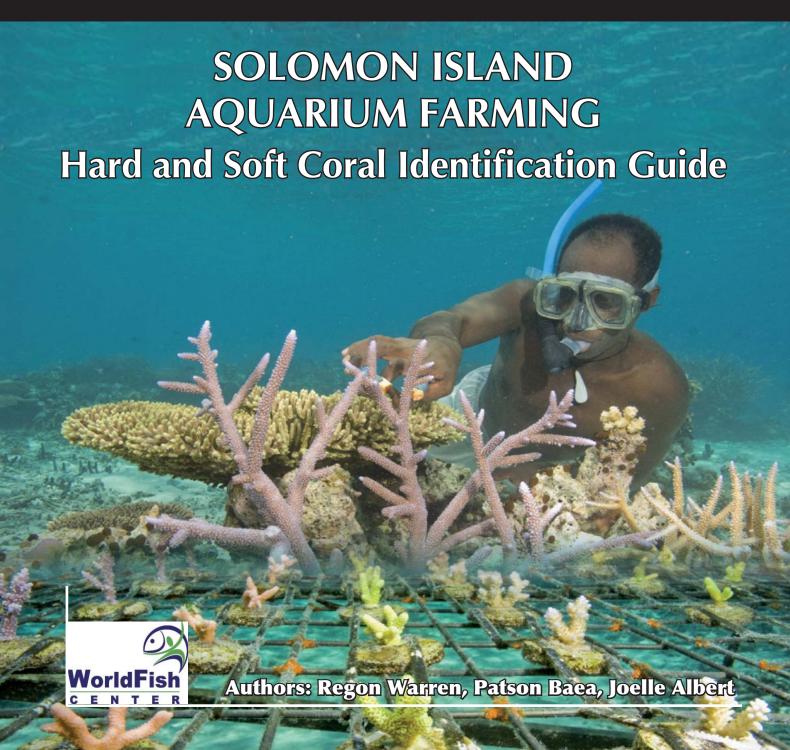
COMPONENT 3C Project 3C13
Marine Ornementals in Solomon Islands

March 2011











The CRISP Coordinating Unit (CCU) was integrated into the Secretariat of the Pacific Community in April 2008 to insure maximum coordination and synergy in work relating to coral reef management in the region.



The CRISP Programme is implemented as part of the policy developed by the Secretariat of the Pacific Regional Environment Programme to contribute to the conservation and sustainable development of coral reefs in the Pacific.

The Initiative for the Protection and Management of Coral Reefs in the Pacific (CRISP), sponsored by France and established by the French Development Agency (AFD), is part of an inter-ministerial project that began in 2002. CRISP aims to develop a vision for the future of these unique ecosystems and the communities that depend on them and to introduce strategies and projects to conserve their biodiversity, while developing the economic and environmental services that they provide both locally and globally. CRISP also, has a role in fostering greater integration in this area between developed countries (Australia, New Zealand, Japan, USA), French overseas territories and Pacific Island developing countries.

The initiative follows a specific approach designed to:

- associate networking activities and fieldwork projects;
- bring together research, management and development endeavours;
- combine the contributions of a range of scientific disciplines, including biology, ecology, economics, law and social sciences;
- address the various land and marine factors affecting coral reefs (including watershed rehabilitation and management);
- avoid setting up any new body but supply financial resources to already operational partners wishing to develop their activities in a spirit of regional cooperation.
   This is why the initiative was established on the basis of a call for proposals to all institutions and networks.

CRISP Coordinating Unit (CCU)
Programme Manager: Eric CLUA
SPC - PO Box D5
98848 Noumea Cedex
New Caledonia
Tel./Fax: (687) 26 54 71
E-mail: ericc@spc.int
www.crisponline.net

This approach is articulated through a series of thematic objectives:

**Objective 1:** Improved knowledge of the biodiversity, status and functioning of coral ecosystems.

**Objective 2:** Protection and management of coral ecosystems on a significant scale.

**Objective 3:** Development of the economic potential represented by the use values and biodiversity of coral ecosystems.

**Objective 4:** Dissemination of information and know-ledge; and capacitybuilding and leadership with local, national and international networks.

The CRISP Programme comprises three major components: **Component 1A:** Integrated coastal management and watershed management

- 1A1: Marine biodiversity conservation planning
- 1A2: Marine Protected Areas
- 1A3: Institutional strengthening and networking
- 1A4: Integrated coastal reef zone and watershed management

**Component 2:** Development of coral ecosystems

- 2A: Knowledge, beneficial use and management of coral ecosytems
- 2B: Reef rehabilitation
- 2C: Development of active marine substances
- 2D: Development of regional data base (ReefBase Pacific)

**Component 3:** Programme coordination and development

- 3A: Capitalisation, value-adding and extension of CRISP programme activities
- 3B: Coordination, promotion and development of the CRISP programme
- 3C: Support to alternative livelihoods
- 3D: Vulnerability of ecosystems and species
- 3E: Economic task force

CRISP is funded by the following partners:















This hard and soft coral identification guide has been developed to assist coral farmers in the Solomon Islands to grow the right corals for the aquarium trade. It has been developed by the WorldFish Center with funding provided through the Coral Reef InitiativeS of the Pacific (CRISP) by the French GEF Programme.

Compiled by: Regon Warren, Patson Baea and Joelle Albert

**Photos:** Regon Warren, Fred Olivier, Joelle Albert, Eran Brockovich and Simon Albert.

**Designed by**: Joelle Albert

**For further information:** visit the website below or contact - info@solomonseasustainables.com



#### www.solomonseasustainables.com



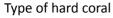




#### What are corals?

Corals are classified as an animal, but they are actually a combination of a plant and animal. Corals can be hard or soft, the difference between them is the skeleton of the coral. Hard corals have a hard skeleton (lime) which the coral makes as it grows. The skeleton of hard corals serves the same purpose as for other animals – it provides protection and a place for the flesh of the coral animal to attach. Over long periods of time coral skeletons accumulate to build reefs and even islands as they grow on top of each other. Soft corals have a tough, but soft skeleton. These animals have tiny spikes and also release a toxin that makes them less likely to be eaten by fish and other animals and has the same protection role as the hard skeleton of hard corals. Individual coral colonies are made up of thousands of individual animals.







Type of soft coral

#### What is a farmed coral?

A farmed coral is sometimes called a propagated or cultured coral. Farmed corals are grown from small pieces (fragments) taken from bigger corals growing on the reef or already growing in the farm. They are made to attach to small artificial bases and then helped to grow until they are big enough to be sold. In a well developed coral farm, the corals that are the best for farming are selected and are kept in the farm as parent, or broodstock, corals so that there is no need to keep using the reef to supply fragments.

