THE BIG DISCUS FISH BOOK

BERND DEGEN

DISCUS live
Europe’s biggest hatchery

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Europe’s biggest hatchery is located in Warendorf, Germany. The company is over 40 years old and is now being run in the 2nd generation. European hatcheries differ widely from their counterparts in Southeast Asia. Conditions in European hatcheries are fundamentally different and, in fact, they are necessarily so. Just as in Asia, only captive bred discus fish are bred here in Europe. This means that the hatcheries do not produce pure breeds from discus fish caught in the wild. This is primarily because a significant market for small-sized discus fish, caught in the wild, has not yet developed, despite the fact that this would be an interesting prospect. In part it is also due to the fact that discus fish caught in the wild take a very long time to fully develop their colouration. Only at six months of age do the juvenile fish begin to show any colours and they only become truly spectacular to look at after a year or more. For example, Curipera captive breeds, which are meant to be a strong reddish-brown colour, cannot be successfully marketed as greyish-brown juvenile fish, 6 cm in size. So, large hatcheries must pursue other avenues, in order to remain competitive on today’s global market.
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In such an enormous-sized hatchery, hygienic conditions are of prime importance. Outbreaks of disease would have disastrous results, because within a very short time, thousands of discus fish could become infected. The hatchery’s staff has been trained accordingly.

As fish are shipped from the hatchery throughout the week, constant sorting is necessary. Fish need to be caught, transferred to other aquariums, or prepared for shipping. The hatchery’s staff always controls the size and quality of each fish, every time it is caught/ transferred.

On the left page, you can see a staff member carrying out these controls. He is using three aquariums, so that he can take the juvenile fish from the middle aquarium and transfer them to the right or left aquarium, according to certain criteria. Sometimes it is necessary to control the fishes’ size, in order to achieve steady growth.

By examining the photo above of a group of red discus fish, it is easy to see that all the fish in this aquarium are roughly the same size.

This continuous selection process guarantees consistent quality standards. Also, fish that are required for breeding purposes can always be selected using this process.

And this is how such superbly marked discuses, like the show fish in this photo, are selected to stay in the hatchery, to further raise the breeding quality.
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The Stendker family has many years of experience in breeding discus fish. And obviously, anyone who manages to establish a hatchery of this size, and to be unrivalled in Europe, must have significant experience in this field. Seven days a week and 365 days a year, control rounds are carried out. Each aquarium must be inspected, as often only an expert can tell if something is amiss. Once you know your aquarium and your fish well, however, you will develop a good eye for this. At home, you will no doubt also notice if something is wrong in your discus aquarium. In terms of technology, the hatchery’s aquariums are kept as simple as possible. As you can see from the photos, the water supply is well visible at the front of each aquarium. The outlet pipes are also installed in front of the aquariums. While this doesn’t look all that pretty, it is very practical – and that’s what’s most important in a hatchery. It simply wouldn’t be viable to need to carry out complicated maintenance procedures behind the aquaria. Because of the high stocking densities, it is vital that the water circulates constantly and fresh oxygen is continuously supplied. Each aquarium also has an air supply via an aeration stone. As the hatchery sells large discus fish as well as discus fish of all sizes, all year round, the aquaria are always pretty full. A red washing peg clamped to the edge of the aquarium indicates that no fish are to be sold from this aquarium at present. Usually this is for breeding purposes, e.g. because some distinctively marked fish are to be selected for breeding in the hatchery. It goes without saying that only discus fish of the highest quality are used for breeding and that only superb fish, as in the photos on the left, are chosen for this purpose.
Discus fish colours are subject to fashion trends. Sometimes fish with red spots are more in demand, other times discuses with solid colours are “in” or “out”. Currently, discus fish with an abundance of red spots are especially popular. This colour variety has been in demand for several years now and it’s these red spotted fish that are currently winning all the discus fish championships.

A lovely breeding pair of this colour variety can be seen in the photo above. It is important that truly the entire body of the fish is decorated with this pattern. Such fish then “breed true” and the offspring inherit the fixed trait from their parents and look identical to the parents. This too is very important for a hatchery, because if half of the juvenile fish are a different or a weaker colour, they are very difficult to sell.

