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# Aquascaping with George Farmer

Contributed by George Farmer

My name is George Farmer, 31, and I'm very lucky to be married to a wonderful and very understanding wife, Janine, with two joyful and incredibly bright daughters – Emily, 12 and Florence, 3. I live in a beautiful rural village in Lincolnshire, England. I count my blessings every day, it has to be said!

## A little about me

My full-time career is as an aircraft weapons engineer in the Royal Air Force - in fact I'm writing this whilst on a 4 month tour in Afghanistan, as we speak! I'm also a freelance writer and photographer specializing in planted aquariums and aquascaping. I mainly contribute to Practical Fishkeeping (PFK) magazine, writing between one and three articles regularly every month. As a member of their 'Ask the Expert' panel, I help out readers with their planted tank problems. I write blogs for the PFK website ([www.practicalfishkeeping.co.uk](http://www.practicalfishkeeping.co.uk)) and have presented a step-by-step video/podcast on setting up a nature aquarium. I have also written articles for Pet Product Marketing, a publication for the UK pet retail sector.

I'm in the privileged position of being able to work with Tropica, the Danish plant grower, who supply me with their excellent plants and products. Recently I have tested out some brand new plant species which has been very exciting. I get to test out a lot of new products for various manufacturers, the most recent being the new LED lighting from TMC.

At one point I was a moderator of five Internet forums, but have limited myself to being active on two or three, when I have the time. Last year I helped to set up the UK Aquatic Plant Society ([www.ukaps.org](http://www.ukaps.org)), with three other UK-based talented hobbyists. We have a very active forum with a fast-growing membership and considerable range of experiences. I would like to think that we all have helped to promote the UK planted tank and aquascaping hobby significantly in the relatively short time we have been established.

I started the aquarium hobby relatively late, five years ago, and kept an off-the-shelf 125 litre (33 US gal.) aquarium ready-supplied with filter, lighting and heater. I filled it with non-aquatic plants, not realizing my mistake at the time. Of course, the plants died and algae took over. Determined to succeed, I read some books and began to use the Internet as my main source of information, being careful who I listened to. I enjoyed learning about the Estimative Index (EI) fertilization principles and continue to practice this method with great success by using Tropica fertilisers, at the moment. I'd like to thank Tom Barr for his guidance in many matters.

As I became more informed and skilled as an aquarist, the hobby turned into an obsession. I discovered Takashi Amano's work and bought all of his books, reading them back-to-back several times over. I also enjoy reading the ADA Aqua Journals and catalogues. Mr. Amano changed my whole philosophy towards fishkeeping and I discovered a passion for aquascaping as an art form. More recently I have become a very keen photographer and find the link between aquascaping and photographing very interesting. Takashi Amano is the ultimate master of both, in my view.

## Aquascaping Fundamentals

I believe the first fundamental lesson to learn before even designing and implementing a successful aquascape is to

learn how to grow plants effectively. No layout will be successful with dying or algae-infested plants. Once plant growing has been mastered through appropriate lighting and nutrient levels, whether they be high light, CO<sub>2</sub>, etc. or 'lower-tech' methods, one is then free to concentrate on the creative side of aquascaping and layout design. It took me about 12 months to realize exactly what I needed to grow plants well, without algae issues. Good light, CO<sub>2</sub> and other nutrients, including NPK, with plenty of water changes, are my main 'rules' for success and more recently I have learnt the importance of good levels of flow. Most of my set ups will have at least 10x filter turnover, with my most recent two layouts, 'Little Mountain' and 'English Summer' having over 20x turnover.

Choosing plants according to one's individual aquarium set up and size is also a vital element. Some plants require more light and nutrients than others, or different water chemistries, so do some research, or better still, experiment to find out what works for your aquarium and its conditions. I have had success with most plants I have tried, even though I have hard tap water. The key, as mentioned, is appropriate light and nutrients. Patience is also very important, as some plants will take a good while to adjust to their new environment.

One element that really only comes with experience is learning how plants grow together at different rates and sizes and how these influence the whole aesthetic of the aquascape. Pruning techniques become a priority with foresight into anticipating the evolution of the aquascape. Most of my aquascapes contain few or no stems plants at all, so the end result is more predictable with lower maintenance, which suits my somewhat hectic daily schedule.

