

Strengthening & Developing Community-led Food Growing In Tayside

Recipes for action 2024



Photo courtesy Maxwell Centre, Dundee

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1. Background & Context

Background

This project emerged from the conference '[Feeding Tayside Through The Climate Crisis](#)', which took place in Dundee in March 2023.

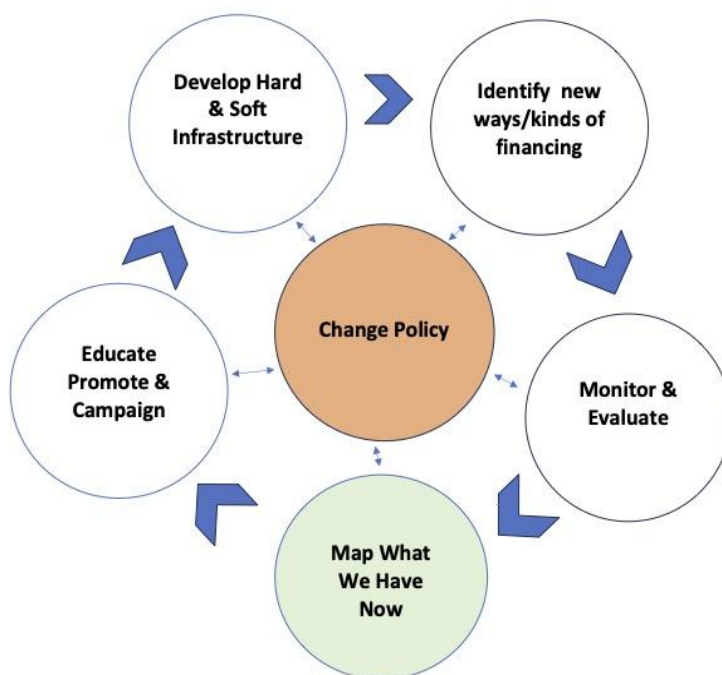
The conference was convened under the umbrella of Bioregioning Tayside by a group of individuals and organisations from civil society, the market, and representatives from local and national government, all of whom are working in different ways to design interventions that could transform Tayside's food system.

It is widely acknowledged that a global transformation of our food system is required this decade to deliver climate change mitigation and adaptation, safeguard biological diversity, improve food security, and create more inclusive and resilient food economies that deliver healthier diets for all. This conference aimed to identify the framework for achieving that transformation in Tayside.

Using the [Food & Land use Coalition's methodology](#), conference participants pinpointed:

- the goals and vision needed in Tayside
- the enabling conditions for triggering systemic tipping points
- the positive/reinforcing feedback loops
- the interventions that will drive those feedback loop
- the actors who can accelerate or hamper the change we need

Following the event, the Conference Working Group devised a framework for the different areas of activity that required action see diagram below.



Intervention Wheel

Called the 'Intervention Wheel', the aim was to help visually summarise the many suggestions and recommendations made and make it easier for everyone involved in Tayside's food system to understand where they could best contribute.

Bioregioning Tayside undertook to lead on the mapping intervention, beginning with mapping **community-led food growing** in Tayside with the aim of better understanding how to strengthen and develop.

Wider context for this work

The contemporary global food system, born out of a post-war, industrialised model aimed at feeding growing populations with cheap, intensively produced food, is fundamentally flawed. It prioritises economic gain for a few at the expense of public health, the environment, animal welfare, biodiversity, and social equality. Despite mounting calls for change, it resists adaptation or regulation of agricultural and food production practices, leading to a lack of progress in reducing diet-related illnesses, mitigating the environmental impact of food production, halting biodiversity loss, and addressing food insecurity on a global scale.

Internationally, there is an increase in policy that can be linked to growing awareness of the fragility of the global food system and the wider polycrisis of climate change, biodiversity collapse and a broken economic model. This has led to the emergence of stronger global agreements and coalitions, such as the draft EU Sustainable Food Systems Law, the Brazilian Food and Nutrition Security Law, the Climate Change (Emissions Reduction Targets (Scotland) Act, and the new French Environmental Labelling law. Ambitious national and regional legislation and policies, like the United Nations Sustainable Development Goals, UN Climate Change Targets, the UK Climate Change Committee, and the UN School Food Coalition, are also driving change. Additionally, corporate social responsibility partnerships and programs, such as Unilever's Planet and Society Programme and the World Wildlife Foundation's Retailers' Commitment for Nature, are contributing to this shift. This change is occurring amidst volatile global food supply chains, rising food poverty, and increased civil society activism.

In Scotland, the main policy drivers for land reform and food system change include:

Sustainable Development Goals (SDGs): Scotland is committed to achieving the United Nations SDGs, which include goals related to sustainable agriculture, food security, and environmental sustainability. This commitment provides a framework for policy development and implementation in these areas.

Climate Change Targets: Scotland has set ambitious climate change targets, including targets for reducing greenhouse gas emissions, increasing renewable energy production, implementing a [National Adaptation Plan](#) and ensuring a [Just Transition](#). Land reform and changes in the food system are seen as essential components of efforts to mitigate climate change and adapt to its impacts.

Land Reform Legislation: Scotland's past land reform legislation and new [Land Reform Bill](#) are aimed at promoting social justice, community ownership, and sustainable land management. This current and planned legislation includes measures to empower local communities, improve access to land, and promote more diverse and sustainable land use practices.

Rural Development Policy: Scotland's new [Agriculture and Rural Communities Bill](#) aims to support rural communities, promote sustainable agriculture, and enhance the economic viability of rural areas. This policy includes measures to support local food production, encourage agroecological practices, and promote diversification in the agricultural sector.

Public Health Concerns: There is growing recognition of the link between diet, health, and the environment. Policy drivers for food system change in Scotland include efforts to improve public health outcomes by promoting healthier diets, reducing food waste, and supporting sustainable food production and distribution systems.

Overall, these policy drivers reflect a growing recognition of the need for transformative change in Scotland's land use and food systems to address environmental, social, and economic challenges and to build a more sustainable and resilient future.

The following attempts to summarise and contextualise this policy framework in relation to community-led food growing:

[The Community Empowerment \(Scotland\) Act 2015](#) – Part 9 (allotments), which places statutory duties on local authorities to take reasonable steps to provide allotments and manage waiting lists. Also creating a number of duties around the wider management of allotment sites, that include the publication of food growing strategies and annual allotment plans. Examples in Tayside include [Dundee](#), [Perth and Kinross](#), and [Angus](#).

[The NPF4](#) is clear that local development plans should create healthier places, including opportunities for food growing and allotments. Development proposals that will have positive effects on health will be supported: for example, where they incorporate opportunities for community food growing or allotments.

[The Good Food Nation Act 2022](#) has a whole section on growing your own food, prioritising two key points for action:

- To encourage and empower people to grow their own food
- To make more land available for community growing and to enable more people to access growing sites and allotments

“We want the people of Scotland to be active participants in building and maintaining a Good Food Nation. Encouraging and empowering people to grow their own food and participate in community food initiatives can have a range of positive impacts on mental and physical wellbeing as well as building a sense of community.”

The [Scottish Government's Climate Change Plan](#) includes measures to support community food growing as part of efforts to promote sustainable agriculture and reduce greenhouse gas emissions. This includes support for community-led initiatives to increase local food production and reduce food miles.

[Scottish Land Fund](#), administered by the Scottish Government, provides financial support to communities to acquire and develop land for a range of community uses, including community gardens and allotments.

[Community Growing Fund](#), also managed by the Scottish Government, provides financial support to community groups and organisations for establishing and developing **community-led food growing** projects. It aims to increase access to locally grown food and promote community engagement and empowerment.

Many local authorities in Scotland have policies and initiatives to support **community-led food growing**. This may include providing access to land for community gardens and allotments, offering funding and technical support, and promoting community gardening through education and outreach programmes. In Tayside, this includes [Food4Fife](#). Perth & Kinross's [Growing Together](#), [Angus Food Growing Strategy](#) and Dundee's [Local Food Growing Strategy](#).

Many Community Action Plans in Tayside have also prioritised community-led food growing and there are already a number of major community-led initiatives in play driving this agenda forward in our Bioregion, such as [Grow Dundee](#), [Sustainable Kirriemuir](#) and [Aberfeldy, Healthiest Town](#)

Such Community Food Growing Networks are significant actors in this space. They are supported in turn by various networks and organisations in Scotland, such as Social Farms & Gardens, Scotland and the Scottish Allotments and Gardens Society (SAGS), providing support, resources, and networking opportunities for community food growing initiatives.

These policies and initiatives work together to enable and support community food growing across Scotland, promoting local food production, community empowerment, and sustainable land use.

