



# HOW TO BUILD AND MAINTAIN A COMMUNITY PLANT NURSERY



Wildlife  
Conservation  
Society



**WISH**  
Watershed Interventions for  
Systems Health in Fiji





The production of this manual was supported by a grant from Bloomberg Philanthropies (Grant #111340).

©2022 Wildlife Conservation Society

<https://doi.org/10.19121/2022.Report.43725>

All rights reserved. This publication may not be reproduced in whole or in part and in any form without the permission of the copyright holders. To obtain permission, contact the Wildlife Conservation Society's Fiji Country Program, [infofiji@wcs.org](mailto:infofiji@wcs.org)

Cover photographs: Left ©Tukana, Right ©Tamani. Back cover: ©Tamani.

Layout and design: Kate Hodge, Hodge Environmental

This document should be cited as:

Thaman B, Rounds I, Sue D, Thomas-Moko N, Tuiwawa M, Bolatolu W, Lesubula M, Lutua A, Waqa K, Mangubhai S (2022) How to build and maintain a community plant nursery. Wildlife Conservation Society. Suva, Fiji. 28 pp.

### Acknowledgements

This manual would not have been possible without the expert knowledge and experiences of local forest and botanical experts from Conservation International, Ministry of Forestry, NatureFiji-MareqetiViti, and the University of the South Pacific.

We would like to acknowledge the writers, contributors, partner organisations, field workers and community members involved in the production of the previous training manual for communities<sup>1</sup> from which this manual draws from.

We would like to thank Bloomberg Philanthropies Vibrant Oceans Initiative who provided support for development of this manual through the Watershed Interventions for Systems Health in Fiji (WISH Fiji) project, co-financed by the The Australian Government's Indo-Pacific Centre for Health Security.

**Bloomberg  
Philanthropies**  
Vibrant Oceans  
Initiative 



---

1 Tuiwawa M, Buliruarua L, Dayal B (2010) How to Build a Simple, Low- Cost Community Nursery. A training manual for communities and field workers. The COWRIE Project. Institute of Applied Sciences, University of the South Pacific, Suva.

# CONTENTS

<b>INTRODUCTION .....</b>	<b>4</b>
Why build a nursery? .....	4
Purpose of this manual.....	4
<b>NURSERY LOCATION AND DESIGN .....</b>	<b>5</b>
<b>HOW TO CONSTRUCT A NURSERY .....</b>	<b>6</b>
Step 1. Clearing the area .....	7
Step 2. Constructing the frame.....	7
Step 3. Adding shading .....	8
Step 4. Constructing shelves.....	8
Examples and techniques used for nursery construction .....	9
<b>SOIL MIXTURE.....</b>	<b>10</b>
Step 1. Preparing soil mixture .....	10
Step 2. Filling the potting bags .....	11
<b>PREPARING PLANTING MATERIAL .....</b>	<b>12</b>
Wildings.....	13
<i>Seed pre-treatment</i> .....	14
<i>Seed sowing and transplanting</i> .....	14
Cuttings and shoots.....	15
<b>SEEDLING GROWTH .....</b>	<b>16</b>
<b>CARING FOR YOUR NURSERY .....</b>	<b>17</b>
Nursery manager .....	17
Watering .....	17
Weeds, pests and disease .....	18
Bad weather .....	18
<b>NATIVE AND NATURALISED TREE SPECIES USED FOR FOREST RESTORATION .....</b>	<b>19</b>
<b>REFERENCES .....</b>	<b>25</b>

# INTRODUCTION

## Why build a nursery?

Replanting cleared or damaged land with native trees is good for restoring forests and the important role they play in watersheds. In order for this to happen you will need different types of seedlings for planting. A nursery is a place where you will care for the seedlings until they are strong and healthy enough to be planted on the land you want to restore.

## Purpose of this manual

The *purpose* of this manual is to help communities to build and manage a low-cost nursery for forest restoration work.

This is the first of two forest manuals that have been developed for rural communities to help them restore cleared or degraded land in their watersheds. These manuals can be used together in any forest restoration work.



# NURSERY LOCATION AND DESIGN

The location and the design of your nursery are important and will depend on its purpose. If it is for restoration, it should be near your restoration site so that seedlings can be easily and safely transported when you start your planting. The nursery should also be big enough to produce the required number of seedlings each year for your restoration work.

Below are important questions that you must consider when deciding on the location and design of your nursery:

- Is it close to a water source such as a river, stream or tap?
- Is there good quality soil available close by?
- Is it sheltered from strong winds which could dry out the soil and seedlings?
- Is it located on land that does not flood after heavy rain?
- Does it receive sunlight throughout the day?
- Is it close to the final planting area?
- Is it large enough to produce the number of seedlings required for planting?

# HOW TO CONSTRUCT A NURSERY

There are different ways of constructing a nursery. They depend mainly on the materials that are available to you locally, as well as how much money you want to spend. Some methods may require buying construction materials. However, you should be able to use locally available materials to build a simple, inexpensive nursery. Some common examples and techniques used for nursery construction are shown at the end of this section, to help you decide on your method of construction.

Your nursery can even be located under the shade of large trees such as *vaivai*. If this is the case, then you will not need to construct the frame and add the shading as described below. Please remember that your seedlings will need more sunlight as they grow older, so choose your site carefully before you begin.

