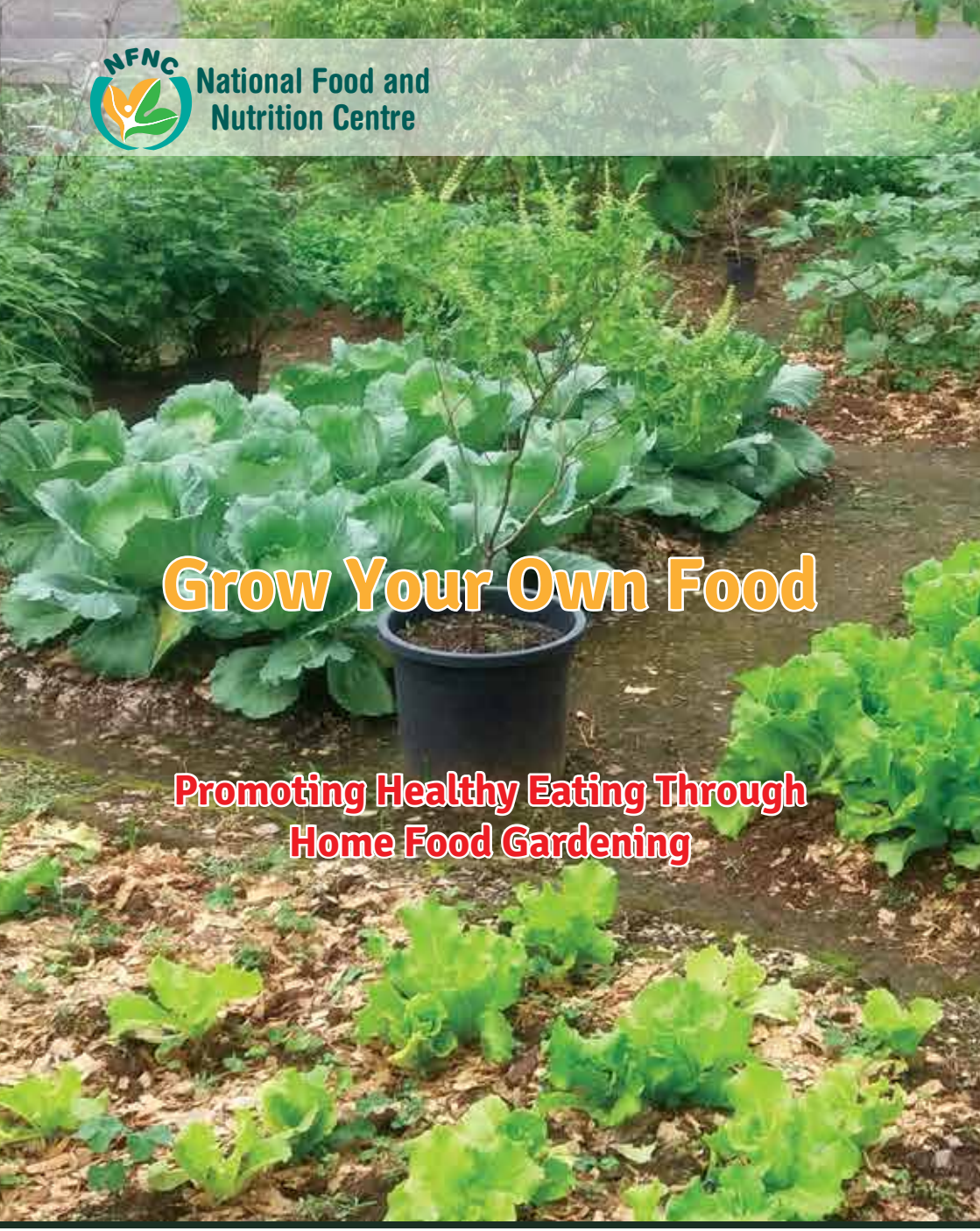
National Food and Nutrition Centre



Grow Your Own Food

Promoting Healthy Eating Through Home Food Gardening

Food and Agriculture Organization of the United Nations

Ministry of Health & Medical Services

Shaping Fiji's Health

Funding support for the development of this booklet was provided through the PROFAV and FIRST Programmes of the Food and Agriculture Organization of the United Nations.

Author: Dr Manuel Alagcan

Grow your own Food

Promoting healthy eating through home food gardening

National Food and Nutrition Centre
Fiji, 2017

Foreword

Food and nutrition security is becoming a threat in Fiji due to impacts of climate change and frequent natural disasters. Soaring food prices are emerging, and are affecting our households especially the already vulnerable and disadvantaged in our communities.

Fiji is making a stand to prepare for the ill-effects of climate change and natural disasters and ensure that our families and communities are resilient, and are food and nutrition secure.

The *Grow your Own Food Booklet* is intended to provide avid gardeners, families and communities simple and practical ways on establishing home food gardens, useful gardening techniques, and organic practices. It details caring for your garden and growing fresh vegetables, fruits and starchy staples for household consumption.

All you need to know about growing fresh crops is available on the *Grow your Own Food Booklet*. Follow the simple tips and ways of keeping garden crops healthy. The Booklet also provides a technique for container gardening.

The *Grow your Own Food Booklet* - simple, easy and practical ways to start your garden today!

Acknowledgement

This booklet was developed by the National Food and Nutrition Centre (NFNC) in conjunction through the Food and Agriculture Organisation's 'Promotion of Fruit and Vegetable Production and Consumption for Health Programme (PROFAV)' and the 'Food and Nutrition Security Impact, Resilience, Sustainability, Transformation Programme (FIRST)'. Drafting of this information material was conducted by Dr. Manuel Alagcan (Agriculture scientist-consultant) and edited by the NFNC Team: Asaeli Naika, Ravindra Kumar, Jowalesi Taukei and Alvina Deo. The team appreciates the contribution provided by Ms Makiko Taguchi (FAO Plant Production and Protection Division), Dr. Tim Martyn (FAO FIRST Programme Officer) and Penina Vatucawaqa (FAO Policy Officer Food and Nutrition Security Fiji). NFNC is grateful to the Ministry of Agriculture who helped to develop and test the booklet in the project communities.

Special acknowledgement is due to the Ministry of Agriculture counterparts: Savenaca Cuquma, Sowane Remudu, Eliki Sorova, Akuila Tuvakaikoya, Pritika Rischal, Malti Prasad, Lusiana Tumaitoga, Waisake Maseikula, Jotame Naureure, Farasiko Soloto, Atelaite Rasaku, Josivini Rosana and Sebasitiano Manakiwai.

Contents

Why grow your own food?

Eighty five percent Fijians are not eating enough vegetables and fruits daily. This is one of the main causes of the rapidly increasing rate of Non-Communicable Diseases (NCDs) in Fiji. A home food garden is the most simple and practical way we can eat vegetables and fruits to improve the health of our families.

Benefits of home food gardening

All food grown in your garden are more fresh and nutritious and free of harmful chemicals. Growing food at home also saves money you spend at the market and is also a form of physical activity (exercise) for you and your family.

Common tools and equipment for home gardening

1. Spade or Fork - used to turn over soil, mix compost into soil and dig up weeds or plants.
2. Rake – used to level soil after planting vegetable seeds into the bed.
3. Garden trowel (small hand spade/fork) - used to break up soil, dig small holes, especially for planting, weeding, and other additives.
4. Shears/clippers - used to prune (trim), shape and remove leaves or branches.
5. Stakes (sticks - bamboo stakes, branches, posts and old rake handles) – used to support tall and creeping plants.
6. Garden-hose, water can and sprinkler (optional) –used to water plants to reach across long distances especially young seedlings.
7. Wheelbarrow (optional) – used to move or carry heavy materials and plants around the yard.

