

Creating & Maintaining Organic Produce Gardens



Early Childhood Teacher's Resource Kit

This project was funded by



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INTRODUCTION

In today's society it is so important to give our children a healthy start to life as they will face many more pre-packaged food options than what we did twenty to thirty years ago, which will have a big influence on their diet. As educators and parents it is our role to teach children about where their food comes from and making a connection between the garden and the table. Gardening is a fun activity that will delight the senses of young and old. If you've never done any gardening before, use this as an opportunity to learn with the children, as the best way to learn about gardening is through trial and error. This resource kit is designed to give pre-school teachers some basic information on how to get started in developing a productive organic vegetable garden. Teachers will be able to use this valuable information to pass on to children to encourage them to make healthy eating choices.

About this program

This program is aimed at pre-school aged children with the emphasis on connecting children with their food through growing and learning about food in their daily routine.

This program will provide children with:

- The knowledge that vegetables grow in the ground and don't just come pre packaged from the supermarket
- Skills on conditioning soil, composting, worm farming, fertilising, growing food plants from seed & water conservation
- Healthy eating choices

Benefits for daycare centres:

- Providing staff with new skills and a teaching resource kit
- Providing inspiration, support & information on funding opportunities

Why grow organic produce?

Research shows that organic foods have more nutrients, vitamins and minerals and no toxic pesticides, fungicides and artificial chemical fertilisers. Most fruit and vegetables from the supermarket or your local fruit shop, unless certified organic, have been sprayed with a variety of chemicals. By growing your own vegetables organically you know for a fact that they have not been sprayed with chemicals.

Tools of the trade

Suggested equipment you will need for a group of 5 children to participate in gardening activities:

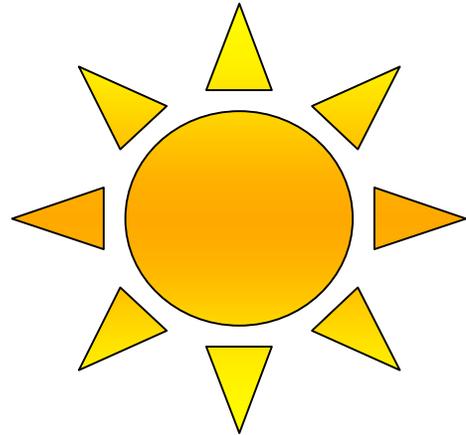
- 5 x small watering cans
- 5 x child size trowels
- 5 x child size gardening gloves

Children's gardening tools are normally available from your local hardware store.



DESIGN AND IMPLEMENT AN ORGANIC GARDEN

1. Before you work out the design of your garden, it is important to be realistic about the amount of time your staff may be able to spend on a gardening activity per week. All gardens require a minimum amount of watering and maintenance depending on the size of the garden, so it is best to start off small and grow the size of your garden as the program develops. Once you have worked out the grand design for your centre's garden you may like to implement this in stages or as money and resources become available.
2. Measure up the area available for your new vegetable garden.
3. Work out the design for your centre's garden, as putting pen to paper and having a plan is the most important step, even if it's just a rough sketch.
4. Be inspired by gardening books eg. Organic Gardening in Australia by Pauline Pears and visit other gardens eg. Kindilan Childcare Centre or the Forster Community Garden to get inspired.
5. Choose a site with full sun or at the minimum 1½ day sun, as most vegetables need a sunny position to thrive.
6. Gardens come in all shapes & sizes and your imagination is the only limit. Think about the use of different materials to give a full sensory experience for children who will be using the garden. For example wood, corrugated iron or rocks.
7. Espalier fruit trees (this is where a tree is trained to grow flat against a fence) & grow vines in small gardens to maximise vertical space.
8. Choose your materials for garden bed edges or type of containers if you have limited room for garden beds.
9. Mark out the edges of borders and pathways with a string line or some sand & then construct garden bed edges or lay your pots out.
10. Pathways – a great material for garden paths is sawdust, which is usually free from your local sawmill.
11. Once you have constructed the garden beds you will need to fill them with soil and organic matter. See page 9 for details.