The following steps can help you to construct a nursery, regardless of what materials you use.

## Step 1. Clearing the area

## Step 2. Constructing the frame

## Step 3. Adding shading

## Step 4. Constructing shelves

### Materials needed

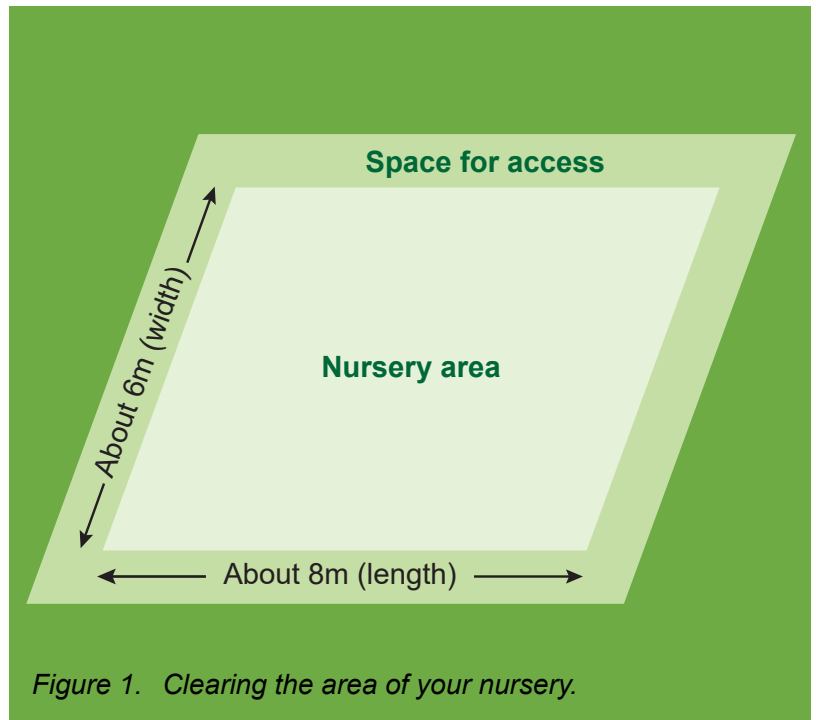
The following materials are generally required when constructing your nursery:

- Corner posts (bamboo/tree posts/pine posts)
- Binding/fasteners (vines/nails/bolts)
- Shading (bamboo/coconut leaves/salon shade cloth)
- Black potting bags PB2 (or bamboo sections, plastic rice/sugar bags, milk cartons, the bottom half of plastic bottles)
- Seed trays or old containers
- Watering can, bucket or hose
- Labels or tags

## Step 1. Clearing the area

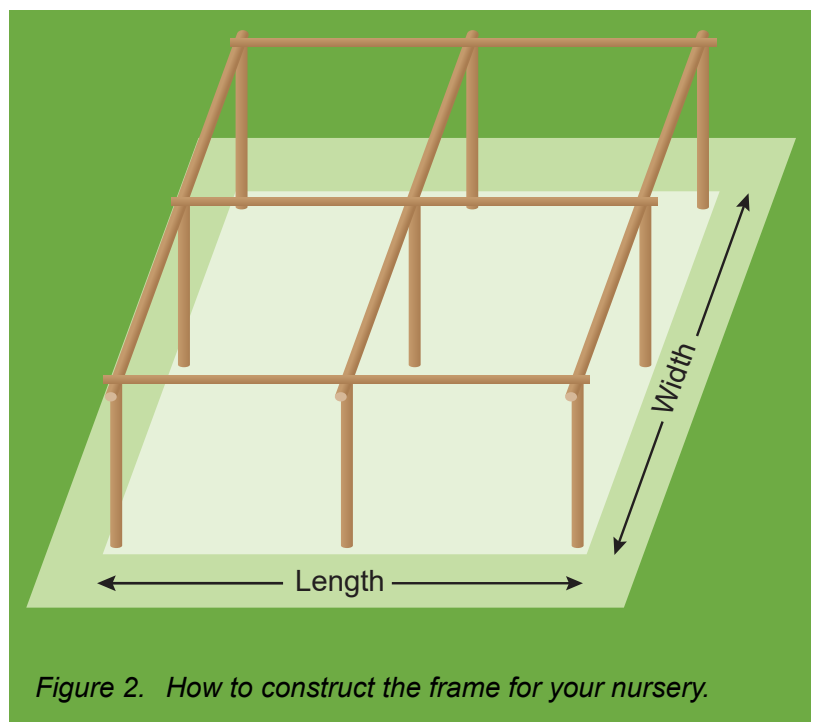
After you have decided on the location of your nursery, clear an area for it, as shown in *Figure 1*. Make sure that you clear enough space around the nursery for easy access.

A nursery of this size will give you about 1,000 seedlings. Note that 8 x 6 metres is a general guide. The size of the nursery you want to build will depend on how many seedlings you want to produce.



## Step 2. Constructing the frame

The outer frame of the nursery structure will consist of strong posts along the boundary of your nursery area. Dig the holes and insert the posts into the ground and then place roofing frames at the top of the erected posts along the length and width of your nursery area (see *Figure 2*). If your nursery is small, middle posts may not be needed for the width.



