

EARTH FRIENDLY PRODUCTS FOR  
PONDS, FOUNTAINS & BIRDBATHS

# MICROBE-LIFT<sup>®</sup>

# FAQS

VOLUME II



## FREQUENTLY ASKED QUESTIONS

with answers by Mark J. Krupka, VP & Technical Director

## AND PRODUCT DESCRIPTIONS

 **Ecological Laboratories** INC.

# FAQs

VOLUME II

answers by Mark J. Krupka, VP, Technical Director, Ecological Laboratories, Inc.

**Q.** I recently enlarged my 1,000 gal. pond a bit and added some city water to it. It needs more, but I'm worried that the chlorine in the water will kill the bacteria population I've established with MICROBE-LIFT products. If I add more water and a dose of one of the dechlorinator products, are the bacteria protected or, do I have to start all over again?

**A.** If you add more water and *pretreat it* with a dechlorinator, you'll be fine. If you add untreated water to the pond and treat with the dechlorinator after it's *in* the pond, then I'd suggest going back to the "Week 2 - 4" dosage for one week. This will give the population a boost since you may have some kill-off from the chlorine before the dechlorinator deactivates it, but you won't have to start from scratch. The MICROBE-LIFT organisms are pretty hardy and can even survive when exposed to formalin-based products and tea tree oil products which are used as biocides for disease control.

**Q.** I have a 2,300 gal. rock lined pond with a stream and small waterfall. I put the pond in last summer and, for a new pond, it was running well by summer's end. Right now I am applying Pond Care "AlgaeFix" to rid my pond of some "hair" algae that is growing on the rocks on the pond bottom and around the edge since this spring. So far, I have no algae at all in my waterfall or stream, and my water is clear. I also wanted to apply MICROBE-LIFT/PL to get the pond off to a good start this year. I noticed in the FAQs on the PL box that it is NOT to be applied along with algaecides. Is "AlgaeFix" considered an algaecide? If so, how long do I need to wait before applying the PL?

**A.** Yes, AlgaeFix<sup>®\*</sup> is an EPA Registered chemical algaecide. We have done some inhibition studies on the AlgaeFix and find that *it does* inhibit the beneficial bacteria that you want to naturally keep your pond clean and healthy. Fortunately, the MICROBE-LIFT/PL will restore this activity. Since the AlgaeFix becomes attenuated by attaching itself to any algae or sediment in the pond, it is usually neutralized within two days. Just wait three days after adding AlgaeFix before adding the ML/PL.

And if you experience some mosquitoes during the upcoming summer season, look for our

MICROBE-LIFT/BMC (Biological Mosquito Control)—the most effective, all-natural way to kill mosquitoes before they grow into breeding, biting adults. There is a reason it was named *Top New Pond Product for 2004!* With that rock bottom, you might also find our new MICROBE-LIFT/SLUDGE AWAY a big help in keeping the rock bottom clean without a lot of hassle.

**Q.** We have a 1,000 gal. pond with a waterfall that runs year around and 35 goldfish who also stay in the pond year round. Most of the year, especially in cold weather, we have two 3'-4' circles of watercress. We treat the water with MICROBE-LIFT summer and winter products. Can we safely eat the watercress?

**A.** Enjoy the watercress in sandwiches, salads or however you like to prepare it! All MICROBE-LIFT products are natural and provide a perfectly healthy environment for all aquatic flora and fauna, even those you might want to eat. (Well, flora that is). This even applies to pets that might drink the water out of a pond that has MICROBE-LIFT products added to it.

**Q.** I'm going to use MICROBE-LIFT SPRING/SUMMER CLEANER and am wondering if I can cut the dosage of either MICROBE-LIFT/PL or ML/SSC by 40%? Since ML/BARLEY STRAW PELLETS PLUS is new to me as well, should I put in the recommended dosage or cut it also?

**A.** MICROBE-LIFT SPRING/SUMMER CLEANER is designed to be used with MICROBE-LIFT/PL, as you point out. While ML/THERAP and ML/ENSURE products share some of the same constituent organisms as ML/PL, which allows you to cut the dosage of products used with the ML/PL, the ML/SPRING/SUMMER CLEANER does not. It is a bacterial/enzyme blend designed specifically to speed up the slow steps in the degradation of leaves and other plant (cellulosic) matter that can accumulate in your pond. Since there is no overlap of the constituent organisms, there is no reduction in dosage with the ML/SPRING/SUMMER CLEANER when the products are used together.

The same applies to ML/BARLEY STRAW PELLETS PLUS. In the same way the ML/PL matures your pond biologically, the ML/BARLEY STRAW PELLETS PLUS

\*AlgaeFix is a Registered Trademark of Aquarium Pharmaceuticals, Inc.



matures your pond chemically. Again, there is no overlap of components so no reduction in dosage is recommended. Most people who use the pellets find that it chemically balances the pond and ties up a lot of the nutrients.

**Q.** I have a 6,000 gal. pond. My water was clear (I have a Cyprio filter and UV light), but my skimmer pads were collecting a lot of gunk. I have to clean the pads every couple of days. My local pond supply dealer recommended your product. So I used 1 gal. of the MICROBE-LIFT/SA a week ago. My water is now the color of your product (black)! The bottom of my pond has rocks and based on all of the calculations I can find, I do not have too many fish. I checked all of my pond plants and the koi are not disturbing the soil. How long before my water will get clear again? Any suggestions?

**A.** We have had very good success in similar applications with many types of filters including Cyprio filters, which I consider one of the best filters on the market. Typically, we will recommend MICROBE-LIFT/PL to enhance the efficiency of the biological film, which may have been contributing to the gunk on the filter pads. Some of this is beneficial, but when it clogs the pad it is no longer helping the situation. By establishing a more active biomass, more of the colloidal organics that also make up this gunk are broken down, minimizing the buildup.

MICROBE-LIFT/SA is designed to work in conjunction with the MICROBE-LIFT/PL. It helps to solubilize colloidal and particulate organics that make up a lot of the gunk, as well as sediment, on the bottom and in between the rocks. Once solubilized, the organisms in MICROBE-LIFT/PL will rapidly break down the solubilized organics to carbon dioxide, water and cells. If there is a lot of accumulation in the rock, it may take a little while to work the accumulated solids off. But once reduced to a comfortable level, a regular maintenance program of the ML/PL and ML/SA can keep it from ever developing to an undesirable depth (greater than 0.5" to 1.0") again.

In our testing we never saw the water turn the color of the product, but we never added at quite the concentration that you did. According to the label on the ML/SA 1 gallon container, for a pond with a volume from 3,500 - 5,000 gals. the initial dosage is 35 - 50 oz. (10 oz./1,000 gals). If your pond is 6,000 gals., the recommended initial dosage would have been 60 oz. A gallon is 128 oz. which is a little more than double the recommended dosage.

The good news is that over dosing has no negative effects other than maybe darkening the water. We did not test over the recommended dosage levels so we

would not have known the impact on the color at double the dosage. Occasionally, we will also find that the water in different areas of the country may contain different minerals or metals that react a little unpredictably with some products. The ML/SA is a natural, organic product and the color will break down in a week or two and the pond will return to clear again. This process will be speeded up by the addition of ML/PL if you aren't already using it.

Put a sample of your water in a clear glass or plastic jar, hold it up to the light and see if it looks as dark as it does in the pond. Often times when you're looking through a lot more layers of water the color gets somewhat exaggerated. I've had people send samples of water to our laboratory saying it was dark green but when we got it in the clear container, it only had the slightest tinge of green. That's why the ocean and seas in some areas will look deep blue or aqua green even though if you looked at the same water in a glass, it would look almost perfectly clear.

We apologize for any inconvenience or confusion. The ML/SA is a new product and it is hard for the dealers to understand every product they handle perfectly, especially a new product. We need to make it clearer that the ML/SA should be used as an adjunct product to ML/PL for situations like yours where there is a rock bottom with sediments and/or excessive buildup in the filter pads. You were sold the correct product for your situation but it should have been used in conjunction with the ML/PL. And when the time comes for another application of the ML/SA, cut back to 60 oz.

**Q.** After having done some research, I am about to purchase MICROBE-LIFT/PL for my 3,000 gallon pond. I live in northern Massachusetts, so the water temperature right now is around 40°F and probably won't pass 50°F until mid-late May. Based on water temperature considerations, when is the best time to apply ML/PL? Can I begin the initial dose immediately and continue with the recommended dosage cycle? Will I just be throwing my money away by making any application before the water is above 50°F? I know ML/PL does contain psychrophilic bacteria, but I want to make sure I get the most "bang for the buck".

**A.** We are pleased that after doing your research you decided to use the MICROBE-LIFT/PL—the most asked for pond clarifier by name. The ML/PL will give some decent activity down to around 37°F. However, even psychrophilic bacteria are more active at higher temperatures. To get the best "bang for your buck" don't add the product until the average water temperatures are consistently in the 45-50°F. range.