CHOOSING GARDEN BED EDGES

When constructing the edges of your garden bed keep in mind that you will need at least 40cm of soil to successfully grow vegetables in. The garden bed edge needs to be at least 50cm high.

Tip: *Organise a working bee with the parents at the centre who may be able to donate their time and building or carpentry skills. They may also be able to donate recycled materials for building projects.

New corrugated iron water tanks

Examples of these can be seen at Kindilan Childcare Centre and Forster Community Garden. Corrugated iron water tanks are available from Colonial Tanks – see supplier contacts.

These tanks come in a variety of shapes and sizes including:

- Small round - 1m in diameter
- Large round - 2m in diameter
- Oval – 2.5m long x 1.5m wide

Easy to install

- Dig a small trench and place tank on top of grass or soil.
- Place a thick layer of newspaper or cardboard to cover the grass or soil to help prevent invasion from weeds.
- Follow the no dig method below by layering organic material or the tanks can be filled with a soil compost mix.
- To cover the sharp edges around the top of the tank get some heavy-duty 19mm polytube (available from your local plumbing supply shop) and using a sharp Stanley knife cut a straight line down the bottom edge. Place the polytube over the top of the tank and fix it on with Tec screws about every 40cm.



Corrugated iron water tanks make an easy to install garden bed edge

Recycled corrugated iron water tanks

Where possible it is good to try and incorporate old materials that would otherwise end up in landfill. Take a trip to your local Waste Management Centre where you may find an old tank with holes in the bottom, which is perfect for an instant garden bed edge.

Wooden edges

*It is **not recommended to use treated timber** as a border for an organic garden bed. The major concern is the potential for leaching out of arsenic from the treated timber. More information on this topic can be found at www.kidsafensw.org - playground fact sheet.

Logs

Hardwood logs make a good border material and you may be able to get them donated from parents at the centre who live on nearby properties.



Bessa block or recycled bricks

The benefit of using bricks, as a garden bed edge is, that unlike timber and corrugated iron, it will not rot or rust.

*Your imagination is the limit with the type of edge you may use; just keep in mind the material must be safe for the children to work with.

COMPOSTING

Turn kitchen scraps into compost instead of placing them in the rubbish bin where it will end up in landfill.

Compost is a process of breaking down organic matter by bacteria and fungi. It is important to place your compost heap or bin on soil, not on cement, so worms can enter the compost heap.

Five easy steps to making compost...

1. Make a compost bin out of recycled materials, for example using old chicken wire or discarded wooden pallets to form the sides of the compost bin.
2. Build the compost in layers of nitrogen and carbon materials, about 1/3 of the materials should be carbon.
3. Add water to each layer to moisten the materials.
4. To enable the heat to build up aim to have about a one cubic metre heap at the end of the layering process.
5. Turn the heap using a pitchfork every couple of days to speed up the composting process.

High nitrogen Quick to rot	Intermediate	High carbon Slow to rot
Comfrey Leaves	Fruit & vegetable scraps	Old straw
Lawn clippings	Bracken	Tough vegetable stems
Poultry manure	Rhubarb leaves	Herbaceous stems
Young weeds & plants	Tea & coffee grounds	Old bedding plants
Nettles	Tea bags	Autumn leaves
Cow manure	Vegetable plant remains	Woody pruning's
Horse manure	Strawy animal manures	Hedge clippings
Borage leaves	Cut flowers	Newspaper
Seaweed tea	Soft hedge clippings	Shredded office paper

*Do not add the following items to a compost heap

- Meat and dairy products (may attract vermin)
- Diseased plants (will infect the compost)
- Metals, plastic, glass
- Dog and cat manures which have been wormed
- Cooking Fat & Bones
- Magazines (no glossy paper)
- Large branches
- Weeds that have seeds or underground stems
- Bread or cake (may attract mice)
- Sawdust from treated timber (eg.treated pine)



COMPANION PLANTING

Many plants have natural substances in their flowers, roots and leaves that can repel or attract insects depending on the needs of your garden. By using companion planting guides, you can experiment with what works in your garden and have some fun learning with the children along the way. To attract good insects such as ladybirds to the garden plant a variety of flowers in and around the vegetable patch. You can plant a border of flowering plants like marigolds or celosia to attract beneficial insects to your garden.