### Step 3. Adding shading

The seedlings in the nursery need to be protected from direct sunlight. You can create shading from natural materials such as bamboo and coconut leaves, or from salon shade cloth, and place them on the roofing frame of the nursery (see *Figure 3*).



*Figure 3. Examples of roofing shade made from local materials. ©Tamani*

### Step 4. Constructing shelves

The potted seedlings need to be protected from animals, heavy rain and possible flooding. The best way to do this is by constructing shelves (see *Figure 4*). Make sure that the shelves are constructed within the outer nursery frame boundary.

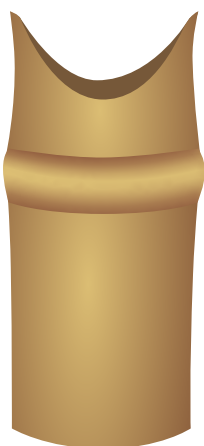


*Figure 4. Examples of shelves made from local materials. ©Tamani*

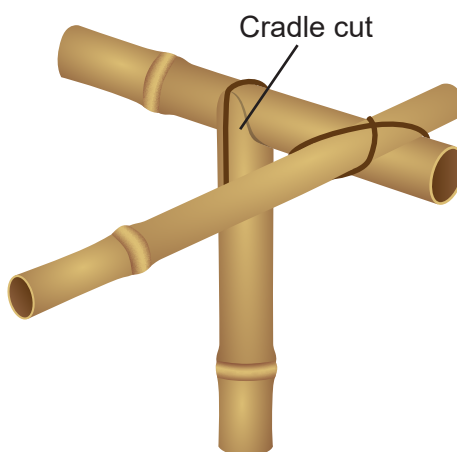


## Examples and techniques used for nursery construction

We have provided photographs to show you how to cut and bind bamboo (see *Figure 5*), as well as common examples and techniques that communities in Fiji are using for constructing a plant nursery (see *Figure 6*).

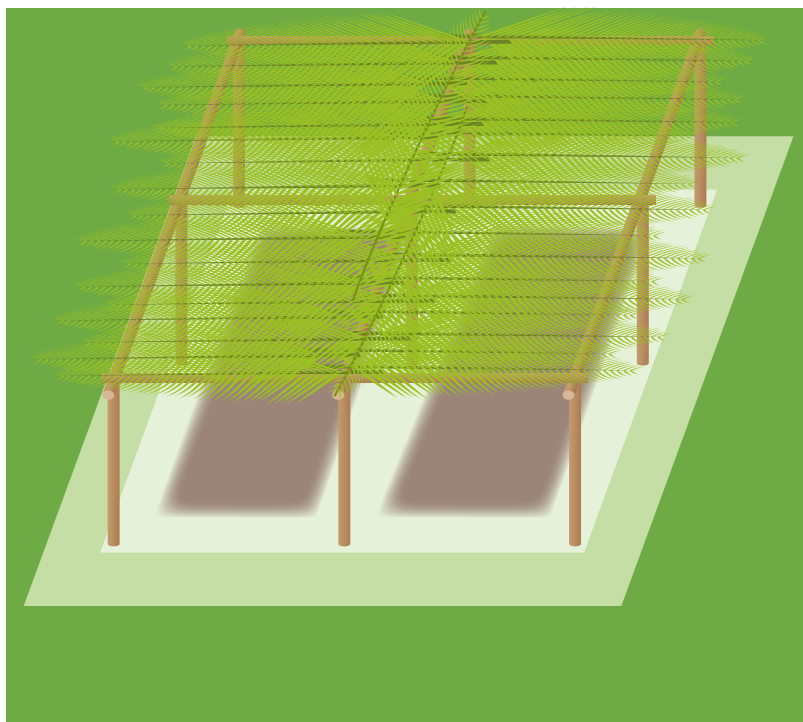


**Cradle-cut bamboo**



**Binding with vines**

*Figure 5. How to cut and bind bamboo to make a nursery frame.*



*Figure 6. Examples of completed nurseries made from different local materials in Fiji.*

# SOIL MIXTURE

The soil mixture is what you will fill into the potting bags in which seedlings will be grown. This is very important for the seedlings as it also acts as a temporary supply of nutrients for them when they are planted out.

## Step 1. Preparing soil mixture

The soil mixture should contain *topsoil*, *mulch* and *sand* or a *sand/charcoal* mixture.

Local topsoil is the top 30 centimetres of fertile soil that can be found on your land (see *Figure 7*). Topsoil has most of the nutrients required for plant growth. This may be agricultural soil or soil from the existing forest floor, and it is up to you to decide where to get it from.

*Mulch* is needed to enable the soil mixture to hold moisture over a long period of time and improve its fertility. *Compost* can be used as mulch (see box on next page). Sawdust and dead leaves collected from under trees can also be used or added to organic waste to make the compost.

River or coastal sand can be used to ensure the potting mix drains well. Charcoal can also be added or used if sand is not readily available.

