VIRESCO (UK) LTD

MAIL ORDER CATALOGUE

Viresco™ Microbial Products

Humavite™

Oxygenating Products

and Other Aquatic Products

AQUATICS

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VIRESCO (UK) LTD

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MAIL ORDER CATALOGUE - AQUATICS

VIRESCO™ MICROBIAL PRODUCTS

We sell a number of products to the pond and aquarium keeper. For about 10 years we have been selling products that suppress blanketweed (string algae) and other forms of algae in ponds and other water bodies. These products are all micro-organism based and are sold under the brand name "Viresco™". Their mode of action is to remove nitrate from the water and, as a consquence, algae, in whatever form, die from starvation. These same products will also reduce phosphate levels in water but it is found that the critical ingredient is nitrate.

Following on from the success of the Viresco™ Aqua and Viresco™ Koi pond products, we introduced a microbial product for use in aquariums in 2003 under the name Viresco™ Aquarium.

Before discussing in more detail the different micro-organism based products we sell for aquatic use, we should like to cover the subject of the Nitrogen Cycle and follow that with a statement on how our nitrate removing microbes work. This latter subject is covered in the section on Bio-Films on page 5.

Discussions on usage rates and whether rainwater or tapwater should be used follow. A section summarising various independent trials that have been undertaken is then presented. It is worth mentioning here that the most recent trial has been carried out by "Gardening Which?". The trial compared 21 different algae control products, including our Viresco™ Aqua. Our product came out best value for money over a year. It was shown to be over 5 times more cost effective than the next best value product.

As well as the aforementioned Viresco™ algae control items, we continue to sell our well established Viresco™ Digester, our Viresco™ Filter-Start and our Microboost. In addition to these, a number of new microbial Viresco™ aquatic products were introduced last year. These include a tablet form of an ammonia/nitrite/nitrate remover called Viresco™ NitroGone and and a digestion aid for fish called Viresco™ Probiotic.

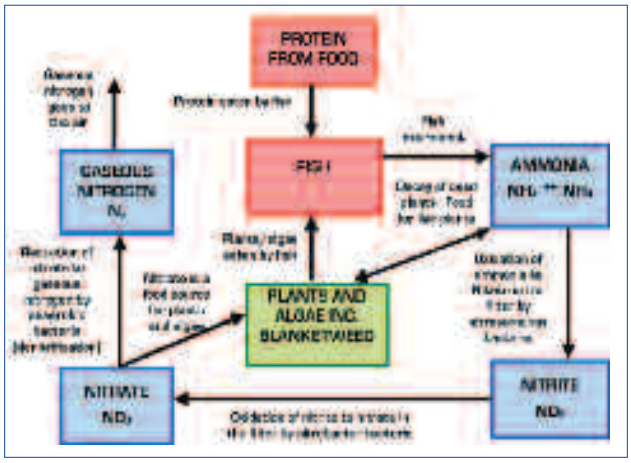
So **"THINK NITRATE"** and use **Viresco™** to take it down to zero.

With nitrate at zero, your fish will be **happier** and **healthier!**

see test kit on page 17

THE NITROGEN CYCLE AND "THINK NITRATE"

The Nitrogen Cycle



The above diagram shows the manner in which nitrate is formed in an aquatic system from the ammonia arising from excrement from fish and other aquatic creatures. Ammonia is converted firstly into nitrite and then into nitrate in the filter by the action of certain mico-organisms under aerobic conditions. This nitrate continuously enters the water whilst fish are being fed. Then, in order for the nitrate to be converted to nitrogen, anaerobic conditions are required. Many people do not accept there are anaerobic conditions in aquatic systems because of the input of air that is usually required to establish and run the filters for ammonia and nitrite removal. However, anaerobic sites exist and it is in these sites that the micro-organisms in our Viresco™ products carry out the work of reducing nitrate to nitrogen. In the absence of nitrate, algae in whatever form, will die.

Think Nitrate

We recommend pondkeepers should "Think Nitrate" and set out to take nitrate down to zero. As well as removing blanketweed through starvation, a zero nitrate pond system is very much better for fish health. Feedback from customers suggest that their fish become more active and less prone to disease. It is also found that sores and ulcers heal up faster when nitrate is at zero. However, we are unsure whether this healing process is directly linked to low nitrate or to the presence of the Viresco™ microbes in the water. Certain of the Viresco™ microbes form bio-films on surfaces (see next section) and they will therefore form such a film over the damaged fish scales and flesh. This bio-film shows as a thicker mucus layer, protecting the sore and allowing it to heal faster.

Herbicidal chemicals used for killing algae do not address the problem of nitrate in pondwater. When the chemical is dissipated, the algae starts to grow again as the nitrate is still present. Neither do electronic/magnetic gadgets address the problem of nitrate. Other than a microbial approach, it would appear that only the installation of vegetable filters or regular water changes do anything to reduce nitrate levels. Even with these methods, rarely will the nitrate level drop to zero. However, our Viresco™ Aqua and Viresco™ Koi will remove nitrate completely and keep it at zero for some time.

BIO-FILMS
Introduction

In the Nitrogen Cycle shown previously, the final step is the removal of nitrate by its conversion into nitrogen gas. The first two steps of the cycle, the conversion of ammonia to nitrite and the subsequent conversion of nitrite to nitrate, are carried out under aerobic conditions by specific bacteria in the filter. Introducing air into the water will enhance these changes.

However, the conversion of nitrate to nitrogen can only take place under anaerobic conditions and many people question whether these anaerobic conditions can exist in ponds and aquariums. The answer is these anaerobic conditions can and do occur.

What are Bio-films?

Bio-films consist of micro-organisms surrounded by the slime they secrete that are attached to both inert and living surfaces when the surfaces are in contact with water. Well known examples of bio-films are plaque on teeth, the slimy films that build up on the inside surfaces of flower vases and the slippery surfaces on pebbles in river water. These very thin layers of water/slime/microbes adhere to surfaces in ponds and aquariums. These surfaces include pipe-work, pond liners, glass, filter parts and even live fish. When water passes by, the films remain fixed and static although the speed of the water flow becomes a limiting factor to the bio-film thickness. Close to the surface, the films become anaerobic and it is in these layers that the anaerobic microbes in our Viresco™ products take up residence. This is where the nitrate in the water is reduced to nitrogen.

In July 2000, a customer in Kent began to use Viresco™ Koi in his koi pond which has a glass viewing plate 7ft 6in by 4ft 2in. Prior to using Viresco™ Koi, he had to wipe down the inside of this glass plate nearly every day to clear it of algae bloom build-up. The day after introducing the Viresco™ into his pond, there was no algae build-up on the glass. Five days after introducing the product, he reported that he still had not wiped down the plate. He now is a regular user of Viresco™ Koi and no longer has algae bloom build-up on the inside of his glass viewing plate.

We understand that the bacteria in our product had, in the bio-film on the glass, preferentially displaced the algae that was adhering there. There was no way that the algae bloom could have been removed through nitrate starvation in, say, 12 hours.

In 2002, the editor of “Tropical Fish” magazine, Simon Wolstencroft, carried out a trial of our Viresco™ Aquarium product in his own aquarium. In the magazine he wrote:

”Within ten days of adding the product, this level (nitrate) was halved. Within a month the levels were unmeasurable, even on a good quality test kit and have remained so. Furthermore, in almost three months of continuous use, the front glass of the aquarium has not needed to be cleaned of algae, and there has been a considerable reduction in sludge.”

Again, he is stating that no algae was present on the glass in all the time the trial was being conducted, ie well before the nitrate had dropped to zero. The bacteria in our product had displaced the algae bloom adhering to the bio-film on the surface of the glass.

Viresco™ in Ponds with High Surface Area Filter Systems

There are a number of proprietary pond filter systems now available that contain very high-surface area materials, such as glass pellets. One of the claims made for these types of systems is the ability to filter much larger volumes of water than more conventional filters. Another of the claims is a reduction in nitrate levels. This occurs because of the denitrification process that takes place in the bio-films that stick to the surfaces of the filter media. This denitrification process takes place naturally because of the presence of certain anaerobic microbes in the pond water. The larger the area of the surfaces in the pond or aquarium system, the greater the bio-film area and the more efficient is the denitrification process.

We have been contacted by pondkeepers who have some of these high surface area filter systems. They state that the nitrate content is under better control but say it never drops low enough, ie to zero, so that blanketweed disappears. Our Viresco™ products will these take nitrate levels down to zero.

Viresco™ in Ponds with Protein Skimmers/ Foam Fractionators.

Similarly with protein skimmers and foam fractionators, claims are made that these units will reduce nitrate. One supplier of a protein skimmer/foam fractionator states that their unit can give a 40% reduction in nitrogen, nitrate and nitrite.

Whilst it is stated above that their unit reduces nitrate, it does not drop to zero. At the risk of being repetitive, it is only when zero nitrate is reached that algae die of starvation. The solution to full nitrate removal and blanketweed control in both high surface area filter systems and in protein skimmers/foam fractionators is quite simple. Use our Viresco™ denitrifying products in conjunction with these systems.

USAGE RATES

The Multiplication of Bacteria in Pond Systems

There is evidence that typically in water bodies, a bacterium, through binary fission, can split into 2 bacteria in about 20 minutes. If the temperature were optimum, if there were a continuing adequate food source and if there were no competition from other microbes, this single bacterium would produce over 17 million bacteria in 8 hours! In practice, however, these required conditions would never be met but the statement gives a very good indication of the huge numbers of bacteria that can develop in a relatively short period of time.

This answers the question we are frequently asked – how is it that 10g, about 3 teaspoonsful, of microbial Viresco™ pond product can treat 6000 gallons or 27 cubic metres of pond water?

