



January, 2007  
Volume 15 Issue 1

# THE TBAS . . . Since 1992 FILTER



Peru Pleco . . . photo:mfjacobs 2006

## MONTHLY BOWL SHOW

- 1) Livebearers
- 2) Egglayers

### January Program

Jeff Cardwell . . . Marineland Speaker  
Direct From a Peru Trip

# Tampa Bay Aquarium Society



## “The Filter”

Tampa/St. Pete, Florida

**Volume 15 Issue 1**  
**January, 2007**

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by Ken Normandin

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### Editor's Turn:

I took up the entire bulletin with this article as I think this explanation is one of the better papers on this topic. These worms thrive in normal house temperature . . . yes, even Florida's hot temperatures in the middle of the summer. If you really want to give your fish a treat then this is what you want to try. Soil-less Grindals . . . one of the most nutritious live foods you can give to fish . . . and EASY!

Feeding Your Fish Live Foods

# GRINDAL WORMS

## Soil-Less

by: Ken Normandin

It is widely accepted in the killifish hobby that in order to get the best health and reproduction out of your killies, live foods need to be given regularly. The problem is and has always been finding an easy and reliable method for raising these foods, since most of them are not available through your local pet establishments. Described below is my method for culturing Grindal worms without the use of soil or soil/peat mixtures.

For me, using peat or peat/soil mixtures was always an “iffy” proposition. I would get a culture established and producing enough to feed to my fish, then it would inexplicably crash and the worms would die off. This was usually due to one of two factors: The culture would acidify creating an unsuitable habitat for the worms, or the media would compress and become anaerobic also making the culture die off. Additionally, I would often have problems with mites or springtails which would often out-compete the worms for food and again the culture would crash or I would have to seriously soak the culture to eradicate the invaders. As a result I started looking for an alternative to the standard soil cultures. That’s when I saw a demonstration by someone at the New Jersey AKA convention. I can’t remember his name, but his internet name was “RJ”. He demonstrated a method of culturing Grindal worms using nothing but a shoe box and some green scrubbing pads such as you can find at any local grocery store. This had gotten my interest so I determined to make this culturing method work for me. After a few months of trial and error I managed to get it right and have since been able to produce enough Grindal worms to feed over 200 tanks approximately twice per week.

Now that I’ve given you a bit of background, let’s put together our own soil-less Grindal worm culture. Later, I will discuss the advantages and disadvantages (yes there is a couple) for this type of culturing.

First, here's a quick list of materials and equipment you will need to complete your culture:

1. A watertight container to hold your media and water. Any size will do, as long as it meets your needs. The most common size is a plastic shoe box.
2. Any cheap tight mesh plastic scrubbing pad. Tight mesh is better for wicking water up into the culture. I get mine from the local flea market and they sell for \$1.00 for 12
3. Higher quality (Scotch-Brite) scrubbing pads for the upper layers. These have a looser weave and allow for free movement in the media by the worms.
4. Decent quality cat food. I use Science Diet Older Cat formula; since it is readily available at home (we feed it to our cat). Any good quality cat food can be used, try to get one that is protein and vitamin enriched.
5. Cover material to put immediately over the culture. I usually use either thin plexiglass or acrylic fluorescent light lens material since both are easily cut with scissors.
6. Good heavy duty pair of scissors for cutting the aforementioned acrylic material.
7. Water – use de-chlorinated tap water. Using aquarium water can pose some interesting problems (see disadvantages for details)



Materials

Construction:

1. In your container, place your media in approximately the center. Place the finer mesh pads on the bottom (2 pads), then the coarser pads (2 pads) on top.