#### How do corals feed?

Each of the tiny animals are patient fishermen and they have a ring of arms (polyp) that they use to catch even smaller animals that float past in the water. Hard corals usually feed at night time (so you rarely see the polyp out during the day. Soft corals however feed during the day and night.

Some corals however are not only fishermen but they are also gardeners. All reef-building corals and some soft corals have small plants (called zooxanthelle) that grow inside the coral animal. The plants provide food and help to build the stony skeleton. Without the help of these plants the corals would die. This means that these corals need light, just like plants, in order to grow, and that means that they cannot grow in very deep water. It also helps to explain why corals die when the water gets dirty. A good example of this is when mud from logging runs down rivers and into the ocean.

#### How do corals reproduce?

Corals reproduce in two ways; sexual and asexual. In sexual reproduction, corals release sperm and eggs into the water, and the fertilized eggs become larvae, drifting on the current until they settle on suitable substrate, where they then grow into mature corals. When we see a tiny new coral colony on a reef it has come from this method, and could eventually grow into a massive colony.

In asexual reproduction, the coral grows and pieces break off. These are called fragments, and the fragments in turn grow into new colonies. Fragmentation is a natural process, and reefs that have been hit by storms may have many corals broken into lots of small pieces. The fragments will start to reattach themselves to the coral rock and regenerate into big coral colonies if they are still alive and if conditions are suitable. The fragments are identical to the parent colony. Coral farming uses this asexual form of reproduction to produce new coral colonies, though coral farmers deliberately cut fragments off of suitable corals rather than waiting for a big storm.

#### Why farm corals?

In many parts of the world people like to buy corals to keep in aquariums, and they are happy to buy corals from people who have access to coral reefs. To meet this demand, in many places people break off pieces of coral directly from the reef, but this is not good for the reef. Coral reefs grow slowly and sometimes too many are harvested to allow the reef to grow back. Corals are also taken from the reef for making lime for chewing betel nut or for building rock walls. Coral reefs around the world are becoming less healthy and more damaged and if we do not find better ways to look after them, one day there may be no reefs left.

Since we rely on reefs for food and protection from storms we need to keep reefs healthy. For people who need to make money from their reef, and do not want to spoil it, one way is to farm corals. It is better for the reef to farm corals instead of taking them directly from the reef. Of course, when you start coral farming you will need to collect some corals from the reef to start with. On the farm you can grow up corals that you can use to take pieces from instead of always collecting them from the reef. When farming corals, it is more environmentally friendly – and sustainable- to remove only fragments from wild-growing colonies, transport them for short distances, and allow them to regrow in your farm. Remember a coral is a living thing, so this is a bit like pruning a tree – if you take too much the tree will die.



Corals growing in an aquarium with fish

#### About this guide

This coral identification guide shows some corals that you should grow for sale in the aquarium trade. This manual does not provide pictures of all the corals that you may find in the Solomon Islands that are suitable for the aquarium trade (there are thousands of different corals). This manual should be used as an example guide only.

It is important that you farm a number of different corals, to ensure that you always will have corals to sell that are in demand for the aquarium trade. People that buy your corals like to have a choice and a mixture of different types of colour and shape of corals. If all farmers grow the same one or two corals, you will not be able to sell many corals - if farmers grow many different types, and colors of corals, it will be more likely that the exporter will want to buy your corals.

If you are worried about whether a particular coral that you are growing is suitable for the aquarium trade, either send a photo to the following email address info@solomonseasustainables or send a specimen to the exporter in Honiara.

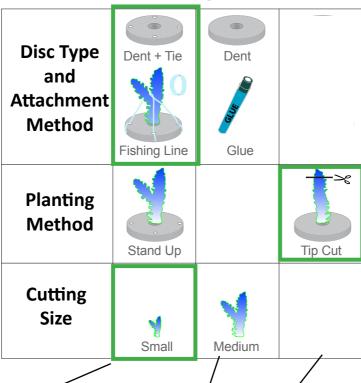
For each of the hard and soft coral included here, the *scientific name* and the **local Solomon name** is provided as well as a brief description about the coral and example pictures.



#### How to use this guide

For each coral identified the guide provides information about the best method for planting these corals including the best method for attachment, best type of base to use and what size cutting should be taken from the broodstock. This information has been compiled based on experience from the authors of this book. A description is provided for what each of these methods mean.

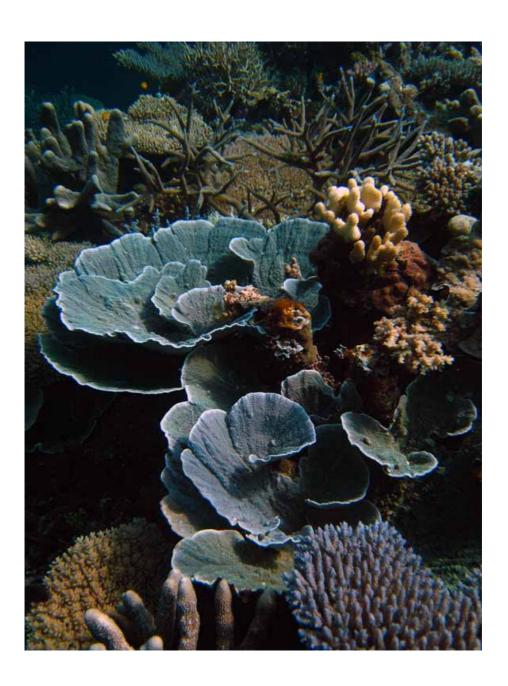
### **Coral Planting Method**



The green highlighted box is the best method to use

Blanked out methods are not advised for this coral type

The box not highlighted is also ok to use

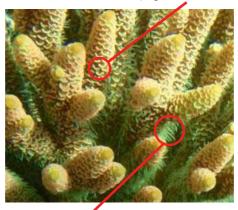


# HARD CORAL

#### What are hard corals?

Hard corals (or stony corals) have a hard skeleton (of calcium or lime) which the coral makes as it grows. Each hard coral colony is made up of thousands of tiny corallites, each of which house a coral polyp - the coral animal. The coral polyps generally only feed at night time, although you may sometimes see them feeding during the day.

individual coral polyp (together these form the coral colony)



feeding tentacles (arms) of the coral polyp

#### Which hard corals to grow

Hard corals come in many different shapes and sizes. Hard corals can be branching, digitate, plate like, foliose, massive/stone or encrusting. The pictures below show some of these different forms. Branching, digitate and foliose corals are generally the fastest growing hard corals and can be most easily cultured in a coral farm.













