

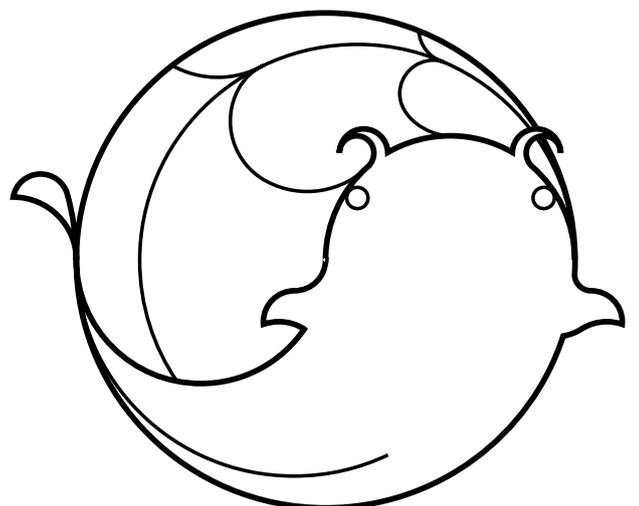
# *Welcome to the Mediamatic Aquaponics Farm*

*Nice you are in our team!*

*This folder will not only help you through your first days as an Aquaponics intern, it also provides a lot of knowledge your colleagues collected before you.*

*It is meant to be kept in the farm, to answer questions right away and to be updated or changed whenever there are new to-dos or how-tos, all Aquaponics interns should know.*

*It works like a slimmed and ordered info basis, analogous to the digital info collection on Evernote.*



# Content

## *Daily To-Dos*

- feeding the fish*
- measuring the PH and the temperature*
- checking the waterflow of the growbed pipes, cleaning if necessary*
- cleaning up the farm (broom, bring waste to compost, put tools back to their place, ...)*

## *Weekly To-Dos*

- measuring the micro elements in the water*
- adding iron, potassium, calcium, ...*

## *Monthly To-Dos*

- weighing the fish*

## *Occasional To-Dos*

- harvesting plants for the kitchen*
- measuring the harvest and the plant waste*
- filling the sump tank with fresh water*
- checking the health of the plants (mould, pests?) and cut back if necessary*
- watering the seedlings, miniponics and outside growbeds*
- removing fish excrements from the big-parts-filter*

## *How-Tos, Best Practice*

- maintaining plumbing hell (filters, tubes, pumps, ...)*
- measuring the PH*
- adding elements (iron, potassium, calcium, ...)*
- measuring the micro elements*
- measuring the EC*
- measuring the water temperature*
- weighing the fish*
- calculating the fish food*
- planting plants (right place, distance,*
- harvesting plants and caring for plants (trimming, combating pests)*
- using Evernote and Wunderlist*
- order stuff*

## *Detailed Knowledge (For Questions During Tours)*

- function of our system (water-/nutrient-circle, flooding system)*
- function of the siphons*
- function of the big-parts-filter*
- purpose of the clay pebbles/vulcanic stones*
- catfish (food, health, behavior)*

## *Filled Forms*

## *Old Forms, How-Tos or To-Dos*

## *Notes & Ideas*

# Feeding Fish

## Daily To-Dos

1. We usually feed the fish twice a day during the working days, at 10:00 am and at 5:00 pm.
2. Check the white A4-forms in front of the tanks for the maximum amount for each tank per day.
3. Decide how much grams you want to feed at this moment based on what your colleagues fed the day before and on what the maximum amount for the tank is.
4. Take the little measuring jar with the scale for the amount of fish food (the numbers represent the grams of our fishfood) and fill it with the amount of fish food you want to feed.
5. First let a little bit of the fish food fall into the water to see how the fish react to the feeding. If they are very slow, something is wrong with them. Stop feeding for now to examine the possible reason for that (> see „measuring the PH“, „measuring micro elements in water“ or „adding iron, potassium, calcium, ...“).  
If they react very enthusiastically, go on spreading the food carefully over the water surface (be prepared to be sprayed with water).
6. Use the A4-forms to note how much you fed that day in the morning and in the afternoon and how the fish reacted. Use a „:)“ to show, that everything was fine.  
(> see „calculateing the fish food“ to prepare feeding forms for the new month)

# Measuring PH and Temperature

## Daily To-Dos

1. We usually use an electric PH meter. It should always stand straight because of the cleaning solution in the bottom cap of the meter.
2. We measure the PH from the fish tanks and from the sump tank every day. The meter also shows you the temperature.
3. Remove the PH meter carefully from the bottom cap to ensure that nothing from the cleaning solution is spilled. Therefore also put the bottom cap upright back to the shelf during the usage of the meter.
4. Put the side with the sensor into the prepared glass with the distilled water and turn it a little bit to free it from the cleaning solution. Try to shake off the rest of the water afterwards.
5. Press the left button to activate the meter. The meter can measure different things. If it is not showing „PH“, use the right button to set the PH mode.
6. Hold at least half of the meter into the water (don't worry, it's water proof) and turn it a little bit in the water until the PH value is settled. There is a little icon of a clock on left side of the display that disappears when the PH is settled.
7. Keep the value of the PH and the value of the temperature from the moment the clock icon disappears in mind and put them into the digital data logging form (usually always open on one tablet close to the fish container door - be patient with the slow system!).  
We aim for a PH between 6,5 and 7. If the PH is under 6,5, be alarmed, this is too acidic for the fish! You will have to add elements to the system to buffer it (> see „adding iron, potassium, calcium, ...“)
8. Dry the meter after measuring, rinse it in the distilled water again, dry it again and carefully put it back into the cap.
9. Put the meter back into the shelf in an upright position.

