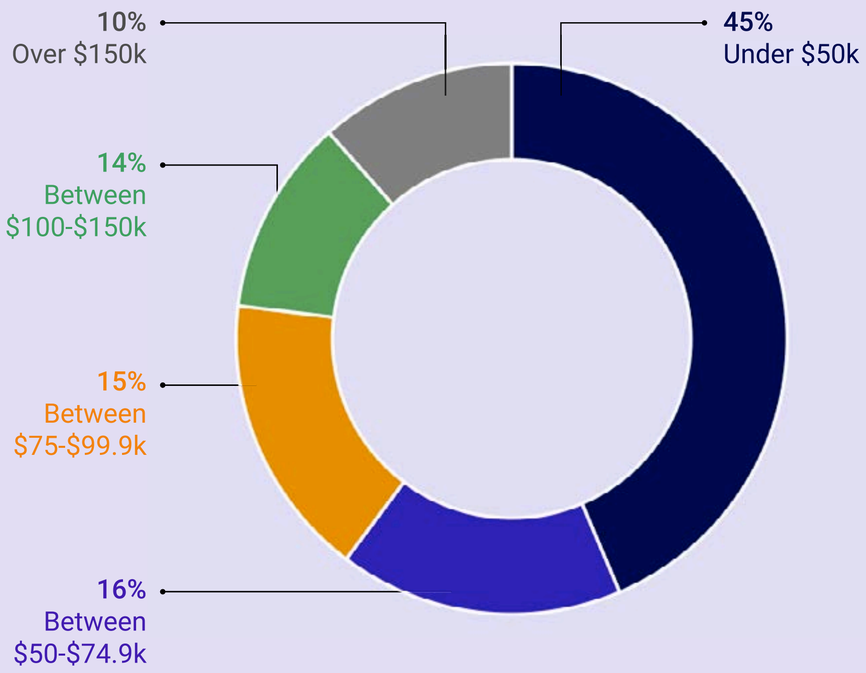


The survey revealed the importance of edible gardening for households with incomes of $50,000 or less per annum.

As the graph to the right shows, low-income gardeners were amongst the most productive gardeners. As household income goes up, the less likely a gardener is to be growing significant quantities of their own food. This challenges the assumption that edible gardening is the exclusive domain of the privileged, a significant finding, which itself justifies a major investment in supporting low-income households to grow more of their own food.

> “Single income, family of four with one being an adult with a disability and not working. No choice but to grow food but to make the budget work and eat well. We never eat out. We are self-sufficient in all vegetables and most fruit.”
>
> **Low-income female gardener, Anglo-Australian, 55-64, Warragul Vic**

Households growing 30% or more of their own food by household income (n=924)



Dietary diversity

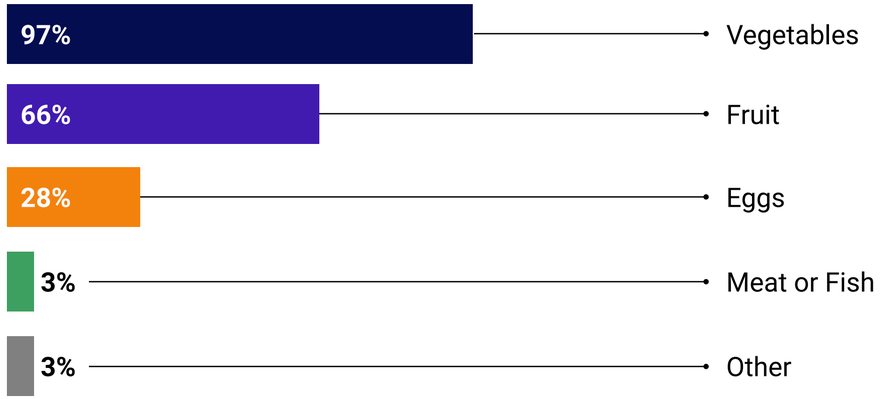
The Australian Institute of Health and Welfare reported in 2018 that a meagre 7% of adults and 5% of children eat the recommended daily serves of vegetables.

Edible gardening can, and often does, involve more than growing vegetables and fruits. Respondents grew a diverse variety of foods during the pandemic. Vegetables were by far the most widely reported foods grown, followed by fruit. Over a quarter of respondents reported keeping chickens for eggs. A significant portion of respondents were growing 7 different categories of fruit or vegetable (e.g. fruiting vegetables such as tomatoes or eggplants, legumes, leafy greens, herbs, tree fruits or root crops).

A productive gardener is therefore likely to be integrating several types of vegetables into their diet, with leafy greens being the most popular and easiest to grow. These findings suggest that edible gardens have the potential to increase dietary diversity and enhance nutritional health.

The additional time afforded by lockdowns enabled many gardeners to significantly expand the quantity and types of food they grew, thus increasing dietary diversity. An experienced gardener from Broken Hill commented: “We have always had a home vegetable garden, but when COVID-19 struck we set about to treble the size of our vegetable garden. We now grow 55 varieties of vegetables and 32 varieties of herbs. There are five adults in this household. We produce 80% of our vegetables and have large quantities in excess.”

What kinds of foods have you grown during the COVID-19 pandemic? (n=8,925)



Types of vegetables grown

94%
Leafy greens

89%
Herbs

71%
Legumes
(e.g. peas, beans)

67%
Root crops
and aromatics

58%
Fruiting vegetables
(e.g. tomatoes,
eggplant)

Nourishing deliciousness

The garden is a deep source of gastronomic pleasure which inspires people to cook and eat what they grow. A Gold Coast gardener describes how her culinary repertoire has diversified as she expanded her garden during the pandemic.

> “I have added many fruit trees and two new garden beds, and I plan on adding more. I love my garden, and I love our food. I love sharing it with my children. I love learning about native bush foods, growing them myself and adding them to our diet. I want to buy more fruiting trees, some olives and grapes. I want to ferment and preserve even more than I do now... I am so in love.”
>
> **Female gardener, Anglo-Australian, 35-44, Gold Coast QLD**

A low-income gardener from Warrandyte is similarly effusive about how gardening encourages her to experiment with new recipes. She enjoys the deliciousness of her garden so much that growing her own food is now her “new normal.”

> “It’s very satisfying being able to supply pretty much all of the vegetables we consume in the house. […] I find the gardening aspect satisfying, but what makes me most happy is the cooking and eating. I love playing around with recipes and trying new things like green tomato chutney or radish leaf pesto. I’ve also had tremendous luck with the mushrooms! So many and so delicious. What has shifted throughout the pandemic is that growing my own food was once something I had to put a lot of thought and effort into. It is now second nature and the new normal.”
>
> **Low-income female gardener, Anglo-Australian, 25-34, Warrandyte Vic**

These are only a sample from the hundreds of respondents who love eating from their garden. We suggest one of the most effective ways to encourage people to eat healthy food is to support them in growing it themselves. Gardeners do not need health promotion campaigns to encourage them to eat more fresh fruit and vegetables. They are as passionate about eating their produce as they are about growing it and, what’s more, they love to share it with others.

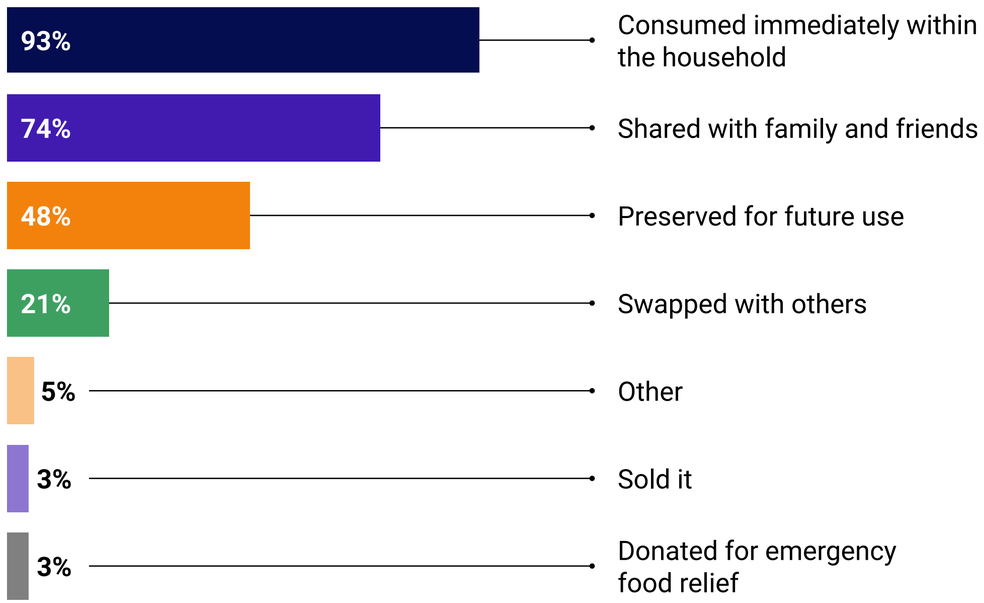
Sharing abundance

Respondents did a range of things with the bounty of their gardens. As the earlier gardener comments suggest, 93% consumed it within their household. Almost half of respondents preserved their produce, and 21% swapped it with others. Smaller numbers reported selling it or donating it for emergency food relief.

Three-quarters also shared their produce with family and friends. As an experienced gardener from Adelaide commented: “We have eaten a more vegetable-based diet. We have plenty to share and swap locally which has increased the feeling of community even when we had to socially distance.” Another gardener from Geelong observed: “I’ve experienced some lovely interactions with neighbours due to the new ‘grow free’ cart. Some even leave little notes: heart-warming and joyful.” There are thousands of similar comments from the survey.

> “[My garden] has allowed me to eat without having to go to the shops. It has also allowed me to be more creative with my cooking. I also enjoyed sharing my excess produce with others - I had a glut of tomatoes at the start of the pandemic and gave all my excess away rather than preserving them. The joy it brought [my friends] was wonderful!”
>
> **Female gardener, Anglo-Australian, 25-34, outer Melbourne**

What have you done with the food you have grown in 2020? (n=8,662)



Active living in the garden

Gardening is an excellent form of gentle physical activity. Over 40% of respondents reported gardening more than 5 hours a week, with an additional 47% spending 1-5 hours a week in their garden. Many felt that the physical activity was also beneficial for their mental health.

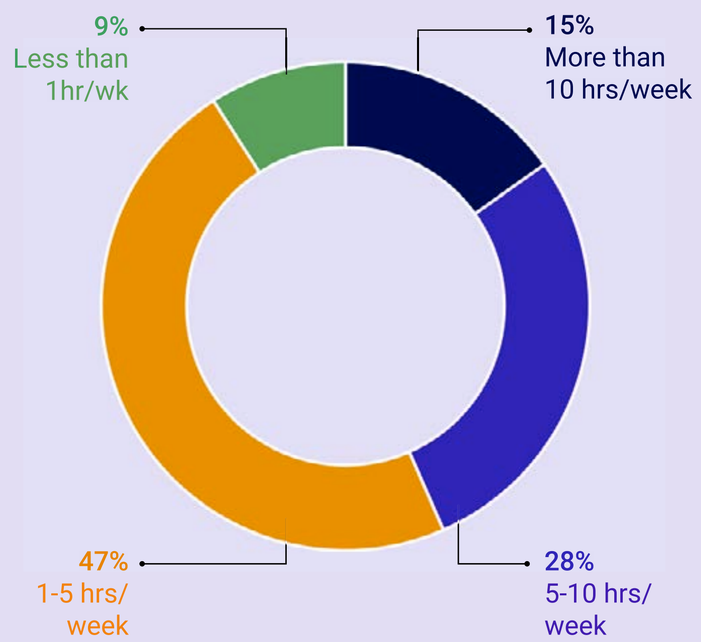
> “Gardening has got me outside and being more physically active which has been great for my mental health too.”
>
> **Experienced female gardener, 55-64, northeast Victoria**

Like many other survey respondents, a general practitioner from the Central Coast comments that gardening has been the perfect physical activity to manage her health conditions, providing weight bearing activities whilst also enjoying fresh air and sunshine.