Water Temperatures

We state that our Viresco™ microbial based products work best in water with temperatures above 50° F or 10° C. However, there is an advantage in having the Viresco™ microbes in the water at temperatures lower than this. When fish are coming out of their cold-spell in late winter or early spring and start feeding again, their immune system is at its lowest. This is when they are liable to pick up a fungal or bacterial disease. Having the Viresco™ microbes in the water at that time, will tend to suppress any micro-organisms present in the water that might otherwise form a disease.

Above 10°C, the optimum working temperature for our microbes is between 30° to 33°C. Temperatures above about 37° will kill the microbes.

Fish Stocking Levels – Feature in "Koi Carp" Magazine, April 2007

In order to achieve the satisfactory reduction of nitrate levels to zero in ponds and aquariums, the anaerobic microbes that are contained in our Viresco™ products have to continuously work to remove this nutrient. The more food that is offered to the fish and the higher the protein level of the food, the more ammonia and consequent nitrite and nitrate come into the pond or aquarium water.

The suggested rates of use of our microbial products are based on volumes of water, eg 10g of Viresco™ for 6000 gallons. Whilst accepting that the bacteria in our mixes will multiply dramatically, they can come up against limiting factors that relate quite simply to the amount of ammonia being excreted from fish and the resultant nitrate that is the final conversion product of this ammonia.

Fish Weight versus Fish Length

In the April 2007 issue of "Koi Carp", we had published an article that discussed koi weight in relation to length along with fish stocking levels in relation to the use of our Viresco™ algae control products.

Most pond keepers know the lengths of their fish but have little idea about their weights. The amount of feed consumed by the fish is related to the weight of the fish and not their length so the amount of nitrate arising in the pond is a function of the food consumed which is related directly to the weight of the fish. There is one proviso here and this is that consideration should also be given to the shape of the koi. We have categorised three shapes as "thin", "standard" and "fat."

In the article, a simple formula is given for the pondkeeper to work out the weights of each of his fish, based on their lengths and their shape. Because pondkeepers tend to talk in inches of length and kilos of weight, the formula is based on these units.

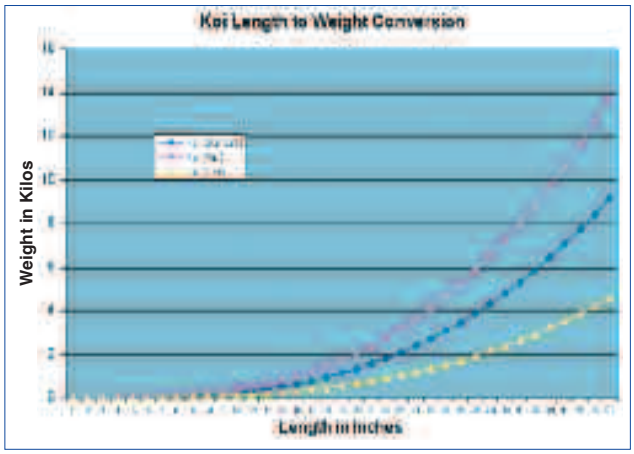
The formulae are as follows:

For a thin shaped koi, $W = L^3 \div 10000$,

For a standard shaped koi, $W = 2L^3 \div 10000$,

For a fat shaped koi, $W, = 3L^3 \div 10000$,

where W is weight in kilos and L the length in inches.



Using the formulae, a 12" thin shaped koi weighs about 0.17kg. A fat shaped 30" koi weighs about 8.1kg. Thus 5 x 12" thin koi weigh about 0.85kg. The equivalent length of the 30" koi, ie two of them, will weigh about 16.2kg in total. Thus the two fat ones are almost 20 times the weight of the 5 smaller ones but both sets are of the same length.

The graph above shows the relationship between length and weight for the three defined koi shapes.

We suggest, for our Viresco™ pond products, the standard application rate is valid where the total fish weight is no more than about 2½kg to 5kg per 1000 gallons. If it is much more than that, then more product should be applied proportionately. Similarly, with rates of feed and amounts of high protein feed, we recommend adjustments to application rates. About 2% of fish weight given daily is the base point for our calculations. This amount of food will achieve general good growth. When these feed amounts are increased, then more Viresco™ should be used.

The annual rate of growth of koi can vary dramatically depending on a number of factors. A 6" koi can easily grow to 8" in one year. The weight of such a fish increases from 0.043kg to 0.102kg in that period of time. This weight increase is 137% whereas the length increase is only 33%. Many pondkeepers do not realise by how much the weights of their koi can increase in relatively short time periods.

Occasionally, we hear from a pondkeeper who states our product worked very well against blanketweed in the previous year but in the current year he is not achieving the same success. The usual reason for our products working better in the first year is quite simple. The fish stocking level has usually increased in the second year by a relatively large amount as the fish have grown and, sometimes, as more fish have been introduced to the pond.

We are also asked whether the blanketweed can become immune to our product. Blanketweed and other algae cannot become immune to the microbes in our products – the microbes do not affect the algae directly. The algae die from starvation of nitrate food.

Large Fishing Lakes with Low Fish Stocking Levels

A medium stocked koi pond contains around 5kg of fish per 1000 gallons. However, in some ponds, the fish weights can be considerably more than this.

We state above, in a koi pond with a low to medium stocking density of 2½kg to 5kg of fish per 1000 gallons, a minimum dose of 10g per 6000 gallons of our microbial Viresco™ would usually be required. However, where fish stocking levels are considerably lower than 2½kg koi per 1000 gallons, eg fishing lakes and many garden ponds, then considerably less of our product need be used per unit volume of water.

Typical fish stocking levels for a well-stocked fishing lake is 1kg per 200,000 gallons. This suggests much smaller amounts of Viresco™ microbial product per unit volume can be used in such water bodies to control algae than would be used in a koi pond.

RAIN WATER VS. TAP WATER?
Introduction

Our microbial products, sold under the brand name Viresco™, remove nitrate in pond and aquarium water. The main reason for using these products is to remove blanketweed and other algae. Nitrate is the key nutrient ingredient because, when it is reduced to zero, algae, in whatever form, will die of starvation.

Over the years, we have recommended that ponds be topped up using rainwater when the nitrate content of tapwater is relatively high. We have had, however, interesting feed-back from some pondkeepers. Having used our Viresco™ product to keep their ponds clear of blanketweed, they have reported that blanketweed has grown back with a vengeance after a rainstorm.

Why should this happen? We are certain it occurs, at least in part, because of something we have all heard about. The key to this phenomenon is acid rain. I would suggest that most of us have not fully appreciated the significance of acid rain in keeping ponds.

Acid rain arises from two types of acid-forming materials. One is from sulphur oxides that rise into the atmosphere primarily as a by-product of industrial processes and from the burning of fossil fuels. From a pond keeping and algae growth perspective, these sulphur products are not important. The second acid-forming group of gases that rise into the atmosphere are the nitrogen oxides. These include nitric oxide (NO) and nitrogen peroxide (NO_2). When these oxides are dissolved in rainwater high in the atmosphere, mainly nitric acid (HNO_3) is produced. This dilute acid falls to the ground when it rains and produces nitrate in ponds. The sudden rush into growth of blanketweed after a rain storm is therefore explained.

The Work of the National Atmospheric Emissions Inventory

The website - www.naei.org.uk - of the National Atmospheric Emissions Inventory (NAEI) gives a good deal of information about the amounts and sources of various atmospheric pollutants.

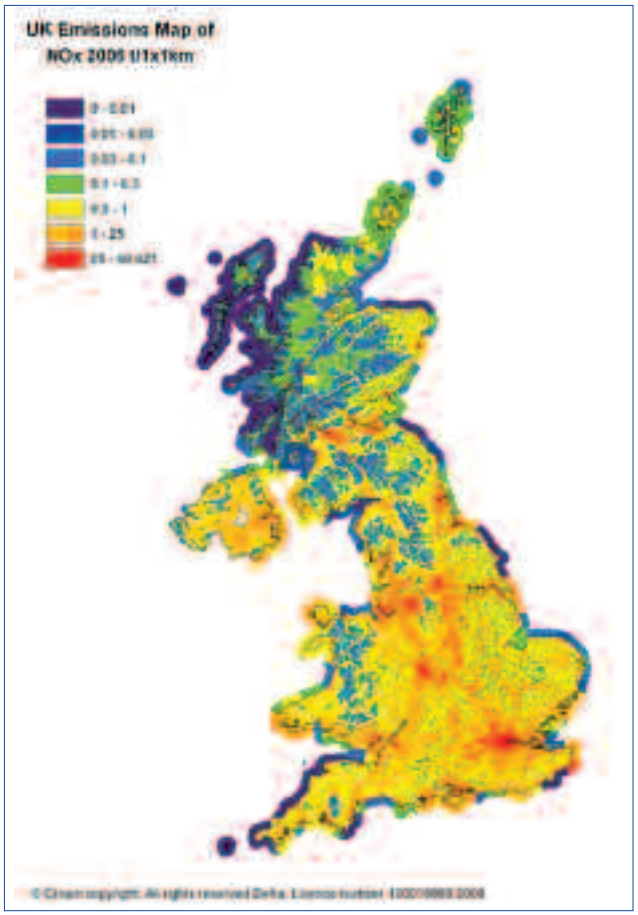
Shown below, is a map of the UK giving the emissions of nitrogen oxides (NO and NO_2) for year 2006. The units are expressed in tonnes per square kilometre.

A major source of these pollutants is road transport. Looking at the map, it is easy to see that the areas of the major roads and urban conurbations show up in red as the highest for nitrogen oxides emissions. The lowest areas for these emissions are shown in blue or purple. As one might expect, these areas are typically in the north-west of Scotland and along rural coast lines.

