

AQUA JOURNAL

Nature Aquarium information magazine



Special Feature
BEGINNING
of Nature Aquarium

ADA CO₂ SYSTEM, EQUIPPED THE WORLD BEST SAFETY AND FUNCTION

NATURE AQUARIUM HIGH QUALITY CO₂ SYSTEM

Aqua Design Amano has produced the world's first CO₂ supply system for water plants.

Its function and safety are passed to current CO₂ ADVANCED SYSTEM
and new CO₂ STARTER KIT.

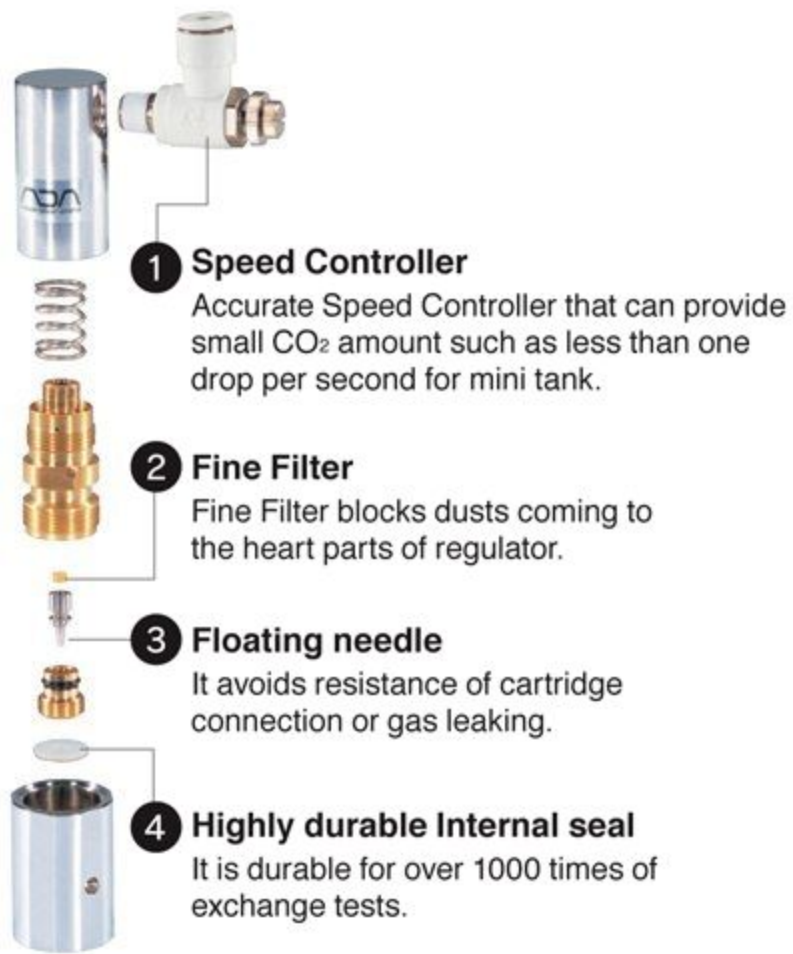


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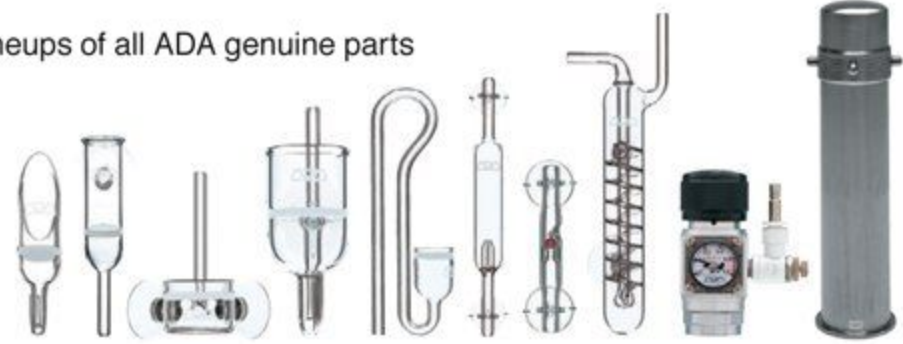
ADA Original Regulator creating high reliability and accuracy



- 1 Speed Controller**
Accurate Speed Controller that can provide small CO₂ amount such as less than one drop per second for mini tank.
- 2 Fine Filter**
Fine Filter blocks dusts coming to the heart parts of regulator.
- 3 Floating needle**
It avoids resistance of cartridge connection or gas leaking.
- 4 Highly durable Internal seal**
It is durable for over 1000 times of exchange tests.

Rich variation allows upgrading your system according to the situation.

Lineups of all ADA genuine parts



Speciality CO₂ supplying style, expressing an aquascape joyfully.



The tropical fragrance with an image of tropical rain forest is added.

Stylish design

[All inclusive necessary items for supplying CO₂, and you can do it right after purchasing.]

ADA NATURE AQUARIUM

CO₂ ADVANCED SYSTEM For Professional

You want to be a master of Nature Aquarium?
CO₂ ADVANCED SYSTEM is recommendable for you who master aquatic layout seriously. It corresponds CO₂ large bottle using optional ADAPTOR.



- [Contents]
- CO₂ System 74-YA/Ver.2
 - CO₂ System 74 Tropical Forest No.1 Amazonian
 - Pollen Glass for CO₂
 - Check Valve
 - Cap Stand
 - Silicone Tube
 - Syringe
 - CO₂ Bubble Counter
 - Ball Valve
 - Pressure-resistance Tube
 - Suction Cup
 - Green Bacter

Do!aqua

CO₂ STARTER KIT For Beginner

You are going to start Nature Aquarium?
CO₂ STARTER KIT is recommendable for you who begins aquatic plants casually. It matches small tank with the minimum system.



- [Contents]
- CO₂ Regulator
 - CO₂ Bottle (Contents: 35g) ×2
 - CO₂ Bottle Stand
 - Ball valve
 - Check Valve
 - Silicone Tube
 - CO₂ Diffuse
 - Pressure-resistance Tube
 - Suction Cup





Travel across Japan

Vol. 27 Sado Island, Niigata, Japan

NATURE AQUARIUM GOODS FOR THE IDEAL AQUARIUM SYSTEM

Nature Aquarium Goods have been developed from our experience of making and maintaining aquariums, and with its rich product lineup, it is possible to make aquarium layout of your own style. In order to bring you a sense of satisfaction and continuous joy, all products are strictly controlled by the highest inspection standard and delivered with our quality assurance. All products are safe and free of radiation contamination. You can create an ideal aquarium system with the Nature Aquarium Goods.



ADA
aqua design amano

ADA OFFICIAL WEBSITE (ENGLISH) www.adana.co.jp/en



Blue Ocean and Paddy Fields (Sado Island, Niigata, Japan)

The Sotokaifu Coast in Sado is known for its long, beautiful coastline and clear water. As I looked out over the landscape from higher ground on a sunny day, spread out before me as far as the horizon was the deep blue sea. Paddy fields covered with newly-planted fresh green paddy extend close to the coast and their geometric pattern is in harmony with the blue of the sea. It was a pleasant spring day with crisp, clear air.

Shooting data / Wisner 8x20, APO-Symmar 480mm, 1/4 sec at f32, Velvia 50, 8x20 inch film

AQUA JOURNAL

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Special Feature

My First Aquatic Plant Layout

Special Feature

BEGINNING

of Nature Aquarium

The underwater world with its flourishing aquatic plants has a pure, delicate beauty. More than just being therapeutic, the aquatic plant layout is also a fantastic hobby that showcases the natural ecosystem. Welcome to the world of aquatic plant layout!

Photographs by Takashi Amano

Text by Masatoshi Abe / Tsuyoshi Oiwa

Everyone has their “First Time”.



■ Wanted to have Nature Aquarium in my room as an aqua-*interior* décor. (Company employee)



■ Couldn't help but get Nature Aquarium after I saw it in many shops. (Teacher)

■ Fascinated by aquatic plants swaying in water. (Self-employed)



■ Recommended by one of my friends. (Vocational school student)



■ Wanted to have something more than just rearing tropical fish. (Housewife)



■ Came to know about the world of Nature Aquarium through a magazine. (Doctor)



■ Having Nature Aquarium has been my dream since childhood. (Self-employed)

Aquatic Plant Layout Begins with Knowing the Basic Processes.

The budget for purchasing materials such as aquatic plants, stones and driftwoods can be a concern for aquatic plant layout beginners. This section introduces a layout example limited to a budget of about JPY10,000.

1 Composition



Place a single piece of driftwood such that its attractive curves are accentuated. The stones placed beside the driftwood are broken pieces of Fujiishi.

2 Planting undergrowth plants



Put water in the aquarium just enough to cover the substrate and start planting the undergrowth plants. In this example, a pot of *Glossostigma elatinoides* divided into small bunches is planted.

With Pinsettes L specifically designed for aquatic plants, you can plant aquatic plants accurately even around or between the stones and driftwoods.



3 Planting stem plants



Increase the water level a little so that the substrate in the background is covered with water, and then, plant *Rotala* and other stem plants in the background.



Hygrophila polysperma

Hygrophila polysperma

This plant has quite large leaves for 60cm tanks. Be careful not to use it too much or the aquarium may look flat.



Rotala sp. "Green"

Rotala rotundifolia (Green)

One of the most popular species for the aquatic plant layout. It forms a beautiful bush after pruning.

4



Willow moss

Fantinalis antipyretica



Fujiishi Stone

FUJISHI



Glossostigma elatinoides

Glossostigma elatinoides

Wrap thinly around the driftwood and just fix it. A piece the size of a ping-pong ball is enough for the layout.

In this example, a large Fujiishi stone is broken into small pieces and used in the aquarium.

Just one pot of this plant is sufficient for the layout in this planting example.



Rotala indica
Rotala rotundifolia

Red aquatic plant which is a good match with Rotala sp. "Green" of the same species.



Rotala wallichii
Rotala wallichii

Beautiful plant with fine pink leaves. It grows rapidly and it's a little hard to maintain a good appearance.



Rotala nanjean
Rotala nanjean

One of the toughest among the Rotala species. Recommended for aquatic plant beginners.

5 1 month after planting



Riccia and Willow moss have grown and covered the surface of the driftwood. Stem plants in the background have grown tall till they reach the water surface.

When the stem plants have grown close to the water surface, it is time for the first round of trimming. Prune them with Trimming Scissors..



6 First trimming



Plants are pruned to the height of the driftwood. During the first trimming, the plants should be trimmed to the lowest possible height.

After trimming, take care of the aquatic plants with Green Gain containing plant hormone.



7 10 days after trimming



Compared to photo 5 showing the aquarium before trimming, we can see how much denser the stem plants have become.

8 Second trimming



The plants are pruned at a level a little higher than the previous trim position. This encourages the tip of a stem to branch out and the stem and its leaves to grow densely..



Planting completed

Due to budget constraints, aquatic plants in the aquarium are not very dense at this stage. After this, we just count on the plants' reproductive ability.



Driftwood
Driftwood

Cheap, odd-shaped driftwood is purposely chosen for this example. Willow moss is used to make up for its odd shape.



Riccia
Riccia fluitans

Riccia is not an epiphyte. Attach it to small Fujiishi pieces with Riccia Line.



Cyperus helferi
Cyperus helferi

Plant Cyperus helferi at both sides of the middle ground to hide the unsightly bottom part of stem plants.



Little Great Nature with Aquatic Plants and Tropical Fish

The photos in this page show the aquarium on page 10-11 after two months. The aquatic plants have grown denser and now give the impression of “an underwater forest”.

Colorful tropical fish weave in and out of the aquatic plants of many different colors in this aquarium. As you can see from the previous pages, this aquarium did not start out with beautifully flourishing aquatic plants. This beautiful layout has been achieved, even without a big budget, through repeated trimming and additional planting of aquatic plants. In the aquarium which has been finally completed through the care and effort of the aquarist, a little ecosystem is established by interaction among aquatic plants, tropical fish and beneficial bacteria. The aquatic plant layout is truly a rich hobby that says a lot about nature.



- A : Penguin tetra (*Thayeria boehlkei*)
- B : Glowlight tetra (*Hemigrammus erythrozonus*)
- C : Yellow Mickey Mouse platy (*Xiphophorus maculatus* var.)
- D : Golden honey dwarf gourami (*Colisa sota* var.)
- E : Black tetra (*Gymnocorymbus ternetzi*)
- F : Golden angelfish (*Pterophyllum scalare* var.)
- G : Red wag platy (*Xiphophorus maculatus* var.)





In tune with the cheerful atmosphere of the aquarium, several species of colorful, popular fish are kept to produce a fun-filled aquarium ambience.

Let's Begin with
These Aquatic Plants.



Stem plants

1

Let's Begin with these Aquatic Plants

- Stem Plants

Bright and gorgeous stem plants are the best species to appreciate the beauty of aquatic plants. For a 60cm or smaller tank, the layout comprising aquatic plants with finer leaves makes the aquascape look bigger. During planting, a good balance of leaf shapes and colors should be considered.



Rotala macrandra "Green"

Rotala macrandra (Green)

Relatively easy to grow unlike the red leaved Rotala macrandra. The leaves become reddish if exposed to intense light.



Rotala indica

Rotala rotundifolia

Red aquatic plants are said to be hard to grow, but their red color can be enhanced by adding ECA to the aquarium. Have fun seeing its beautiful red leaves grow.

Rotala

Green Rotala

Rotala rotundifolia (Green)

Forms a beautiful bush through repeated trimming. You can brush up on your trimming skills with this species.



Rotala wallichii

Rotala wallichii

Beautiful plant with fine leaves. It grows straight upwards and therefore can be used as an accent in the layout.

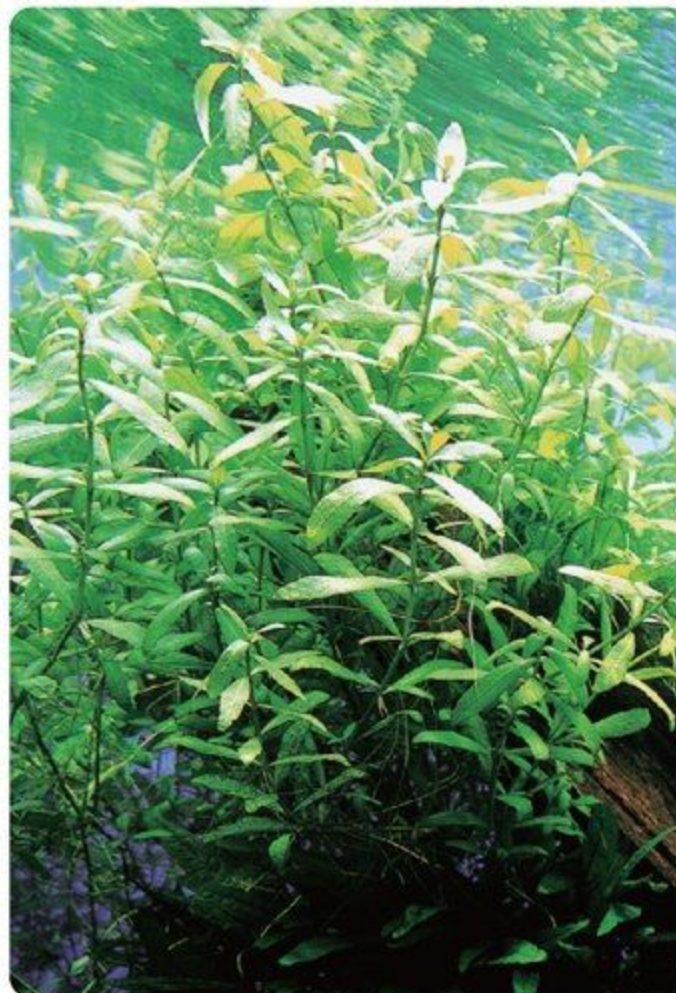
Hygrophila



Water wisteria

Hygrophila difformis

This plant features a remarkable difference in leaves; its emersed leaves are smooth-edged while the submerged leaves have pinnate lobes. Avoid excessive use of it as its leaves are rather large for small aquariums.



Largeleaf Hygrophila

Hygrophila stricta

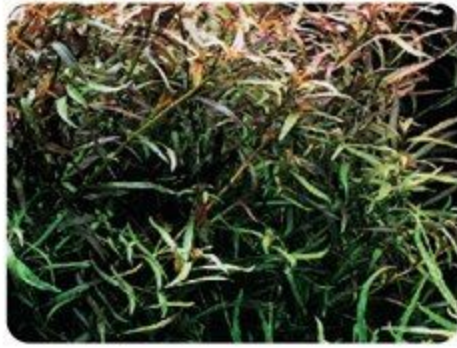
This plant has large leaves. Allow a space between stalks as dense planting can cause the lower leaves to drop.

Hygrophila polysperma

Hygrophila polysperma

Under good growth conditions, it grows rapidly and its internode length can be too long. Keep the internode length short through repeated trimming.

Ludwigia



Ludwigia brevipes

Ludwigia sp.

Looks like Needle leaf ludwigia of the same species, but this has wider leaves with curled tips.



Ludwigia repens

Ludwigia repens

This is a Ludwigia species that has strong, round leaves. The leaves turn green under low-intensity light. The amount of light is insufficient if its terminal buds are green.



Needle leaf ludwigia

Ludwigia arcuata

This plant provides variety to colors and leaf shapes. Take good care to prevent decay of the lower stem which can often occur immediately after planting.

Others



Myriophyllum matogrossense "Green"

Myriophyllum matogrossense (Green)

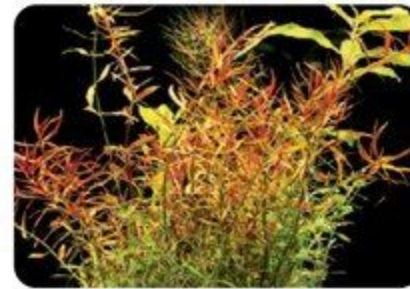
Forms a beautiful cluster with aligned terminal buds if pruned in a straight line at an angle.



