Gladstone Regional Seed Library

What is it?

A seed library collection is where the library loans out seeds instead of books or DVDs.

How does it work?

Gladstone Regional Library members borrow seeds for free then plant and tend to their crops. The return on this long-term loan is not fresh produce but instead the return of some seeds from the yield. These seeds are then made available for members to plant next season

Seed Donations:

The library is happy to accept donated seeds. When giving a donation you will be required to fill in a seed donation form with as much details about the plant as possible. Gladstone Regional Libraries are not accountable for the content of seed donations and any errors in the information provided with them.

Information Handouts:

This range of information sheets and activities have been designed to provide basic information on the seeds available and help teachers and parents encourage and inspire their children's interest in nature.

Curriculum Ideas:

Science: parts of plants, what plants need to grow, water recycling

Numeracy: weights and measurements and mixing for nutrient solution

Literacy: diary of plant growth or watering, plant care and harvesting

Art: plants in paintings and botanical artists. Inspiration for own artwork

History/geography: Countries around the world that use hydroponics and why.

Further Reading and References

The following resources contain more information about the topic:

1. Mason, J. 1990. Commercial hydroponics. Kangaroo Press, Kenthurst, NSW.
2. Hydroponics. (2019). Retrieved 6 August 2019, from https://en.wikipedia.org/wiki/Hydroponics
3. Herbert, S., & Herbert, M. (2008). *Aquaponics in Australia*. Mudgee, N.S.W.: Aquaponics Pty Ltd.
4. Hydroponics, S. (2019). Simple Hydroponics. Retrieved 6 August 2019, from https://www.abc.net.au/gardening/factsheets/simple-hydroponics/9432820

Let it Grow - #HomeMakerSpace

Combining the traditional Homemaker skills with the "give it a go" principle of technology focused Makerspace movement.

The *"Let it Grow"* – #HomeMakerSpace Project is designed to complement the current digital literacy programs currently run by Gladstone Regional Council Library Service, by offering a range of activities that draws upon a broad range of low-tech practical skills from the past and utilizing digital literacy training sessions to aid in the sharing and preservation of local knowledge and skills.

GLADSTONE REGIONAL LIBRARIES

Let it Grow #HomeMakerSpace Project Seed Library

Basic Hydroponics

Image: Hydroponic System
Source: Flickr

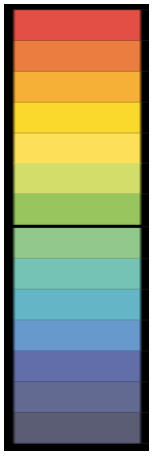
What is Hydroponics?

Hydroponics is a way of growing plants without needing to rely on the soil for plant nutrients. This form of cultivation may be used in areas that prevents the use of local soil, or where maximum yields over a small is required.

There is a variety of growing medium products readily available that can be used for hydroponics, including:

- Rockwool
- Pearlite
- Vermiculite
- Sand (washed)
- Gravel (washed)
- OASIS blocks
- Plastic sheet or polystyrene block (for Nutrient Film Technique)

What is pH?



pH is the measurement of how acidic a substance is. Neutral is 7 (green) getting more acidic as it gets closer to 0 (red) and more alkaline as it gets closer to 14 (purple).

Pure water is Neutral (7) however the recommended pH for hydroponic culture is between 5.0 and 6.0. This slightly acidic pH allows for the better uptake (or availability) of nutrients by the plants.

Warning: roots will burn off if water gets too acidic

Types of Hydroponic Systems

There are several standard set ups for hydroponic systems.

- Flood Irrigation – growing media is periodically flooded with nutrient solution. AKA Ebb & Flow system
- Wick – water is drawn up from the water reservoir and into the growing media continuously through several wicks
- Nutrient Film Technique – contains no growing medium instead nutrient solution constantly flows over roots
- Raft – Plants are held in place on a raft that floats on top of the nutrient solution.

Feeding Plants

Because plants are grown in medium that doesn't provide any nutrients, a nutrient solution is used to feed the plants.

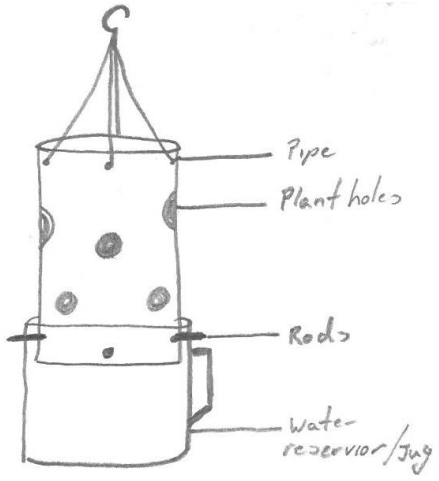
Macronutrients refer to the main nutrients required for optimum growth.

- Nitrogen (N) – for leaf growth
- Phosphorous (P) – for root growth
- Potassium (K) – for disease resistance
- Sulfur (S) – for healthy leaves
- Calcium (Ca) – for shoot growth
- Magnesium (Mg) – for chlorophyll production

Micronutrients are usually gained from the soil and are only needed in small amounts, these include:

Boron (B)	Manganese (Mn)	Zinc (Zn)
Copper (Cu)	Iron (Fe)	
Cobalt (Co)	Molybdenum (Mo)	

Building a Basic Flood Hydroponic System



Materials

- PVC Pipe (80-100mm)
- Dog food tin plastic lid (to fit PVC Pipe)
- Growing medium (Oasis or rock wool)
- Plants (Strawberries work well)
- 1-2 Measuring jugs (20mm bigger diameter than PVC Pipe)
- Plastic dowel/rods
- Wire/chain (for hanging)
- Hydroponic nutrient mix

Method

- Drill holes at the top to attach hanging wire/chain leaving room to fit lid
- Drill 4 holes (in opposing pairs) at the base of pipe with one pair higher than the other for sliding rods through
- Dill holes in measuring jug to match holes at base of pipe
- Drill 20mm-30mm holes for plants, around the pipe (remember to try and distribute weight evenly)
- Loosely fill the pipe with growing medium
- Take plants out of current pots, wash all soil/potting mix off and replant in Hydroponic growing medium
- To water, mix batch of nutrients up and pour through the top allowing it to drain into attached jug. Every subsequent watering recycles the water in the bottom jug
- Change nutrient solution every four weeks and "flush" (with plain water) every month to prevent nutrient salt build up.