Branching

Digitate

Plate

Foliose

Stone

**Encrusting** 

People who buy hard corals for their aquarium prefer ones that are brightly coloured, like pink, blue and purple. These colours are often unusual and sometimes hard to find. The worst colour of corals to grow are brown ones. This is because some corals change colour once they are taken out of the sea - and the most common colour that they change to is brown. So it is best to grow some pink, some blue and some purple corals, as people also like to have a choice when they buy them. In terms of the colour, you need to remember that you will be growing the tips of the coral, so look at the colour of the tip, rather than the bottom part of the coral.



When choosing your corals to grow, you first need to spend alot of time swimming in different reef areas to find ones that are not commonly seen and are a little different and brightly coloured. If you collect from within the top 5 - 10 m you are more likely to grow the corals that will survive and grow best in your farm. The following hard corals show some examples of corals that are currently being grown for the aquarium trade.

#### **Hard Coral Farming Methods**

There are many different methods for farming hard corals. The methods described here are based on using a small cement base. You may find other ways of attaching corals that work better than those described here.

#### Disc type and attachment method

#### Fishing Line



This is the basic method for attaching hard corals. Make sure the dent in the base does not go all the way through and it is the right size for the coral you are planting. Coral should be held as tight as possible to the base.

#### Glue



Glue is a good way to attach corals that take a long time to grow onto the base. The best glow to use for hard corals are glues that can be used to fix water tanks. These glues can be hard to find in the Solomon Islands. Take care as some glues will be toxic to your corals and will kill them. Contact the exporter or the depot for more advice.

#### Full hole - Push In



This is a good method to use for corals with a thick branch. The base should have a hole all the way through and it should be the size of the coral branch. Simply push the coral branch through the hole to the other side (not sticking out the other side). It should be tight in the hole.

#### Planting method

Planting method refers to the way that they corals are planted on the disc. Most corals grow best standing up, but some you should lay sideways







Lying down Tip Cut

- this helps them attach to the base quickly. If you have only a single piece with no branch, if you cut the top - it branches more quickly

#### Planting fragment size

Not all corals grow at the same rate, some grow fast ad others grow slow.

We have given an indication about the size of fragment that you should start with to ensure that your corals is neither too hig or too small for export (and it





neither too big or too small for export (and it is sufficiently attached to the base).

## **Green Tree**

### Acropora florida



Wild coral colony



**Cultured coral** 

Green tree consists of thick upright coral branches. It is usually yellow-brown in colour, but you some are bright green colour. So make sure you choose the brightest green that you can find. The wild coral in the left picture above is a much better colour to grow that the cultured coral on the right.

Green tree is slow growing, so you will need to ensure you grow out a high number of broodstock corals to ensure that you have enough broodstock to keep your farm well stocked.

## **Green Tree**

## **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line	Dent Glue	
Planting Method	Stand Up		
Cutting Size		Medium	Large

Green tree is a slow growing coral, so plant a medium - large sized piece when you initially plant. It takes time to attach to the base, so use glue if you want to reduce the time it takes to attach. If using fishing line, make sure you tie the coral tight to the base.

# **Spider Blue**

### Acropora horrida



**Broodstock colony** 



**Cultured coral** 

Spider blue is usually found in more dirty water around fringing reefs. It is pale blue or dark blue in colour.

Spider blue is a fast growing coral and if your cultured coral gets too large the branches are thin, so they will easily break. This is an easy coral to grow, but handle it with care!

# **Spider Blue**

### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie Fishing Line	Dent Slue	Full hole Push In
Planting Method	Stand Up		
Cutting Size	<b>⅓</b> Small	Medium	

Spider blue is a fast-growing coral that can quickly become too big to transport without breaking. Start with a small piece of coral with a branch and use a small amount of glue for a coral that will attach enough for a quick sale.

## **Bubble Coral**

#### Acropora sp.





Wild coral colony

**Cultured** coral

Bubble coral is found mostly in shallow waters on the reef and sometimes in lagoon areas. The coral is in a tight colony and it is sometime difficult to take cuttings. The coral branches are very hard and sometimes difficult to cut. Bubble coral can be green or blue in colour.

# **Bubble Coral**

### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line	Dent Miss Glue	Full hole Push In
Planting Method	Stand Up		
Cutting Size		Medium	Large

Bubble coral does not usually grow tall, so take a medium sized cutting for it to attach well to the base and be ready for sale. Make sure you choose a cutting with a branch to make it easier to attach it to the base.

# **Pink Lady**

### Acropora millepora



Wild coral colony



**Cultured** coral

A very common coral found in shallow waters within reef flats and lagoons. Wild colonies are generally plate like, with branches growing out from a centre base. This type of coral can be pink, bright orange, green, blue or yellow/brown (see also Green Girl).

Select only the brightest pink colours that you can find. Sometimes these corals may turn brown when you move them to your farm, so select broodstock from a few different corals to find the one which best keeps its bright colour.

# **Pink Lady**

## **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line	Dent Glue	
Planting Method	Stand Up	Lying down	
Cutting Size	<b>√</b> Small	Medium	

Pink lady is a fast growing coral that attaches quickly to the base. It is a very easy coral to grow, so it is a good coral to practise on. But remember it is very common coral, so ensure that other farmers nearby are not also growing this coral for sale.

# **Green Girl**

### Acropora millepora



**Broodstock colony** 

Green Girl is the green version of Pink Lady but Girl is less common to find on the reef. This coral is found in shallow waters within reef flats and lagoons. Wild colonies are generally plate like, with branches growing out from a centre base. This type of coral can be pink, bright orange, green, blue or yellow/brown (see also Pink Lady). Select only the brightest green colours that you can find. Sometimes these corals may turn brown when you move them to your farm, so select broodstock from a few different corals to find the one which best keeps its bright colour.

## **Green Girl**

## **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line	Dent Glue	
Planting Method	Stand Up	Lying down	
Cutting Size	<b>√</b> Small	Medium	-

Green Girl is a fast growing coral that attaches quickly to the base. It is a very easy coral to grow, so it is a good coral to practise on. Green Girl is not commonly found compared to Pink Lady - so it is less likely that other people will be growing it.

## **Brilliant Blue**

#### Acropora formosa



**Broodstock coral** 



**Cultured coral** 

Brilliant blue is a common coral often found in lagoon areas. This coral has the same bright blue colour from tip to base (unlike blue tip). It is a fast growing coral and can easily get too big to transport. Often the branches are long in broodstock coral, which can make it difficult to find a small branch to attach the coral easily to the cement base. The tips of this coral are very sensitive, so be careful not to break them when you are planting.

This type of coral is commonly used for making betelnut lime.