Common discourse identifies a whole range of benefits offered by community-led food growing:

Human health and wellbeing

Fruit and vegetable consumption increases when people are involved in community-led food growing. As well as the nutritional benefits, the physical and mental health benefits of gardening and community growing are well documented. A sense of connection to place and to community is also encouraged when people participate in local food growing activities and there is evidence that there is greater engagement with place-based decision-making and collective organising around for example, issues relating to repair and maintenance.

Benefits to Biotic (other than human) Communities

Community-led food growing can mean enhanced space and habitat for wildlife, such as pollinator friendly planting and the management of green infrastructure linking to adjacent wildlife corridors. It can contribute to reducing carbon emissions through reduced food miles and improving air quality. As well as reducing waste packaging and food waste, people are less likely to waste food that they grow, with more grow-your-own waste being composted.

Economic

Community gardens tend to spend grant funding locally, utilising local goods and services, employing local people and training up local volunteers. Growing your own can be a cost-effective part of household food spending, saving families money. Skills and training opportunities, both formal and informal, support the local economy indirectly by preparing people for employment.

Educational

Community growing can contribute to learning, offering both practical skills development and a therapeutic environment. Food growing is for all ages and encompasses a broad range of learning

areas including biodiversity, provenance, horticulture, climatology, ecology, cookery, history, and health and wellbeing.

Food Security

Food security, as defined by the United Nations' Committee on World Food Security, means that all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life. Grow-your-own and locally grown produce ensures sustainable, safe access to produce in Tayside.

2. Project Aims and Objectives

This aims and objectives of this project were threefold:

To map community food growing in Tayside in a publicly accessible way, collecting data in the following categories:

- geographic
- biophysical characteristics including the ecological processes in use
- social characteristics

To identify and cost interventions that would support the strengthening, development and transformation of community food growing in Tayside.

To design a delivery plan involving relevant stakeholders which will strengthen, develop and transform community food growing in Tayside.

3. Project Methodologies

Our focus for this project was on what has been classified as non-commercial local food growing – see table below.¹

	Commercial	Non-commercial
Privately managed	Market gardening, horticultural enterprises	Allotments, home growing
Communally managed	Community-supported agriculture (CSA)	Community gardens and orchards

3.1 Mapping

A mapping exercise was undertaken to identify current community-led food-growing initiatives in Tayside. These combined existing lists generated by [Perth & Kinross Council](#), [Grow Dundee](#) and the Murton Trust's [Growing In Angus](#) data set and added to it using other data collected by the Scottish Communities Climate Action Network and cross-referencing via online search engines.

3.2 Survey

With the support of the James Hutton Institute, a survey was designed, which was sent to

¹ [https://www.hutton.ac.uk/sites/default/files/files/Enquiry%20into%20local%20food%20growing%20Summary\(1\).pdf](https://www.hutton.ac.uk/sites/default/files/files/Enquiry%20into%20local%20food%20growing%20Summary(1).pdf)

134 community-led growing initiatives in Tayside, supported by a number of direct phone calls, online meetings, and follow-ups on alternative contacts. 17 of these returned as either no longer active, closed down or inaccurate information. 32 responses were received, giving a 27% return.

3.3 Live sessions

Three live sessions were held in Angus, Dundee, and Perth & Kinross, where people involved in community-led growing initiatives in Tayside were invited to share their dreams for their community growing site, the barriers that were preventing them from achieving those dreams, and the solutions they could see to overcoming those barriers. A summary of their contributions can be found in the next section.

Desktop research

Desk research was undertaken into reports and policies published relating to community-led food growing in Scotland and Tayside in particular, over the last three years.

4. What we found

4.1 Mapping

A comprehensive mapping exercise was conducted to pinpoint and catalogue the diverse array of community-led food-growing initiatives flourishing in Tayside. This initiative entailed amalgamating existing databases provided by key stakeholders such as Perth & Kinross Council, Grow Dundee, and the Murton Trust's Growing In Angus dataset. To ensure thorough coverage, additional data was incorporated from sources gathered by the Scottish Communities Climate Action Network. Moreover, an extensive cross-referencing process utilising online search engines was undertaken to supplement the existing information. This meticulous approach aimed to create a comprehensive and up-to-date inventory of community-driven food-growing initiatives across the Tayside region.

The data set was cross-referenced using information from Angus Council's [online allotment pages](#), Perth and Kinross's '[Growing Together](#)' Map, Dundee City Council's '[Dundee Food Growing Space Map](#)', Fife Council's 2023-2030 [Food4Fife Strategy](#) and Action Plan (consultation draft - March 2023), [Grow Dundee](#), along with Facebook, Instagram and online search engines.

The original research identified 134 organisations or groups that could be considered 'community-led food growers'. Cross-referencing identified 17 of these as either no longer operating, would not consider themselves 'community-led food growers', or lacked pertinent online information relevant to this research. This underscores the dynamic nature of community initiatives and the importance of ongoing monitoring and engagement efforts.

Overall, it was apparent that volunteer-led organisations struggled with website maintenance, hindering effective communication. Inconsistencies were common across various social media platforms, with some platforms devoid of any pertinent information altogether. Additionally, pinpointing map locations proved arduous at times, compounded by partial postcodes embedded within larger organisational, school, or council premises.

Information dissemination was impaired by fragmentation and accessibility challenges. Valuable details were often obscured within broader organisational content, making it difficult to locate

pertinent information, and there was uncertainty regarding the operational status of certain organisations. While some Facebook posts remained stagnant and outdated, corresponding websites remained active, creating a disparity in information.

Statistics

Communications

53% have a named contact person

87% of organisations have a public email address

79% have public web addresses

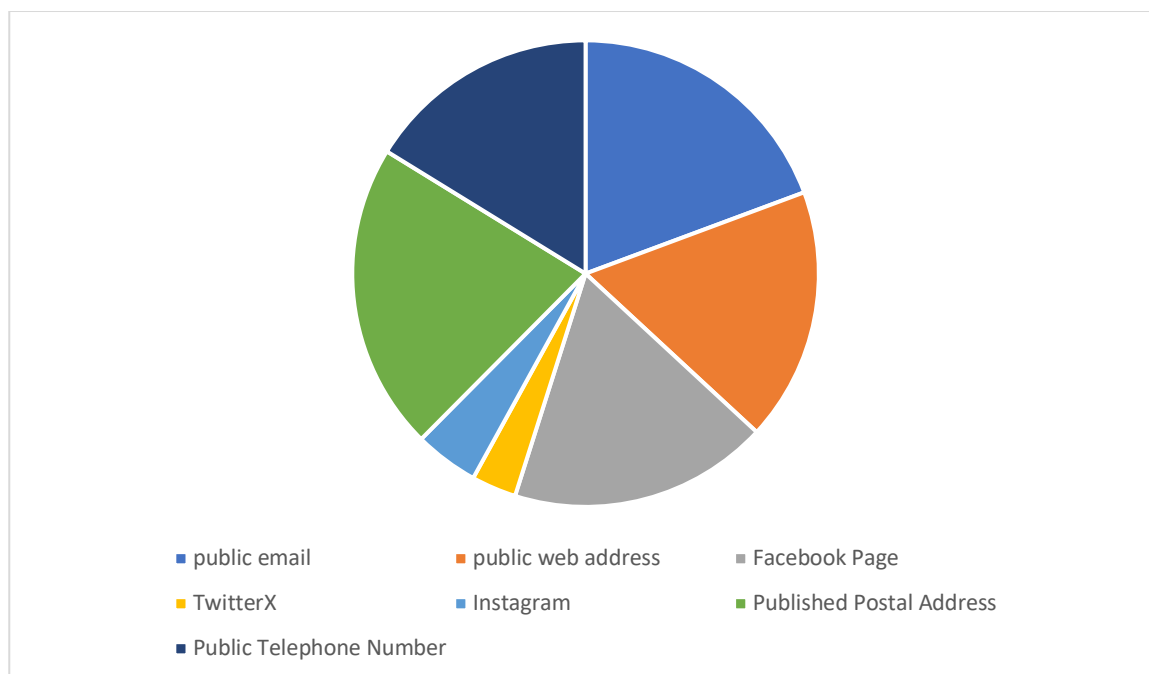
81% have FaceBook pages

14% have TwitterX profiles

20% have Instagram pages

96% publish their postal address

73% publish a public telephone number



The data reveals that a majority of organisations prioritise communication accessibility, with significant proportions maintaining named contact persons (53%), public email addresses (87%), public web addresses (79%), Facebook pages (81%), and publishing their postal addresses (96%). While Twitter profiles are less common (14%), Instagram presence is notable (20%). Additionally, a substantial portion makes public telephone numbers available (73%). These findings underscore a multifaceted approach to communication, blending digital platforms with traditional contact methods to engage stakeholders effectively.