Large pearl grass

Micranthemum umbrosum

Its thin stem can break easily. Plant a few stalks together with care. This plant adds a bright touch to the aquascape.



Wabi-kusa/Stem plant MIX

WABIKUSA

Submerged leaves of many different colors develop just by placing this Wabi-kusa set in the tank. A beautiful bush with dense stem will be formed.



Pearl grass

Hemianthus micranthemoides

This plant can easily decay just after planting. It may be a little difficult to care for, but it will surely fascinate you with its beautiful, delicate bush.

Heteranthera

Heteranthera zosterifolia

This plant grows against the force of gravity. If it is planted while it is still short, it first spreads over the substrate and then grows upwards. Suitable for middle ground to background.

Yellow amania

Mesaea Pedicellata

This is an aquatic plant in unique yellow and has its own distinct presence. It grows relatively slowly.



Cryptocoryne



Cryptocoryne patchii

Cryptocoryne patchii

This plant has olive-green wavy-edged leaves with sharp tips. When in good condition, the leaves look really beautiful in the light.



Cryptocoryne albida

Cryptocoryne albida

The leaf color changes from green to brown according to the environment. The size is just right for a 60cm tank.



Cryptocoryne lucens

Cryptocoryne lucens

Suitable as a middle ground plant, this plant is easy to maintain even in a small tank as it grows slowly and does not get too big.

Cryptocoryne wendtii "Green"

Cryptocoryne wendtii "green"

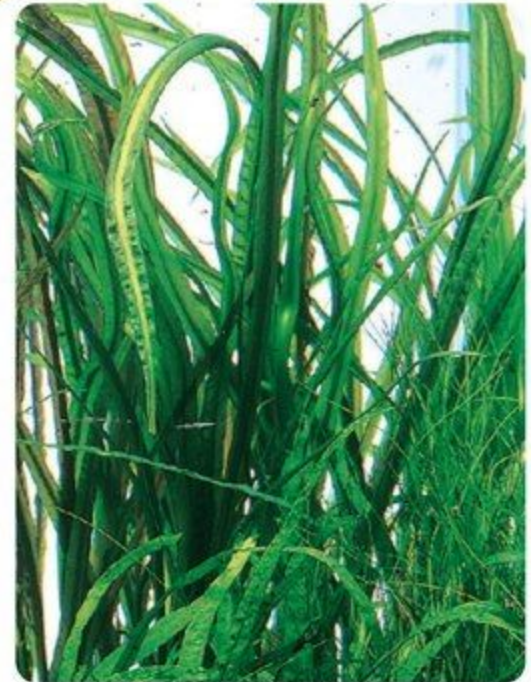
This is a must if you want to plant a green-colored Cryptocoryne. Emerged leaves sold in a pot look weak, but grow vigorously in the water.



Cryptocoryne wendtii "Brown"

Cryptocoryne wendtii "brown"

This plant initially produces only small brown leaves, but later grows fairly large as shown in the picture. Its leaves look wonderful in the light.



Cryptocoryne retrospiralis

Cryptocoryne retrospiralis

Amidst narrow-leaved Cryptocoryne, this species is easy to use for layout and suitable as a background plant. It prefers bright light.



Cryptocoryne pontederifolia

Cryptocoryne pontederifolia

This is the easiest species to grow among round-leaved Cryptocoryne. The reverse side of the leaf is slightly pinkish.

Echinodorus



Echinodorus tenellus

Echinodorus tenellus

Suitable as ground cover. Purchase of emerged leaves is recommended for rapid growth of new leaves.



Echinodorus angustifolia

Echinodorus angustifolia

This narrow-leaved Echinodorus is a useful background plant. It also looks great if mixed with other tape-like aquatic plants.



Echinodorus latifolius

Echinodorus latifolius

This middle-sized Echinodorus spreads aggressively by runners. Fertilization is important to prevent the leaves from fading.



Amazon sword plant

Echinodorus amazonicus

A decade ago, everyone chose this plant as a fast aquatic plant. It looks splendid with an abundance of leaves.



Echinodorus veronicae

Echinodorus veronicae

This is a narrow-leaved Echinodorus with beautiful veins. The Echinodorus family is very strong, so you may try a species which you do not usually use.

Let's Begin with
These Aquatic Plants.



2

Let's Begin with These Aquatic Plants

-Rosette-type aquatic plants

Among rosette-type plants, Cryptocoryne and Echinodorus are the two major species. Both of these species take deep root in the substrate and can be enjoyed over time. Cryptocoryne has a bright look while Echinodorus gives a dark impression.



Undergrowth plants

Riccia (Crystalwort)

Riccia fluitans

This floating liverwort is not an epiphyte. To use this plant in the aquarium, attach it to a Riccia Stone with Riccia Line.



Let's Begin with
These Aquatic Plants.



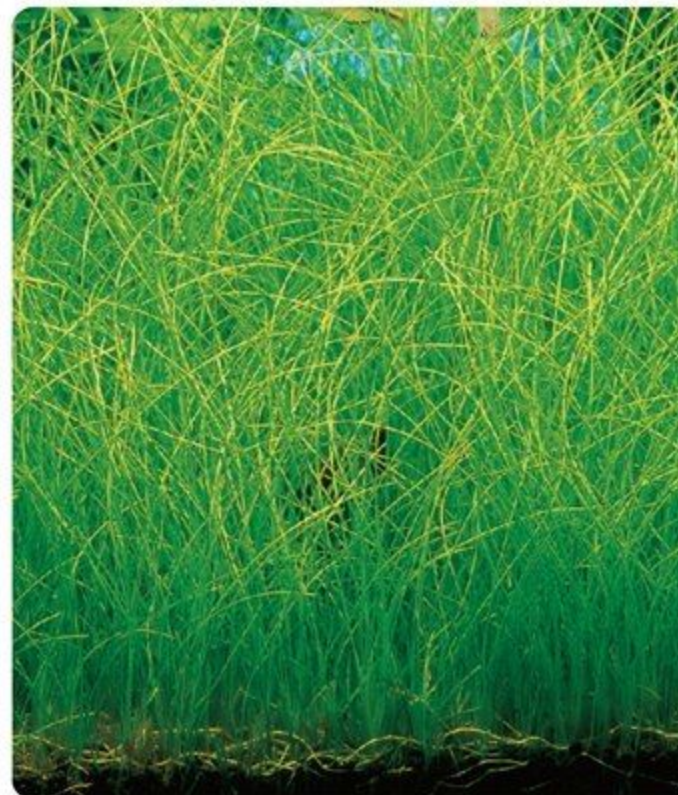
Undergrowth plants & Epiphytic plants

3

Let's Begin with These Aquatic Plants

- Undergrowth & Epiphytic plants

A natural feel of the aquatic plant layout is produced by undergrowth and epiphytic plants that decorate the bottom part of the aquascape. The key to selecting undergrowth plants is the plant height. Choose a short plant if you wish to give a good view of the driftwood or the area around the rocks or, if these areas are to be hidden from view, you should choose a tall species. Using epiphytic plants is one of the techniques for covering up the odd parts of the driftwood.



Hair grass

Eleocharis acicularis

This is an aquatic plant giving a soft impression reminiscent of a grassland. A short type of this species has also become popular in recent years.

Cobra grass

Lilaeopsis novae zelandiae

Dense planting is required for this plant as its growing rate is relatively slow. A thick, neat carpet of Cobra grass produces a rigid look.



Cuba pearl grass

Hemianthus callitrichoides

This is an aquatic plant that can be kept very short. It is hard to grow in the initial stage. Use "Wabi-kusa Cuba Pearl Grass" for easy planting.



Glossostigma elatinoides

Glossostigma elatinoides

This plant is very easy to grow and recommended for beginners. It can recover fast after trimming.



European clover

Marsilea angustifolia

Cut four emerged leaves before planting. The Wabi-kusa version of this plant grows faster.

Epiphytic plants



Microsorium pteropus

Microsorium pteropus

One of the most common epiphytic species. This plant produces leaves of many different widths and shapes. This is one of the toughest aquatic plants.



Bolbitis heudelotii

Bolbitis heudelotii

The ruggedness of this leafy fern provides both subtlety and depth. Old leaves should be trimmed off frequently.



Microsorium pteropus "Narrow leaf"

Microsorium pteropus "Narrow leaf"

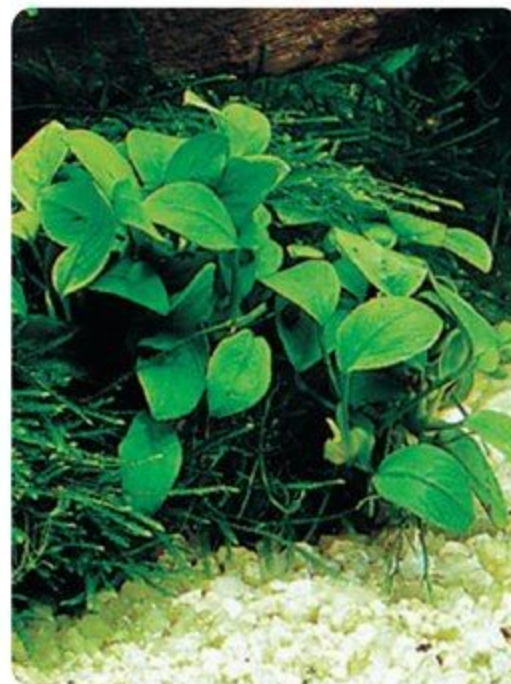
The leaves of this narrow-leaved species grow very long. Fix it in a place with Wood Tight so that its leaves will not touch the glass surface.



Willow moss

Echinodorus latifolius

Attach a Willow moss to driftwood to produce subtle and profound moss-covered visual effect. This plant also has the effect of softening the impression of driftwood.



Anubias nana "Yellow heart"

Anubias barteri var. *nana* "Yellow Heart"

Anubias nana is very popular but its leaves are too large for 60cm or smaller tanks. Anubias nana "Yellow heart" is a solution.



Anubias nana "Petit"

Anubias barteri var. *nana* "Petit"

This is the smallest among the Anubias species. It would be a great idea to mix this with Anubias nana "Yellow heart" to enjoy different sizes of leaves.

Enjoy Aquascape with Variations

A lot of variations can be achieved in Nature Aquarium by combining various types of materials and aquatic plants.

This section introduces you to some examples of aquascape for 60cm and mini aquarium tanks that can be easily created and maintained.

Aquascape using driftwood as a composition framework

A piece of driftwood lends definition to the composition. Driftwood can also be served as a guideline for the trimming of stem plants. In this aquascape, the driftwood is covered with Christmas moss.

Tank size: W60×D30×H36 (cm)

Aquatic plants: *Eleocharis acicularis* / *Glossostigma elatinoides* / *Anubias barteri* / *Rotala rotundifolia* / *Rotala macrandra* "Narrow leaf" / *Rotala macrandra* "Green Narrow" / *Rotala nanjean* / *Rotala wallichii* / *Ludwigia brevipes* / *Rotala* sp. "Green" / *Eleocharis vivipara* / *Cyperus helferi* / *Bolbitis heudelotti* / *Vesicularia* sp

Fish species: *Nematobrycon palmeri* / *Hemigrammus erythrozonus* / *Mikrogeophagus ramirezi* / *Thoracocharax stellatus* / *Hyphessobrycon sweglesii*

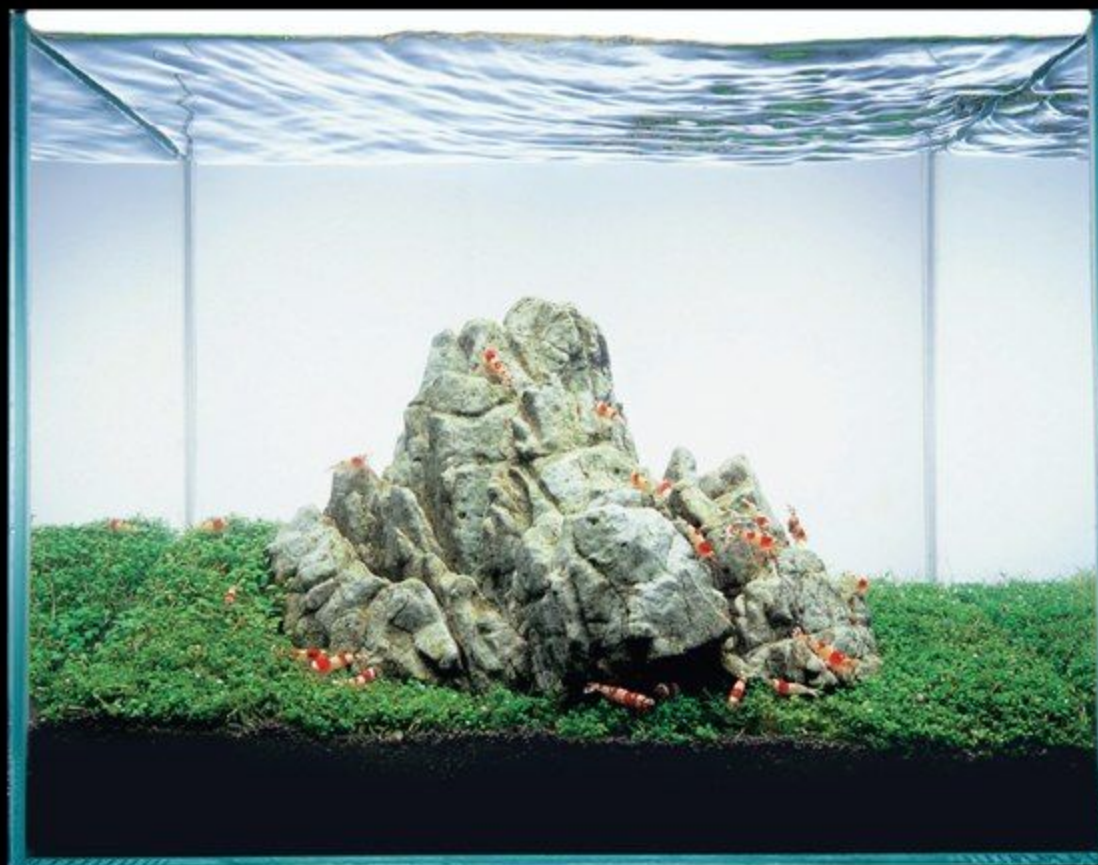




Aquascape with foreground covered with cosmetic sand

The substrate is usually built with Power Sand and Aqua Soil for the healthy growth of aquatic plants. However, some layouts feature the foreground with cosmetic sand which is intentionally kept bare of plants.

Tank size: W60×D30×H36 (cm)
 Aquatic plants: Rotala sp. "Green" /
 Rotala rotundifolia / Eusteralis stellata /
 Microsorium pteropus "Narrow leaf"
 Fish species: Trigonostigma espei



Simple and easy stony aquascape with mini aquarium tank

If you have stones of your favorite shapes, you can easily create a stony aquascape just by laying powder type Aqua Soil in a mini aquarium, placing the stones and then planting short aquatic plants around the stones.

Tank size: W31×D18×H24 (cm)
 Aquatic plants: Hemianthus callitrichoides / Glossostigma elatinoides / Riccia fluitans
 Fish species: Neocaridina sp.





Combination of bright green and red colors

The combination of bright green and red is one of the great features of the aquatic plant layout which gives a cheerful look. This delightful atmosphere can be further enhanced by planting soft-looking stem plants in the background and covering the foreground with cosmetic sand.

Substrate is a Foundation. Selecting good substrate materials is essential.

It is important to build an established substrate in order to maintain the aquatic plant layout in a good condition for a long time. Combine various substrate materials to suit your needs.

Substrate, the foundation of the aquatic plant layout, is an important place where aquatic plants root and beneficial bacteria live and actively multiply. However, a substrate area where the water tends to be static can be a weak spot in the aquarium environment. You should try to build a substrate system as perfect as you can during the initial setup of the aquarium since you cannot rebuild it later on. For the healthy growth of aquatic plants, it is ideal to establish a substrate rich in nutrient with good water circulation so that oxygen essential for microbial activity can spread all over the substrate. Achieve a live substrate where beneficial bacteria and plant roots interact with each other!

Power Sand

Rich in organic nutrients. Porous volcanic stones, the base material, ensure water circulation in the base substrate. Select the right size from S, M and L according to the depth of the aquarium tank.



Bacter 100

Being a source of beneficial bacteria, Bacter 100 forms an optimal bacterial layer for the aquarium environment.



Clear Super

Active carbon powder absorbs excess organic substances and promotes the growth of beneficial nitrifying bacteria.



Tourmaline BC

Tourmaline stimulates and activates the bacteria and roots of the aquatic plants in the substrate.



Power Sand Special

This is the base substrate material with additional organic nutrients. It is very effective for the layout to use rosette plants that spread their roots in the substrate.



Substrate nutrients

Each substrate material has its own function. Build a substrate system by combining the materials suitable for your purpose. Please refer to the table on page 25.



Substrate additives

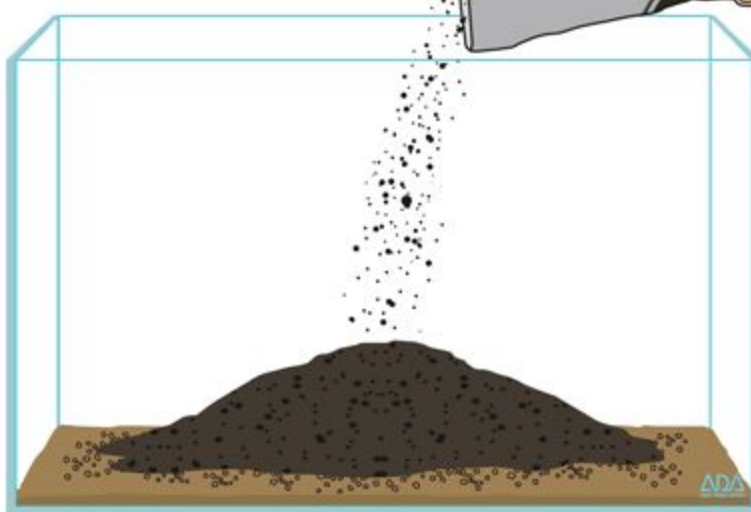
PENAC W for Aquarium

When sprinkled on the base substrate, it prevents from becoming anaerobic and improves the substrate environment.