# **Brilliant Blue**

### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line	Dent Glue	Full hole Push In
Planting Method	Stand Up		Tip Cut
Cutting Size	Small	Medium	-

Brilliant blue is a fast growing coral that quickly attaches to the cement base. If using fishing line to attach this coral you must tie it tight to the base to ensure it attaches quickly. If you have corals that do not have a branch, you may find it easier to push the coral through a full hole rather than attaching it using fishing line.

# **Blue Tip**

### Acropora formosa, nobilis or grandis



**Cultured coral** 



**Cultured coral** 

Blue tip is a name given to a number of different corals. These corals are commonly found in lagoon areas. This coral is similar to Brilliant Blue, but it generally has a different colour tips compared to the base. Only choose corals that are bright in colour (in particular the tips of the corals). These corals are fast growing and can easily get to large to transport. Often the branches are long in broodstock coral, which can make it difficult to find a small branch to attach the coral easily to the cement base. This type of coral is commonly used for making betelnut lime.

# **Blue Tip**

## **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie Fishing Line	Dent Glue	Full hole Push In
Planting Method	Stand Up		Tip Cut
Cutting Size	<b>y</b> Small	Medium	

Blue tip corals are fast growing corals that quickly attach to the cement base. If using fishing line to attach this coral you must tie it tight to the base to ensure it attaches quickly. Some of these corals are weak and may go white and die when handled. Only grow the stronger corals you find.

# **Purple Bush**

#### Acropora sp.



**Cultured coral** 



**Cultured coral** 

Purple Bush are common corals found in shallow reef areas. They are small and bushy and grow quickly. Make sure you select only the brightest colours for your broodstock. Be very careful when you handle these corals as the tips are easily broken.



**Cultured coral** 

# **Purple Bush**

### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line	Dent Glue	
Planting Method	Stand Up		-
Cutting Size	<b>√</b> Small	Medium	

Purple Bush are fast growing branching coral, so make sure you only plant a medium to small size piece to grow. This coral is easy to grow. We have found that some of these corals are weak and may go white and die when handled. Only grow the stronger corals you find.

# Pink Acropora

#### Acropora sp



**Cultured coral** 



**Cultured coral** 

Pink acropora corals may be one of very many different species of Acropora corals. They are common corals often found in shallow reef areas. Pink acropora corals have fine branches that are easy to break. Only choose corals that are bright in colour. We have found that some of these corals are weak and may go white and die when handled. Only grow the stronger corals you find. Corals are fast growing and can easily get to large to transport. If they get too big, the branches can break during transport.

# Pink Acropora

### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line		
Planting Method	Stand Up	Lying down	
Cutting Size	Small	Medium	

When planting these corals, make sure you choose a piece with a branch. Be sure to tie the coral tight to the base and make sure you remove fishing line early (as soon as the coral attaches to the base).

## **Blue Polyp Green**

### Acropora subulata



Wild coral colony



**Cultured coral** 

Blue polyp green can be found on shallow reefs in areas of high current (but protected from waves). It has bright green polyps and the branches are blue or purple in colour. This coral has very fine branches, so you need to take care when you handle this coral, so that it does not break.



Wild coral colony

## **Blue Polyp Green**

### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie Fishing Line	Dent Glue	
Planting Method	Stand Up	Lying down	
Cutting Size	Small	Medium	

Blue polyp green has fine, thin branches that can be easily broken, so handle with care! Be sure to tie the coral tight to the base and make sure you remove fishing line early (as soon as the coral attaches to the base).

## **Yellow Tree**

#### Acropora sp.



**Cultured coral** 



**Cultured coral** 



**Cultured coral** 

This coral is common in shallow reef where there are strong currents but no breaking waves. This coral has many small branches that come from a central base. This coral is yellow in colour, sometimes with blue tips. Make sure you grow the brightest colours that you can find.

## **Yellow Tree**

### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line	Dent Glue	
Planting Method	Stand Up	Lying down	
Cutting Size	<b>S</b> mall	Medium	

Yellow tree has fine, thin branches that can be easily broken, so handle with care! Be sure to tie the coral tight to the base and make sure you remove fishing line early (as soon as the coral attaches to the base).

## **Snow White**

## Acropora multiacuta



**Cultured coral** 

Snow white is a beautiful but slow growing branching coral. It can be found in areas of high current or waves. This coral is brilliant white or cream in colour with blue tips. Because this is a slow growing coral, you will need to make sure that you have enough broodstock corals to ensure that you can have high numbers of product in your farm. Snow white is a strong coral and can be difficult to cut, but it is easy to keep alive.

# **Snow White**

### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line	Dent Glue	
Planting Method	Stand Up		
Cutting Size		Medium	Large

Snow white is a rare but beautiful coral. It is very slow growing, and will generally grow up from the base - not growing much in height. Make sure your broodstock has a wide base for it to grow on. It is a very tough and strong coral. You will need to tie the coral tight to the cement base for it to attach well.

## **Purple Dwarf**

#### **Acropora loripes**



**Broodstock coral** 



Wild coral colony



**Cultured coral** 

Purple dwarf is an abundant coral on shallow reef slopes, but can be found in lagoons and on reef flats. It has obvious branches with no polyps on one side. It is usually purple or blue in colour, but sometimes brown. It is a very a beautiful coral that is relatively slow growing.

## **Purple Dwarf**

#### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line	Dent Glue	
Planting Method	Stand Up	Lying down	
Cutting Size		Medium	Large

Purple dwarf corals are a beautiful coral that is relatively slow growing. It is a strong coral that keeps its colour well. You will need to tie the coral tight to the cement base for it to attach well.

## Finga Coral

### **Acropora humilis**



**Cultured coral** 

Finga coral is an common coral on shallow reef flats and expose reef slopes. It has thick finger like branches. It is usually brown, purple, blue, pink or red in colour. Choose only bright broodstock to farm. It is a tough coral that is sometimes difficult to cut.

## Finga Coral

#### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line	Dent Glue	
Planting Method	Stand Up	Lying down	
Cutting Size	<b>y</b> Small	Medium	

Finga coral does not usually grow tall - it will branch from the base. Make sure you choose a cutting with a branch to make it easier to attach it to the base. Tie the coral tight to the cement base and remove the fishing line as soon as it attaches.

## **Purple Finger**

#### Montipora digitata



**Broodstock coral** 



Wild coral colony



**Cultured coral** 



**Cultured coral** 

Purple finger are common corals found in shallow seagrass or mud areas. The branches are like fingers. This coral may be purple, blue, brown or orange (see also Orange Finger). Some purple finger broodstock corals may change from purple/blue to brown when moved to your farm. Make sure you select the brightest colours for your broodstock.