Benefits of companion planting

- Help to deter unwanted pests
- Improve growth
- Enhance flavour
- Attract beneficial insects

Try these combinations:

Tomatoes, basil and marigold

Comfrey grown below avocados and most fruit trees

Garlic & mint repel white cabbage butterfly

Zinnias attract ladybirds



Above: Celosia planted as a border in the vegetable patch



Left: Sunflowers attract bees to the vegetable patch

Flowers to plant amongst the vegetable patch

- Celosia
- Nasturtium
- Sunflower
- Zinnia
- Marigold
- Borage
- Pansy
- Viola
- Alyssum

For a complete guide to companion planting check out these great websites:

Figtree Community Garden – www.figtree.org.au go to companion planting

Sustainable Gardening – www.sgaonline.org.au/info_companion_planting.html

WORM FARMING & LIQUID FERTILISING

Worm farming is a great way to teach the children about recycling. Instead of throwing away valuable kitchen scraps, they can be placed in a worm farm where it will end up as rich liquid fertilizer and castings that can be used to plant seedlings into. As an activity you can make a worm farm using polystyrene boxes or commercial worm farms are available from Great Lakes Council at a subsidised rate and also at your local hardware store.

See Great Lakes council brochure on worm farming

www.moretonbay.qld.gov.au/uploadedFiles/moretonbay/environment/education/worm.pdf

www.lifeisagarden.com.au - fact sheet on worm farms

HARVESTING RAIN WATER

All vegetable gardens need water to thrive and the most sustainable way to do this is by collecting your own water. All you need is a roof with guttering to collect water from and a water tank. Government rebates are available for installing water tanks *Conditions apply. Go to www.environment.nsw.gov.au/rebates

How often do I water my vegetable garden?

Plants have differing watering requirements however the best way to test the moisture in the soil is to stick your finger in and if the soil sticks to your finger this means it is damp. It is better to water less often, so the roots travel down deeper in the soil looking for moisture.

Small Areas

Don't be disheartened if you only have a small area for growing vegetables as some of the most productive vegetable gardens are in pots. You could also think about vertical spaces to grow a passionfruit vine or to espalier a fruit tree.



As an **activity** with the children and some creative adults you could decorate an old pot using mosaics or paint.

Polystyrene boxes are free and readily available from your local fruit shop and can also be used to grow herbs and vegetables in. This is a great way to teach children about reusing something that may otherwise end up as landfill.

An old **wheelbarrow** with holes in the bottom can be reused as a feature in your vegetable garden to plant herbs and flowers in.

SOIL AND ORGANIC MATTER

Buying soil

This is probably the most expensive option (unless you can get the soil donated from your local garden supplies shop and have them as a sponsor for your garden) however it is quick and easy. If you are buying soil, make sure you explain it is for a vegetable garden and go to the garden centre and test it to make sure it is not water repellent. This test can be done by pouring a drink bottle full of water on the soil and watch to see if the soil sucks the water into it. If the water pools on the surface and does not penetrate the soil, this means the soil is water repellent. If the water quickly disappears into the soil, it is not water repellent.

What is the best mix of soil for a vegetable garden?

30% well rotted chicken manure or other animal manure, which will increase the nitrogen level and feed your plants making a lot of growth.

20% Mushroom compost or other well rotted compost

50% Premium garden soil

Mulch

To conserve water and keep the weeds at a minimum level, mulching is a must! The best type of mulch for a vegetable garden is certified organic sugar cane mulch, which is finely chopped up mulch and great for mulching around seedlings. It is readily available from nurseries and hardware stores. Mulching can be done before or after you have planted seedlings, although it is often easier to mulch first and then make a hole and plant the seedling into the soil. Leave a 2cm gap around the seedling free of mulch so the seedling stem doesn't become too wet and rot.