> “There is such positivity in gardening - birdsong, sunshine, physical activity - that it is a perfect antidote to the stress, negativity and restriction of not only the pandemic, but of modern living. […] I have osteoporosis and a family history of early ischaemic heart disease so the physical benefits of gardening are perfect for me as [it is] exercise which is largely weight-bearing.”
>
> **Experienced female gardener, Anglo-Australian, 55-64, Central Coast NSW**

In summary, evidence from the Pandemic Gardening Survey suggests that edible gardening and urban agriculture can make a substantial difference to accessing fresh and nutritious food, especially for members of low-income communities. Time spent growing food, and in the garden generally, has multiple health benefits by diversifying diets, encouraging consumption of fresh fruit and vegetables and providing opportunities for physical activity outdoors. As the next section explores, edible gardening also counters the effects of stress and anxiety.

How many hours a week do you garden? (n=9,036)



> *My garden is my church. For a woman with a history of mental health challenges and supporting a family and husband with terminal cancer in his early 50s, my garden has been my way back to a happy, healthy state of mind. I'm back!"*
>
> **Female gardener, European-Australian, 45-54, Melbourne**

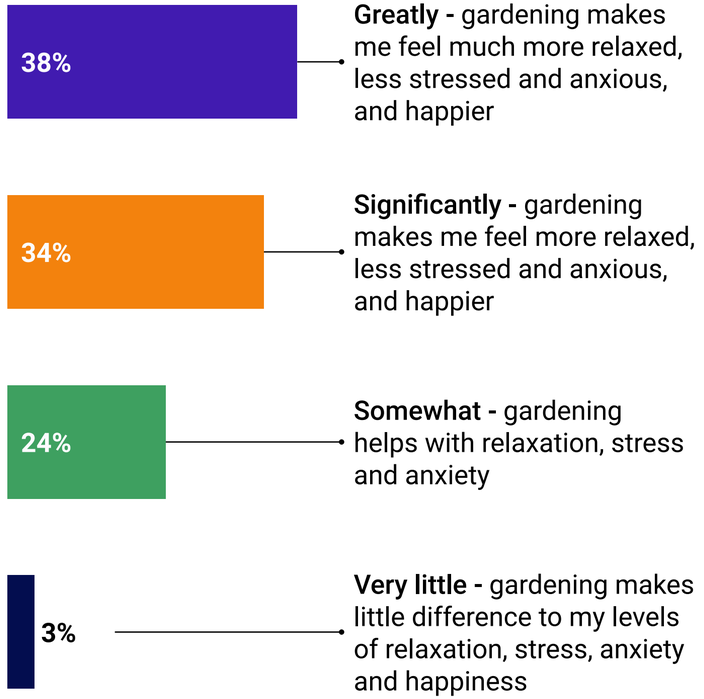
Mental Health and Wellbeing

A central purpose of the survey was to explore the link between edible gardening and mental health. An impressive 72% of respondents reported that gardening greatly or significantly improves their mental health. Importantly, the age group that mostly strongly expressed the link between gardening and mental health was 18-24 year-olds. Fifty-three percent of these respondents said gardening *greatly improved* their mental health, compared to 38% overall. Young people also reported the greatest increase in time spent gardening during the pandemic.

The benefits of gardening for mental health are consistently reported in other research so these findings come as no surprise.[24] What was surprising were the moving stories gardeners shared, reflecting on how gardening helped them cope with profound grief or personal crisis.

> My mother passed away in March, and watching things grow, helping them into the world, has been enormously comforting. In a year where things feel like they've been put on pause, the inexorable growth of our vegetables has been a sweet and quiet lesson in motion. A sense of things carrying on."
>
> **New female gardener, Anglo-Australian, 25-34, Geelong Vic**

To what extent have your gardening activities resulted in improved mental health and wellbeing? (n= 8,642)



> *Gardening has literally been a lifesaver having struggled through PTSD and then the COVID-19 epidemic. I can't express enough the healing that comes from gardening."*
>
> **Female gardener, Anglo-Australian, 55-64, western Sydney**

Cultivating peace and happiness

The mental health and wellbeing benefits of edible gardening are multidimensional. They serve a protective function by reducing stress and anxiety, whilst also boosting feelings of happiness and peacefulness and providing a sense of healing. Many respondents reported on the therapeutic effect that comes with gardening, particularly those coping with or recovering from chronic, severe and disabling conditions such as cancer or post-traumatic stress disorder, as illustrated by this sample of comments.

> I suffer from PTSD resulting from my firefighting career, so gardening has become a balm for my soul."
>
> **Male gardener, Indigenous Australian, 65-74, regional VIC**

> [Edible gardening] has changed my life after years of grief and illness. I'm doing it to help me mentally and physically... I have severe arthritis and fibromyalgia, yet somehow the pandemic motivated me to set goals after the initial period of worry and isolation. Now I have plans and projects for the future and have achieved much in spite of the physical challenges and setbacks."
>
> **Female gardener, Indigenous Australian, 55-64, outer Brisbane**

> I have cancer. My garden keeps me alive, especially on the bad days...For me keeping the garden going in times of stress is a way of asserting some control in my life, of establishing and maintaining some normality while the world spins out of control."
>
> **Experienced female gardener, Anglo Australian, 65-74, ACT**

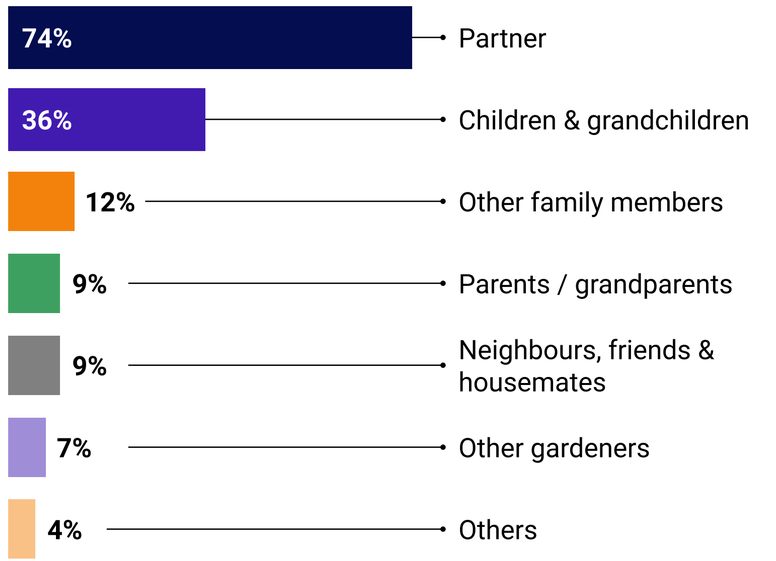
Social connectedness

Another important dimension of mental health is social connectedness, which was particularly highlighted during the months of the pandemic's enforced lockdowns and social distancing. Prior to the pandemic, the Australian Institute of Health and Welfare reported Australia as undergoing an 'epidemic of loneliness', with more than half the Australian population reporting feeling lonely at least once a week, and a further 10% stating that they are socially isolated.[25] The AIHW goes on to note that loneliness has been linked to 'premature death, poor physical and mental health, and general dissatisfaction with life', while social isolation is connected with 'mental illness, emotional distress, suicide, the development of dementia, premature death, poor health behaviours, smoking, physical inactivity, poor sleep, high blood pressure, poorer immune function, and sustained decreases in feelings of wellbeing.'[26]

While most survey respondents (64%) said they gardened mainly on their own, many observed that gardening led to positive social interactions, either through exchanging food, seeds or gardening tips. A gardener in Bankstown (NSW), who lives alone, wrote about how gardening "creates opportunities to chat with neighbours".

Over 3,200 respondents stated that gardening was primarily a social activity for them. It is clearly a family activity for many, with over 1,000 respondents reporting that they regularly garden with their children or grandchildren. It is also a way of bringing communities together, involving neighbours and other gardeners. These findings are highly significant in the context of the post-COVID recovery.

The social lives of gardeners: who do you garden with? (n=3,233)



> *We made our edible garden mostly in the front. We ended up having lots of positive interaction with people walking by during the COVID lockdown. A lot of people stopped to comment how much they loved watching the progress in our garden etc, ending up in regular little 'hello chats.' So, it actually made us better connected to our community and prevented isolation and loneliness."*
>
> **New gardener, European, 35-44, Sydney**

A gardener in Townsville describes her community garden as a "haven during the pandemic." She could go there on her own, escape stress, experience fresh air but also plant seeds to grow food that she could share with others.

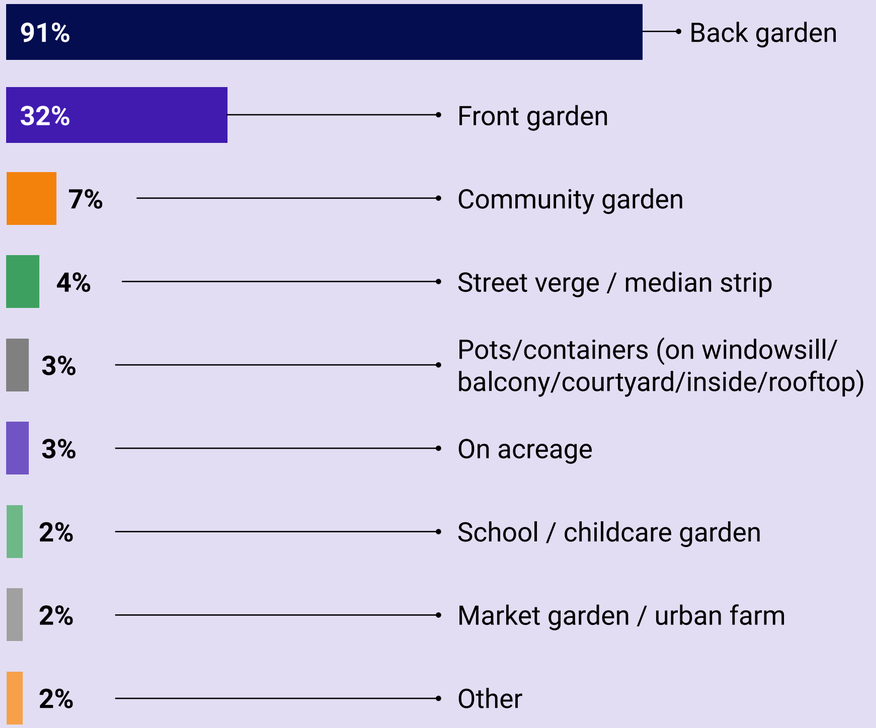
> We grew veggies in our front garden this summer and, now with COVID, everyone has been walking past our house and asking about our food. I teach people how they can do the same, give them seeds and give them excess produce. The positive interaction with my very immediate community has give me the confidence to upscale the front yard veggie production this coming spring. I hope to inspire other, make connections and give/trade foods with locals."
>
> **Female gardener, Anglo-Australian, 35-44, Shepparton Vic**