By crossing in Asian pigeon blood varieties approximately 10 years ago, it was possible to create a number of new colour varieties that today are an integral part of the company’s price list. On the internet, you can see which colours are currently popular. Simply enter the terms “Stendker” and “discus hatchery” in any search engine. Classic Red Turquoise discus fish continue to be popular, even though sales have decreased from the time when they were at their most popular. The photo on the right shows a group of superb Blue Pigeon Bloods.
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One reason for the hatchery’s longstanding success is surely that the newest Asian colourations are immediately bred here too. However, when discus fish are bought from elsewhere for breeding purposes, they need to be subjected to a very rigorous and lengthy quarantine process. It is vital that the risk of introducing disease into such an enormous hatchery be reduced to nil right from the outset, because if a disease were to break out, the entire hatchery would be affected. This is also one of the reasons why the hatchery’s five breeding buildings (halls for breeding pairs and for raising juvenile fish) are completely separate from one another. There are absolutely no joint water connections between the five separate buildings. In fact, even five separate staff crews are deployed for these buildings. In practice, this means that staff members who work in building 1 never enter buildings 2 or 3, for example. Also, visitors are not allowed in the hatchery, for the same, practical reasons. The hatchery breeds fish exclusively for specialist (retail) pet shops. The discus fish are sold all over Europe and are even supplied to individual retailers all around the world. Retailers can only select and order the fish via the company’s price list. Shipping is carried out via express delivery and/ or airplane. While retailers in the region are able to collect their orders, they cannot access the breeding buildings, but can only collect their packaged discus fish from the company’s shipping area. Thanks to these measures, the hatchery is entirely free of any ill or diseased discus fish. The sheer enormous number of discus fish that swim in the hatchery’s aquariums is staggering and, even in Southern Asia, there are scarcely any hatcheries which are truly larger in size. Approximately 450 discus pairs breed in the hatchery at any given time. A total of approximately 200,000 discus fish populate the hatchery’s aquariums, of which around 15,000 are fully-grown. Fish of all sizes are available for purchase – starting at 5cm in diameter and going right through to jumbo-sizes of around 20cm. To be able to breed such numbers at high standards of quality, it is vital to have practical working procedures. So, each building is equipped with a number of different water circulation systems. Firstly, there is one water system with water for the breeding discus pairs. Then there is a water system for rearing juvenile fish, which has a general hardness of 15° dGH.
Around twenty years ago, when the Blue Diamond discus fish arrived in Europe from Hong Kong (and yes, time flies – it really was that long ago) they caused a lot of excitement. Finally, solid turquoise blue coloured discus fish without any stripes were available – brilliant. Above all, these Blue Diamonds no longer had the nine dark vertical stripes – they had simply been bred out. Initially, attempts to breed these fish outside of Hong Kong failed. After a while, the Blue Diamond became available in small numbers in some countries. Today, all large hatcheries are able to supply Blue Diamond discus fish. However, there are great differences in quality. One difficulty is the bright turquoise colouring – it is especially important that this colouring is brilliant towards the middle of the fish’s body. And ideally, these fish should have red-coloured eyes. However, many of these fish are still being sold with yellow-coloured eyes, which looks far less appealing. In the Stendker hatchery, Blue Diamonds are bred with red eyes and intense turquoise colouring, as the photos show. Because Blue Diamonds are often a little smaller than expected when fully grown, selective breeding is very important.
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Once small juvenile fish are separated from their parents, they are slowly acclimatised to harder water and higher pH levels, over a period of approximately four weeks. Using this harder water with neutral pH values is of great advantage for the eventual customers and owners, as their fish will be accustomed to normal tap water.

As regards the selection of breeding pairs, the hatchery says that they do not have a special mating procedure. Two suitable discus fish are simply placed in an aquarium together. If they spawn, then that’s great, if they don’t, they are simply separated again. Particularly striking discuses are given a second chance to breed with another partner. The hatchery’s staff is confident of always being able to correctly combine one male and one female discus fish for breeding.

Thanks to the staff’s considerable experience, this seems to be successful in about 99 per cent of cases. As a result of numerous improvements in the hatchery in recent years, the number of juvenile fish generated per breeding discus pair has nearly doubled. The record stands at 425 fish larvae, produced by a breeding pair, however, this remains a rare exception.

Artificial breeding methods are not used in the hatchery. Brood care, even for particularly tricky colour varieties like red discuses, goes smoothly. For these varieties it is important that no dark-coloured objects are present in the aquarium, as otherwise the fish larvae would confuse these objects with the parent fish and attach to these objects instead. This, then, could result in the loss of the entire fry.

Small nauplii of the Artemia brine shrimp are fed additionally, as soon as the larvae begin to swim. So that the large number of staff members, including temporary staff, are able to tell which discus pairs are caring for a brood and should be fed with brine shrimp, these aquariums are fitted with a yellow-coloured clothes peg as a marker. A red clothes peg is a marker which indicates: “Stop! Do not clean aquarium panes as the fish have spawned on the glass!”