To make a suitable soil mixture, the following ingredients are generally mixed in **parts** (the same amount of each ingredient) in a **3:1:1 ratio** (see *Figure 8*). Use a large container or bucket to measure each part and then mix them together as:

- ▶ 3 parts fertile local topsoil
- ▶ 1 part mulch (compost/sawdust/dead leaves)
- ▶ 1 part sand or sand/charcoal mixture

Getting ready to grow seedlings involves two main steps:

1. Preparing soil mixture
2. Filling the potting bags

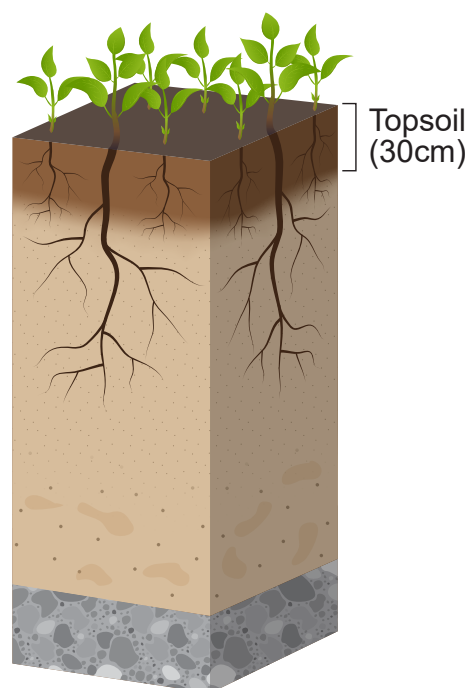


Figure 7. Diagram of soil profile showing topsoil.



Figure 8. Making potting mix. ©Tabua

## Compost

Compost is a mixture of organic materials used to improve soil fertility. It is prepared by decomposing plant and food waste and recycling organic materials. Compost also reduces expenses on commercial chemical fertilisers.

Composting requires a mix of 'green' stuff, such as leaves, grass, and food scraps, and 'brown' stuff, such as coconut husk, paper, and wood chips/sawdust. Water is added to break them down, over a period of months. The decomposition process is aided by ensuring proper aeration by regularly mixing or turning your compost.

Simple composting can be done in large bins or containers, or in a hole dug about 50 centimetres into the ground. You should also cover your composting structure or area so that it does not attract flies, rats or other pests.

## Step 2. Filling the potting bags

Some seeds and smaller seedlings can be transplanted into potting bags that have already been filled with soil mixture. Other larger seedlings may require filling at the time of transplanting (see section on *wildings* below).

Fill up the soil mixture to the top of the potting bags, frequently tapping the bottom of the bag in order to prevent any large air pockets. Do not press the soil during or after filling or else the soil may become too thick.

If you are using alternatives to potting bags, such as bamboo, plastic bags, milk cartons or bottles (see *Figure 9*), make sure that holes are made at the bottom of the container to allow the drainage of water.



Figure 9. Examples of materials that can be used as potting bags.

# PREPARING PLANTING MATERIAL

Planting material can be collected directly from your surroundings. There are three main types:

- *Wildings*: grown seedlings collected from the wild and transplanted into potting bags.
- *Seeds*: planted in trays and potting bags to germinate.
- *Cuttings and shoots*: planted in potting bags to root.

It is recommended that you seek advice from the Ministry of Forestry on the most suitable method for growing different tree species.

Before planting in potting bags, you must first select the tree species that you want. Species selection is yours to make using the local knowledge held within your community about native tree species in your area together with information on their uses. It is important to consult with as many different members of the community as possible, including men, women, the elderly, youth, farmers and foresters, as they each may hold different knowledge on particular tree species.

The table at the back of this manual lists the recommended native tree species you can use for restoration purposes and *land types*. Land types in watersheds include slopes, flats, gullies, creekbanks, riverbanks, ridges and soil erosion areas (*see companion Forest Restoration Manual for more details*).

You may want to create a simple table like below, to help you decide which species you wish to plant.

Species	Uses	Land types it grows well on	Growing method (wildlings/seeds/cuttings/shoots)
Teak	Timber	All terrain	Seeds, cuttings
Ivi	Source of food, source of income	creekbanks	Seeds
Yasi	Timber can be sold	Slopes, flats, gullies	Seeds
Kura	Medicinal value	All terrain	Seeds
Vesi	Wood for construction/carving	Creekbanks, slopes	seeds



## Wildings

Wildings are seedlings that grow from seeds in ripe fruits that have fallen to the ground (see *Figure 10*). You should consult with your community members on the usual places from which to collect wildings.

The roots of wildings are very fragile. When collecting wildings for transplanting, ensure that they are uprooted with some soil attached so that the roots are not disturbed - this will increase their chances of survival. **Wildings must not be left in the open to dry and must be transplanted immediately into potting bags, taking care not to disturb their roots.** We recommend that you:

- place the wildling into a half-filled potting bag allowing the roots to fit freely into the bag
- continue filling to the top around the wildling's roots
- gently press around the plant to ensure there are no air pockets around the roots
- water well to ensure they survive the transplanting process



*Figure 10. Examples of different wilding species. ©Tabua*



## Seeds

Seeds are collected and planted in trays or directly into potting bags to germinate (see *Figure 11*). It is important to know the different stages and seasons for flowering and fruiting of different tree species in order to know when to collect seeds. The list at the back of this manual can guide you on when to collect seeds for different tree species.