Continued

By the way, in addition to the psychrophilic bacteria, the MICROBE-LIFT/PL also contains photosynthetic bacteria that can tap energy from the sun to help keep your pond water clean, ecologically balanced and sediment free.

**Q.** I recently changed to your product MICROBE-LIFT/PL and have just put in the second 'dose'. Until now I have used Aqua Bacta Aid®\* in my pond and have been quite pleased with the results, although it is difficult to know exactly what, if anything, is in fact "working". I also put H<sub>2</sub>O<sub>2</sub> in my pond. I have been in the habit of alternating weeks, ie: MICROBE-LIFT/PL one week, H<sub>2</sub>O<sub>2</sub> the next.

I was teaching a Master Gardener Class last night, (I do the water gardening section) and one of the students asked whether the H<sub>2</sub>O<sub>2</sub> would just kill the microbes in either ABA or MICROBE-LIFT (I presume they are similar strains) as H<sub>2</sub>O<sub>2</sub> kills bacteria. Got me thinking, and I decided to ask if you could help.

**A.** That is a very good question as H<sub>2</sub>O<sub>2</sub> (hydrogen peroxide) is a strong oxidizing agent and *does* have disinfecting or germicidal properties as the student pointed out. The key thing here is the residual concentration of H<sub>2</sub>O<sub>2</sub> and how much organic is present to react with the peroxide.

Hydrogen peroxide reacts very quickly in water and won't leave a long lasting residual the way something like chlorine compounds would. If you're only putting in a few mg/L of hydrogen peroxide at typical consumer strength (0.5% to 3%) this may react with and break down the available organics and kill some bacteria. But once reacted in this way, or if it just converts to oxygen and vents from the system, the effect will be short lived and the bacteria will quickly multiply to replace the killed bacteria, depending on the F/M (food to mass) ratio in the pond.

If you add enough of a commercial grade H<sub>2</sub>O<sub>2</sub> (up to 30% concentration), so that you can oxidize all of the organics in the pond and have enough to kill a lot of the bacteria, you can really knock down the total population. However, just like before, once the H<sub>2</sub>O<sub>2</sub> is gone, any remaining bacteria will quickly start to grow to bring the F/M back into line.

**Q.** I'm a big fan of your products. I had a few fish that were pretty cut up after spawning. I always use MICROBE-LIFT/PL per directions. I noted it said no salt water and asked my local pond supply store if I could treat water with 3% salt solution to avoid sick fish. They said yes. Is this correct, because the water is murky?

**A.** Glad to hear that you are a big fan of the products. There are a lot of you and we are working constantly to provide you with the best, natural products to keep you all as fans!

Yes, the local pond supply store was correct.

You can use the MICROBE-LIFT/PL in salinity up to 3%. The salinity *does* slow the bacteria down a little as they adapt to the osmotic balance of the saline environment. The salt also adds to the specific gravity of the water making it easier for particles to stay in suspension and cause cloudiness.

Just make sure that 3% is actually the concentration they want you to use. Most people use 0.3% which is about 3 lbs. of salt per 100 gals. of water. Most people think that this is 3% but you have to calculate percentage of salt on a weight/weight basis and 100 gals. of water is approximately 834 lbs., so 3 lbs. in 100 gals. is closer to 0.3%.

**Q.** I have a 11' x 16' pond, approximately 4' deep at its deepest point. It is about 1 year old, contains various lily plants (both potted and planted in gravel), as well as water iris and water canna. It sits in both morning and afternoon sunshine for some 8 to 10 hours a day. I've never completely emptied the pond and vacuumed the rocks, since it is a gravel-filled pond. This spring I'm seeing a bunch of algae growing on the rocks—as well as a small bit of string algae floating about—getting caught on the plants and generally looking "yucky". I have five comets and three shebunkin swimming about, all seem to be quite healthy and happy. I have the usual bullfrogs living around (betcha I have tadpoles too). Overall the water is fairly clear. I can see my fish swimming along the deepest part of the pond clearly. I have a good-sized waterfall and biofalls for filtration.

I have been using MICROBE-LIFT/PL, but have been wondering about the MICROBE-LIFT/SA I found at my local garden shop. Will this SA help clear the gunk growing on rocks in my pond?

**A.** Glad to hear that MICROBE-LIFT/PL is keeping your pond nice and clear and that your fish, bullfrogs and tadpoles (you're probably right) are so healthy! That's one of the nicest things about our natural pond treatments.

This is exactly the situation for which the MICROBE-LIFT/SA (SLUDGE AWAY) was developed. Since it is *not* easy to physically clean out a gravel-filled pond, we came up with ML/SA to accelerate the solubilization of the sludge so that the bacteria in MICROBE-LIFT/PL could biodegrade it at a rate faster than it is accumulating. Over time, this will eliminate the built-up sludge so that it is possible to reduce or eliminate manual cleaning. The only thing that the ML/SA will not have an effect on is inorganic solids like sand and grit. Eventually, this will have to be flushed out of the rock and removed.

Keep in mind that when the ML/SA is first added, it will darken the water as it begins to dissolve the sludge just like when you dissolve cocoa powder in milk. This color is all from dissolved organics, so once it is biodegraded the water will clear up again,



**MICROBE-LIFT®**

*is the product line most often requested by brand name to establish, restore or maintain the natural biological and chemical balance of your pond in all seasons.*

*Continued biological activity even in water temperatures under 55°F. (12°C.)*



#10PLQ  
1 gal. / 3.785L



#10PLQ  
1 qt. / 946mL

#10PLP  
16 oz. / 473mL



## **MICROBE-LIFT/PL**

*Specially Formulated for Decorative Fish Ponds, Lagoons & Smaller Water Features*

- Creates a healthy environment for your pond, promoting faster fish growth
- Reduces ammonia nitrogen levels
- Dissolves away organic sludge
- Seeds and maintains biological filters
- Significantly reduces noxious odors caused by dead algae, fish fecal matter and urine
- Reduces hydrogen sulfide, which creates strong, offensive odors
- Reduces biological oxygen demand (B.O.D.)
- Reduces buildup of bird droppings, fish feed and dead leaves
- Breaks down dead algae
- Improves dissolved oxygen levels
- Contains photosynthetic bacteria which reduces cloudy water by promoting flocculation and settling of organic and inorganic particles
- Effective over a wide range of pH conditions

normally in about two or three weeks but the exact time depends on how much sludge there is in the gravel. Some nutrients will also be released when the sludge solubilizes so you might see a little surge in algae growth although a few more plants can help control this by taking up released excess nutrients.

**Q.** Are any of your products made for mosquito control in birdbaths and stock tanks harmful to wild bees or honey bees?

**A.** MICROBE-LIFT/BMC (Biological Mosquito Control) is an EPA Registered biological mosquito larvicide. Part of the EPA registration process requires what is called “non-target insect” testing. In these tests the MICROBE-LIFT/BMC was shown to have no effect on honey bees. This is not surprising since the BMC is very specific and is only active against the larvae of mosquitoes, black flies and certain nuisance aquatic midges. The protein responsible for the effect is very specific to the cells in the lining of the mosquito larvae gut. Basically it gives them bleeding ulcers. So now you can “bee” confident using the ML/BMC, knowing that it won’t affect these beneficial insects making it a “honey” of a natural biological pesticide!

**Q.** I have a newly installed pond (3+ weeks) and we have had unusually hot and humid weather here in Central New Jersey. The pond is in direct sun most of the day. Less than two weeks ago, plants were added (a few water hyacinths, water lettuce, three iris, some variegated grass and a couple of “just starting” lilies), along with one 6" goldfish and 6 or 7 small fish. A week ago Saturday, I went to my local distributor who recommended MICROBE-LIFT/PL and another product in combination.

I completely miscalculated how many gallons of water the pond had and treated it as though it was 100 gallons: 8 tbsp. of MICROBE-LIFT plus 2 tsp. of the other product. It got a little better for a day or so. This week I added three 5" koi on Friday night and thought I would retreat the pond on Saturday, calculating that the pond is actually 1,100+ gallons (12' x 7' x a little over 2' deep). Not wanting to overdo it, I added another 8 tbsp. of MICROBE-LIFT plus 20 tsp. of the other product. It's not any better. It may even be worse.

Should I just be patient? Should I add fresh water every day? Should I be doing anything different?

**A.** You're not the first one to miscalculate the volume of your pond! Most people find it hard to believe how much water is in what appears to be a relatively small volume. People underestimate the weight of the water even more often. For example, your 1,100 gallons weighs over 4 tons!

And I know it's been unusually hot here in NJ for

May since I live in the Medford area in southern NJ.