### Shape Your Inspiration

Gaining inspiration is a very important element in aquascape design. For beginners that can grow plants well, I often recommend copying an aquascape they like, as they will immediately choose appropriate plants and composition. Through the process they will learn how their plants grow in their set up and may be confident enough to evolve the aquascape by changing species or layout as they see fit. The whole experience will be beneficial and after some time they may be able to come up with some innovative creations without resorting to copying aquascapes, or elements there of. I still gain much inspiration from others and will use some aspects to the designs in my own work. I don't consider myself a 'natural' artist so creating an innovative design is hard for me. However, like anything in life, I know it will become easier with practice and I can see my aquascapes improving with every new attempt.

As for the actual layout materials when considering an aquascape design, the importance of good hardscape selection and position, if used at all, is incredibly important. Rocks and/or wood should often provide the 'bones' to the layout with the plants providing the 'flesh'. Even if the hardscape becomes invisible over time, they help to provide a basis for which to build upon. Only recently, in the UK, have decent hardscape materials become readily available and this has boosted the quality of aquascapes produced considerably.

### My First Aquascape

My first aquascape was a result of all my learning about how to grow plants within the first year of starting the hobby. I had not been influenced by the nature aquarium style back then, as I hadn't seen any of Amano's work, or other aquascapes influenced by his style. I hadn't seen any Dutch style layouts either, but rather I kept adding new plant species here and there, tidying them up and pruning as necessary. The end result is what you see here, which I was pretty pleased with back then!

I boosted my lighting from the supplied 2 x T8 fluorescents to 4 x T8 with reflectors and I added yeast-based CO<sub>2</sub> injection. Dosing ferts was via the Dennerle system which doesn't contain any sources of NP. This is why the lifespan of the aquascape was limited, because algae became an issue, due to nutrient deficiencies and unstable CO<sub>2</sub> levels. The tank also had a heater cable fitted, which in my opinion isn't necessary, as none of my aquascapes since have used them, despite their success. Plant growth itself was pretty good, but most of the plants were easy. Due to the large proportion of stem plants, I learnt about pruning technique and the way that plants grow at different rates. Hardscape was non-existent, as with most Dutch style aquascapes, but this choice was made for me due to a lack of decent materials available in the UK at the time.

After this first aquascape I discovered the virtues of pressurized CO<sub>2</sub> injection and NPK dosing via the Estimote Index

(EI). These two factors, in combination with discovering Amano's work, were instrumental to my progression in the hobby. I look back at this aquascape with fond memories and use it to remind myself of how newcomers to the hobby may feel.

## An Aquascape Takes Time

My quickest aquascape to completion was 'Harlequins' Haven'. From start to finish it took around five weeks. This was mainly due to heavy planting from the outset, in combination with some fast growing Vallisneria. I didn't keep it running for long, as the tank sprang a leak! Apart from that they were no problems at all with this aquascape.

My longest-term layout was 'The Shade' which evolved over around 18 months. It had low lighting (2 x T8, 1wpg) and slow growing species – Crypts, Anubias and ferns. The aquascape didn't have any problems until I went on holiday and the CO2 stopped, melting all the crypts and causing a massive algae bloom!

## Aquarium Maintenance

In all my set ups, except nano aquariums, I change between 1/3 and 1/2 water every week. In the early stages of the tank's life I will often change more water, more regularly. Plants are pruned as and when required, from weekly for fast growing stems, to monthly or longer for slower growers. In nano aquaria I will change 1/2 water 2x per week minimum.

Algae is cleaned from the glass using magnetic algae scrapers, razor blades and toothbrushes. I rarely vacuum gravel as there is too much plant cover, so I wave my hand above the substrate, lifting up any detritus and siphon it out during a water change. I also 'fluff up' the plants to remove any collected detritus from the leaves etc. Any uprooting of plants or hardscape will be followed by a 1/2 water change to minimize algae. In fact, almost any maintenance is followed by a water change.

I dose Tropica Plant Nutrition+ in all my tanks, generally at a rate of 5ml per 100 litres per day for higher lighting, down to 2ml per day 100 litres for lower lighting. This is a great all-in-one liquid fertiliser that works brilliantly in all my tanks. I will adjust dosing as the plants require.

Filters are always over-rated for the aquarium size and are cleaned every couple of months. In larger tanks (120cm+) I'll always use two filters, as I like to achieve a minimum of 10x turnover. I only use biological and mechanical filter media, no carbon or Purigen etc. Lily pipes and filter hosing are cleaned as and when required.