PENAC P for Plants

It helps plants to spread their roots and improves the substrate environment. For aquarists who care for the perfect aquarium environment.



Substrate soil



Aqua Soil - NEW Amazonia

Its organic nutrient content is the highest among the Aqua Soil series to promote the rapid growth of aquatic plants. For those who know how to regulate the water quality in the newly setup aquarium.



Aqua Soil - Malaya

Its ability to lower the pH level is the highest among the Aqua Soil series. It contains the least amount of nitrogen, so aquatic plants grow slower in this soil.



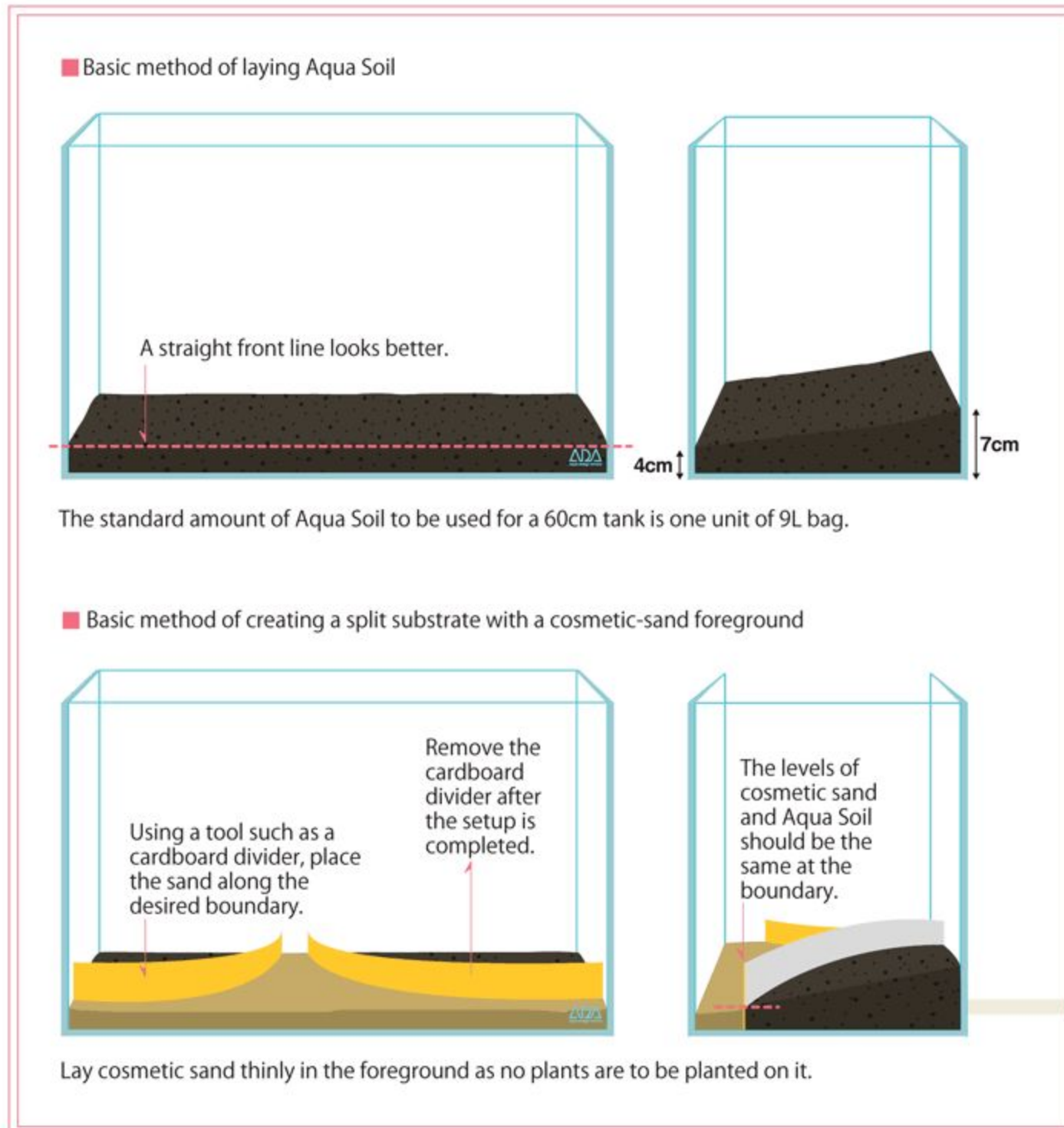
Aqua Soil - Africana

Its ability to lower the pH level is just between Amazonia and Malaya. It also contains nitrogen.

Building a substrate with cosmetic sand

Building a substrate with cosmetic sand in the foreground in addition to Aqua Soil has the advantage of securing a wider clear space in the layout and making the aquascape look brighter. These effects can be enhanced if the cosmetic sand is laid thinly at the forefront of the tank. Another advantage is the reduced workload of taking care of foreground (or undergrowth) plants as no aquatic plants are planted on the cosmetic

sand in the foreground. Nevertheless, it is difficult to maintain the appearance of the cosmetic sand area unless Aqua Soil is prevented from mixing with cosmetic sand by placing divider stones or planting aquatic plants that grow long runners at the border. For your information, Power Sand is not to be laid under cosmetic sand; it should be used only for the area where Aqua Soil is laid for planting aquatic plants.



Light color of cosmetic sand reflects light and produces a bright ambience in the aquascape. Laying cosmetic sand also helps secure a clear space in the layout. Be sure to lay the cosmetic sand thinly.



Nile Sand

This cosmetic sand gives a soft and cool impression. Its light grey color tone creates a bright ambience in the aquascape.



Sarawak Sand

This warm-colored cosmetic sand has the natural look of the riverbed. Wash well before spreading on the substrate.



Substrate system by purpose

| STYLE \ MATERIAL | Aqua Soil | Aqua Soil Powder | Cosmetic Sand | Power Sand | Power Sand Special | Bacter 100 | Clear Super | Tourmaline BC | PENAC W | PENAC P |
|--------------------------------------------------------------|-----------|-------------------------------|---------------|-----------------------------|--------------------|------------|-------------|---------------|---------|---------|
| Enjoy aquatic plants in a mini tank | | ○ | | | | | | | | |
| Enjoy aquatic plant layout at a low budget | ○ | | | ○ | | | | | | |
| Enjoy basic aquatic plant layout | ○ | | | ○ | | ○ | ○ | | | |
| Enjoy split substrate using cosmetic sand | ○ | | ○ | ○ (Only under Aqua Soil) | | ○ | ○ | | | |
| Enjoy Cryptocoryne and Echinodorus as main plants | ○ | | | | ○ | ○ | ○ | | | |
| Enjoy aquatic plant layout with established substrate system | ○ | ○ (Only for the top layer) | | ○ | | ○ | ○ | ○ | ○ | ○ |

Use your own know-how to combine substrate materials. Please refer to the above table when selecting substrate materials.

Make Planting More Effective! This Important Process Starts with Preparation

The Aquatic plant layout begins with planting the aquatic plants. The key to success is preparation which makes the actual planting a breeze.

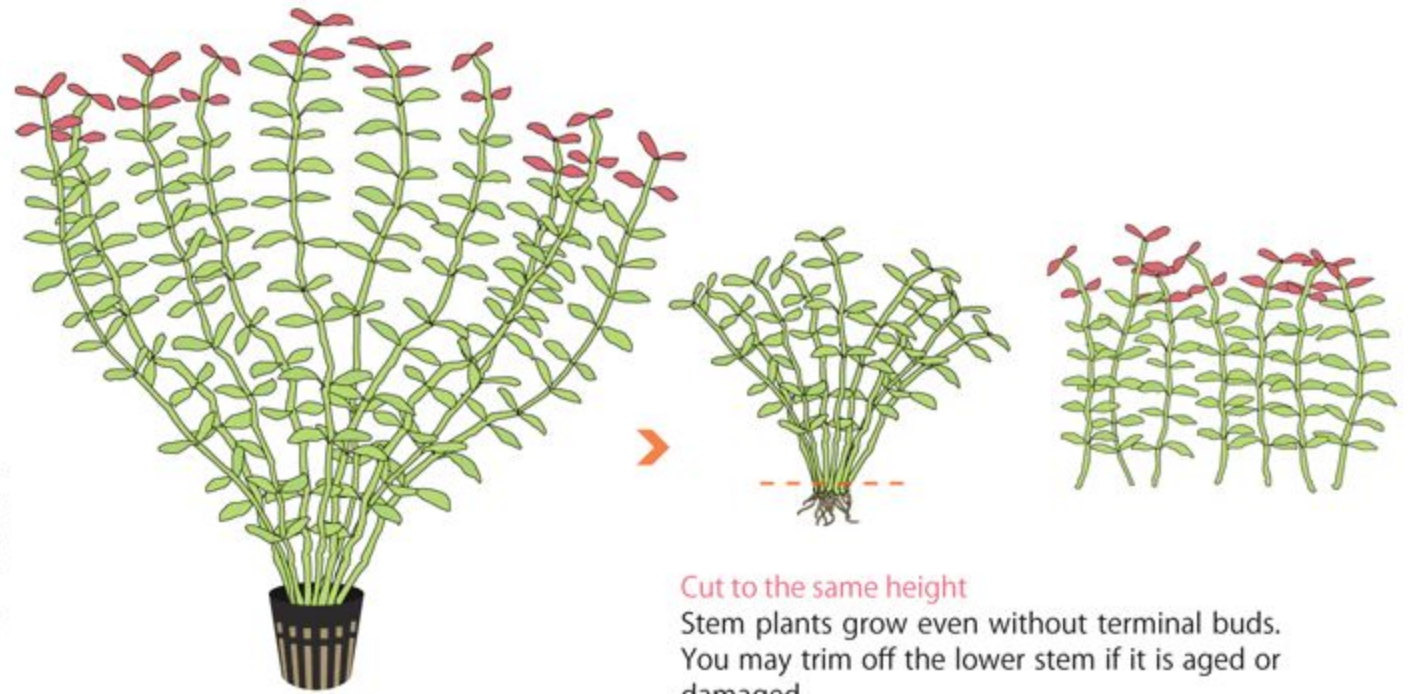
How to handle aquatic plants is something totally new to beginners of the aquatic plant layout. Aquatic plants are broadly classified into stem plants and rosette plants and different approaches are required for these two types of plants. Stem plants, in particular, need extra care. They look better and grow faster if they are frequently pruned to an appropriate height and their lower leaves are properly removed. It is advisable to use tweezers designed specifically for planting aquatic plants to ensure success with minimal damage to the plants.

A Volume of stem plant can increase by cutting it into individual stalks

You may plant a larger volume of stem plants if you cut a single stalk that has grown tall into several stalks and align their height. This is also a helpful budget tip.

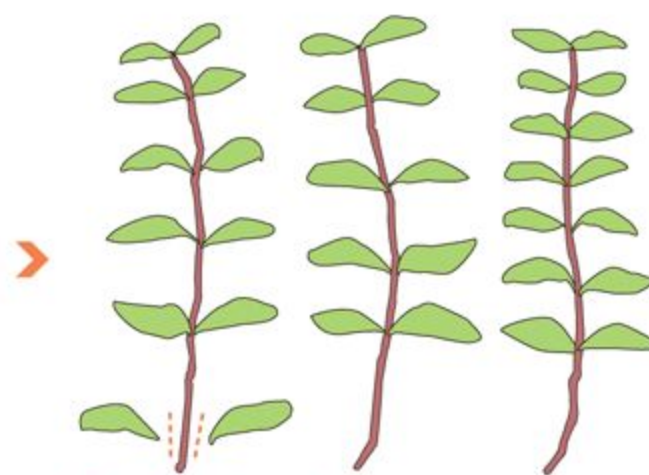
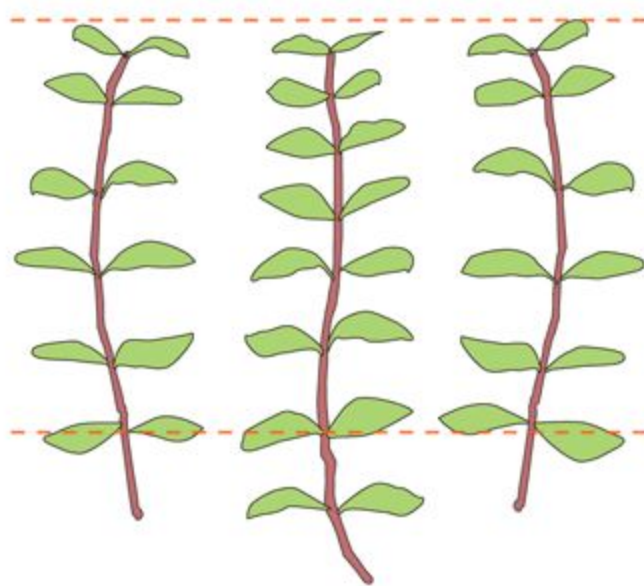


Before planting, carefully align the level of the terminal bud of each stalk and cut the lower part of the stem to the same height.



Cut to the same height

Stem plants grow even without terminal buds. You may trim off the lower stem if it is aged or damaged.



Trim off the lower leaves

Large lower leaves usually wilt from lack of light, so they should be trimmed off while aligning the height of the plants. This will also ensure smooth planting.

B Remove the lower leaves of large-leaved stem plants

Many Hygrophila and Ludwigia species develop relatively large leaves. Trim off unnecessary lower leaves before planting.

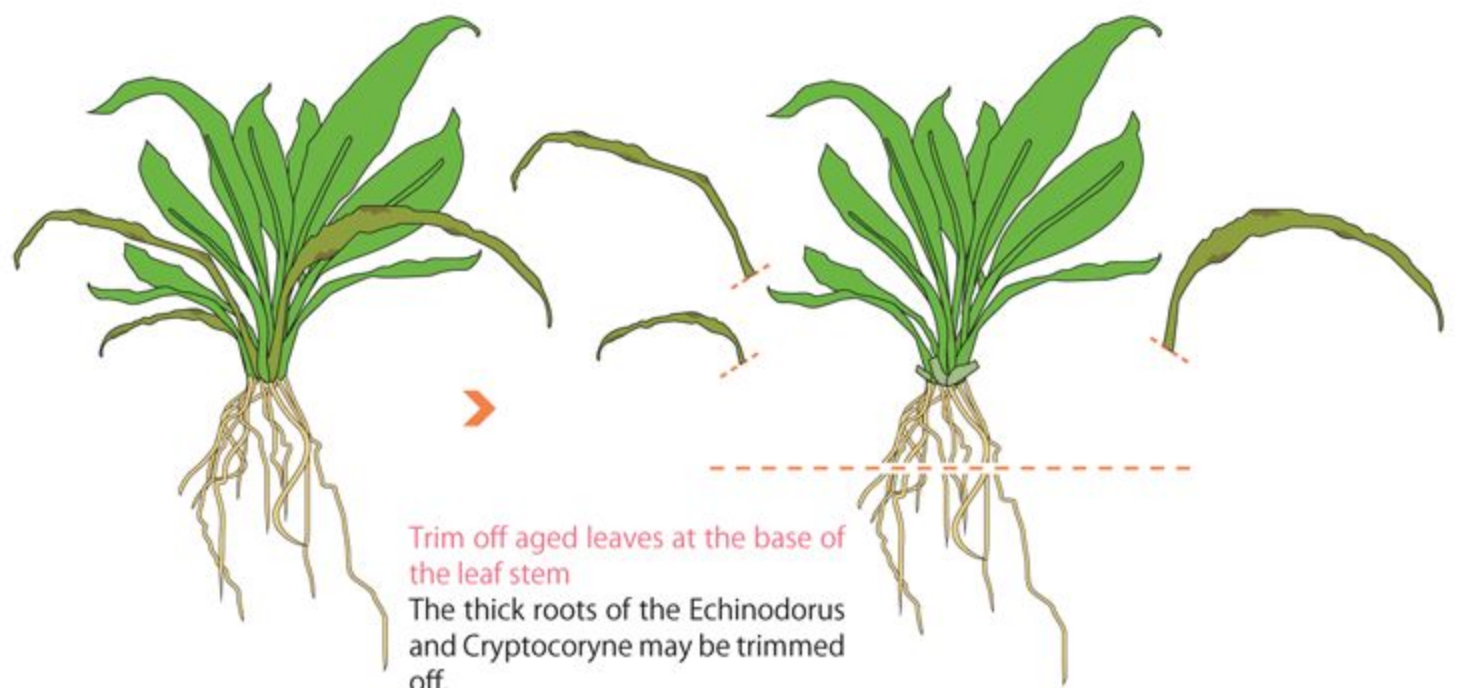


Rotala macrandra "Green" carefully bunched up after their lower leaves are removed. This arrangement helps make planting easier.

C Trim off the roots and damaged leaves of rosette plants

Some rosette-type aquatic plants have long roots. Long and thick roots will eventually wilt after planting. Trim them off, just leaving the base of the roots behind.

Trim off the aged leaves with holes or damage at the base of the leaf stem.