Organisation Structure

Identifying the governing structure of groups or organisations posed a challenge, as this information was not readily available. To ascertain this, cross-referencing with databases like Companies House and OSCR would be necessary to determine the specific governing structures in place.

4.2 Survey

In collaboration with the James Hutton Institute, a survey was crafted to capture insights from 117 community-led growing initiatives operating across the Tayside region. Employing a multifaceted approach, the survey was disseminated through various channels, including direct phone calls, virtual online meetings, and follow-ups on alternative contacts.

The survey yielded valuable responses from 32 active groups or organisations, representing a commendable 27% response rate. These responses offer a rich tapestry of insights into the diverse landscape of community-led growing initiatives in Tayside, providing a foundation for further analysis and strategic planning to support sustainable development and community empowerment in the region.

Survey Structure

The survey was designed to capture the group or organisation's address in order to define a location for the online map. It also asked for the website, Facebook, Instagram and TwitterX and enquired about the governing structure and the labour sources used within the group or organisation.

Section One - Tell us about your organisation

Questions	Options
<p>What is the governing structure of your group or organisation?</p> <p>Select all that apply</p>	<ul style="list-style-type: none"> ● Unincorporated Association ● Charitable Trust ● Volunteer Group ● Charitable Incorporated Organisation (CIO) ● Charity ● Private Company ● Council Owned ● Company Limited by Guarantee ● Community Interest Company (CIC) ● Community Benefit Society ● Cooperative Society ● Do not know/not sure
<p>How would you describe the labour source of your organisation?</p> <p>The labour source of a UK organisation typically refers to the workforce or employees that the organisation relies on to carry</p>	<ul style="list-style-type: none"> ● Paid full-time employees ● Paid part-time employees ● Freelance staff ● Volunteers - full time ● Volunteers - part-time ● Internships ● Apprenticeships paid ● Apprenticeships unpaid

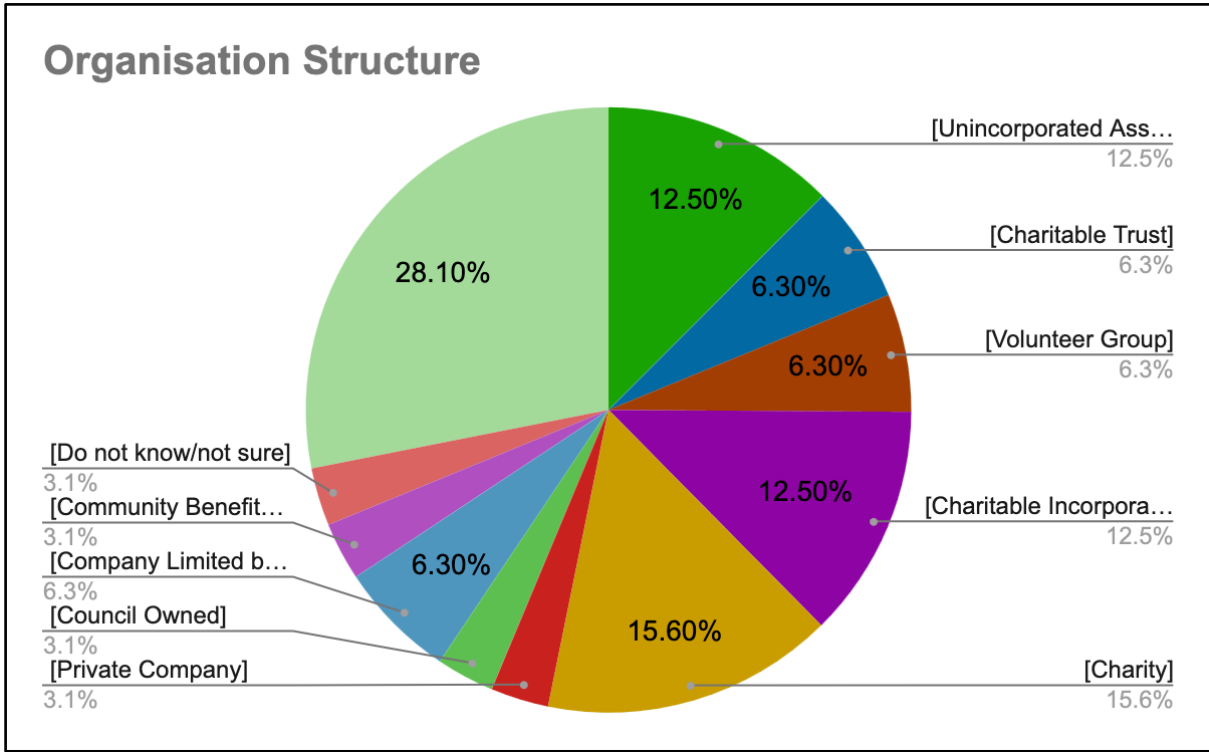
out its operations and achieve its goals.

Select all that apply

Rationale

Understanding governance and staffing, gives us an overview of the ecosystem of contributors and stakeholders. Diversity of entities gives a unique perspective, resources, and expertise. It also reflects a multifaceted approach to addressing complex issues, leveraging the strengths of different organisational models to achieve common goals. This overview allows future proposals to have tailored strategies to accommodate the needs and preferences of diverse stakeholders.

Results



This breakdown indicates the range of legal structures adopted by community-led growing initiatives. It highlights the prevalence of charitable entities (including trusts, CIOs, and charities), as well as the presence of unincorporated associations and volunteer groups.

The distribution of legal structures sheds light on the organisational governance, liability, and regulatory requirements within the sector. Understanding this diversity helps in tailoring support, addressing specific legal challenges, and promoting effective governance practices within community-led initiatives.

Staffing Structure							
Paid full-time employees]	[Paid part-time employees]	[Freelance staff]	[Volunteers - full-time]	[Volunteers - part-time]	[Internships]	[Apprenticeships paid]	[Apprenticeships unpaid]
15.60%	31.30%	6.30%	6.30%	46.90%	12.50%	0.00%	0.00%

This breakdown offers insights into the organisation's reliance on various forms of labour, including paid employees, volunteers, freelancers, and interns. It also reflects the organisation's commitment to engaging volunteers, as a significant portion of the workforce comprises part-time volunteers.

Section Two - Tell us about your growing

In this section, we collected data on growing practices, techniques, and, where possible, details about the soil on the site. We explained that we understood that volunteers drive many community-led growing initiatives, but that we wanted to begin gathering larger data sets which we believed could begin to identify gaps in knowledge, pinpoint areas that may benefit from additional human and/or financial resources and help to strengthen and sustain community-led growing efforts.

Understanding how to grow plants and manage soil is crucial for producing enough food efficiently, protecting the environment, adapting to changing climates, and ensuring sustainable farming practices. This knowledge is essential for farmers, gardeners, and communities to secure a reliable food supply now and respond optimally to food security crises in the future.

Questions	Options	Results	Observations
<p>How do you grow? What kind of growing structures do you use?</p> <p>Please choose all that apply and provide a comment:</p>	<ul style="list-style-type: none"> ● Poly Tunnels ● Greenhouse ● Raised beds ● Open Ground/Field Cultivation ● Container Gardening ● Hydroponics ● Vertical Farming ● Other 	<p>Poly Tunnels: 34.30%</p> <p>Greenhouse: 40.60%</p> <p>Raised beds: 15.60%</p> <p>Open Ground/Field Cultivation: 0%</p> <p>Container Gardening: 15.60%</p> <p>Hydroponics: 0%</p> <p>Vertical Farming: 0%</p> <p>Other: 0%</p>	<p>This breakdown showcases the prevalence of various cultivation methods, with a significant portion of initiatives utilising polytunnels and greenhouses. It also highlights the absence or limited use of certain methods such as raised beds, open ground/field cultivation, and hydroponics. Understanding these preferences informs resource allocation, support provision, and strategic planning to enhance the</p>

			effectiveness and sustainability of community-led growing initiatives.
<p>What is the compaction of your soil?</p> <p>Soil compaction refers to the reduction of soil pore space and an increase in soil density. It can occur naturally over time or as a result of animal or human activities, and can reduce root growth and water retention.</p> <p>Please choose all that apply and provide a comment:</p>	<ul style="list-style-type: none"> ● Compaction - describe as much as you can ● Not known ● Never considered ● Any other comments 	<p>31.30% of participants could describe the compaction of their soil.</p> <p>68.70% of participants did not know or have ever considered the compaction of their soil.</p>	<p>Some participants were knowledgeable enough to describe the compaction of their soil. However, a significant majority of participants, either lacked awareness about their soil's compaction or had never given it consideration.</p> <p>Not knowing about soil compaction can lead to challenges such as reduced water infiltration, impaired root growth, decreased soil aeration, and increased run-off, ultimately impacting crop productivity, soil health, and overall agricultural sustainability.</p>
<p>What is the structure of your soil?</p> <p>Soil structure refers to the arrangement of soil particles into aggregates or clumps and is an essential factor in how plants grow and how well they grow</p> <p>Please choose all that apply and</p>	<ul style="list-style-type: none"> ● Structure - describe as much as you can ● Not known ● Never considered ● Any other comments 	<p>31.30% of participants could describe the structure of their soil.</p> <p>68.70% of participants did not know or have ever considered the structure of their soil.</p>	<p>Some participants were knowledgeable enough to describe the structure of their soil. However, a significant majority of participants, either lacked awareness about their soil's structure or had never given it consideration.</p> <p>The lack of knowledge about soil structure poses several potential problems, including inefficient resource management, compromised crop health and yield, inappropriate soil management practices,</p>