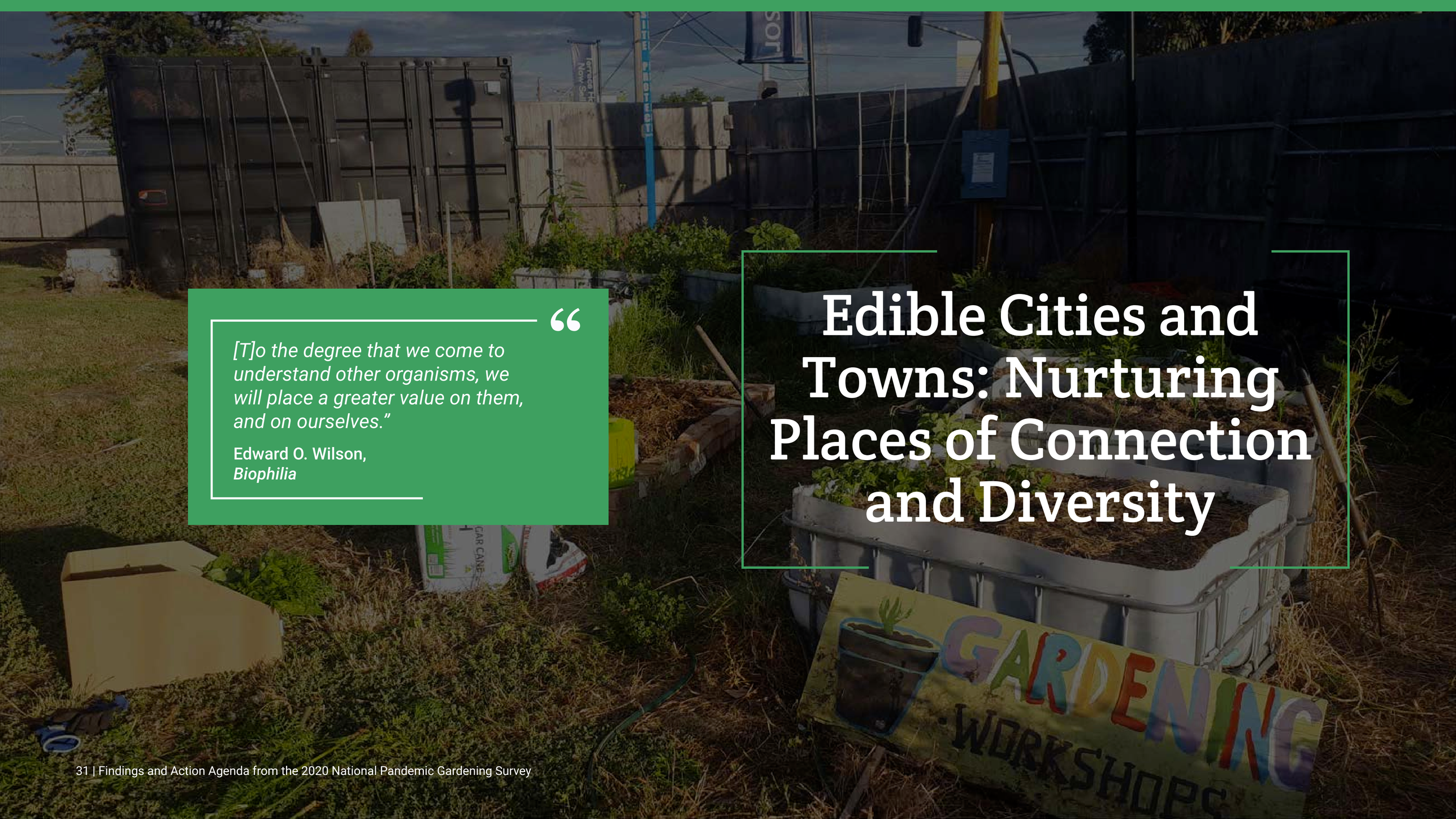
Gardeners expressed a strong desire to share throughout the survey. Swapping produce or seeds, sharing gardening tips in online forums, or casual chit-chats were just some of the ways in which gardeners connected with people beyond their garden. Many people reported putting excess produce in front of their homes for others to take as they needed.

Gardening in visible spaces, such as front yards and verges, invites conversation, exchanges and connection, as this Melbourne gardener notes:

> I've used COVID lockdown time to remove my front lawn and replace it with garden beds. I am in the process of planting fruit trees, and gathering cuttings from neighbours in order to create a large space for food growing. Connecting with neighbours through front yard gardening and having over-the-fence chats has greatly helped me through these isolating times, and I think encouraging the community to plant on verges and dabble in front yard gardening is a wonderfully powerful thing to do."
>
> **Female gardener, South-Asian, 35-44, Melbourne Vic**

Food growing: spaces and places. Where do you grow your own food? (n=8,986)





> *[T]o the degree that we come to understand other organisms, we will place a greater value on them, and on ourselves."*
>
> **Edward O. Wilson,**
> ***Biophilia***

Edible Cities and Towns: Nurturing Places of Connection and Diversity

For so many people, in Australia and globally, the pandemic has been a time of hardship and suffering, of loss and grief, of fear and anxiety. The garden has been important to discovering and rediscovering what connects us and what we share—not just with our fellow humans, but with all forms of life on Earth. This sense of connectedness has been described by Edward Wilson as biophilia, defined the desire to 'affiliate with life' as a 'deep and complicated process in mental development,' capturing how mental wellbeing is bound up with this affiliation such that 'our spirit is woven from it, hope rises on its currents.'[28]

At the same time, humanity as a species faces very real challenges of declining biodiversity and a rapidly unfolding climate emergency.[27]

> **The negative impacts of climate change on mental health cannot be underestimated, in particular the sense of existential dread, generalised anxiety and loss of hope for the future that it produces for some.**

As noted earlier, we do not propose that edible gardening will redress the fundamental dysfunction of the industrial food system, including the devastation it wreaks on ecological systems. A thorough and supported transition to sustainable and regenerative agriculture, together with several other reforms, are required to achieve that. We do, however, strongly believe in the great potential of edible gardening and urban agriculture to strengthen the ecological health of our cities and towns.

Photo credit: Melbourne Food Hub
Phoebe Powell ©

Eco-anxiety and mental health

'Ecological grief' is just one of many potential emotional responses to 'experienced or anticipated ecological losses, including the loss of species, ecosystems and meaningful landscapes due to acute or chronic environmental change,' a phenomenon that will only 'be felt more strongly and by a growing number of people as we move deeper into the Anthropocene.'[29]

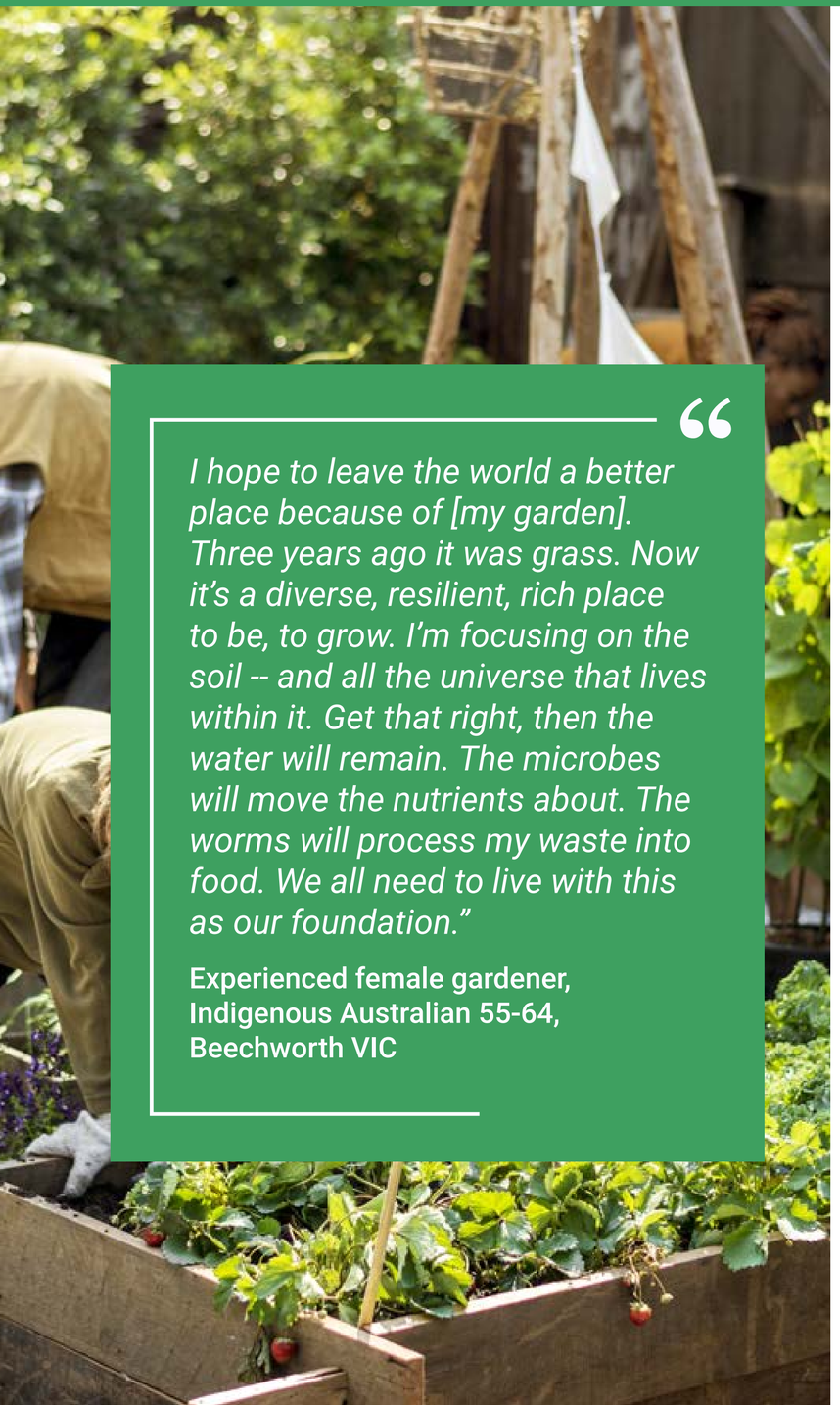
The profound ecological transformation of the Anthropocene also have the potential to generate fear and anxiety. Many gardeners expressed such anxiety in the face of what they see as a lack of political leadership and meaningful action.

> From public health, political and systemic failures to the environment to the state of our soil, the future scares me."
>
> **Female gardener, European-Australian, 35-44, Brisbane**

While an expansion of edible gardening is no substitute for the political will, systemic transformation and effective action needed to tackle the current crisis, it does appear to offer some mitigation against the mental health implications of living in the Anthropocene. As one respondent in Melbourne notes, 'being in the garden before COVID was incredibly important to my mental health, especially during the bushfires over summer, and dealing with the dread of climate change and mass extinction. Now that COVID has come, the garden is even more important to me."

An experienced Melburnian gardener expresses a similar sentiment: "I do see this upheaval as a precursor to greater concerns to come with the potential devastating effects of climate change...if we fail to address the myriad of environmental issues in time. I lament the fact that not enough of us are listening to the experts of science, and we are failing to adequately address the changes required to keep our planet under the appropriate temperature range." She also believes nurturing life in the garden offers important lessons for finding better ways to live on this planet (see quote at right).

