



Metanalysis of the fish farming and sale in Bahawalpur (Pakistan)

H. R. Chaudhry, AbduSamad, Mushtaq Aziz, U. Farooq, Abdul Qayyum, M. Taslim Ghori and M. Latif

The University College of Veterinary & Animal Sciences, The Islamia University of Bahawalpur, Pakistan

Abstract

Fish Farming in the Cholistan is a growing industry despite the low water holding capacity of the desert sand terrain of the Cholistan desert. This is not the only problem lack of fresh water is also at large and the availability of brackish sub soil water adds to the insult. Despite all odds Bahawalpur district caters for the market in Multan by the help of interior sindh and 125 large scale mostly earthen fish farms. A Government fish farm has almost 20 ponds active throughout the year. The Islamia University of Bahawalpur has 2 ponds one 2 kanal 3-6ft deep nursery and another 500x108 ft farm which is 5-8ft deep earthen fish farms. The Bahawalpur District tastes the best in Rohu Carp, Mori Carp, and to a lesser extent Grass and Silver Carp and the Thela Carp is for the impoverished individuals. The seasons starts from October and continues till march but the peak sale and price are usually fetched in the months of December and January. Last years rate of Fish ranging from 1-2 kg was started at Rs. 140 and ended at a peak of Rs. 160. The fish above 2 kg was sold at Rs. 210-230. The retailers fetched a price higher by Rs. 30-40 on the previously mentioned price. Cooked, fried and Pakora Deep Fried fish rated at Rs. 150-200 per 250 grams. The present study highlights the various activities of the Fish Farming and Marketing.

Keywords: Fish, Fish Farming, Fish Marketing

Introduction

Fish: The commodity

Fish is the finest source of protein available to mankind. In Pakistan it is only limited to the rich and the famous. Fish Farming in the Cholistan is a growing industry despite the low water holding capacity of the desert sand terrain of the Cholistan desert. This is not the only problem lack of fresh water is also at large and the availability of brackish sub soil water adds to the insult. Despite all odds fish remains as the major contributing factor of Protein diet of the rich and well to do population of the Pakistan. In the major cities like Lahore, Islamabad and Karachi this aquatic protein boosted commodity comes in dietetic vogue in the months of October, November, December and January. These cities host a number of restaurants which cater for Fried, Deep Fried, cooked fish. Canned fish is not considered as a favourite food item rather the 99% of the population relishes fresh fish of the farm. Canned fish, Salted fish and fresh fish displayed in proper fish displays and sale containers filled with crushed ice are a new trend given by MAKRO, HYPERSTAR and METRO super markets which can be bought off the shelf at any time of the year and has given the concept of hygienic fish markets.

The Area

Cholistan

Cholistan is the largest of four major deserts of Pakistan. It is bordered on the south by the Thar desert in Sindh province and on the east by the Rajasthan desert in India (Map 2.4). The Cholistan desert covers about 26,000 km², which corresponds to 26% of the 110,000 km² of the country's total desert area and 3% of its overall surface area. The length of the desert is about 480 Km and breadth is from 32 to 192Km. The desert is situated in South-West of Punjab province (Pakistan) spread over an area of 26,000 square kilometers with patches of highly saline soils and brackish sub-soil aquifer (water) located between latitudes of 27° to 42° and 29° North and longitudes 57° to 60° East.

Rainwater Harvesting and Migration

While most of the rainfall is received during the monsoon months of July through September, smaller quantities of rainfall sometimes occur in winter. The average annual rainfall in the desert ranges from 100 to 200 mm. Consequently, freshwater availability is very limited. There are no perennial or ephemeral streams, and most of the groundwater is saline with a medium to high range of dissolved solids that make it generally

unfit for drinking (Akram and Chandio, 1998). High salt concentration also makes groundwater impossible to use even for saline agriculture without costly treatment. Because of the extreme aridity, the local people and their livestock are migratory (PCRWR, 2004). The only source of freshwater for about 110,000 inhabitants and their approximately 2 million head of subsistence livestock is the occasional rainfall. Fortunately, the average annual potential of 300 million m³ for rainwater harvesting is more than sufficient to satisfy the combined water demand of the people and livestock. To make the best use of this potential the herders have found ponds known locally as tobas. These store runoff water for use during the dry periods. Harvested rainwater is also stored for household use in large circular or rectangular tanks called kunds.

Bahawalpur City

Bahawalpur (population 0.79 Million) a booming and well furnished city of Bahawalpur District lying adjunct the border of the Cholistan desert. A relatively small and economical city of Pakistan furnished by almost all facilities of daily life, a medical college, veterinary college, pharmacy faculty, a world class university, an engineering college and one of the finest schools of the world (Sadiq Public School). Bahawalpur city is bordered by Lodhran, Yazman, Ahmad Pur East, Dera Nawab Saab, Hasil Pur.

Materials and Methods

In this study samples were taken and pictographic survey was made from the various markets and vendors of Bahawalpur city and applied on bacterial culture media (MacConkey Agar) to test primarily for three food marker bacteria of Enterobacteriaceae family (*E. coli*, *Salmonella* and *Shigella*). For this the samples were grown on Nutrient Broth and McConkey broth and then transferred to Nutrient Agar and McConkey agar. Further identification was made on SS Agar for *Shigella* and *Salmonella*. After the completion of the study the results indicated surprising figures and further study was plotted to see why the human population was safe from the harmful effects

Results and Discussion

Market Analysis

Despite all odds Bahawalpur district caters for the market in Multan by the help of interior Sindh and 125 large scale mostly earthen fish farms. A Government fish farm has almost 20 ponds active throughout the year. The Islamia University of Bahawalpur has 2 ponds one 2 kanal 3-6ft deep nursery and another 500x108 ft farm which is 5-8ft deep earthen fish farms.