*Figure 11. Different types of seeds from native trees. ©Tabua*

### Seed pre-treatment

Some seed species require treatment before sowing to help them germinate faster. A table is provided at the back of this manual with information on the pre-treatment required for different seed species.

### Seed sowing and transplanting

Seeds can be sown directly into potting bags if they are big enough, thereby avoiding the transplanting process, or in seed trays or old containers that are cut in half with holes at the bottom for drainage.

Depending on seed availability, species, and size, more than one seed may be sown in each potting bag, and the healthiest seedling chosen to continue growing after germination.

For sowing in seed trays or old containers, spread the seeds evenly over the surface area of the soil using your hand as shown in *Figure 12*. Ensure that the seeds are well spaced apart from each other depending on the plant species or size.

Cover the seeds with more soil (3-4 millimetres) and water the seed tray after



*Figure 12. Seed trays with seeds evenly spaced and then covered with a thin layer of soil. ©Tabua*

sowing. It is important to always keep the soil moist and seed trays properly labelled so that you know what was planted in each tray.

When the seeds have germinated and produced their first pair of leaves, like those in *Figure 13* below, carefully transplant each seedling into individual potting bags for further growth. The guidance provided on wildings also can be used for transplanting your seedlings.

For seeds sown directly into potting bags, remove the unhealthy-looking seedlings, keeping only the healthiest ones.

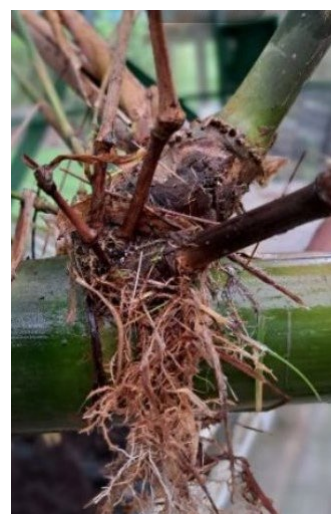


*Figure 13. Germinated seeds in trays or potting bags. ©Tukana*

## Cuttings and shoots

Cuttings and shoots are planting methods that do not involve seeds (see *Figure 14*). Cuttings are sections of tree branches or stems that can grow roots when planted, for example *bamboo*. It is important to make sure that the cuttings are the right way up when planting in potting bags, so that the growth direction is upwards. Shoots are young plants that have grown out from a parent plant, for example *vetiver grass*.

Consult the list at the back of this manual for instructions on plant species that can be grown from cuttings or shoots.



*Figure 14. Plant cuttings (left) and grass shoots (right). ©Tabua*



# SEEDLING GROWTH

Seedlings must grow into a suitable size, generally around 15 centimetres in height, and should be healthy and strong before you plant them on the land you wish to restore. Poor quality seedlings have a lower chance of survival in the field. On the other hand, letting seedlings grow too long in potting bags will result in them becoming overgrown and may have a lower chance of survival when planted out because of root disturbance.

**Hardening-off** is the process of gradually exposing the seedlings to the environment outside the nursery to help them get used to the climate of a place (see *Figure 15*). This needs to be carried out two months before seedlings are planted out, and involves reducing the amount of shade and water that the seedlings get over time. If hardening-off is not carried out, the seedlings may not be able to cope well with harsh conditions when planted out, and are less likely to survive.

Between 4-6 weeks before planting, remove part of the shade, or move the seedlings to a special place, so that they can get more light. Completely remove the shade after 1 month.

Depending on soil moisture, reduce watering because older seedlings do not need as much moisture as young seedlings.

*Your seedlings should now be ready for planting in the field.*



*Figure 15. Healthy seedlings ready for planting. ©Tukana*



# CARING FOR YOUR NURSERY

## Nursery manager

A successful nursery is a team effort, and a nursery manager should be appointed to oversee and supervise the activities associated with running your nursery (see *Figure 16*). This may involve delegating to community members the various other duties listed below to ensure a successful and productive nursery.

A good nursery manager might be someone who:

- already has knowledge and experience in growing plants
- is organised and has good leadership skills



*Figure 16. Community members caring for their nursery. ©Tamani*

## Watering

Seedlings in your nursery should be watered regularly. It is important that the soil in the potting bags is neither waterlogged nor completely dry. Therefore, depending on the climate, you should constantly check the soil for moisture and water your seedlings as required. Seedlings in dry areas will need more frequent watering than those in wet areas.

## Weeds, pests and disease

The soil mixture used for potting may contain seeds already present in the original soil collected, and these may germinate and compete with the seedlings for water, nutrients and light. You should keep a lookout for weeds that sprout in the potting bags and remove them while still small to avoid damaging the roots of the seedlings.

Pests (such as caterpillars, aphids, slugs, snails, mealy bugs, whiteflies, and scales) and diseases (such as fungus) can be found even in well-kept nurseries. You should make regular and careful inspections of your seedlings to ensure that no pest infestation can occur. To prevent diseases, make sure all containers, tools and work surfaces are kept clean. If you find pests or diseases you should immediately contact the Ministry of Agriculture on the best action to take.