A pumpkin vine mulched with a coarse wood chip



Sugar cane mulch is excellent for mulching around small vegetable seedlings

CREATING A NO DIG GARDEN

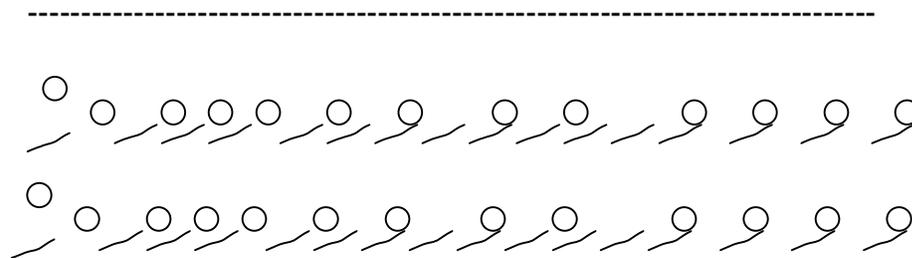
This method can best be described as creating a 'Lasagne of Organic Materials'. It is basically layering one material on top of the other to end up with an instant garden you can plant into with the top layer being well-rotted compost. It is perfect for soils where you cannot easily get a spade into the existing ground due to clay or rock and also where the existing soil lacks nutrients for example a sandy soil.

The benefit of a no dig garden is it will save you hours of backbreaking work digging up the soil. If you have a grass area, this can be done straight over the top of the existing grass. If you are starting a no dig garden on tall grass or weeds, slash the weeds first and use the clippings as one of the layers.

Step by step to creating a no dig garden

Wet each layer as you go!

1. You will need a 50 - 60cm high edge to contain the organic materials. You can use logs, timber, bricks or corrugated iron – see garden bed edges.
2. Place a 5cm layer of newspaper or cardboard on the ground.
3. Place a 20cm layer of lucerne hay, pea straw or sugarcane mulch on top of the newspaper.
4. Sprinkle with animal manure – *chicken, horse or cow manure whatever you have in abundance *chicken manure has the highest amount of Nitrogen.
5. Cover with a 20cm layer of lucerne hay, pea straw or sugarcane mulch.
6. Sprinkle with animal manure or Blood and Bone fertiliser.
7. Add a 10cm layer of rich compost.
8. Mulch with finely chopped up sugar cane mulch.
9. Plant out with your favourite vegetables & herb seedlings or seeds.
10. The soil will sink as the organic materials breaks down. After each crop has finished replenish the top layer of soil with more compost.



Lay newspaper 5cm thick to start your no dig garden

--	Compost	5cm
○	Manure	2cm
—	Hay	20cm
○	Manure	2cm
—	Hay	20cm

50 – 60cm high garden bed edge
 Wooden hardwood sleepers – non-treated timber
 Logs
 Corrugated iron
 Rocks with no sharp edges

MAINTAINING AN ORGANIC VEGETABLE GARDEN

Plants are like people in a lot of ways, they need food, water, sunlight and little bit of TLC to survive! Like us, plants need to be kept healthy or they are more susceptible to attack from unwanted pests and diseases.

Pests & diseases are a normal part of every garden and ecosystem. To prevent these from getting out of control, use a holistic garden approach rather than just focusing on what may be the problem at the time.

Five steps to preventing Pest & Disease

1. BIODIVERSITY

Plant a variety of plants in and around your vegetable patch to attract beneficial insects. A vegetable patch planted only with broccoli will attract White Cabbage Butterfly however if you were to plant a mixed vegetable patch of flowers and companion plants they would have a much better chance of thriving. Go to www.floraforfauna.com.au for a list of plants to attract Fauna

Plant perennials – lavender, rosemary, comfrey

Trees – orange, lemon, plum, crepe myrtle

Shrubs – Grevillea, Banksia, Acacia (Wattle), Callistemon (Bottlebrush)

2. HEALTHY SOIL & LIQUID FERTILISING

Generally healthy soil = healthy plants. Keep your soil free of harmful chemicals and artificial fertilisers and you should find plenty of worms and bacteria. Liquid feed your plants with seaweed fertiliser or worm wee. Refer to composting & worm farming information

3. CHOOSE THE RIGHT PLANTS FOR THE RIGHT POSITION

By doing a small amount of research first, you can avoid years of disappointment. For example, if you plant a sun loving plant like a lemon tree in the shade, it will probably not fruit and get pests and diseases. So read the plant labels or refer to books and the internet for planting information.