Trim off aged leaves at the base of the leaf stem

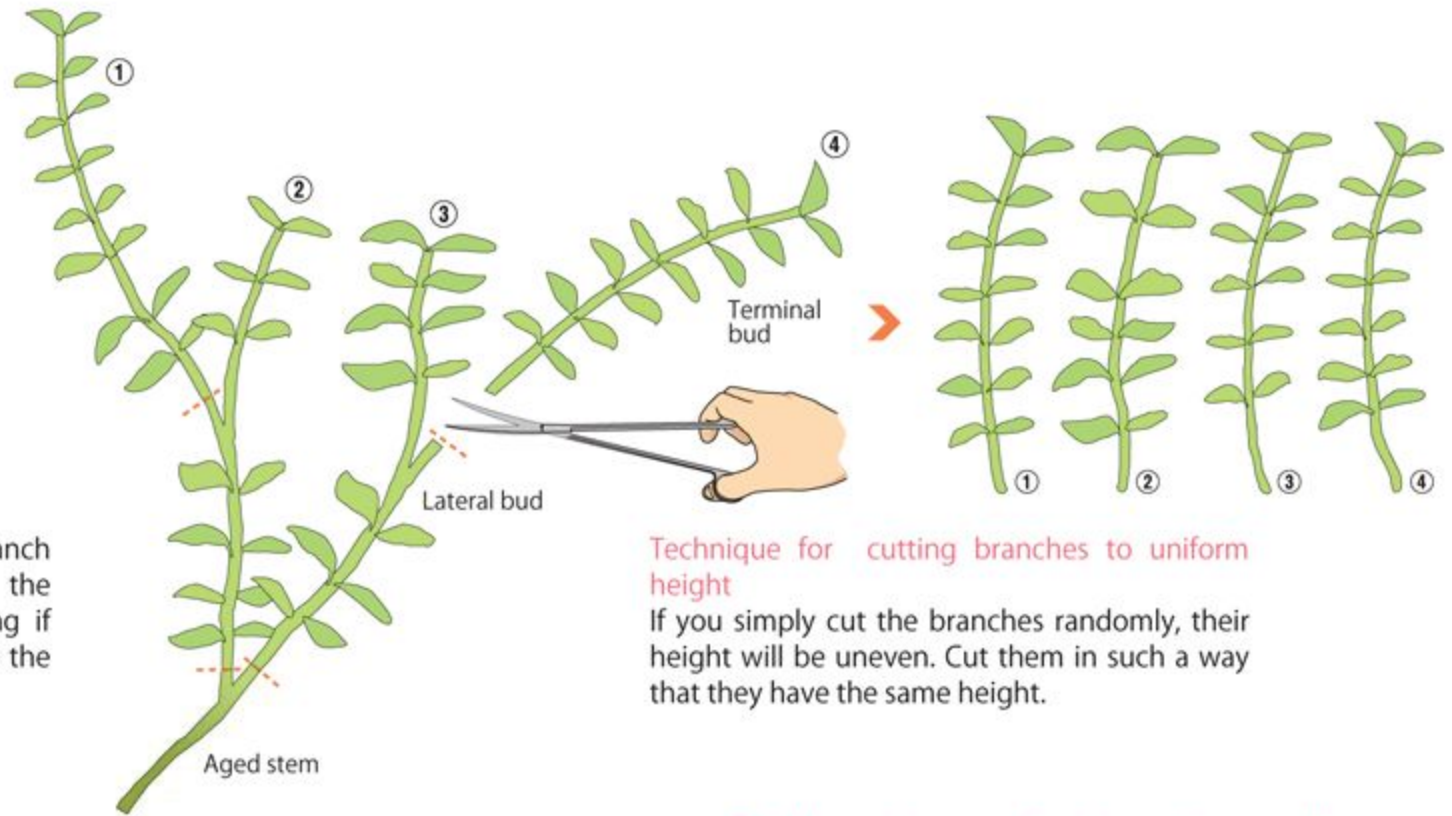
The thick roots of the *Echinodorus* and *Cryptocoryne* may be trimmed off.

D Cut and use the branches to have more stalks

The cut branches of stem plant can grow when planted. If you cut the branches as shown in the illustration, the original stem plants and their cut branches may have the same height with their terminal buds aligned.



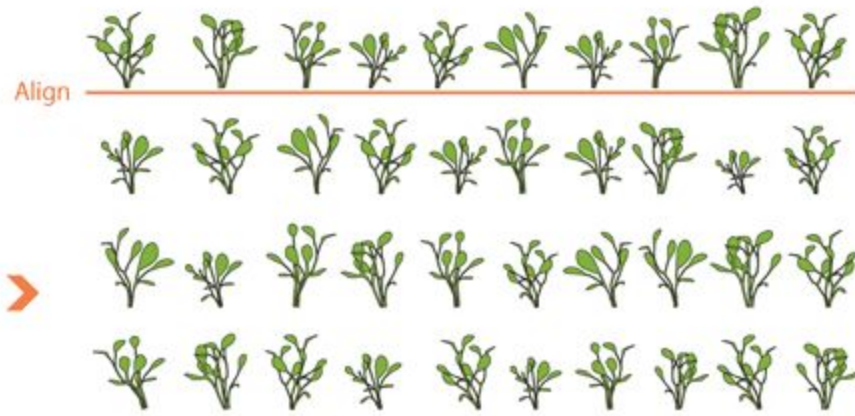
Some stem plants branch out. You may cut the branches for planting if you wish to increase the volume.



Technique for cutting branches to uniform height
If you simply cut the branches randomly, their height will be uneven. Cut them in such a way that they have the same height.

E Divide undergrowth plants into small bunches

A short undergrowth plant such as *Glossostigma* should first be divided into small bunches that are easy to plant with tweezers. This will speed up the planting.

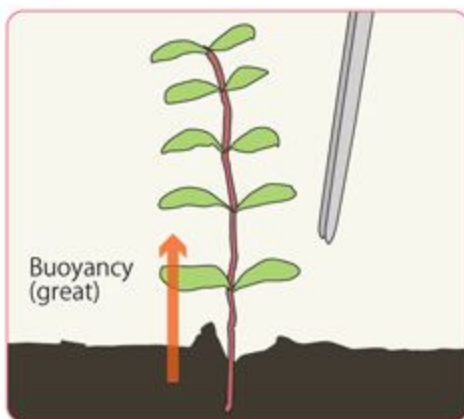


Place in straight horizontal rows
Place the divided small bunches in straight horizontal rows, not by the tip but by the section you are to hold with the tweezers.

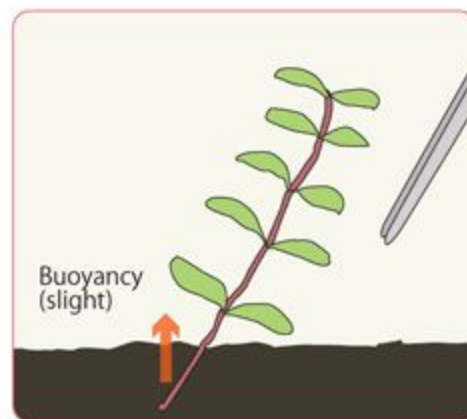


It is convenient to use a lightweight styrofoam sheet as a tray for efficient preparation work.

1 Planting techniques to minimize buoyancy



Stem plants that have not yet spread their roots may slip out of the substrate due to buoyancy.

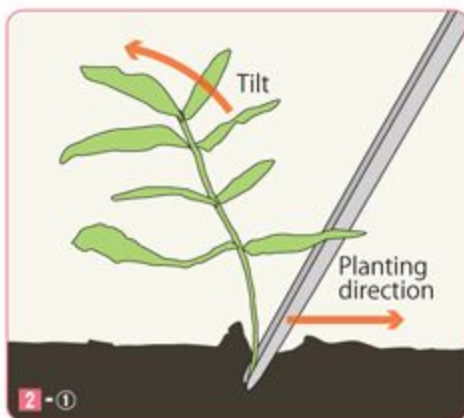


If the stem is inserted in the substrate at a slight angle, the buoyancy of the plants decreases due to the substrate, and the plants will not easily be unrooted.



Proceed with planting while tilting the plant against the planting direction.

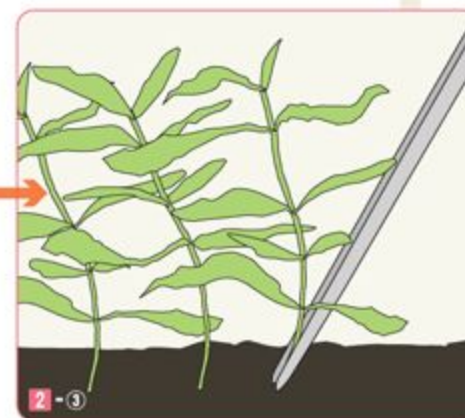
2 Techniques for dense planting



For dense planting, tilt the stem plants against the planting direction.



You will have a wider planting area if the plants are tilted against the planting direction.



Dense planting of stem plants can be done accurately if the planting area is made wide and open.

3 Water level during planting



During planting, put just enough water to barely cover the substrate. This minimizes the buoyancy of plants and prevents your hands from getting unnecessarily wet.

Basic Knowledge is Essential for Maintenance

Knowledge of maintenance including trimming and adequate supply of CO₂ as well as liquid fertilizer is essential for the healthy growth of aquatic plants and maintenance of a beautiful aquascape.

Unlike aquariums mainly for keeping tropical fish, the aquatic plant layout requires CO₂ injection using special equipment. CO₂ injection promotes the photosynthesis of aquatic plants and supplies adequate oxygen to the aquarium. However, if the CO₂ injection volume is excessive or insufficient, the aquatic plants may not grow healthily and the fish may suffer from lack of oxygen. Therefore you need to ensure that an adequate amount of CO₂ is injected at all times. Another important factor to promote growth of aquatic plants is liquid fertilizer. Supply additional potassium and trace elements, which are often lacking in the aquarium, as well as other nutrients.

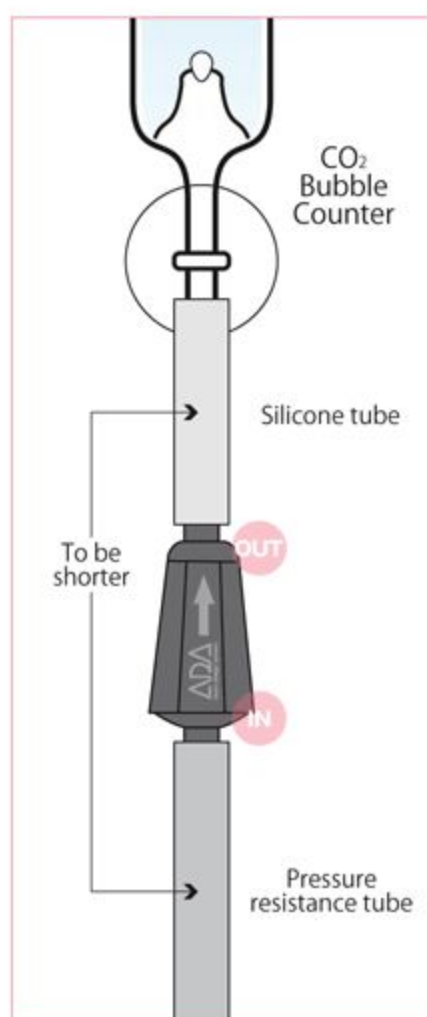
Basics of CO₂ injection

The silicon tube connecting the check valve and CO₂ Bubble Counter should be shorter to minimize back flow within the counter and to achieve a quick response to the adjustment made. (See Fig.A)

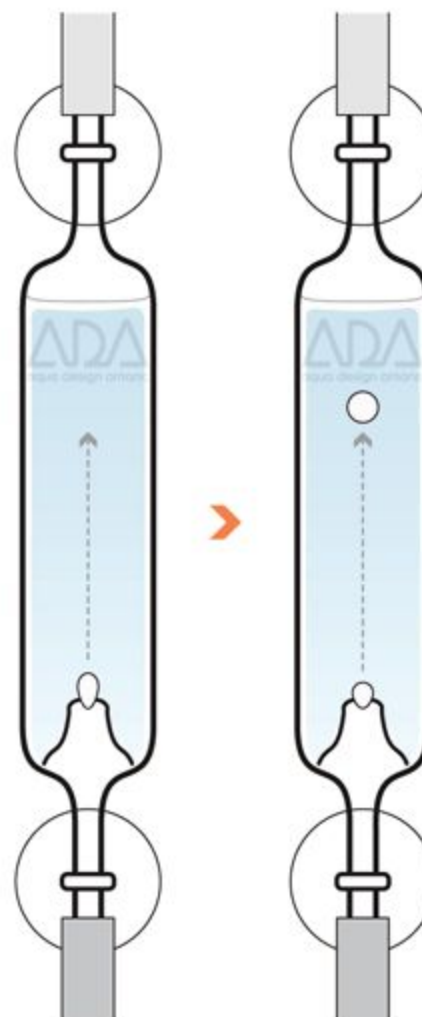


The Pollen Glass should basically be installed at about the middle of the tank height.

A Points of connection

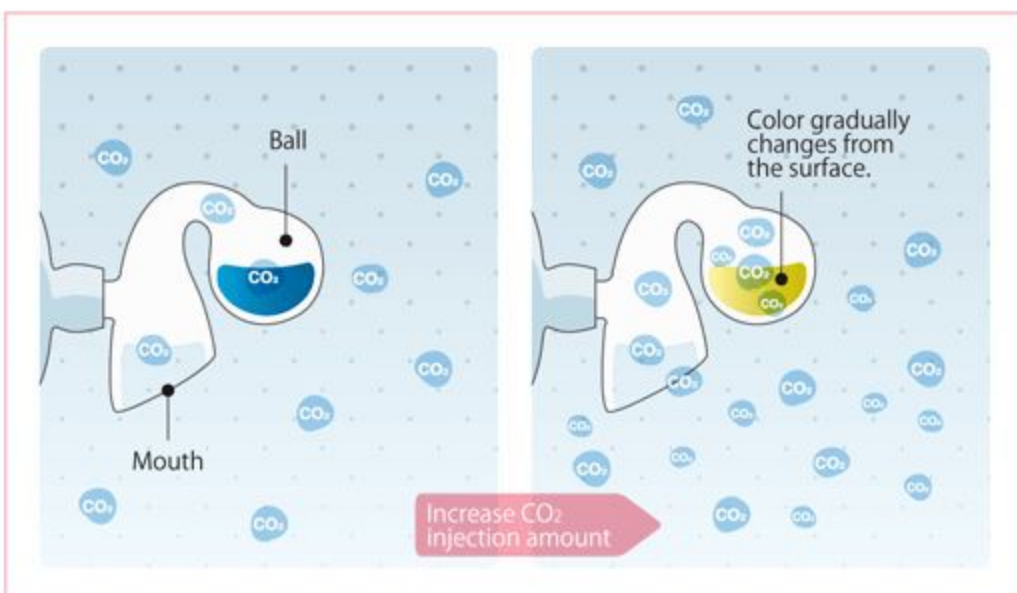


B How to count bubbles



The phrase "XX bubbles per second" is used to indicate the CO₂ injection volume. To work out this figure, count how many bubbles are supplied every 10 seconds and then convert the result to the value per second.

C Checking the CO₂ injection volume with Drop Checker

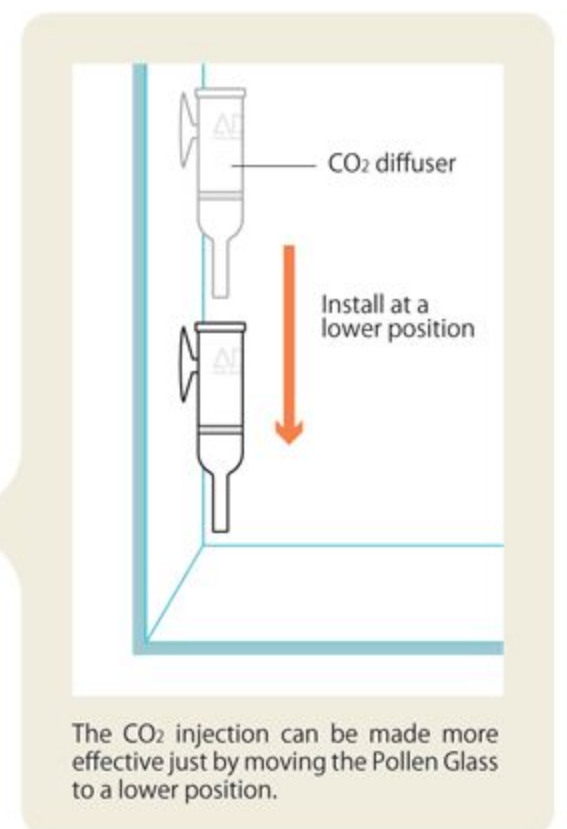


By installing a Drop Checker, anyone can know the change in CO₂ concentration in the aquarium by the color of the reagent. Drop Checker indicates the change in CO₂, free from the influence of water quality.

D For more efficient CO₂ injection



It is a good idea to upgrade to Pollen Glass Large with a wider diffusing filter when the aquatic plants have grown thick in the aquarium or the volume of CO₂ to be injected is increased.



The CO₂ injection can be made more effective just by moving the Pollen Glass to a lower position.

Basic plan for addition of liquid fertilizer

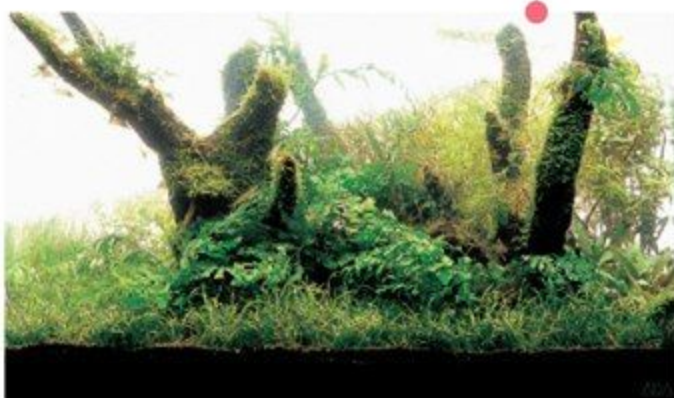
The environment within the aquarium and condition of the aquatic plant is not constant but changes over time. The aquatic plants will grow beautifully if you carefully select and add liquid fertilizer according to their condition.