Before we begin to make any decisions, the best thing to do is get a handle on the situation. A good start is to get a pond test kit to find out the pH, nitrate levels, etc. in your pond. I always say, “no matter what happens in your pond, there is always a scientific explanation for it”. This information will help us understand what is happening.

Second, since the MICROBE-LIFT/PL is a biological product, it usually takes around 7 to 10 days to start seeing results and around 3 weeks to get the full benefit. I compare it to planting grass seed. If you plant grass seed today, it will be a few weeks before you are mowing the lawn. In essence, we are seeding the pond with a population that we are relying on to reach an effective concentration in the pond through growth.

Since your pond is in full sun, sometimes you have to increase the dosage 25% or 50% to compensate. This is because of what they call your Effective Pond Volume, or EPV, is greater than your actual pond volume. Many filter manufacturers use this in sizing a filter. It helps to adjust for the greater tendencies for organic growth where there is full sun and warmer temperatures. So give it a few days and if you don't see anything, go to the week 2 - 4 dosages but double them.

Speaking of filters, it sounds like you did a very nice job on your pond and I am assuming that you have a filter, but just to make sure—do you? The filter is critical in helping provide a place where the bacteria can carry out certain processes to help remove the nutrients that can degrade water quality. Also, approximately how much of the pond surface area is covered with plants?

Wait a few days and in the meantime try to do some water analysis and get back to me. If things aren't looking better, we can develop some strategies based on good information.

**Q.** I applied way too much of the MICROBE-LIFT/ BIOLOGICAL MOSQUITO CONTROL and my water looks milky white. Short of removing the KOI and completely emptying the pond (50 gallons), is there anything else I can do?

**A.** The reason that it looks milky white is that there are protein crystals in the product that are produced by the Bti. They are the active ingredients in the product. These crystals are microscopic but when there are a lot in suspension, it can give a milky white appearance just like milk. In fact, what makes milk look “milky” is the butterfat globules suspended in the whey which is pretty clear.

Fortunately, these protein crystals are biodegradable, like most proteins. Between your filter and biodegradation the milky color will dissipate in around a week or two. If you don't use MICROBE-LIFT/PL now, a little of that will accelerate



# MICROBE-LIFT/TAC

## Totally Active Clarifier

An odorless, dry powder formulation.

- Has powdered activated carbon which clarifies water and removes turbidity associated with dispersed bacteria
- Acts as a detoxifier by absorbing micro-amounts of toxic materials that can make their way into a pond, e.g. pesticides
- Contains sodium bicarbonate—a buffer that helps stabilize the pH
- Contains sea salt to control pathogens and helps to induce a protective slime layer on fish



100% Active Ingredients!  
No Fillers! 100% Effective!  
100% Water Soluble!

#MLTAC3  
3 lb./1.36 kg

Also available in  
8 oz., 16 oz. and 5 lb.

# MICROBE-LIFT SPRING/SUMMER CLEANER

## A Seasonal Approach to the Proper Organic Balance in Ponds

Accelerates the breakdown  
of leaves, twigs and other  
accumulated dead organic waste

- Helps to jump start your pond to a healthier environment in the spring
- Reduces buildup of dead leaves and residual organic sediment
- Pre-measured
- Easy to handle
- Cost effective
- Natural
- Nontoxic
- Noncaustic



#10-SSC-1  
1 lb. / 454 grams

*ML/SSC is not a chemical. It is harmless to humans, fish, and plants. Each box contains: (8) 2 oz. water soluble packets of cellulase enzymes and hyper cellulase-producing bacteria.*

# MICROBE-LIFT/ AUTUMN/WINTER PREP

## Specially Formulated for Pond Winterization

Best started in early fall, this 2-part program is the most effective method of winter pond maintenance available.

- Will continue to provide sustained biological activity even in water temps. under 55°F. (12°C.)
- Helps to jump start your pond to a healthier environment in the spring
- Helps maintain a healthy immune system for fish during the winter months
- Reduces buildup of dead leaves and organic sediment all winter long



#AUTPREP Quarts

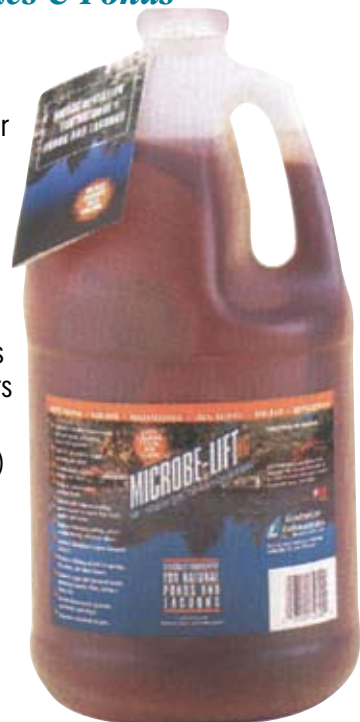
- If frozen, bacteria remains effective after thawing
- Effective in darker conditions (under ice and snow)

Each box contains: one liquid quart & two 2 oz. water-soluble packets with cellulase enzyme, hyper cellulase-producing bacteria & a cold weather bacteria (psychrophile).

# MICROBE-LIFT/HC

## A Proprietary Formulation for Larger, Rural Lakes & Ponds

- Creates a healthy environment for your pond, promoting faster fish growth
- Safe for all wildlife
- Significantly reduces noxious odors
- Reduces hydrogen sulfide, which creates strong, offensive odors
- Reduces biological oxygen demand (B.O.D.)
- Reduces buildup of bird droppings, fish feed and dead leaves
- Breaks down organic sludge
- Improves dissolved oxygen levels
- Reduces ammonia nitrogen levels



#10HCG  
1 gal. / 3.785L

Gallon container also includes informational hangtag.

the process. In the meantime, even though the water looks milky it's not going to hurt anything, except maybe your enjoyment of the pond for a few days!

**Q.** I purchased your MICROBE-LIFT product recently to use in my 120 gal. pond. I started the application process. I applied the recommended 8 oz. for the first application, and the following week I applied the second treatment of 2 oz. A couple of days later my fountain went crazy during the night. When I checked on the pond before work the next day, it was almost empty. There was only about 6 inches of water in the pond. I had to fill the pond with tap water for lack of time. I filled it about half full and treated it with a chlorine and chloramine remover. In the next couple of days we experienced so much rain that the pond refilled the rest of the way with rain water. The fish and plants seem to be fine. My problem is that there is still some sludge on the sides of the pond and with the loss of water I don't know where to go with the treatment. What would be your suggestion as to continuing the use of MICROBE-LIFT?

**A.** It is not necessary to reapply the initial purge or inoculum dosage since you still had the 6" of water in the pond which contained the MICROBE-LIFT organisms. Go ahead with the 2 oz. dosage for week 2 again and continue out on the recommended schedule from there.

You should start seeing that sludge disappear in 10 to 14 days. If it doesn't go away, try adding a little MICROBE-LIFT/SA to give the process a boost.

**Q.** I love the MICROBE-LIFT products! Last year my pond was crystal clear. I've done everything pretty much the same this year, however, the pond is so cloudy I can't see the bottom! Early Spring I started using MICROBE-LIFT/BARLEY STRAW PELLETS PLUS and MICROBE-LIFT/SLUDGE AWAY for 5 weeks and went right into MICROBE-LIFT/PL. This year it's a mess! With morning pH 7.8 and evening 8.6, no ammonia nitrate or phosphate, I have no idea why it's so cloudy. I even tried a flocculant with no results. My pond is 2,500 gal. with 2 waterfalls. The biofilter is a Biofalls (large) full of stacked media. Any thoughts? I just purchased your MICROBE-LIFT/BARLEY STRAW PELLETS PLUS 25 lbs. from a local dealer and the instructions weren't clear as to how to apply. It says how much to add...but how? In a bag-like straw, or directly to pond, loose? Please specify. Any and all suggestions will be happily received.

**A.** This always leaves me scratching my head when a pond goes from crystal clear one year to cloudy the next with no apparent changes. But as we both know, there has to be a reason for it because nature isn't irrational!

If you look in our FAQs you'll see a detailed answer

on cloudiness or turbidity and the most common causes. I'm not sure where you live, but if it's in one of the areas that has been having heavy rain this spring, it may just be due to runoff or turbulence in the water. Eventually, most of the particles that result in the turbidity should settle out.

As far as product addition goes, I'd generally begin maintenance at the start of a new pond season by using MICROBE-LIFT/PL to establish the best biological balance in the pond. I'd only use the ML/BARLEY STRAW PELLETS PLUS if you didn't see the desired level of clarity after the MICROBE-LIFT/PL was in for a few weeks or if the nutrient levels were high. ML/BARLEY STRAW PELLETS PLUS can be added directly to the pond, or put in a fabric sack, to keep any of the peat residue from settling to the bottom of the pond (although the peat is a very good conditioning agent for the water). MICROBE-LIFT/SA should be used when you see solids starting to build up on the pond bottom, especially if you have a stone or gravel bottom pond.