provide a comment:			adverse environmental impact, and economic sustainability concerns.
<p>What is your soil depth?</p> <p>Soil depth refers to the distance from the soil surface to the underlying rock or hardpan. It is a critical factor in determining the suitability of an area for various types of plant growth. Different plants have varying root systems that require specific soil depths for optimal development.</p> <p>Comment only when you choose an answer.</p> <p>Please choose all that apply and provide a comment:</p>	<ul style="list-style-type: none"> ● Soil depth ● Not known ● Never considered ● Any other comments 	<p>15.50% of participants knew the depth of their soil.</p> <p>84.00% of participants did not know the depth of their soil.</p>	<p>Not knowing the depth of your soil can result in challenges such as inadequate root development, improper irrigation planning, limited nutrient availability, and difficulty in selecting suitable crops, all of which can significantly impact agricultural productivity and long-term soil health.</p>
<p>Rationale</p> <p>Understanding soil is crucial because it directly impacts various aspects of soil health and productivity, including water retention, nutrient availability, root growth, erosion resistance, and overall soil fertility. This knowledge helps inform agricultural practices and land management decisions, which contribute to sustainable land use and food production. Collecting this data will thus help give a broad picture of soil health status, how much people know about it, and whether training support on soil health management is needed.</p>			

Section Three - Networking and challenges

Tell us about whether and how you connect and network with other community-led growers. These were open questions with no multiple choice.

1. What kind of groups and networks do you interact with regards your community growing?
2. What do you use these groups and networks for? Is it for seeking advice, gaining or sharing knowledge, exchanging resources or socialising.
3. Tell us about your challenges. What challenges do you usually face? This could be Limited Resources, Land Access and Space Constraints, Community Engagement, Weather and Climate Variability, Funding and Grant Availability or Labour.
Rationale Inquiring about an organisation's approach to connecting and networking with other community-led growers serves to gauge its collaborative efforts and engagement within the sector. This information aids in identifying potential partnership opportunities, fostering relationships, promoting learning, and ultimately enhancing the collective impact of community-led growing initiatives. Identifying the key challenges faced by organisations engaged in community-led growing initiatives—such as limited resources, land access constraints, community engagement issues, weather fluctuations, funding uncertainties, and labour management —provides crucial insights. This understanding empowers us to customise support and allocate resources strategically, effectively address shared obstacles, and bolster the resilience and impact of community-led growing endeavours.

Comments (Unedited)

1. What kind of groups and networks do you interact with regards your community growing?
We have contact with some Community Gardens in the city and provide surplus produce in a basket at the main gate to the local community.
We are members of Scottish Allotments and Gardens Association, but that group is disbanding.

DCC has been working to establish community growing spaces in Dundee's more deprived areas for several years, interacting with groups, individuals and communities across the city. There is now a Community Gardens Network organisation which connects all of Dundee's groups nmmaxinfo@gmail.com is the contact for the network.
Whatsapp contact with Climate Friendly Gardening Group a Fife based group. Contact with PLANT- Tayport Community Garden, Strathkinnes Community Garden, Ninewells Community Garden.
Gowanlea - Community Mental Health Team Glen Isla - Women's Group Local schools Voluntary Action Angus Tayside Healthcare Arts Trust Angus Carers
Local growing groups, allotments, food bank garden, local Bloom group. Also members of Trellis and Social Farms and gardens
Community garden network.
We are part of the Dundee community growing network. We also liaise with Nourish, Trellis, Fife community growing network.
other gardens, local community projects charities, hospital patients, staff, visitors, public, schools/nurseries/universities
- member of Dundee Community Gardens group - member of Fife Communities Climate Network and Fife Climate Hub - we play an active, funded role in Climate Cation Fife (managed by Greener Kirkcaldy and funded by the Big Lottery) - other groups such as Trellis
We work with Whitfield Community Hub to provide a base for their garden group We are part of the Dundee Community Growers Network

Observations

Only a few groups and organisations interact with other groups and networks. However, this small network engages with a diverse array of groups and networks regarding community growing initiatives, including local community gardens, associations like the Scottish Allotments and Gardens Association, Dundee City Council, and the Community Gardens Network. They also collaborate with various local community groups, national associations such as Trellis and Social Farms and Gardens, climate action initiatives like Climate Action Fife, and specific community hubs like the Whitfield Community Hub. This small network reflects their commitment to fostering collaboration, knowledge sharing, and collective action for sustainable community growing practices.

2. What do you use these groups and networks for? Is it for seeking advice, gaining or sharing knowledge, exchanging resources or socialising?
We share order/purchase of seed potatoes on occasion with a Community Garden, and exchange knowledge of resources with other Allotment sites + Community Gardens
Not much
Everything!
Knowledge Problem solving
Sharing resources, knowledge, and socialising
Learning and project-based learning. Horticultural education. Socialising. Art projects.
exchanging ideas and knowledge, sometimes plants, and produce to the local food bank. Trellis for advice and conferences sharing information. We have had visits from local Councillors and MSP.
Sharing knowledge and trying to access resources.
Sharing knowledge, delivering training, exchanging resources, Raising the profile of the network, sharing volunteers and best practice. We are developing a website for the network.
all of the above
Mainly for advice and sharing knowledge

Observations

The groups and networks within the community growing context serve as invaluable platforms for a variety of purposes, including knowledge sharing, problem-solving, resource exchange, socialising, learning, and advocacy. They facilitate collaboration, mutual support, and capacity building among participants, fostering community cohesion and advancing the goals of sustainable food production and environmental stewardship.

3. Tell us about your challenges. What challenges do you usually face? This could be Limited Resources, Land Access and Space Constraints, Community Engagement, Weather and Climate Variability, Funding and Grant Availability or Labour
We are self-financing, from rents, membership, on site shop and events. Increasing revenue for improvements can be difficult depending on skills available. We are dependent on member volunteers for all aspects of the site management.
Rabbits. A community footpath from the village to the camp. Increased rental costs.
Weather and Climate Variability, it is a very exposed site which puts structures at risk from the wind. We are also on a private road and core cycle path so we have planning permission restrictions on vehicle access, which means we are limited in how far away our potholders can travel from.

<p>Individual objections to shared growing spaces have been problematic with shared backies projects invariably failing due to a single resident.</p> <p>Covid-related sickness and debilitation has reduced volunteer workforce energy and resilience. Long Covid and repeat infections are projected to make this situation progressively worse.</p> <p>Climate emergency has impacted weather with flooding and drought alternating. AMOC predictions make the future even more uncertain for growing.</p> <p>Deer and slugs are our biggest pests leading to crop destruction.,</p> <p>Funding situation seems to be pretty good currently. DCC's Climate Choices fund has been a huge, targeted help to community growing groups.</p>
<p>Off grid...advantages but challenges At times lack of volunteers</p>
<p>We are currently applying for funding for deer fencing, as deer are a challenge as is access to water to the veg plot (funding applied for). We are trying to garden in a way that is resilient in the face of changing climate, and unreliable weather.</p>
<p>Funding and grant availability. Resource constraints. Labour constraints.</p>
<p>We are self-supporting financially by plant sales, and have a volunteer team who benefit from gardening and socialising. The vegetable beds are limited in size, we also use the greenhouse for propagation and growing summer tomatoes etc. We provide some educational input for local schools, and occasional adult courses. Growing a large quantity of produce is not our main focus. Expansion of activities is limited by our space and volunteers' time.</p>
<p>Accessibility to the site means we cannot get compost deliveries from the council which means volunteers have to bring bags of compost themselves - this is really hard due to lack of vehicle access and funding.</p>
<p>We struggle to get volunteers. Many people begin helping and then have other commitments and cannot continue. There is no continuity in volunteers e.g. People can not attend every week. This makes it hard to encourage new people to come as attendance is unreliable. There are only a couple of volunteers who are confident in growing so they are required for gardening to take place. If they cannot attend then nobody else comes.</p>
<p>Limited volunteers makes it difficult to form a constituted group. Without a group it is difficult to get funding. Most resources are paid for out of volunteers pockets.</p>
<p>The main challenge is securing long term funding. Many sources only run for a year so we set things up then we can't continue them. Many people rely on us.</p>
<p>We are fortunate as we are a community centre as well as a garden so it brings a lot of people into the centre. We have many long standing volunteers.</p>
<p>Our space here is very limited.</p>
<p>funding availability</p>
<p>Weather was a major problem in 2023 because of lack of rain in the growing period. We are completely volunteer-run (we have some funding but it is limited and directed at specific projects) so a lack of core funding is an issue.</p>

Shortage of volunteers to take a leading role in the Community Garden and in managing (the organisation).