Immediately and 1 week after setup
If a new filtration system is used, the focus should be on promoting the growth of filtration bacteria using Green Bacter.



1 month after setup
Once the aquatic plants start developing new shoots, supply potassium and trace elements which are often found lacking with Brighty K and Green Brighty STEP 1.



After trimming
For one week after trimming, add Green Gain containing plant hormone to the aquarium to promote the growth of new leaves.



3 months after setup
The vigorous growth of aquatic plants reaches its peak around this time. Add Green Brighty STEP 2 rich in iron to enhance the leaf color.



1 Enhancing leaf color

ECA is effective to enhance the red color of aquatic plants and prevent color-loss of the leaves of terminal buds. Use this additive to enhance the leaf color of aquatic plants.



3 Additional fertilizer application to Cryptocoryne

Additional fertilizer should be periodically applied to Cryptocoryne which vigorously absorbs nutrients through its roots.



2 Preventing fern disease

Fern disease often occurs in the summer when the water temperature remains high. Keep the disease at bay with Phyton Git containing sterilizing ingredients.



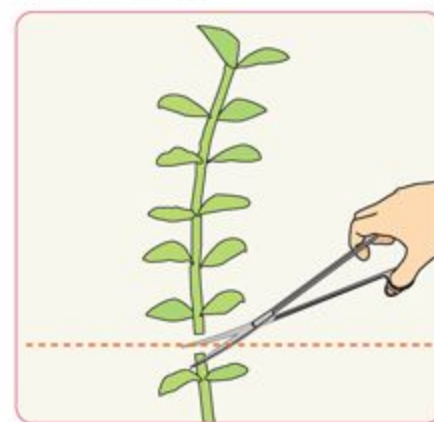
Basics of trimming

Trimming is one of the main things to maintain the appearance of the aquatic plant layout. Trimming helps stem plants grow denser and maintains the undergrowth plants at the right thickness.

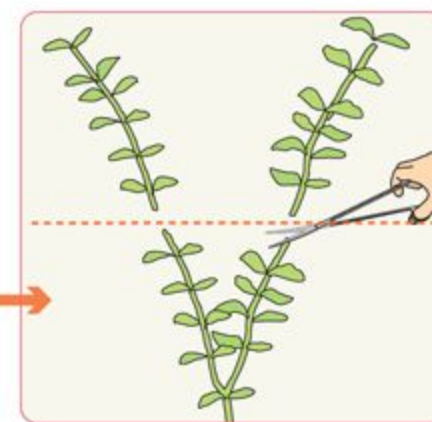


Make an outline of the stem plant bush by trimming.

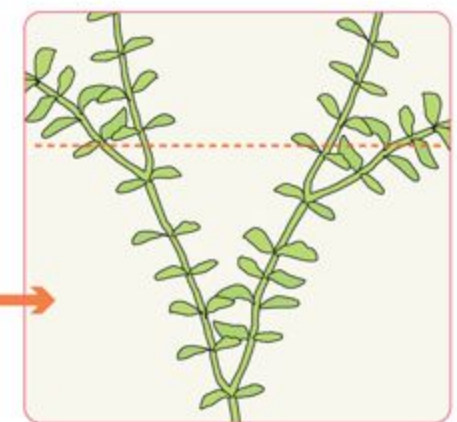
Trim position



The initial trim position should be the lower part of the plant to delay aging of the lower stem and prolong the plant's life.

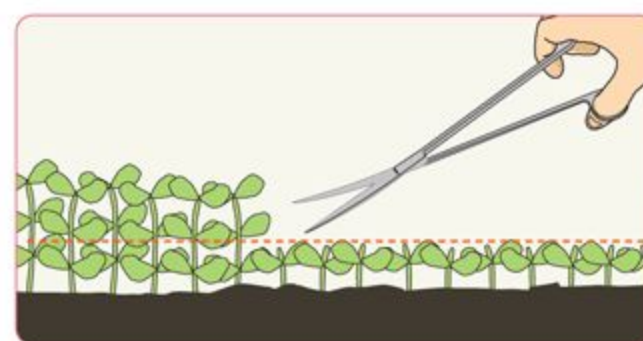


Trim at a higher position than the previous trim to promote branching out.



With repeated trimming, the plants grow denser in a broom-like formation.

Trimming of undergrowth (foreground) plants



During trimming, prune the whole area evenly.







Making the Most of the Goodness of Driftwood

The layout of Nature Aquarium is composed of materials such as stones and driftwood in addition to the aquatic plants. It would be easier to create a layout if you decide on the materials to be used first, and then which and how the aquatic plants are to be planted. In this example, a piece of branch wood featuring slender, crooked branches is used and *Microsorium* sp.

"Narrow leaf" is planted mainly around the base of the wood so that the branches are not hidden from view. Around the driftwood, *Cryptocoryne* is planted in harmony with the driftwood.

DATA

| | |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tank | / Cube Garden W60×D30×H36 (cm) |
| Lighting system | / NA Lamp Twin 36W (2 units) (Solar II) Lighting for 10 hours a day |
| Filtration system | / Super Jet Filter ES-600 & Bio Rio |
| Substrate system | / Aqua Soil-Amazonia II, Power Sand Special S, Bacter 100, Clear Super, Tourmaline BC, PENAC W for Aquarium and PENAC P |
| CO ₂ system | / Pollen Glass – 3 bubbles per second with CO ₂ Glass Counter |
| Air | / Aeration with Lily Pipe |
| Additives | / Brighty K, Green Brighty STEP 2 & Green Gain |
| Water change | / 1/3 water change once a week |
| Water quality | / Water temperature: 25°C; pH: 6.8; TH: 20mg/ℓ |
| Aquatic plants | / <i>Eleocharis vivipara</i> <i>Microsorium</i> sp. "Narrow leaf" <i>Glossostigma elatinoides</i> <i>Lilaeopsis novae zelandiae</i> <i>Cryptocoryne wendtii</i> "Green" <i>Cryptocoryne wendtii</i> "Tropica" <i>Cryptocoryne petchii</i> |
| Fish species | / <i>Microrasbora kubotai</i> <i>Crossocheilus siamensis</i> <i>Caridina Japonica</i> (Yamato Numa Ebi) <i>Otocinclus</i> sp. |



Color arrangement in cool, serene green

One of the attractions of aquatic plants is their rich variety of color. Even just for green aquatic plants, there are wide variations which are slightly different from terrestrial plants. The color arrangement in cool, serene green offers a profound healing effect.



Ferns attached to driftwood branches

Ferns such as *Microsorium* are used by attaching them to driftwood or rock. To attach a fern to a branch as shown in the above photo, fix the roots of the fern directly to the branch with Wood Tight.



Cryptocoryne planted around driftwood

The shade-loving *Cryptocoryne* is suitable for planting in the shade of driftwood. *Cryptocoryne* also connects the driftwood and foreground and produces cohesiveness within the aquarium.



Placing a bunch of fern between branches

To place *Microsorium* between complicated driftwood branches as in the above photo, attach the *Microsorium* to a small-sized stone with Wood Tight and then place it between the branches.



Cryptocoryne in different colors

The *Cryptocoryne wendtii* "Tropica" featuring hammered leaves is planted on the other side of the section. A plant with a different color gives an accent to the layout.

Planting the Right Aquatic Plant in the Right Place

There are numerous species of aquatic plants that are used in Nature Aquarium and each of them has different ecological characteristics. In a single layout, some sections are under intense light and some are in the shade of the driftwood. In addition, some sections are with substrate ready for the planting of aquatic plants but some are not due to layout materials placed on the substrate. The area which does not receive much light is a good place to plant *Cryptocoryne*, which grows even in low-lit conditions, while the area with bright light is a must for *Glossostigma*. These aquatic plants take root in the substrate and thus cannot be planted in a place dominated by materials like rocks and driftwood. Meanwhile epiphytes like ferns and mosses should be attached to the surface of driftwood, stone or rock. Identify the characteristics of each aquatic plant to use the right plant in the right place.

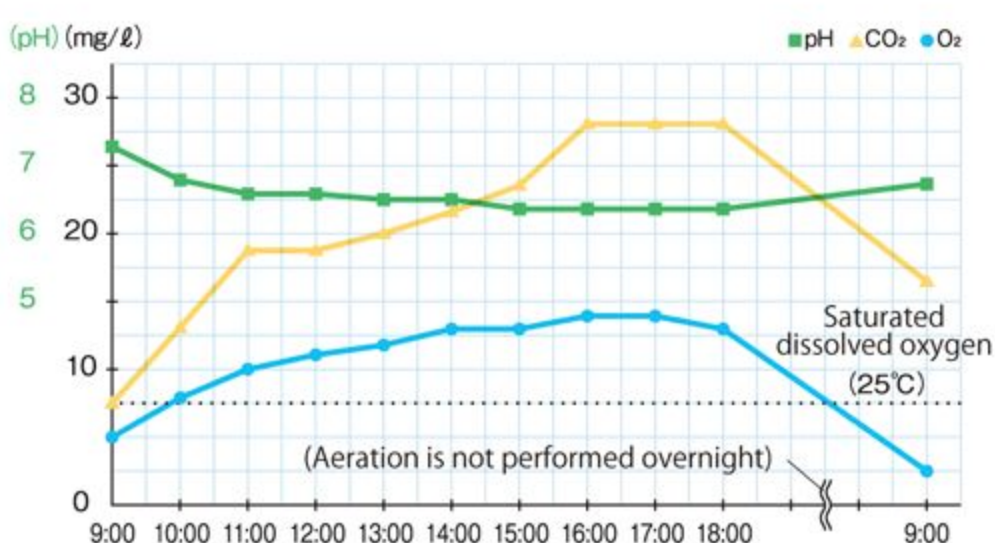
Periodic Maintenance Preserves Aquarium Environment

The water quality in the aquarium changes due to various factors. Remove the factors contributing to algae proliferation by water change!

In the Nature Aquarium, CO₂ is injected into an aquarium tank to promote the photosynthesis of aquatic plants. The concentration of CO₂ and oxygen, and also pH in line with it, will vary even within a day depending on the CO₂ injection volume. Moreover, during the initial setup, the aquarium is in a state in which nitrogen compounds, often a cause of algae proliferation, easily increase. What is essential in eliminating these nitrogen compounds and stabilizing the water quality is timely water change and maintenance of the filtration system. This section discusses water quality check, water change and maintenance of the filtration system.

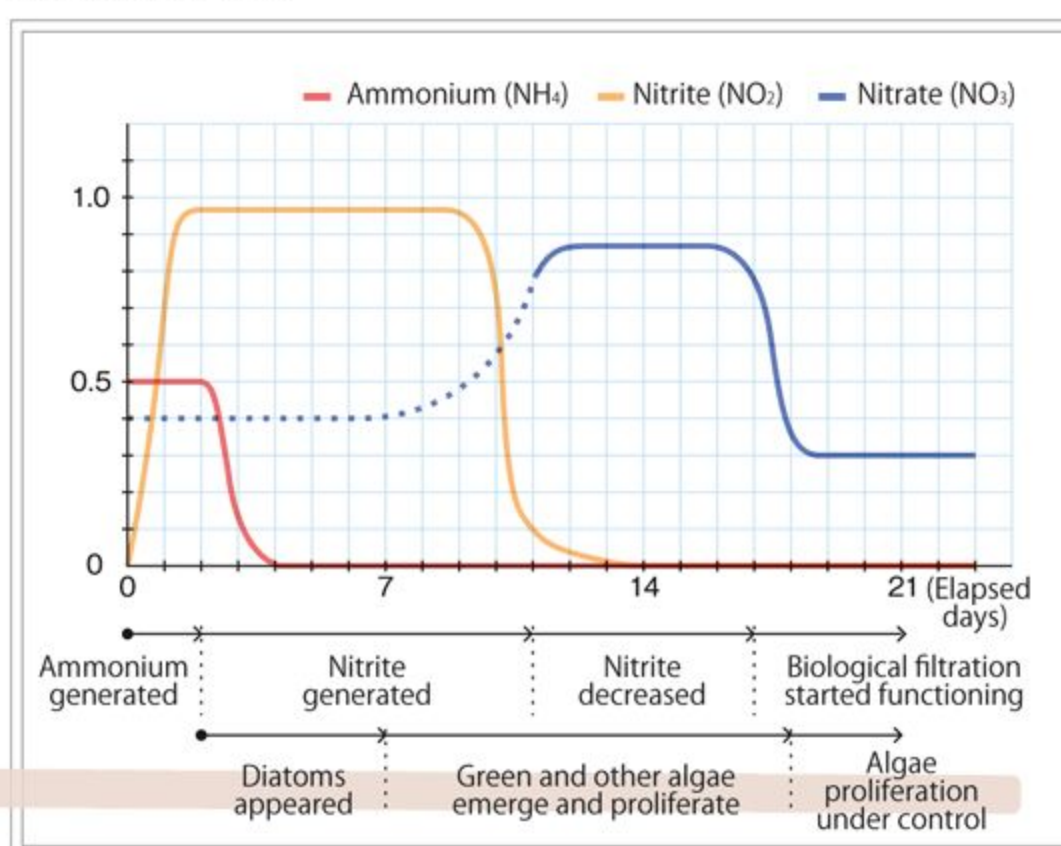
Change of pH by CO₂ injection volume and photosynthesis

The pH level decreases as CO₂ concentration increases, while it increases when photosynthesis takes place. In general, the change of pH level within a day is shown in the graph below.



Change of nitrogen compounds during initial setup period of aquarium

Once the biological filtration starts functioning, ammonia, which is a nitrogen compound generated from the nutrients in the substrate system, is converted to nitrite, and then to nitrate.



Diatoms tend to appear during initial setup of aquarium
Diatoms are brown algae which tend to appear during the initial setup of aquarium when the nitrite level is high. This type of algae can easily be removed with the help of *Caridina Japonica* (Yamato Numa Ebi) and *Otocinclus*.



Green algae grow on glass surface
Green algae usually grow on the tank glass surface first. Scrape them off at an early opportunity.



Filamentous algae attach to aquatic plants
Filamentous algae proliferate along with the accumulation of nitrates. Remove them as soon as you can.



Stubborn black beard algae
Stubborn black beard algae grow after the water quality is stabilized.

Water change procedures effective for algae removal



Scraping algae
Firstly, scrape off algae on the glass, driftwood and stones with an appropriate tool.



Suction out algae and dirt
Suction out with a hose the removed algae, filamentous green algae and accumulated dirt on the substrate surface.

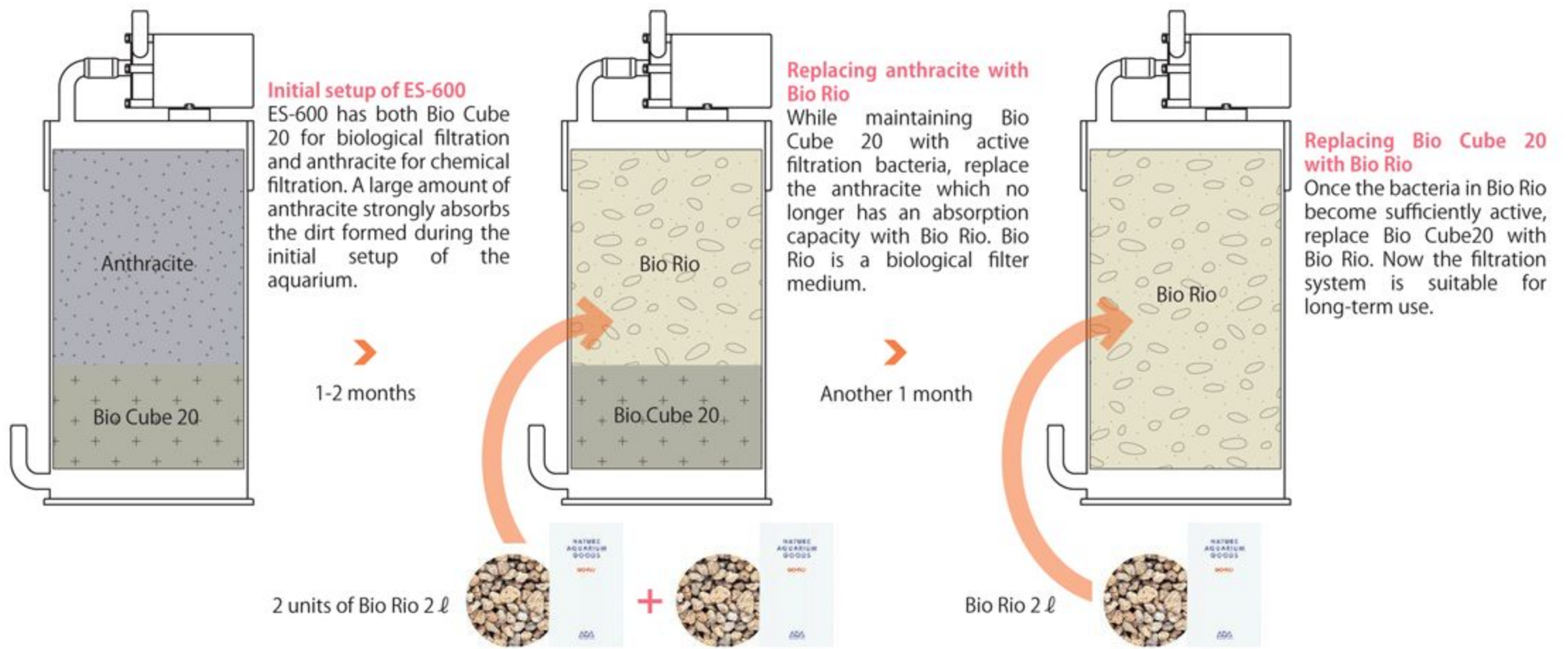


Removing residual chlorine
Remove harmful residual chlorine in tap water by adding Chlor-Off to the water before pouring it into the aquarium.



