

## **7.13 A summary report of a study carried out by the Insight Group, University of Glamorgan Business School, for the Treforest Wholesome Food Association (TWFA), in summer 2008**

### **1. Background and aims**

TWFA is a social enterprise set up to promote the dissemination of knowledge and training in sustainable food production methods and healthy eating approaches. The company has 3 plots of land, two for food production and one for eco-building and forest school projects.

The study aimed to examine some aspects of the feasibility of setting up an aquaponics-hydroponics system in south east Wales, producing Tilapia fish and vegetables and herbs for distribution through local retail outlets.

### **2. Method**

The group carried out mainly desk research to obtain information on aquaponics and hydroponics methods of food production. They also conducted short interviews with members of the public and fish retailers to obtain market information.

### **3. Results**

**3.1** The group found a number of advantages associated with the use of the aquaponics-hydroponics production method in comparison with other methods of fish farming and vegetable production:

- The method creates less impact on the local environment than some other production methods, for example, water is conserved, and solid waste disposal problems are avoided.
- Waste products are used as an organic fertiliser resource for hydroponic vegetable cultivation, making the system resource-efficient.
- There is a reduction in the area of land needed for crop production over some other methods of horticulture.
- Local production can result in a reduction of food miles in comparison with other farmed fish production.
- Aquaponics allows an efficient conversion of low-grade feed to high-value protein.
- Vegetables produced by hydroponics tend to be less visibly damaged than those produced by traditional methods.

**3.2** Some disadvantages of the aquaponics-hydroponics method were noted:

- The method requires high energy inputs.
- There is a risk of loss of fish stock due to system failures.
- Initial expenditure is needed to establish the system.

**3.3** The group found that the farming of tilapia appeared to offer some advantages over the farming of other fish:

- The fish has a significantly shorter maturation period than many other farmed fish, reducing the farmers' costs.
- It does not need to be fed with meat meals.
- It is disease resistant and tolerant of tank conditions.
- It is similar in texture and colour to cod, a fish that is highly popular with the UK population. Owing to over-fishing, the continuing consumption of cod is unsustainable. (All currently popular UK commercial fish species are likely to be lost by 2048 [New Scientist, vol. 314, p. 787]).

**3.4** Findings from the market research interviews can be summarised thus:

- Familiarity with the tilapia fish is minimal among the local population at present. However, there appears to be a year-on-year increasing market for the fish, especially among ethnic minority groups.
- A willingness to try the fish was expressed by 84% of those interviewed who had not tasted it already.
- The fish is already sold in Cardiff fishmongers and some local supermarkets.
- There is a lack of knowledge of the term 'aquaponics' in the local population. When the term was explained, there was an indication that there could be some aversion to vegetables produced using the aquaponics-hydroponics method.
- However, it was important to two thirds of those interviewed that their vegetables were unspoilt in appearance, indicating a possible consumer preference for vegetables produced by methods such as hydroponics.

## **4. Conclusions**

The main conclusions of the study were that:

- With appropriate marketing, there is potential for local production and consumption of tilapia to significantly increase, as a sustainable and attractive alternative to cod and other environmentally threatened white flesh fish.
- The aquaponic-hydroponic method of local production offers a potentially useful means of producing high quality food protein and vegetables with a reduced environmental impact over some other production methods. Although the method requires high energy inputs, there appears to be potential to design energy efficient and/or sustainable systems.
- Establishing local aquaponic-hydroponic production could offer benefits to the local economy.

## **5. Recommendations**

The group made the following main recommendations:

- There was a need to develop energy efficient production systems for aquaponics-hydroponics.
- Marketing of tilapia fish to potential consumers was needed, with an emphasis on its possibilities as a sustainable and tasty alternative to cod.