I often use a CO2 drop checker with 4dKH solution and pH reagent to maintain good CO2 levels. Once an ideal bubble rate has been achieved, I may remove the drop checker for aesthetic purposes. Glass/ceramic diffusers are cleaned regularly in bleach to maintain maximum efficiency.

## The Solution to Algae

The maintenance regime outlined above will normally keep algae at bay. I always plant very heavily from the outset and change plenty of water. I will normally dose fertilizers on the lean side in the first few weeks. There is plenty of discussion on whether or not this is necessary, but it works for me and saves on fertilisers. A good nutritious substrate will allow more forgiveness with lean dosing too. It's also worth noting that most new plants require an acclimatization period in their new environment, so dosing may not actually do any good at all. Most aquarium plants are grown emerged in the nurseries and will have a lot of nutrient stock in them too.

I always have an algae-crew, right from the start, normally consisting of Amano shrimp (*Caridina multidentata*) and *Otocinclus* sp. I will stock around 10 Otos and 20 shrimp per 100 litres. In nano tanks I like to use Nerite snails and smaller shrimp.

Algae, in my experience, is caused by neglecting the tank (poor/fluctuating CO2 and other nutrients, blocked filter or lack of water changes), or by running excessive lighting for too long. With good CO2 and other nutrients, it may be surprising how little light one can use to grow plants well. I can grow most plants in most tanks with 2 x HO T5 and good reflectors spanning the length of the aquarium.

## Plant Selection

Plants are chosen according to the layout design and how much maintenance I wish to perform. These days I tend to avoid fast growing stems due to their high maintenance and my lack of spare time. However, I will sometimes use them if I know the aquascape is going to be a short-term affair and I wish to experiment with any new ideas. My favorite slow growing and low maintenance plants are Java ferns, Anubias and crypts, and these will appear in most of my larger aquascapes.

## Fish Selection

Fish selection is an obsession for me! I will wait until the aquascape is at least three to four weeks old before adding fish and think about their selection a great deal before choosing. They must match the planting design and the tank's dimensions. Taller fish suit taller tanks etc. and sense of scale is essential. I will always prefer to use larger shoals of smaller fish over a few larger fish. One exception is half a dozen large discus that I plan for a new 180cm layout next year.

Fish coloration is another important consideration, as they must not clash with the planting. I am not a fan of gawdy colors generally, unless their contrast suits the planting. For simple aquascapes I will always choose one species of display fish and for more complex layouts, I will have a few species. If I do mix species, they will be from the same continent i.e. I won't mix South American tetras with South East Asian Rasboras or Danios etc.

I also tend to understock with fish as this helps to maintain water quality, reduces risks of algae and lowers maintenance times. I am very lucky to have an excellent aquatic shop nearby that stock a huge selection of fish suitable for planted aquariums. I am spoiled for choice. They also give me a good discount, as I'm a regular customer who always has time for a nice chat with the staff!

## Aquatic Photography

Photography is such an important factor in getting that "perfect shot" for a layout. I currently use an old (2003) Canon EOS 10D DSLR camera, sold to me by my wife's uncle for a good price. It's regarded as outdated now but I like the results. It only has 6MP but it's plenty for publishing in magazines and on the web. Eventually I will upgrade to a 5D or even a 1Ds Mk.III, as I'm becoming more interested in landscape photography where the full frame sensor and higher pixel count come into their own for larger prints.

Currently I only use a Sigma 17-35mm f/2.8 lens for full tank shots in confined spaces and a Canon 100mm f/2.8 macro for close-ups. It is best to buy the best lenses you can afford, as they will outlast the camera and are interchangeable when you upgrade to a camera from the same manufacturer. Unfortunately, decent lenses tend to be very expensive!

For final photo shoots I will get as much light above the tank as possible, normally 4 x HO T5 or more if I can fit it. I do not own any flash guns yet but intend to invest in some soon. The more light the better, as it results in a faster shutter speed for capturing fish. Also a greater depth of field (DoF) can be used to ensure the whole tank is in focus, front to rear.

I will often use ISO 400 or 800 to help maintain fast shutter speed and higher DoF. However, high ISO can result in grainy images, depending on the camera. This is why flash guns are good, because you can use a high DoF, fast shutter speed and low ISO for best quality images.

I will shoot in the dark, except for the aquarium lighting, as this prevents reflections. A tripod is useful and I also use a remote shutter release to help eliminate camera shake further. The self-timer can be used but it's harder to capture the fish in the right spot.