Observations

The challenges faced by community growing initiatives encompass financial sustainability, resource constraints, labour shortages, environmental hurdles, community engagement issues, and access limitations. These include difficulties in securing long-term funding, limited resources for expansion, dependence on volunteer labour, weather and pest-related challenges, community opposition, and logistical barriers. Overcoming these obstacles requires strategic planning, resource mobilisation, and collaborative efforts to foster sustainable growth and resilience within the community gardening sector.

4.3 Live sessions

1. Dundee

Dreams Green = Most important

- Humans respecting other than human life
- Lots of 'other than human life' in the community garden – bees, chickens, space for wildlife to thrive
- Funding and access to long term funding
- Garden workers are paid a fair wage
- Efficient systems make growing easier for everyone
- Accessible and inclusive, a place that everyone feels welcome
- Companionship through nature
- Shared meals where everyone brings something
- Sense of agency
- People who eat together stick together
- People growing together, families growing together, everyone learning together through food
- Food for all, not just the privileged
- Community gardens are safe and family friendly
- To slow down
- Nutritious food grown for health
- Skill sharing
- Everyone can identify native species
- Growing in solidarity with the farming community
- A sun patio, swings
- Get more people growing

Barriers

- Space to develop new ideas
- More volunteers

- Financial uncertainty – spillover insecurity to people using the garden and their families
- Funders always want something new
- Exploitative funding model that relies on huge levels of volunteering
- Human and financial resources
- Governance structures
- Capacity and time of current team
- Short term funding
- Setting expectations that cannot be met
- Meeting unmet needs
- Demands to participate too great
- Catastrophic social breakdown
- Burn out of staff and volunteers
- Demands to participate in endless consultations too great
- Mental health issues of users – managing and enabling

Solutions

- Long term planning
- Re-structured local councils
- Council talking to each other
- Government and Council's taking a holistic view of the benefits of community-led food growing to e.g. health services
- New ways of dealing with surplus food grown
- Collective voice across the Bioregion to tackle common issues, e.g.: compost
- Secure compost supply chain
- Better data collection including 'anec-data'
- Cost benefit analysis of community-led food growing to show benefits to other policy agendas, such as health
- Seed sovereignty – to include farmers (e.g.: from Austria)
- Invent a bioregional food waste system
- Community supported agriculture
- Valuing education about food
- Children and adults encouraged and supported to eat vegetables
- Children and adults see vegetables growing
- Teachers who have time
- No red tape, sensible risk assessments
- Farms twinned with schools
- Connections to other parts of the food system – RSABI, NFUS

2. Coupar Angus

Dreams **Green = Most important**

- Funding opportunities are easily accessible and fair
- Infrastructure is easily obtainable, making growing easier – not uphill battle
- For everyone to understand the value of fresh locally grown food and get involved
- There is a desire to learn food growing skills
- Garden has strong networks and food hubs
- **Safe crossing spaces to access growing spaces**
- Rainwater collection

- Communal growing spaces in new and old housing estates
- To involve other community groups in growing vegetables
- Growing wildflowers and rewilding
- Involving schools and individuals
- Involve new starters – novices – into growing – food buddies
- Community food growing leading to self sufficiency
- Picnics for children of fresh locally grown food
- Children and young people involved in a fun way
- Education – growing & cooking local produce – schools and nurseries
- Learning where food comes from and how food grows
- Vegetables which grow in changing weather conditions
- Seasonal, perennial, fast growing vegetables
- Supermarket guilt
- Locally grown seasonal food for local people – e.g.: Fife Diet
- A plot for growing vegetables & fruit, untidy with space for wildlife, wild flowers
- Family involved
- Bring all varieties
- Sharing produce
- Guerrilla gardening
- Growing veg in ‘spaces’ – community raised beds accessible for all
- Dig for ‘organic’ victory for 21st century
- Sharing excess produce in a way that is accessible to others
- Partnership working
- Connected to all other community-led growing sites in Tayside
- Allotment Festival
- Promotion of ‘The Tayside Diet’ like the Fife Diet
- Experiment with new plants that could grow because of climate change
- Drought management because we have built underground water tanks which will be filled in winter rains
- An annual feast on our allotment where we cook and share the food we have grown there with singing and dancing
- Growing food that feeds us but feeds other than human life too
- Learning new knowledge about soils, companion planting, preserving, cooking etc, but from each other on the site
- Local indigenous seeds easily available
- Linked garden growing
- Community led food growers are always at the food policy table
- More pick your own
- More perennial veg
- Fresh, organic – no plastic
- Encouraging people to grow food
- Allotment growing spaces across communities
- Resilience and empowerment – food bank are not empowering
- A food revolution
- Celebrate the season
- Tayside store where you can buy community grown food
- Learn more about wild food to support all species and the land
- Housing estates also have food growing communal space – ponds – whole ecosystems
- Learn more about seed saving

- Learn what grows well per area – heritage varieties
- Food growing around the town openly available for all species
- A more organised consumption sized food farm where people can get involved with growing or just purchase affordably or pick their own
- Educational get together to exchange food ideas on growing, cooking preserving

Barriers

- Supermarkets
- Clean veg expectations and exaptation of size and shape
- Price
- Global supply chain
- The way we live now
- Fracture of family unit
- Climate crisis
- Changing habits is hard
- Drought
- Flood
- Insufficient education
- Loss of skills
- Culture of outsourced responsibility– it's always someone else's responsibility – never your own
- Capitalism and the individualistic values it promotes
- Lost connection to nature
- Food industry
- Accessibility – especially in some cases physical accessibility
- Infrastructure issues generally
- Access to land and suitable land

Solutions

- Use Local Place plans to drive change
- Reconnect children and adults to the seasons
- We should not need Fair Trade
- Food Ceilidh's
- Live meet-ups
- Funding that is easily accessible
- Ethical meaningful experiences of food
- Push Perth and Kinross Council (PKC) to change the way they support community-led food growing
- Data on how many people want to grow their own food and whether allotments are actually being used
- Local governance to ensure the best use of e.g. allotments
- Good, maintained infrastructure – water, compost, waste collection
- Community buy out of private land to expand community-led food growing
- Land for community farms
- Open conversations to resolve barriers
- More Employers offering X4 day weeks would give people more time to grow their own food
- Food provenance that is understandable – what does organic really mean?
- Time to lead a healthy life

- Just do it

3. Brechin

Dreams Green = Most important

- Understanding of the need of food for health
- All schools have a garden and get time to spend there and learn the skills to grow
- Land laws reformed
- Rewild the mind
- School food system gets local
- Reconnect people to nature
- Reducing sugar and junk food
- Wild medicine – use natural remedies first
- Abundant thriving growing spaces where all community can be involved
- Build community resilience
- Wildlife meadows, people taking peace from the space
- Self-sufficient, families growing, cooking, food at home not solely relying on supermarkets
- Free food for community
- Remove the need/focus on economic growth
- Reconnecting to land, foraging for food
- Eating seasonally
- Coastal seaweed as fertiliser
- Education is key – what is food, not just fuel – provides connection
- Accessible for people with disabilities
- Use more unloved spaces to grow food
- More people would grow fruit and veg in gardens
- Polytunnels that are wind/storm resistant
- The big supermarkets stop selling veg in Carnoustie because the community grow all their own
- Community kitchen cooking area – enthuse, educate, resilience
- People are healthier, levels of obesity reduce and type 2 diabetes also
- Share food that you have grown
- Take what you want
- No false grass, stop hard surfaces in gardens
- Loan out your garden space if you can't use it
- All new housing estate would integrate food planting into their plans
- Learn to grow from scratch
- Policy by local government to educate people about food growing
- Utilise space by using grow sacks
- Decouple markets
- 1,000 acres of community-led food growing in to Angus
- Food and growing is fun
- Underground greenhouse
- Communal space
- All year round production
- Start small and grow
- Permaculture
- Food is fun
- Routes to market