As our product line has expanded, it isn't always clear exactly when to add the various products, so one of my projects for right now is putting together a large chart with all of the products, what they do and when to apply. This should help avoid any confusion.

A flocculant is usually a good idea for cloudiness if the cloudiness is caused by suspended particulates. We are currently developing a new, non-toxic, biodegradable flocculant that we hope to have on the market by 2006. (With respect to testing, packaging, dosing, etc., we must have products for next year completely done by July in order to get them in the distributor catalogues and product lines). Until then, you can try one of the alum or polymer flocculants available.

If you continue to have problems, we'll do a free water analysis for you just to make sure there isn't anything interfering with your test results.

**Q.** We are new pond owners and haven't had clear water after introducing water lilies. We used two doses of MICROBE-LIFT/PL and there is no change. We only have four 2" goldfish and can't even see them. If I take a water sample in a clear jar, the water has a green tinge. At this rate we will not be able to enjoy our pond all summer. Do we need to change the water? We have not done this as yet. We use well water for our sprinkler system and have been advised to use this water to change the pond. This water smells like rotten eggs when the system is on and has an iron content. We use a system to take the rust out so our patio is not rust colored. The initial water was city water. We live in Panama City, Florida. I hope I have covered everything so we can have a clear pond quickly!

**A.** I'm not sure what substrate was used for the water lilies but if there was some potting soil with

Continued





All 3 products also available in 8 oz.

### SOY-BASED CLEANERS

*Natural, soy-based cleaning products that combine the power & versatility of the soybean to create safe, renewable alternatives to petroleum-based products*

- Powerful and safe removal of organic debris and mineral deposits
- Environmentally friendly
- Biodegradable, skin friendly and nontoxic
- Safe for use around birds, animals and humans, plants and grass
- Not harmful to fish or other aquatic life

### ML/SOY-BASED CLEANER for Vinyl, Rubber, EPDM, Butyl, Polyethylene & Plastic Surfaces

*Safely cleans pond liners, preformed ponds, pond containers and plant containers*

### ML/BIRDBATH & STATUARY CLEANER for Birdbaths, Garden Statues, Sculptures, Stone & Brick

*Helps correct mineral problems such as scaling, staining and water discolorations*

### ML/BIRDHOUSE & BIRDFEEDER CLEANER for all Plastic, Vinyl, Fiberglass & Metal Birdhouses & Resin/Poly Birdfeeder Surfaces

*Safely cleans surfaces of organic debris, mineral deposits and bird droppings*

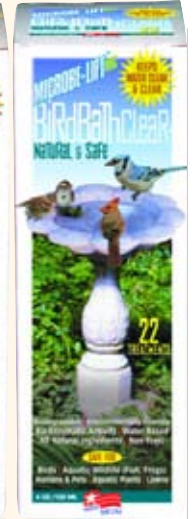
#10LFC16 16 oz./472mL



#10TFC4  
4 oz./120mL



#10BBC4  
4 oz./120mL



### CLEAR FOUNTAIN PRODUCTS

*Three all-natural, biodegradable and nontoxic products that prevent organic contaminants from forming*

### ML/LARGE FOUNTAIN CLEAR Specially Formulated for Larger Water Fountains & Indoor/Outdoor Waterfalls

*Will help to ensure clear, sparkling water that keeps water filters and pumps free from organic debris*

- Safe for birds, fish, aquatic wildlife (fish, frogs), humans, pets, aquatic plants and lawns
- Treats up to 6,400 gallons

### ML/SMALL FOUNTAIN CLEAR Specially Formulated for Smaller Fountains

*Will help to ensure clear, sparkling water that keeps water pumps free from organic debris*

- Safe for humans, pets and fish
- Up to 22 treatments per 4 oz. bottle

### ML/BIRDBATH CLEAR A Bio-Enzymatic Product Specially Formulated for Birdbaths Inhabited by Birds, Small Fish, Frogs, etc.

*Two unique proprietary technologies: One prevents stain, mineral deposits and organic buildup on the birdbath or fountain surface; the second keeps water clear and free from organic debris that can make the water cloudy.*

- Helps keep birdbath water clear
- Safe for humans, pets and fish
- 22 treatments per 4 oz. bottle

added fertilizer in it, some of the nitrogen and phosphorous could have leached out into the water. This would provide the necessary nutrients to support the planktonic algae growth that usually causes the greenish tint—or what’s called “pea soup”—if it gets that density of color. You don’t mention how large your pond is but with the number and size goldfish you have, anything over 80 gals. would be large enough. I’m assuming that you have a filter. If you don’t, let me know. This is also important to the way the bacteria function and what they can do. Given the information from your e-mail and making certain assumptions about the water characteristics, my recommendations are as follows:

1. Get a pond test kit at your local pond center and find out what the pH, alkalinity, ammonia, nitrate, etc. levels are. Unfortunately, none of the kits now include a test for phosphate which is a critical parameter. (We may have our own kit for this next year since it is so important). Make sure all of the parameters are in the normal ranges.

2. Establish all of the necessary biological cycles with the MICROBE-LIFT/PL and remove any residual nutrients by covering one-third to one-half of the pond surface area with plants.

3. If you don’t have a filter, install one. If you have one but it doesn’t have a uv light, consider installing one that is EPA approved as a pesticide device. Just remember to turn the filter off for 24 hours after adding MICROBE-LIFT/PL since the uv light can also damage beneficial bacteria, especially when they are in their most rapid growth phase.

4. While the MICROBE-LIFT/PL can get rid of excess sludge, seed your filter, get rid of excess nitrogen and, in most cases, keep your water crystal clear and healthy for your fish, the only way to get rid of excess phosphorous is with a phosphorous scavenger or a partial water change. Just drain 50% of the water in your pond and replace with the well water, which I agree will be better than city water in most cases. Testing the well water can confirm this. The MICROBE-LIFT can also help get rid of the rotten egg odor. That’s why the product has that odor. (In order to grow bacteria that will oxidize hydrogen sulfide you have to have some in there to grow them).

If you try some of these and are still having problems, let me know. We’ll get that water clear so you can enjoy your pond.

**Q.** Can MICROBE LIFT/PL be used in my aquarium?

**A.** Due to the smaller volumes and unique characteristics of aquariums, we have formulated a product specifically for aquariums. It is called MICROBE-LIFT/SPECIAL BLEND.

In tests, we kept two 65 gallon aquariums that were cloudy and smelly after 6 weeks of operation and turned them crystal clear. They stayed that way for three years without even a partial water change

and no cleaning. We wouldn’t recommend this! We were just seeing how far we could go. Most people find that they can at least double their time between water changes.

One of the biggest pet chains is now evaluating the product in their own fish tanks with excellent results to date. See if you can find ML/SPECIAL BLEND at your local pet store or somewhere online.

**Q.** I have been opening the MICROBE-LIFT/SPRING/SUMMER CLEANER packets and sprinkling them around the pond. Is this correct or should I be just dropping them in the pond?

**A.** We try to make things as easy as we can for our customers so we have made the pre-measured packets water soluble. All you have to do is toss them into the pond, preferably near a point where the water is circulating. The packaging material will dissolve in a few minutes and release the bacteria/enzyme blend.

The neat part is the bacteria in the MICROBE-LIFT/SPRING/SUMMER CLEANER will then break down the packaging material to carbon dioxide and water. Perfect recycling! They don’t call us Ecological Laboratories for nothing!

**Q.** I’ve had a disaster occur! My pond fish have been dying by the droves. I had someone come out and test the pond water yesterday. She found the ammonia level to be toxic. Other than the automatic refill on the filter not shutting off, I don’t know what else could have caused this. Can you by any chance explain what could have happened?

**A.** I think that I have a pretty good idea about what might have happened!

First, ammonia is a natural breakdown product of protein through a process called *ammonification*. The fish give this off right through their gills. That is the most common source of ammonia in a pond. It is also possible that some may be released in the digestion of organic sludges or plant waste. This can be a problem because ammonia is generally toxic to fish in concentrations as low as 1.0 PPM. The ammonia toxicity threshold will also be affected by pH since the ammonia can exist in the aqueous phase as the  $\text{NH}_4^+$  ion and as dissolved  $\text{NH}_3$ . The dissolved  $\text{NH}_3$  is the more toxic form and the higher the pH, the more ammonia will be in this form.