# Checking Waterflow

## Daily To-Dos

### Waterflow to the Grow Beds

1. Check whether there is water coming out of the very last outlets of the pipes that end in the upper grow bed of the first column close to the building and the last column close to the end of the green house.
2. If there is enough water coming out, everything seems fine.  
If there is only a little stream or even no water coming out, either clean the pipes with the tube brush or clean the filters on the pumps in the sump tank. (> see „maintaining plumbing hell“).

### Waterflow to the Fish Tanks

1. There is a waterflow sensor at the tube before the water flows into fish tank 5. It constantly transmits that info to a webpage and to an app we use to keep track of the waterflow. The webpage, mainly showing the waterflow and the measured PH, is always open on one of the tablets that hang at the wall close to the door of the container.
2. If the waterflow is under 600, be alarmed! You should clean the small filter with the blue top that is hanging in fish tank 5 (> see „maintaining plumbing hell“).

# *Cleaning up Farm*

## *Daily To-Dos*

- 1. We usually try to clean up the farm at the end of the working day, because the farm also works as a figurehead for Mediamatic and from every side of the greenhouse you can see through the windows. But it is also nice to start the day in a clean farm where you can find everything ;).*
- 2. Broom the floor and free it from plant waste after every time you cut the plants, otherwise we attract unbidden guests like mice, rats and flying pests. Additionally we prevent seeds and roots from settling down in the floor. The plant waste goes to the compost or to the bin for the organic waste. Other waste goes into the smaller trash bins.*
- 3. Put the tools you used to the place you removed them from so that your colleagues can find them where they expect them. Clean the tools that turned dirty during the usage before you put them back (e.g. clean the the scissors with alcohol a.s.o.)*
- 4. If you have an idea about how to sort our equipment or generally create order in a better way, feel free to create order and tell your colleagues about your changes.*

# Measuring Micro Elements

## Weekly To-Dos

1. Take the box with the little jars and syringes to the sink. Rinse the jars, lids, spoons and syringes you want to use (you will need some of them) and dry them well with paper towels.
2. Take the bigger box that is full with little cardboard boxes that contain chemicals to test the amount of different micro elements in the sample water. Usually we monitor  $\text{NH}_4$  (very important!),  $\text{NO}_2$ ,  $\text{NO}_3$ , K, Ca, Fe,  $\text{PO}_4$ ,  $\text{O}_2$ . Take the cardboard boxes for the tests you want to do out of bigger the box. Have a look at the dates on the boxes - only use chemicals that are not expired yet.
3. Take the plastic watering can, rinse it at the sink to clean it and use it to take out some sample water from the system. We normally test the water quality in one of the fish tanks to make sure the fish are fine. Since we installed the big-parts-filter (big blue barrel in front of tank 5), we also try to monitor the water quality directly after the poo filter (the water that comes out of the thinner, black tube in the sump tank) to see whether we filter out important elements.
4. You will find an instruction about how to run each test inside of each cardboard box. The results for some of them are represented with colors and are very easy to understand. For the results of some of them you will have to count drops of chemicals you add until the color of the solution changes.
5. Use a piece of paper to note all the results of the tests you run. Put them into the digital data logging form later (usually always open on one tablet close to the fish container door - be patient with the slow system!). You can also put the piece of paper with your notes into the chapter „Filled Forms“ within this folder.
6. Have a look at the instruction papers of each test to interpret the results. If some of the measured elements seem to have an alarming amount (either too high or too low), discuss with your colleagues what to do about it. In case the amount of iron, potassium or calcium is too low, add them (> see „adding iron, potassium, calcium, ...“).
7. Pour all chemicals you used to run the tests into the „waste“-bottle (usually besides the bigger box that contains all the cardboard boxes with the tests). Never pour them into the drainage! Because of the septic tank we can only pour non-toxic matter down the drainage.
8. Rinse all the jars, spoons, syringes and lids you used to run the test using fresh water and the small brushes. Dry them and put everything back to their original place.
9. If you have left overs from the sample water, use it for example to water the grow beds outside.

# *Adding Iron, Potassium, Calcium, ...*

*Weekly To-Dos*

1.

2.

# *Weighing Fish*

## *Monthly To-Dos*

1.

2.

# *Harvesting Plants for the Kitchen*

*Occasional To-Dos*

- 1.
- 2.

# *Measuring Harvest and Plant Waste*

*Occasional To-Dos*

- 1.
- 2.

# *Filling Sump Tank with Fresh Water*

*Occasional To-Dos*

- 1.
- 2.

# *Checking Health of Plants*

## *Occasional To-Dos*

- 1.
- 2.

# *Watering Seedlings, Miniponics and Outside Growbeds*

*Occasional To-Dos*

- 1.
- 2.

# *Removing Fish Excrements from Big-Parts-Filter*

*Occasional To-Dos*

- 1.
- 2.