Pouring water into aquarium
Pour the water in the pail gently into the aquarium. Now, the water change process is complete.

Step-by-step change of filter media



Periodic maintenance of Bio Rio



Open the filtration system to check the dirt
Open the filtration system and check if the filter media are dirty. Conduct maintenance of the filtration system in case of excessive build-up of sludge.

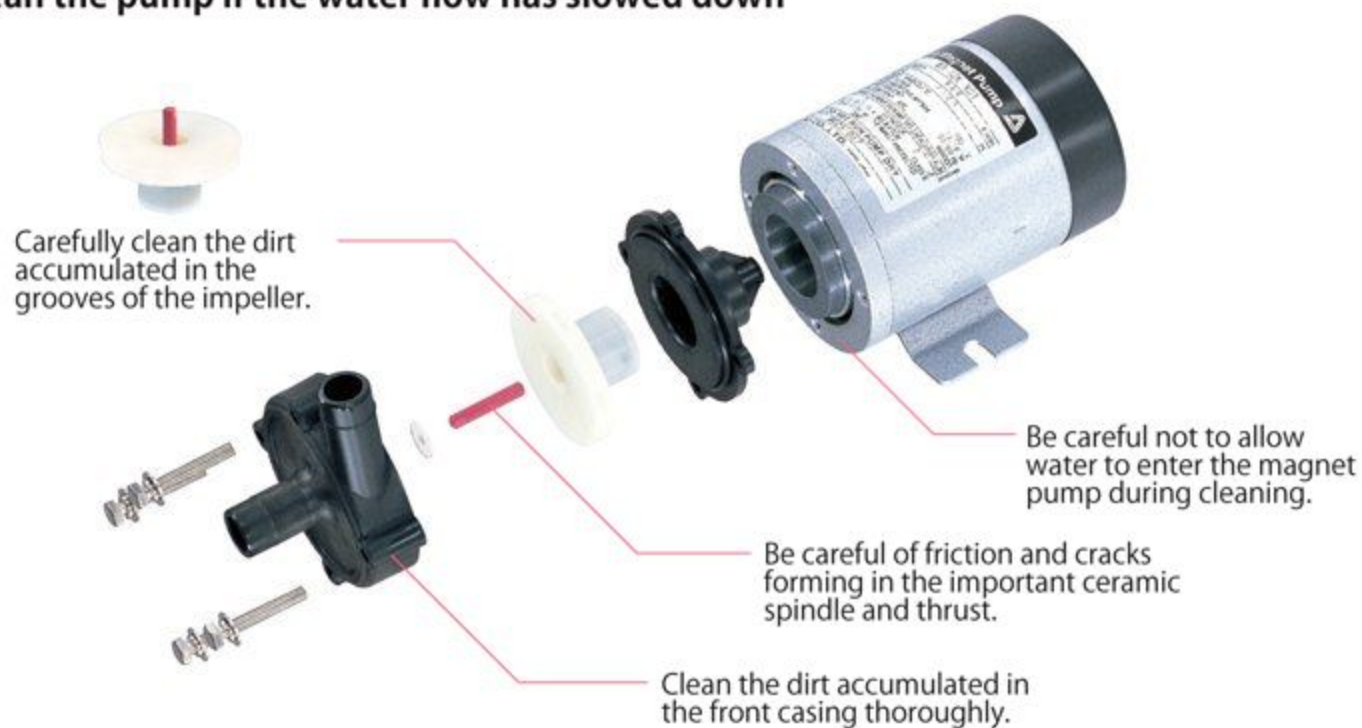


Pour aquarium water from aquarium tank into a pail
Be sure to rinse the filter media with aquarium water from the same aquarium tank to minimize the damage to microorganisms in the filter media. Put the filter media in the aquarium water.



Lightly rinse the filter media by hand
Avoid washing the filter media too hard. Rinse off the brown sludge gently by hand. Reinstall the cleaned filter media to the filtration system.

Pump - The heart of Super Jet Filter ES-600 Clean the pump if the water flow has slowed down



The Super Jet Filter ES-600 is equipped with a pump designed to prevent a decline in flow rate due to load on the filter media. However, the water flow rate will inevitably decline with long-term use as a result of dirt build-up within the pump. Clean the interior of the pump at least once a year. For cleaning, the pump needs to be taken out of the main filter unit and disassembled. Remember the mounting position and orientation of each part and be careful not to lose any of them. Wash off the dirt inside with a brush, and then reassemble the pump.



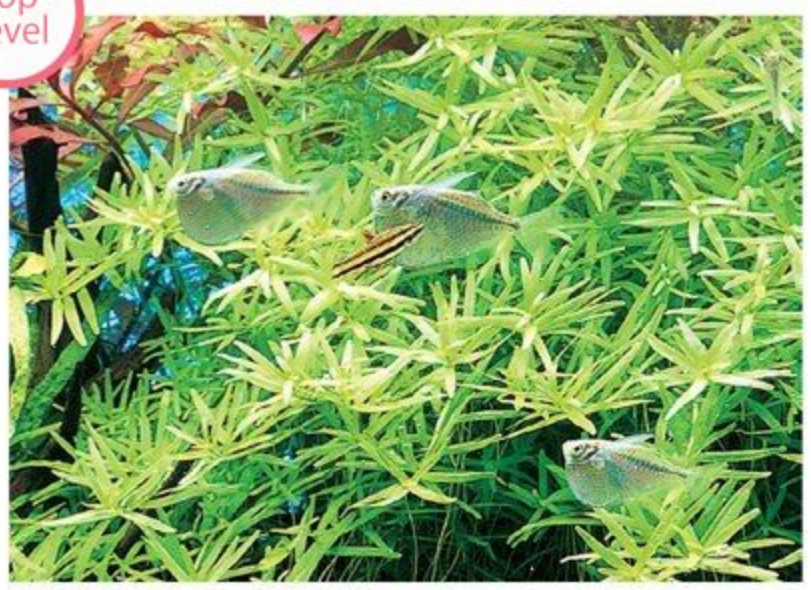
Mixed Fish Aquarium Doubling the Joy of Keeping Fish

One of the reasons for growing aquatic plants in the Nature Aquarium is to create an environment suitable for keeping fish. Flourishing aquatic plants supply abundant oxygen to the water and also improve water quality. Furthermore, a cluster of aquatic plants provides the

fish with a shelter as well as an egg-laying site. It is fun to mix and keep multiple species of fish in a layout with luxuriant aquatic plants. You will have greater joy if you care about the places of origin of the fish and find the best match based on swimming level, body shape and body color.

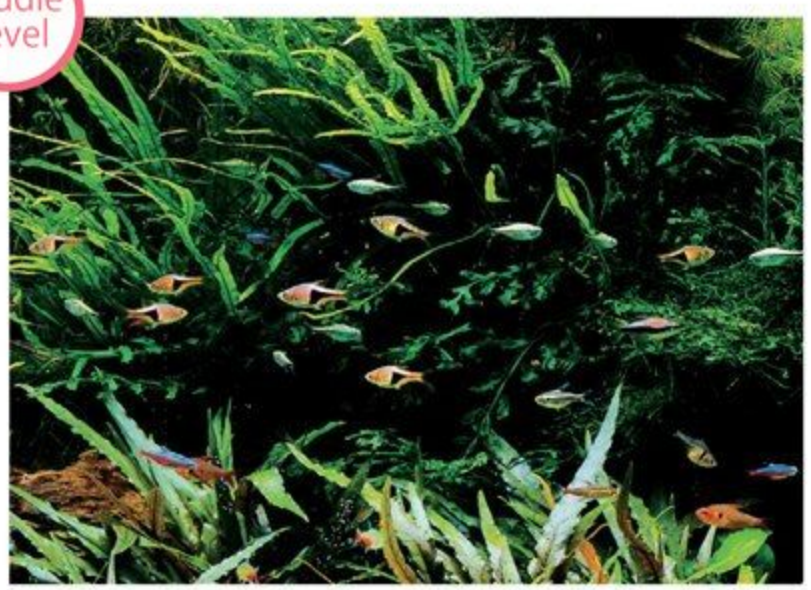


Top Level



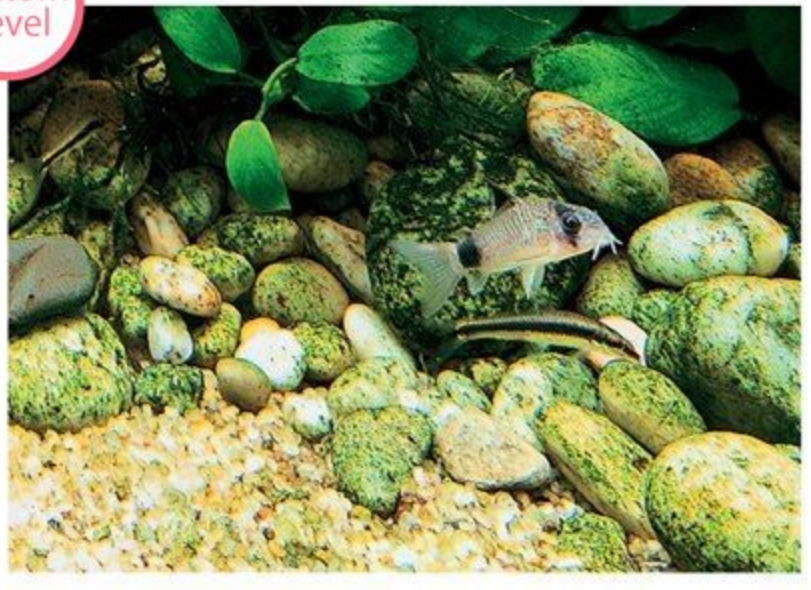
Bring luster to the top level
One of the common types of fish swimming at the topmost level of the aquarium is the Hatchet fish of various sizes. In addition, pencil fish and killifish also swim at the top level. Be careful to see that this type of fish does not jump out of the tank.

Middle Level



Produce splendor in the middle level
Most of small characin and rasbora swim in the middle level of the aquarium, so you may select your favorite one from a wide range of choices. This level catches the viewer's eye the most. Combine the species that have the body shapes, sizes and colors that match the layout.

Bottom Level



Add merriment to the bottom level
Many fish that swim near the bottom of the aquarium are unique species such as corydoras, roach and South American cichlid. You will have greater fun if you make a creative arrangement, such as laying sand in the foreground, according to the habits of your fish.

System Highlights for the Beginner

You should select products with excellent features when starting the aquatic plant layout. This section introduces you to the 60cm aquarium tank system.

The environment within an aquarium is made up of various factors including light, CO₂, filter and substrate. It is important for beginners to select the most appropriate equipment to establish a better system in order to make their first aquatic plant layout a success. If you wish to have an aquarium as part of the aqua-interior décor for your room, you should consider the total design of the entire aquarium system. Use reliable items of high quality which can last a long time – a principle we may need to adopt now.

Lighting



← Solar II
↓ NA Lamp

Blue spectrum light is effective for aquatic plants

The NA Lamp featuring high underwater light transmission provides an adequate level of light even for undergrowth plants at the bottom of the aquarium. This helps create an aquascape of greater perfection. It is advisable to write on the lamp the date you started using it as a reference for the next periodic replacement.





20w NATURE AQUARIUM GOODS NA-LAMP

Aquarium tank

Quality of glass can be identified on cut section

All frameless aquarium tanks seem to look the same, but the impression they give differs depending on the quality of glass plates used. A key point in determining glass quality is to see the cut section. ADA's current Cube Garden boasts exceptional glass clarity.

↑ Ordinary frameless tank ↑ ADA's current Cube Garden

CO₂

CO₂ injection equipment also focuses on reliability and safety

A high-pressure tank containing liquid carbon dioxide and regulator are used to perform CO₂ injection in a more efficient way. Safety is therefore an important concern.





↑ Complete set of CO₂ Advanced System ↑ Periodic cleaning is required.

Installation

Total design for more stylish interior

A uniform and stylish interior cannot be achieved if the parts of the aquarium equipment used are of different designs. The simple and streamlined ADA products also feature excellent design.

■ For better-looking aquarium
To ensure a beautiful display of the aquarium system, it is also important to clean the glass equipment and install hanging-type lighting on a level surface.



← Solar II Stand
Solar II →
↑ Lily Pipe P-2
New Lily Pipe V-3
Wood Cabinet →
↑ Clear Stand for CO₂ System
↑ Pollen Glass series

Substrate

Derive the benefits of natural soil

If Aqua Soil is left as it is after being laid in the tank, its surface will dry up and become dusty. Be careful not to allow this to occur as it may lead to cloudy water in the aquarium.




↑ It is advisable to avoid leaving the soil without water for days to prevent excessive drying.
↑ Aqua Soil – NEW Amazonia Aqua Soil lowers pH and KH, and makes an idealistic environment for plants and fish.

Materials

Grab it if You Like it

The layout materials are all natural products, so there are no two identical types. If you find something you like or some items with a good shape, it is advisable for you to purchase them on the spot.



Nutrients

Rich in Minerals Derived from Desalinated Deep-Sea Water

The Brighty series adopts a unique step-by-step approach to add nutrients to the aquarium according to the growth stages of aquatic plants. This fertilizer contains deep seawater rich in natural minerals.



Brighty series

Contains desalinated deep-sea water

Aquatic plants

Identify plants in good condition

Aquatic plants are sold in various forms, and are broadly divided into potted, stalk/bunch and wabi-kusa. Whatever you choose, select the ones with firm, healthy leaves and stem.

↓ Aquatic plants sold by the stalk or in a bunch
Some stem plants are sold not in a pot but by stalk or bunch. The condition of the plants greatly varies depending on how they were handled in the shop.



→ Wabi-kusa
Many of them are sold in the form of emerged leaves. Wabi-kusa can be used for layout just by placing it in the aquarium. This arrangement does not damage the roots and promotes the development of new leaves. It is easy to handle and recommended for beginners.



↑ Aquatic plants in a pot
Most epiphytic and rosette aquatic plants are sold in a pot. Carefully remove the rockwool covering the roots before planting. Be careful of residual pesticide.



Trimming tools

The value of the trimming scissors is determined by its blades

High hardness tungsten steel is used for the blades of Nature Aquarium Goods Trimming Scissors. This feature allows the scissors to always stay sharp.



Trimming Scissors

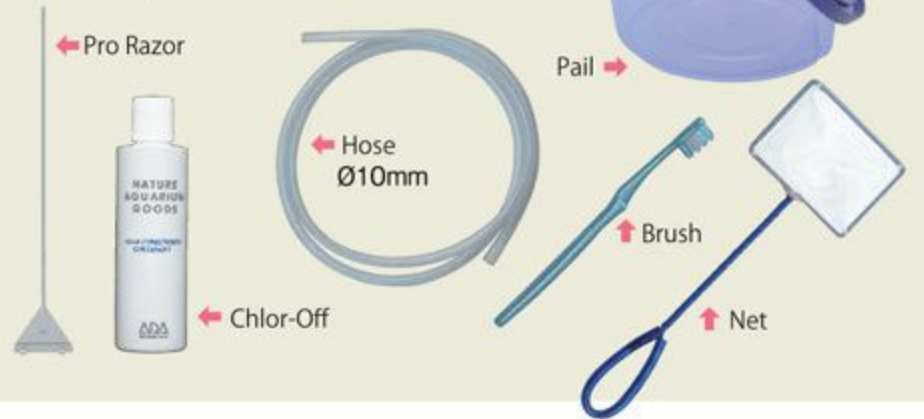
Pro-Scissors Force

↑ An anti-slip effect is provided by means of finger holes and tungsten steel is used for the blades. Use long-lasting quality tools.

Water change

Select highly usable tools

For convenient water change, it is advisable to prepare at least the following tools. These are among the tools most frequently used for the daily maintenance of the aquarium. For the pail, a size of about 10 l is easy for everyone to use.



Pro Razor

Chlor-Off

Hose Ø10mm

Pail

Brush

Net

Aquarium stand

Provided with both adequate strength and good design

Select a stand or cabinet with sufficient strength to support an aquarium. Be sure to choose a stable location for installation and make sure the surface is level. Use a mat for the aquarium as well.



↑ Cube Cabinet Clear

↑ Garden Stand

↑ Wood Cabinet

↑ Garden Mat

Filtration

A design to stabilize biological filtration over a long period is important

The essence of the filtration system is to maximize its biological filtration capability. To achieve this, a large-capacity canister and a pump which has a strong pumping capacity are combined. In addition, tough stainless steel is used for the filtration system.



← Buckles and elbows are also highly durable. For ES-600, a special impeller is used for realizing high pumping capacity.

VIDA CAFÉ

Takashi Amano's way of living

"AMANO – An Emerging Icon"

Takashi Amano, the pioneer of Nature Aquarium!

He is not only famous as an aquarist but his lifestyle is also drawing global attention.

Through media publishing and broadcasting, "AMANO" is now getting to be a global icon.

In VIDA CAFÉ for this issue, we look into the topics under the theme, "What the icon AMANO symbolizes".

vol. 03

Up-Close Coverage for 600 Hours

At the end of 2009, a documentary covering Takashi Amano entitled, "The Enchanted Primeval Forest – Vision of Takashi Amano" was produced by the Broadcasting System of Niigata Inc. (BSN) and was broadcast in some areas of Japan. This program won the JNN Network Consortium Award for the Best Environment & Ecology Program. Looking back at the memories of up-close coverage for as long as 600 hours, Takashi Amano said, "I never expected I would accept being featured in a documentary program and I didn't like being followed by a reporter wherever I went. But the producers and crews worked really hard, in all possible ways, to bring out my innermost self and, after a while, I started to sense their enthusiasm."