Combustion processes also provide a significant contribution. Since 1970, overall nitrogen oxides emissions have fallen by 47%.

Another set of data that is available from the NAEI website is a table that shows the annual tonnes of different pollutants emitted from various large point sources situated within different distances from a particular post code. Much of the data has been produced from models used by the NAEI although some have been provided by the owners of the industrial plants.

Pondkeepers can access this tool by going to www.naei.org.uk/mapping/mapping_2006.php and entering their postcode in the appropriate box.



One of our customers in the west of Scotland has an emissions level for nitrogen oxides of 0.27 tonnes per sq. km, of which emissions from industry are 0.0071 tonnes and, from road transport, are 0.21 tonnes per sq.km.

Another customer in Essex would find that the nitrogen oxides emissions above his home total 153 tonnes per sq. km. per annum. Of this, industrial combustion contributes 64 tonnes and 36 tonnes arises from road transport. The difference in nitrogen emissions between these two pondkeepers homes is a factor of over 560 times!

Another pollutant that rains down from the atmosphere that could be significant to the pond keeper is ammonia. Again the NAEI have produced a map that gives emissions data for ammonia across the country for year 2004. Ammonia emissions are dominated by agricultural sources. Emissions from livestock and their wastes account for 79% of the total emission. These emissions primarily arise from the decomposition of urea in animal wastes and uric acid in poultry wastes.

Comments and Conclusions

Let us take a figure of 100 tonnes of nitrogen oxides (NO_x) emissions per sq. km. per year. This converts to 1000 mg/litre (ppm) for a pond that is 10 sq. m. in area and one metre deep. These nitrogen oxides are converted by water into mainly nitric acid (HNO_3). The amount of nitrate (NO_3) entering the pond is approximately 50% greater than the amount shown as nitrogen oxides. Thus the total nitrate entering the water for the pond given above is going to be about 1500 mg/litre (ppm).

These major variations in nitrogen oxides and ammonia emissions across different areas of the country must make a difference in the way koi and other ponds are managed, in particular in relation to blanketweed control. Most pondkeepers know that the level of nitrate in tapwater can be high. However, do they know that ammonia and nitrate can fall out of the sky in rain? Evidence is there to show a sudden burst of algae growth can occur shortly after a downfall of rain.

We suggest that pondkeepers go into the NAEI website – www.naei.org.uk – and look further into the emissions that might be personally affecting them by using their specific post codes.

Going back to the original question of whether tapwater or rainwater should be used for topping up ponds, the recommendation is the pondkeeper should check particularly for nitrate in both types of water sources and, if possible, use the one with the lowest content. Better still, if they practice water changes to simply lower the nitrate level in the pondwater, then they need not change large volumes of water because our Viresco™ pond products will take the nitrate level down to zero and hold it there. Once nitrate is removed, blanketweed and other algae stop growing.

ALGAE CONTROL TRIALS
Introduction

Since 2000, 5 independent comparative trials on Viresco™ products have been carried out. These have been published in the following:

"Gardening Which?", May 2007 (Viresco™ Aqua)

"Koi Ponds & Gardens", Summer 2004 – Adrian Love of Brooksby College (Viresco™ Koi)

"Tropical Fish", February `2003 - Simon Wolstencraft (Viresco™ Aquarium)

"Koi Ponds & Gardens", August 2001 – Adrian Love of Brooksby College (Viresco™ Koi)

"Koi Ponds & Gardens", June 2000 – David Brown (Viresco™ Koi)

"Gardening Which" Blanket Weed & Green Water Trial Using Viresco™ Aqua – May 2007

During 2006, "Gardening Which" conducted a major trial on 21 different algae control products. Our Viresco™ Aqua was one of the 21 products. In the May 2007 issue, 6 products were chosen as the "Best Buys" and one of these 6 was Viresco™ Aqua. The products were marked out of 5 for certain aspects - greenwater control, blanketweed control and ease of use. Four of the products were given 9 points out of 10 for blanketweed and greenwater control with the other 2 being given lower marks. Three of the 4 products, including Viresco™ Aqua, were given 5 stars for blanketweed suppression and 4 stars for greenwater (algae bloom) suppression.

The costs of application were also given. One of the other six "Best Buys" was shown as the cheapest to use – 49p per 1000 litres. Another was costed at 89p. Our Viresco™ Aqua was the next best value at 97p. The costs of using the other 3 products ranged from £1.60 to £2.58.

These costs are for one application only. However, the pondkeeper wants to know how much the treatment costs for a full year when he uses the number of doses recommended by the manufacturer. This was not calculated in the "Gardening Which?" feature.

"Koi Ponds & Gardens" Blanket Weed Trial Using Viresco™ Koi (Brooksby College) – Summer 2004

In 2004, "Koi Ponds and Gardens" (now called "Koi") carried out another trial, this time on 13 blanketweed control products. Our Viresco™ Koi came out equal top with two other products on 8 points. However, it was not given the accolade of best product. It was marked down on the basis that all the product had to be used at once. This is incorrect. There was also another weakness in the report in that it did not cost the the full recommended annual doses of the "best product".

"Tropical Fish" Viresco™ Aquarium Trial (Simon Wolstencraft) – February 2003

Simon Wolstencroft, the editor of "Tropical Fish", successfully tested Viresco™ Aquarium over a number of weeks. The results of the trial and his comments were published in the February 2003 issue of the magazine. At the beginning of the article he says: "We don't run a competition for the best new product of the year, but, if we did, this (Viresco™ Aquarium nitrate remover) would be a strong contender"

Starting with a nitrate level of 25 mg/l (ppm), he states: *"Within ten days of adding the product, this level (nitrate) was halved. Within a month the levels were unmeasurable, even on a good quality test kit and have remained so. Furthermore, in almost three months of continuous use, the front glass of the aquarium has not needed to be cleaned of algae, and there has been a considerable reduction in sludge."*

He concludes the article by stating: *"Our Verdict: We can't quite figure out how this product works, but work it does. An absolute essential for freshwater fishkeepers"*

Full Annual Treatment Costs for 1000 Gallons

"Best Buy" Product	Cost of First Dose	Subsequent Applications	Number of Applications	Cost of Subsequent Applications	Total Annual Cost	Times the Cost of Viresco™Aqua
Viresco™ Aqua	£4.41	None	0	0	£4.41	N/A
NT Labs Pond Aid Aquaclear	£2.23	Monthly	9	£20.07	£22.30	5.06 x
Hozelock Blanketweed Treatment	£7.27	Every 4 Mths	3	£21.81	£29.08	6.59 x
Aquahydrotech Extract of Barley Straw	£4.05	64p per Wk	48	£30.72	£34.77	7.85 x
Green Ways Lavender Pond Pads	£11.73	Every 4 Mths	3	£35.19	£46.92	10.64 x
Interpet Blanketweed Buster	£7.27	Every 2 Wks	24	£174.48	£181.75	42.21 x

Thus, of the six "Best Buy" products, Viresco™ Aqua is the best value for money per annum.

"Koi Ponds & Gardens" Blanket Weed Trial Using Viresco™ Koi (Brooksby College) - August 2001

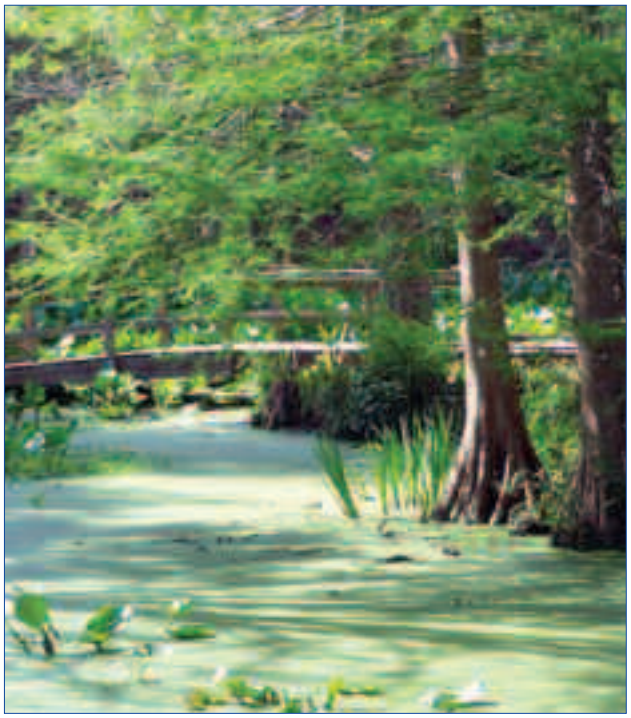
During 2001, Brooksby College in Leicestershire were asked to undertake some blanketweed trials for "Koi Ponds & Gardens" magazine. The results were published in the August 2001 issue of the magazine in the feature entitled "Beat the Weed". Six blanketweed control products were tested. Two were electronic, one was a water purifier with a copper releasing cartridge, one was a water colorant and two were microbial.

Fourteen vats containing blanketweed were set up and each product was tested in two vats. The final two vats were used as control. After two weeks following treatment, the weight of the blanketweed in each vat was checked and an assessment made of the results.

