

PRODUCTION CONSTRAINTS AND TRAINING NEEDS OF WOMEN IN FISH PROCESSING IN THE CENTRAL REGION OF GHANA

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Abstract

This study was undertaken to assess the production constraints and training needs of women fish processors in the Central Region of Ghana. The study involved 150 women fish processors and 19 agricultural extension agents (AEAs) in the study area. Descriptive statistics, t-test and the Borrich Needs Assessment Model were used in the data analysis and organisation of the results.

The assessment of fish processing technology transfer and adoption indicated that the degree of adoption of fish processing practices ranged from slight to moderate adoption. The exception was only seen with the construction and use of Chorkor smoker (oven) which registered relatively higher adoption (3.5 on a 5-point Likert scale). Inadequate capital to run their business was the most crucial constraint mentioned by the women fish processors. Other important constraints mentioned were the high cost of wiremesh and fish conveying bowls, transportation, fuelwood, and poor quality of fresh fish due to the use of dynamites in fishing by some farmers.

The areas considered by fish processors as constituting their greatest training needs were how to acquire credit, management of storage pests, record keeping, workings of co-operatives, storage of fresh fish and marketing strategies.

The Ministry of Food and Agriculture (MOFA), NGOs, and Research Institutions should collaborate to work out a training programme to upgrade the competencies of their staff and fish processors in fish processing technologies. Government at the local level (e.g. District Assemblies) and NGOs should design a sustainable loan scheme to support fish processors with seasonal business loans.

Introduction

For the realisation of the overall objective of Ghana's Vision 2020 policy concerning agriculture, there is a growing concern about gender issues. The focus now is to increase the productivity of the agricultural sector by improving the condition of the rural woman since they are the major food producers (National Development Planning Commission, 1996). In the Central Region of Ghana, the fish processing enterprise has attracted much attention and is dominated by women. The export earnings from this industry are substantial. In 1994, export earnings from fish and seafoods was 11.4 million U.S. dollars (Adam, 1994). However, it is estimated that about 100,000 tonnes of fish go to waste annually in Ghana through bad handling and non-hygienic treatment, as well as the absence of improved technologies for preservation and processing even though local demand for processed fish far exceeds the supply in the country (Mensah, 1997).

With the high demand for quality processed fish both for the local and export markets, and the fact that protein malnutrition exist in Ghana (Mensah, 1997), it is expedient to assess the situation of fish processors in the Central Region where the country gets about one-third of its fish supply. The findings from this study will provide information on the training needs and possible solutions of women in fish processing in the region. The information will be useful for further research, extension in-service training, programme planning, and ensuring relevancy of programmes targeted at women fish processors.

The information from the study is also expected to contribute to improvements in fish processing, income levels, nutritional levels, and the general standard of living. Finally, the findings from this study will contribute to the efforts being made by the government to ensure food security and improve the quality of life in the Central Region in particular, and Ghana in general.

Objectives of the Study

The overall purpose of the study was to determine the production constraints and training needs of women fish processors in the Central Region of Ghana. The specific objectives of the study were:

1. To determine the degree of adoption of fish processing technologies by women in fish processing in the Central Region;
2. To identify constraints to the productivity of women fish processors in the Central Region;
3. To determine the training needs of women fish processors in the Central Region.

Methodology

A descriptive survey was used for the study. The study investigated the production constraints and training needs of women fish processors in fishing towns along the coastal strip of the Central Region of Ghana selected based on fishing intensity. The Central Region covers a total land area of approximately 9,826sq km, with about 3,144 sq. km under cultivation and borders the Atlantic Ocean to the South. It has a population of about 1,114,233 people with about 690,000 being in agriculture (Population Census Data, 1984). The main occupation of the people is farming and fishing.

A stratified random sample, based on the scale and the extent of fishing, was used to select 150 women fish processors from the five Districts of the Central Region of Ghana. The districts were Komenda-Edina-Eguafo-Abrem (KEEA), Cape Coast, Mfantseman, Gomoa and Ewutu-Efutu-Senya Districts.