In a pond that is “cycling” properly—meaning that it has established the bacteria necessary to carry out the nitrification process—this ammonia is quickly oxidized to nitrite and nitrate. The nitrate isn’t harmful to fish until it gets to very high concentrations. Unfortunately, the nitrifiers grow slowly and don’t function well when the temperature goes below 50°F. At around 42°F. they shut off completely. (Most of this information comes from



# MICROBE-LIFT/BIO-BLUE ENZYMES & POND COLORANT

*For Larger Natural Ponds, Lakes & Lagoons*



**PATENT PENDING**

*Safely colors water a beautiful shade of blue while the enzymes assist the beneficial bacteria in your pond to create a healthy pond environment.*

#MLBB  
1 gal. / 3.785L

- Once diluted, will not stain birds or fish, nor most concrete fountains or pond rocks
- Safe for humans, plants and aquatic life
- Mixes completely in hours
- Digests organic waste
- No restrictions on swimming, irrigating or fishing
- Makes off-color water more appealing

*Single application does 2 jobs saving time & money!*

# MICROBE-LIFT/SUPER START BEAD FILTER BACTERIA

*Contains aerobic heterotrophs, facultative anaerobes, anaerobic and chemotrophic bacteria capable of carrying out all the necessary processes for optimum performance of bead filters.*



#MLBFBG  
1 gal. / 3.785L

#MLBFBQ  
1 qt. / 945mL

- Contains organisms that synthesize biopolymers which speed up biofilm formation
- Rapid establishment of organic removal capabilities
- Rapid establishment of nitrogen cycling including nitrification and denitrification

- Reduces buildup of residue in filter, decreasing maintenance and improving filter efficiency by avoiding "channeling"
- Rapid recovery of filter after use of medications and antibiotics
- Breakdown of residual medications, like tea tree oils and formalin products, which are inhibitory to most bacteria, after use
- Effective over a wide pH range
- Reduces hydrogen sulfide

*Natural, non-toxic & non-pathogenic*



**EPA REGISTERED**

# MICROBE-LIFT/BMC BIOLOGICAL MOSQUITO CONTROL

*LIQUID Formulation for Areas Where Standing Water Exists Like Decorative Water Gardens, Ponds, Lakes, Lagoons, Fountains, Birdbaths & Stock Tanks*

*Kills developing mosquito larvae before they become breeding, biting adults, including those which may transmit WEST NILE VIRUS and EQUINE ENCEPHALITIS, and those which may transmit HEARTWORM DISEASE to dogs and cats.*

*Can be applied to areas that can contain aquatic life, fish and plants.*

*Can be applied to areas used by or in contact with humans, animals, horses, livestock, pets, birds, wildlife.*

- Biological Larvicide (Active Ingredient: Bti )
- Can be used in water gardens that contain live fish and plants
- Disperses rapidly and evenly in water
- For ponds and lakes: 540 square foot coverage per tsp. and up to 14 days activity
- No toxicity to fish or non-target invertebrates
- No potential for resistance development in the target mosquito population
- No adverse aesthetics
- No organic or inorganic residues

SMALL Ponds	#BMC2	2 oz./60 mL
MEDIUM Ponds	#BMC6	6 oz./177 mL
LARGE Ponds	#BMC12	12 oz./354 mL
EXTRA LARGE Ponds	#BMC16	16 oz./473 mL
BIRDBATHS	#BMC.5	.5 oz. /15 mL
STOCK TANKS	#BMCQ	2 oz./60 mL

around three years of research I did on nitrifiers.)

If you happened to be in an area that was affected by the recent cold snap, your nitrifiers may have shut down allowing the ammonia to build up to toxic levels. It will be hard to re-establish biological nitrification right now if the pond water is cold. The best way to knock down the ammonia toxicity immediately is to get an ammonia absorber at your pond specialty center or the pond section of your lawn and garden store. (A pet supply store may also have something you can use if the pond section is closed for the year). While ammonia absorbers are useful in an emergency like this, ultimately it is best to re-establish *biological* ammonia control since it adjusts to the loading and is more economical over a long period of time.

Next spring, as the pond water warms up above 50°F., use MICROBE-LIFT/PL to help establish natural biological nitrification. If that alone doesn't do the job, keep an eye out for our new MICROBE-LIFT/NITE-OUT II—concentrated nitrifying culture. As you can probably tell, if we have come up with a special product for this, it is a common problem. I hope this helps and you can save your fish.

**Q.** Your product, MICROBE-LIFT/BMC, for pond-mosquito control says nothing about safety! Is it safe for the fish that live in our small pond or the animals that drink from that water source? If it is safe, and I would hope it would be, do you have a back-up sources, i.e. studies that would support your product's safety?

On second thought, it's curious as to why the company would not include said info on the bottle.

**A.** YES, the product is safe and will not harm fish or pets that drink out of a pond or other water source to which the MICROBE-LIFT/BMC has been added.

And, YES, we do have the data to back up these claims. As an EPA Registered pesticide, the product has been subjected to a full toxicology screening that includes acute oral toxicity, non-target insect, non-target plants, cold water and warm water fish species, non-target invertebrates, etc. These tests cost approximately \$500,000 to conduct and are done by outside certified testing labs. All of this information is on file and available upon request. The summaries are several pages long and would not fit on the label. The EPA has very strict guidelines for what is required and also what can and cannot be put on a label. We have to follow these guidelines and do follow them.

**Q.** I have a fairly large backyard pond, a little less than an acre in surface area and an average depth of about 5 feet. I have recently installed a bubbler and a fountain to increase oxygen levels and mix up the stratification of the pond. It has carp, bass and catfish stocked in it as well. The pond is very

cloudy and has a lot of "muck" built up on the bottom. We use the pond for swimming in the summer so we'd really like to clear it up. I recently purchased MICROBE-LIFT/PL to use on the pond. Will we still be able to swim in it after we use the MICROBE-LIFT? If it is safe long term, do we need to wait a period of time after initial treatment?

**A.** Adding the bubbler and fountain to increase the oxygen levels and mix up the stratification in the pond should help significantly, along with the addition of the MICROBE-LIFT/PL, in reducing the buildup of sludge and sediment in the pond. We have performed toxicology studies on the MICROBE-LIFT which shows that it is not toxic in acute oral, acute and chronic dermal, and chronic ocular toxicology studies, so there should be no problem using the pond for recreational activities. The pond water isn't sterile even if you don't add a biological product. The ML/PL will also do a good job of breaking down body oils and tanning lotions that can cause a surface sheen on the pond.

The only downside of adding the bubbler and fountain is that they will provide mixing energy and suspend some of the settleable solids in the pond. This will make the pond look turbid and murky until a majority of these solids have been broken down.

The only thing that the ML/PL won't remove is any inorganic particulates. Depending on how clear you want your water to be, it may be necessary to install a filter to trap and remove some of these particles.

MICROBE-LIFT/SA, SLUDGE AWAY, may also help accelerate the breakdown of the "muck" but it will make the water a slight tea color for awhile. And get your pond off to a great start next spring with MICROBE-LIFT/AUTUMN/WINTER PREP to help break down leaves and other plant matter that can get into the pond during the fall months.

**Q.** I live in Wisconsin and want to know how I can save my water plants. I have cannas, irises, hyacinths and water lettuce. What can I do to keep them alive until spring?

**A.** The best way to handle each of these varies from one plant to another.

Tropical floating plants like the water lettuce (*Pistia stratiotes*) and water hyacinths (*Eichornia*) cannot remain outdoors but must be brought in for the winter. They can be kept in an aquarium or just floated in anything that can hold water. You can place them in a warm, sunny window for several weeks. Often they will appear to do well but suddenly turn soft like a rotten tomato. The reason for this is that as the days begin to lengthen in February, the plants start growing but the natural light is not adequate so the plants start to die. They need about 70°F. and 14 hours of light per day to do well so you will obviously have to supplement with grow lights or fluorescent lights powerful enough to generate 1,000



Shown: #10BSPP2.2 2.2 lb. bags  
Also available in 4.4 lb. & 10.5 lb. bags



Shown:  
#MLCBSE250  
8 oz./245 mL  
Treats 1,600 gal.

Also available in  
16 oz. & 32 oz.