Brooksby College Blanketweed Trial for "Koi Ponds & Gardens"

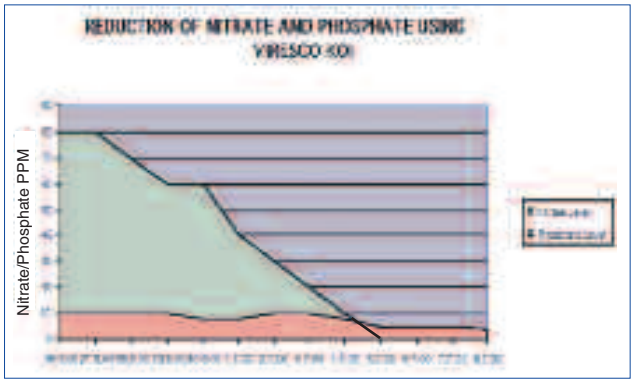
Viresco™ Koi declared "The Winner"

Viresco™ Koi	★★★★
Kusuri Eco-Pure	★★★
Pondweeder	★★★
Water King	★★★
Nishicare	★★★
Aquastar	★★



"Koi Ponds & Gardens" Blanket Weed Trial Using Viresco™ Koi (David Brown) – June 2000

In June 2000, David Brown, a researcher/writer for "Koi Ponds & Gardens" magazine took some Viresco™ Koi to do nitrate and phosphate checks on the water in his blanketweed infested 4000 gallon pond. On June 26th, he tested the water for nitrate and phosphate immediately before applying Viresco™ Koi. The nitrate level was 80ppm and the phosphate was 10ppm. He then took readings daily. The following shows the results:



It is readily seen that the nitrate level over the nine day period dropped from 80ppm to zero. In the same period, the phosphate level went down by 50%. However, it should be pointed out on 1st July some clay was added to the pond. The phosphate level which had begun to drop, rose slightly. The clay was tested and was found to contain phosphate.

On 25th July, more than four weeks after the trial started, the nitrate level was still at zero, as we would have expected, and the phosphate was holding steady at about 1.5ppm. The blanketweed which had been growing at about 2 feet a day had virtually all disappeared after the ninth day. There was only a small amount - about 2" in length - near to the filter outlet. There was no blanketweed at all in the remainder of the pond. The results of the trial were written up in the September 2000 issue of "Koi Ponds & Gardens" magazine. About three months after the trial began, the nitrate level remained at zero and the blanketweed was still absent. The phosphate level was still at 1.5ppm. At that time, David emptied his pond to rebuild it.

This trial substantiates exactly what we state about Viresco™ Aqua and Viresco™ Koi. The micro-organisms in our mixes reduce both nitrate and phosphate, the main nutrients on which blanketweed feeds. However, more than that, nitrate is taken down to zero and when that position is reached, blanketweed and other algae starve to death.

ALGAE CONTROL PRODUCTS

VIRESCO™ AQUA

Microbial Viresco™ Aqua is now widely used in ponds to suppress blanket weed in particular and also green algae bloom. It will also digest organic detritus found on the sides and bottoms of ponds. Viresco™ Aqua contains two groups of micro-organisms. One of these groups is designed to effect rapid water clarification. This is done by efficient microbial reduction of the soluble nutrients in the water, in particular nitrate. Green algae blooms and filamentaceous algae - blanket weed - are thus rapidly suppressed.

The other group of micro-organisms in the product gives an efficient biodigestion of all the organic detritus in place on the walls and bottoms of ponds. This biodegradation also rapidly reduces the source organic material that is in part providing soluble nutrient in an aquatic system. It is this imbalance of nutrients that causes a pond system to develop heavy algal growth.

As well as the micro-organisms it contains, Viresco™ Aqua also contains other materials that stimulate the activity of aerobic, anaerobic and facultative bacteria at very high levels over a long time.

The initial suggested usage rate for Viresco™ Aqua is 10g per 27m³ of water volume (approx. 6000 gallons). Viresco™ Aqua should be put into solution using, say, 2 to 4 litres of pondwater per 10g and allowed to stand for a few hours. Use an egg whisk or an air-stone to put air into the solution. Alternatively, one or two of our oxygen releasing tablets, Peroxyaqua C, can be put into the container. Ideally it should be mixed in the morning and then applied to the pond during the evening. The prepared solution should be bulked up with more pondwater and poured into the pond in different places whilst walking around the pond.

Viresco™ Aqua is completely harmless to plants, fish and other pond life and will, in fact, improve the health of fish. It was initially formulated for use on fish farms to improve the health, disease resistance and growth of fish.

It is important to have enough oxygen in the water when Viresco™ Aqua is used as it contains aerobic micro-organisms. If it is used in a pond without sufficient oxygen, its effectiveness will be reduced. At worst, it will also deprive fish of the oxygen they need. If there is any doubt about the levels of oxygen, then start with a reduced application of Viresco™ Aqua and watch the fish carefully. Then continue to add the product until the entire quantity has been applied.

We have had great success selling Viresco™ Aqua to koi and other pond keepers for whom the growth of blanketweed can be like an epidemic. Viresco™ Aqua was introduced in autumn 1997 and, from the earliest users, we quickly received very good feed-back.

Whilst some pondkeepers obtain a response from Viresco™ Aqua within 7 to 10 days, some need more than one application to achieve success. A few people have had to use more than two treatments before the blanket weed disappeared. (See section on page 7 on “Fish Stocking Levels”.)

Similarly, for some people, the length of time one application will work for has been well over 12 months. For others it is only a few weeks. No two ponds are alike and we suggest that 10g per 6000 gallons is a sensible rate of use to start with. However, it is very likely that, for some people with high levels of nutrients in their ponds, further applications are needed. Nitrate tends to be the main nutrient that encourages the growth of blanket weed but other nutrients are also relevant, eg phosphate.

Code	Product	Pack Size
VAQG/005	Viresco™ Aqua	5g
VAQG/010	Viresco™ Aqua	10g
VAQG/025	Viresco™ Aqua	25g

VIRESCO™ KOI

Because many koi keepers ensure they have little organic waste in their ponds by the use of bottom drains, vacuums and skimmers, the microbial waste digester portion of Viresco™ Aqua is somewhat superfluous. Therefore, in April 2000 we introduced Viresco™ Koi which contains more of the micro-organism mix that reduces the nutrients on which blanketweed feeds and fewer of the waste digesting microbes. Overdosing with these microbial materials causes no problem so, using the same quantities for the same volume of water as for Viresco™ Aqua, we are thus recommending, in effect, a higher dose of the nitrate removing microbes when Viresco™ Koi is used.

Early in 2001, we sold a pack of Viresco™ Koi to a koi keeper. Exactly 7 days later, she rang to say our product was "absolutely marvellous". She is a keen exhibitor of koi and told us she had been trying for years to to reduce the level of nitrate in the water in her pond to zero. Whilst there was only a relatively small amount of blanketweed present in the pond, her prime aim was to address the nitrate problem. She had never been able to take it much lower than 20ppm. She wanted nitrate at zero because she knew her fish would be "happier". With the nitrate at zero, she realised any blanketweed would starve to death. When she rang, she said in the 7 days, the pond nitrate had dropped from about 30ppm to zero.

We met her again at a show about 3 weeks after the phone call. She stated that the nitrate reading was still zero and her fish "were different creatures". They were very lively and would eat virtually anything. She added that one of her koi had been suffering from body damage and had "a hole in its side". She had been bringing in the local veterinary expert on a weekly basis to treat it, but the sore would not heal. However, within a short time of applying Viresco™ to the pond, the flesh had healed completely.

Her husband, on deciding to buy another pack of Viresco™ at the show, said he would have been happy to pay double the amount for the results he had seen. He also said that, for the first time since they had set up the pond, he was able to see both the colour of the brushes in the filter and to the bottom of the chamber in which the brushes were positioned. Our product had removed the green slimy algae that was always present in that part of the filter unit.

Code	Product	Pack Size
VKOG/005	Viresco™ Koi	5g
VKOG/010	Viresco™ Koi	10g
VKOG/025	Viresco™ Koi	25g

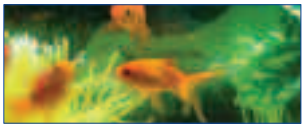
VIRESCO™ FOR SWIMMING POOLS AND SWIMMING PONDS

As is well known, chlorine is used in swimming pools to disinfect the water and to keep algae bloom at bay. However, there is increasing evidence that chlorine is toxic to people who use pools. Julia Stephenson, of "The Independent", in a website article of 17th March 2007 that was published in the newspaper in 2005, summarises the problems that are linked to chlorine in swimming pools. She states:

"Chlorine by-products in swimming pools are linked to higher incidences of asthma, skin disease, lung damage, still births, miscarriages and bladder cancer, according to research conducted in the US, Canada, Norway, Australia and Belgium".

Our Viresco™ Aqua is used in one swimming pool at a holiday complex in The Gambia. The owners purposely did not want to use chlorine and turned to our product to keep down levels of ammonia and nitrate so that algae did not grow. A photograph of the pool is shown.

It is not surprising that people are turning away from conventional swimming pools. This is reflected in an increase in a relatively new past-time that is swimming in so-called swimming ponds - essentially garden ponds without fish. The deeper, swimming part of the pond is surrounded by a shallower shelving section, on which are placed pond plants. The pond plants are there to remove nitrate that comes in with tap water used to fill or top up the pond as well as the nitrate that arises from ammonia released from human or other wildlife visitors. There is evidence to suggest that this type of vegetable filter rarely works 100% in removing nitrate and algae growth is the unsightly result. As a consequence, we now have a number of swimming pond owners who back-up their vegetable filters with our Viresco™ Aqua.



VIRESCO™ FOR AQUATIC WEED CONTROL

We believe that our nitrate removing Viresco™ products will control free floating pond weeds such as duckweed. These types of plants rely on nitrate in the water as a nutrient supply. Because Viresco™ takes the nitrate to zero, their nitrate supply disappears. Therefore this type of plant should die.