Bottom Pads



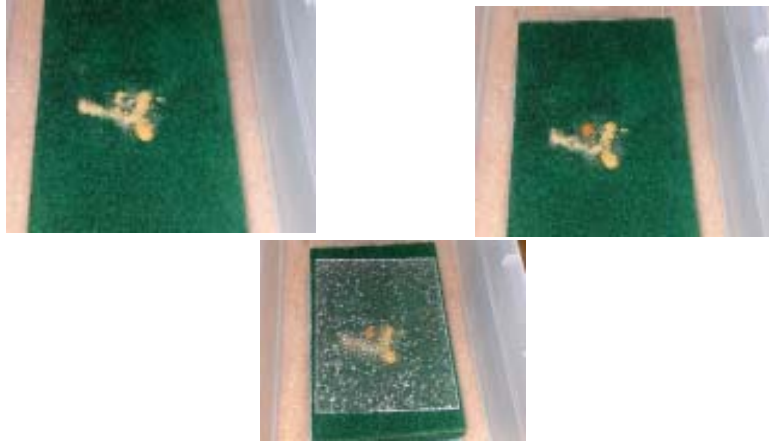
Top Pads

2. Fill your container with the de-chlorinated tap water. The bottom two pads should be completely immersed in water. This is approximately ½” in depth.



Water  
Level

Place your starter culture on the pads, add 1 or 2 pellets of cat food then cover with the acrylic sheet (cut to measure slightly smaller than the pads). Place the shoe box lid on top (holes are not required to be punched in the lid, there is enough air flow with the lid placed loosely on top)



Feed your culture every other day as required, gradually increasing the amount of pellets as the culture grows. The culture should mature in approximately 30 days, after that you can feed to your fish and expect a population turnover about every 2-3 days. Hopefully, after that time your cultures should look like this (I am using my sweater box sized cultures for example):



**Now that we've completed the culture, let's discuss some advantages and disadvantages. Here are the advantages:**

- No soil or peat mixture that can acidify or become anaerobic causing the culture to crash.
- Due to the water barrier, there is a greatly reduced chance of cultures becoming contaminated with other pests (springtails, mites, etc.)
- Cultures are very easy to harvest – after the food has been consumed, just rinse the acrylic lid into your holding container and away you go....
- Maintenance is very easy – replace water due to evaporation weekly and change water approximately every month to six weeks. Pads **might** need to be rinsed every 3 months or so. Pads can be rinsed under a spray nozzle with light pressure (garden hose) with minimal danger of the worms being washed out.

- Culture longevity thus far appears to be limitless. I have had these cultures going for about a year without crashing.
- Creating subcultures is quite simple. Just follow the steps from above and then rinse a starter culture from one of the acrylic covers into the new substrate.
- In established cultures, another benefit has lately come to the front. As the cultures mature, the water becomes a very nice infusoria culture. Actually, under the microscope you can find the likes of rotifers, large and small infusoria, Cyclops, and even newly hatched and/or juvenile Grindal worms. This impromptu infusoria culture can be used to feed directly to your fry tanks, which the fry will take with great enthusiasm. So far, there have been no adverse effects to this direct feeding.
- These cultures can withstand an extended time without feeding. The longest time I have recorded between feedings is 5 weeks and without exception, all of the cultures recovered within a few weeks.

**Here are as many disadvantages as I could come up with for this culturing system:**

- There is a chance if using aquarium water or aged water from storage barrels that your cultures may become infested with a species of fly that lays its eggs on water. The fly larvae will enter into the media to later pupate and mature into adult flies. Although the larvae are eaten readily by your fishes, the flies are a complete nuisance.... However, they can be eradicated simply by either one of two methods. The first is to place your cultures inside a completely sealable bag (Ziploc, pillow bag, etc.). The reduced amount of air will suffocate the flies without greatly affecting the culture and will protect the culture against future contamination. The second method is simply to not feed the affected cultures for about 3 weeks. The fly/larvae/fly cycle will be interrupted since the larvae cannot feed and will die off.
- If the cultures are too wet or too dry, they will not produce in great numbers. If too wet the worms will eventually drown and if too dry the worms will dry out. Always make sure the cultures have the bottom layers of pads immersed.
- If the cultures are overfed, the uneaten food will mold due to the moist environment. Just clean the top pad where the food was and re-feed with a reduced amount. Always think “less” when feeding and feed more often. My sweater box sized cultures are fed approximately 7-8 pellets every other day and produce numbers as shown in illustrations 8 and 9.

I hope this explains as accurately as possible a quick and simple method for culturing Grindal worms without using a dirt/peat substrate. In my opinion, this is a very simple and as close to fool-proof method as I have seen (believe me, I haven't screwed it up yet.....) that produces large amounts of worms to feed your fish. I hope you enjoy building your own cultures and wish you every success in raising them to feed your killies.

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stamp