I will sometimes use backlighting to enhance the background of the aquascape. This is normally achieved by an old T8 tube and reflector against a pale wall. These days all my aquascapes do not have a background, as I like the extra sense of depth this creates.

Generally I don't use Adobe Photoshop too much, as I prefer to get the shot right at the start. I may boost contrast and saturation a little, as well as use unsharp mask to improve the overall effect of the shot. Some see this as cheating, but as long as you aren't adding things that aren't there already, I don't see any problems. For me, Photoshop is simply used as a digital darkroom. Recently I have started shooting in RAW for my most important shots, as these are higher quality and provide more flexibility with image parameter adjustments without loss of image data. When I return from Afghanistan I am treating myself to a nice new 24" Apple iMac, that is far superior to my current PC for dealing with images.

### Popularity of Aquascaping Around the UK and the World

The UK planted tank and aquascaping hobby is enjoying a rise in popularity, but the vast majority of aquarium keepers are still more interested in fish than aquascaping. We still are a long way behind many other countries in terms of aquascaping talent but the potential is certainly there. Last year we had just three UK entries into the ADA contest but they'll be more this year. I'd like to think that the UK Aquatic Plant Society and my work with PFK are helping to promote aquascaping in the UK.

Most UK aquascapers I know of are influenced by Amano's work and the nature aquarium style. The Dutch style is rare to see over here. I don't believe there is a UK style yet, as the UK aquascaping community is still in its infancy and has yet to reach the mainstream fishkeepers, but we do see new members every day joining UKAPS. There are some notable young and upcoming UK aquascapers, such as Dan Crawford, Graeme Edwards and Tom Messenger who have produced some very exciting work.

The UK retail sector slowly is switching on to the rise of the planted tank hobby, with new products becoming available regularly. When I started the hobby, pressurized CO2 systems were rare and NPK dosing was unheard of. Today, we still see some shops refusing to accept that NPK dosing is acceptable with some reports of shops refusing sales of fish to those that dose NPK! It's find disappointing that many retailers and manufacturers still believe that nitrate and phosphate dosing cause algae in a well planted tank. Of course, these nutrient additions are often necessary to support healthy plant growth and prevent algae. I praise manufacturers like Tropica, Seachem and ADA that produce fertilisers with added N and P, who cater for today's modern plant grower.

Glassware and other specialist gear from ADA, Cal Aqua etc. are becoming more popular with two excellent outlets selling their products - Aqua Essentials and The Green Machine. Opti-white, high clarity glass is being used more by aquascaping enthusiasts. Nice wood and rocks are also available now, from many retailers, which were absent or very hard to obtain a few years ago.

### My Aquascaping Competition Entries

I entered 'Meadow Zephyr' into last year's ADA and AGA contests. I also entered 'Mother Microsorium' and 'The Shade' into the AGA. I came 775th in the ADA and didn't win any awards in the AGA. The judge's feedback was worthwhile in the AGA and I am hopeful to gain a higher position in this year's ADA. I always value the comments from the AGA contest judges and with the ADA contest I can hopefully climb up the ranks as I become a more experienced aquascaper.

I like contests because they give me an added sense of motivation and end goal. I also like to urge other UK hobbyists to enter into contests to let the aquascaping world know that we are here!

### Why I Aquascape

For me aquascaping is the ultimate combination of living art, design and technology that is infinitely complex and never fails to hold my interest. I'm highly privileged and honoured to be able to contribute to the hobby through a variety of media and count myself as very lucky to have some influence on the promotion of aquascaping in the UK in particular. In the near future I would like to write my own book on growing plants and aquascaping complete with my own photography.

I would like to think that the aquascaping hobby will have a bigger influence on all aspects of fishkeeping. For me it just makes sense to have an aesthetically pleasing aquarium in one's living space, even if it is fish-only. As more manufacturers realise that aquarium plants and layout design are becoming more popular, I anticipate the market will adapt accordingly, providing the consumer with a greater variety of equipment making it easier for the newcomers to the aquascaping hobby. We can already witness this wind of change occurring in the UK and I remain very optimistic for the future.

### Practice Makes Perfect

Finally, there will always be conflicting information as to what is the best way to grow plants, but in my opinion, there is no specific right or wrong way. Choose a method or combination of methods that works for you, experiment and learn from your mistakes. Practice makes perfect.

80 cm - The Shade

120cm - Harlequins' Haven