Other floating pond weeds, eg azolla, are able to make nutrient from nitrogen of the air. This is called nitrogen-fixing. We do not believe that our Viresco™ product will control such plants. However, Viresco™ may well reduce the rate of growth of these plants.

There are other aquatic weeds that are rooted in the detritus in the bottoms of ponds. They will take their nitrate requirement in part from this detritus material in which they are anchored. They will also take some of their nitrate from that which is in solution in the water. Consequently we might expect their vigour to be reduced when Viresco™ is used. This would be analogous to what happens with purchased pond plants. They do not die but do not grow as profusely. It is found that flowering plants such as water lilies flower better as they are not spending all their energies putting out green stems and leaves.

VIRESCO™ AQUARIUM

Viresco™ Aquarium was launched early in 2003. It is packed in small snap-on capsules. Each capsule will treat 10 to 15 gallons of aquarium water. Maintenance doses are required but the timing will vary. Viresco™ Aquarium removes nitrate from aquarium water and reduces phosphate. Consequently algae bloom disappears and fish are healthier. Organic waste is also digested.

Various tests with Viresco™ Aquarium were conducted during 2002. One such test was carried out by Simon Wolstencroft, the editor of "Tropical Fish". He successfully trialled it over a number of weeks and the results of the trial and his comments were published in the February 2003 issue of the magazine. At the beginning of the article he says: *"We don't run a competition for the best new product of the year, but, if we did, this (Viresco™ Aquarium nitrate remover) would be a strong contender"*

He continued: *"Within ten days of adding the product, this level (nitrate) was halved. Within a month the levels were unmeasurable, even on a good quality test kit and have remained so. Furthermore, in almost three months of continuous use, the front glass of the aquarium has not needed to be cleaned of algae, and there has been a considerable reduction in sludge."*

He concludes the article by stating: *"Our Verdict: We can't quite figure out how this product works, but work it does. An absolute essential for freshwater fishkeepers"*

We have one major aquarium manufacturer who, in just under 4 years, has ordered almost 2.5 million capsules and tablets. Depending on the size of the associated aquarium, one, two or three of the capsules/tablets are placed in a filter sponge. They are then sold as nitrate removing sponges.

Code	Product	Pack Size
VAMU/010	V. Aquarium	10 capsules
VAMU/025	V. Aquarium	25 capsules
VAMU/050	V. Aquarium	50 capsules

OTHER AQUATIC VIRESCO™ PRODUCTS

VIRESCO™ NITROGONE TABLETS

Since Viresco™Aqua was introduced in 1997, the emphasis has been on algae removal in ponds and aquariums. This takes place because certain microbes in the mixes convert nitrate to nitrogen, thus removing the food source that is essential for algae growth. With the introduction of the Viresco™ NitroGone tablets, the emphasis is switched from algae control to ammonia and nitrite conversion. These tablets, available in two sizes, should be used when ammonia and/or nitrite levels in ponds are problematical.

The tablets, available in two sizes, should be used when ammonia and nitrite levels in ponds are problematical. The 1g size tablet would normally treat 500 gallons and is available in 5 tablet and 10 tablet pack sizes. A 2g tablet is available for larger water volumes in two pack sizes, 5 tablets and 10 tablets. Increased doses should be made if fish stocking levels are high or where there is a need to reduce the nitrite or nitrate levels quickly.

Code	Product	Pack Size
VNIU/005	V. NitroGone	5 x 1g tablets
VNIU/010	V. NitroGone	10 x 1g tablets
VNJU/005	V. NitroGone	5 x 2g tablets
VNJU/010	V. NitroGone	10 x 2g tablets

VIRESCO™ DIGESTER

Two basic requirements for the removal of organic detritus from the bottom of ponds and other water bodies are aerobic conditions coupled with the appropriate heterotrophic microbes.

We sell a microbial product, Viresco™ Digester that provides the appropriate waste-digesting microbes. In typical garden ponds, there is usually enough oxygen for the microbes in Viresco™ Digester to successfully clean-up this dead organic matter.

In 2007, we introduced some oxygenating products into both our horticultural and aquatic markets. These oxygenators alone are recommended for use to help already existing waste digesting microbes remove detritus from the bottom of water bodies. These microbes can be shown to have a limiting capability by a shortfall in oxygen availabilty - hence the need for the oxygenating material. Our approach is to recommend both the addition of more microbes - Viresco™ Digester - along with more oxygen.

Viresco™ Aqua is a mixture of a microbial nutrient remover and a microbial waste digester. Viresco™ Digester is mainly a microbial waste digester. The latter removes dead organic material in ponds and can be used in under-gravel filters to clean up organic detritus build-up in the gravel. It can also be used in sand filters to digest the organic waste that accumulates on the sand particles. The 10g pack will nominally treat 6000 gallons of pond water.

Viresco™ Digester can be used in septic tanks. The best way to use it is to put about 50g into solution, leave for an hour or so, and then flush it down the toilet that is the furthest from the septic tank. Repeat every 1 to 2 months.

Code	Product	Pack Size
VDIG/005	Viresco™ Digester	5g
VDIG/010	Viresco™ Digester	10g
VDIG/025	Viresco™ Digester	25g

VIRESCO™ FILTER-START

Microbial Viresco™ Filter-Start puts into the biological filter micro-organisms that convert ammonia to nitrite and nitrite to nitrate. The 25g pack is sufficient for ponds of approximately 2000 gallons.

Code	Product	Pack Size
VFSG/025	Viresco™ Filter-Start	25g

VIRESCO™ PROBIOTIC

Introduction

In certain koi foods, there are included probiotic bacteria that improve the digestive process of the fish. These bacteria suppress disease micro-organisms in the gut that might otherwise become pathogenic. Food is more efficiently digested, resulting in a lower load on the bio-filter with a consequent improvement in water quality. We are able to offer such a microbial product under the name Viresco™ Probiotic. Our product will help to boost the fish immune system which is particularly important with pond fish as they come out of the cold spell at the end of winter. This is when their immune system is at its lowest.

Viresco™ Probiotic as a Fish Food Supplement

Viresco™ Probiotic is used at the rate of about 2.5g in 1kg of fish food. It is available as a dry powder. The dry powder mixed should be mixed into a food paste. The product is available in 25g packs.

Code	Product	Pack Size
VPRG/025	Viresco™ Probiotic	25g

MICROBOOST

Humic acid is a very good food source for micro-organisms and it gives a tremendous boost to microbial numbers. It is therefore advisable to introduce some of this material into the pondwater. We therefore supply Microboost that is granular humic acid (sized between about 1.2mm and 3.4mm) containing some Viresco™ Aqua. Microboost is only partially soluble and breaks down slowly over time by the action of microbes. Where there are no bottom drains or there are no vacuums used, Microboost should be thrown into the bottom of the pond. Alternatively, it should be placed into the biological filter, contained in an appropriate mesh bag if necessary. The 250g pack will treat about 10,000 gallons of pondwater.

Code	Product	Pack Size
MIBG/250	Microboost	250g

Viresco™ Nitrate Test Kits

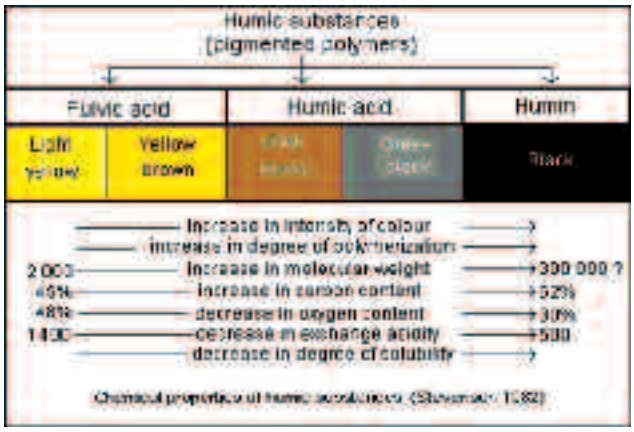
Our microbial products work by bringing the nitrate content in ponds and aquariums down to zero so that blanketweeed and algae cannot grow. We often recommend nitrate testing to our customers to help monitor nitrate levels and now we are able to offer a kit. We researched the market and discovered that many of the

existing test kits involved mixing of chemicals and complex instructions. Our kit is very easy to use – it consists of ten foil-wrapped dip-strips and a simple colour chart. It is packed in a flat plastic bag – ideal for mail-order and great for easy storage. As an added bonus, Viresco™ Nitrate Test Kit indicates presence of nitrite, allowing detailed checking of water quality.

Code	Product	Pack Size
NITU/010	Nitrate Test Kit	10 Strips

HUMAVITE™

Humavite™ is a humic substance, ie the breakdown product of long-dead vegetable matter. Humic substances contain essentially three types of products. These are fulvic acid, humic acid and humin. Fulvic acid dissolves in aqueous solutions of both acids and alkalis. Humic acids will dissolve only in alkaline solutions whilst humin will dissolve in neither.



Fulvic acid and humic acid are the important constituents of a humic substance. They have relatively large molecules, with molecular weights starting at around 2000 for fulvic acid. Fulvic acid can be referred to as a monomer. Humic acids have much larger molecular weights and can be described as a polymer. (See above diagram.)

There are a great many different sources of humic substances. Our Humavite™ product is of very high quality in that it contains a very high percentage (about 70%) of humic and fulvic acids.

As the molecular weights increase, the cation exchange capacities (CEC) decrease.

Research as an anti-viral product

Much research has been carried out on fulvic and humic acids as products for improving health in animals and man. One such area of research is as an anti-viral product. It is claimed that, when ingested, the large molecule of humic acid will envelope a virus and prevent it from replicating.