In the past, Amano never appeared on the news media unless it had to do with aquariums. However, a few years ago he had an interview with Mr. Takashi Murakami, an artist, and this changed Amano's mind. Said Amano in regard to media appearances and speaking activities, "I want to tell people what I see with my own eyes in nature and how I feel about it. And I hope this will help people realize that something wrong is happening in the natural world. With this in mind, I'm now actively engaged in speaking

and organizing photo exhibitions in and out of Japan."

A Wild, Cool Man!?

As an artist, Takashi Amano is attentive to the latest fashion. He is really fashion savvy and during seminars, he sometimes changes his clothes many times to raise the excitement of the audience, to the extent of sporting a ten-gallon hat when speaking about photo shoots in the Amazon. Some of our dear readers might feel a little surprised, but Amano once received an offer from a men's magazine to be a model as one of Japan's wildest, coolest men!

Speaking of "icon", many people may think of the phrase "fashion icon". When it comes to Amano, he is recognized as an icon, not only for his fashion sense but also for his style and way of life. You can get a glimpse of Takashi Amano's style from the fact that he has an aquarium as wide as 4m in his private residence and that he has been using his favorite ultra large format camera even till now. In these modern times we have a younger generation with a social problem, who cannot decide what they want to do. But Takashi Amano says, "I've never had a time I didn't have anything I wanted to do."

Why is Takashi Amano regarded as an

icon of style? The answer may be his immeasurable passion in going all the way to pursue his dreams and ideals. A huge number of people empathize with his way of life. And this is also the reason why the information on "AMANO" is distributed to the international community and draws the world's attention. What does the icon "AMANO" symbolize – It is Nature Aquarium and the way of life that emanates from it.

An Enthusiastic Welcome!

In 2009, Takashi Amano visited Qatar for his photo exhibition and was asked for his autograph even from a royal family. As a pioneer of Nature Aquarium and also as an artist always pursuing his dreams, Amano Takashi very often receives an enthusiastic welcome outside Japan. It is quite common for people to ask him to autograph their books and shirts, but there was once a rare case where Amano was asked to write his autograph on an undergarment. Amano always maintains his style of using a fountain pen to sign his autograph. It was about 30 years ago when he first used a fountain pen. That time he thought it was cool to use that type of pen to write articles. Eventually, he was fascinated by the fountain pen's wet ink effect and also by the originality of each single piece of writing, and since then this type of pen has been his

"VIDA" is a Portuguese word for "life". This corner introduces you to Takashi Amano's way of life through topics around us.



Interviewer/Editor: Miyuki Yano (Overseas Trade Department, ADA)

hallmark.

At the end of each Nature Aquarium Seminar, an event organized annually for ADA's overseas distributors, Takashi Amano signs his autographs with a fountain pen on the papers submitted by the participants who have gathered from all over the world wishing to learn the latest techniques first-hand from Amano. As we can see from the recent International Aquatic Plants Layout Contest, the Nature Aquarium is gaining greater popularity worldwide and the number of talented aquarists continues to increase. The website introducing the latest news on Takashi Amano currently receives more than 10,000 visitors a month. His work and activities are introduced through many kinds of media including Italian and Russian TV programs and various magazines in many countries.

Add Style to Daily Life

There is an episode in which the phrase, "Not pizza for Mr. Amano" was popular among those involved in a photo exhibition in Italy. The local staff knew that Takashi Amano does not like cheesy food, so they used this phrase to remind everyone to avoid serving dishes using cheese. Takashi Amano is very particular about food and his motto is, "Eat dishes using local ingredients harvested in their best season", which is common to the "slow food" concept. Disparaging today's eating culture which is all about "efficiency", Takashi Amano said, "Through my observation of tropical fish, I have learned the great importance of food in building our bodies. I think we must care about what we eat. I'm afraid we will become stale just like a cultured fish if we continue with our unnatural eating habits

ignoring the fresh produce of the season."

His unique lifestyle in harmony with nature is surely a part of the iconic "AMANO". We will have more fun in our daily lives if we establish our own lifestyle and uncompromising beliefs in the midst of a world driven by convenience.

A Great Work Titled "A life"

The origin of the Takashi Amano's style and Nature Aquarium is affection for nature and living things. For the upcoming seminar on Nature Aquarium which will be held in Beijing on June 2010, Amano expresses his enthusiasm, saying, "I want Chinese aquarists to know about

Nature Aquarium. And I really want to introduce the beauty of nature and green concept to Chinese people living in a land facing serious environmental issues such as desertification and air pollution." This year is declared as the International Year of Biodiversity by the UN and it is expected that the growing awareness about life on this planet will have a great synergistic effect in this seminar.

Looking at Takashi Amano's style that actively conveys his message to the world and draws attention of aquarists and industrial players all over the world, it can be felt that each of our lives will eventually become a wonderful artistic work if we identify our aspirations as well as enthusiasm and pursue it with all our heart. This is exactly what was said by Ryotaro Shiba, a Japanese novelist: "Every person's life is a great work."



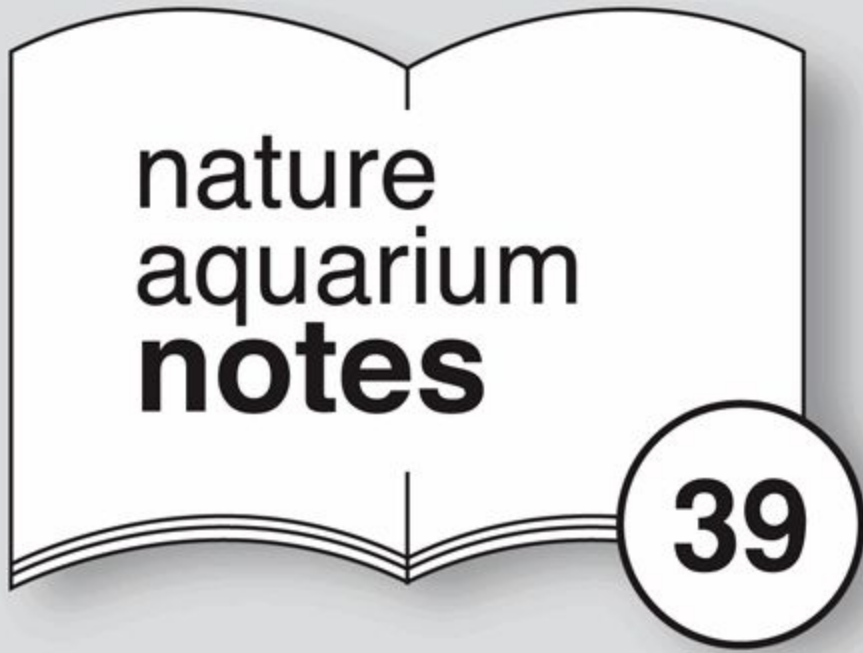
Takashi Amano's way of living

Takashi Amano receiving a commemorative gift at the photo exhibition in Qatar. Amano actively organizes photo exhibitions and Nature Aquarium seminars all over the world.

Takashi Amano being interviewed and photographed in Italy. He is no less attentive to fashion than the Italians.



Takashi Amano's way of living



Optimal CO₂ Injection for Each Tank Size

You need to prepare the substrate and lighting to grow aquatic plants in a tank. Besides these, one of the factors greatly influencing the healthy growth of aquatic plants is CO₂ injection. The effective CO₂ injection method has now been established and everyone can easily start supplying CO₂ to the aquarium tank. The Nature Aquarium Notes in this issue explain CO₂ injection systems suitable for each size of tank.

● CO₂ injection volume varies with the size of the aquarium

From compact to huge, a wide range of sizes is available for Nature Aquarium tanks. The size of the tank determines its capacity, which in turn determines the appropriate amounts of substrate materials and filtration system required. The same applies to CO₂ injection volume. CO₂ volume in water is expressed in density (mg/ℓ). As you can see from this unit, a constant density cannot be achieved unless the amount of CO₂ is increased in proportion to the rise in water volume (ℓ). For example, to always maintain a CO₂ density of about 20mg/ℓ to promote the photosynthesis of aquatic plants, 200mg of CO₂ must be dissolved in water if the water volume is 10 ℓ. If the water volume is 100 ℓ, the amount of CO₂ to be dissolved in water will be 2,000mg. This means the greater the capacity of the aquarium tank which determines water volume, the greater the amount of CO₂ to be injected.

There is a standard level of CO₂ injection volume for each tank size, though the CO₂ injection

volume in fact varies with the pH level of water and density of aquatic plants. For instance, the capacity of a 90cm tank is three times higher than that of a 60cm tank and therefore the required CO₂ injection volume for the 90cm tank will be almost tripled. The CO₂ injection volume can be checked with a CO₂ Glass Counter and CO₂ Beetle Counter by “the number of bubbles per second”. However, the CO₂ diffusion efficiency may vary depending on the size of the Pollen Glass which discharges CO₂ into the water. The Pollen Glass is adequate for a 60cm tank while the Pollen Glass Large 30φ should be used for the 90cm tank. This is because a larger amount of CO₂ can be injected into the aquarium tank with the Pollen Glass Large with a wider diffusing filter. If you install too large a Pollen Glass in your small aquarium, the well-balanced proportions of the aquarium will be upset. Which is why ADA offers a wide range of products with different diameters for the Pollen Glass series, including Pollen Glass Large and Beetle. For the CO₂ counter as well, two types of products are available and you may

select the most suitable one from the CO₂ Glass Counter for small-sized tanks and CO₂ Beetle Counter for larger tanks. Please refer to the table below to select a Pollen Glass which is best for your aquarium tank.

● CO₂ advanced system optimal for 60cm aquarium tank

A lot of equipment is used in a CO₂ system, which you might find a little complicated initially. Please don't worry. If you use only the minimum of necessities to build the system, the connection will be relatively simple. Let's look at the configuration of the CO₂ Advanced System to learn about the basic CO₂ injection system used in Nature Aquarium. The CO₂ regulator using a small-capacity CO₂ cartridge (74g) is suitable for 60cm or smaller tanks. The CO₂ Advanced System comprising CO₂ Glass Counter, Pollen Glass and small CO₂ cartridge -Tropical Forest is an optimal CO₂ system for 60cm tanks (see photo on right).

This small CO₂ cartridge is filled with a high-pressure liquid CO₂. To reduce the pressure and release CO₂ from the cartridge, a piece of equipment called the CO₂ regulator is required. The CO₂ regulator used in the CO₂ Advanced System is YA/Ver.2 of the fixed pressure-reducing type. Reduction of the in-cartridge pressure of 6.0MPa to 3.0MPa makes the connection of valves and branching parts on the piping possible, allowing easy fine control of the CO₂ injection volume. The fine control of the CO₂ volume can be made on the high-precision speed controller on YA/Ver.2.

These small CO₂ cartridges and CO₂ regulators serve as the source of CO₂ supply and they are supported by two important parts, namely, the Cap Stand and Ball Valve. The Cap Stand is a stand for a small CO₂ cartridge and is essential for safe CO₂ injecting operation. The CO₂ is contained in a cartridge in a liquid form under high pressure. If you place the cartridge upside

■ Reference for Pollen Glass Series and Tank sizes

W×D×H (cm)

| | Mini S | Mini M | 60×30×36 | 90×45×45 | 120×45×45 | 180×60×60 |
|-------------------------|--------|--------|----------|----------|-----------|-----------|
| Pollen Glass Mini | ○ | ○ | | | | |
| Pollen Glass | | | ○ | | | |
| Pollen Glass TYPE-2 | | | ○ | | | |
| Pollen Glass TYPE-3 | | | ○ | | | |
| New Pollen Glass | | | ○ | | | |
| Pollen Glass Large 20φ | | | ○ | | | |
| Pollen Glass Large 30φ | | | | ○ | | |
| Pollen Glass Beetle 30φ | | | | ○ | | |
| Pollen Glass Beetle 40φ | | | | | ○ | |
| Pollen Glass Beetle 50φ | | | | | | ○ |

The Pollen Glass series offers a wide range of products of different shapes and diffusing filter sizes. The above table is a reference to indicate the range of Pollen Glass products suitable for each tank size. For your information, the CO₂ Glass Counter should be used in combination with Pollen Glass for 60cm or smaller tanks, while the CO₂ Beetle Counter should be used for 90cm or larger tanks.

down or on its side, liquid CO₂ enters the regulator and this may cause a malfunction. To avoid this, the cartridge must stand upright when being installed to the regulator or during CO₂ injection. The Ball Valve, the other essential part, is a part used to stop CO₂ injection easily. CO₂ injection is performed while the lighting is on, but it needs to be stopped when it is switched off.

In the event that CO₂ is supplied even while the lighting is off, the fish, shrimps and microorganisms may suffer from lack of oxygen. Shrimps and microorganisms, in particular, are vulnerable to low oxygen levels, resulting in the slower movement of the shrimps' legs and possible oil film formation on the water surface caused by dead microorganisms. CO₂ is discharged as long as the Ball Valve installed on the CO₂ regulator is open, and it stops if the valve is closed by turning the lever 90 degrees. The Ball Valve can be opened and closed by a simple operation and the same CO₂ injection volume is maintained even when the valve is closed and then reopened for convenient daily CO₂ injection.

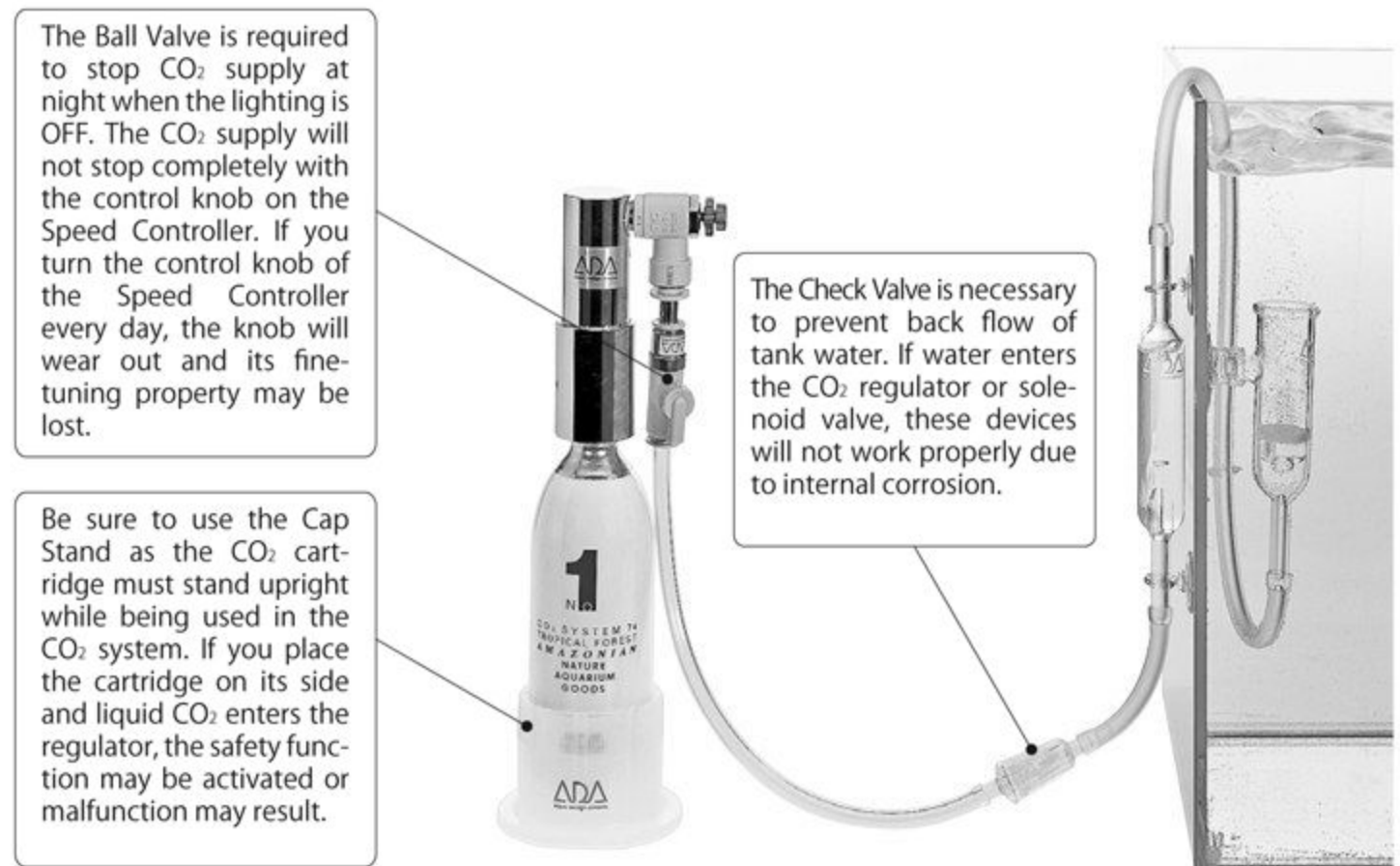
The CO₂ outlet section consists of Pollen Glass, CO₂ Glass Counter and Check Valve. CO₂ measured by the number of bubbles per second, is converted into fine bubbles by the Pollen Glass and then released into the water. The CO₂ so released then rapidly dissolves in water and is dispersed across the tank. The Check Valve is a part to prevent back flow of tank water towards the CO₂ regulator side. As CO₂ easily dissolves in water, the tank water enters the tube after the CO₂ injection is stopped. If it is left untreated, the tank water even reaches the CO₂ regulator which may cause a malfunction. In the CO₂ Advanced System, a pressure resistance tube coming from the Ball Valve side and a silicone tube coming from the CO₂ Glass Counter side are connected via a Check Valve. The pressure resistance tube and silicon tube are provided with the CO₂ Advanced System.

