PREWORTH

Fish Farming

QUESTIONNARIE 1

Senior Fish Expert
PREWORTH | Plot23, Tweedragt, JR516, Pretoria East

Questionnaire 1

Preworth

Website: Preworth.co.za

Plot23, Tweedragt, JR516

Pretoria

Location: Pin-pointed on web page.

Thank you for your interest in the field of fish farming.

Note: You must please answer the following questions in order for us to assist you.

There is quite a lot to fish farming and once you have certain factors in place and understood it, it can be rewarding...

The first few questions I have are the basics, as well as first things needed in order to get started, which will affect the design and outcome of your fish farm and once you have answered the questions... I'll ask you more and answer yours. Over time you will see the fish farm growing in design. There are a number of different options both small scale projects to large scale projects done in many ways.

1. How many fish would you like to produce per month or do you intend farming and what species of fish? (Hobbyist 5/10kgs per meter cubed of water, Semi intensive fish farming 10/30kg per meter cubed and Intensive fish farming 35kg and up to 100kg in some circumstances). Once you have chosen kg/m cubed, the next steps are filtration, food need (BW), etc. We are farming fresh water species of

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fish e.g.: (Tilapia and carp) not salt water fish and we are focusing on RAS (Recirculating Aquaculture Systems).

2. Where is the location of your choice? What are your Average outside temperatures winter, summer, day and night? A good area is closer to the equator (Tropical regions), no greenhouse required and in subtropical areas (South Africa) a greenhouse is required for winter temperatures below 3° for long periods of time. In subtropical regions along the coastal areas are normally better and warmer in the winter, which can be cost savings on heat exchange (Greenhouses are normally 10/15 degrees warmer than the outside temperatures and can add 6°c/10°c to the water temperatures, which greatly increases productivity, also keeps predators at bay e.g. birds, parasites, aquatic invertebrates, fungus, bacteria, etc, and the environment can be controlled better, (a Biodome). Tilapia, Carp and Cat fish are comfortable at different water temperatures, Tilapia and Cat fish @ 25°c/30°c and Carp 20°c/25°c and Trout 15°c/20°c and once this is met, breeding and productivity are at a high under optimal conditions. Most Tilapia species start to die off at 10°c and below for periods longer than 3/4 days and Carp, Cat fish and Trout from about 0°c/2°c for weeks at a time or go into a semi hibernation state depending on the species of fish, age and weight.

3. How much space (site) do you have or allocated for your fish farm? (This will effect your production, design, filtration, warmth, oxygen, etc) Small scale projects can be done in Ebb and Flow system's (IBC tanks) and this system can be used to grow leafy greens as an extra income or food source, Open ponds or Cage farming in open ponds, Welded mesh reservoirs are all a cost effective approach and can be expanded onto over time. Large scale projects are normally built out of concrete or masonry materials, fiberglass, etc. There is no real limit to how big one can go on both large and small scale production designs, as long as it has been designed that way and are based on the questions I'm asking

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in questionnaires. Most technical literature shows that one must understand how many fish you have or want per volume of water e.g.: square feet, meters cube, also the amount of feed needed to feed them, filtration (Nitrogen Cycle), oxygen, water flow rate, retention times for Nitrification, etc and once you have decided and calculated according to their daily food requirements BW (Body weight per day) , normally a rule of thumb 2% bw/day, but varies between different ages and sizes of fish, according to species of choice. The SSA (Specific Surface Area) of your bio media (many different options, some better than others) is important, in order to work out your BSA (Biological Surface Area), which in turn will determine how big an area is needed, how much fish you can stock per meter cubed of water depends on how large your filtration units are and the media used also dictates the size (dimensions) of the filter and how much space(site) is needed, a rule of thumb is 25sq.ft (2.323m square) of BSA per 1 pond (0.454 kg) of fish minimum, 100sq.ft (9.29m square) BSA or more per 1 pond of fish is recommended, in order for the Nitrification process to occur (cleans the water), cold water species will need more filtration at least a third bigger than a warm fish species, (Tilapia) for example.

Fish farming can be either done through purposely built fish farming open ponds, plastic pool's, welded mesh reservoirs, IBC tanks, concrete, bricks, fiberglass or at one's own building ways, style and materials, as long as it is water tight. Open ponds, welded mesh tanks, IBC tanks and Plastic pools are normally the most cost effective way to go, (has its own pros and cons), normally masonry work or fiberglass structures are more expensive, and can be the long term solution to your fish farms structural integrity, life span, aesthetics, heat retention times are better, hard to puncture, etc (each has its own pros and cons).

4. Have you got access to water (borehole) and have you tested your water? (Check for earth minerals, toxins, Litres/hour, if you can drink it, normally is a good sign). Municipality water has chemicals (chlorine, fluoride compounds, in it to sterilize it and sometimes lead, arsenic,

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pesticides chemicals, aluminium, fertilizers, etc) which is not good for fish. We can do the different tests on your water.

5. Topography of the land, slope features on the land, soil type (clay, silt, sand, loam, etc? (Effects question 3) Images of your site would help too.

6. How close is the nearest river or stream for your site? (By law no closer than 600m)

7. Would you like to do it in phases or get the job done in one building project? (Effects building designs, materials, labour, productivity, cash flow, budget, etc)

8. We sell 3 species of tilapia fish, the Redbreast tilapia (Coptodon Rendalli), Mozambican Tilapia (Oreochromis Mozambicus) both of which are indigenous to South Africa and the Nile tilapia (Oreochromis Niloticus) which is not, but found in most of our North province's waters. The Nile Tilapia, which grows the biggest out of the 3 species, followed by the Mozambican Tilapia and then Redbreast Tilapia, you have to have a permit for the 3 different species to purchase and sell fish in the end? We can assist you with that and give all persons to contact and their details.

Note: At Preworth Fish Farm we believe that the first questionnaire should be free of charge as a service to our client's, as to get them to understand the choices involved in fish farming, also the basic complexities, natural way and order things on this planet have been designed with intelligence.

We will assist you on your journey.

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Questionnaire 2 we will discuss filtration, media types, temperature tolerances and effects, tilapia, SSA, BSA, volume needed for fish per meter cubed of water, 5 steps in the nitrogen cycle, DO levels, salinity and more in depth and how to replicate it and why.

Note: R450 per email questionnaire, includes relevant information and assistance from us on the different topics discussed in Questionnaire 2.

Questionnaire 3 will be on growth, water tests and results, feeding charts, protein needs of fish at different ages and sizes, alternative feeds(organic), feed program(FCR), medications, mortality rates.

Note: R650 per email questionnaire, includes relevant information and assistance from us on the different topics discussed in Questionnaire 3.

Questionnaire 4 will be on materials, permits, laws, pricings, markets, harvesting, packaging, transportation of fish.

Note: R850 per email questionnaire, includes relevant information and assistance from us on the different topics discussed in Questionnaire 4.

Regards

Preworth Team

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