Step-by-step guide to starting a home garden

STEP 1

Choose the best place to plant

Find a place that has at least 6-8 hours of direct sunlight. A loose, fertile, level and well-drained soil is best. Do not choose heavy clay soil areas. Avoid shaded space between houses and walls, or underneath trees. If good soil is not available, try and get it from somewhere else and if you do not have enough space, container gardening may be the best option.

STEP 2 Choose the best size for your garden

The best size depends on the space you have available. It is best to sketch a plan. While planning, the rows should run north and south to take full advantage of the sun.

STEP 3 Prepare soil before planting

Soil preparation can be done in two ways: ***seedbed/ plot method*** and ***container method*** . Break up the soil finely with fork, spade or hand.

Seedbed/ Plot Method
Mix soil with at least 2-5kg of compost or poultry manure per square metre. (Manure should be applied 3-5 days before sowing so that seeds and young seedlings are not damaged or burnt). Avoid areas with heavy clay (red soil) content if possible. Dig soil at least 60cm (2ft) deep. Have a good drainage e.g. raised garden bed above 40cm in wet areas. (Mix your garden soil with manure and other nutrient-rich wastes after each harvest).

Container Method
Clean containers well. Punch drainage holes along the side 1inch (for small containers) or 2inches (for big containers) from the bottom of the container. Prepare your potting mix (refer to page 10 on soil mix preparation). Fill this potting mix into container to within ¼ inch of the top and level surface.

STEP 4 Seed preparation, sowing and transplanting

a) Seed preparation and sowing (planting)

Seed-Bed/Plot Method
Sow seeds thinly in rows 15cm apart in seed boxes or in 25cm in a raised seedbed or plot. Place a 3ft high shelter over seedbed/plot to protect seeds and seedlings from extra heat from sun and too much water from rain.

Container Method
Sow seeds into container. Plant only one variety of seed per container to avoid mixing seedlings.

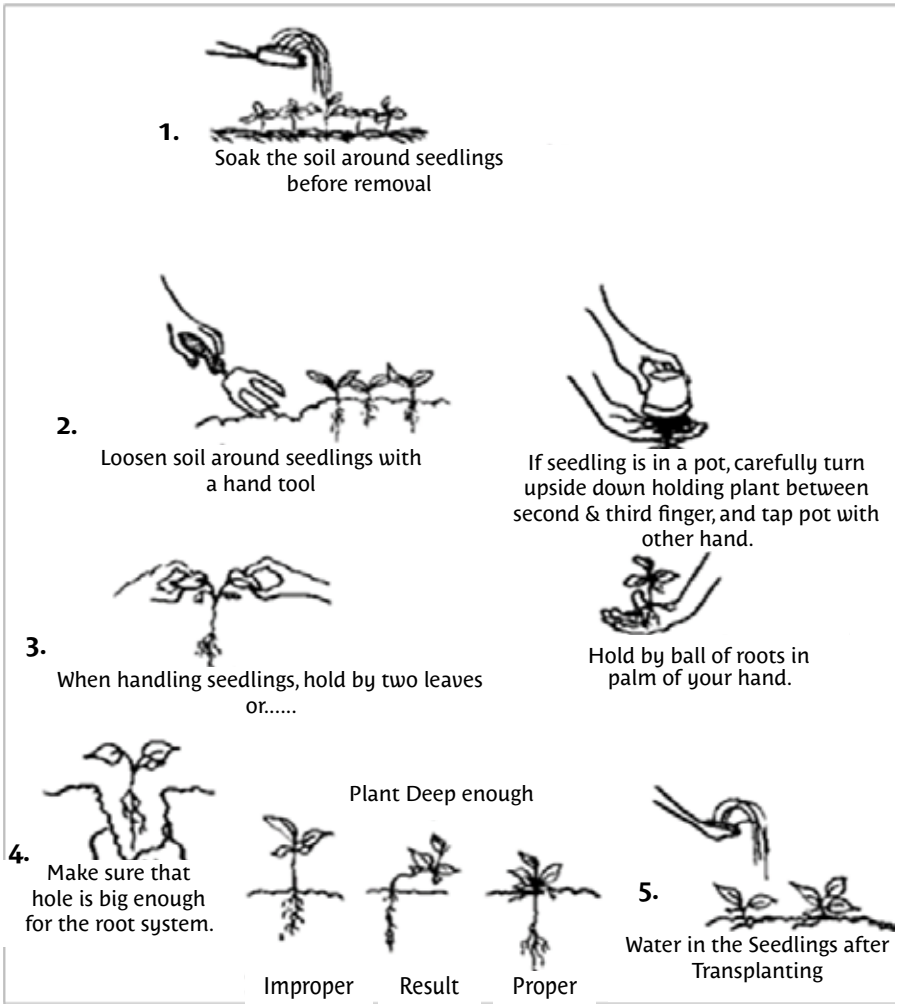
- Seeds should be covered in the soil to three times their diameter. Read the directions on the seed packet for specific planting instructions.
- Label each container with the name of seed, date planted, expected date (range) of germination. Also, mark a calendar with your plants germination dates which will make planning easier.
- Apply just enough water to moisten your potting mix, but do not put too much water to soak the soil.
- Cover the seed containers with plastic wrap or place inside a plastic bag. This keeps enough water for seeds to grow. Make sure to remove cover once seeds have germinated to prevent plant diseases such as damping off.

b) Transplanting
Seedlings are transplanted when they are 10cm (4 inches) in height or in a 3 leaf stage/4 weeks old. Seedlings should be hardened-off, well-fed and watered before transplanting. Water the seedling 6-12hours before transplanting for soil moisture and to minimize root injury during pulling.

Prepare a weed-free surface and loosen garden soil. Dig a hole large enough for seedling. Carefully remove seedling from its seedbed/plot or container and try not to disturb the roots. Set seedling in the hole and level with soil surface. Feed seedling with a handful of compost to help it grow. Surround seedling with loose soil.

Water seedling thoroughly. Mulch *(to cover beds around plants with very thin layer of dry grass clippings)* seedling to maintain enough soil water levels and temperature. Remove weeds regularly to help seedlings grow better.

Figure 1. Steps in transplanting seedlings



STEP 5

Watering

Gently water the seedbed/ plot every morning and in the afternoon. Don't water over top of the plants. Seedbeds should receive at least 1 inch of water per week. Avoid watering in the evening.

STEP 6

Care and Maintenance

Dig and break up the soil finely every 2-3 times or once a week to allow enough air into the soil. Pull the weeds so that it will not compete with plant growth. Build fences around the garden to protect plants from other animals such as chicken, dog etc.

STEP 7

Harvesting

Avoid harvesting over matured vegetables. Harvest vegetables as soon as they have reached full maturity. This is the time that they are full of flavour and just waiting to be served. Avoid harvesting vegetables too early.

Container Gardening

Container gardening is a cheap and practical method of growing vegetables at home using recyclable containers and soil mixed with compost made from household wastes.

Benefits of container gardening

This is another method of home gardening for poor soil areas and homes with very little space to plant. It is cheap and reduces waste as it uses recycled containers. Container gardening can provide as much nutritious vegetables as traditional garden beds.

Methods of Container Gardening

i) Horizontal Container Method

This is a method of growing food in containers across the ground or given area of space. The horizontal container method can be used where there is poor quality soil around your home (e.g. stony or poor drainage soil).

ii) Vertical Container Method

This is a method of growing food in containers in an upward position different to the traditional garden bed. The vertical container method can be used where there is very little space to grow vegetables around your home.

A-Frame Bamboo System

Sacks Hanging System

Basic steps to starting container gardening

STEP 1

Choose the correct containers for your crops

Choose containers that are large enough to hold the plants and can provide enough room for the root systems of the plants you would like to grow. Leafy vegetables (e.g. lettuce, cabbage, herbs) have smaller roots so will require small containers (6-10 inches or 15.2 – 25.4 cm) and other vegetables (e.g. okra, eggplant, tomato including corn) with bigger roots will require big containers 15-(25 inches or 38 – 64 cm).