Now we understand that a basic CO₂ injection system can be built just by connecting the equipment contained in the CO₂ Advanced System. The system used for large tanks and the automated system using a timer is an extended version of this basic system.

● Expansion of CO₂ injection system

As mentioned at the beginning of this column, there are different sizes of CO₂ diffusers for each size of aquarium tank. Likewise, cartridges and regulators are also available in different sizes to cater for both small and large tanks. The CO₂ Advanced System is suitable for 60cm or smaller tanks, but it cannot provide adequate

■ Connection of CO₂ Advanced System and precautions



results for 90cm or larger tanks. The issue of CO₂ injection volume can be resolved by replacing the Pollen Glass with a product in the same series with a greater capacity, but the CO₂ injection time will be substantially shortened if a small CO₂ cartridge is still used. Simply put, if the CO₂ injection volume increases three times, the injection time will be reduced to one-third. For this reason, it is practical to use a Tower (large cylinder) for 90cm or larger aquarium tanks. The Tower can be filled with a large amount of CO₂ (almost equivalent to 18 bottles of small cartridge). With its refillable feature, it also provides high cost efficiency.

A CO₂ regulator designed for a large cylinder is required when using the Tower, and you have two choices, CO₂ Attache Regulator and CO₂ Speed Regulator. The CO₂ Attache Regulator is a fixed pressure reducing type just like YA/Ver.2. The CO₂ Speed Regulator can control the discharge pressure within a range of 0 - 0.35MPa and is therefore suitable for branching off into several aquarium tanks. Among the regulators for the small CO₂ cartridge, the SA type is a regulator of a variable pressure reducing type. Regulator YA/Ver.2 and SA can also be used as for a large CO₂ cylinder by combining it with the CO₂ Adaptor. This method is recommended if you wish to upgrade a small aquarium to a larger one. With this method, you will also be able to perform CO₂ injection using a small CO₂ cartridge while filling up the Tower. The use of a timer is a good way to enhance the CO₂ injection. There are two methods for this: one is the combined use of a solenoid valve and commercially-available timer, and the other is the use of the NA Control Timer equipped with a built-in solenoid valve. When using a solenoid

valve, replace the Ball Valve in the CO₂ Advanced System with the solenoid valve. This allows you to automate the opening/closing of the valve which should be performed manually with the Ball Valve. The NA Control Timer is very convenient as it controls the ON/OFF lighting in conjunction with the start/end of the CO₂ injection. It can also be used to control aeration.

● Replacing options

Some products in the Pollen Glass series have diffusing filters of a common size. For example, Pollen Glass, Pollen Glass TYPE-2, Pollen Glass TYPE-3 and New Pollen Glass have the same diffusing filter size and so do Pollen Glass Large 30Ø and Pollen Glass Beetle 30Ø. While providing the same CO₂ diffusing efficiency, each of these products has a different shape of pipe connection to the silicone tube. You may replace them according to their location and your design preference.

Besides the Pollen Glass, the Cap Stand can be replaced with the Clear Stand for CO₂ System 74. With the Clear Stand which can be hung on the side of an aquarium tank, you can save space and prevent toppling of the cartridge. Cabochon Ruby can be an alternative to the Check Valve. The Check Valve which is made of plastic needs to be replaced almost once a year, but no periodical replacement is required for the Cabochon Ruby made of glass. However, the Cabochon Ruby cannot be connected to the pressure resistance tube. The solution to this problem is to install a Ball Valve or Speed Controller together with a Joint Stick before the Cabochon Ruby so that a silicon tube can be connected.

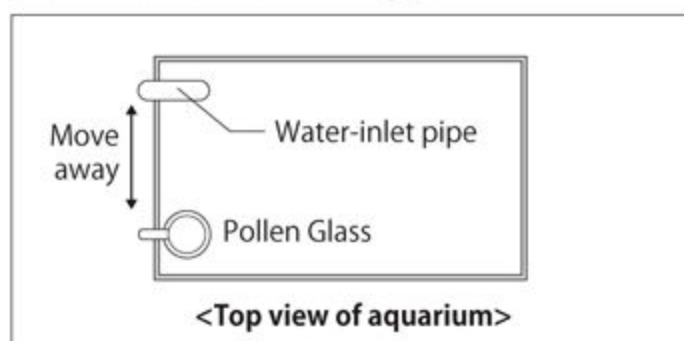
Q&A

Q I'm currently using a Super Jet Filter. Will this filter have an adequate filtration capacity only with Bio Rio? CO₂ is injected into the aquarium using a large tank on a 24-hour basis. However, Pollen Glass is installed near the water inlet of the filter and a small amount of injected CO₂ seems to be absorbed into the filter. My aquatic plants are growing healthily so far, but the water is slightly cloudy.

A The essence of filtration is biological filtration through microbial activity. The Super Jet Filter can provide an adequate filtration capacity if Bio Rio, a filtration medium for biological filtration, is used as the ultimate filtration medium. Bio Rio features a porous structure which is optimal for microbial activity as well as mineral contents, thanks to its natural ingredients. As for cloudy water, most likely this is caused by the 24-hour CO₂ injection and absorption of CO₂ into the filter, as you mentioned.

It is sufficient to carry out CO₂ injection only while the lighting has been on for about 8 hours. During the night when the light is switched off, CO₂ injection should be stopped and aeration should be performed to get rid of excessive CO₂ in the water. This is because the oxygen in aquariums sometimes becomes insufficient because the flourishing aquatic plants respire during the night. Lack of oxygen affects microbial activity which impedes improvement in water clarity. For these reasons, locate the water inlet of the filter and Pollen Glass in a place where CO₂ is not absorbed from the water inlet of the filter.

■ Position of water-inlet pipe

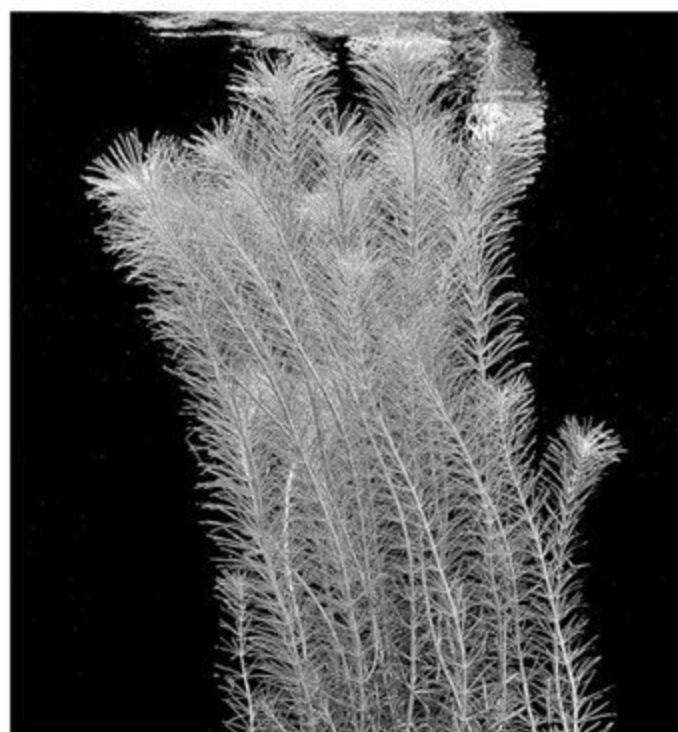


Do not allow CO₂ to be absorbed into the water-inflow pipe.

It's currently the best season for field trips and camping. How did you spend your holidays? No doubt our dear readers would have gone to the riverside excitedly looking for stones for aquariums ... Am I right?

Q I'm thinking of trimming my *Rotala wallichii*. Will new leaves of *Rotala wallichii* develop even after trimming the terminal buds, like other *Rotala* species?

A Like ordinary stem plants, *Rotala wallichii* may be trimmed together with its terminal buds. For about one week after trimming, Green Gain, a liquid fertilizer containing plant hormones for promoting the growth of new leaves, should be added to the aquarium until new leaves start developing. *Rotala wallichii* grows faster than other *Rotala* species but, at the same time, its lower stem ages faster. If you find the lower stem of *Rotala wallichii* darkening and hardening, replant it by using its cuttings.



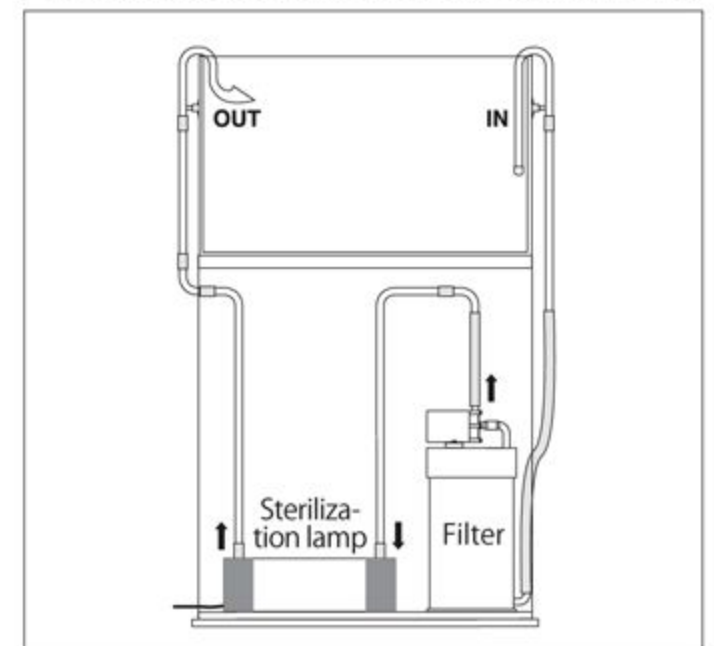
Rotala wallichii

Q The use of a UV sterilization lamp is not mentioned in the "Aqua Journal". Isn't a sterilization lamp used for the Nature Aquarium? If it is used, tell me how it should be connected.

A UV Sterilization lamps are used for aquariums displayed in the Nature Aquarium Gallery if the aquarium suffers from a prolonged cloudy water problem which usually occurs during the initial setup

period. However, the sterilization lamp is not installed all the time but is usually removed once the cloudy water is cleared and water clarity restored. This is because the ultraviolet light of the sterilization lamp deactivates the iron content which helps to improve the leaf color of aquatic plants. As for the connection method of the sterilization lamp, connect it to the water outlet hose of the external filter. The effect of the sterilization lamp will be enhanced if clean filtered water is exposed to the light of the sterilization lamp.

■ Sample installation of UV sterilization lamp



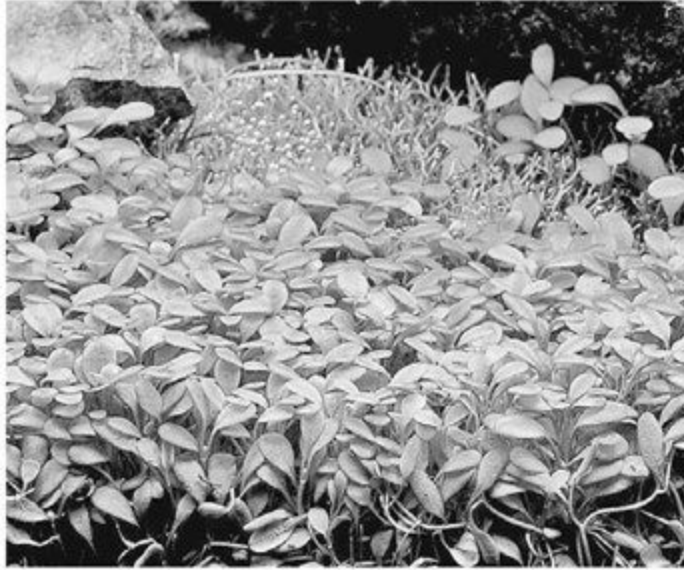
Make the hose as short as possible to ensure a secure connection.

Q I have been working on aquatic plant layouts for about half a year and am currently growing *Glossostigma* under CO₂ injection. *Glossostigma* spreads over the substrate to a certain extent but most of the leaves are as small as rice grains and not getting any bigger. It seems that more *Glossostigma* leaves spreading over the substrate are drying rather than growing.

A An insufficient amount of light is not suspected judging from the fact that *Glossostigma* is not growing upwards. There should be no nutritional problems in the substrate as long as Aqua Soil Amazonia and Power Sand are used together. If CO₂ or the amount of light and substrate are not a

Send us your questions!

We welcome your questions and enquiries on Nature Aquarium. Please feel free to send your questions to ADA to our email address (ada@adana.co.jp).



Healthily-growing Glossostigma has large leaves.

problem, but the Glossostigma still suffers from poor growth, very small leaves or deteriorating color (turning yellowish or reddish purple), then most probably the stones used for the layout are having a negative impact on the water quality (if stones are used for this layout). The problem of high total hardness of the water can be solved by the Softener, but the negative impact of stones mentioned above is not a matter that can be detected by a water quality tester. However, it is certain that the stunted growth of Glossostigma is due to some elements contained in the stones.

Q I'm currently trying to grow a *Eusteralis stellata*. In the magazines, some of the *Eusteralis stellata* look large with big stems while some look smaller with tiny stems. I prefer my *Eusteralis stellata* to grow into a large one with big stem. Is the size difference caused by differences in plant growth conditions?

A This is not due to differences in plant growth conditions but to differences in trimming frequency. *Eusteralis stellata* used for aquatic plant layouts tend to grow larger with big stems if they are grown in a large aquarium, while they remain small with delicate-looking leaves and tiny stems if grown in a small aquarium and are subjected to frequent trimming before they grow larger. From the viewpoint of aquatic plant layout, a frequently trimmed *Eusteralis stellata* has tidy-looking terminal buds and looks well-balanced



Big *Eusteralis stellata* with attractive leaves

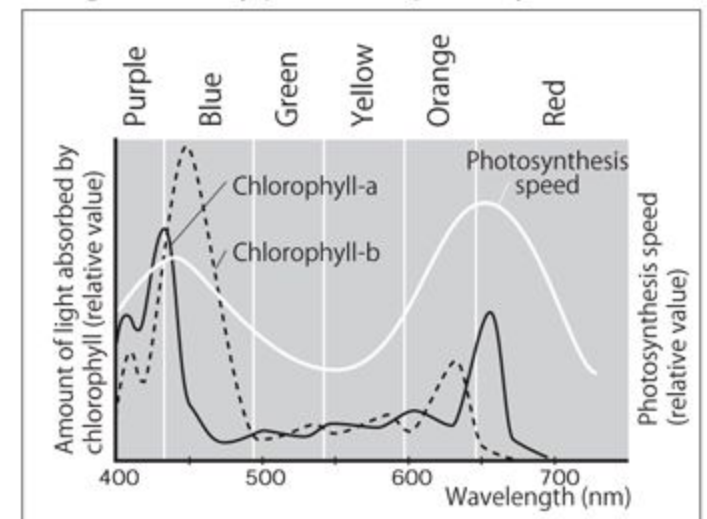
with the other stem plants. If you wish to grow a *Eusteralis stellata* with large leaves and big stem, you should plant its cuttings with terminal buds on the substrate and take your time to grow it. However, a densely-grown effect full of terminal buds may not be attained if you grow *Eusteralis stellata* in that way.

Q I'm using four NA Lamps for my 60cm aquarium. I sometimes see in shops that one of the fluorescent lamps used for aquariums with aquatic plant layouts is a red fluorescent lamp and it is situated at the front side of the aquarium. Will this enhance the natural feel of the layout? Should I use a red fluorescent lamp?

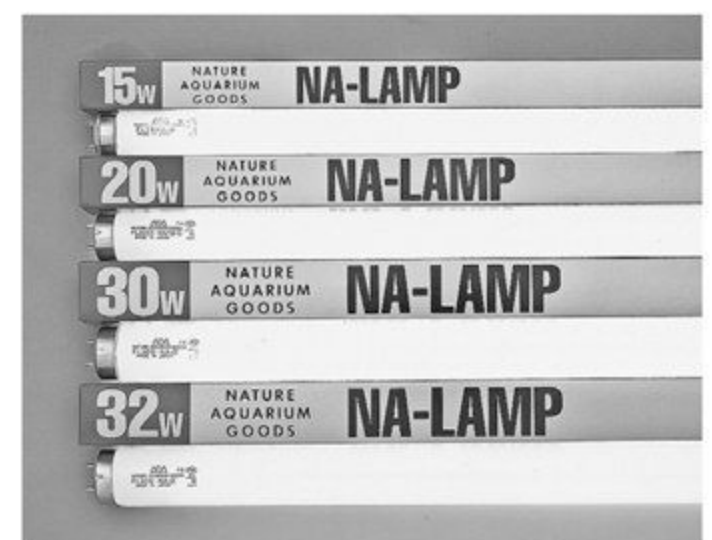
A You may feel that reddish aquatic plants look more attractive under a red fluorescent lamp, but it is merely a color rendering effect produced by the fluorescent lamp. When focusing on a natural feel, the healthy growth of aquatic plants, regardless of species, is a matter of critical importance. To make the red color of reddish aquatic plants appear more attractive, do not rely on the color rendering effect of the fluorescent lamp but focus on enhancement of leaf color by supplementing with iron using a nutrient such as ECA. The ultimate natural look should be obtained by precisely reproducing the leaf color of healthily grown plants and the fluorescent lamps used in aquatic plant layouts are expected to bring this out. For this reason, there will be no problem if only NA Lamps are

used. Rather, this arrangement can make growing aquatic plants look more natural than introducing a red fluorescent lamp among ordinary fluorescent lamps. The NA Lamp is the first fluorescent lamp designed exclusively for aquatic plant growth and has excellent plant growing as well as color rendering effects.

Light used by plants for photosynthesis



As red light is absorbed in water, it is thought that the photosynthesis of aquatic plants is promoted under blue light.



NA Lamp is a lamp exclusively for aquatic plant growth. It emits a higher degree of blue spectrum light.

Changes for the New Creation