## **Purple Finger**

#### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie Fishing Line	Dent Glue	
Planting Method	Stand Up	Lying down	·
Cutting Size	<b>√</b> Small	Medium	

Purple fingers is a fast growing coral, but we have found that some broodstock a long time to attach to the base compared to others. Try attaching the coral lying down on the base, with the a number of tips of the coral touching the cement base.

## **Orange Finger**

#### Montipora digitata



**Broodstock coral** 

Orange finger are common corals found in shallow seagrass or mud areas. The branches are like fingers. This coral may be purple, blue, brown or orange (see also Purple Finger). Some purple finger broodstock



**Cultured coral** 



**Cultured coral** 

corals may change from purple/blue to brown when moved to your farm. Make sure you select the brightest colours for your broodstock.

## Orange Finger

#### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line	Dent Glue	
Planting Method	Stand Up	Lying down	
Cutting Size	<b>√</b> Small	Medium	

Orange finger is a fast growing coral, but we have found that some broodstock a long time to attach to the base compared to others. Try attaching the coral lying down on the base, with the a number of tips of the coral touching the cement base.

### **Superman Coral**

#### Monitopora sp.



Wild coral colony



**Cultured coral** 

Superman coral is bright purple in colour with red polyps. Superman coral is an encrusting coral - meaning that it crawls along and sticks to the coral reef like carpet. To collect broodstock you will need to use a hacksaw to cut the coral off the reef. You will then need to find the best way to grow broodstock for later use (try a thin piece of cement that can be broken into smaller pieces and glued onto the cement base). You should only try to grow this type of coral once you are an experienced farmer - it may take some experimenting! Select broodstock well as we have found that some of these corals tend to change to brown.

### Superman Coral

#### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie Fishing Line	Dent Janus Glue	
Planting Method		Lying down	
Cutting Size	Small	Medium	

This coral can be attached using fishing line and glue (super glue). The coral will grow over the base, so make a base that is hill shaped, not flat. Flatten underneath the coral where it attaches to base for good attachment. This coral is quick to attach to the base, ensure you remove fishing line as soon as it attaches.

## **Pointy Blue**

### Species unknown



**Cultured coral** 

Pointy blue can be found in small coral colonies growing on stone where there is alot of waves and current. This coral can be found as a blue or a pink colour (see also Pointy Pink). This coral grows very slow, so you will need to have a lot of broodstock before planting for export. Take care that algae does not cover or kill part of the coral as it takes a long time to recover - cut out any dead parts as soon as possible.

## **Pointy Blue**

#### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line	Dent Glue	
Planting Method	Stand Up	Lying down	
Cutting Size	<b>√</b> Small	Medium	

Pointy blue is an extremely slow growing coral that will take a long time to grow out, but it is very tough. Be sure to tie the coral tight to the base.

## **Pointy Pink**

### Species unknown



**Broodstock colony** 

Pointy pink can be found in small coral colonies growing on stone where there is alot of waves and current. This coral can be found as a blue or a pink colour (see also Pointy Blue). This coral grows very slow, so you will need to have a lot of broodstock before planting for export. Take care that algae does not cover or kill part of the coral as it takes a long time to recover - cut out any dead parts as soon as possible.

# **Pointy Pink**

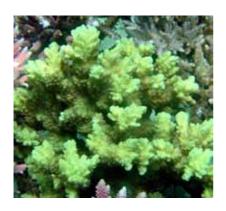
### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line	Dent Glue	
Planting Method	Stand Up	Lying down	
Cutting Size	Small	Medium	

Pointy Pink is an extremely slow growing coral that will take a long time to grow out, but it is very tough. Be sure to tie the coral tight to the base.

### **Bright Star**

### Hydnophora sp.



Wild coral colony



**Cultured coral** 

Bright star is an uncommon coral found in lagoons and on reef edges. It has distinct round ridges, with wild coral colonies often very small. This coral is usually cream or brown, but some bright green and fluorescent yellow colours can be found. Grow only the brightest of corals. Its unusual shape make this an interesting aquarium coral.

Bright Star is a tough coral but it is slow growing and takes time to attach to the cement base.

## **Bright Star**

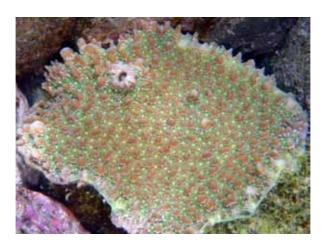
#### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie Fishing Line	Dent Glue	
Planting Method	Stand Up	Lying down	
Cutting Size		Medium	Large

Bright start is a tough, but slow growing coral. You will have most success if you use glue to attach this coral to the cement base.

## **Creeping Star**

### Hydnophora exesa



**Broodstock coral** 

Creeping star is an uncommon coral found in lagoons and on reef edges that are protected from waves. It has distinct round ridges. Wild corals can be encrusting (growing like a carpet over the reef) or submassive (stone like). It is easiest to collect broodstock where the encrusting coral has an overhanging edge that can be easily broken off. This coral usually has cream or brown ridges, with bright green colours in between the ridges. Grow only the brightest of corals. Its unusual shape make this an interesting aquarium coral. You will need to grow broodstock over a thin piece of cement to be able to cut it into small piece to plant.

## Creeping Star

#### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie Fishing Line	Dent Glue	
Planting Method		Lying down	
Cutting Size	<b>√</b> Small	Medium	

Creeping star is a tough coral that will keep it's colour but it is slow growing. You will have most success if you use glue to attach this coral to the cement base. Cut the encrusting coral into small pieces with a hacksaw and glue them to the cement base. This is not a coral for beginners!

## **Candy Coral**

#### Caulastrea furcata



**Cultured coral** 



**Broodstock coral** 

Candy coral is a slow growing massive coral. It is a common coral that can be found on reef slopes that are protected from waves. This coral has separate large corallites (small coral) that are brown or green on the edge with green polyps in the centre. Because this is a slow growing coral, you will need to make sure that you have enough broodstock corals to ensure that you can have high numbers of product in your farm.

## **Candy Coral**

#### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line	Dent Ogue	
Planting Method	Stand Up		
Cutting Size		Medium	

Candy coral is a massive coral, so it will grow into the shape of a stone. Separate 2 or 3 corallites from you broodstock to attach to your base. The coral will grow around the shape of the base (but will not attach to it, unless you use glue). This is not a coral for beginners!

### **Bird Nest**

### Seriatopora hystrix



**Cultured coral** 

Bird nest corals are common on shallow reefs. They can be cream, blue or pink in colour. Select only the brightest pink or blue bird nest corals to grow. The tips of this coral are very sharp and the branches are thin and easy to break.

Bird nest corals can be weak and easily die. Make sure you keep them in cool when transporting them and quickly get them back to sea when attaching them.