Koi Herpes Virus and other Viruses

This anti-viral property of humic acid suggests that humic acid has potential for use as an agent to control KHV and other fish viruses. It is also being recommended as an anti-viral agent for a range of viruses in other animals, including man, eg bird flu.

Humavite™ as a heavy metal remover

Humic substances have the property, through their cation exchange capacity, of locking on to heavy metals such a lead, cadmium and mercury. This can be carried out in soils, water and in the bodies of animals. In soils, this locking up prevents the heavy metals being taken up by plants. In water, the locked up metal does not enter the bloodstream of the fish. In animals, including fish, any such heavy metal already in the body is locked-up and removed as waste. Smokers, who introduce cadmium into their systems through the smoke in tobacco, can reduce the amounts of cadmium build-up by ingesting our Humavite™ capsules.

Humavite™ for fish health

Humavite™ is an immune system booster. It is also a very good anti-oxidant, removing health damaging free radicals from animal bodies. Humavite™ has the capability of removing heavy metals from soil, water and animal body systems. It also contains a whole range of micronutrients that are essential for good animal health.

HUMAVITE™

In an ideal world, Humavite™ should be included in all manufactured fish foods. Its rate of incorporation would be of the order of 500g per 100kg of food. To calculate the dose, for a fish weighing, say, 1kg assume it eats 2% of its weight in food per day. This equals 20g. At an incorporation rate of Humavite™ of 500g per 100kg of food, ie 0.5%, the amount of Humavite™ required daily for that size of fish would be 0.1g.

We offer Humavite™ as a fish food supplement or additive in powder form. The powder should be mixed with fish food paste powder. Its rate of incorporation should be 5g per kilo of paste food made.

Code	Product	Pack Size
HUVG/025	Humavite™ Powder	25g

OXYGENATING PRODUCTS & OTHER AQUATIC PRODUCTS

We have available a number of products that release oxygen on contact with water. They have a use in both horticultural and aquatic applications. In horticulture, where they are mixed into growing media, the rate of oxygen release should be relatively slow. A quicker release rate is required for our two main applications in aquatics. The first of these is the additional supply of oxygen into pond or aquarium water. The second application is the provision of oxygenated water near the bottoms of lakes or ponds to help decompose, under aerobic conditions, dead organic matter such as leaves.

In addition to the release of additional oxygen into the water, these products will also reduce chlorine in the water.

PEROXYAQUA C

Oxygenating Tablets for Ponds

This product is available in 2g size of tablets, containing the oxygenating powder plus montmorillonite clay.

Code	Product	Pack Size
PLCU/010	Peroxyaqua C 2g	10 tablets
PLCU/025	Peroxyaqua C 2g	25 tablets

BRI-VITA & BRI-VITA PLUS

(Montmorillonite Clay Powder)

Montmorillonite clay is used primarily in koi ponds. The fine montmorillonite clay, mixed into water and then poured into the pond, forms a cloud through which the fish swim. The clay is taken internally by the fish. It improves their digestive processes and gives an improved lustre to the colours of the fish. We are selling two versions of this product. Bri-Vita is the straight montmorillonite whilst Bri-Vita Plus is a mixture of the pure montmorillonite and Viresco™ Aqua. The amount of Viresco™ Aqua it contains is such that it will provide a full treatment of the micro-organisms after 5 applications. Both products would usually be used once per week but every two weeks in the winter. The rate of use for both products is 40g per 1000 gallons.

Code	Product	Pack Size
BRVK/020	Bri-Vita	2kg
BVPK/010	Bri-Vita Plus	1kg

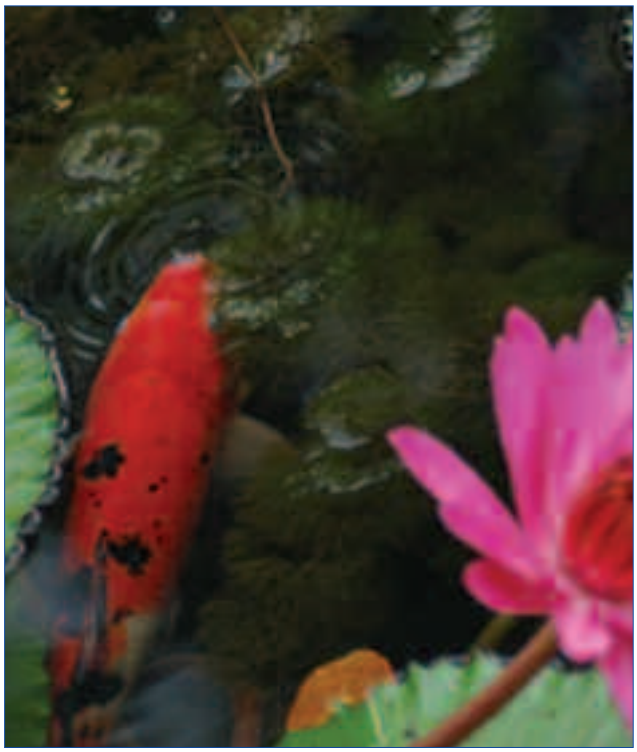
AQUACLIN

Aquatic Plant Fertiliser

Our zeolite based Aquaclin fertiliser offers to the pondkeeper a way of putting fertilisers to aquatic plants without the nutrients dissolving out. The nutrients, with the exception of phosphate, are adsorbed on to zeolite granules and will only come out by direct root hair contact. The plant only takes out what is required. The analysis is 0.44% N as ammonium, 0.24% P, 1.40% K with Mg, Ca and other micro-nutrients. Use at 10% to 25% rate mixed with aquatic composts.

We have one customer who is a commercial grower of aquatic plants. He now grows his plants in 100% Aquaclin, in effect hydroponically. The results are brilliant – the plants do not bolt and when he sells them by mail order, the roots have very little aggregate clinging to them. His postage/carrier costs are consequently reduced.

Code	Product	Pack Size
AQCK/050	Aquaclin	5kg



S'KOI BLUE

Many koi keepers erect a pergola over their ponds to cut back on the direct sunlight that hits the surface of the water. The brighter the light entering the water, the more rapidly blanketweed will grow. A way to reduce the intensity of light under the surface of the water is to slightly colour the water. S'koi Blue is a water colorant that will give shade within the water. It is completely safe to use and will not harm aquatic life. It is non-toxic to people, fish, water fowl and livestock. The 500ml bottle will treat 15,000 gallons of water.

Code	Product	Pack Size
SKBM/500	S'koi Blue	500ml

BENTONITE

For Lining and Repairing Ponds

Background

At the beginning of January 2004, we were appointed by Steetley Bentonite and Absorbents Ltd as their sole distributors for orders up to 5 tonnes for their bentonite product used in the construction of pond linings.

Our bentonite is a clay mineral that is supplied in two forms. One is a fine powder and the other is a granule. These forms of bentonite have the ability to absorb large amounts of water and, in so doing, can expand as much as tenfold. When absorbing water and swelling by a process of hydration, bentonite becomes sticky. It thus has the ability to bind soil or sand particles together. Hydrated bentonite will then resist the passage of further water and thus can be used as a sealing material. It is safe to use and is environmentally friendly.

Bentonite Product

The bentonite product sold for pond lining is called Steebent CE. It is processed from a European calcium bentonite. Its swelling and water absorbency properties are improved by adding sodium carbonate.

Method of Use

Pondlining using Steebent CE Powder

- For preparing a pond lining, the Steebent CE powder should be used. It is recommended that work should be done on a dry, calm day as the powder is dusty. Use appropriate safety equipment such as goggles and dust masks.
- The soil for mixing with the bentonite should be free from large lumps and stones and dry enough enough to allow easy mixing with the bentonite powder. Soils rich in stone, limestone, chalk and peat tend to be very porous and thus require special attention. For such ground conditions, we suggest the use of a bentonite enriched sand layer. Suitable fine sand for mixing is usually available from a builder's merchant.

- Thorough mixing of the bentonite powder with the soil or sand is essential to achieve optimum results.

- Mixing can be carried out by using a cement mixer adding the soil or sand first followed by the bentonite. For sandy soils, porous soils and bentonite enriched sands we suggest a guideline addition of 1 part bentonite to 12 parts of soil by weight (8 to 10 kgs per square metre). For clay soils, 1 part of bentonite to 20 parts of soil may be adequate (4 to 6 kgs per square metre). Bentonite powder is lower in density compared to soil or sand, thus it is vital to weigh the first shovels or buckets to ensure that the guideline addition rates are followed. Mix until a uniform colour is achieved. Take a sample to see if the bentonite is binding the soil by squeezing a handful. If the mix is dry and powdery, it will be necessary to add water to achieve swelling and bonding. If the mix is too sticky, too much water is present and more soil/sand or bentonite powder should be added.

- Lay the prepared mixture over the area of the proposed pond site. Rake to obtain an even layer which, when tamped hard or firmly packed with a heavy roller, achieves a dense layer 20 to 25 cms (8 to 10 inches) in depth. The harder the soil is packed, the lower will be its permeability and the better its long term resistance to the passage of water. Hard rammed bentonite enriched soil will have a density of approximately 1.5 tonnes per cubic metre.

- The sides of the pond should not have a gradient exceeding 1 in 3 otherwise slippage can occur during preparation or during pond life leading to "sideways" water loss.

- Having laid and compacted the mix it is important to apply 5 to 10cms of soil and hard ram/roll this layer. The bentonite is then trapped as a sandwich. It cannot leak out and will not "cloud" the pond water.

- Remember, it may be necessary to top-up the pond from time to time to offset evaporation losses during warm weather.

- Disposal: surplus bentonite can be used to enhance the water retention capacity of porous garden soils. Apply as a thin layer and work in well.