**BARLEY STRAW PRODUCTS**

*Specially Formulated to Naturally Balance Pond Water & Improve Clarity*

## MICROBE-LIFT/BARLEY STRAW PELLETS PLUS

**100% Natural & Organic Ingredients**

*Works Faster and Better With Less Mess and Cost; Easier to Apply than Bales, Pillows and Pads!*

*Revolutionary formula of pure natural concentrated barley straw enriched with peat and humic acid*

- Disperses quickly
- Matures pond water chemistry
- Releases decomposition by-products immediately
- Buffers pH
- Provides slow, steady release of beneficial ingredients by natural, biological activity
- Works year round
- Recommended for use with MICROBE-LIFT bacterial and enzymatic pond products
- Harmless to fish and higher pond plants

## MICROBE-LIFT/BARLEY STRAW CONCENTRATED EXTRACT

**Helpful Where Bottom Drains Exist!**

- Goes to work on contact
- Immediate decomposition process
- Not harmful to aquatic life, plants, humans or pets
- One bottle is equal to a multiple of barley straw bales
- Can be used all year round
- No messy residual

## MICROBE-LIFT/CONCENTRATED AQUATIC PLANTING MEDIA

**Pre-Colonized with Beneficial Bacteria**

*All Inert Ingredients!*

*No Fertilizer, Compost, Peat or Pesticides!*

*100% Natural Minerals!*

*Kiln Fired!*

- Ideal to use when potting aquatic plants
- Retains oxygen
- Enormous surface area perfect to colonize beneficial nitrifying bacteria
- Contains no algae promoting nutrients
- Allows mixing any ratio of loam to planting media
- Is non-toxic to plants
- Will not breakdown or float
- Will not cloud pond water
- Safe for all fish and aquatic life

Shown: #MLCAPM10 10 lb. bags  
Also available in 20 lb. bags



Shown:  
#MLKKB6  
6 lbs. / 2.73 kg.  
Also available in  
4 lbs. & 2 lbs.



**PREMIUM GRADE**

## MICROBE-LIFT/CALCIUM MONTMORILLONITE CLAY

**100% Natural Formulation for Pond Clarity, Koi Health, Growth & Color**

- Provides fish nutrition through mineral ingestion
- Promotes immunity against viruses and other common pathogens
- Improves fish color
- Detoxifies and clarifies pond water (polishing)

foot-candles of light. With the energy required, many plant experts like Greg Speichert of "Water Gardening" magazine suggest mulching tropicals in the fall and buying new ones the following spring.

Cannas are rated "hardy" in growing zones to 8b i.e. temperatures down to 15 to 20°F. However, the generally accepted view is that cannas are tropical plants that cannot stand a winter freeze and should be brought indoors for the winter. They can also be left to dry out so the tubers can be cleaned and stored for the winter. Robert Armstrong, who hybridized the famed Longwood water cannas, reports that he successfully overwinters his hybrids by placing them at the bottom of the pond. As long as the rhizomes are not reached by the ice during the winter, the plants return the following spring.

Proper winter care for irises depends upon the particular species of Iris. Generally, irises that like to grow in water year-round (*I. pseudamorus*, *I. virginica*, *I. versicolor*, *I. laevigata*, and *I. prismatica*) are easily prepared for winter's cold winds. As the foliage dies down in the fall when temperatures cool, trim the leaves back to just an inch or so above the crown of the plant. Leave plants in the pond, making sure they will stay wet throughout the winter. Some gardeners prefer to mulch them into the perennial border, while others move them to the bottom of the pond. Most people find these irises do well if they are simply left on the shelf or margin of the pond.

Other water garden irises cannot tolerate water over their crown during the cold winter months in your area. These include *I. ensata*, *I. missouriensis* and the Siberian irises. As a general rule, none of these species will survive a period of dormancy with their crowns submerged below water. They do perform well, however, if they are grown in a boggy area where the soil stays moist but the crown of the plant is not covered with water. Growing these species at the edge of a natural pond or stream, where they will not be subjected to winter drowning is the ideal solution. If they are in pots in the pond, remove them from the water garden in the fall, dig a temporary border, and mulch them heavily for the winter. Be sure to trim off most of the foliage to prevent dormant insects or their eggs from spending the winter in this hospitable environment.

For more information on aquatic plants, I suggest "The Encyclopedia of WATER GARDEN PLANTS" by Greg Speichert and Sue Speichert, Timber Press, Inc., Portland, Oregon 97204, 2004. This is the book I use for information on aquatic plants including much of the information provided here. Even if not for all the valuable information, the book is worth the \$49.95 price tag (a bargain at twice the price) just for the incredible pictures! Honestly, when not reading it or using it as a reference source, I keep it on my coffee table. It's a must for the aquatic plant enthusiast's library, even if you only have this one book.

**Q.** I cannot find any info on Aquatic Plant Soil on the MICROBE-LIFT website. Where may I find it?

**A.** We redid our website earlier this and it has been a work in progress. Since the potting soil was a new product for 2004 and our established lines were the top priority it may have taken a little longer to get the planting media up there but it is there now. When you go to our website click on the "Pond Products" button on the left side of the screen. When the pond products come up, click the menu item "Click for More Products". The potting soil is MICROBE-LIFT/CAPM, CONCENTRATED AQUATIC PLANTING MEDIA. We should probably put some more descriptive language with the name so it is easier to find and determine what the product is. I'll talk to our website people about that. To save you some time, here is a summary of the features and benefits of the MICROBE-LIFT/CAPM, CONCENTRATED AQUATIC PLANTING MEDIA. For more info, go to our website at <http://www.microbelift.com/>.

The MICROBE-LIFT/CAPM is a high quality ceramic media that contains beneficial microorganisms. The media is an ideal sieve size for use as a planting media since it won't float and, as a ceramic, is inert and will not leach nutrients into the water that can promote the growth of algae. ML/CAPM has a neutral pH and is also kiln fired and does not break down easily.

However, since it is inert, it cannot provide anything more than a structural foundation to the root system of the plants on its own. The microorganisms can provide substantial benefits by interacting with the root system by modifying nutrients so they can more easily be taken up by the plant and also by producing growth factors that are beneficial to the plant. This helps reduce transplant shock as well.

This would come as no surprise to farmers who have found that one of the most significant factors in determining the health of soil and its suitability for crops is the microbiological activity. It was determined that the effects of residual pesticide toxicity were not so much due to the presence of residual pesticide but to the suppression of bacterial activity.

The feedback we've gotten to date has been excellent. Many dealers have even dropped the other lines they were carrying. Give it a try and let us know how you like it.

**Q.** The information on the MICROBE-LIFT/PL box states that it has a shelf life of approximately 3 years if it is unopened. My question is: from what date is this 3 years? Is there a date of manufacture or expiry date on the bottle or box?

**A.** While the product has a three year shelf life, we normally prefer that it is used within two years from the date of manufacture for best results. The bottle



# MICROBE-LIFT/SA SLUDGE AWAY

*Especially Helpful for Ponds That Have a Rock or Gravel Bottom & Where Vacuuming is Impractical*

*MICROBE-LIFT/SA is formulated specifically for the removal of organic bottom solids that are slow to degrade.*

## ML/SLUDGE AWAY's Oxygen Demand

MICROBE-LIFT/SA will accelerate the solubilization and biological digestion of organic solids in your pond. As a result of this increased oxygen demand, the Oxygen Uptake Rate (OUR) in your pond will increase in the process, along with your aquatic life's need for oxygen.

**When using MICROBE-LIFT/SA, make sure that your pond is adequately oxygenated (>4.0 mg/L dissolved oxygen).**

- Provides “rapid and natural sludge and muck removal”
- 80% faster than competitive products
- Organic and microbial-based
- Helps improve pond clarity
- 100% active ingredients
- Binds phosphate
- Disperses quickly
- Bio-degradable

#ML/SAQ  
1 qt. / 946mL

#ML/SAG  
1 gal. / 3.785L



# MICROBE-LIFT/NITE-OUT II

*Specially formulated for Rapid Ammonia & Nitrite Reduction*

MICROBE-LIFT/NITE-OUT II is designed specifically for pond waters that contain marine life. Its highly-specialized microbial consortium of nitrifying cultures are specially formulated to eliminate ammonia via a natural biological process termed nitrification. The cultures contained in MICROBE-LIFT/NITE-OUT II will establish, promote or stabilize and maintain nitrification in pond waters, eliminating the toxic effect of ammonia.

MICROBE-LIFT/NITE-OUT II liquid nitrifying bacteria contains select strains of Nitrosomonas, Nitrospira and Nitrobacter. Nitrosomonas convert ammonia to nitrite and Nitrobacter and Nitrospira convert nitrite to nitrate.

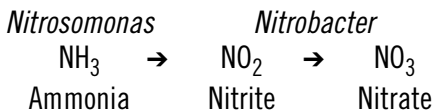
- Initiates nitrification
- Promotes stable nitrification
- Provides stable cold weather nitrification
- Safe for use around plants and animals

#NOG  
1 gal. / 3.785L

#NOQ  
1 qt. / 946mL



## NITRIFICATION



MICROBE-LIFT/NITE-OUT II comprises select microorganisms that are autotrophic—able to use carbon dioxide as the sole source of carbon—and are relatively slow growing, requiring specific conditions for optimum growth with typical cell division rates from 8 to 16 hours. Their performance and rate of growth is impacted by the environmental parameters required for nitrification. They are also highly oxygen-sensitive, requiring high dissolved oxygen levels (greater than 2 mg/L) to achieve maximum growth rates. Nitrite is produced by beneficial bacteria in the pond and the oxidation of harmful waste ammonia excreted by fish. Even though nitrite is not as toxic as ammonia, it is still very damaging to the health of fish.

has a lot number on it that we can use to track the date of manufacture.