Almost any type of recycled container can be used. And they should be able to have good drainage holes on the sides. However, do not use plastic containers that are used for petroleum products and chemicals.

Small size containers

1-liter Tetra pack (Juices & milk), 2-liter ice cream & 1-kg yoghurt

2.5-liter Juice, 1.5-liter Bottled water & 2-liter Cooking oil & soy sauce

Medium and Large size containers

1-gallon vinegar & liquid soap, 2-liter dish washing soap

20-Liter cooking oil

STEP 2 Prepare containers for planting

You will need tools such as garden trowel, kitchen knives, iron rod (5 mm diameter), and scissors.

Hand tools

i. Cut the upper large side of the rectangular shape containers or the upper part of the cylindrical containers.

Small and medium size containers

Large container

ii. Provide adequate drainage holes at the sides of the containers. Inadequate drainage is one of the major reasons for the failure of vegetable container gardening.

The required height of the drainage holes from the bottom of the containers:

- Small containers: 2.5 cm (1 inch)
- Big containers: 5 cm (2 inch)

Use scissors, pointed kitchen knife, or small diameter heated iron bar/rod to punch drainage holes. The space from the bottom and height of drainage holes around the containers will serve as water storage for plant use.

How to make drainage holes in the containers

Use small kitchen knife for cutting and making drainage holes 1 inch from bottom of the small containers

1-liter tetra pack milk container

1.5 liter water bottle

Heat tip of iron rod to make drainage hole at the sides, 1 inch from the bottom of the medium container and 2 inches from the bottom of the large hard plastic containers.

Heating the tip of iron rod by LPG stove or candle

Drilling drainage holes in the 1-gallon hard plastic container

iii. You may also construct an A-frame bamboo system using bamboo or use old house gutter as containers or A-frame timber system. Steps are shown below

1. Measure and cut the bamboo materials

2. Making the bamboo container

3. Drilling drainage holes for bamboo container

4. A-frame bamboo system using bamboo as container

STEP 3

Soil mix preparation, seed sowing and transplanting

Container gardening requires a specific soil mixture. You will need a light weight potting soil mix with sufficient nutrients, aeration and drainage. The best soil mixture should be dark brown in colour. The soil mix ratio is shown below.

Soil Type	Ideal Soil Mix Ratio
Using loam and alluvial Soil	1 part loam or alluvial + 1 part composted manure/ kitchen or agriculture waste + 1 part saw dust/ rice hulls/ coconut coir
Using clay soil	1 part clay + 2 part composted manure/ kitchen or agriculture waste + 1 part saw dust/ rice hulls/ coconut coir dust/ river sand soil

- Loam - sandy soil
- Alluvial - fine and loose soil
- Clay - compact soil

Soil dug from your garden will not work. It does not have the sufficient soil properties and nutrients necessary to promote healthy plant growth. Constant watering ordinary garden soil has the tendency to compact, squeeze out all the air from the soil and cause waterlogging. This will result in stunted plant growth, wilting, or death.

Preparation of the Soil Mix for the Containers

1. Prepare the required soil mixture ration

2. Mix the soil mixture thoroughly

3(a). 2-litre ice cream container filled with the soil medium

3(b). 1-litre milk container filled with the soil medium

Once containers are filled with potting mix, plant your seeds or transplant seedling into containers if needed. Vegetables grown in containers require routine watering to keep the soil moist but not too much water (waterlogged). Too much water does not allow roots get enough oxygen and not enough water will cause plants to wilt and die. Water your plants only once per day. Preparing the right soil mix for the containers will ensure good drainage and that enough water is retained.

Vegetables grown in containers also have shorter and compact root systems. This makes it more difficult for them to obtain enough nutrients from soil. To supply the nutrients needed to your plants, it's important that you top up your containers with well-prepared compost every two weeks to keep them healthy and productive.

Planting season for home gardening

Cooler and Dry Season (Main season)						Hot and Wet Season (Off season)					
Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Non-starchy vegetables (Direct seeding crops)						***Non-starchy vegetables (Direct seeding crops)***					
Cucumber (Kheera) - seeds			Green Peas (Matar) - seeds			Cucumber (Kheera) - Seeds			Pumpkin (Papukeni, Kaddu) - seeds		
French Beans - seeds			Raddish - seeds			Bele - cuttings			Long Bean - seeds		
Butter Beans - seeds			Carrots - seeds			Rourou - suckers			Winged beans (Sam) - seeds		
Non-starchy vegetables (Transplanted crops)						Amaranthus (Tubua, Chauraiya) - seeds/ cuttings			Cow Peas (Bora - seeds)		
Eggplant (Baigani, Baigan) - seeds			Tomatoes (Tomato, Tamatar) - seeds			Spinach (Poi) - seeds/ cuttings			Urdi dhal - seeds		
Chinese cabbage (Kaveti)- seeds			Onion (Varasa, Piaz)- seeds			Ipomea (Karamua, Kangkong) - cuttings			Moong dhal - seeds		
English cabbage (Kavetiolo, Ghobi) - seeds			Celery - seeds			Roselle (KattaBhaji) – seeds/ cuttings			Okra (Bhindi) - seeds		
Lettuce (Letisi) - seeds			Capsicum - seeds			Drumstick Leaves (Saijan, Boro-ni-Idia) – seeds/cuttings			Chilli (Rokete, Mircha)		
Cauliflower - seeds			Chilli (Rokete, Mircha)								
Starchy Vegetables (Resilient Root Crops)						***Starchy Vegetables (Resilient Root Crops)***					
Dalo and Tannia - toppings			Sweet potato (kumala) - toppings			Dalo and Tannia - toppings			Sweet potato (kumala) - toppings		
Cassava (tavioka) - cuttings			Yam (uvi) -cuttings/ toppings			Cassava (tavioka) - cuttings			Yam (uvi) –cuttings/ toppings		
Other Starchy Vegetables						***Other Starchy Vegetables***					
Breadfruit (Uto) – seeds/ seedlings			Plantain (Vudi) - suckers			Breadfruit (Uto) - seeds			Plantain (Vudi) - suckers		
Fruit Crops						***Fruit Crops***					
Pawpaw - seeds			Banana - suckers			Pawpaw - seeds/ seedlings			Banana - suckers		
Avocado - seeds/ seedlings			Melons - seeds			Avocado - seeds/ seedlings			Star fruit (Carambola) - seeds/ seedlings		
Herbs						***Herbs***					
Coriander (Dhania) - seeds			Rosemary - seeds			Lemongrass			Rosemary		
Mint - seeds			Basil - seeds			Lemon balm			Rosemary		
Lemongrass - seeds			Parsely- seeds								

Organic Gardening Practices

Home gardening promotes organic practices. Organic gardening practices involve techniques of growing plants without the use of fertilizers and chemical means of pest and weed control. These practices promote the use of natural methods that are safe for the soil, environment and health.

Using homemade organic Fertilizers

There are generally two homemade products that can easily replace commercial fertilizers for your home gardens:

i. Compost
ii. Homemade Liquid Fertilizer (Compost tea)

i) What is a Compost

Compost is a dark coloured fine soil, rich in nutrients, you get from composting

What is Composting

Composting is a natural process that involves the decomposition of organic matter (nutrient rich wastes) to make compost. This includes recycling kitchen and house wastes, and simply allowing them to decompose (decay naturally) until they change and become soil that is rich in nutrients.