4. WATERING

Different plants require different amounts of water so do some research prior to planting. Most vegetables like to be watered every couple of days depending on the type of soil in your garden. Get in tune with your plants and watch them carefully. If plants dry out, they will start to wilt or if plants get too wet, they will start to rot at the base. It is better to give your plants a deep soaking every few days so the roots will travel further into the soil for moisture rather than give them a little bit of water each day which will create a shallow root system close to the surface.

5. COMPANION PLANTING

Refer to companion planting guide

Go to www.greenharvest.com.au/pestcontrol for specific information on pest and diseases.

Prevention is always better than a cure...

POISONOUS PLANTS

The following websites will give you information on poisonous plants:

Children's Hospital at Westmead

www.chw.edu.au/parents/factsheets/pdf/poisonous_plants.pdf

Kids Safe

For a list of Poisonous Plants to Avoid - go to Playground Safety – Frequent Inquiries – FAQ's – What plants are suitable for playspaces – brochure

www.kidsafensw.org

NSW Department of Primary Industries

A guide to garden plants poisonous to people

www.dpi.nsw.gov.au/agriculture

Other Sustainable practices for daycare centre's:

- Providing craft materials that are from a recycled source or waste product
- Recycle the kitchen scraps and children's lunches through worm farms, chickens & composting.
- Buy local products for your centre where possible – support the small companies and cut out the food miles eg. Buy fruit & vegetable from a local fruit shop rather than the supermarket, as the local fruit shop will probably be sourcing their products from local sources rather than importing produce from overseas.
- Use 100% recycled paper, which is made from post consumer waste - check out www.ecocern.com.au for recycled paper products.

GARDENING ACTIVITIES WITH CHILDREN

When working with pre school age children it is more manageable to break them up into a group of around 5 children per activity rather than working with a large group at the one time. To keep the children engaged in the activity it is best to plan one activity and rotate groups so all the children receive a similar experience.

- Grow some seeds or vegetables in polystyrene boxes.
- From garden to kitchen – make delicious recipes like pizza's using freshly picked produce.
- Make labels for your vegetable garden from old ice cream containers.
- Decorate icy pole sticks with the name of herb eg. Parsley.
- Make a scarecrow with straw and old clothes.
- Make stocking heads by filling old panty hose with soil and sowing grass seed on top for hair. Decorate faces using old buttons for eyes/nose and string for lips.
- Make a scrapbook style photo album with progress photos of your new vegetable garden. Invite the children to help decorate the pages.
- Grow and dry some herbs for the children to take home for their parents.

Contacts

Forster Neighbourhood Centre & Forster Community Garden

Trish Wallace, Centre Manager

e. trish@fnc.org.au

Megan Cooke, Horticulturalist

e. megan@fnc.org.au

PO BOX 314, Forster, NSW, 2428

Little St, Forster (next to the Forster Tourist Information Centre)

t. 6555 4351

www.fnc.org.au

Community Health Forum

Phil Webster

e. philw.heather@bigpond.com

Forster Community Health Centre

Kerith Duncanson - Community Nutritionist

t. 02 6555 1830

m. 0429 99 1830

e. kerith.duncanson@hnehealth.nsw.gov.au

Fresh produce

Great Lakes Great Produce Markets – 3rd Saturday of each month

@ Forster Community Garden (near old School of the Arts site)

