Realism in Tilapia Farming in the Western Cape

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If you are an aquaculture extensionist in the Western Cape, you get a number of queries on the farming of tilapia, also known as bream or karper, on a regular basis. invariably the query comes from a person that has heard that there is money to be made from farming these fish. Normally this perception is fueled by a newspaper/magazine article or discussion with some so-called expert. Normally, but not always, these experts have a vested interest in trying to sell production system technology, feedings and/or consulting (me). The purpose of this article is to expose some facts on the folly to make it possible for a potential investor to make balanced and informed decisions in undertaking a tilapia farming project.

Tilapia (Oreochromis sp. and Tilapia sp.) is a currently a world food commodity, second only to Asian carps (Family Cyprinidae) in terms of global production. Worldwide production of tilapia is expected to reach 6.1 million metric tonnes in 2010 at 3.2 million metric ton. This was based on projected figures by FAO fisheries economists made in 2007 of 3.5 million mt. However, this growth is impressive given the global economic recession, which could not have been predicted in 2007. The Far East is a major producer of tilapia, with China producing just over 60% of the world production. Indonesia, the Philippines, Taiwan, Thailand, Bangladesh and Vietnam are some of the other large producers in Asia. South and Central America is starting to expand and make a production impact with Brazil and Mexico leading the way and Ecuador, Colombia, Cuba, Honduras and Costa Rica producing significant amounts of fish. In an African context, Egypt is a major producer, with the Nile River and large impoundments such as the Aswan Dam. These large dams are conducive to cage culture production systems, which has relatively low production costs when compared with intensive rearing. Tilapia pond aquaculture systems, either static or flow-through, is another major production system employed to produce tilapia. In a South African context there is a major producer in Lake Kamies, also utilising cage culture grow-out technology. This company is vortically integrated in that it has shore-based hatchery, feed manufacturing and HACCP processing capability. This business exports fresh and frozen tilapia fillets to the UK and mainland Europe. In South Africa we have not been able to commercially produce Tilapia at competitive prices. There are a number of reasons for this, some technical and some market related.

Let's deal with some of the technical issues first. South Africa has hot summers and relatively cold winters, except in the north and north east of the country. The reader will notice that the countries that are doing well as far as tilapia production gains are situated in the tropics or at the very least warm temperate climates. The temperatures that are required for these fish to thrive, and not just survive, are in the close range of 25°C and above. The South African environment can supply these water temperatures in summer and then only in certain water bodies. However, a research aquaculture trial looking at the cage culture potential of Mozambique Tilapia (Oreochromis mossambicus) in the Pongola Poort Dam near Jozi, Northern KZN, recently found that the temperatures of the dam, which can drop to 17 degrees Celsius, were not conducive to culturing this species. O. mossambicus is not necessary the best candidate for aquaculture, as most of the world production of Tilapia comes from Nile Tilapia (O. niloticus). This species has been genetically selected through various genetic selection programs, such as the Genetically Improved Farmed Tilapia (GIFT) strains of the Philippines. Nile Tilapia has the following attributes in culture: performs well in tropical/subtropical areas, sexual maturity in ponds reached only at age of 6-7 months, suitable for culture in wide range of farming systems (extensive to highly intensive system, monoculture and polyculture), high consumer and producer acceptance; hence, a major cold water species. Nile Tilapia have male growth superiority as opposed to Salmoides where female growth superiority is in evidence, so it is of importance to only farm all male populations. Mozambique systems can be found in a large number of water bodies in the province and there are several fish die-off on an area experiences severe cold spots. Tilapias, utilising re-circulation technology, have far not shown to be cost effective in allowing best growth in the winter months and normally an insulated shed may cost too much from a capital investment perspective. If you were to heat the water under the pond, this is of operational expenses, especially if you utilise electric heating elements. So technically growing tilapia is possible in this environment, but is it cost effective? An important factor is the need to stop anything extraneous or industrial waste heat to treat your production system and reduce your electricity costs. Those geothermal heat sources are difficult to secure for aquaculture purposes, as other land uses, such as tourism developments, have taken precedence over aquaculture projects. Remember your prospective farming competition, in the topics, has perfected to meet temperature profiles, abundant water, cheap labour and is local market that consumes freshwater fish on his doorstep. The large producers (10 000 tonne and up) in these countries benefit economics of scale that make it possible for them to sell bulk quantities of product at very competitive prices.

Economic factors that have played a role in tilapia culture not taking off in South Africa are as follows: 1) South Africans traditionally are not a freshwater fish eating nation. We prefer marine fish, unlike our neighbours to the north of us who consume large quantities of freshwater fish. 2) Currently tilapia is not well known, but over time cheap imports of fresh and frozen tilapia fillets may find local markets. One importer is currently sending small quantities of head-on gutted out frozen Chinese tilapia for R15.00 kg. Wholesalers. 3) Frozen costs are relatively high, and currently even at the best Feed Conversion Ratio (FCR) your feed will end up costing you in the region of R5 00kg of fish feed. Given a carcass that sells out of say 43%, your feed cost will be over the landed price of imported stock. So under current economic conditions these does not seem to be enough margins to economically farm tilapia and compete with overseas imports. Incidentally Mexico has a similar problem in that their entire farmed product is sold locally and they cannot compete with cheap Chinese imports. 4) What also needs to be remembered is that a perspectiva tilapia farmer is competing against locally caught and imported marine fish in the whalefish market. 5) Currently average landed international prices realised for tilapia products are as follows; whole (R 12 - 11.5kg), frozen fillets (R 4kg), live fish (5 - 5.20/kg) and trash fillets (7/kg). Remember to deduct the freight in your farm gate calculation!

Given the above-mentioned, tilapia aquaculture does not seem like a very promising opportunity at present. However, in the future it may become visible given the exploitation levels of capture fisheries. The development of enough profit margin to accommodate all the production and distribution costs is critical for this. Alternative product development such as canning and drying, and/or traditional African smoking of tilapia may open new market opportunities. Operating in these markets will force a producer to be efficient in the extreme.