Barriers

- Supermarket cartels
- Bad branding
- Endless consultation is actually exploitation
- Expectation of industrial scale volunteering being the answer
- Looking afresh at what we mean by community
- People are working and don't have time to grow their own food
- Local food growing should be prioritised over salting the roads
- Integrated decision-making at national and local level
- Government not being given right information
- Current perceptions about food
- Current world views – very individualistic = profit and growth focus

Solutions

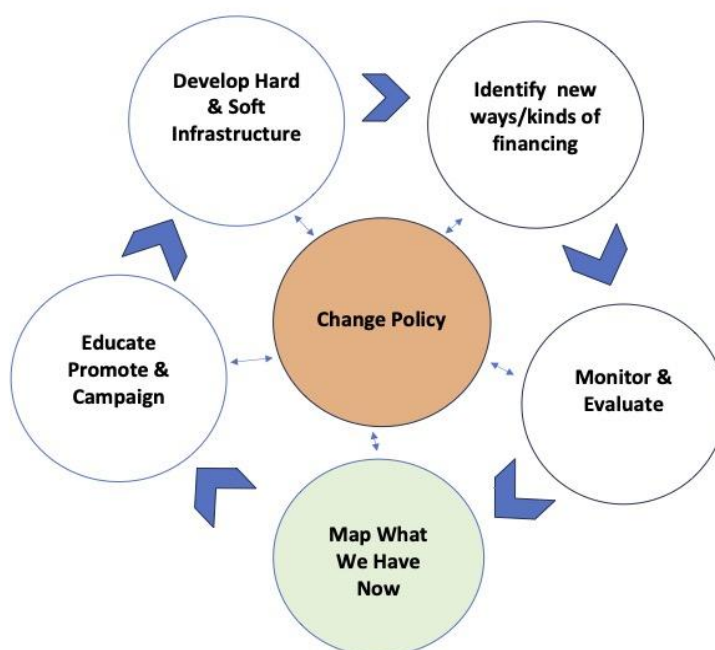
- All school have gardens
- Refocus on available space
- Who can support that
- Shared resources
- Natural remedies first
- Take kids/adults into wild local places
- Share the knowledge
- Reconnect to the land
- Go outside every day
- Take a friend
- Connect schools and local groups and start appreciating what we have
- Outcomes will be better connect, people developing agency, increased belief in ability, capacity, future
- More volunteers
- Open shed pop-ups
- Working together to repurpose, reuse materials
- Scaling up what we have proven so far – skills etc
- Policy change at top level
- Relationships and trust
- Access to land and facilities
- Proactive not reactive
- New governance structures
- Don't work in silos
- Food preservation
- Complex policies need to be interlinked
- What relationships do we need that we don't have for solutions?
- Affect policy, spread word, show possibilities on the ground
- Farmers need to go somewhere else besides supermarkets
- We need to be good ancestors
- Seismic shift
- Make ourselves more visible to each other
- Making those who are doing it more visible
- Citizen assemblies
- Single industrial facility to support processing

- Decouple from existing markets
- Are we seeing this through too rural a lens?
- Safe space to do all sorts of stuff
- Need to stop folk thinking it is someone else's problem – this is our job
- Local procurement
- National and government departments knowing what each other is doing

5. Mapping findings from the workshops onto the Intervention Wheel

Change policy

Common themes emerged from the workshops. The need for a holistic approach by policymakers was touched on in several ways, with attendees outlining a range of areas where they thought it would be possible for departments and budgets to work together with beneficial impacts for individuals, communities, and better outcomes for the agencies themselves. It was pointed out that community growing provided significant potential for a crossover between health, social work, and education, and that a new inter-agency approach could lead to measurable benefits and outcomes, ultimately leading to happier and healthier people, and budget savings for the agencies which went beyond the investment in the growing projects.



Intervention Wheel

Many felt better means of direct engagement with our national government would lead to politicians at Holyrood being able to make policies which better understood and represented people working at the grassroots in communities. The idea of citizen assemblies was raised to give politicians and civil servants an opportunity to understand the needs of communities when formulating policies. Some said they felt there were so many consultations being held, it was

almost at the point of being an exploitative 'tick box' exercise, while recognising that it was important the views of the public were sought. One attendee said better data collection was needed which valued and included 'anec-data'.

Many of the volunteers expressed an emotional and mental exhaustion as the number of 'good causes' needing to be run by volunteers has grown as local authorities have had to cut services and infrastructure over the last 15 years; this, coupled with insecure funding models which offered short-term support for projects which many in communities come to rely on was highlighted as a significant cause of stress and distress, with uncertainty and a sense of letting people down when projects providing a crucial safety net disappear. Many wanted to see less of an emphasis on 'new' and more of an emphasis on supporting and developing long term projects with multi-agency approaches.

Policies supporting local procurement, developing community supported agriculture, linking schools with local growers and farms, and supporting engagement with bodies like RSABI and NFUS was suggested. Changes to land access and community ownership of land were raised in a variety of ways; housing developers being required to provide space for allotments or community growing spaces; growing areas in schools which were supported and funded; infrastructure which enabled growing (such as the provision of water and waste removal); and a requirement for safe and accessible access to growing spaces, such as shared pedestrian and cycleways away from roads and with bridges over dangerous roads. Clear and easily understood provenance which avoided greenwashing was also raised – while recognising that food labelling is reserved to the Westminster Government, it was hoped that ways to make progress in this area would be found.

Educate, promote & campaign

Examples of Tayside schools using outdoor education in positive ways is very inspiring and attendees were keen to see more schools supported and adequately funded to explore models which would work for their circumstances, the examples of improved outcomes for youngsters and classroom behaviours having considerable scope for being expanded upon, as well as providing fresh produce for school kitchens, pupils, and staff.

Adult education in community growing spaces is multifaceted, from skill-sharing to more formal courses, some of which lead to people gaining employment in other areas. The potential for community cooking, skills to be learned in nutrition, food preservation, seed saving and sharing (in particular, of heritage and landrace seeds) is of great importance both as a resource for facing the climate emergency, but also as a way of providing food, resources, and knowledge within the community.

There was an important cultural aspect of the work too, with people finding better community cohesion and aspiration growing out of communal gardening spaces, a greater knowledge of local traditions, and a reduction of waste as people shared tools and learned upcycling methods.

Develop hard & soft infrastructure

There were many ideas about the kind of infrastructure needed, from on-field resources such as polytunnels/polycrubs, sheds, on-site composting toilets, and field kitchens, to secure storage facilities in community spaces, the provision of water supplies and waste removal services.

Crucially, safe access to growing spaces was raised with some alarming examples of people trying to access growing spaces along routes which were too dangerous for pedestrians or bicyclists. Adequate lighting for community gardens in shared spaces, such as parks, also is a health and safety issue.

Growing spaces which can be accessed and enjoyed by people with a range of accessibility needs also is important, but sadly lacking, sometimes because of a lack of education and awareness, but often owing to a lack of resources.

The way in which we access fruit and vegetables was raised with many wanting to see community supermarkets selling produce from community gardens and local farms/market gardens. There is significant awareness of the issues facing professional growers and a concern about the profits being made by supermarkets. More than one attendee made the observation that we needed a 'fair trade' model which saw money staying in local communities with a fresh and diverse range of varieties, including heritage and landrace, on the shelves, with farmers being paid a fair sum and customers being able to afford fruit and vegetables. Local markets and pop-up open sheds were also suggested.

There was a keen interest in more growing spaces being incorporated into the designs when new housing was being developed, with the potential for community spaces and markets alongside growing areas. As we face a growing climate emergency, the need for rainwater storage and a means for that water to be used on the growing areas was also highlighted as being of key importance, possibly also as part of flood management and mitigation.

Identify new ways/kinds of financing

It was widely reported in all the live sessions that the current funding model, dominated by grants from the public and philanthropic sectors, not only is broken, but is breaking the people who are trying to work within it, with funding uncertainties and short-termism causing significant distress and acting as a barrier to innovation and cost-effective investment. In the current economic climate, most people and government institutions are so squeezed, the ability to finance projects adequately seems like a pipe dream. Everyone agreed we need to see significant change to address the current inequalities and the unrealistic expectations from local, regional and national government that industrial-scale volunteering was the answer.

Monitor & evaluate

Participants recognised that collecting more comprehensive and consistent data on community-led food growing would help build the case for better resourcing, but that currently, organisations were too under-resourced to deliver this in any meaningful way.

6. Interventions needed to strengthen & develop community-led food growing in Tayside

Whilst this project has focused on one aspect of Tayside's food system – community-led food growing, and how it can be strengthened and developed, achieving real transformative change in this one domain needs a comprehensive and multifaceted series of interventions across the whole system. Transitioning to a locally financed and regenerative food system is a complex process that

requires the involvement of various stakeholders, including government, farmers, consumers, businesses, and communities. Collaboration, education, and long-term commitment are key to achieving a sustainable, resilient and more secure food system in Tayside.

