

An Overview of the Edible Gardens Project Structure

Edible Gardens is a citizen science project developed to investigate the inputs (labour, costs and water use), and outputs (especially produce yields and value) of urban food gardens in a selected study area. This project is capable of studying all kinds of home, school and community gardens, including those growing a wide variety of fruit, vegetables and herbs, even those keeping urban livestock such as chickens, other poultry, bees or fish. It is well suited to promotion to the public via social media (Facebook, Twitter and Google+), websites, newsletters and other print materials.



Edible Gardens was designed around two main phases, an online survey and in-field garden data collection by selected participants:

Phase 1 of the project involves an online survey (via Survey Monkey), which asks respondents about their motivations, any challenges, their experience, and from where they learnt to grow food. They are also asked to describe their food gardens (size, production method/s, gardening approaches, water source/s, and irrigation method/s), and estimate their typical yields, labour, expenses and water use.

Data collected by the online survey provides a wonderful snapshot of how people in your study area are currently choosing to grow food. Statistical analysis can compare results between the respondents: ages, education levels, housing situations, motivations and what they value about growing food, the challenges they experience, how much money they invest in setup and ongoing costs and how much time they estimate they spend on their food gardens. Phase 1 also allows the selection of a spread of suitable gardeners who wish to contribute to Phase 2 by collecting data on their own food gardens.

Phase 2 involves selecting suitable participants to collect data on their own food gardens. This phase involves a numbers of project protocols and resources, including automated welcome emails and registration requests, the instructions and blank data collection sheets of the data collection toolkits, and customised online infrastructure. Our web developer create the online infrastructure, including a database for data storage (hosted by Microsoft Azure), plus a web interface which can be embedded in websites (e.g. in the Discovery Circle website). The online infrastructure allows for each participating garden to have an online description and profile photograph, linked to their data entry and data visualisation pages. It was designed so that, as participants enter data it, graphs of **their data are automatically generated to display preliminary results for each individual garden**. These online graphics can be used to compare food production areas within gardens (e.g. between two different garden beds (see Figure 1)) and between gardens (i.e. participants can access data from other participants and compare their productivity, water use, labour, all displayed per square metre for easy comparison (See Figure 2)).

Selected participants collect data on three inputs: garden related expenses, time spent on specific garden activities, and water use. They also collect data on their harvested yields and track any produce they share with others outside of their household. Participants are able to choose how long they wish to collect data for. Some of our participants collected data for only three months, while other have completed more than 1 year of data collection thus far. In order to keep participants

engaged with collecting and entering their data online, we recommend sending emails every 2-3 months with updates on: how the project is progressing, the number of people involved, what sort of data is being collected and reminders to please enter their data monthly.