Forster Neighbourhood Centre

t. 6555 4351

The Farmers Patch – support local growers & community

Lake St, Forster

Books

Organic Gardening in Australia – Pauline Pears

The Permaculture Home Garden – Linda Woodrow

Permaculture, A Designers Manual – Bill Mollison

Pretty but Poisonous – Plants Poisonous to People

Hollyhocks and Honeybees: Garden Projects for Young Children” by Sara Starbuck, Marla Olthof and Karen Midden

Sees to Seed. Food gardens in Schools available through the Forster

Neighbourhood Centre or at www.seedsavers.net/school-gardens

Magazines

Earth Garden, Organic Gardener

www.goodlifebookclub.com - A great range of mail order gardening books

Websites

www.organicfeast.com.au - Fresh Organic Food delivered to your door

www.climatefriendlyliving.org - Great Lakes Climate Friendly Living Guide

www.kidsafensw.org - Information on children's safety

www.earlychildhoodaustralia.org.au - Information on early childhood

www.lifeisagarden.com.au - Gardening recipes and projects

www.kidsgrow.com.au - Information on constructing a no dig garden bed

www.kidsgardening.org - Gardening activities with children

www.greenharvest.com.au/pestcontrol - Green harvest, pest and disease information

www.sgaonline.org.au - Sustainable Gardening Australia, excellent organic gardening information

Seed suppliers – seed catalogues available

Eden Seeds

Lower Beechmont, QLD 4211

t. 07 5533 1107

www.edenseeds.com.au

The Digger's Club – new seed catalogs available in July 2009

PO BOX 300, Dromana, VIC 3936

t. 03 5984 7900

www.diggers.com.au

Greenpatch Organic Seeds

PO BOX 1285, Taree, NSW, 2430

t. 02 6551 4240

www.greenpatchseeds.com.au

Locally grown plants

Native plants

Sydney native nursery - For native tube stock
At the Pacific Palms Market the last Sunday of each month
Melanie & Matthew
t. 0419 447 207

Bush tucker plants

Dingo Creek Rainforest Nursery
82 Schneider Rd, Bobin, NSW, 2429
t. 02 6550 5167

Vegetable & flower seedlings

Ron Hand
At the Great Lakes Great Produce Markets the 3rd Saturday of each month & the
Palms Market last Sunday of each month

Landscape supplies – soil, mulch, gravel

Pacific Palms Landscape Supplies & Gardenworld

3469 The Lakes Way, Pacific Palms, 2428
t. 6552 9088

Gnomes Landscaping & Garden Supplies

152 Manning River Drive, Taree South, NSW, 2430
t. 02 6551 0553
www.gnomes.com.au

Lumberjacks

27 Chapmans Rd, Tuncurry, NSW, 2428
t. 02 6557 6558
www.lumberjackptyltd.com.au

Suppliers

Colonial Tanks - Rainwater Tank Suppliers

453 Tinonee Rd, Mondrook, NSW, 2430
t. 02 6553 5725

Tuncurry Waste Management Centre –Tip Shop for recycled materials

Tuncurry Rd, Tuncurry, NSW, 2428
t. 02 6554 9471

Town Plumbing – Irrigation equipment

21 Breese Parade, Forster, NSW, 2428
t. 02 6591 7917

Garden clubs to join

If you are thirsty for gardening information why not join the local seed savers group who meet at members gardens on the third Sunday of the month and discuss everything from saving seed to growing food plants.

Great Lakes Seed Savers

Kim Voss

t. 6559 1871

kimbo71@wildmail.com

www.seedsavers.net

The Digger's Club

Join this club and receive discounts on mail order seeds

See contact details above

Become a volunteer

Forster Community Garden

Volunteering is a great way to meet like minded people and learn about sowing seeds, composting, worm farming, growing vegetables and much more. All the produce from the community garden is donated to the volunteers and the local soup kitchen. Volunteers meet every Tuesday and Friday from 9am – 12pm. For more information call 6555 4351.

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Forster Community Health Centre

Partners in the project

Forster Neighbourhood Centre & Forster Community Garden
Community Health Forum
Forster Community Health Centre