Nevertheless, using the Intervention Wheel to map local people's views and suggestions on how to strengthen and develop community-led food growing has started to build the picture of connection to other stakeholders and other domains across the whole food system, which could now be activated in the following ways;

Change policy

Co-design and publish a charter for community-led food growing in Tayside.

Use Local Place Plans (LPP's) to advance community-led food growing ambitions (submission late 2024)

Who could do this and how?

Community-led food growers and other relevant stakeholders working with Local Authority Good Food officers responsible for delivering Good Food Nation plans. This could be enabled via a Working Group representing relevant stakeholders, with a secretariat provided by Bioregioning Tayside.

LPP's need to be submitted in late 2024 to be included in the next round of Local Development Plans. Greater promotion of the opportunity afforded by LPP's to develop community-led food growing needs to be undertaken with some urgency by Local Authority Good Food officers.

Educate, promote & campaign

Identify existing community-led food growing 'hubs' who would be interested in taking on the design and delivery of relevant campaigns across the Bioregion if they were appropriately financed to do so.

Who could do this and how?

A call could be put out for 'hubs' to express an interest in being a campaign hub via the newly formed network - see below. Joint funding bids could be designed for a 3-5 year education, promotion and campaigning strategy for Tayside, if preparation of those bids was appropriately resourced.

The network could be asked to identify best practice community-led food growing campaigns from Tayside, Scotland and beyond which could be run in Tayside. Again, any rollout could be undertaken through 'hubs' if appropriately resourced.

The very important cultural aspects of food could be promoted via existing events, e.g. Aberfeldy's 'Open Gate Festival', allotment festivals etc., and new joint events. All these activities would need to be appropriately resourced.

Develop hard & soft infrastructure

Brief for and launch of a new digitally enabled 'by invitation' network for community-led food growing in Tayside, similar to the Scottish Nature Finance Pioneers:

<https://finance.naturalcapitalscotland.com>. This would need a dedicated 'network weaver' resource whose role would be to connect community-led food growing activists in Tayside on a range of issues – skill sharing, seed sharing, soil improvement, food security, policy development, joint bidding, joint events and campaigning and growing better connectivity with other parts of Tayside's food system such as more commercial community food growers.

Who could do this and how?

An existing community-led food growing 'hub' would need to be identified to act as the 'Network Host'. Funding would need to be secured for the purchase of e.g. a basecamp subscription over a period of 3 years in the first instance and a network weaver or weavers would need to be employed to drive connectivity between stakeholders in the network.

Identify new ways/kinds of financing

A Tayside-wide public and philanthropic funding information resource focused on supporting community-led food growing.

A new matchmaking mechanism for community-led food growing groups to find each other to make joint bids for common issues could be enabled.

A feasibility study investigating new ways of financing and resourcing community-led food growing in Tayside.

Who could do this and how?

Depending on how funding information for community-led food growing is currently curated and publicised across Tayside, Local Authority/City Authority/CLLD/Good Food teams could take responsibility for research and updating. Links could be available through the network platform and stakeholder websites.

A Feasibility Study brief could be designed and undertaken by either relevant personnel in Local Authorities or an independent consultant to investigate the relevance of existing financial instruments such as:

- Community Investment Funds
- Social Impact Bonds
- Community-Supported Agriculture (CSA)
- Local Investment Networks
- Crowdfunding Platforms
- Public-Private Partnerships
- Local Currency Systems

The brief could also investigate other ways of resourcing community-led food growing such as recycling and salvage, Time Banks, Corporate Volunteering, bulk buying and/or preferential discounts, bartering and Local Exchange Trading Schemes (LETS).

Monitor & evaluate

An easy, standardised way of collecting data that each community-led food growing site could use, building on the current on-line survey designed for this project, in collaboration with the James Hutton Institute together with a simple standardised way of evaluating key outputs and outcomes

Who could do this and how?

The survey could be further designed by Bioregioning Tayside and the James Hutton Institute and distributed via the new network. The most appropriate host organisation for the survey, data, analysis and publication/sharing would need to be further discussed.

In addition to the data collected in the survey for this project, information could also be collected on:

- Total area of land under cultivation
- Types and quantities of crops grown
- Soil management system
- Pests and diseases management
- Number of community members involved
- Amount of food harvested and distribution reach
- Use of sustainable practices (e.g., organic farming, water conservation)
- Community engagement activities (e.g., workshops, events)
- Challenges and successes experienced during the year

This data could be collected annually by establishing a designated time each year for community-led food growing sites to complete and submit the survey.

Once the data has been collected, results could be analysed to identify trends, patterns, and areas for improvement across community-led food growing sites. An annual report could be prepared summarising the findings and sharing insights with participating sites and stakeholders.

A new feedback and reflection resource could be provided to participating sites based on their survey responses, highlighting areas of success and offering recommendations for improvement.

The survey template could be continuously improved and refined by regular review, based on feedback from participating sites and changes in the local context.

Mapping what we have now

A new [online map of community-led food growing initiatives in Tayside](#), powered by Google Maps has been researched and embedded into [Bioregioning Tayside's website](#) managed via Wordpress. This solution has proven to be the most cost-effective and straightforward providing efficient hosting and mapping capabilities for our project at this stage:

Google Maps is a free web-based mapping service that provides users with various features for exploring, navigating, and interacting with maps and geographic information. It offers satellite imagery, street maps, 360° panoramic street-level views, real-time traffic conditions, route planning for driving, walking, cycling, and public transportation, as well as location-based services such as business listings, reviews, and local points of interest. Google Maps is available on desktop computers via web browsers and as a mobile app for smartphones and tablets, offering users a versatile tool for finding locations, getting directions, and discovering information about places worldwide.

Pros and Cons of current mapping structure

Using Google Maps to map community-led food growers in Tayside offers several advantages:

1. **Accessibility:** Google Maps is widely accessible and user-friendly, making it easy for community members, researchers, policymakers, and stakeholders to access and interact with the mapped data.
2. **Visualisation:** Google Maps provides a visually appealing platform for visualising the geographical distribution of community-led food growers in Tayside, allowing users to easily identify locations, clusters, and patterns of community growing initiatives.
3. **Interactivity:** Google Maps allows for interactive exploration of mapped data, enabling users to zoom in, pan, and click on markers to access additional information about each community growing site, including contact details, descriptions, and photos.
4. **Geospatial Analysis:** Google Maps supports geospatial analysis capabilities, allowing users to perform spatial queries, measure distances, calculate areas, and analyse spatial relationships between community growing sites and other geographical features.
5. **Integration:** Google Maps can be easily integrated with other Google services and applications, such as Google Earth, Google Sheets, and Google Drive, facilitating data sharing, collaboration, and workflow integration.
6. **Mobile Compatibility:** Google Maps is compatible with mobile devices, allowing users to access and explore mapped data on smartphones and tablets, enhancing accessibility and usability for on-the-go users.
7. **Community Engagement:** Mapping community-led food growers on Google Maps can foster community engagement and collaboration by providing a platform for sharing information, promoting networking, and connecting growers with each other and with local stakeholders.

Overall, using Google Maps to map community-led food growers in Tayside offers a versatile and effective tool for visualising, analysing, and promoting community-based agriculture initiatives in the region.

While Google Maps offers many advantages for mapping community-led food growers in Tayside, there are also some potential drawbacks to consider:

1. **Privacy Concerns:** Mapping community-led food growers on Google Maps may raise privacy concerns, as it involves sharing the locations of individuals' homes, gardens, or community spaces. Some growers may be uncomfortable with their precise locations being publicly accessible.
2. **Data Ownership and Control:** When using Google Maps, data ownership and control reside with Google, which may raise concerns about data security, privacy, and reliance on a commercial platform for hosting and managing sensitive information.
3. **Limited Customisation:** Google Maps provides limited customisation options, making it challenging to tailor the map interface and features to specific community needs or preferences. Users may have limited control over map styling, labelling, and data presentation.
4. **Dependency on Internet Connectivity:** Google Maps relies on internet connectivity, which may pose challenges for users in areas with poor or limited internet access. Offline access to mapped data may be limited or unavailable without an internet connection.

5. **Costs for High Usage:** While Google Maps offers free usage for low-volume mapping applications, high-volume or commercial use may incur costs, particularly if users exceed usage limits or require advanced features and services.
6. **Reliance on Third-Party Platform:** Relying solely on Google Maps for mapping community-led food growers may create dependencies on a single third-party platform, limiting flexibility and interoperability with other mapping tools or systems.
7. **Lack of Openness and Transparency:** Google Maps is a proprietary platform owned by Google, which may limit openness, transparency, and community involvement in the development and governance of mapping tools and data standards.
8. **Potential for Data Inaccuracy:** Mapping data on Google Maps may be subject to inaccuracies or outdated information, particularly if community growers fail to update their locations or if changes occur that are not reflected in the mapping data.