- Our guidelines are offered in good faith but total success cannot be guaranteed. The movement of worms, invertebrates and the germination of seedlings might still happen, whilst the roots of aquatic plants could puncture the bentonite rich layer.

Repair of Damaged Lining using Steebent CE Granules

- The granules of Steebent CE are sized from approximately 2 to 15mm. They can be used to seal holes found in the bentonite mix lining. They can also be used to increase the thickness of the bentonite lining where it has been worn away at the edges by water fowl.

- Sprinkle the granules over the hole or damaged area of the pond lining and as the granules drop through the water, they hydrate and form a seal over the damaged area.

Pack Sizes

Both grades of Steebent CE bentonite are packed in 25kg bags. We are able to supply direct to the user 1 bag or 5 tonnes (200 bags)

Discounts are given for quantity, eg for 20 bags, 45% discount is given. Contact us for prices for specific quantities up to 5 tonnes.

Code	Product	Pack Size
BEPK/250	Bentonite powder	25kg
BEGK/250	Bentonite granular	25kg

FREQUENTLY ASKED QUESTIONS ABOUT VIRESCO™ AQUA AND VIRESCO™ KOI

What are the benefits of using Viresco™ in ponds?

Viresco™ Aqua gives three benefits to the pond keeper. It removes nitrate and reduces phosphate that feed algae in pond water. As a result, blanketweed (string algae) and algae bloom (green water) die of starvation. Secondly, it digests waste organic matter in the pond. Thirdly, Viresco™ Aqua will improve the health, growth and disease resistance of fish.

What is the difference between Viresco™ Aqua and Viresco™ Koi?

Viresco™ Aqua is a 50:50 mix of two groups of micro-organisms based items. One group removes the nutrients from pond water and the other group digests organic waste on the bottoms and sides of ponds. Viresco™ Koi is a microbial product that has more of the nutrient remover. Where ponds have little or no organic waste, then use Viresco™ Koi. For all general garden ponds in which organic waste arises from fish excrement, from surplus food or from wind carried leaves and grasses, use Viresco™ Aqua. If in doubt then use Viresco™ Aqua.

How is Viresco™ applied?

Viresco™ is a dry powder. We advise that the appropriate amount be mixed into water and allowed to stand for a few hours. The water should be taken from the pond. Ideally it should be mixed in the morning and applied to the pond in the evening. Also some air should be introduced into the solution via the use of an air stone or regular whisking. Never leave the solution for more than about 12 hours before applying to the pond. Most people put the solution of Viresco™ directly into the pond although some put the concentrated solution into the filter.

How frequently should Viresco™ be used and how long does it last in the pond?

Many of our customers make one application and then see no more blanketweed for over one full year. Others keep blanketweed at bay for a few months with one application. However, a minority of pondkeepers need more than one dose to suppress blanketweed. It makes sense to consider the application of maintenance doses of Viresco™. However, unlike recommendations for some other products, we do not suggest what these should be. We advise that that nitrate levels should be regularly checked and used as a guide as to when more Viresco™ should be added.

What differences do fish stocking levels and overfeeding make?

Many ponds have filters with capacities that are far greater than those needed for the pond volume. More fish tend to be introduced knowing that the filters can cope with the increased amounts of ammonia. Where this is the case, then more Viresco™ than our suggested dose should be used. The amount required is linked to the increased amounts of ammonia produced rather than just straight water volume. Many people know the length of their fish but few will know the weight. We can give guidance on calculating the weight of koi. Assuming that the fish have a shape that is either thin, standard or fat, then the weight of a fish can be calculated as $W = L^3/10000$, $W = 2L^3/10000$and $W = 3L^3/10000$ respectively for thin, standard and fat shapes. W is the weight in kilos and L is the length in inches. Where the total weight of the fish in the pond adds up to more than, say, 2½ to 5kg per 1000 gallons, we suggest that more product should be applied. Year on year, fish can increase appreciably in weight. Also, where overfeeding occurs or when very high protein foods are used, more ammonia is produced. More ammonia means more nitrite and more nitrate. More Viresco™ should again be used.

How quickly does Viresco™ work?

Many people see blanketweed dying back within 4 to 5 days. For others it does take longer. For most people it occurs within about 3 weeks. If, after this time, no noticeable change has taken place, then apply a second dose. The colour of the blanketweed starts to change from green to brown. It also becomes brittle and pieces break off. Some people have reported that pH levels in the pondwater increase as the blanketweed dies.

Is Viresco™ safe for fish?
Is Viresco™ safe for other wildlife?
What about plants?

Yes, Viresco™ is safe for fish. It was initially formulated for use on commercial fish farms to improve the growth, health and disease resistance of the fish. The fact that it suppressed algae growth by removing the nutrients on which algae feed turned out to be a bonus. Viresco™ improves the health of fish. They eat better and grow quicker. They are less prone to fungal and bacterial diseases. Many of our customers state their fish become "more lively". One of our first customers had a 70,000 gallon pond. About 18 months after starting to use our Viresco™ Aqua, he told us that he “dare not stop using it” as he had not lost one fish since he first introduced Viresco™ to his pond! He had over 200 fish in his pond, roughly 50% of which were koi. There is no problem for other wildlife, eg newts and frogs. Viresco™ does no harm to plants. However, because Viresco™ reduces nitrate levels in the water, plants may grow less strongly. For example, leaves of, say, water lilies grow less vigorously but the bonus is that they should flower better.

HOW IMPORTANT IS OXYGEN?

Viresco™ Aqua is harmless to fish and plants and it can be overdosed. HOWEVER, It is important to have enough oxygen in the water when Viresco™ is used as it contains aerobic micro-organisms. Pumps, oxygenating plants, waterfalls and fountains are all good oxygenators. If it is used in a pond without sufficient oxygen, its effectiveness is reduced. It could also deprive fish of oxygen. If there is any doubt about the oxygen levels, start with a reduced application and watch the fish carefully. Then continue to add the full amount over a few days. If the fish move to the surface, they are not receiving enough oxygen and aeration will be required immediately. Remember, in hot weather, water does not hold as much oxygen as in cold weather.

FREQUENTLY ASKED QUESTIONS

How does Viresco™ improve the health and disease resistance of the fish?

A fish succumbs to a bacterial or fungal disease because the bacteria or fungi that form the disease have become predominant. If pond systems were kept in better balance and disease microbes had greater competition, then they would not become predominant and form the disease. The micro-organisms in Viresco™ are present in huge numbers and in many different species. They do not remove the disease forming species but compete with them for food and space and keep their numbers down so they do not take over.

Is Viresco™ temperature dependent?

Yes, Viresco™ works best in water temperatures above about 10°C (50°F). However, it will work in lower temperatures but more slowly.

What does Viresco™ do to aeromonas bacteria?

Aeromonas bacteria, which can cause severe problems to the health of fish, particularly in koi ponds, are kept at bay in the same way as other pathogenic microbes by the competitive action of the micro-organisms in Viresco™.

Are the Viresco™ products chemicals?

The Viresco™ products are micro-organism based and the method of operation is biological and not chemical. Viresco™ contains a number of species of micro-organism carried on bran. In addition there are support nutrients included in the mixes. One critic on a website chat page suggested that, because Viresco™ worked so well, it could only be a chemical and not a biological/microbial product. We swiftly corrected him!

How do water changes affect the effectiveness of Viresco™?

Obviously as water is removed from a pond, the microbes in that water will be lost. However, because the micro-organisms are always growing and multiplying as long as there is food and space available, those that remain in the pond will increase in numbers until a balance is reached. One customer said he lost approx. 85% of his water shortly after applying Viresco™. Our product went on to clear his blanketweed. Bear in mind the nitrate removing microbes take up residence in anaerobic sites in ponds, eg surface bio-films.

Can I use Viresco™ with chemicals?

Any fungicidal chemical that knocks back the microbes in a filter system will also knock back the microbes in Viresco™. Wait until these chemicals have dissipated. However, other chemicals that are known not to affect microbes can be used at the same time as Viresco™. Some people use herbicides to remove blanketweed and these types of chemicals would not normally lower the efficacy of Viresco™. However, it still would be best to leave a gap of a few days between using such chemicals and using Viresco™.

What does Viresco™ do to the micro-organisms in the filter?

Viresco™ helps to maintain an efficient biological filter as it contains microbes that are used in the denitrifying process in the filter.

Can Viresco™ be overdosed?

Yes, Viresco™ can be overdosed with no problem. It is organic and not a chemical. We have one customer who each year uses 6 times our recommended dose all at once and for four years has not seen any blanketweed. The only qualification is that enough oxygen should be present in the pond when Viresco™ is used.

What is the effect of UV light and UV filters on Viresco™?

It is widely accepted that ultra violet light from the sky does destroy bacteria. In order to protect the bacteria in Viresco™, we recommend that the solution of the product be applied to the pond in the evening, during low daylight levels followed by a period of darkness. Initially, we also recommended that UV filters be turned off as the UV light from them again could affect the efficacy of the product. However, we now believe that UV filters can be left on as the intensity of the emitted light is generally not enough to kill bacteria. A number of UV "experts" claim this to be the case. In support of this, David Brown who did the trials work mentioned earlier, did not switch off his UV light!

UV lights are primarily used to agglomerate algae bloom, the clumps of which are caught up in the physical filter. Viresco™ removes the nutrients on which both blanketweed and algae bloom live, so there should be no need to use a UV filter once the nitrate levels have been taken to zero. It is still advisable to apply the product to the pond in the evening as the intensity of UV from daylight, even on bright cloudy days is considerably greater than the UV from pond filters.

What is the shelf life of Viresco™?