Through consultations with the District Agricultural Extension and Fisheries Departments, key informants who were themselves women fish processors were identified and selected for focus group discussions. The informants comprised leaders of co-operatives and representatives of fish processors, and active fish processors as judged by the Fisheries Department. In addition, each of the 46 agricultural extension agents (AEAs) in the five selected Districts were given a questionnaire to complete for the study. Three content-validated questionnaires were developed and used for data collection. A participatory approach was employed in the group discussions to generate qualitative information.

These data were analyzed using descriptive statistics including means, percentages, frequencies, and standard deviations. A modified Borich Needs Assessment Model (Ntifo-Siaw, 1993) with the formula: $(N-P) \times N^*$ was used to determine the statistical discrepancy between competency level needed by the women fish processors, where N is the importance of the training in the technology to the business, P is the competency level already possessed in the technology, and N^* is the overall average of the competency needed for the training areas or technology. The scores were then ranked to determine the priority training needs of the fish processors. All differences were tested at $p < .05$.

Results and Discussions

The results indicated that the degree of adoption of fish processing practices ranged from between slight adoption to moderate adoption (Table 1). Exception was only seen with the construction and use of Chorkor smoker (oven), which registered a higher adoption (3.5 on a 5-point Likert scale). The low level of adoption of fish processing technologies by women fish processors could be attributable to the fact that the fish processors were not receiving enough training, and insufficient competent (in fish processing technologies) extension agents to train them.

The results also indicate that where higher numbers of AEAs taught the fish processors a particular practice there were corresponding higher degrees of adoption of the practice by the fish processors (see Table 1). The implication is that adoption of fish processing technologies could be improved amongst women fish processors if more AEAs are trained and supported to reach more women fish processors.

Constraints on Women Fish Processors Productivity

The potentials of the Ghanaian women have not been tapped in agricultural economic terms. Ghanaian women are faced with several constraints, which prevent them from establishing or developing their agricultural enterprises. The constraints identified in this study were generated from discussions held with key informants. Individual fish processors were then interviewed regarding the constraints to establish importance. The results show that inadequate capital was the most crucial limiting factor of the women fish processors (see Table 2, two pages ahead). This is in agreement with the Women in Agricultural Development (WIAD) survey where all the women interviewed mentioned credit, as their immediate need (Duncan, 1997). About 95% of the fish processors reported it as a very high constraint. This was not surprising since Ghanaian women are mostly small business holders with little family resources to invest in their business. Local moneylenders, commercial banks, and the Ministry of Agriculture supervised agricultural credit schemes did not give adequate loans to the women. Although there are no specific constraints to women taking credit or loans they often lack the required capital such as land and houses, which are generally owned by their husbands. Even when they are given loans, it is

reported as either too little or untimely.

Table 1. Technologies Transferred to Women Fish Processors by AEAs and the Level of Adoption (As Reported by AEAs).

Training Areas	AEAs who have taught women fish processors (n=19)		Degree of adoption by fish processors (n=150)
	Freq.	(%)	MEAN*
Construction of Chorkor Smoker	16	84.2	3.5
Construction of smokingTrays	15	78.9	3.1
Use of Chorkor smoker	15	78.9	3.5
Maintenance of Chorkor Smoker	15	78.9	2.9
Use of smoking trays	15	78.9	3.1
Maintenance of smoking trays	12	63.2	2.9
Hygienic handling of wet fish	10	52.6	3.3
Processing techniques	15	78.9	3.4
Storage of wet fish	9	47.4	2.3
Management of storage pests	10	52.6	3.0
Marketing strategies	5	26.3	3.0
Fish packaging	7	36.8	2.6
Record keeping	14	73.7	2.3
Time management	8	42.1	2.2
Workings of co-operatives	16	84.2	2.6
Credit acquisition	14	73.7	2.6
Financial management	8	42.1	2.3

Note: *MEANS were calculated on the basis of a five-point Likert scale 1=not using at all, 2=slight adoption, 3=moderate adoption, 4=high adoption, 5=very high adoption.