Considering these potential drawbacks, it will be important to carefully weigh the benefits and limitations of using Google Maps for mapping community-led food growers in Tayside and explore alternative mapping solutions that may better align with community needs and priorities over the longer term.

A software platform that could consolidate a greater level of data Bioregion-wide about community-led food growing sites would be an advantage. This needs to be identified in collaboration with existing City/Shire focused aggregators in the Bioregion such as Grow Dundee and Perth & Kinross's Growing Together Story Map.

This would enable data capture and analysis which could provide a greater understanding of:

- the optimum growing capacity (i.e. how much and what kind of food could be grown) on each site
- the reach of the produce grown at each site (i.e. how far that food is currently travelling and how where in Tayside are their 'empty quarters' where there is little or no community-led food growing)
- what hard infrastructure improvements were needed where to enable optimisation of community-led food growing
- the human and financial resources needed to enable optimisation and growth of community-led food growing, including education needs
- how this aspect of the food system in Tayside could be better connected to other kinds of food growing and food distribution

Compiling more sophisticated data sets in these fields would contribute to Bioregioning Tayside's plans to build a 'Digital Twin' of Tayside's food system – a virtual representation that would enable possibility mapping and/or simulation of various scenarios in relation to e.g. food security needs.

Platform Recommendation

ArcGIS map (ArcMap) is a subscription based, secure mapping and spatial analysis software as a service (SaaS) platform that empowers your organisation to unlock geospatial insights. Built on scalable and resilient technology, your organisation can collect and manage data, analyse it, and improve decision-making by easily sharing maps and apps. Seamlessly collaborate with the help of a configurable sharing model and a variety of integrated apps and capabilities.

An ArcMap allows users to create, view, analyse, and manipulate geographic data in the form of maps. It provides tools for displaying and working with spatial data, performing spatial analysis, and producing high-quality cartographic outputs.

Some of the key features and capabilities of ArcMap include:

1. **Map Creation:** Users can create maps by adding layers of various geographic data types, such as shape files, raster images, and feature classes.
2. **Data Visualization:** ArcMap allows users to symbolise and visualise data through various styles, colours, and labels. It supports both quantitative and qualitative data representation.
3. **Spatial Analysis:** The software provides tools for performing spatial analyses, such as overlay operations, proximity analysis, network analysis, and terrain modelling.
4. **Geoprocessing:** ArcMap includes a wide range of geo-processing tools that enable users to manipulate and analyse geographic data. These tools can be used to perform tasks like buffer creation, spatial joins, and data conversion.
5. **Cartography:** ArcMap offers advanced cartographic tools for designing and creating aesthetically pleasing maps suitable for various purposes, including presentation and publication.
6. **Layout Design:** Users can create map layouts by arranging map elements such as legends, scale bars, titles, and north arrows. This is useful for generating final map outputs for printing or digital sharing.
7. **Data Editing:** ArcMap provides tools for editing geographic data, allowing users to add, modify, and delete features in vector datasets.
8. **Integration with Data Sources:** ArcMap supports various data formats and can connect to various data sources, including databases, web services, and other GIS software.
9. **Spatial Database Management:** ArcMap can be used to manage and query spatial databases, enabling users to store, organise, and retrieve spatial data efficiently.

Pros/Cons of ArcGIS Desktop

Here are some of the advantages and disadvantages of using ArcGIS Desktop compared to other GIS software applications.

PROS

- Scalability for extra capability
- Solid geo-processing framework
- Beautiful cartography options for print and web maps
- Full set of editing and topology tools
- ArcGIS Online for mobile apps and web maps

CONS

- High cost for usage and maintenance
- Licence levels bring limited tools for basic work
- Interoperability underachieves in accepting non-common formats
- Being phased out for ArcGIS Pro

Data set development

This project has begun to consolidate the map of current community-led food growing in Tayside. The initial collection of data sets including organisation name, location, contacts, governance,

online presence, staffing details, and a sample of growing techniques, soil management information, network activities, and challenges has commenced. However, additional mapping efforts are required to comprehensively capture and analyse the landscape of community growing initiatives, ensuring a thorough understanding of their operations, needs, and contributions within the broader context.

Further research is required to get a better picture of growing capacity, including:

Crops - crop diversity, destination of harvested fruits and vegetables, and cultivation methods employed. We can get a more nuanced picture of growing capacity within the community, enabling better-informed decision-making, resource allocation, and support strategies for sustainable food production and distribution.

Supply Chains - Source of supplies, frequency of local variety use and proportion of locally marketed produce. By exploring these aspects of supply chains, researchers can better understand the resilience, sustainability, and socio-economic impact of community growing initiatives.

Soil Fertility Management - Soil fertility, pest and disease management, and waste recycling. This will assess the ecological footprint, resilience, and socio-economic viability of community growing initiatives, guiding efforts to enhance sustainability, promote environmental stewardship.

Water Conservation - resource efficiency, environmental impact and resilience to climate change. Exploring water conservation practices within community growing initiatives, can assess sustainability, resilience, and environmental impact, guiding efforts to enhance water efficiency, promote eco-friendly practices, and contribute to long-term sustainability.

Climate & Weather - climate change adaptation, optimised growing methods, weather forecasting and risk management: capacity building. By investigating the availability, utilisation, and impact of climate, growing, and weather information, we can identify opportunities to enhance resilience, promote sustainable agriculture, and support community adaptation to climate change.

Pest Management - environmental impact, health and safety, economic sustainability and community preferences. These aspects of pest management will allow research to assess the environmental, health, economic, and social dimensions of pest control practices, guiding efforts to promote sustainable agriculture, minimise environmental impact, and support community well-being.

Soil Management (Detailed) - Soil colour and odour, water retention, soil cover and soil erosion, along with presence of living organisms. Assessing the degree of soil erosion provides insights into the effectiveness of erosion control practices and the vulnerability of soil to degradation. Implementing erosion control measures, such as contour planting, terracing, or vegetative buffers, helps mitigate erosion risks and preserve soil integrity and productivity. Healthy soils teeming with diverse microbial life support nutrient cycling, soil structure improvement, and plant growth promotion.

Policies - compliance and legal obligations, market access and distribution, food sovereignty and local food systems, policy advocacy and engagement. Community growers can use their awareness of relevant policies to engage in policy advocacy, coalition building, and community organising efforts aimed at shaping agricultural policies to better support small-scale, sustainable food production, and equitable access to healthy food. This may involve participating in policy

discussions, submitting public comments, and lobbying policymakers to address the needs and priorities of community growers.

Who could do this and how?

Bioregioning Tayside and the James Hutton Institute could design the annual survey, which could consistently collect data on:

- sites that were operational and their location
- deeper information on biophysical characteristics including the ecological processes in use in order to capture data on
- the kind of produce being grown
- the amount of produce
- how far produce from each site reached
- social characteristics
- changing hard and soft infrastructure requirements
- changing human and financial resource needs
- connectivities that could be strengthened with other parts of Tayside’s food system

and analyse the self-reporting monitoring.

The most appropriate host organisation for the survey, data, analysis and publication/sharing would need to be further discussed.

7. Resources and Budget for Stage 2

The table below offers indicative costs and other resources for the interventions outlined above.

Strand	Cost £ over x3 years
Change Policy	
Charter development	3,000.00
Educate, Promote & Campaign	
X3 hubs £10,000 annually x3 years	90,000.00
Develop hard and soft infrastructure	
Software platform costs x 3 years	4,200.00
Network Weavers costs x 3 years	30,000.00
Identify new ways/kinds of financing	
Curation/research of funding opportunities x 3 years	3,000.00
Feasibility Study	8,000.00

Monitor & Evaluate	
Development/set-up/promotion of survey x 3 years	9,000.00
Mapping	
ArcGIS Storymap costs x 3 years (non profit rates)	3,000.00
Further mapping research & survey analysis x 3 years	9,000.00
Total over three years	159,200

8. Schedule for Stage 2

The timetable below is being developed in discussion with key partners in Tayside who could contribute aspects of the delivery of the interventions proposed if they are appropriately resourced to do so. Activity period highlighted in green.

Strand	2024	2025	2026
Change Policy			
Charter development & promotion of Local Place Plans as vehicles to develop community-led food growing			
Educate, Promote & Campaign			
Develop hard and soft infrastructure			
Software platform			
Network Weavers			
Identify new ways/kinds of financing			
Curation/research of funding opportunities x 3 years			
Feasibility Study			
Monitor & Evaluate			
Mapping			
ArcGIS Storymap			
Further mapping research & survey analysis			

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