> *This pandemic has highlighted how connected we all are and [our] responsibility to live more gently on this Earth...Working in a garden is really the first step in becoming open to [...] the fragility of our planet and the importance of making choices that do not damage it. Our priorities need to be seriously re-examined. Connecting to nature through the nurturing of a garden will awaken us to what needs to be addressed now."*
>
> **Female gardener, Anglo-Australian, 55-64, Melbourne**



> *I hope to leave the world a better place because of [my garden]. Three years ago it was grass. Now it's a diverse, resilient, rich place to be, to grow. I'm focusing on the soil -- and all the universe that lives within it. Get that right, then the water will remain. The microbes will move the nutrients about. The worms will process my waste into food. We all need to live with this as our foundation."*
>
> **Experienced female gardener, Indigenous Australian 55-64, Beechworth VIC**

Ecology, biodiversity and health

Research on edible gardens has demonstrated their significant potential to contribute to healthy and biodiverse urban environments.[30] Home gardens have been described as complex and multifunctional environments that are 'neglected hotspots of agro-biodiversity and cultural diversity,' providing nutritional benefits while also serving as spaces where cultural and ecological knowledge flourish and are shared, along with seeds and plants.[31]

> When I started gardening my verge where I live, it brought all the neighbours out to talk and help. It's not just important from a sustainability perspective, it's important for community. My Nepalese neighbours taught me their history and their culture via the edible garden we created together."
>
> **Since COVID low-income female gardener, Anglo-Australian, age unstated, Coffs Harbour NSW**

Survey respondents shared their experiences of keeping heirloom varieties in their garden, but also swapping seeds with neighbours which in turn helps to preserve genetic heritage and diversity of seed stock. A female gardener in Sydney notes that while she started gardening years ago with the aim of "self-sufficiency and reducing my own footprint," she now feels she is contributing to "the genetic diversity of food crops by using heirloom seeds." Growing food was not only seen as benefiting humans, but also the "native animals and birds that live in our area," as another female gardener in Sydney notes.

> I grow for the pleasure of producing as much of our food as I can. The connection to nature. The opportunity to observe the biodiversity in our patch. The opportunity to observe how my edibles respond to the soil conditions, climate, visiting pests and helpers. The opportunity to observe insects, birds and other animals. Watching my fruit trees through the seasons."
>
> **Female gardener, European Australian 65-74, outer Perth**

Respondents reflected on everything from creating habitats and offering food to plants and animals to maintaining seed diversity and fostering the microbial communities of the soil. A gardener on the Central Coast of NSW describes the presence of birds, lizards, native bees and other creatures as a "gift" that brought peace after the anxiety of her husband's heart attack.

Other gardeners felt that their personal wellbeing was connected to the health and diversity of their garden. This female gardener from the Sunshine Coast notes that caring for the soil and caring for herself are one and the same: "Gardening reconnects with the Earth and in that reconnection, there will be feelings of taking care of the soil and so taking care of the body."

Some gardeners articulated a reciprocity in the garden, nurturing but also feeling nurtured. As a Melbourne gardener writes: "Growing veggies and fruit, having chickens and bees brings a sense of security which has helped to keep me stable and reduced my anxiety during [COVID]. For me, there is nothing more soothing and grounding… It satisfies a basic need in me to nurture." A male gardener in Adelaide notes his garden offers "pleasure and sanity. Plants don't talk back but grow and show a great deal of love and affection."

Other gardeners were thinking at the microscopic scale, composting household food waste to enhance the microbiology of their soil. Some felt there was a strong connection between their microbiome and that of the garden. Some scientists suggest that the relationship between soil biodiversity, gut microbiota and human health warrants greater attention as our living environments become more heavily urbanised.[32] The 'biodiversity hypothesis' proposes that exposure to a diversity of microbiota and macrobiota plays an important role in developing and strengthening immune function.[33] Research on the gut microbiome further reveals that many urbanised diets produce 'decreased microbiome complexity,' the biomedical effects of which are only just beginning to be understood.[34] Cultivating urban microdiversity through green infrastructure is advocated by some as a means to redress the health consequences of the depleted microbial habitat of urban environments.[35]

> **Despite the growing body of evidence that points to the interconnectedness between human health and the urban ecosystems in which we live, garden and eat, these relationships remain largely underappreciated and inadequately accounted for in the planning and design of our cities and towns.**

We call for municipal governments and town planners to give stronger consideration to these connections in Municipal Health and Wellbeing Plans.

The allotment and community garden: multi-functional spaces

The multifunctional benefits of edible gardening are well understood and more strongly supported in other parts of the world. Allotment gardens have been a mainstay of many European towns and cities for centuries, particularly in the United Kingdom and Germany where they arose during the industrialisation of the 19th century. Across Europe and even in Australia, allotment gardens were an important source of food security between and during the wars.[36] In the United States, community gardens have similarly been mobilised in community food security initiatives as well as neighbourhood beautification.[37] These public spaces for food production enhance community connectedness. They act as green spaces that invite bees, birds and other creatures and provide spaces for composting food waste. At the same time, they counteract the urban heat island effect and drastically reduce stormwater run-off and flooding.

Allotments and community gardens are therefore important multifunctional spaces for greening the city, reducing household waste, strengthening community connectedness, enhancing food security and encouraging the consumption of fresh produce.

> **There are very few initiatives that fall within the remit of local councils that so powerfully support so many aspects of wellbeing at once.**

Allotment and community gardens serve as examples for how to make edible gardening more accessible to those who do not have access to private land for growing food.

Photo description: Allotment garden in Munich, Germany.
Credit: Kelly Donati

Barriers to Edible Gardening

> *Sadly in our area suburban nature strips, which might otherwise be great for growing herbs and leafy greens, (gardening plots) are banned because local government views them as a potential physical hazard when they can be the exact opposite."*
>
> **Male gardener, Anglo-Australian, 65-74, Geelong VIC**

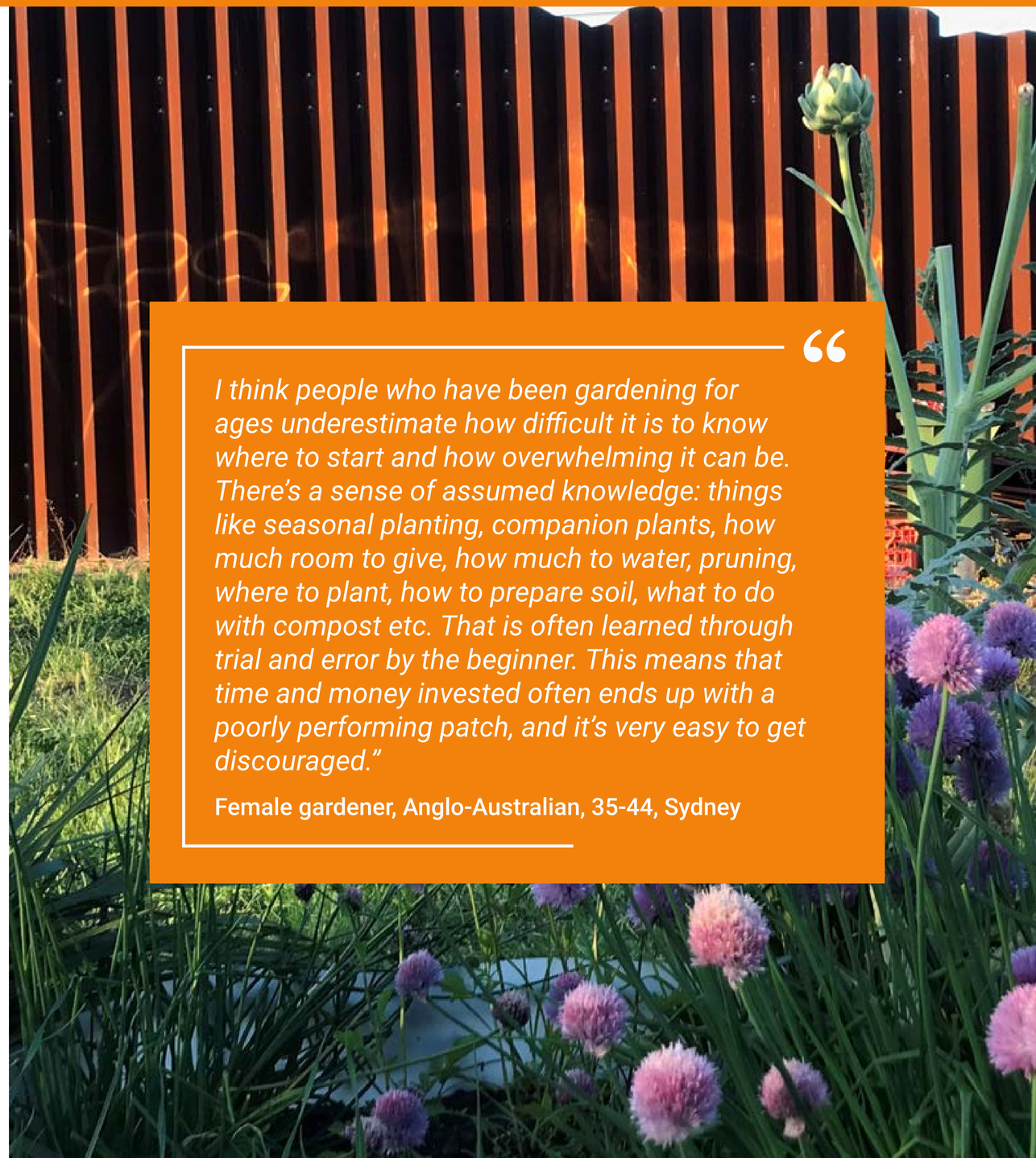
Support for gardeners

98% of respondents said they intended to continue or expand their edible gardening activities.

While the majority of respondents said they felt they had enough support to continue and expand their gardening activities, over 2200 (26%) said they needed more support. This rose to nearly 40% for new (1 year or less) and since-COVID-19 gardeners.The most commonly expressed need for additional support was for knowledge in the form of advice, mentoring and guidance. A theme that emerged from the respondents' comments was how critical skills and knowledge can be for the new gardener, as reflected by this since-COVID gardener's comment (see right).