*Figure 17. Examples of pests and diseases to look out for. ©Torowale*

## Bad weather

In the event of bad weather such as heavy rainfall, strong winds or cyclones, shading should be removed from the nursery frame in order to avoid damage, and seedlings should be transferred indoors or to a protected place to prevent them from getting damaged.

# NATIVE AND NATURALISED TREE SPECIES USED FOR FOREST RESTORATION

Listed in the table below are tree species that can be planted in **A. degraded land** and **B. badly degraded land**. Information is provided on their land type suitability, flowering and fruiting months, growing methods, and other details such as seed pre-treatment/sowing position/germination time.

*NOTE: Species listed under badly degraded land and others also qualify for degraded land. Species highlighted in light green are naturalised (non-native) useful species that may also be used for forest restoration.*

Local & botanical name(s)	Suitability	Flowering (fruiting) months	Growing methods	Seed pre-treatment/sowing position/germination time and notes
<b>A. DEGRADED LAND (species NOT recommended for badly degraded land below)</b>				
Baka-ni-viti <i>Ficus obliqua</i>	Slopes, flats, gullies	Year-round	Seeds	No seed pre-treatment is required.
Cadamba <i>Neolamarckia cadamba</i>	Slopes, flats	June-Aug	Seeds	Soak fruits until rotten, then mash by hand and air dry. Pass through a sieve to obtain seeds. Sow in trays. When the seedlings are 8-12 weeks old, transplant to plastic bags. After 6-7 months, when the seedlings are about 30 cm tall, transplant into the field.
Dawa <i>Pometia pinnata</i>	Creekbanks, flats	Dec-Mar (Jan-May)	Seeds	No seed pre-treatment is required. Large seeds that can be planted directly in potting bags. Seeds will lose viability if dried. Germination in 7-10 days.
Doi <i>Alphitonia zizyphoides</i>	Gullies, slopes		Seeds	Pre-soak seeds in water for 12-24 hours. Sow in trays in a sunny situation. Some seed lots take several months to germinate. Should be transplanted to individual containers at the four-leaf stage. Seedlings are ready for planting out after about 16-20 weeks when they are about 25 cm tall.
Drou <i>Trema cannabina</i>	Slopes, flats, gullies		Seeds	No seed pre-treatment is required. Needs well-drained sandy soil.

Local & botanical name(s)	Suitability	Flowering (fruiting) months	Growing methods	Seed pre-treatment/sowing position/ germination time and notes
Drou, Drouvula <i>Parasponia andersonii</i>	Slopes, flats			No seed pre-treatment is required.
Ivi <i>Inocarpus fagifer</i>	Creekbanks	Year-round (twice)	Seeds, cuttings	No seed pre-treatment is required. The large can be sown directly into potting bags. Can be transplanted to their permanent positions about 2 months after germinating, when about 20-30 cm tall. seeds should be buried at a depth of 3–5 cm. Germinates in 7 days.
Koka <i>Bischofia javanica</i>	Slopes, flats, gullies	Aug-Nov (Feb-June)	Seeds, cuttings	No seed pre-treatment is required. Germination starts 13 weeks after sowing.
Kuluva <i>Dillenia biflora</i>	All terrain	Year-round	Seeds	No seed pre-treatment is required.
Losilosi <i>Ficus vitiensis</i>	All terrain	Year-round	Seeds	No seed pre-treatment is required.
Mako <i>Trichospermum calyculatum</i>	Slopes, flats	Year-round	Seeds	No seed pre-treatment is required.
Makoloa <i>Trichospermum richii</i>	Slopes, flats	Year-round	Seeds	No seed pre-treatment is required.
Molau, Molauyalewa <i>Glochidion seemanii</i>	Slopes, flats	Year-round	Seeds	No seed pre-treatment is required.
Molaudamu <i>Glochidion concolor</i>	All terrain	Year-round	Seeds	No seed pre-treatment is required.
Molautagane <i>Glochidion vitiense</i>	Slopes, flats	Jun-Jan (Dec-Feb)	seeds	No seed pre-treatment is required.
Nuqanuqa <i>Decaspermum vitiensis</i>	All terrain	Year-round	Seeds	No seed pre-treatment is required.
Sama <i>Commersonia bartramia</i>	slopes	Year-round	Seeds, cuttings	No seed pre-treatment is required.
Tadalo <i>Homalanthus nutans</i>	slopes	Sept-Dec	Seeds, cuttings	No seed pre-treatment is required.