The Viresco™ microbial products are purposely put out as soluble powders. The Viresco™ range, unlike microbial products in liquid form, has an unlimited shelf life if kept dry. Liquid microbial products deteriorate over time. The end user of a liquid product is usually uncertain of its shelf life. Also, the end user might not know how long it has been in the supply chain since manufacture.

How long has Viresco™ been on the market?

Viresco™ Aqua was launched as a blanketweed control product in autumn 1997. We have had tremendous success with Viresco™ Aqua and Viresco™ Koi, as people have wanted to move away from chemical products towards microbial and biological products.

Large Ponds and Lakes

Jubilee Ponds

For each of the past 5 years, Canary Wharf Management has bought our Viresco™ Aqua for use as an algae control product in their Jubilee Ponds at the Canary Wharf site in London. Algae bloom had previously been a problem but since its initial application, Viresco™ Aqua has successfully kept algae bloom at bay in these ponds.

Gallery of Modern Art, Edinburgh

On the last day of June 2008, the National Galleries of Scotland bought for their "Landform Ueda" pond complex on the site of the Gallery of Modern Art in Belford Road, Edinburgh a quantity of Viresco™ Aqua to control a severe outbreak of blanketweed.

We were informed that prior to the use of Viresco™, the blanketweed was so thick that it was "almost possible to walk across it". Three separate applications of Viresco were made. On September 6th, we saw the pond. and apart from a few green "wisps" in the water, the ponds were completely clear of blanketweed.

Viresco - Improves Vitality

Happy Koi, a trade customer in South Africa has written the following on their website www.happykoi.co.za:

"Viresco - improves Koi's vitality and activity level - An interesting side effect of Viresco

In our warmer Koi keeping waters we have noticed that Viresco has had an unexpected result on our Koi. It just goes to show that there is far more to water and keeping fish than we can possibly know about or measure ...

After about two weeks of Viresco in a pond, across the board, we have noticed that the activity levels of our Koi have suddenly scaled up dramatically. They seem to be hungrier, they rush around the pond like mad things and generally act as if they were 'Koi on Speed'. **And their appetites seem never ending."**

- **Extract from a 20th January 2009 letter received from a customer in Fife, Scotland.**

  "…. Living in Scotland, north of the Forth, I felt that the climate was against success, particularly as the instructions said that water temperature must be over 10C for the microbes to work – reaching that level of heat is not easy up here. Then at 12C the greenwater problem went and suddenly I could see fish and indeed the bottom of the pond. However, still the blanket weed was fighting a heavy and at times overwhelming battle. Suddenly, in mid-July at 18C and over the course of three days, first of all the weed turned brown, then it disintegrated and finally disappeared.

  The fish seem perkier and larger than before and the water lilies last year had never had so many nor such large flowers. Altogether a great success and I intend to renew the treatment this year when the weather warms up (a while away yet). ….."

- **Letter from Mrs. L. Waters—Viresco™ customer (Feb 08)**

  "I have been trying for a couple of years to rid my pond of blanket weed and also green water. I have used all of the products that have been recommended by various aquatic departments in garden centres etc with no success.

  I then came across an advert for Viresco™ Aqua. I phoned you for advice on the products; you recommended what treatment for the size of pond etc. and all the blanket weed and green water cleared. I would and will recommend your products to anyone and would like to thank your for your advice."

- **Email from Mrs. J. Schiller— Viresco™ Koi customer (Jan 08)**

  "I really love your product. I almost gave up on keeping a koi pond because the string algae was such a problem. It was like creepy, long, green hair everywhere! I tried various solutions, but nothing really worked well. I am so glad I decided to try Viresco, because it started to work within days! One or two applications gets my pond through most of the year here in sunny Arizona. I don't need the rake anymore. Yeah! "

VIRESCO™ AQUA TESTIMONIALS

Examples of Viresco™ Aqua Success Stories in Britain and Abroad

Testimonial 1

Bob Moore of Texas ordered 5g of Viresco™ Aqua on 29th May 2007 to treat his small pond He received it by 1st June and he emailed us on 28th June. In his e-mail he said that after about 2½ weeks, the algae turned brown. Then, in a few more days the water cleared. The "Before" and "After" photographs below illustrate the results.

Before using Viresco™ Aqua

After using Viresco™ Aqua

Testimonial 2

For many years I have had the ongoing problem of the dreaded Blanketweed in my pond, and more so this year having just refurbished the pond and increased its depth. Having installed a top quality UV light/filter unit, the green water was not an issue but boy did the blanketweed take over.

In fact it was so bad that I actually lost one of my koi which actually got tangled up in it. I had tried many different products in the past without success, then I came across your web site and decided to give VIRESCO AQUA a go.

I must admit being a bit of a 'Doubting Thomas' as nothing else had worked so why this one, but you can see from the attached photographs within one week of treating the pond there is not a sign of any blanketweed, at long last success.

I also checked the water with your Nitrate testing kits which has now been reduced to zero within the same timescale.

Thanks again for a top class product which actually does what it says, it makes sitting by the pond in the sunshine so much more enjoyable.

Len Sankey – Viresco Customer™ (July 2010)

Testimonial 3

I would just like to say how pleased I am with the results of Viresco Aqua, here in Cyprus the blanket weed was starting to take over my pond. The pond was and is over stocked. I had tried different products without any success then last Feb (2009) I saw your product on the internet and ordered 10g of Viresco Aqua. Over the next 2 to 3 weeks the blanket weed disappeared, now in Feb 2010 the blanket weed has just started to reappear.

Mike Jarvis – Viresco™ Customer (Feb 2010)

Testimonial 4

Thanks

Awesome product. The water is clearing from pea-soup thick with blanket weed to a pond again.

I was about to spend £100+ on a second filter and UVC. Now I have no need.

Chris Cunningham – Viresco Customer™ (July 2010)

Viresco™ Aqua — best buy in "Gardening Which?" (2007) and best buy for thousands of our satisfied customers.

Aeration: The addition of oxygen to a pond to remedy stagnant water and prevent fish from gasping for air at the surface of the pond during the summer months. Remedies include adding oxygenating plants (eg curly water thyme), turning on a fountain, or stirring the water with a stick.

Aerobic: Living, active, or occurring only in the presence of free oxygen.

Aeromonas bacteria: A genus of gram-negative, facultatively anaerobic bacteria. Its organisms are found in fresh water and sewage and are pathogenic to humans, frogs and fish.

Air stone: A small piece of porous material, driven by an air pump, used to provide supplemental air in a water garden, pond or aquarium.

Algae: Minute free-floating plants present in pond water that feed on dissolved minerals from fish, decaying plants and soil washed into the pond.

Ammonia: (NH_3) The most toxic of the nitrogen containing pollutants. Most ammonia enters the water when excreted from the fishes' gills; it is broken down into nitrate by nitrosomonas bacteria.

Anaerobic: Living, active or occurring in the absence of free oxygen.

Bacteria: Ubiquitous one-celled organisms, various species of which are involved in fermentation, putrefaction, infectious diseases or nitrogen fixation.

Bio-film: A thin layer of micro-organisms that forms on and coats various surfaces that are regularly in contact with water.

Biological filtration: A method of filtration using bacteria to change toxic compounds (eg ammonia) into safer compounds (eg nitrates).

Blanket Weed: Fibrous algae that look like long strands or filaments (sometimes called String Algae) Thick floating mats of the algae can form on ponds and deprive fish and wildlife of oxygen.

Facultative: Having the capacity to live under more than one specific set of environmental conditions, eg a plant that can lead either a parasitic or a nonparasitic life or a bacterium that can live with or without air.

Fulvic Acid: Fulvic acid is that part of a humic substance that is soluble under all pH conditions. It dissolves in water or alkaline solution to form a clear orange solution. Fulvic acid is also soluble in methyl alcohol.

The proportion of fulvic acid in a humic substance is important. The higher it is, the more reactive the substance is.

Structurally, fulvic acid and humic acid are similar molecularly. However, fulvic acid is usually treated as a monomer, whilst humic acid is the polymer.

Heterotroph: An organism that cannot synthesize its own food and is dependent on complex organic substances for nutrition.

Humate: A salt of humic acid.

Humic Acid: The fraction of a humic substance that is not soluble in water under acidic conditions but is soluble in water under alkaline conditions. (see Fulvic Acid above)

Humic Acids: The collective name for acid radicals found in humic substances by alkaline extraction.

Humic Substances: Heterogeneous mixtures of naturally occurring organic materials. They are generally classified into humic acid, fulvic acid and humin on the basis of their solubility in water and as a function of pH.

Humin: The fraction of a humic substance that is not soluble in water at any pH value.

Microbial: Of, relating to, caused by, or being microbes (micro-organisms, esp. a pathogenic bacterium)

Montmorillonite: Any of a group of clay minerals characterized by the ability to expand when they absorb large quantities of water.

Micron: One micron is 1000th of a millimetre.

Nitrate: The univalent radical NO_3 or a compound containing it, as a salt or an ester of nitric acid.

Nitrite: The univalent radical NO_2 or a compound containing it, such as a salt or an ester of nitrous acid.

Nitrobacter: Genus or bacteria which oxidises nitrite into nitrate.

Nitrosomonas: Genus of nitrifying bacteria found in biological filtration which oxidises ammonia into nitrite.

Pathogen: Any disease-producing agent (especially a virus or bacterium or other microorganism).

String Algae: See "Blanket Weed".

Ultraviolet (UV) light: Ultraviolet is a high energy, short wavelength of light, shorter than violet in the visible spectrum and on the border of the x-ray region.

Virus: A non-cellular infectious agent that reproduces only in living cells.

Zeolite: A type of ion exchange media use for removing ammonia from pond or water-garden water.

PRODUCT INDEX

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