Two broad categories of microorganisms consume and decompose organic matter: those that need air (aerobic) and those that don't (anaerobic). Most people who do composting rely on aerobic, above ground decomposition. It's the simplest method to start with because all that's required is a pile of organic matter or nutrient-rich wastes

Benefits of Composting

Composting improves soil fertility and provides nutrients that help home garden vegetables, fruits and herbs to grow well and healthy. It improves soil structure and texture that allows movement of air within the soil and helps garden soil keep enough and water/moisture retention for the plants.

Starting Composting – Materials/ ingredients

- ***Green ingredients*** *- are ideal sources of nitrogen for composting which is an essential nutrient for plant growth and development. It can help the compost pile get to proper temperatures for making very good compost.*
- ***Brown ingredients*** *- are garden materials which are source of carbon to a compost pile. Carbon materials are very useful to balance the mixture ratio if the compost pile contains excess nitrogen. Too much nitrogen will cause strong unpleasant (bad) smell so carbon is needed to balance the excess amount of nitrogen in your compost.*

BROWN Ingredients (Carbon)	GREEN Ingredients (Nitrogen)
• Dry shredded leaves • Dry grass • Chipped wood • Sawdust • Wood ash (not char-coal) • Banana skins • Cassava peelings	• Fruit, Vegetable and Root crop peelings/ trimmings • Green leaves and grass/ weeds • Seaweed • Plant clippings/prunings • Used coffee grounds • Used tea leaves • Wilted flowers • Human/Animal hair • Chicken/Duck Feathers • Crushed egg shells

Materials/Ingredients NOT to use for Composting

- Bones and meat
- Fats and cooking oils
- Dairy products
- Plastics
- Yard clippings with pesticides or herbicides on them
- Waste from dogs or cats
- Treated wood
- Diseased plants
- Left over cooked food
- Mature weeds – seeds may germinate

Never use these materials as ingredients to your composting. They have certain bacteria in them that will slow down the breakdown process in composting.

When starting your composting:

- It is important to make sure that you always use the right amount of green to brown ingredients in the table above; the best ratio is 1: 2.
- This means you will add 2 parts of brown ingredients into1 part of green ingredients.
- This ratio will allow the breakdown process to start and keep it going.
- Remember that if you do not follow the right ratio, it will take longer for the composting to decay until you can get compost.

STEPS

How to do Composting

Step 1. Collect all waste materials.
Step 2. Choose an area that receives moderate sunlight close to a water source
Step 3. Pile by layers the different compost materials.
Step 4. Water the pile evenly and avoid over watering.
Step 5. Repeat Step 3 to make the pile higher.
Step 6. Test if the pile is hot inside by inserting a stick (or thermometer, optional) all the way into the pile.
Step 7. Turn the pile upside down when it has cooled down.
Step 8. After three months, the compost will be ready for use. The finished compost will have a pleasant odour of soil and leaves; and very dark in colour.

A well broken-down compost is one that has a very dark colour with the crumbling and very fine texture. It generally has a smell like that of rich soil in a forest.

Illustration of the complete piling by layers of the different compost materials

Source: http://keyword-synonyms.com/word/compost-layers.html

ii. What is Homemade Liquid Fertilizer (Compost tea)

Homemade liquid fertilizer is also known as ***compost tea***. This is a nutritionally rich, well-balanced liquid organic fertilizer made by soaking compost in water. This can be made at home with a well broken-down compost that has decomposed over a long period of time.

Benefits of Compost Tea

Compost tea provides nutrients that are quickly absorbed by the soil or plants through their leaves that increases plant growth. The good microbes from compost tea also enhance the soil and the immune system of plants. When used as a foliar spray, compost tea provides good microbes (tiny organisms) to the leaves which helps avoid pathogens (organisms that can cause diseases to plants). Unlike garden chemicals like fertilizers, pesticides and fungicides, compost tea promotes an organic practice that is safe for the soil and environment

and harmless to human health. It uses natural ingredients and it will never burn plants, leaves and roots. Making your own compost tea saves money.

Step-by-step guide to making compost tea

Step 1
Fill a bucket 1/3 full of quality matured compost

Step 2
Add water into the bucket (best water is rain/clean well water, not tap water because of chlorine).

Step 3
Leave the mixture 3-4 days and stir it it regularly.

Step 4
Strain the mixture through old shirt, potato sack into another bucket. Add the remaining solids to your garden.

Step 5
Mix the remaining liquid with water using a mix ratio: 10 parts water to 1 part tea).

Step 6
Use the compost tea immediately into the soil around the base of the plants.

Step 7
Application to Root Systems
Simply pour the compost tea from the bucket around the root system at the base of the plant.

Step 8
Use as Foliar Spray
Can also be used as a foliar spray on plants. Add 1/8 tsp vegetable oil per gallon of compost tea so that tea can stick to leaves.

When to apply the Compost Tea?

Apply 2-3 weeks after germination of seeds
Apply immediately after transplanting
Repeat after 3-4 weeks

Using homemade organic Pesticides

Similar to fertilizers, there are generally two homemade products that can easily replace commercial pesticides for your home gardens:

i. Planting aromatic plants around your garden
ii. Using Homemade insect spray solutions

i. What are Aromatic Plants

Aromatic plants are those that have a strong aroma (smell) or fragrance. There are many aromatic herbs and attractive plants that contain essential oils known to naturally keep away most garden pests like harmful insects and aphids. Keeping these pests away will help your home garden stay healthy, productive and attractive at the same time. However, aromatic plants will not ensure your garden totally insect free.

Benefits of using Aromatic Plants

Unlike chemical pesticides, aromatic plants promote the organic practice that naturally keeps most harmful insects away from your home garden. It also allows you to grow food free of most toxic chemicals that can harm the soil/environment and also harm human health.

Recommended Aromatic Plants

Names	Image	What does it Repel?
Lemongrass (coboi)		Repels house flies and mosquitoes
Mint		Repel mosquitoes. Containers of mint strategically placed in the garden will help keep insects away from nearby plants
Basil varieties (tamole)		Repel house flies and mosquitoes
Marigold varieties		Repel aphids and mosquitoes Grow marigolds throughout your vegetable garden

Lemon balm		Repel house flies and mosquitoes
Rosemary		Repel mosquitoes and a variety of insects harmful to vegetable plants Plants can be grown in containers on a veranda/porch, or grown in herb gardens
Common lantanas (lanitana)		Repel mosquitoes
Coleus (lata)		Repel mosquitoes

Where to plant Aromatic Plants?

- Interspersed with crops i.e. planted in between crops in garden
- Short and/or vigorous growing plants like mint should be planted in containers to control growth and stop spreading in the garden area
- Plant on garden boundaries or fence line with crops

ii. Homemade insect spray solutions

There are simple insect spray solutions you can make at home to keep away most harmful insects from your plants. Unlike most chemical pesticides, these homemade solutions are effective but safe enough from poisoning you and your family.

Homemade insect sprays

Oil spray

A homemade insecticide made from vegetable oil mixed with a mild soap can have a devastating effect on certain troublesome insects, such as aphids, mites, thrips, etc.

To make a basic oil spray:

- Mix 1 cup of vegetable oil with 1 tablespoon of soap (cover and shake thoroughly).
- Add 2 teaspoons of the oil spray mix with 1L of water, shake thoroughly, and spray directly on the surfaces of the plants which are being affected by the little pests.
- The oil coats the bodies of the insects, effectively suffocating them, as it blocks the pores through which they breathe.

Soap spray

A very similar homemade pesticide to the oil spray is a soap spray, which is also effective for controlling mites, aphids, whiteflies, beetles, and other hungry little insects.

To make a basic soap spray:

- Mix 1½ teaspoons of a mild liquid soap (such as castile soap) with 1L of water, and spray the mixture directly on the infected surfaces of the plants.
- A soap spray insecticide works in a similar fashion as an oil spray, and can be applied as necessary.
- It is always recommended NOT TO apply it during the hot sunny part of the day, but rather in the evenings or early mornings.