Local & botanical name(s)	Suitability	Flowering (fruiting) months	Growing methods	Seed pre-treatment/sowing position/ germination time and notes
Tadano, Vuetinaitasiri <i>Pagiantha thurstonii</i>	Slopes, flats, gullies	Year-round	Seeds	No seed pre-treatment is required.
Tarawau-kei-rakakā <i>Dysoxylum richii</i>	Slopes, flats, gullies	Apr-Jul	Seeds	No seed pre-treatment is required.
Vadra <i>Pandanus tectorius</i>	slopes	Mar-May (Feb-Apr)	Seeds, shoots	Soak in cool tap water for 5 days, and change the water daily. Seeds will lose viability if dried. Germination in 7-70 days. Grow from shoots during the growing season.
Vakaceredavui <i>Tarenna sambucina</i>	Slopes, flats			No seed pre-treatment is required.
Vau <i>Hibiscus tiliaceus</i>	All terrain	Year-round	Cuttings, seeds	Soak seeds in water.
Vesi <i>Intsia bijuga</i>	Creekbanks, slopes	Year-round	Seeds	Soak in boiled water for 2 hours and dry for 24 hours at room temperature. Sow 5-7 mm apart and 3 mm deep with 'pointed' end up and tip just emerging from the surface of soil. Germination in 17-41 days.
Vuetinaitasiri <i>Ervatamia obtusiuscula</i>	All terrain			No seed pre-treatment is required.
<b>A. BADLY DEGRADED LAND (species ALSO recommended for degraded land above)</b>				
Ai masi <i>Ficus barclayana</i>	Slopes, flats	Year-round	Seeds	No seed pre-treatment is required.
Bitudina (bamboo) <i>Schizostachyum glaucifolium</i>	Slopes, creekbanks	-	Shoots	No seed pre-treatment is required.
Koka <i>Bischofia javanica</i>	Slopes, flats, gullies		Seeds, cuttings	No seed pre-treatment is required. Germination after 1-3 weeks.
Kuluva <i>Dilenia biflora</i>	Slopes, flats	Mar-Nov		No seed pre-treatment is required.
Kura (Noni) <i>Morinda citrifolia</i>	All terrain	Year-round	Seeds	No seed pre-treatment is required. Sow in nursery beds. Germination in 3-9 weeks. Deep taproot, good for holding soil.
Laūci, Sikeci <i>Aleurites mollucana</i>	Gullies, slopes	Year-round	Seeds	Seeds are hard-shelled, and untreated seeds stay in a seedbed for as long as 38-150 days before germination. For faster germination, the seed can be cracked.

Local & botanical name(s)	Suitability	Flowering (fruiting) months	Growing methods	Seed pre-treatment/sowing position/ germination time and notes
Macou <i>Cinnamomum pallidum</i>	Slopes, flats			No seed pre-treatment is required.
Mangium <i>Acacia mangium</i>	Slope, flats		Seeds	Seed should be submerged in boiled water then cool for 24 hours. The swollen seeds should be sown immediately. Germination in 1-15 days. Young seedlings potted when large enough to handle, and can be planted out when 25 cm tall, usually after about 16 weeks.
Mango/Maqo <i>Mangifera indica</i>	Flats, ridges		Seeds	No seed pre-treatment is required.
Qumu <i>Acacia richii</i>	Slopes, flats	May-Dec	Seeds	Has a hard seed coat. Pour a small amount of nearly boiling water on the seeds being careful not to cook them and then soaking them for 12-24 hours in warm water.
Tamarind <i>Tamarindus indica</i>	Slopes		Seeds	Pre-soak the seed for 24 hours in warm water and sow in a seed bed. Grow in seedbed for more than 4 months before being transplanted.
Tavola <i>Terminalia catappa</i>	Creekbanks	Jan (Mar-Jul)	Seeds	It is recommended that seeds are sown within 4-6 weeks after collection. Pre-soak seeds for 24 hours in cold water. Germination in about 20-56 days.
Teak <i>Tectona grandis</i>	All terrain	Jan-May (Jun-Nov)	Seeds, cuttings	Seeds stored for 12 months germinate easier. Soaked for 24-48 hours in warm water, changing the water frequently. Seeds from the same year should be subjected to alternate wetting and then drying for 24 hours each for 14 days. Collect seeds from trees over 20 years old. Germination in 10-90 days. The rooting time of cutting is 8-15 days. Able to survive fires.
Vaivai-kena-mē <i>Leucaena leucocephala</i>	Slopes, flats		Seeds	No seed pre-treatment is required.
Vaivai-ni vavalagi (raintree) <i>Samanea saman</i>	Gullies. riverbanks	Nov-May (Jul-Dec)	Seeds	No seed pre-treatment is required.

Local & botanical name(s)	Suitability	Flowering (fruiting) months	Growing methods	Seed pre-treatment/sowing position/ germination time and notes
Vetiver grass <i>Vetiveria zizanioides</i>	Soil erosion areas	-	Cuttings	No seed pre-treatment is required.
Vutukana <i>Barringtonia edulis</i>	Slopes, flats	Year-round	Seeds	No seed pre-treatment is required.
<b>OTHERS</b>				
Dakuamakadre <i>Agathis macrophylla (vitiensis)</i>	Slopes, ridges	Year-round	Cones/ seeds	Dry at room temperature for 1 day. 3-5 mm apart and 3-4 mm deep with 'pointed' end up and tip just emerging from the surface of soil. Germinates in 2-14 days.
Dakuasalusalu <i>Retrophyllum vitiense</i>	Slopes, ridges	Mar-Feb (Jun-Feb)	Cones/ seeds	Dry at room temperature for 1 day. Seed's base end is cut to speed up germination. Plant 3-5 mm deep with the cut end facing downwards in soil. Germination in 28-88 days.
Damanu <i>Calophyllum vitiense</i>	Flats, Slopes	Year-round	Seeds	Soak in water for 4 days. Remove the pulp off the seed and dry for 2-3 days at room temperature. Plant 3-4 mm apart and 3-4 mm deep in soil. Germination in 12 days
Kaudamu <i>Myristica castaneifolia</i>	Slopes, flats	Year-round	Seeds	Dry at room temperature for 2 weeks. Seed's hard coat is removed using a vice. Plant 3-5 mm apart in germination trays. Mahogany pod compost used as soil. Germination in 18-65 days.
Kaunicina <i>Canarium vitiense</i>	Slopes, flats	Year-round	Seeds	Dry at room temperature for 2-3 days. Seed's base end is cut to speed up germination. Plant 5mm apart and 3-4 mm deep with the cut-end facing downwards in soil. Germination in 87 days.
Kauvula <i>Endospermum macrophyllum</i>	Flats	Year-round	seeds	Leave seed in a bag for about 1 week until the pulp is gone. Rinse well and dry at room temperature for 2 days. Plant 5-7 mm apart and 3-4 mm deep in soil. Germination in 10 days.
Laubū <i>Garcinia myrifolia</i>	Creekbanks	Year-round	seeds	Soak in water for 4 days. remove the pulp off the seed, clean thoroughly and dry at room temperature for 3-4 days. Plant 5-7 mm apart and 3-4 mm deep in soil. Germination in 37 days.