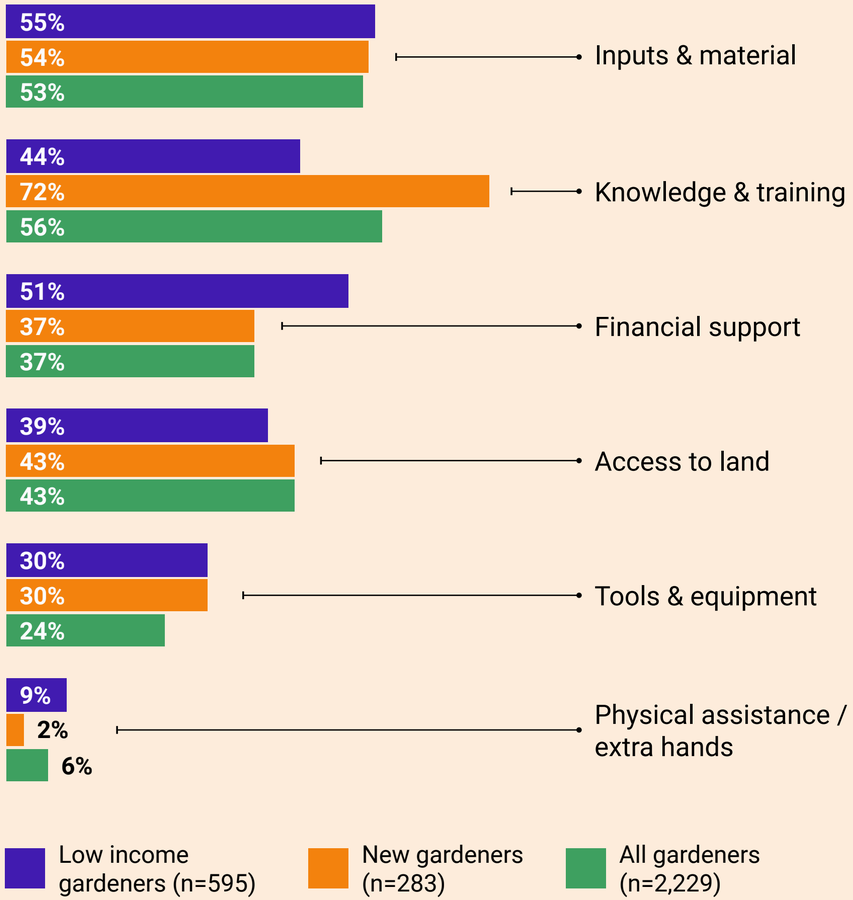
Another gardener acknowledges that, while learning to grow one's own food is valuable for food security, it must be adequately supported.

> Growing their own food is a concept that is really hard for people to focus on when they are already worried about the food they need for the next meal, the roof over their heads and their immediate safety and health. While gardening does build resilience, you really can't make a decision to start gardening for the first time during a period of crisis. And for a first-time gardener, you really can't do this without support (educationally, emotionally, financially or physically).
>
> **Female gardener, 35-44, Shepparton Vic**



> *I think people who have been gardening for ages underestimate how difficult it is to know where to start and how overwhelming it can be. There's a sense of assumed knowledge: things like seasonal planting, companion plants, how much room to give, how much to water, pruning, where to plant, how to prepare soil, what to do with compost etc. That is often learned through trial and error by the beginner. This means that time and money invested often ends up with a poorly performing patch, and it's very easy to get discouraged."*
>
> **Female gardener, Anglo-Australian, 35-44, Sydney**

What additional support / resources do you require access to in order to continue / expand your edible gardening activities?



Over 70% of new gardeners seeking support expressed knowledge and training as their greatest need. This was followed by inputs and materials, such as seeds and compost. Third was access to land, followed by financial support, and then tools and equipment. Finally, several gardeners mentioned physical assistance, which is especially important for persons living with mobility challenges or disabilities.

Many support structures and networks already exist, as noted by a gardener from Victoria: “I’m part of online veggie and fruit growing groups where many new gardeners have come into the group and the group is supporting them well with information and encouragement through the early difficulties in starting to grow food.” Community gardens offer a real-world supportive learning environment. However, many respondents reported long waiting lists of more than a year for the limited spaces available.

> **There was strong enthusiasm for expanded systematic support for community gardens from local governments around the country.**

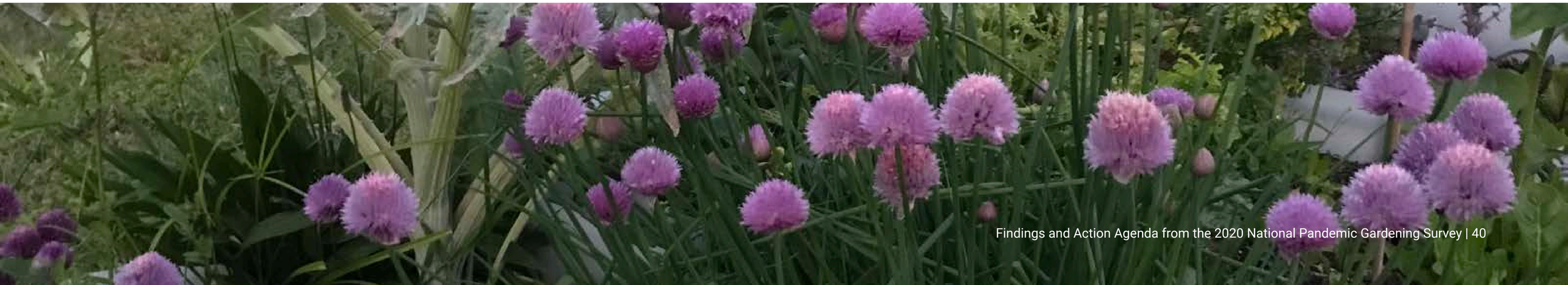
Such support would include a streamlined process for their establishment as well as a much greater willingness to have mixed uses of existing land for communal gardening purposes.

> “I am an experienced gardener (>30 years), but I would like to see a much greater focus on gardening, especially community gardens in all neighbourhoods. There are so many small parks or open green spaces that could be used by people. Councils should be promoting this heavily as it is one of the best ways to create lively communities, where generations and people from all walks of life can meet and share nature.”
>
> **Female gardener, 55-64, European, Adelaide**

Similarly a male gardener, also from Adelaide, said that there should be “more community gardens as there are lots of parks and reserves under-utilized, and most community gardens in my area are overcrowded and have waiting lists a mile long for plots.” Noting other barriers for community garden establishment as well as the shared intergenerational learning opportunities they present, the same gardener commented that councils “should also cut the red tape [involved in starting community gardens] as it takes too long and people lose interest...Get younger people involved so there is a mix of old and new and they can learn from each other.”

> “Much more financial support is needed for community gardens & urban farms. These are a valuable source of advice and support for local communities. [...] Funding for coordinators/ gardening mentors could expand and further support the vital role of community gardens. In Paris, community gardens receive public funding if they are open to the public one day a week. Just imagine the gardening knowledge and skills that could be shared at a local level.”
>
> **Experienced female gardener, 55-64, Anglo-Australian, Adelaide**

The need for access to tools, equipment and infrastructure, especially water, were mentioned frequently as barriers. One respondent noted that “it would be wonderful to be able to share tools as you have to buy so many, and it is costly.” Another said: “I need more compost and soil. It’s hard to keep carting it in, when I seldom go to the shops [and] I can’t be buying multiples of heavy bags of soil.” A gardener from Central Coast NSW said that water was a major issue, with ‘three periods of prolonged dry in the last five years” and several “severely plant stressing temperature spikes in summer”.



Overcoming obstacles

Given how strongly survey respondents feel about the multiple benefits of edible gardening, it is not surprising that there was a palpable frustration with the commonly experienced unwillingness of local councils to allow edible gardening on verges and nature strips. A gardener in Ballarat who sees verges and nature strips as wasted local resources writes that her council wouldn't even discuss the possibility with her. Another gardener on Phillip Island in Victoria said she is too scared to approach her council because she expects them to say no.

A low-income female gardener from Geelong writes that the council is more focused on 'regulation than facilitation,' noting that 'local councils could learn a lot from what is done successfully around the country, and I'd like to see them form a network for sharing policies and procedures that don't just facilitate but actively encourage verge and community food growing.' Another gardener from Geelong similarly comments that the council focuses on the risks rather than the benefits of edible gardening.

> "Sadly in our area suburban nature strips, which might otherwise be great for growing herbs and leafy greens, are banned because the local government views them as a potential physical hazard when they can be the exact opposite."
>
> **Male gardener, Anglo-Australian, 65-74, Geelong Vic**

Many gardeners suggested making nature strips and other public areas available for food production whilst others argued for allotment gardens being made available for those living in apartments. This is where planning frameworks have a very important role to play, particularly for new developments but also on existing land zoned for public use under very narrowly defined parameters. The use of public land is often thwarted by the need for planning permits, presenting costly and time-consuming barriers.

Renters also faced considerable barriers in realising their desire to grow their own food. While some landlords are accommodating, an experienced gardener in Queensland explains that her new rental property comes with many restrictions which have forced almost two decades of food production into pots and containers so as not to disturb the "lawn":

> "My new rental had restrictions. No growing on lawn area so had to think outside the "lawn" and to recreate a garden cultivated over 18 years in a very constricted space. (I) used shelving, tubs, window sills and fences to grow up/against staying off the "green lawn." Having sought permission to plant into the small garden at the front, I have utilised as much space as possible and now have to rethink going forward.
>
> **Female gardener, Indigenous (other), 45-54, Sunshine Coast QLD**

A new gardener in south Brisbane notes that she is both a landlord and a renter. Although she has provided a raised bed for her tenants to grow food, her own landlord has banned not only the lawn but also the patio from any form of edible gardening. Likewise, a gardener from Mornington Peninsula has ample space to grow food but is not permitted, as a renter, to use it. He states that being able to garden would help reduce the financial pressures that his household of four is facing while also allowing him to support others with their food needs.

> “I estimate we have enough space to grow vegetables for eight people (we are a household of four). However, our landlord will not allow us to develop vegetable patches. Currently we are confined to growing vegetables mostly in a potted garden and whatever existing garden beds. If we had the freedom to use wasted space on our property, we could not only reduce the financial pressure we are feeling; we could definitely help others.”
>
> **Male gardener, Anglo-Australian, 45-54, Mornington Penisula, Vic**

In terms of the spatial constraints associated with apartment living, some gardeners suggested that body corporate laws should explicitly allow food gardening by residents, taking issue with the lack of space around high-density developments for growing food. As a Sydney gardener argues, ‘the body corporate should have to prove why it would be unreasonable in specific cases. Changes are also needed to residential tenancy laws, again to include the presumption that landlords should permit tenants to grow food on the property… Food growing should be considered an essential activity.’

> “Community gardens with individual plots as well as a shared plot are essential as an entree into gardening…, particularly in high density areas where people live in apartments. All apartment buildings (particularly low income) should have a shared communal garden area.”
>
> **Since COVID low-income female gardener, Anglo-Australian, age unstated, Coffs Harbour NSW**

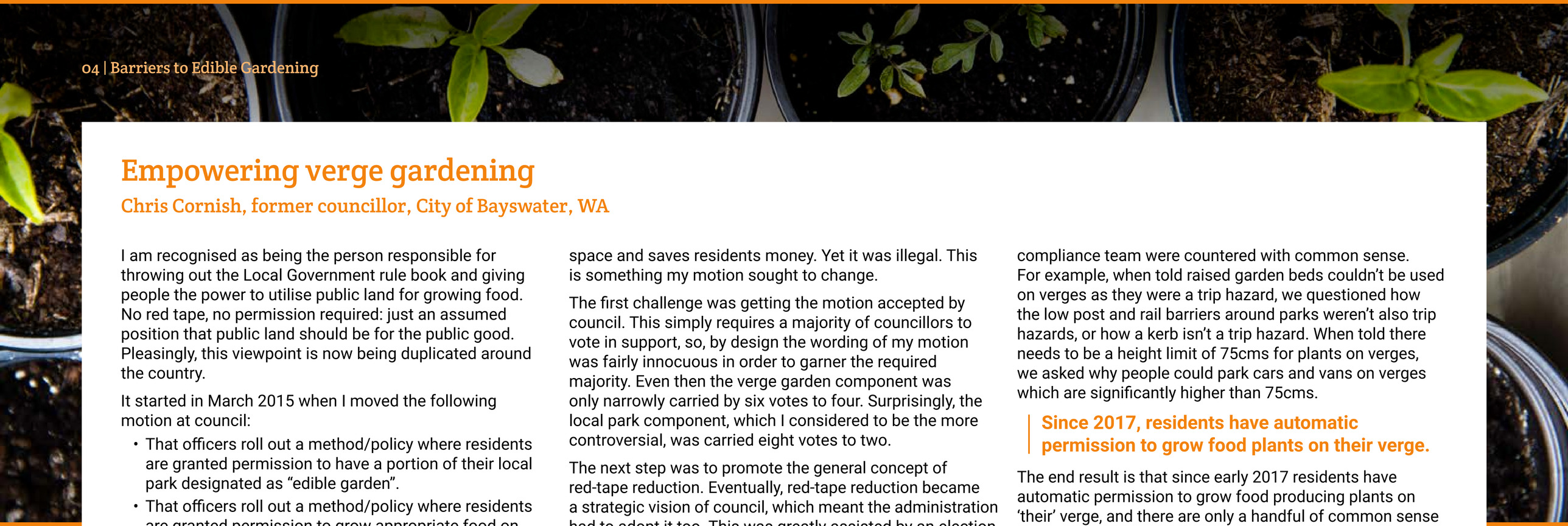
Photo credit: Melb Food Hub Phoebe Powell ©

The creation of allotments and community gardens were advocated by many respondents as good alternatives for those who may not have space or security of tenure to grow their own food.