Neem oil spray

An oil extracted from the seeds of the neem tree is a powerful natural insecticide, capable of disrupting the life cycle of insects at all stages (adult, larvae, and egg), making it a great resource for the organic gardener.

To make neem oil spray:

- Mix of 2 teaspoons neem oil and 1 teaspoon of mild liquid soap shaken thoroughly with 1L of water.

- Spray on the affected plant foliage.
- Neem oil can also be used preventatively by spraying the leaves of plants that are often attacked by pests, before they're actually infested.

Garlic spray

Garlic is well-known for its pungent smell, which is most liked by some and yet disliked by others, and it is this strong scent that comes into play when used as a natural insecticide.

To make basic garlic spray:

- Use 2 whole bulbs (not just 2 cloves) and pound them and mix with 1L of water.
- Let the mixture sit overnight, then strain it into a 1L jar, adding 1/2 cup of vegetable oil (optional), and 1 teaspoon of mild liquid soap, and enough water to fill the jar.
- Use 1 cup of mixture with 1L of water and spray liberally on infested plants.

Chilli spray

Similar to garlic spray, chilli spray is a great homemade natural insect repellent that can be used for a variety of different pests. Chilli spray can be made from either fresh hot chillies or chilli powder.

1) To make a basic chilli spray from chilli powder:

- Mix 1 tablespoon of chilli powder with 1L of water and several drops of mild liquid soap.
- This mixture can be used full-strength on the leaves of affected plants.

2) To make chilli spray from fresh chillies:

- Pound ½ cup of chillies and mix with 1 cup of water, then add 1L of water and bring to a boil.
- Let sit until cooled, then strain out the chilli material, add several drops of liquid soap to it and spray as desired.

Caution:
Hot chillies can be very potent on humans as well, so be sure to wear gloves when handling them, and keep any sprays made from them

away from eyes, nose, and mouth.
Note: Avoid using anti-bacterial dish washing soap solution when making spray.

Tomato leaf spray

Tomato plants are part of the night shade family, and as such, contain alkaloids such "tomatine," a chemical which can effectively keep away aphids and other insects.

To make tomato leaf spray:

- Chop 2 cups of fresh tomato leaves (which can be taken from the bottom part of the plant) into 1L of water, and let sit overnight.
- Strain out the plant material and spray onto plant foliage.

Other organic practices for home gardening

There are other techniques that you must practice in your home garden. These include mixed cropping, intercropping, crop rotation, and mulching. These practices will complement all other organic practices you are using to help your home garden more healthy and productive.

Mixed cropping - This practice involves planting lots of different types of vegetables or plants together.

Intercropping - This practice is similar to mixed cropping. It involves growing many different vegetables or plants to minimize free space in your garden. This will not allow weeds to grow and improve the health of soil and all the plants.

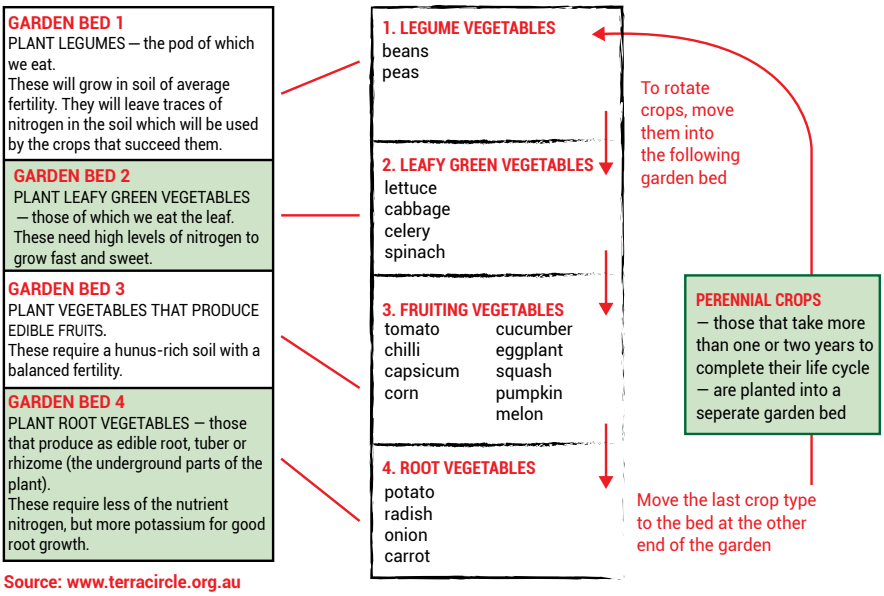
Crop Rotation for your home garden
Crop rotation is an important organic practice for your home garden. It simply means changing the type of crop grown on a particular piece of land or garden bed from year to year.

Benefits of crop rotation

Crop rotation improves the physical quality of your garden soil that is best for growing food. It also improves soil nutrient and soil health for good growth of your crops by reducing nutrient overuse. The practice also reduces risk of most plants diseases that can harm your crops. It also limits the number of insect pests or damages to your crops caused by those pests.

The best way to learn about crop rotation is to start simply with rotation by plant type. Different plant types, such as leafy green vegetables or roots, use different nutrients in the soil. Planting the crops of the same plant type over and over again in the same place in the garden will overuse nutrients causing soil to be less productive and your crops not growing strong and healthy.

Illustration of Crop Rotation by Plant Type



Source: www.terracircle.org.au

Mulching - This practice involves covering a layer of green or dry leaves and grasses around the base of plants to retain the water content of soil, reducing weed growth and improve health of the soil.

Seed bank - This practice involves preservation of seeds from your garden for future planting. Saving of seeds will help you save money buying them from the market. Most seeds available in shops are chemically treated. Never save seeds of hybrid varieties.

Growing Iron and Vitamin C rich foods

Iron is an essential nutrient needed by our bodies to make an important protein called haemoglobin. Our blood needs enough haemoglobin to carry oxygen to all parts of the body. Our bodies cannot produce iron; therefore we need to eat foods that are good sources of iron regularly for haemoglobin to be produced. Meat and liver are rich in iron that can easily be absorbed into the body.

In Fiji, eating meat and liver regularly can be very expensive and the cheapest sources would be iron-rich vegetables. However, unlike meat and liver, iron-rich vegetables need to be eaten with Vitamin C-rich foods in order for the iron to be easily absorbed into the body.

Why grow Iron and Vitamin C Rich Foods?
Iron-deficiency Anaemia is a public health issue in Fiji and more than 50 percent of our population (mostly women, pregnant women and children) suffers from it. This is caused by lack of iron in the diet. One of the ways to improve iron intake is to grow and eat foods that are good sources of Iron and Vitamin C.

Benefits of growing and eating Iron and Vitamin C foods
Growing and eating food rich in Iron and Vitamic C provides enough iron to your diet. It reduces your risk of iron deficiency anaemia. It also allows your body to produce healthy blood and reduce risk of other illnesses and infections.

List of Recommended Iron and Vitamin C Foods

Iron Sources	Vitamin C Sources
Dark-Green Leafy Vegetables ● Amaranthus (Tubua, Chau-raiya) ● Bele ● Drumstick (saijan, boronidia, horse radish) ● Ipomea (karamua) ● Ota ● Rourou (Dalo leaves) ● Kumala leaves ● Pumpkin leaves/stalk ● Cassava leaves *Other Non-starchy Vegetables* ● Pumpkin ● French bean ● Butter bean ● Chinese cabbage (Bok choy) ● Cauliflower ● Carrots ● Raddish ● Tomatoes *Fruit* ● Cumquat *Herb* ● Lemon grass *(Coboi)*	*Non-starchy Vegetables* ● Tomato ● Cauliflower *Fruits* ● Lemon, Lime, Cumquat, Local orange etc. ● Banana ● Pawpaw ● Guava ● Pineapple ● Cumquat

Growing Resilient Starchy Staples

Roots (like tavioka and dalo) and tubers (like kumala and uvi) are often called root crops. They are starchy vegetables which are a major staple in Fiji. Other starchy vegetables include breadfruit (uto) and plantain (vudi) and few more are also eaten the same way as root crops. It is important that root crops and other starchy staples be planted in your home garden along with other non-starchy vegetables.