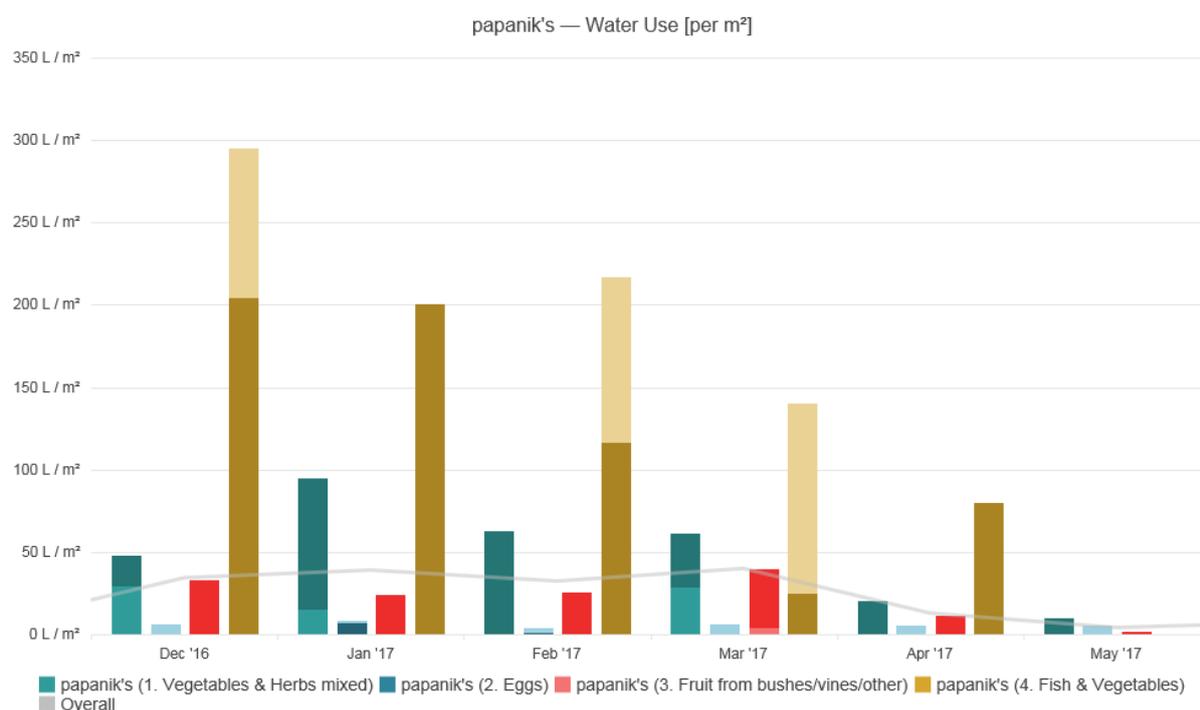


Figure 1 is an example of the water use recorded for four different growing areas of one garden. Each colour column is a separate growing area – with the different shades of colour relating to different water sources e.g. mains water or rainwater. Participants name their gardens - this one is called “Papanik’s”.

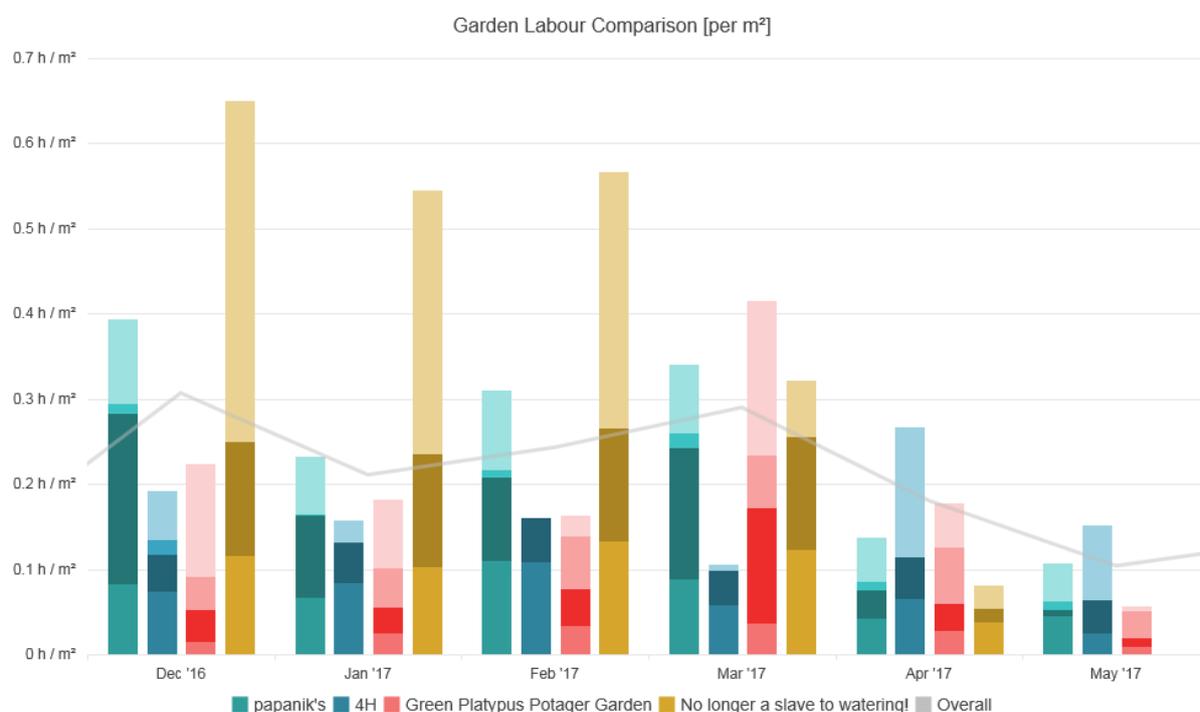


Figure 2 shows a comparison of labour (time spent per square meter) for four separate gardens.

Here each coloured column is a separate garden, with the colour shading relating to different activities such as, 'harvesting', 'watering' or 'livestock care' etc.

A fundamental component of citizen science is the reciprocal relationship with the citizens who contribute to the project (Roetman, 2013). Without citizens contributing their valuable time and effort, the *Edible Gardens* project could not be so detailed or so large-scale. Therefore, providing reciprocal benefits was an important part of the project design.

While collecting garden data, participants were able to download their raw data while also visualising and interacting with the preliminary data displayed in their results charts. These charts could be downloaded, emailed or shared on social media. Once data collection is complete, we recommend that each participant receive a personalised report of their garden's results. In addition to summarising their total inputs (labour distribution, costs and water use) and yields, the report also calculates the retail value and estimated nutritional value of the crops they harvested. Finally, the overall project results and raw data should be made publically available and all results published as open-access research articles. This acknowledgement of the citizen's contribution is necessary (Droege, 2007; Roy et al., 2012; Silvertown, 2009), and can assist in greater recruitment and retention of citizen volunteers (Graham, Henderson, & Schloss, 2011).