### **Bird Nest**

### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie Fishing Line	Dent	Full hole Push In
Planting Method	Stand Up	Lying down	
Cutting Size	<b>⅓</b> Small	Medium	

Bird Nest coral is a fast growing, but because of it's thin branches, it can be sometimes difficult to attach. Try using glue or lie the coral down on the cement base to attach. Be sure to tie the coral tight to the base.

### Nobble coral

### Stylophora sp.



Wild coral colony



Wild coral colony

Nobble corals are common on shallow reefs where there is strong wave action and strong current. These corals can be cream, blue, green or pink in colour. Select only the brightest pink, green or blue nobble corals to grow.

This coral has very tough branches and is sometimes difficult to take cuttings. It grows slowly so make sure you have plenty of broodstock to ensure a continuous supply.

### Nobble coral

### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie  Fishing Line	Dent Glue	
Planting Method	Stand Up		
Cutting Size		Medium	

Nobble coral does not grow tall, or fast so take a medium sized cutting for it to attach well to the base and be ready for sale. Make sure you choose a cutting with a branch to make it easier to attach it to the base. Tie the coral tight to the base for better attachment.

### **Purple polyp**

### **Echinopora mammiformis**



Wild coral colony

Purple polyp is an encrusting coral (meaning it grows like a carpet over the reef) but it has many growth forms and can even grow branches. It is a very common coral, especially in waters that are more dirty. The coral is brown or cream in colour with purple (sometimes pink) polyps. Do not farm this coral close to soft corals as the toxins that the soft coral produce can kill this coral.

### **Purple polyp**

#### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie Fishing Line	Dent Glue	
Planting Method		Lying down	
Cutting Size	<b>y</b> Small	Medium	

You will have most success if you use glue to attach this purple polyp to the cement base. Cut the encrusting coral into small pieces with a hacksaw and glue them to the cement base. Try a base with a hill for an interesting shape This is not a coral for beginners!

### Sun Coral

### Tubastrea sp.



Wild coral colony



**Cultured coral** 

Sun coral does not contain zooxanthelle (algae) so it does not need sunlight to survive (unlike most other hard corals). Sun coral is usually found in areas of strong current, such as along walls or under ledges. The coral polyps generally only come out at night (when they are feeding). These corals are best grown



suspended vertically. (see photo at right) This coral is fast growing, but you will need to have a large number of broodstock to maintain stock numbers.

### Sun Coral

### **Coral Planting Method**

Disc Type and Attachment Method		Dent	
Planting Method	Stand Up	Lying down	
Cutting Size	<b>√</b> Small	Medium	

Sun coral is not easy to grow, so do not start with this coral. You need to use glue as it will not attach to the base. To plant, separate 2 or 3 polyps from your broodstock using a hacksaw and glue onto the base. The corals will not grow upwards, but sideways.

### **Black Sun**

#### Tubastrea sp.





**Cultured coral** 

Wild coral colony

Black sun coral is similar to sun coral and it also does not have zooxanthelle. Black sun coral is usually found at deeper depths along the reef wall. The coral polyps generally only come out at night (when they are feeding) and the polyps are black in colour. Unlike sun coral, black sun will grow similarly to a normal hard coral (ie grow upwards and branch).

### **Black Sun**

### **Coral Planting Method**

Disc Type and Attachment Method	Dent + Tie Fishing Line	Dent Glue	
Planting Method	Stand Up		
Cutting Size	<b>√</b> Small	Medium	-

Black sun coral is easy to grow, as long as there is enough current at your farm site, which carries the food that this coral needs to survive. You need to be careful that the outside skin of this coral as it is easy to break, you need to especially take care when transporting.

### **Torch Coral**

#### Euphyllia glabrescens



Coral with polyps feeding



Coral with polyps hidden

Torch corals can be found in shallow environments that have a moderate amount of wave action. These corals can form fairly large coral colonies up to 1m across. The polyps of this coral are usually extended during the day time and unlike Hammer coral, Torch coral has long flowing tentacles with the tips of the coral polyp being green or orange. Torch corals can be slow to grow, so make sure you grow out a large number of broodstock.

### **Torch Coral**

### **Coral Planting Method**

Disc Type and Attachment Method		Dent Glue	
Planting Method	Stand Up	Lying down	
Cutting Size	<b>√</b> Small	Medium	-

Torch corals will need to be carefully cut with a hacksaw into small fragments to grow out. These corals will not attach to the base, so you will need to use glue. Take the time to let these coral grow out well onto the base.

### **Hammer Coral**

### Euphyllia fimbriata





**Coral with polyps feeding** 

Coral with polyps hidden

Hammer corals can be found in shallow environments that have a moderate amount of wave action. These corals can form fairly large coral colonies up to 1m across. The polyps of this coral are usually extended during the day time and they have a distinct hammer (or T shape) on the tip of the coral polyp. The tips of this coral can be green or cream (grow only the green ones). Hammer corals can be slow to grow, so make sure you grow out a large number of broodstock. This coral is in high demand for the aquarium trade.

## Hammer Coral

### **Coral Planting Method**

Disc Type and Attachment Method		Dent Glue	
Planting Method	Stand Up	Lying down	
Cutting Size	<b>√</b> Small	Medium	

Hammer corals will need to be carefully cut with a hacksaw into small fragments to grow out. These corals will not attach to the base, so you will need to use glue. Take the time to let these coral grow out well onto the base.

### Blasto

#### Blastomussa corals



Wild coral colony coral



**Cultured coral** 



**Cultured coral** 

Blasto corals are a very different coral that are in a high demand in the aquarium trade. They are not very common but can be found in areas of dirty water on the lower reef slope in areas protected from waves. Blasto corals are generally green or red in colour. Blasto coral colonies are made up of a number of large corallites that extending from a common centre, creating a dome shape. Each of these individual corals can be separated carefully and allowed to grow multiply and grow out. Blasto corals are relatively large (1cm diameter) polyps that extend their tentacles to feed at night.



### **Coral Planting Method**

Disc Type and Attachment Method	_	Dent Glue	
Planting Method	Stand Up	Lying down	
Cutting Size	Small		

Do not start farming with this coral - experiment once you get good at farming other corals. Use a hacksaw to carefully separate the large polyps. Attach one coral polyp to a cement base and allow it to multiple. It will take a long time for this coral to multiply - be patient.



# **SOFT CORAL**

#### What are soft corals?

Soft corals, unlike hard corals do not have a hard skeleton made of calcium, instead they have a tough, but soft skeleton. To protect themselves from enemies, these animals have tiny spikes and some release a chemical that makes them less likely to be eaten by fish and other animals and has the same protection role as the hard skeleton of hard corals. You should not keep your farmed soft and hard corals close to each other as the toxins that they release can damage each other.