Climate change is affecting our weather patterns and soil that can decrease the amount of crop yields farmers produce. This has put agriculture production in Fiji under a lot of pressure causing a rise in fresh food prices in the market.

While planning for your home garden, include starchy vegetables to grow. If you are planning to grow root crops, it is best to choose varieties that can grow well under extreme conditions such as prolonged droughts, heavy rainfall, floods and higher temperatures caused by climate change. Crop varieties that can grow well in extreme conditions are usually called 'resilient crop varieties'. Most of our local traditional Fijian root crops and starchy vegetables are resilient crops. These resilient crops include uvi (yams), kumala (sweet potatoes) and some varieties of dalo (taro), tavioka (cassava) and many other traditional crops. Some of these varieties are also resistant meaning they cannot be harmed easily by pests and diseases that damage crops during planting.

Benefits of growing resilient starchy staples

Resilient starchy staples are healthier than most processed staples like rice and wheat flour and can grow well under extreme weather conditions. Some are unaffected by pests and diseases. They can provide supply of fresh starchy staples for family meals all year round especially during and after natural disasters like cyclones, drought and floods. Most importantly less money is spent on buying them from the market.

Saving seeds from your Garden

Saving seeds of beans

- Allow the seeds to turn brown, then harvest from plants, dry them for one to two weeks in a warm, dry area and shell.
- Mix seeds well with dry ash or charcoal or camphor.
- Store the seeds in paper envelopes or bottles in a cool, dry place.

Saving seeds of fleshy fruit (tomato, cucumber, etc.)

- Pick fully ripe fruit of cucumber and tomato and squeeze the pulp, including the seeds, into a glass or plastic container.
- Add a little water and stir. Good seeds will settle at the bottom of the container; bad seeds will float.
- Pour off the water with pulp and bad seeds and spread the good seeds in a single layer on a paper to dry.
- Scrape out the seeds of chillies, melons, pumpkins and eggplant and spread them onto a paper to dry.
- Mix seeds well with dry ash or charcoal or camphor.
- Store them in a paper envelope or bottles in a cool, dry place.

CROP GUIDE

Guide To Growing Food In Your Home Garden

Crop	Planting Time	Seed Rate	Minimum Container Size (Liter)	Spacing Between Rows x Between Plants (cm)	Days from Seed to Harvest	Average Yield (kg/m2)	Nutritional Values
Non Starchy Vegetables							
Amaranthus (Chauraiya, Tubua) 	Can grow all year around. Plant in an area that is close to a water source	0.4g/ha Seeds can also be broadcasted on the beds Germination: 6 to 10 days after sowing. Plant a new crop after the second harvest or plant in stages (phase planting).	10	50 x 15	Harvest when stems and leaves are tender. Weekly harvesting is recommended for larger areas.	12 ton/ha.	Dietary fibre, Potassium, Calcium, Magnesium, Iron, Vitamin A, Vitamin B and Vitamin C

Bele 	Can grow all year round	1 cutting/ m2 (Cut 30 cm matured stems and plant directly to soil)	20	100-150 x 50	Leaves ready after 60 days. Continue 2-3 weeks interval.	Harvest at 2 to 3 weeks interval	Dietary fiber, Potassium, Calcium, Magnesium, Iron, Vitamin A, Vitamin C & Riboflavin
Drumstick Leaves(-saijan, boronildia) 	All year round	1plant/9 m2	-	300 x 300	3-months after planting for leaves and 7 months for pods. Use fresh pod.	2 – 3 kg/ week	Protein, Dietary fibre, Potassium, Calcium, Magnesium, Iron, Vitamin A, Vitamin C, Riboflavin, Niacin.
Watercress (Karisi) 	October to April	7 cuttings/ m2 Germination: 2 weeks after planting.	5 - 10	50 x 30	5 – 6 weeks after plant-ing	5 to 8 tons	Dietary fibre, Potassium, Calcium, Iron, Vitamin A, Vitamin C and Vitamin K (very high)

Crop	Planting Time	Seed Rate	Minimum Container Size (Liter)	Spacing Between Rows x Between Plants (cm)	Days from Seed to Harvest	Average Yield (kg/m2)	Nutritional Values
Kumala (Sweet Potato) leaves 	Can be grown all year round.	18 cuttings/ m2 and 2 - 3 cuttings per mound Plant 40 cm (16 inches) long cuttings.	10	100 x 50	Harvest young shoots and leaves after 4-5 months for use as a green vegetable Later harvest the tubers.	1 kg/m2	Dietary fibre, Potassium, Calcium, Magnesium, Iron, Vitamin A and Vitamin C (very high)
Ota (fern leaves) 	Plant suckers or runners in shady	Plant suckers or runners	10	50 x 50	Harvest tender shoots 3 months after planting.	0.5-1.0 kg/ m2	Dietary fibre, Potassium, Calcium, Iron, Vitamin A, Vitamin C and Vitamin K (very high)

Rourou (Taro leaves) 	Can be grown all year round.	Plant suck-ers. (Non-itchy rourou are very light green in colour)	20	50 x 30	Harvest tender leaves after 6 weeks,	1 bundle or 0.8-1 kg/	Dietary fibre, Potassium, Calcium, Magnesium, Iron, Vitamin A, Vitamin C and Vitamin K (very high)
Chinese Cabbage 	Best during the cooler months but can grow all year round	300 g/ha (0.03 g/m2) Transplant 4 weeks or at 3 leaf stage after sowing	2	60 x 30	30 to 45	1.5	Source of Vita-min A, Vitamin B & Vitamin C
English Cab-bage 	Best during the cooler months but can grow all year round	300 g/ha (0.03 g/m2) Transplant 3- 4 weeks after sowing.	4 .	75 x 45 - 60 :	60 - 90	2	Good source of Vitamin A, Vitamin B and Vitamin C.

Crop	Planting Time	Seed Rate	Minimum Container Size (Liter)	Spacing Between Rows x Between Plants (cm)	Days from Seed to Harvest	Average Yield (kg/m2)	Nutritional Values
Lettuce 	Head Type: March to October Leafy type: All year round	300 g/ha (0.03 g/m2) Transplant at 3 to 4 leaf stage.	1-2	75 x 30 - 40	Leafy lettuce: 45-70 Head type: 84	1	Dietary fibre, source of Vitamin A, Vitamin B and Vitamin C.
Cauliflower 	Grows well during cooler months (April - August)	0.03 g/m2. Transplant after 3-4 weeks.	4	75 x 40		1	Dietary fiber, Folate, Vitamin C, Thiamin, Iron and Zinc
Celery 	Grows well during cooler months (April – August)	250 g/ha (0.025 g/m2) Transplant after 4 weeks.	4	60-90 x 15-25	80 – 110	2	Protein, Iron, Vitamin A & C, Thiamin, Riboflavin, Niacin, Potassium, Calcium and Magnesium

Capsicum 	Grows well during cooler months (April - September)	0.03 g/m2 Germination: 6-10 days after planting.	10 - 20	100 x 50	90 and continue harvest 2-3 months.	1	Very high in Vitamin C, Vitamin A
Chilies 	Best during September to February but can grow all year round.	0.03 g/m2 Germination: 5 to 8 days after sowing	20	100 x 30	45 – 60 and continue harvest weekly for 1 year.	Fresh: 2 Dried:0.5	(Dried) Dietary fiber, (Very high) Calcium; Vitamin A, Riboflavin
Cowpea 	Can grow all year round	2.5 g/m2 Germination: 4-6 days after Sowing	20	65 x 20	Green pod: 55- 70 Dry seed: 80 -90	Green pod: 0.5 Dry seed:0.25	Vitamin B-complex group of Vitamin, Vitamin C, Iron, Zinc & Calcium
Cucumber 	Fruits best during cooler months but can grow all year round	0.2 g/m2 Germination: 5-7 days after sowing	20	100 x 30 Plant seeds directly to cultivated soil-depth of 12-18 mm.	45 – 60 Picking continues for 3 weeks.	1.5	Vitamin C.