Wholesale Market

Fish are brought from the interior Sindh especially from Sukkur harvested from the Indus River, Punjab and the various fish farms of the city. The population of Pakistan by large relish the riverine fish rather than the farmed fish. The local market much aware of the fact fish misbrands the farmed fish as riverine fish. The vehicles carrying the fish arrive at the Bahawalpur City's only fish market known commonly as the Khokha Market at 4.00-5.00 am. The 6 wholesale dealer's sell the fish at 6.00 am keeping Rs. 5-10/- per kilogram of fish to as high as Rs. 30/kg of fish.

Wholesale Profit

The total amount of fish sold in a day ranges from 9,600 kg-12,000 kg. By 8.00 am the whole market disperses to a calm. 80% of the fish is sold for the neighboring markets Yazman city, Hasil Pur, Ahmad Pur East, Lodhran to as far as Multan City which is an upcoming metropolitan city of the Southern Punjab. The daily turnover of the fish market is around Rs. 1,344,000-1,680,000/- and daily profit ranges from Rs. 134,400-168,000/-

Taste & Flavor

The Bahawalpur District tastes the best in Rohu Carp, Mori Carp, and to a lesser extent Grass and Silver Carp and the Thela Carp is for the impoverished individuals.

Time of Maximum Sale

The seasons start from October and continue till March but the peak sale and price are usually fetched in the months of December and January.

Rate of Fish

In the year 2009 rates of Fish ranging from 1-2 kg was started at Rs. 140/kg and ended at a peak of Rs. 160/kg. The fish above 2 kg was sold at Rs. 210-230/kg. The retailers fetched a price higher by Rs. 30-40 on the previously mentioned price. This year, 2010, there was an extensive flood in Indus River leading to an abundance of fish from the Indus River. Despite an increase in the prices of Poultry meat to Rs. 180/kg of meat, mutton to as high as Rs. 450/kg of meat and beef to Rs. 250/kg of meat the price of fish has not increased at all rather they are still being sold at Rs. 150/kg in the retail (October/November, 2010). The wholesale rate still fluctuating between Rs. 135-140/kg.

Live Fish Concept

Only a hand counted restaurants offer fresh from the aquarium live fish in Pakistan and is not a very popular commodity and way a selling. After 2010 flood in Indus river the concept of live fish marketing caught the eyes of media when in the refugee camps one

entrepreneur engaged in emergency fried fish marketing which was televised on national and private TV channels. The literatti hopes this may be the start of live fresh fish marketing which is already in vogue in the Arab, East Asian and European markets.

Marketing

In Bahawalpur and in rest of the country's small cities fish selling remains a medieval marketing and most of the fish is sold on horse cart, donkey carts, and manned carts without the aid of salting or icing for preservation and remains active in the extreme winter months. A very interesting concept is selling the fish on bicycle to every street. These street hawkers sell to the housewives the small sized to medium sized fish by 9.00-12.00 noon selling as much as 25-30 kg of fish in a day. In this group the novice population is looted with substandard fish liable to spoilage and misbranding.

Processed Fish/Fried and Cooked Fish

2009 saw the cooked, fried and Pakora Deep Fried fish rated at Rs. 150-200 per 250 grams in high class restaurants and fried fish vendors sold the fish at Rs. 200/400 gram serving. In the year 2010 the prices of the fried fish have not changed much. The fried fish vendors of which there are four in Bahawalpur City are selling the pakora coated fried fish at Rs. 180/400 gram serving. Three of the four fried fish vendors of the city of Bahawalpur are owned by the same entrepreneur who is famous for his special dressing and sauce. The famous restaurant like *La Taska* are known for their **Fish Manchurian** served with chinese rice served at Rs. 400-500/serving of 4 persons.

Caviar

Only 1% of the total population which being the beaurocrats, the auspicious technocrats and some industrialists are aware of the caviar. It is not available at all in the markets and the population is totally unaware of the most expansive delicacy of the Fish.

Sushi

A prized delicacy of the Far East still inexistent in the country with a total of 2 restaurants selling sushi in

Pakistan and those being the most celebrated and expansive. Only the most vogue rich class resorting to this kind of protein. None of them in Bahawalpur.

Microbiology

The results indicated that the fish was sold on donkey carts, bicycles, hand carts using green as the cooling agent which amount for 95% of the fresh uncooked fish sold in the market was rich (80% by evening) in E. coli, Salmonella and Shigella. 3% of the total fish are sold on donkey carts, bicycle and hand carts using ice as the base for preservation material showed 60% contamination by E. coli and Salmonella but no colonies of Shigella were observed. The major route found to be the dirty bucket filled with a contaminated tap water from remote and filthy environment. 2% of the total fish sold in Pakistan through the mega marts like HYPERSTAR, METRO, MAKRO in ice boxes and washed with clean water were found to be free from marker bacteria. If the number of bacteria was so high and the contamination so severe it was found that the 99% of the fish sold in restaurants was deep fried with a coating of PAKORA to mask spoilage effects and the number of marker bacteria was 0. 1% of the fish sold in restaurants was pan fried which was found to browned without coating and (OVER COOKED / BAKED).

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