Allotments and community gardens alike were seen as important spaces for creating social connections, reducing isolation and sharing knowledge about food.

> “I lived in the UK for a very long time, and I’m sad that we don’t have many places in urban areas in Australia where people can share edible gardens / access allotment programs. Those kinds of spaces and programs go a very long way to assisting in a whole range of community issues from health and mental health, isolation, education, building a strong sense of community etc. [Allotments] would go some way to helping create a sustainable and resilient path to recovery.”
>
> **Female gardener, Anglo-Australian, 35-44, Melbourne**

Dozens of gardeners expressed frustration about the costs and waiting lists associated with community gardens, calling on councils to resource the establishment of new gardens in order to improve access. Others advocated for the opening up of verges and median strips as a cost-effective and equitable approach to allocating more space for edible gardening while also creating more opportunities for neighbours to connect. On the following page, a former councillor of the City of Bayswater in Western Australia offers a case study of how this can be achieved.



Empowering verge gardening

Chris Cornish, former councillor, City of Bayswater, WA

I am recognised as being the person responsible for throwing out the Local Government rule book and giving people the power to utilise public land for growing food. No red tape, no permission required: just an assumed position that public land should be for the public good. Pleasingly, this viewpoint is now being duplicated around the country.

It started in March 2015 when I moved the following motion at council:

- That officers roll out a method/policy where residents are granted permission to have a portion of their local park designated as “edible garden”.
- That officers roll out a method/policy where residents are granted permission to grow appropriate food on their street verge.

A main part of the motivation for the motion was that a local resident, self-confessed trouble-stirrer Greg Smith, showed me how he and some neighbours had been planting food producing plants in a corner of their small local park. Specifically, the local community can, and do, pop by and pick up some capsicums, basil, guava, pomegranates, bay-leaf, oranges, lemons, figs and quince.

I was intrigued. This “pocket garden” cost the City nothing, was a great community project which brings people together, makes good use of an otherwise empty space and saves residents money. Yet it was illegal. This is something my motion sought to change.

The first challenge was getting the motion accepted by council. This simply requires a majority of councillors to vote in support, so, by design the wording of my motion was fairly innocuous in order to garner the required majority. Even then the verge garden component was only narrowly carried by six votes to four. Surprisingly, the local park component, which I considered to be the more controversial, was carried eight votes to two.

The next step was to promote the general concept of red-tape reduction. Eventually, red-tape reduction became a strategic vision of council, which meant the administration had to adopt it too. This was greatly assisted by an election in late 2015 which led to the addition of two more like-minded councillors. The Audit & Risk Committee, which I chaired, formed a ‘red-tape reduction working group’ and we actively thrashed out areas of unnecessary compliance which we become aware of either through our own experiences or by being approached by constituents. This included being involved in any challenges to do with the City’s new edible food on public land focus.

To the credit of the City of Bayswater staff, and especially the then Acting CEO Carissa Bywater who fully embraced Council’s vision, obstacles from the insurers and compliance team were countered with common sense. For example, when told raised garden beds couldn’t be used on verges as they were a trip hazard, we questioned how the low post and rail barriers around parks weren’t also trip hazards, or how a kerb isn’t a trip hazard. When told there needs to be a height limit of 75cms for plants on verges, we asked why people could park cars and vans on verges which are significantly higher than 75cms.

> **Since 2017, residents have automatic permission to grow food plants on their verge.**

The end result is that since early 2017 residents have automatic permission to grow food producing plants on ‘their’ verge, and there are only a handful of common sense guidelines which they must abide by. And since early 2018 the City welcomes people planting food in sections of their local park, but they must submit a simple application showing what and where they plan to plant before doing so.

A vision of every street having verges bristling with herbs, fruit and veggies and everyone sharing produce has not yet materialised. But a growing number of residents are gardening on the verge, and have planted food trees in local parks. Most importantly, they can if they want to.

Indigenous urban land justice

Any attempt to expand access to edible gardening spaces—be they private gardens, verges and nature strips, or public land—must acknowledge that these are all Aboriginal lands for which sovereignty was never ceded.

An Indigenous gardener in Brisbane describes the heartbreaking experience of losing his garden. As he explains elsewhere in the survey: "I am trained in horticulture, conservation, and indigenous land management with years of experience. Always underemployed, now unemployable. In poverty, home gardens and revegetation have been my consolation." However, when he was evicted from his tenancy in December, he was utterly devastated. He shares this devastation through the survey, reflecting on the experience of losing his garden: "My garden was an extension of my self. I felt amputated and traumatised without it. It was my primary means of contribution to community, interconnection, my therapy, regenerative permaculture, my activism against the consumption machine destroying the earth. I fell into depression without it and felt suicidal." This powerful reflection speaks to how this gardener's sense of self was deeply entangled with his garden.

At the same time, two Indigenous gardeners from Melbourne and Sydney highlight the important possibilities of edible gardening for connecting to culture and country.

> "I definitely want to grow more medicinal herbs, especially native herbs. I'm Indigenous, and I feel this is an area I would love to explore at home, as an option other than returning back to country."
>
> **Female gardener, Indigenous Australian, 45-54, south Sydney**

> "I do weaving and wood carving from my garden. Plants provide more than food. Indigenous plants used by an Indigenous person…"
>
> **Female gardener, Indigenous Australian, 55-64, Melbourne**

Care must be taken by policymakers and practitioners alike to ensure that the expansion of urban agriculture does not overlook Australia's history of dispossession, including in its cities and towns.

We share with Dr Libby Porter, Professor in Urban Planning, the view that 'mainstream urban planning processes' should acknowledge 'continuing co-existing Indigenous methods of land governance' and work towards 'honour[ing] Indigenous histories, knowledge and relationships' in urban environments.[38]

Urban policy and planning to support edible gardening must acknowledge the injustices wrought by colonisation and work with relevant First Nations leaders and organisations to dismantle barriers in accessing their own lands, not only in remote and regional communities, but also in cities and towns.

Photo description: Everleigh Indigenous Rooftop Farm, Jiwah Pty Ltd, Photo credit: Eberle Photography

> *As a health care provider I fully endorse edible gardening as an intervention that would improve public and climate health. I would view any government support - federal, state or local - as a very good and wise use of my taxes and rates.*
>
> **Experienced female gardener, Anglo-Australian, 55-64, Central Coast NSW**

Action Agenda and Roadmap for Transformation

We are calling for the establishment of a major national Edible Gardening Fund as an urgent investment in public health.

The COVID-19 budget, delivered on 6 October 2020, has been described by some as the most consequential in Australia's history.[39] However, the Public Health Association of Australia condemned it as "'border[ing] on the disastrous" with "urgently needed public health investment … largely overlooked." [40] Combined with the ending of the JobSeeker supplement and tax cuts skewed to upper income earners, many organisations have noted how the budget will entrench and widen existing health and social inequalities.

To help counter those trends we are calling for the establishment of a major national fund to expand home and communal edible gardening in Australia.

What's required is a clear commitment to prioritise human and ecological health. This must go together with a whole-of-government and whole-of-system approach, that is based on a deep understanding of the interconnected, systemic and structural nature of the challenges and crises we face.

This requires leadership – and a willingness to face fears and overcome a culture of risk aversion which unfortunately is pervasive throughout many institutions.

Here we present our roadmap for transformation to make Australian towns and cities edible. This is based on the tens of thousands of comments shared by respondents to the Pandemic Gardening Survey, a small handful of which we have shared in this report. In formulating this roadmap, we also draw on our research and knowledge of this sector, as well as the accumulated experience and expertise of urban agriculture, community and school garden groups, networks and organisations, both in Australia and globally.

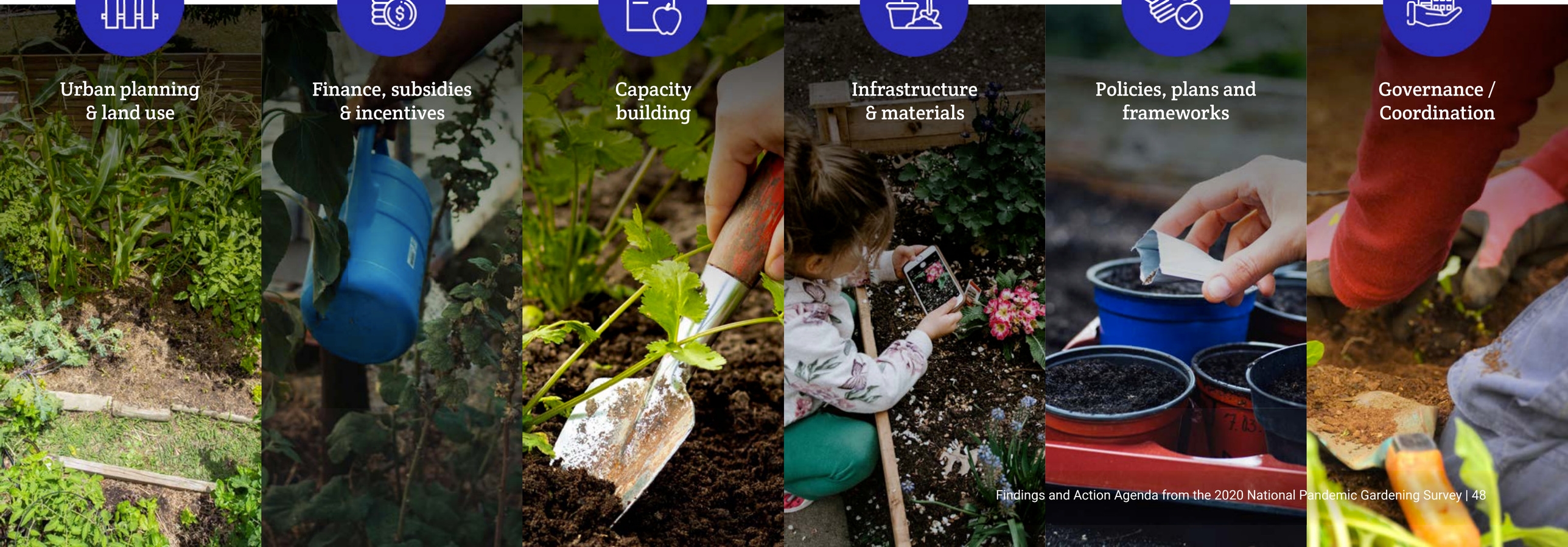
We have set out six key steps in our roadmap. Action in each is critical, and together we believe they form a comprehensive and achievable action agenda.