Until this year we used a six-digit number that many people assumed was the date. I recently had a woman buy a gallon with the lot number 101197 on the bottle which she assumed meant it was made in October '97. As I checked into it, it turned out that this batch was made in July '02! We have recently gone to a lot code system of numbers and letters to avoid this. If you want to check when your product was made, e-mail me the number and I'll get the manufacture date for you. We don't usually worry much about the manufacture date because MICROBE-LIFT/PL and other MICROBE-LIFT products move too quickly to get out of date!

**Q.** I have just discovered MICROBE-LIFT products and began to use MICROBE-LIFT/PL. I am excited to see if my cloudy water will clear up soon.

I used an algaecide product (AlgaeFix) in my pond due to green water. I added a 16 oz. bottle (16 oz. = 3,000 gals.) to my 3,000 gal. pond and then three days later I added another 16 oz. bottle. Three days after the second application of algaecide, I began the initial dose of MICROBE-LIFT/PL. Does the residual algaecide in the pond decrease the effectiveness of your product? Is three days enough time to wait? Should I reapply the initial dose of ML/PL?

**A.** We have many people who use MICROBE-LIFT/PL after using an algaecide to break down the dead algae and clear up the water. We have done some respirometry studies (a study to determine how a substance affects the microbial activity) on a number of biocides and antimicrobial agents, the AlgaeFix among them.

We found that the polyquat (the chemical used in the AlgaeFix as well as many other swimming pool and spa products) does suppress microbial activity. However, the chemical is quickly attenuated in the pond by sediments, etc. so that the impact is quickly neutralized. In addition, the organisms in the MICROBE-LIFT/PL aren't as inhibited by it as much as most organisms. We normally recommend waiting three days to a week after your last AlgaeFix addition before adding MICROBE-LIFT/PL, so if it's been that long you may want to start with the initial dosage and follow this same procedure in the future.

Make sure your pond is well aerated since the dead algae can cause an increased oxygen demand as it is broken down. Also, be careful NOT to add over the recommended dosages of the AlgaeFix to get fast results because there is a fish toxicity threshold. If you get the same results as 90% of our customers, within 10-14 days your water will be crystal clear.

**Q.** About a month ago I told you of a problem I was having trying to clear my pond. Your advice,

**(increase the amount and frequency of MICROBE-LIFT) has made my pond crystal clear! It looks like I can now keep all my fish at least for another year. They are getting larger and will have to be given another home. Thanks again for your help.**

**A.** Glad to hear you got such great results at the increased dosages. Wish we could figure out exactly why some ponds need more. Well, maybe someday. We also appreciate you taking the time to get back to us with positive feedback.

As for your fish being healthy, it's one of the things MICROBE-LIFT/PL does best. At the recent Koi America Show in Chantilly, VA the owner of two class champion Koi at the show, one of which was the Grand Champion, stopped by our booth and talked about how healthy his fish have been and how clear his water has been over the past two years while he has been using MICROBE-LIFT in his pond. We just love stories like this.

**Q.** I have a diatomaceous earth filter manufactured by Innerspace Products. Can this be utilized with MICROBE-LIFT/PL? This filter removes particles down to 1 micron.

**A.** Good question! Most bacteria vary in size from 0.5 microns to 3.0 microns (1 micron = .000039 inches) for some of the larger Bacillus sp. An "absolute" biological filter is one that filters out anything larger than 0.45 microns. While a small fraction of the organisms in MICROBE-LIFT/PL may be filtered out, the majority will pass through. You'll probably start getting some biological activity in the diatomaceous earth filter thus purifying your water even better.

Most other biological products *wouldn't* work as well since most contain only a few spore forming Bacillus sp.—most of which are larger than 1 micron—and just can't compare with the spectrum of organisms contained in MICROBE-LIFT products.

**Q.** Can you tell me whether worms are beneficial or detrimental to my fish pond?

**A.** The term "worms" takes in a lot of territory. There are flat worms, cut worms, red worms, etc. If you are referring to the red worms you may find in the bottom sediment or your filter media slime, these are primarily beneficial and an indication that your pond is healthy as worms are a natural part of many natural ecosystems. Just as in the soil, they can aerate sediment by burrowing through it so there is less chance of undesirable anaerobic activity. They also process organic waste like undigested food and fish waste leaving castings that are more stable and rich in minerals. They also make good fish food.

There are some worms that can be parasites or act as hosts for other parasites. Obviously, these are undesirable and if you have problems with worm parasites or other parasites that use the worm as a host at various phases of its life cycle, try to get rid



*Setting a whole  
new standard!  
It's not just  
a fish food...  
it's a complete  
nutritional  
feeding system!*

**MICROBE-LIFT®/LEGACY FOODS**  
*are the finest cold-water fish  
food formulas today!  
Manufactured from the  
highest-quality ingredients  
selected for optimum growth  
and the latest technology  
available for digestibility and  
color enhancement, all  
MICROBE-LIFT®/LEGACY products  
contain low ash content.*

**MICROBE-LIFT®/LEGACY FOODS**  
*are made by an extrusion  
process—not pelleting. During  
extrusion, the cell walls of all  
organic substances contained  
in the food are disintegrated  
under pressure. The nutrients  
hidden in these cells are thus  
easily accessible for digesting  
agents, resulting in much  
higher digestibility in  
comparison with pelleted or  
flaked food. Additionally, the  
LEGACY FOODS have an  
extremely low phosphorous  
content which keeps fish waste  
to a minimum and helps to  
ensure superior water quality.*

# MICROBE-LIFT®/ LEGACY KOI & GOLDFISH FOOD



## *A Scientific Diet for Fish*

The concept of probiotics—direct-fed microbials (DFM)—began in the early 1950's when researchers observed a positive growth response in animals fed with antibiotics.

This observation led researchers to theorize that intestinal microflora may play a role in health and vitality. Continued research has determined that a delicate balance exists in the intestinal tract between beneficial and potentially harmful bacteria. The balance of these two bacterial groups in the fish's intestines is an important factor which can be upset by stresses, such as: shipping; changes in diet, water quality and/or temperature, environment; additions of new aquatic life; etc. If the beneficial intestinal bacteria decrease and the potentially harmful bacteria increase, it is possible to compromise fish health and performance. Additionally, koi and goldfish have no stomachs and use their intestinal tract for digestion, so it is important that enzyme producers survive and germinate there.

Because of their efficient enzyme production and other metabolite-producing capabilities for intestinal tract conditions, Ecological Laboratories Inc. has specially selected two strains of *Bacillus* (*B. subtilis* and *B. licheniformis*) for inclusion in all of its fish foods, named Nature's Building Blocks. FDA (USA) and EU (European Union) Approved, these bacteria have been tested for 1)strain stability, 2)efficacy and 3)safety. Extensively studied, they were found to be genetically stable, non-genetically modified, produce no toxins, and—being a natural product—environmental impact studies show these strains pose no threat to the environment. They also show the following characteristics:

- Form spores to survive extrusion conditions
- Naturally occurring nonpathogenic microorganisms
- Utilize large numbers of carbohydrates for growth
- Produce and secrete a variety of relevant enzymes, e.g. protease, lipase, amylase, which break down carbohydrates, proteins and fats into smaller, easily digested nutrients used for growth, health and vitality!

of them. Naming all of these is beyond the scope of this answer, but if you do note specific problems drop me another line. Until then, don't sweat the worms. They are likely doing more good than harm.

**Q.** I am trying to figure out how many gallons are in my pond before I add any products. (I purchased MICROBE-LIFT/BARLEY STRAW PELLETS PLUS). I know there is some mathematical equation out there...or is there another way to figure it out?

My pond is the shape of the number 8, about 2' deep, 15' long, and 4' wide at the small end, 5.5' at the widest end.

While I'm at it, I may as well ask...I've had the pond for about 3 years now. It has a small waterfall and a fountain at the other end that is contained in one of those filter boxes. It has a pond liner and I added pea gravel to the floor of the pond to give it a more natural look. The ecosystem has been fairly well balanced between the plants, Koi and goldfish, but the growth of algae on the waterfall rocks is bad. I realize the need for beneficial algae, which grows on the side walls of the pond, but I'm wondering if there is a need for an additional filter or additives to keep things under control.

I'm not concerned about having a perfectly clean pond—that is impossible with the “natural” ecosystem I have tried to encourage. But between cleaning the algae off the rocks and keeping leaves out of the pond, it is challenging at times.

