Research Application Summary

Economic analysis of fish farming in Mbale-sub region, eastern Uganda

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Abstract

Aquaculture is an important fish subsector in Uganda. It provides alternative employment opportunity along the entire value chain. Though aquaculture is facing many limitations like market imperfections, it is still being promoted as a sector having strong and backward linkages and hence holds potential for development. However, there exists limited socioeconomic knowledge on the sector. The study was conducted in Sironko, Mbale and Manafwa districts located in Eastern Uganda. A sample of 120 households was randomly selected from whom data were collected using structured questionnaire. The results showed that tilapia farmers had a lower gross margin than catfish farmers. The average unit cost ratio of 0.89 for catfish indicated that it was more competitive than tilapia (0.94). Regression results revealed that experience, membership to organisation, pond size, number of extension staff visits, significantly influenced competitiveness of both species implying that if improved will lead to better performance of both species.

Key words: Aquaculture, market, Uganda, unit cost ratio

Résumé

L'aquaculture est un sous secteur important de poissons en Ouganda. Elle donne des opportunités alternatives d'emploi le long de la chaîne de valeur. Bien que l'aquaculture est confrontée à de nombreuses limites, telles que les imperfections du marché, il est toujours présenté comme un secteur ayant des liens étroits et ancien, et détient donc un potentiel de développement. Cependant, il existe peu de connaissances socio-économiques sur le secteur. L'étude a été menée dans les districts de Sironko, de Mbale et de Manafwa, situés dans l'Est de l'Ouganda. Un échantillon de 120 ménages a été sélectionné au hasard parmi lesquels des données ont été recueillies à l'aide d'un questionnaire structuré. Les résultats ont montré que les éleveurs de tilapia avaient eu une marge brute inférieure éleveurs de poisson-chat. Le rapport de coût unitaire moyen de 0,89 pour le poisson-chat a indiqué qu'il était plus compétitif que le tilapia (0,94). Les résultats de la régression

a révélé que l'expérience, du membre à l'organisation, la taille de l'étang, le nombre de visites du personnel de vulgarisation, ont influencé de façon significative la compétitivité des deux espèces, signifiant que s'il y a amélioration, cela conduira à une meilleure performance des deux espèces.

Mots clés: aquaculture, le marché, l'Ouganda, le taux coût unitaire

Background

Aquaculture is an important fish subsector in Uganda. It provides affordable source of quality protein (Rutaisire et al., 2009). It is a main source of foreign exchange through exporting baits and fingerlings to Kenya, Rwanda and Tanzania (FAO, 2012). By 2004, there was a regular export of 1.5 tones of smoked cat fish from Entebbe weekly to earn foreign exchange (MAAIF, 2011). Due to decreasing activities in capture fisheries, farmed fish provides alternative employment opportunity along the entire value chain (MAAIF, 2011; FAO, 2012) and is regarded as a better form of employment compared with other non environmentally friendly practices like deforestation (Rutaisire et al., 2009). In Kabale district fish is regarded as the only activity which is environmentally friendly, sustainable and economically profitable by the population (Kirya, 2011). For instance, the process of smoking, salting or sun drying creates employment for people. At the same time, hatcheries operating in the county generate employment (MAAIF, 2011). Small scale farmers will always rely on traders and intermediary agents to deliver goods to the market (Jagger and Pender, 2001). Though aquaculture is facing many limitations like market imperfections, it is still being promoted to provide food security and employment (Hyuha et al., 2011, and Hyuha, 2006). Uganda could benefit from fingerling and fry production sales which though small, could benefit the community through the multiplier effect. Such aquaculture business may eventually facilitate improvement of services such as electricity, water availability and transport sector amongst farming communities (VanderLuugt, 2010). In view of these strong linkages and potential for development, limited information exist of the socio economic nature and hence the study. The study focused on determining competitiveness of fish (tilapia and catfish) farming in Mbale sub region and its factors influencing it for policy purposes.