There must also be a major shift in culture and values at the political level.

We need our elected leaders' and policymakers' commitment to doing everything required to create a healthy and sustainable food system for all Australians.

That means embracing the movement for regenerative agriculture. It also means controlling the expansion of the fast food industry and the marketing of unhealthy food and beverage products to children and youth. It means empowering individuals and communities to grow more of their own food. And it means embedding all of this, and more, in long-term food system strategies and plans, that are created and implemented through inclusive, participatory and collaborative processes.

Action Agenda and Roadmap for Transformation



Urban planning & land use

> There should be more public and unused private land made available for small-holdings, community gardens, allotments etc."
>
> **Since COVID male gardener, Anglo-Australian, 25-34, outer southeast Melbourne**

Why should urban food production be of major interest to planners? The research shows that planning has a critical role to play. As Sarker et al. argue, "urban food systems have profound effects on numerous areas of interest to planners, such as land use, transportation, economic development, local employment, provision of energy and water, air pollution, public health and social justice." [41]

Why do planners not take food issues into account when making decisions about land use? Victor Pires (2011) argues that the reasons include "lack of awareness of issues and responsibilities; lack of political will; time and financial constraints; conflict with other priorities; lack of planning recognition for food; and, their limited sphere of influence." [42]

Pires' analysis found that "most urban agriculture practices are regulated from a nuisance-causing perspective, which results in prohibitions, obstacles and impracticable conditions. To facilitate urban agriculture recognition, local governments should invest in education, in particular educating decision-makers, planners and the community on its practices, benefits and risks."

We endorse this view whole-heartedly, and it was consistent with survey respondents' comments. Any coordinated and serious action to expand urban food production must work to challenge a culture of risk aversion that acts as a barrier rather than an enabler.

As stated previously, expansion of land access must explicitly acknowledge First Nations methods of land governance, honour First Nations histories and work with First Nations communities to access their own lands in cities and towns.

Action	Responsible actors
Prioritise urban food production as part of the vital city infrastructure, like roads or sewers, as part of a broader commitment to urban food security (Sarket et al 2019)	State & local governments Utility corporations Developers / landowners
Incorporate edible gardening and urban / peri-urban agriculture in state and local planning frameworks and schemes – e.g. by creating a dedicated urban agriculture zoning classification	State and local governments
Map and audit available public and private land suitable for urban food production	State & local governments Utility corporations Developers / landowners
Facilitate access to public land through specific initiatives – e.g. verge gardens, community gardens, community orchards	Local governments Developers / land owners Utility corporations Appropriate Aboriginal leaders and organisations

Finance, subsidies & incentives

> Provide subsidies for people to set up veggie patches at home. A lot of the initial costs in setting up raised garden beds, good soil, utensils etc can often be out of reach for some family budgets."
>
> **Female gardener, Anglo-Australian, 35-44, Perth**

> Grant bodies and governments should consider funding coordinators / facilitators positions, as volunteers get burnt out trying to run community gardens and networks."
>
> **Experienced female gardener, Anglo-Australian, 45-54, outside Canberra**

A key part of our Action Agenda is to establish a $500 million annual national Edible Gardening Fund, with 50% financed by the Federal government and the balance funded by the development industry, and the States and Territories in proportion to their populations. The allocations from this fund should be devolved to community-level decision-making through popular budgeting processes, such as the Victorian government's Pick My Project grants program in 2018, as well as through joint community-council committees, such as the Town of Victoria Park's Urban Forest Committee.

We further propose that innovative financing models be explored, tested and implemented to expand urban food production. This should include discounts on land tax and council rates for landowners who make their land available for urban and community food growing. It should also include social prescribing, so that GPs and pharmacists can issue prescriptions for local and sustainable fresh food for healthcare card holders, as well as access to mentoring and support in edible gardening and cooking. Such an allocation of public money would expand jobs and training in the labour-intensive urban and sustainable agriculture sector, as well as making fledgling urban farm enterprises more financially viable.

Action	Responsible actors
Commit to resourcing urban food production as an investment in public health: a $500 mn national edible gardening fund	Federal, state & territory governments Development industry
Create incentives for landowners to make land available for urban food production – e.g. discounts on land tax / rates	State, territory & local governments
Commit to funding urban food production through community-led popular budgeting' grant programs, with long-term grants	State and territory governments
Explore and implement innovative financing models to make urban food more accessible for low-income households e.g. through social prescribing	Federal and state governments

A $500 million national Edible Gardening Fund could be spent as follows:

- **$265m** in rates discount rebates and social prescribing (subsidised fresh food parcels, cooking and gardening classes)
- **$135m** in wages (food systems officers for Councils, coordinators for community gardens, garden educators and trainers)
- **$50m** in grants for schools, community groups, social/low-income housing gardens
- **$45m** in infrastructure, inputs, tools, and equipment
- **$5m** in peak body/network and sector coordination

Social prescribing: benefits for health and wellbeing

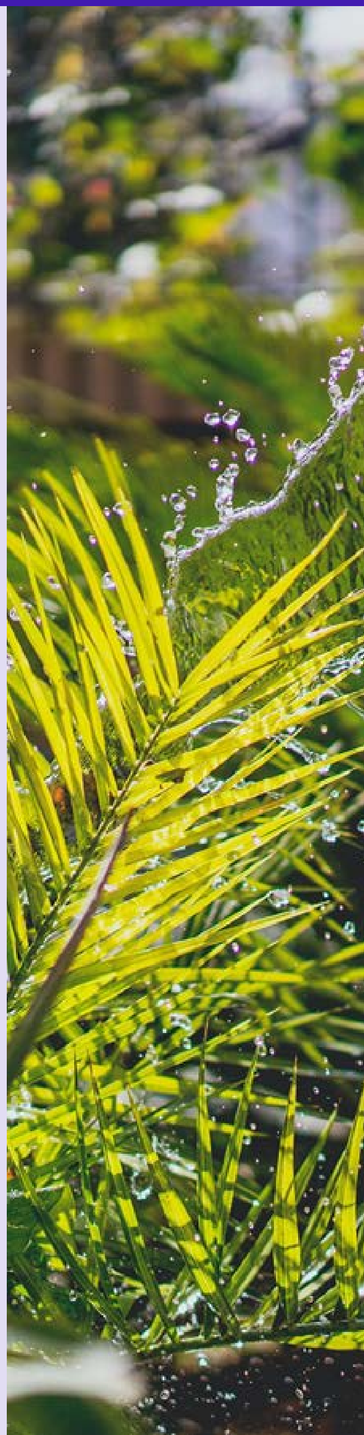
Social prescribing is emerging as an innovative means of enabling healthcare professionals to address poor health and wellbeing with nonmedical interventions. It is often used for patients grappling with poor mental health, social exclusion, and complex long-term health conditions.[43] Through these programs, GPs refer patients to activities such as exercise, arts exposure, and engagements with nature, including community gardening, food growing, horticultural therapy, and care farms. These services are often provided by voluntary and community groups, establishing important partnerships between the healthcare and social sectors.[44]

In the UK, social prescribing is a core component of the National Health Service's long-term plan to deliver personalised care.[45] As an estimated 20% of patients consult GPs for what are inherently social problems, evidence suggests that social prescribing could be a key preventative tool as well as a cost-effective means of reducing pressure on the NHS.[46]

Research indicates that established schemes decrease patients' feelings of social isolation and anxiety and improve their overall health and quality of life.[47]

In the US, a number of similar programs focus specifically on healthy food access. The Fruit and Vegetable Prescription Program by the non-profit Wholesome Wave, for instance, enables doctors across multiple states to prescribe produce to low-income patients. They can then redeem these for free at participating grocery stores and local farmers' markets.

Upscaling social prescribing, however, is challenged by difficulties in robust evaluation of outcomes, coordinating and training service providers, and securing stable and sufficient funding.[48] [49] Still it continues to gain traction, its appeal attributed to its ability to articulate new prevention agendas—ones that take a holistic view of wellbeing, and a collaborative rather than siloed approach to responding to the broader social, cultural, and environmental factors that impact public health.



Capacity building

> There needs to be more funding for urban farmer internships and/or apprenticeships. I would be able to use my 18-plus years of experience to help support/ incubate emerging urban and peri-urban farmers."
>
> **Low-income female gardener, European Australian, 35-44, outer Brisbane**

As our survey has demonstrated, there has been a huge groundswell of interest and enthusiasm for edible gardening. The survey also demonstrates that the support new and inexperienced gardeners most want and need is mentoring, guidance and information-sharing. With most experienced gardeners being over 55 and many in retirement, there is a huge opportunity to facilitate intergenerational exchanges. Experienced gardeners can pass on their accumulated knowledge, wisdom and tips; and younger gardeners can provide assistance with more arduous and labour-intensive tasks leading to social connections and new friendships.

There are also educational, training and capacity-building roles for a huge cast of actors to play. Many are already happening; however as with everything in our Action Agenda, they need to be better resourced with long-term commitments from government. They should also be embedded in curriculum from primary school with a whole-of-country target to reach universal food literacy by 2030, with imparting the knowledge and ability to grow your own food a core component.

Action	Responsible actors
Make food literacy a key goal and embed it through curriculum and programs at primary and secondary schools	State government – Education Schools Not for profits e.g. SAKGF
Create and support networks of knowledge sharing and exchange	Local government e.g. My Smart Garden program Community gardens e.g. CGA
Mentoring, advice and guidance	Local government Gardening groups e.g. SGA
Workshops, pre-accredited and accredited vocational training	TAFE Urban farming organisations Learn Local Networks

Infrastructure & materials

> Gardening vouchers via the council for every household with a rubbish collection service, spendable at local nurseries. A free compost bin for every family. A free or subsidised worm farm kit. Council seed-share depots for low cost seeds or free swaps."
>
> **Female gardener, Anglo-Australian, 65-74, Ballarat VIC**

Land, financing and capacity building are the first three steps of our roadmap. Next, essential infrastructure, inputs and materials are required. These range from quality soil and compost, to wicking and raised beds (where contamination prevents inground growing), to water connections, irrigation equipment, seedlings, mulch, tools, sheds for storage, and shade and shelter for socialising.

With allocations from the national Edible Gardening Fund, local governments and community organisations can obtain and make available the necessary infrastructure to groups and low-income households. As part of a national commitment to ending individual and household food poverty and insecurity, state governments should mandate that water connections for communal food growing be provided free of charge by water utility companies.

As part of the same national commitment, as well as the need to move to zero waste and circular economies, we propose a mass expansion of community composting enabled by an education program. In a similar vein, and consistent with the vision of edible communal growing spaces within a 20-minute walk of every urban dweller in Australia, we propose a national network of micro-community seedling nurseries. Again, this can be financed through the national Edible Gardening Fund.