Crop	Planting Time	Seed Rate	Minimum Container Size (Liter)	Spacing Between Rows x Between Plants (cm)	Days from Seed to Harvest	Average Yield (kg/m2)	Nutritional Values
Eggplant 	Best during hot months but can grow all year round	0.03 g/m2	20	150 x 50	60 - 90 days and cont. for 6 months or longer	2.5	Dietary fiber, Vitamin C.
Pumpkin 	Best during hot months but can grow all year around.	0.15 g/m2	-	180 x 180	12 to 15 weeks after sowing. Fruits appear 12 weeks from planting.	1 to 1.5 kg/ m2	Dietary Fibre, Vitamin C, Potassium and Vitamin A.
French Bean 	Best during cooler months (April – September)	4.5-5 g/m2 Germination: 3-6 days after sowing	10	50 x 15 - 20	42-56, picking continues for 4-6 weeks.	1	Vitamin C. Vitamin A (as carotene) and copper, & dietary fiber,

Butter Bean 	Best during cooler months (April – September)	4.5-5 g/m2 Germination: 3-6 days after sowing	10	50 x 15 - 20	42-56, picking continues for 4-6 weeks.	1	Vitamin C. Vitamin A (as carotene) and copper, & dietary fiber,
Long Bean 	Can grow all year round	0.7 g/m2 Germination: 3-6 days after sowing. Required staking	10 - 20	100 x 30	45 – 60 and continues for about 2-3 weeks.	1	Dietary fiber, Vitamin C, Niacin, Vitamin B complex, Iron and Zinc
Okra 	Can grow all year round	0.8 g/m2	20	100 x 30	60 – 90	1.	Dietary fiber, Potassium, Calcium, Magnesium
Tomato 	Best during cooler months (May-October)	0.03 g/m2	20	75-100 x 30-40	70 - 85 and picking continues for 5 weeks.	1.25	Source of Potassium, Calcium, Sodium, Dietary fiber and Protein.

Crop	Planting Time	Seed Rate	Minimum Container Size (Liter)	Spacing Between Rows x Between Plants (cm)	Days from Seed to Harvest	Average Yield (kg/m2)	Nutritional Values
Carrots 	Best during cooler months (April - September)	0.25 g/m2 Sow thinly in rows using 7- 10 cm spacing.	4	50 x 8	65 - 80 .	1.25	Dietary fiber, Potassium, Vitamin A, Vitamin C, Vitamin K.
Radish 	Can grow all year round	1 g/m2 Broadcast then thin out to 5 cm apart 2 weeks after germination.	4 - 5	50 x 5	30 – 35	1.25	Dietary Fiber and Vitamin C
Herbs							
Coriander 	Best during cooler months but can grow all year round (April - August)	10 kg/ha (1 g/m2) Germination: 6-10 days after sowing	10	-	Harvest when plants are 15-20cm above the ground.	1.5	Iron, Vitamin A, high in Vitamin C, Potassium

Curry Leaves 	Can grow all year round	Germination: 10 – 15 days after sowing	4	100 x 100	Harvest when plants have good size leaves. Life span: 5 to 6 years		
Mint 	Can grow all year round	Grows from cuttings or root. Germination: 8-10 days after sowing	4	30 x 30	30 – 45 then 15 days interval Replant after 3 or 4 harvest		Phytonutrients
Parsley 	Best during cooler months (April – September)	3 kg/ha (0.3 g/m2) Germination: 10 -12 weeks after sowing	4	45 x 30	70 – 84 after 15 days interval.	0.5	Dietary fibre, Potassium, Calcium, Iron, Vitamin C (high), Thiamin, Riboflavin.
Rosemary 	Best during cooler months (April – September)	Grows from cuttings or root.	4	Planting seedlings or cuttings 2 to 3 feet apart			

Crop	Planting Time	Seed Rate	Minimum Container Size (Liter)	Spacing Between Rows x Be-tween Plants (cm)	Days from Seed to Harvest	Average Yield (kg/m2)	Nutritional Values
Lemon grass 	Can grow all year round	Lateral shoots are used for planting	10				Iron
Starchy Vegetables - Resilient Root Crops							
TARO (Dalo)							
Some suitable varieties for prolonged dry seasons							
Dalo-ni-Tana 	January to December. More tolerant of drought than common taro	1 plant/m2 Resistant to pests and diseases that affect Colo-casia taro	20	100 x 100	12 months after plant-ing	15-20 ton/ ha.	Potassium, Magnesium, Calcium, Phosphorus, Iron, Carotene, Dietary Fibre
Vulaono (hybrid) 	Vigorous growth, large leaf area surface	It has some tolerance to dry spells				Bigger corm sizes 0.9 – 2.5kg	Potassium, Magnesium, Calcium, Phosphorus, Iron, Carotene, Dietary Fibre

Via /via mila 	January to December.	Can toler- ate semi - drought conditions	-	-	Vigorous growth, large leaf area surface can grow to more than 3 metres high •	It is a large erect herb 3 - 4 metres tall with a stout permanent stem	Potassium, Magnesium, Calcium, Phosphorus, Iron, Carotene, Dietary Fibre
Some suitable varieties for prolonged dry seasons							
Uronivonu 	Can with- stand water logging	Grows well on lowland wetland areas			Harvested from 7 – 9 months		Potassium, Magnesium, Calcium, Phosphorus, Iron, Carotene, Dietary Fibre
Vavaidina 	Can toler- ate water logging	Grows well on lowland wetland areas			Harvested from 8 – 9 months		Potassium, Magnesium, Calcium, Phosphorus, Iron, Carotene, Dietary Fibre
Vavailoa 	Can toler- ate water logging	Grows well on lowland wetland areas			Harvested from 8 – 9 months		Potassium, Magnesium, Calcium, Phosphorus, Iron, Carotene, Dietary Fibre

Crop	Planting Time	Seed Rate	Minimum Container Size (Liter)	Spacing Between Rows x Between Plants (cm)	Days from Seed to Harvest	Average Yield (kg/m2)	Nutritional Values
Via kau (swamp taro) 	Can tolerate water logging and can grow in brackish water Giant swamp taro is more salt tolerant	Grows well but slowly on lowland wetland areas and swampy coastland areas			Mature between 1- 2 years from planting		Potassium, Magnesium, Calcium, Phosphorus, Iron, Carotene, Dietary Fibre
Wararasa (hybrid) 	Taro varieties for both wet and dry conditions	Can adapt to various conditions in Fiji including dry conditions Can tolerate waterlogging			Matures 7 – 9 months	The most common cultivated taro variety	Potassium, Magnesium, Calcium, Phosphorus, Iron, Carotene, Dietary Fibre