Literature Summary

Various approaches are used to measure competitiveness and these include; productivity, profitability, market share, revealed comparative advantage and unit cost ratio. Ali and Flinn (1989)

argued that a firm can be competitive if it obtains profitability within a profit function contex. Ishunza (1996) among other things considered factor costs, products prices and reported gross margin analysis as an appropriate method of measurement of competitiveness in agriculture production. The method measures competitiveness of the enterprises in terms of income earned and returns to family labour hence showing relative financial profitability of the enterprises. Other measures for competitiveness include :comparative advantage (Balassa,1965), a domestic resource cost (Bruno,1965), a unit labour cost (Hickman,1992) a price (Jorgenson and Kuroda,1992), a market share (Mandeng,1991),a unit cost (Oral,1993) ,a full unit cost (Siggel, Cockburn,1995), a relative unit labour cost (Turner,1997).

In this study unit cost ratio which is a derivation from Richadian, comparative advantage was used. Oral,(1993) notes that by extending the Richadian comparative advantage to factors of production and multiple goods, the adjusted form obtained is easy to use as an indicator of competitiveness. Siggel (2006) indicates that by using price, UCR overcomes problems of comparing competitors who have differences in product quality and mix.

Study Description

The study was conducted in Sironko, Mbale and Manafwa districts located in Eastern Uganda. A sample of respondents was obtained using purposive and random procedures. Forty farmers were selected randomly per district resulting in 120 households visited. The data collected included the production inputs, outputs, corresponding prices and markets. Other forms of data collected were socio-demographics characteristics of fish farmers. The collected data were analysed and the relevant tests carried out to test for Multicollinearity and heteroscedasticity.

Research Application

The results showed that fish farmers are well educated (10 years)and fairly mature(52 years), but have not been in the business for long (8 years). The farmers have limited (29%) access to credit and only 46% kept records. Tilapia farmers had a lower gross margin (Ushs 3,996,424.64) per year per ha than catfish farmers (Ushs 4,122,946.413). The average unit cost ratio for tilapia (0.94) was higher than catfish (0.89), indicating catfish was more competitive. Regression results revealed that experience, membership to organisation, pond size, number of extension staff visits, level of education negatively

and significantly influenced competitiveness of both tilapia and catfish implying these factors, if improved will lead to better performance of both species. Distance to fresh fish market reduced competitiveness of both tilapia and catfish enterprises. Type of feed negatively affected catfish competitiveness.

Table 1. Some selected social economic fish farmer characteristics in the study area.

Characteristics	Overall sample size (n=120)		Tilapia(n=60)		Catfish(n=60)		t-value	p-value
	Mean	SD	Mean	SD	Mean	SD		
Experience (years)	8.18	6.66	8.80	6.53	7.55	6.79	1.03	0.31
Age household head (years)	51.73	13.71	51.90	13.11		14.41	0.13	0.90
Level of education(years)	10.07	4.76	10.05	4.46	10.08	5.60	0.038	0.97
House hold size(persons)	10.83	5.26	10.10	4.83	11.55	5.60	1.52	0.13
Credit access (%)	29.2		26.7		31.7			0.55
Sex of household head (%)	96.70		98.30		95.00			0.31
Practiced sampling (%)	61.70		58.30		65.00			0.45
Kept records %	46.70		41.70		51.70			0.27
Lime use (%)	15.80		15.00		16.70			0.803
Farmers with one pond (%)			39.00		55.00			

Outcomes

- Fish farmers in study area have listened to our advice and in Manafwa and Sironko districts they have formed association through which they can access services, bulky purchases and marketing.
- They have started record keeping which will enable them to operate fish farming as a business.
- Some farmers have taken up the idea of constructing economically viable pond sizes.
- This was the first time research of this nature was carried out in these districts. This led farmers to believe that fish farming is not a marginalised enterprise. They have therefore been reenergised in their fish farming

Recommendation

Given that variables such as experience, membership to organisation, pond size, number of extension staff visits, and level of education had a positive influenced on competitiveness for the two species, farmers should be encouraged to form farmer groups. Farmer groups have advantages in that they can access services such as credit, bulky purchase of feeds and sell of their products. Government should put in place an enabling environment that encourage private sector to play an active role, especially in a critical areas such as feed production and genetic development. More specifically, Government could

waive taxes on imports of aquaculture inputs to encourage private sector to play a key role in providing the same.

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