Soft corals feed during the day and night so you will often see them with their tentacles out.



Soft coral feeding (polyps out)



Soft coral (polyps hidden)

#### What soft corals to grow

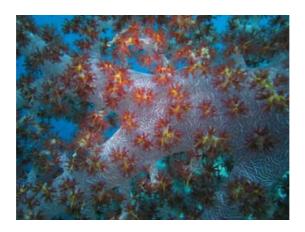
Soft corals are much faster growing than hard corals, and they are less likely to be damaged during shipping. They are also easy to grow, so they are popular for the aquarium trade.

Like hard corals, soft corals also come in different colours and shapes. However, some soft corals do not contain the small plant that help supply their food. It is easiest to grow soft corals that contain these plants, but these are often not the brightest soft corals. This guide shows some examples of easy soft corals to grow, these a group of soft corals called leather corals and include Sarcophyton, Sinularia and Lobophytum corals. These corals are the easiest and toughest soft corals to grow for aquariums.

#### **Examples of soft corals NOT to grow**

Some soft corals are also so soft that they will fall apart when you try to transport them. These soft corals are generally brightly coloured and are at deeper depths on coral reef walls. Do not farm these corals.





#### **Soft Coral Farming Methods**

There are many different methods for farming hard corals. The methods described here are based on attaching the corals to a small cement base. You may find other ways of attaching corals that work better than those described here.

#### Disc type and attachment method

#### Needle and Line



This is a good method for attaching soft corals. A thick needle (or the centre stick of a coconut leaf) is used to push a hole through the soft coral cutting. Fishing line (20 pound) or rice bag string is pushed through the hole in the coral and is tied to the base. Make sure you remove the line as soon as the coral attaches to the base.

#### Tie



Tie

This method is similar to the general method for hard corals, and it is best used on branching soft corals. Use fishing line (20 pound) or rice bag string. Make sure you tie the coral down strong, but not too tight that the line cuts the coral skin. Make sure you remove the line as soon as the coral attaches to the base.

#### Stone



Stone

The stone method is a good method to use to attach mushroom corals. The stone acts like the string, but causes less damage to the corals. First tie line around a piece of coral rubble, you then need to attach the fishing line to two holes in the base, holding the rubble tight on top of the coral. Make sure you remove the line as soon as the coral attaches to the base.

## Mushroom

## Sarcophyton sp.



Wild coral colony - pink (polyps out - feeding)



**Cultured coral** 



Wild coral colony - green (polyps hidden)

Mushroom corals are the hardiest and easiest soft corals to grow. Mushroom corals are common and can be found on shallow reef areas or in lagoons. These corals can be brown, yellow, pink or green in colour. Select only the brightest broodstock colours.

## Mushroom

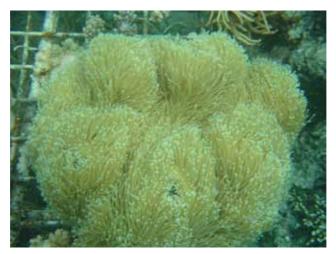
#### **Coral Planting Method**

Disc Type	No centre hole	No centre hole	
Attachment Method	Needle	Tie	

Mushroom corals like to move around and will escape from the base if you do not tie them well. If you tie a piece of coral rubble around a piece of fishing line, and tie the fishing line ends to the cement base - it will stop the coral from moving and help it attach quickly. Remove stone and fishing line as soon as coral attaches. Make sure you tie it down tight to the base. If you use a needle or just line to tie this coral make sure you have four holes in the base, to hold it well until it attaches.

## **Hairy Mushroom**

#### Sarcophyton sp



**Broodstock colony** 

Hairy mushroom corals are similar to mushroom corals, except they have very long string-like feeding arms. Hairy mushroom corals can be found on shallow reef areas or in lagoons. They are easy to grow and are very hardy and strong. Select broodstock that are bright in colour.

## **Hairy Mushroom**

#### **Coral Planting Method**

Disc Type	No centre hole	No centre hole	
Attachment Method	Needle	Tie	

Mushroom corals like to move around and will escape from the base if you do not tie them well. If you tie a piece of coral rubble around a piece of fishing line, and tie the fishing line ends to the cement base - it will stop the coral from moving and help it attach quickly. Remove stone and fishing line as soon as coral attaches. Make sure you tie it down tight to the base. If you use a needle or just line to tie this coral make sure you have four holes in the base, to hold it well until it attaches.

## **Soft Tree**

## Sinularia sp.



Broodstock colony (polyps out - feeding)



**Broodstock colony** 



Broodstock colony (polyps hidden)

Soft tree corals are commonly found on rocky or rubble areas. They can be white, yellow, green or brown - often depending on the depth that they are growing. Select the brightest colours. This soft coral is very easy to grow.

## **Soft Tree**

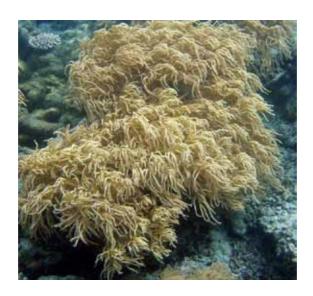
#### **Coral Planting Method**

Disc Type	No centre hole	No centre hole	
Attachment Method	Needle	Tie	

Soft tree coral is very easy to grow. This coral should be cut directly from broodstock and planted onto bases at the same time. Tie the coral tight to the base but not so tight that the line cuts through the skin of the coral. Use fishing line or rice bag. You will need to cut the soft coral so that you have at least two fingers (one branch) to attach the coral to the base. Remove line as soon as the coral attaches.

## **Giants Hair**

## Sinularia flexibilis



Wild coral colony (polyps out - feeding)

Giants hair corals are commonly found on rocky or rubble areas where there is a strong flow of water. Giants hair coral has long soft flexible fingers coming from the base - often with a strong think central base. This coral is can be brown, white, cream or green in colour - choose the brightest colours for your broodstock.

## **Giants Hair**

#### **Coral Planting Method**

Disc Type	No centre hole	No centre hole	
Attachment Method	Needle	Tie	

Giants hair coral is a little more difficult to grow than soft tree, but it is still an easy coral to farm. This coral should be cut directly from broodstock and planted onto bases at the same time. Tie the coral tight to the base but not so tight that the line cuts through the skin of the coral. Use fishing line or rice bag. You will need to cut the soft coral so that you have at least two fingers (one branch) to attach the coral to the base. Remove line as soon as the coral attaches.

# **Fat Finger**

#### Lobophytum sp





**Wild Coral Colony** 

**Broodstock** 

Fat finger corals are commonly found on rock and rubble areas close to shore, on the reef flat and sometimes in lagoon areas. Finger corals can be yellow, green, orange, purple or brown. Fat finger corals are very easy to grow - make sure you choose broodstock that are bright coloured.

