

A PRELIMINARY INVESTIGATION INTO THE POST HARVEST LOSSES OF FISH IN SHIRORO LAKE AREA

BY

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INTRODUCTION

Post harvest losses occur at various points from capture to marketing. In some fishery the level of losses could be considerable. In Nigeria few workers (Azeza 1977; Dada and Gnanados 1983; Tobor 1984; Eyo 1989 and Shimang 1990) have at different times estimated post harvest losses from our water bodies to be between 30 and 50 percent. Eyo and Mdaihili (1997) estimated a loss of 80 million Naira worth of fish through poor handling in Kainji Lake Basin. Prior to this study, no work had been conducted on the post-harvest losses in the Kainji Lake fishery.

The freshwater bodies in Niger State in the Northern Nigeria include the three major hydroelectric power dams at Kainji, Shiroro and Jebba. Others include man made lakes such as Tagwai, Kagara and Rivers Niger and Kaduna and their numerous tributaries and flood plains. The combined surface area of all the freshwater bodies; located in the state is approximately 436,196 hectares and the potential annual fish yield from these water bodies has been estimated at about 41,485 metric tones (Sikoki et al 1992).

Despite its high potential, fish production in the state is estimated at only about 20 tonnes of fish in 1990 representing about 17.48% of the Gross National Domestic Fish Production (FDF 1991). Many factors could be responsible for the low production including overfishing, improper fishing methods, habitat disruption, pollution and post harvest losses, due to bad handling, processing, preservation and storage.

This study attempts to assess post harvest losses in Shiroro lake.

The objectives were to have a rapid survey to identify and quantify types of losses, to provide recommendations that would enhance formulation of policy guidelines for utilization and exploitation of the declining fishery resources of Shiroro Lake.

BACKGROUND INFORMATION

The Shiroro dam water shed covers an area of about 20,300km² in Niger state alone. It drains about 27% of the total land mass of the state. The reservoir created by the dam has a surface area of about 306km² and elevation of 382m with a tremendous storage capacity of 605 billion cubic metres. This lake is a reservoir of valuable renewable resources in the semi-arid zone ecosystem of our nation.

The rich soil deposits and abundant water supply of Shiroro Lake basin have brought about increased agricultural and fisheries activities in the basin. In a rapid inventory survey by

FUTMIN CONSULT in (1992), it was found that the Gill net was the commonest fishing gear. The net mesh size ranged between 6.35cm (2.5”) and 17.78cm (7.0”). Other fishing gear included hooks and line, cast nets and traps. On the average, each fisherman owns a boat and three bundles of net measuring 92.30m (100yds) each. They also reported that most of the catch from the basin were marketed fresh as only the unsold catch were usually smoke dried while it was observed that huge losses occurred through spoilage of the product during the distribution process owing to a variety of factors including poor handling practices resulting from delayed processing; unhygienic marketing facilities; inadequate packaging especially of smoke dried fish; lack of electricity at the landing sites, and the reluctance of fishermen to adopt modern methods of fish preservation.

Sikoki and Van Der Veen (1992) reported that the total standing fish crop of Shiroro reservoir using the Morpho – Edaphic Index (MEI) was approximately 293 metric tones while the total catch per year based on average fish caught per fishermen per year gave a value of 298 metric tones. Thus, theoretically it could be adduced that the lake was being over-fished. It could further be concluded that all the fish produced in the Lake each year are taken out by the fishermen and this looked unrealistic.

MATERIALS AND METHOD

Study Area

One of the major landing sites (Zuba Water Side) was chosen as a case study. Major landings in Zuba water side always occur on Saturdays which are also the market days. During the other days of the week only few fishermen come ashore to sell their catch. Other major landing sites Sarkin Pawa and Shedkona have different market days.

The investigation was conducted on two consecutive market days. (Saturday). On each occasion the following evaluations were made:

1. Enumeration of the boats that came ashore
2. Conduction of an interview with the “Sarkin Ruwa” (chief of the fishermen).
3. Random interview with fishermen, middlemen and fishmongers.
4. Visual estimate of catch landed
5. Organoleptic Assessment of the catch landed.

The following information were obtained from those interviewed:-

- (a) Number of major landing sites
- (b) Number of fishing villages
- (c) Types of fishing gear in use
- (d) The predominant species landed
- (e) Proportion of spoilage after hauling the net
- (f) Preprocessing methods in use
- (g) Preservation methods in use
- (h) Form of distribution of the catches.

RESULTS AND DISCUSSION

The first set of boats started coming ashore at about 7.00am. The traffic became heavy between 8.30am and 12 noon. The last of the boats trickled ashore between 12 noon and 1.00pm.

Almost all the canoes which were dug out were motorized with minimum 25 horse power outboard engines. The canoes were passenger boats conveying the fishermen. Villagers and goods including yams and cows. Average count of 35 motorized boats were counted on the two days of investigation, 7 were counted for dugout canoes with no outboard engines.

The major fish species encountered according to their predominance were *Chrosichthys nigrodigitatus*, *Bagrus* spp.; *Mommyrus* spp., *Synodontis* spp., *Heterotis niloticus*, *Alestes* spp, *Clarias* spp, *Lates niloticus* and *Gymnarchus niloticus*.

The proportion of smoked fish to fresh fish at the landing site was about 80% to 20% respectively. The average number of cartons/basin/basket landed was 200, each having a net weight of about 6.5kg. Thus, average total weight of smoked fish landed was about 1.3 tons while the average total weight of fresh fish landed was 0.35 tons.

From the interview only two landing sites at Sarjub Pawa and Shedkona were confirmed as the major landing sites around the basin. The number of fishing villages around the basin were estimated to be 45. The type of gear predominantly in use was gill net. No information could be obtained about the proportion of spoilage after hauling the net.

For fresh fish there were no preprocessing methods of gutting, scaling etc., before being landed and during sale. Unsold fish were either smoked or if they were large enough (at least 2kg) were kept in deep freezers in the nearby Zuba village.

The organoleptic assessment revealed that most of the fresh fish were of good quality but close to half of the smoked fish were not freshly smoked at least not within a week before landing while some were really charred. This could be due to the effect of unregulated smoking or re-smoking with evident insect or mite infestation.

Any programme of fishery development in the artisanal sector should take into consideration an improved or efficient post harvest technology. The results of the investigation showed that most of the artisanal fishermen fishing on Shiroro Lake usually come to the landing site with their catch with passengers boats as most of them have no motorized boats. They sell their catch to the middlemen at variable prices. A delay in getting the fish to the consumer fresh or processed could lead to loss of the fish through spoilage. This delay in getting to the landing site is also one of the reasons adduced to the high rate of smoked fish in the area. The fishermen in order not to lose their catch have resulted to preservation by smoke drying. However, choice species like *Lates niloticus* of relatively large sizes were always left fresh and preserved in deep freezers in Zuba if unsold. Some of these freezers were provided to some fish mongers through the United Nations Development Programme(UNDP) project, through the Fisheries department of the Ministry of Agriculture and Natural resources of Niger State, while some smoking kilns were donated to some fish processors in Sarkin Pawa and Shadkona.

One basic problem that is still hindering accurate and effective control of post harvest losses is the unavailability of reliable baseline data for researchers to work on. There is the need to do detailed researches into the post harvest losses of all the major Lakes in Nigeria as it was done for Kainji Lake by Eyo and Mdailili (1997).

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