CASSAVA-TAVIOKA							
Cassava-Tavioca 	All year round	1 plants/1.5 m2	Extra large	100 x 150	Mature in 8-10 months. Late Varieties: -Mature in 12 months.	20-30 ton/ ha	Vitamin A, C & K, Potassium, Zinc, Manganese, Iron, Copper, Dietary Fibre
Cassava varieties for prolonged dry season							
Beqa 	Yellow flesh	Branching variety and semi-dwarf Can withstand wind damage Drought tolerant Adaptable to acidic soils				30 ton/ha depending on soil type	Vitamin A, C & K, Potassium, Zinc, Manganese, Iron, Copper, Dietary Fibre
Modre 		Branching variety and semi-dwarf Can withstand wind damage Drought tolerant Adaptable to acidic soils				30 ton/ha depending on soil type	Vitamin A, C & K, Potassium, Zinc, Manganese, Iron, Copper, Dietary Fibre

Crop	Planting Time	Seed Rate	Minimum Container Size (Liter)	Spacing Between Rows x Be-tween Plants (cm)	Days from Seed to Harvest	Average Yield (kg/m2)	Nutritional Values
Nadelei 	Commonly cultivated variety Pink peeling with white flesh	Branching variety and semi-dwarf Can with-stand wind damage Drought tolerant Adaptable to acidic soils				30 ton/ha depending on soil type	Vitamin A, C & K, Potassium, Zinc, Man-ganese, Iron, Copper, Dietary Fibre
New guinea 	Pink peeling with white flesh	Branching variety and semi-dwarf Can with-stand wind damage Drought tolerant Adaptable to acidic soils				30 ton/ha depending on soil type	Vitamin A, C & K, Potassium, Zinc, Man-ganese, Iron, Copper, Dietary Fibre

Yasawavula-tolu 	Grows well in atoll environment	Branching variety and semi-dwarf Can withstand wind damage Drought tolerant Adaptable to acidic soils				30 ton/ha depending on soil type	Vitamin A, C & K, Potassium, Zinc, Manganese, Iron, Copper, Dietary Fibre
SWEET POTATO (Kumala)							
Sweet Potato (Kumala) 	All year round	3 plants/m2	20	80 x 50	16-20 weeks from planting.	15 - 20 ton/ha.	Vitamin A, Potassium, Calcium, Magnesium, Dietary Fibre

Crop	Planting Time	Seed Rate	Minimum Container Size (Liter)	Spacing Between Rows x Between Plants (cm)	Days from Seed to Harvest	Average Yield (kg/m2)	Nutritional Values
Sweet potato varieties for prolonged dry season/dry zone							
Local purple & Papua 	A spreading type and suitable for the dry zones, Drought tolerant variety & resilient to cyclone damage	Grows well in a variety of well drain soil But does not tolerate shading			4 - 6 months Earlier harvest can reduce the incidence of pest and disease.	High yielding (20 -25 t/ha)	Vitamin A, Potassium, Calcium, Magnesium, Dietary Fibre
Sweet potato varieties for wet condition							
Kabara & Korolevu red 	Erect type with branching nodes and suitable for wet zones	Resilient to cyclone damage			4 - 6 months Early harvest can reduce the incidence of pest and disease.	High yielding (20 - 25t/ha)	Vitamin A, Potassium, Calcium, Magnesium, Dietary Fibre

Carrot 	Erect type with branch-ing nodes				4 - 6 months. Resilient to cyclone damage	16 – 18 t/ha	Vitamin A, Potassium, Calcium, Magnesium, Dietary Fibre
Vulatolu 	Semi-erect type with branching nodes				4 - 6 months. Resilient to cyclone damage	16 – 18 t/ha	Vitamin A, Potassium, Calcium, Magnesium, Dietary Fibre
YAM							
Yam (Uvi) 	Early Variety: June/July Late Variety: Aug/Sept	4 plants/m2	Extra Large	60 x 60	When vine turns brown and dies	14 -15 ton/ ha	Potassium, Magnesium, Dietary Fibre
Yams grow well under dry conditions							
Kaile (aka aerial pota-toes) 	Commonly found in the wild	Non – bitter type is edible			Immature bulbils may be harvested 3 - 4 months after plant-ing, and may continue picking up to 24 months		Potassium, Magnesium, Dietary Fibre

Crop	Planting Time	Seed Rate	Minimum Container Size (Liter)	Spacing Between Rows x Between Plants (cm)	Days from Seed to Harvest	Average Yield (kg/m2)	Nutritional Values
Bulou 	Grows in a wide range				Normally harvested from 15 - 24 months		Potassium, Magnesium, Dietary Fibre
Lokaloka,  Vurai,  Veiwa,  & Kivi, 	Can tolerate dry conditions to some extent Have longer shelf life for up to 2 - 3 months				9 - 10 months, some early varieties can be harvested in 6 months		Potassium, Magnesium, Dietary Fibre

Tivoli 	Annual crops	Good disaster and food security crop and disease resistant and adaptability			Have ability of natural regeneration and longer lifespan underground. Has a long shelf life		Potassium, Magnesium, Dietary Fibre
Kawai 	Similar to Tivoli, has a longer lifespan underground and can be continually harvested over 2 - 3 years				Annual crops with the ability of natural regeneration and longer lifespan underground	Short shelf life after harvesting	Potassium, Magnesium, Dietary Fibre

Crop	Planting Time	Seed Rate	Minimum Container Size (Liter)	Spacing Between Rows x Be-tween Plants (cm)	Days from Seed to Harvest	Average Yield (kg/m2)	Nutritional Values
Yam for both wet and dry condition							
Filipai (aka African white yam) 	Vigorous growth and can be grown during dry season Adapts well to wet and dry condi-tions				Resistant to yam an-thracnose	Short shelf life	Potassium, Magnesium, Dietary Fibre
Other Starchy Vegetables							
Corn (Maize) 	Dry Zone: November-December) (Febru-ary-March)	1.8 g/m2	20	75 x 30	Green cobs: 60 – 70 Mature crops: 110 -120	(0.5)	Vitamin A, Potassium, Magnesium, Dietary Fibre

Plantain (Vudi) 	Planting time: October to March	1suckers/18 m2 Healthy and disease free	-	300 x 200	Fruits appear after 9 to 10 months from planting and ripens about 3 months from fruit set.	30 - 40 ton/ ha.	Potassium, Magnesium, Calcium, Dietary Fibre
Breadfruit 	Planting is recommended during the wet season (November to March	1 plant/144 m2	-	1200 x 1200	Plants obtained from marcotting can start flowering within a year and production achieved in 2nd year	20 to 40 ton/ ha	Vitamin C, Calcium, Potassium, Dietary Fibre

Crop	Planting Time	Seed Rate	Minimum Container Size (Liter)	Spacing Between Rows x Be-tween Plants (cm)	Days from Seed to Harvest	Average Yield (kg/m2)	Nutritional Values
Fruits							
Banana 	Recom-mended from Octo-ber to March otherwise all year round.	1 plant/6m2	-	300 x 200	Fruits will appear after 9 to 10 months from planting and ripens about 3 months from fruit set.	About 1,666 bunches in first year. Second year 2,500 bunches	Vitamin A & C, Potassium
Pawpaw 	Planting Time: Can be planted all year round Planted during Octo-ber to March enhance plant growth during wet season.	1 plant/6m2	-	300 x 200	Fruit ripens at 8 to 10 weeks after flowering. Economic life 3 years	60 - 80 ton/ ha	Vitamin A & C.

Guava 	Planting Time: Can be planted all year round	1 plant per 36 m2 Plants – seed, grafted or layering	12 inches	6 x 6	1 – 3 years (grafted) Fruit ma-ture in 2-4 months after flowering	350 k/tree for grafted plant 90kg/tree from seeds	Vitamin C, Potassium, Calcium

Source: Crop Farmer's Guide, 2009 Edition and Root crop varieties to grow under extreme conditions in Fiji, 2015. Fiji Ministry of Agriculture

National Food and Nutrition Centre

1 Clarke Street, Suva.
Phone: 331 3055, **Fax:** 330 3921 **Email:** nfnc@connect.com.fj
Website: www.nutrition.gov.fj