# **Fat Finger**

#### **Coral Planting Method**

Disc Type	No centre hole	No centre hole	
Attachment Method	Needle	Tie	

Fat finger is a very easy coral to grow. It should be cut directly from broodstock and planted onto bases at the same time. Tie the coral tight to the base but not so tight that the line cuts through the skin of the coral. Use fishing line or rice bag. You will need to cut the soft coral so that you have at least two fingers (one branch) to attach the coral to the base. Remove line as soon as the coral attaches.

## **Green Finger**

## Lobophytum sp.



**Broodstock colony** 



**Broodstock colony** 

Finger corals are commonly found on rock and rubble areas close to shore and on the reef flat. Finger corals can be yellow, green, orange, purple or brown. Green finger is very easy to grow - make sure you choose broodstock that are bright green coloured.

# **Green Finger**

#### **Coral Planting Method**

Disc Type	No centre hole	No centre hole	
Attachment Method	Needle	Tie	

Finger corals are very easy corals to grow. This coral should be cut directly from broodstock and planted onto bases at the same time. Tie the coral tight to the base but not so tight that the line cuts through the skin of the coral. Use fishing line or rice bag. You will need to cut the soft coral so that you have at least two fingers (one branch) to attach the coral to the base. Remove line as soon as the coral attaches.

# **Orange Finger**

## Lobophytum sp



**Broodstock coral** 

Finger corals are commonly found on rock and rubble areas close to shore and on the reef flat. Finger corals can be yellow, green, orange, purple or brown. Orange finger is very easy to grow - make sure you choose broodstock that are bright orange coloured.

# **Orange Finger**

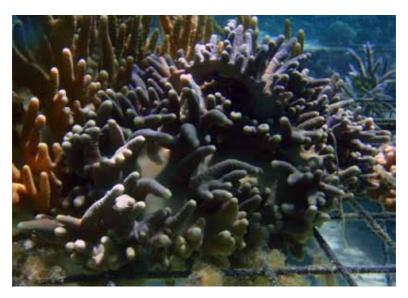
#### **Coral Planting Method**

Disc Type	No centre hole	No centre hole	
Attachment Method	Needle	Tie	

Orange finger is a very easy coral to grow. It should be cut directly from broodstock and planted onto bases at the same time. Tie the coral tight to the base but not so tight that the line cuts through the skin of the coral. Use fishing line or rice bag. You will need to cut the soft coral so that you have at least two fingers (one branch) to attach the coral to the base. Remove line as soon as the coral attaches.

## **Purple Finger**

## Lobophytum sp.



**Broodstock coral** 

Finger corals are commonly found on rock and rubble areas close to shore and on the reef flat. Finger corals can be yellow, green, orange, purple or brown. Purple finger is very easy to grow - make sure you choose broodstock that are bright purple coloured.

## **Purple Finger**

#### **Coral Planting Method**

Disc Type	No centre hole	No centre hole	
Attachment Method	Needle	Tie	

Purple finger is a very easy coral to grow. It should be cut directly from broodstock and planted onto bases at the same time. Tie the coral tight to the base but not so tight that the line cuts through the skin of the coral. Use fishing line or rice bag. You will need to cut the soft coral so that you have at least two fingers (one branch) to attach the coral to the base. Remove line as soon as the coral attaches.

## Nobble Finger

## Lobophytum sp



**Broodstock coral** 

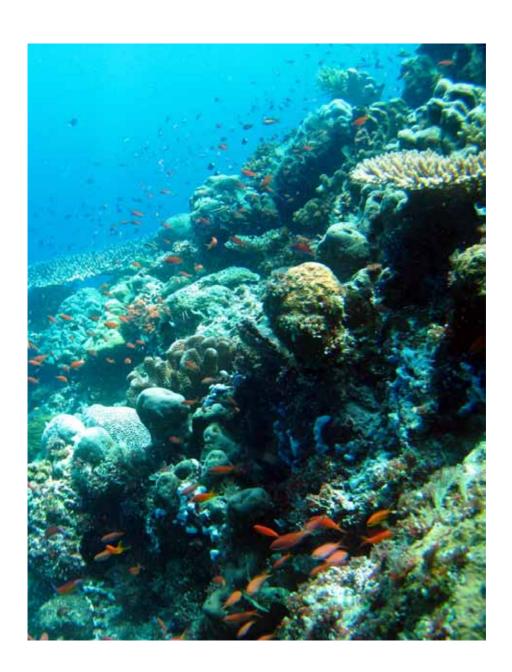
Nobble finger corals are commonly found on rock and rubble areas close to shore and on the reef flat. Finger corals can be yellow, green, orange, purple or brown. Nobble finger is very easy to grow - make sure you choose broodstock that are bright coloured.

# Nobble Finger

#### **Coral Planting Method**

Disc Type	No centre hole	No centre hole	
Attachment Method	Needle	Tie	

Nobble finger is a very easy coral to grow. It should be cut directly from broodstock and planted onto bases at the same time. Tie the coral tight to the base but not so tight that the line cuts through the skin of the coral. Use fishing line or rice bag. You will need to cut the soft coral so that you have at least two fingers (one branch) to attach the coral to the base. Remove line as soon as the coral attaches.



# NON-CORAL

There are other things on the reef (other than hard or soft corals) that are possible to sustainably farm and sell for the aquarium trade. It is important to remember however that you need to be able to make broodstock and grow your farmed corals from the broodstock. It is also important that what you grow will not be toxic to other organisms that people may have growing in their tanks. If you find something that you would like to try to grow - send it first to the exporter or send a photo to the following email address info@solomonseasustainables.com to see if it is something that is wanted in the aquarium trade.



## **Orange Sponge**

#### Stylissa massa



Wild Orange Sponge



**Cultured coral** 

Orange sponge is a type of a marine sponge commonly found in shallow waters in lagoon and reef areas. Sponges are not corals, but they are an interesting feature for an aquarium. Sponges survive by filtering water (and eating the tiny animals and plants in the water). Sponges are made up of small channels through which they pump water. They are very tough and easy to grow and keep their colour.

# NON-CORAL

## Orange Sponge

#### **Coral Planting Method**

Disc Type	No centre hole	;	
Attachment Method	Needle		

Orange sponge is very easy to grow. It is best attached using a needle and rice bag (pushing through the sponge and tying it down tight. Cut broodstock into small pieces and it the sponge will still grow even if every side is cut. The main issue is to ensure that you do not take the sponge out of water (at all) - it will get small air bubbles inside the sponge and it will die.