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**REPORT ON THE TRAINING OF FISH PROCESSORS ON HYGIENIC
DRYING PRACTICES, USE OF DRYING PLATFORMS AND VALUE
ADDITION TO DRIED SMALL FISH AT MOREE AND TEMA NEW
TOWN**



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1.0 Introduction

The LEAP-agri “SmallFishFood” project offers innovative thinking focusing on how utilization of small fish (often labelled as trashfish) can be transformed in a direction where fisheries governance, marketing mechanisms and health policies ensure that the value of these fish are recognized and utilized sustainably for human consumption and good health. The project seeks to achieve this in 2 ways; through maximization and preservation of the nutritional value of small fish specifically (Anchovies and Bumper i.e. *Chloroscombrus chrysurus* and *Selene dorsalis*) and through minimizing the environmental impacts and maintenance of the ecosystem structure and functioning.

In light of this, the CSIR – Food Research Institute Small Fish Team, seeks to identify and describe the harvesting, marketing and utilization patterns of small fish and how they contribute to food and nutritional security in Ghana, and improvement of the production processes to achieve better quality and longer shelf life.

In general, the fishing industry plays a very significant role in poverty alleviation in Ghana. In Ghana, small fish have been categorized as having been overfished and there have been declining stocks over the past 28 years (Fisheries Commission). However, the small fish industry in Ghana provides food security, nutrition, employment, income and maintenance of livelihoods for fishermen and fish processors. The traditional practice with sun dried fish all over Africa involves drying the fish on the ground. This practice has led to concerns about the safety and quality of these small fish and in adverse weather conditions leads to huge revenue losses to the fish processors, mostly women. This project has provided an alternative means of processing fish by sun drying with improved, cost effective, user friendly technologies, and the development of value added products using the fish powder.

2.0 Existing Drying Techniques

Small pelagics or small fish, especially Anchovies (*Engraulis encrasicolus*), Atlantic bumper (*Chloroscombrus chrysurus*) and African moonfish (*Selene dorsalis*) are mainly dried under the sun directly by spreading the fish on the bare ground or beach sand for 2 to 5 days depending in the intensity of the sun. This may result in contamination with flies, sand/dust, microorganisms, infestation from rodents and insects which results in poor quality fish with short shelf life. The processors mostly wash the fish once with sea water and strain, sprinkle some of the sea water on the ground and follow it with the sprinkling of the fish. Some processors also dry on concrete pavements by the roadside, stones, footbridges and open racks. Others sprinkle immediately after purchasing without any form of washing. When dried, the fish is swept into a heap with a standing broom, collected into huge baskets and covered with thick polyethylene for keeping (7 to 12 months) either in the open, shed or store rooms until ready to be sold. A challenge central to the method utilized by most fish processors is the washing away of the fishes by the rain or spoilage during the raining season.



Fig 1. Washing and sprinkling of anchovies



Fig 2. Sun drying on the bare ground



Fig 3. Gathering of sun dried fish



Fig 4. Other types of sun drying platforms



Fig 5. Packaging and storage

3.0 Construction of the drying platform and racks at Tema New Town and Moree

The project therefore designed and constructed an off the ground, drying platform for the women fish processors at Tema and Moree. The Tema platform was fully concrete whilst another type made of a mixture of wood and concrete was made for Moree. The Moree platform was made with a high quality wooden (dahoma timber) drying frame treated with desban to prevent insects infestations on which the racks are placed, supported on embedded concrete support stands. easy to use drying racks (10 for Tema and 20 for Moree) with a mesh and net covering to prevent contamination of the fish by flies which serve as vectors of disease transmission were also constructed. The design of the racks also allows for easy flip-over to dry the other side of the fish on the bottom side of the rack. A locking mechanism on the sides of the racks prevents the falling of fish onto the bare ground when the rack is being turned/flipped over.



Fig 6. Construction of concrete drying platform at Tema New Town



Fig 7. Construction of platform and drying racks at Moree

4.0 Training and Technology Transfer

The training of women fish drying processors at Moree and Tema New Town (TNT) focused on hygienic handling and processing of small pelagics or small fish. These included how to wash the fish twice in clean salt solution (approximately 3.5%), strain the water using a clean basket or rubber strainer, dry, de-head, de-gut and package to come up with a more hygienic product which will be of better quality for consumers. They were encouraged to practice this as the fish can be packaged and sold even in large supermarkets and malls to enhance their livelihoods and income.

They were also taken through how to prepare various food products from the de-headed and de-gutted fish when milled into powder. Emphasis was laid on the benefits of supplementing other foods like weaning foods with small fish powder.

Hammer mill used for milling the fish into powder and sealing machines were handed over to them. They were tasked to take advantage of these opportunities.



Fig 8. Moree fish processors washing anchovies prior to drying on racks



Fig 9. Drying on racks and handing over drying racks at Moree



Fig 10. Training women in Moree on how to make the different products developed



Fig 11. Women de-heading and de-gutting of dried fish



Fig 12. Handing over hammer mill and sealing machine to processors at Moree



Fig 13. Hygienic washing (twice) of bumper prior to drying at Tema New Town (TNT)



Fig 14. Drying on racks at TNT and handing over of racks and drying platform



Fig 15. Training on product developments at TNT



Fig 16. Samples of fish products developed by the processors at TNT



Fig 17. Handing over sealing machine and hammer mill at TNT



Fig 18. Participants were given lunch packs at the end of the training

5.0 Conclusion

The trainings was successful. The fish processors were very delighted to see how value can be added to sun-dried fish and were excited at the endless possibilities of generating additional income. The fish processors expressed interest in constructing their own drying platforms and racks and the Tema Metropolitan Assembly also indicated that they had sought for funding to construct additional platforms and hammer mills for the Tema New Town landing site.

6.0 Acknowledgment

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