FEEDER:

Our first idea was to create a (feeder) to feed the fish. The construction of the feeder was this: it was a plexi- glaas box, which had a spindle at the bottom. The food fell directly to the spindle because of the slope we had designed in the bottom of the box (picture...). The screw was inside a PVC pipe open at the top. The spindle protruding from the box so that the food fell into the tank, so now the pipe was open at the bottom (picture...). The operation was: we introduced the food at the top of the box, the food fell directly to the worm. A motor turned the splindle until the food fell into the tank.

TO INCLUDE THIS IDEA IN 8.2

another improvement we wanted to include was a feeder and control fish food. We explain the idea in the point... but this idea was not included because it exceeded our budget

8.2 ¿¿¿As we have said due to lack of time and money in the budget, we did not include features that are important for the development of our aquaponic system. Water quality is very important for fish health.???

Water quality is very important for fish health. The control of the water is based on temperature, pH and dissolved oxygen. Our aquaponic system controls the temperature so in the future development of our aquaponic system it would be necessary to control the pH and dissolved oxygen. The pH is involved in the process of nitrification (conversion of fish waste in a less toxic and compound acceptable to plants), it is essential in the availability of plant nutrients (manganese, copper, zinc and boron) and must be appropriate to the species of fish that wants to grow. Dissolved oxygen has to be suitable (above 3 mg / L) for a good nitrification.

- The reasons why we decided Raspberry Pi B + against BEAGLEBONE Black are:
- - - USB: B + Raspberry Pi has 4 X USB 2.0 CONNECTOR vs 1 X USB 2.0 CONNECTOR BLACK BONE beable. For our aquaponic system we need to connect with Arduino, camera and wireless Ethernet so we need more than one USB.
- - COMMUNITY: Raspberry Pi has sold over one million units and it have more coverage in the medial comunication and global exposure. Beagle Bone glack has a growing community but it's not enough. raspberry pi production generates 13 times more productivity than beaglebone black
- - As for our aquaponic system is as valid as Raspberry Pi B + bone Beagle but the price was decisive. As we can see from the chart the price of Raspberry Pi B + is € 31.95 compared to € 61.56 Beagle Bone Black. As our product has to have a lower price of 250 € we decided that was a good choice Raspeberry.
- To decide between a component or another, we have chosen a model of Arduino uno and other TI LaunchPad MSP430 . After we have made a comparison table

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We have chosen Arduino Uno because:
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- - - Arduino have a massively huge community support. This is not to be under-estimated.
- - In Arduino there is no limit in a future expansion because the boards called 'shields' can be stacked on top of the board to add features, in the The MSP430 that’s not possible.
- - Arduino one Can run at 5V or 3.3V (or anywhere between 1.8V and 5V if you change oscillators) while The MSP430 caps out at 3.6V.
- - The Arduino have IO pins, 20 while the MSP430 have 16. It might not seem like a huge difference, but some projects where It's used 18 of those pins after using a pin expander to gain 8 more.

Table 1 of resources: Human and Material

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Resource Name	Cost [€]	Type	Intials	Allocation [%]	(Std) Rate [€/h] or [€/unit]	Overtime [€/h]	Cost/User	Accrue	Base
Arick	1 500.00	Work	A	100	4	0	0	Prorated	Standard
Francisco	1 500.00	Work	F	100	4	0	0	Prorated	Standard
Jan	1 500.00	Work	J	100	4	0	0	Prorated	Standard
Katoo	1 500.00	Work	K	100	4	0	0	Prorated	Standard
Rasmus	1 500.00	Work	R	100	4	0	0	Prorated	Standard
Viorel	1 500.00	Work	V	100	4	0	0	Prorated	Standard
Raspberry Pi	31.95	Material	RP		31.95			Prorated	
Arduino	22.90	Material	AR		22.90			Prorated	
USB cable Raspberry Pi	2.25	Material	UCRP		2.25			Prorated	
USB cable Arduino	2.85	Material	UCAR		2.85			Prorated	
Power supply Raspberry Pi	12.24	Material	PSRP		12.24			Prorated	
Jumper wires	12.00	Material	JW		12.00			Prorated	
Memory card	10.90	Material	MC		10.90			Prorated	
Webcam	11.90	Material	W		11.90			Prorated	
Wi-fi dongle	9.80	Material	WF		9.80			Prorated	
Arduino 4 channel relay module	12.90	Material	A4CRM		12.90			Prorated	
Water heater	38.61	Material	WH		38.61			Prorated	
Water pump	ISEP	Material	WP		0			Prorated	
Light led	7.40	Material	LL		7.40			Prorated	
Automatic fish feeder	15.89	Material	AFF		15.89			Prorated	
Step motor	ISEP	Material	SM		0			Prorated	
Temperature sensor	7.30	Material	TS		7.30			Prorated	
Water flow sensor	12.24	Material	WFS		12.24			Prorated	
Depth sensor	12.24	Material	DS		12.24			Prorated	
Infrared sensor	8.40	Material	IS		8.40			Prorated	