Action	Responsible actors
Local governments and community organisations to be resourced to make essential edible gardening infrastructure, inputs, tools and equipment available for groups and low-income individuals	Federal, state and territory governments Development industry
Free water connections for approved community gardens and urban farms	Water utility companies & state governments
A mass expansion of community composting through a network of community gardens/urban farms	Local governments and community gardens / networks
Creation of a national network of community seedling nurseries	Community gardens / urban agriculture cooperatives

Policies, plans and frameworks

> Urban farms should be recognised and encouraged for the enormous contribution they make to LGAs in terms of social capital, community building & ecological benefits, including being explicitly provided for in Local Environment Plans and State Environmental Planning Policies."
>
> **Female gardener, European-Australian 25-34, Sydney**

Food is a basic right and need, and in a country as wealthy as ours no-one should be hungry, food insecure, forced to rely on charity handouts or poor-quality produce. Australia is committed to this goal as a matter of human rights law and as part of its commitment to the UN Sustainable Development Goals.

We must embed and implement this commitment through national, state, territory and local policies and strategies. These policies and strategies must be created through participatory, transparent and inclusive processes, as has been done with the Cardinia Community Food Strategy, the Moreland Food Systems Strategy and the Bendigo Food Systems Strategy amongst others. In this way we will build wide community support for the Roadmap for Transformation. These policies and strategies must not gather cyber dust; they must be living and breathing documents, monitored and reviewed with active community participation and implemented with dedicated food systems and food security officers at the local, state and territory levels.

Action	Responsible actors
Commit to the eradication of poverty and food insecurity in Australia, consistent with our international obligations	All governments
Commit to the participatory and inclusive development of national, state, territory & local food security and healthy & sustainable food system strategies	All governments
Resource the implementation of these strategies through the creation of food security & sustainable food system officers in every local government	All governments
Commit to the participatory monitoring and review of these strategies and plans with broad community participation	All governments / community organisations/ other stakeholders

> *It will take leadership and policy drivers to support the momentum, because understandably there is a lot of fear and concern, and economic issues always seem to come to the forefront."*
>
> **Female gardener, Anglo-American, 45-54, Melbourne**

Governance / Coordination

> Communities should have opportunities to develop cooperative systems for basic fresh food supplies, such as garden cooperatives etc. These should be supported by local and state governments and integrated into urban design and planning."
>
> **Female gardener, European-Australian, 55-64, Melbourne**

This report has laid out an ambitious agenda for transformation to greatly expand edible gardening and urban agriculture across Australian towns and cities. It's already happening in a small but significant way. But scaling it up to the level needed for systemic change will require the coordination and collaboration of tens of thousands of people at every level.

This means that staff, teams and departments within governments understand how and why their respective work impacts the food system, and coordinate their programs and policies accordingly. There is a good precedent for this in the City of Yarra's Urban Agriculture Committee, with representation from Council and community stakeholders. A similarly innovative and collaborative approach to joint urban and food system governance is the Town of Victoria Park's Urban Forestation Committee (see Heather Johnstone's contribution, p56).

In terms of building community capacity, leadership and facilitating the sharing of resources, equipment, information and knowledge, the suggestion made by survey respondents to form Urban Agriculture Cooperatives has great merit and potential. These can be linked with existing and emerging local food networks and movements to accelerate the Action Agenda for whole-of-system transformation. Similarly, we strongly support the extension of this movement to schools, via the formation of multi-school Youth Food Security Networks, which can draw inspiration from the leadership shown by last year's School Strike 4 Climate Action.

Action	Responsible actors
Design and implement a whole-of-government, cross-sectoral and collaborative approach to food system governance	All governments and stakeholders
Support the formation of urban agriculture cooperatives	Community organisations and stakeholders
Support the formation of Youth Food Security Councils	Schools and school-based organisations
Support the formation of local food networks and movements	Local governments and community organisations

Collaborative governance: The Urban Forest Strategy

Town of Victoria Park, Western Australia, Heather Johnstone

The Town of Victoria Park (Perth) is a vibrant, dynamic and multicultural place with a strong sense of community. Aerial mapping completed in 2016 revealed an average tree cover of just 10%, with residents missing out on the many benefits that trees provide such as shade and improved mental and physical health.

A major development in 2016 saw the removal of 8000m^2 of tree canopy, and this provided the catalyst for residents to advocate for greater tree protection. This action culminated in petitioning Council for a Special Electors meeting. At this meeting in July 2016 several motions were put forward to be investigated by Town staff. Residents from community group Vic Park Trees (VPT) were looking to find ways to protect and increase tree cover across the whole Town. The motion they put forward during the meeting was that the Town investigate the development of an Urban Forest Strategy (UFS).

The Town resolved, in November 2016, to endorse the development of the Town's UFS via a tender process open to incorporated, community-based organisations. The Vic Park Collective (VPC) in partnership with VPT submitted an Expression of Interest and were successful in securing the contract to develop the Strategy. The VPC, as the incorporated body, managed a $20,000 budget supplied by the Town to undertake community consultation using participatory planning tools from the Australian Urban Design Research Centre. The project team consisted of 35 volunteers who contributed in excess of 3600 volunteer hours to develop the strategy. The Town undertook canopy mapping analysis at a cost of $17,000 to supplement their street tree audits and inform strategy development. Town staff provided guidance throughout the project.

After endorsement of the Strategy in 2018 the working group disbanded. Key volunteers continued to provide input to an Implementation Action Plan. The action plan is now being facilitated by the Urban Forest Implementation Working Group which consists of the Town's Urban Forest Place Leader, 5 staff who change depending on required skills and availability and 6 residents who were selected through an expression of interest. Throughout, the Urban Forest Working Groups have placed prime importance on community collaboration to build consensus, and capacity building to support the implementation of ambitious goals.

Conclusion

Throughout it all, I have felt hope. Hope that somehow the momentum of getting back to nature, sustainability, and food security would remain after COVID-19. Of course, people will go back to the previous ways of doing things but [there is] the seed of an idea that things can be simpler... I think it takes all of us working on this better, fairer and more sustainable society to continue sharing what we are doing and why."

Female gardener, European Australian, 55-64, Sunshine Coast Qld

Our goal in this brief report has been to do justice to the 9,140 respondents to the 2020 Pandemic Gardening Survey and the tens of thousands of comments where they shared, often in very intimate and moving detail, their edible gardening experiences, ideas, hopes and dreams. While we have only been able to provide brief glimpses into the rich diversity of these perspectives and experiences, we believe we have captured the thematic essence: that edible gardening matters enormously to thousands of Australians; that it is a powerful force for ecological and public health; and that accordingly it is deserving of far greater recognition and support than it currently receives.

We believe that our action agenda and roadmap for transformation would truly make Australian towns and cities edible. The profound, systemic and interconnected challenges that confront us as a community, as a nation, and as a species, call for a clear, unequivocal and unswerving commitment to make human and ecological health the top policy priority. This demands political leadership, the collective courage to face fears and a willingness to overcome a pervasive culture of risk aversion. The much greater risk, we argue, is that doing nothing or doing very little fails to address the scale of the crises we face – which are existential in their severity. Nothing less than a paradigm shift, and a cultural transformation, is required. The potential of such a transformation, the promise of co-flourishing in a more just and harmonious future, is achingly within our grasp.

We conclude with the words of this gardener from Warrnambool: "Every seed I plant is a wish for tomorow."

> *Urban permaculture practices are the future. Monopolistic monocultures which typify Australian rural agriculture must go. Reforestation projects that would employ every un- and under-employed person in the country should be implemented immediately, in all rural regions of the country. Seed collection, nurseries and planting teams should be developed everywhere where the Indigenous landscape has been decimated by tillage, grazing and mining. This will rehydrate the land. Then edible landscapes on broadscale and urban levels must be implemented along with community/publicly managed city farms and community gardens. These will be in schools, aged care facilities, in suburbs, towns and villages."*
>
> **Experienced male gardener, Anglo-Australian, 65-74, Clare SA**

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Appendix 1

Methodology

The Pandemic Gardening Survey attracted responses from 9,140 gardeners from around Australia. Respondents answered questions about their gardening practices, their experience of the pandemic and the significance of edible gardening for them during this period as well as basic demographic questions. Because not every respondent answered every question, some questions have fewer than 9,140 responses.

Data collection and survey distribution

The survey was created in Survey Monkey, tested with a small group of gardeners and refined for clarity. The link to the final survey was distributed and boosted on Sustain's social media platforms, including Facebook, Instagram and Twitter. Specific gardening groups were approached to ensure diverse representation. Community Gardens Australia, which is represented on the Urban Agriculture Forum Steering Committee, shared the survey widely amongst its membership as did the Diggers Club, which resulted in thousands of additional respondents. Over two weekends and on the final day of the survey, Gardening Australia presenter Costa Georgiadis conducted livestreams on Facebook and Instagram to promote the survey, further boosting respondent numbers.

The survey distribution strategy and the focus of questions meant respondents largely self-selected with most (98%) identifying as edible gardeners.

Graphs and rounding

In most cases, figures are rounded to the nearest whole number for clarity of representation. Some graphs may therefore add to 99% or 101%.

Mixed methods

The survey generated over 25,000 comments in addition to quantitative data. This report adopts a mixed methods approach in presenting quantitative data and drawing heavily on the reflections of gardeners' comments to ensure the richness of their experiences is captured.

The authors have also drawn on existing literature in public health, urban planning and ecology to support the discussion of the findings.

Throughout the report, case studies from across Australia are also presented to illustrate recognised edible gardening leadership in policy and practice.

Appendix 2

Edible Gardening Survey Instrument

Survey Title: Urban Agriculture, Edible Food Gardening and COVID19 Survey

Q1 Do you grow some of your own food?

Q2 If yes to question 1, how much of your own food do you grow?

Q3 For how long have you been growing some of your own food?

Q4 Where do you grow your own food? Select any that apply

Q5 How many hours a week do you spend in your garden / other edible food growing area?

Q6 Do you garden...(mainly alone / with others)?

Q7 If you answered 'with others' to the previous question, who do you garden with? Select all that apply

Q8 What impact has the COVID19 pandemic had on your edible food growing activities?

Q9 What kinds of foods have you grown during the COVID19 pandemic? Select all that apply

Q10 Of the food that you have grown during 2020, please indicate what you have done with it (select all that apply)

Q11 How important have your edible food growing activities been to you during COVID19?

Q12 What impact has COVID19 had on you / your family? Select all that apply

Q13 To what extent have your gardening activities resulted in improved mental health and wellbeing?

Q14 Would you agree or disagree with this statement: the COVID19 pandemic has created possibilities for a better, fairer and more sustainable society. I feel hopeful about the future.

Q15 Will you continue and / or increase your food growing activities in the next 6-12 months?

Q16 Do you feel you have enough support for your food growing activities?

Q17 If you answered 'No' to the previous question, please state what additional support / resources you require access to in order to continue / expand your edible food growing activities - select all that apply

Q18 Which state / territory do you live in?

Q19 What is your postcode?

Q20 What is your gender?

Q21 What is your age?

Q22 Please state your cultural and / or ethnic background

Q23 What is your household per annum income bracket?

Q24 Do you have any other comments or observations about edible food growing in Australia, in the context of COVID19 or otherwise?

Q25 Do you have any comments or observations about the sustainability, fairness and / or resilience of the Australian food system, and ways in which individuals, communities and / or governments can support and strengthen it?

urban agriculture forum

An action agenda for edible gardening in Australia

SUSTAIN | LORD MAYOR'S CHARITABLE FOUNDATION | William Angliss Institute

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