A few drops of methylene blue helps protect the fish eggs against fungus. To prevent the methylene blue from spreading throughout the entire aquarium, however, a transparent acrylic tube is first placed over/around the spawning cone.
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One aquarium alongside the next. Endless rows, with thousands of discus fish. It’s impressive to see hundreds of small plastic aquariums lining the shelves. The small aquariums make it easy to surround the juvenile discus fish with feed. On the left page you can see that each aquarium is equipped with an air hose and a water hose, suspended from above. Filtered water permanently flows into the aquarium from above, and the same amount of water flows out via an overflow pipe, into a collective filter. This creates a closed filter circuit with a constant water supply, which is ideal for rearing juvenile fish. The photo on the bottom left give an impression of a breeding area in the hatchery. Here, breeding pairs are kept in the upper aquariums and in the aquariums below, juvenile fish are reared. Only a single row of breeding aquariums is placed at eye level in each aisle, so that the breeding discus pairs are easier to monitor. The lower aquariums are harder to inspect. Here too, a thin stream of fresh water flows into the aquariums from above and later flows out of the aquarium again via the external outlet pipes. Specially treated water is used for the breeding aquariums.
All of the discus fish in the hatchery are given the same feed. The same coarseness and texture of feed (i.e. the size of the feed particles) is fed to all of the fish. This means, that the self-manufactured feed paste is equally suitable for red, blue, brown and green discus fish. It is also equally suitable for two week old, two month old or two year old discus fish. In the hatchery, the fish all eat the same feed. The main ingredient of the self-manufactured feed paste is desinewed beef heart. With the hatchery’s large number of discus fish, a total of around 90 beef hearts are fed daily. This makes the hatchery a bulk purchaser at the local abattoir. Adjacent to the hatchery’s freezer cell is the feed preparation room, where the fat and sinew is removed from the beef hearts. Then, a machine chops the hearts into pieces of the required sized. These feed pieces are quite small and, accordingly, the feed spreads out quite strongly in the aquarium water. The large number of discus fish that greedily devour the feed paste manages to find almost every last scrap of feed, so that hardly any traces of beef heart end up in the hatchery’s filters. Vitamins and special feed supplements are added to the feed mix and these supplements are a “company secret”, so to speak. Additionally, scalded Cyclopes are also added.
Thanks to this acrylic piping, the eggs are practically in their own mini-aquarium, inside of their parent’s larger aquarium. This is one of the many “tricks of the trade” that the hatchery has developed, thanks to many years of experience. It’s nice that the hatchery was not “secretive” about such tricks of the trade, on our visit.

The hatchery has a very specific system for rearing the juvenile fish, which is always strictly adhered to. Immediately after the juvenile fish are separated from their parents, they are place in small aquariums, stocking 50 juvenile fish each. These aquaria stand in shelves and can easily be moved to a work bench for maintenance and care tasks, or for selecting and sorting the fish. Water and air supply hoses are suspended from above and these hoses are bendable, so that the aquaria are easy to access and move. Each aquarium also has an overflow pipe, which is affixed to the back of the aquarium with adhesive. This overflow pipe only extends slightly over the aquarium’s edge and the water simply runs off, down into a large filtration aquarium. Thanks to this system, the water in the small aquariums, used to rear the juvenile fish, is exchanged approximately once every 20 minutes. This rapid rate of water renewal is very advantageous for the little discus fish and they thrive accordingly and grow quickly. In fact, filtration is generally a very important factor for the hatchery. In this regard, German hatcheries are at a big disadvantage compared to Asian hatcheries. For one thing, all of the hatchery’s water needs to be heated to tropical temperatures – and that is a vast amount of water. Also, the water needs to be reused for as long as possible. Many Asian hatcheries simply dispose of up to 90 % of their water, when carrying out water changes, replacing it with fresh tap water. This lavish approach to water usage is no longer sustainable in Europe. In the hatchery’s various filtration circuits, only blue filter mats are used, in the coarsest foam grade of 30 PPI. In some of the hatchery’s aquariums, individual foam filters have been in use for up to 20 years. Thanks to the coarse porosity and the large volume, the filters’ performance capacity (i.e. ability to break down pollutants) and filter service life are at a maximum.
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Cyclopes are small Copepods, which live in our waterways. It is possible to catch Cyclopes in lakes, for example. Like all crustaceans, they are an excellent and nutritious source of feed for fish. However, as Cyclopes can pass on tapeworm cysts, they are briefly scalded with boiling water before being added to the feed-mix. In the hatchery, the discus fish are fed throughout the day. Juvenile fish are fed more often, according to their age, and older fish are fed two to three times daily. This is done by scooping feed directly into the aquarium with a spoon, using either freshly prepared or defrosted feed paste. The discus fish immediately begin to greedily devour the chunks of feed, polishing them off in a matter of seconds.