Local & botanical name(s)	Suitability	Flowering (fruiting) months	Growing methods	Seed pre-treatment/sowing position/ germination time and notes
Lolotagane <i>Ficus theophrastoides</i>	Gullies, riverbanks, creekbanks	Year-round	seeds	No seed pre-treatment is required.
Masiratu <i>Degeneria vitiensis</i>	Slopes, gullies	May-Jul (Sept-Dec)	seeds	Dry at room temperature for 2-3 days. Plant 5-7 mm apart and 3-4 mm deep in soil. Germination in 64-71 days.
Coconut/Niu <i>Cocos nucifera</i>	All terrain	Year-round	seeds	No seed pre-treatment is required. not advisable to store seednuts longer than necessary. Germinates in 42-56 days.
Vesiwai <i>Pongamia pinnata</i>	Riverbanks, Creekbanks	Year-round	seeds	Soak in boiled water for 2 hours and dry for 24 hours at room temperature. Plant 5-7 mm apart and 3-4 mm deep with 'pointed' end up and tip just emerging from the surface of soil. Germination in 8 days.
Vuturakaraka <i>Barringtonia asiatica</i>	All terrain	Year-round	seeds	No seed pre-treatment is required.
Vutuwai <i>Barringtonia racemosa</i>	Gullies, riverbanks, creekbanks	Year-round	seeds	No seed pre-treatment is required.
Yaro <i>Premna protrusa</i>	Gullies, riverbanks, creekbanks	Year-round	seeds	No seed pre-treatment is required.
Yasi <i>Santalum yasi</i>	Slopes, flats, gullies	Oct-Feb (Jun-Aug)	seeds	Soak in water for 3 weeks or bury in sand for 10 days so that fruit pulp is easy to remove. Rinse well and dry for 3 days at room temperature. Plant 2-3 mm apart and covered with soil 3-4 mm deep in soil. Germination in 30-90 days.
Yasiwai <i>Syzygium fijiense</i>	Gullies, riverbanks, creekbanks	Jul-Feb (Nov-Mar)	seeds	No seed pre-treatment is required.



# REFERENCES

D'Antonio C, Yelenik S, Trauernicht C (2018) PFX fact sheet-The grass-fire cycle. Pacific Fire Exchange-Joint fire science program. [www.pacificfireexchange.org/research-publications/category/grass-fire-cycle-on-pacific-islands](http://www.pacificfireexchange.org/research-publications/category/grass-fire-cycle-on-pacific-islands).

Department of Agriculture (2020) *Land use capability classification system-A Fiji guideline for the classification of land for agriculture*. Land Use Planning Section-Land Resource Planning & Development, Suva.

Naikatini AN (2009) *Monitoring comparative spatial and temporal variation in the land-birds of Vago-Savura Forest Reserve, a native lowland rainforest in South East Viti Levu, Fiji*. Master of Science in Environmental Studies (thesis). University of the South Pacific, Suva.

Trauernicht C, Kunz M (2019) Fuel Breaks and Fuels-Management Strategies for Pacific Island Grasslands and Savannas. Forestry and Natural Resources Management RM-22. College of Tropical Agriculture and Human Resources, University of Hawaii, Manoa.

Tuiwawa M, Buliruarua L, Dayal B (2010) How to Build a Simple, Low- Cost Community Nursery. A training manual for communities and field workers. The COWRIE Project. Institute of Applied Sciences, University of the South Pacific, Suva.

Tuiwawa M, Dayal B (2010) A guide to planting local tree species for forest restoration-A training manual for communities. The COWRIE Project. Institute of Applied Sciences, University of the South Pacific, Suva.

Useful Tropical Plants Database (2022) <http://tropical.theferns.info>. Accessed March 2022.









**Wildlife  
Conservation  
Society**

Wildlife Conservation Society  
Fiji Country Program  
11 Ma'afu Street  
Suva, Fiji  
Telephone: +679 3315174  
Email: [infofiji@wcs.org](mailto:infofiji@wcs.org)