**A.** To figure out the volume, we'll have to average some dimensions. Since it is irregular let's take an average of the width and say that it is 15 x 5 x 2. Since Volume = Length x Width x Depth, that would mean that your pond is  $15 \times 5 \times 2 = 150$  cubic feet. To convert cubic feet to gallons, you multiply by 7.49 so that means that you have approximately 1,125 gallons of water. Bet you never thought there was that much in it. That's over 4 1/2 tons of water!

It's good that you accept a “natural” look to your pond. A lot of water gardeners in England say that Americans don't want ponds, they want aquariums in the ground—referring to their fanatic efforts to keep everything crystal clear! There is a place for some algae in a pond ecosystem, as long as it doesn't get carried away and grow to a point where the pond is no longer enjoyable.

Keeping the pond “ecologically balanced” means that you have established the necessary life cycles like the nitrogen cycle, carbon cycle, phosphorous cycle, etc. so that these elements and their various compounds don't accumulate to a point where they are detrimental to the pond environment. This is the way nature handles waste with microorganisms as the ultimate recyclers. Usually an excess of algae means that there is an abundance of their required nutrients, most notably nitrogen and phosphorous, since algae is photosynthetic and can get it's

carbon from the carbon dioxide in the air.

It might be possible that you need a larger filter so that there are enough bacteria to handle the job. A test kit is also a good idea so that you can monitor the quality of the water. That is a big help in sorting out the root cause of any problem. Some of the parameters it is good to monitor are: pH, ammonia nitrogen, nitrite nitrogen, nitrate nitrogen, alkalinity (total and carbonate), phosphate and iron. Dissolved oxygen levels are nice to have, but the best way to measure it is with a D.O. meter and that can get a little pricey.

Our MICROBE-LIFT/AUTUMN/WINTER PREP and MICROBE-LIFT/SPRING/SUMMER CLEANER also do a great job with those leaves and other organic sediments, reducing the need for manual cleaning. And they both do this naturally. We have gotten e-mails from users who say that they used ML/AUTUMN/WINTER PREP the previous fall and their pond has never looked so good in the Spring.

**Q.** My question is about the black sludge that accumulates in my filter and on the bottom of the pond. Is there truly a product that will dissolve this or do I have to vacuum it out periodically? Numerous products, including yours, refer to “eliminating” sludge. Do any of them really eliminate sludge or do they just reduce it?

**A.** As far as sludge goes, there are two factors that are important: first, the composition of the sludge; and, second, the rate of sludge generation. First, if what is accumulating has an inorganic component e.g. sand, grit, etc. that will *never* break down and has to be physically removed. Second, there is a rate of generation of biological slime based on the amount of organics in the pond. MICROBE-LIFT/PL can digest this and, in many cases, increase the rate of digestion so it is equal to or greater than the rate of accumulation so the sludge is “eliminated”. Where the rate of accumulation exceeds this rate, you may have to periodically clean out the filter. Some of your excess accumulation may be due to the string algae. Just remember when you clean it out that you just want to restore free flow to the filter. Some people want it to be as clean as a whistle which you *don't* want. That slime contains beneficial bacteria that are important to your water quality. *Don't* do like a person at one seminar who asked me if it's ok to clean the filter media out with chlorine bleach!

MICROBE-LIFT/SA, SLUDGE AWAY, is designed to be used with MICROBE-LIFT/PL to achieve even *better* sludge digestion. ML/SA accelerates the solubilization of the sludge so that the bacteria in ML/PL can biodegrade it at a rate faster than it is accumulating. Over time, this will eliminate the built-up sludge so that it is possible to reduce or eliminate manual cleaning. Field tests have shown excellent results. It is also an all “natural” product. 🇺🇸



## MICROBE-LIFT/LEGACY 7-DAY NUTRITIONAL FEEDING SYSTEM

*Classified as “omnivores”—those who eat foods derived from plants or animals—Koi will eat practically anything humans will! Koi need a well-balanced daily diet. The MICROBE-LIFT/LEGACY System will achieve maximum health benefits by providing the highest levels of proteins, carbohydrates, fats, vitamins, minerals and water (moisture content), strengthening the fish’s immune system so it can produce needed body heat, energy and growth. Smaller and more frequent feedings is the preferred method. Water temperature is the most important factor in determining what kind of food to feed your fish because the metabolic rate (rate at which energy derived from food is utilized) is influenced by water temperature. Choose one of MICROBE-LIFT/LEGACY’s three primary foods and feed it three days per week, every other day, while alternating that with the MICROBE-LIFT/LEGACY’s supplemental foods four days per week, every other day.*

## PRIMARY FOODS

FEED EVERY OTHER DAY, THREE DAYS PER WEEK • WILL NOT CLOUD POND WATER • CONTAINS STABILIZED VITAMIN C

### MICROBE-LIFT/ SUMMER STAPLE

*Floating Pellets with  
Added Color Enhancers*

*As the warmer weather sets in,  
begin increasing the frequency  
and quantity of your feedings.*

- Contains animal protein and color enhancers needed during the warmer seasons
- The color enhancers—made of astaxanthin (crab shell), spirulina and krill—promote brilliant color development

### MICROBE-LIFT/ COLD WEATHER FOOD (WHEAT GERM)

*Floating Pellets  
Specially Formulated  
for Spring/Fall*

*As pond water temperatures drop,  
fish require a highly-digestible diet.  
During spring and fall, when the  
nighttime temperatures fall below  
55°F (13°C), feed your koi COLD  
WEATHER FORMULA.*

- Contains wheat germ which is easily digested and has higher levels of fats but lesser amounts of protein

### MICROBE-LIFT/ HIGH GROWTH & ENERGY™

*Floating Pellets with  
Added Color Enhancers*

*When the warmer weather  
arrives in late spring, koi and  
goldfish need a boost of protein  
since they have depleted their fat  
reserves over the winter, begin  
increasing the frequency and  
quantity of your feedings.*

- Use this feed at a minimum temperature of 68°F (20°C) when pond fish really start to grow
- Feed 2-3% of fish body weight up to 4 times per day



4  
Convenient  
Sizes Ea.

#MLLSS6.8  
6 lbs. 8 oz.

#MLLWG3.8  
3 lbs. 8 oz.

#MLLHGE16  
16 oz.





## SUPPLEMENTARY FOODS

FEED EVERY OTHER DAY, FOUR DAYS PER WEEK • WILL NOT CLOUD POND WATER • CONTAINS STABILIZED VITAMIN C

### MICROBE-LIFT/ FRUIT & GREENS™

#### *Floating Sticks*

*Variety is the spice of life, and if you don't have time to cut up fruits and vegetables for your pond fish, give them this blend!*

- Made of apples, apricots, kiwi, mangos, papayas, peaches, pears, broccoli, cabbage, peas, red peppers, tomatoes, zucchini and spinach!
- Ecological Laboratories, as far as we know, is the *first* fish food manufacturer to commercially produce this type of food!

### MICROBE-LIFT/ IMMUNO-STIMULANT

#### *w/Montmorillonite Clay*

*Feed at temperatures above 68°F (20°C), every other day, alternating with your primary LEGACY fish food.*

- Contains additional quantities of vitamins
- Montmorillonite Clay provides additional minerals to help build immunity against viruses and acts as a toxin binder, neutralizing metabolic toxins
- During colder weather, can be alternated with your LEGACY Cold Weather formula

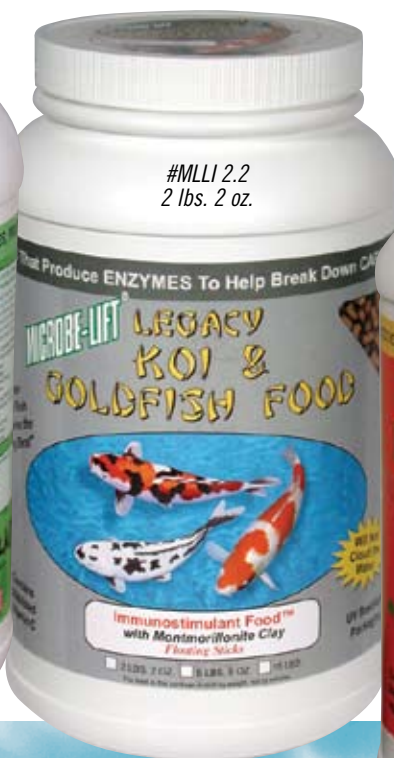
*When your younger fish deserve the very best!*

### MICROBE-LIFT/ MINI PELLETS

The stabilized Vitamin C in these mini-pellets help to promote proper tissue development!



#MLLFG6  
6 lbs.



#MLLI.2.2  
2 lbs. 2 oz.



#MLLMP14  
4 oz.

#MLLMP2.8  
2 lbs. 8 oz.



**Ecological Laboratories** INC.

Solving Environmental Problems *Naturally* for Over 28 Years

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