The discus fish have been accustomed to this feed right from the start and because they are not familiar with other types of feed, even very large discus fish are able to manage well with the fragments of feed, which are sometimes quite tiny, and they search for these fragments throughout the aquarium. As all the discus fish, which are selected for sale, have a good appetite and are “good eaters”, the new owners will have no difficulties getting their fish to eat new, different sorts of feed. Generally, these discus fish will eat any type of feed, the hatchery’s breeding staff says. In particular, experience has shown that especially flake food is eaten well by these discus fish. In the hatchery’s breeding aquariums, the parent fish are given no feed during the first days of brood care. In the following days, the parent fish are only fed selectively. Immediately after they first begin swimming, the juvenile fish are fed live Artemia brine shrimp. This is why these aquariums are marked with a yellow clothes peg, which means: “Careful! Only feed with Artemia brine shrimp!” The hatchery has no problems regarding the production of the nutritious skin secretion by parent fish, even in difficult breed varieties of discus fish. As the photos show, there are no additional objects in the breeding aquariums other than the spawning cone. Especially for complicated varieties like the Red Discus or very pale-coloured varieties, it is vital that no dark objects are placed in the aquarium, which could distract the fry from the parent fish.
The filter basins are simple wooden basins, which have been lined with rubber lining – similar to the lining used for garden ponds. These straightforward structures are very durable. In large hatcheries these basins are used instead of complex glass filters, which would be very expensive, due to the thickness of the glass required on such a large scale. Some of the hatchery’s large filters are still fitted with plastic beads as a filter medium, but these are due to be replaced with blue filter mats before long. As regards the hatchery’s heating system, there is not really much to report, as the filter circuits in each building are fitted with so-called continuous-flow water heaters, which continuously re-heat the water.

Intensive feeding invariably leads to pollution of the aquarium water. This is the case in normal home aquariums, just as it is in large hatcheries with tens of thousands of discus fish. This is why it is important that the fish are fed selectively and systematically. In the hatchery, the fish are fed several times a day according to a feeding schedule. Care is taken that the feed amounts are calculated so that the fish will quickly eat the entire amount of feed provided. It is important that no feed residue remains in the aquarium water. However, with the hatchery’s high stocking densities, it’s hard to imagine any feed being left over, because groups of thirty or more adolescent discus fish develop such strong competitive feeding behaviour that even the last morsel of feed quickly finds its way into the mouth of a discus fish.

The Stendker Discus Hatchery supplies customers all around the world with its discus fish and has made a name for itself. It is good to know that there is a European counterpart to the large hatcheries in Asia. This helps to remind discus fish enthusiasts of Europe’s former market dominance as regards discus breeding. It’s great to see that there are still high-quality discuses being bred in Europe. This also applies to the many small commercial and private breeders and hatcheries, which breed beautiful discus fish, hence proving that this great hobby, involving one of the most interesting fish species in the world, will never die out.
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Above: A breeding aquarium with detailed labels, documenting the offspring that this breeding pair has produced. The entire data is recorded here. Daily, discus fish are shipped to destinations all around the world. To date, polystyrene boxes are still the best packaging for transport. The plastic bags are prepared and labelled in the hatchery’s offices as soon as an order is received. Then, the packaging staff can simply work according to the information on the bag’s label. For normal orders within Germany, the oxygen provided in the packaging is sufficient for 36 hours. For special deliveries, the packaging comes with the guarantee of sufficient oxygen for up to 72 hours.
These photos show the hatchery’s large freezer cell, where the supply of frozen feed-mix is stored, which the company always keeps on-hand as its emergency reserves. With the large amounts of feed required in the hatchery each day, frozen feed offers the advantage of being more cost-efficient. As in any company which is a bulk consumer of fish food, the use of industrial feeds for table fish, such as trout or salmon, has surely been considered. However, these specialised feed granulates are not suitable for aquarium fish, as the ingredients have been selected for meat production purposes. These “fattening feeds” cause the fish to grow very quickly – far too quickly – and the fish develop a fatty degeneration of the liver and their reproductive fertility is significantly reduced. So, if discus fish are fed with cheap fish industry fattening feed, they will not live for long or thrive. The best approach is to provide discus fish with a varied diet, which can best offer all the vital nutrients required. A diet consisting purely of beef heart would also not be feasible for this hatchery. It’s the balanced mix of the feed ingredients that does the trick.