Other major constraints identified by the women surveyed included high cost of inputs (e.g., wiremesh and bowls), transportation and firewood. The mean values for the degree of these constraints were 4.47, 4.31 and 4.07 respectively, all above high constraint (Table 2, following page). Such results could be expected in a situation such as this where most of the women are poor and do not get access to credit because of high interest rates and the fear of loss due to the inconsistency of fresh fish supply. The women fish processors indicated that they spend between the 40-60% of their income on transportation expenses. In addition, demand and cost of fuelwood was high due to strict regulatory activities of the Forestry Department, which restricts the activities of the fuelwood contractors for conservational reasons.

From Table 2 (following page), the fish processors did not consider inadequate extension contact as a major constraint, but this contrasts the conclusions of the discussions with key informants as they identified inadequate extension contact as a serious limiting factor to fish processors. The possible explanation to this result is that on an individual basis, agricultural extension had not made the desired impact among the fish processors. Therefore, the women had nothing to compare their situation with in order to see the difference that extension could make in their business. Their main concern was the lack of affordable credit. Their argument had some substance because it was observed that most of the important constraints were factors related to money or capital. Provision of adequate capital could make a big difference, as many of the constraints listed would be minimized or eliminated. Another important constraint that

came out in the group discussions was the issue of the use of dynamite by fishermen in fishing. The women indicated that the use of dynamite tends to affect the quality of their processed fish because such fish tends to hold much liquid, and takes a longer time to dry resulting in the use of more firewood and hence more cost. In addition, with dynamited fish, the skin of the fish easily peels off, the head breaks off easily, and the whole fish often looks unattractive.

Table 2. Constraints to Women's Productivity as Perceived by Women Fish Processors. (N=150).

Ranked problems	Frequency of Degree of Constrain*					Mean	S.D.
	1	2	3	4	5		
Insufficient capital	-	-	-	8 (5.3)	142 (94.7)	4.95	0.23
High cost of inputs (wiremesh and bowls)	-	-	6 (4.0)	67 (44.7)	77 (51.3)	4.47	0.58
High cost of transportation	-	2 (1.3)	13 (8.7)	72 (48.0)	63 (42.0)	4.31	0.69
High cost of fuel	3 (2.0)	3 (2.0)	32 (21.0)	54 (36.0)	58 (38.7)	4.07	0.93
Too much heat and Smoke	-	14 (9.3)	42 (28.0)	59 (39.3)	35 (23.3)	3.77	0.92
Early breakdown of equipments and infrastructure	2 (1.3)	5 (3.3)	67 (44.7)	43 (28.7)	33 (22.0)	3.67	0.9
Inadequate raw materials(fresh fish)	16 (10.7)	10 (6.7)	51 (34.0)	46 (30.7)	27 (18.0)	3.39	1.18
Inadequate storage facilities for fresh Fish	19 (12.7)	27 (18.0)	30 (20.0)	38 (25.3)	36 (24.0)	3.3	1.35
Price for product is too low	4 (2.7)	7 (4.7)	109 (72.7)	27 (18)	3 (2.0)	3.12	0.63
Inadequate extension contact	29 (19.3)	44 (29.3)	33 (22.0)	20 (13.3)	24 (16.0)	2.77	1.34
Inadequate fuelwood	36 (24.0)	26 (17.3)	49 (32.7)	16 (10.7)	23 (15.3)	2.76	1.35

Note: *Scale: 1= nil, 2 = low, 3 = medium, 4 = high, 5 = very high. Values in brackets “()” are percentages.

Perceived Extension Training Needs of Women Fish Processors in the Central Region

According to Kaufman (1972), needs are areas in which actual status is less than targeted status. Generally, the results from the study showed that the overall knowledge and skill possessed by women fish processors in the Central Region were significantly lower than what they need for better performance (Table 3, following page). As shown in Table 3, the most important training need of fish processors is how to acquire credit. The other training needs in the order of importance are management of storage pests, record keeping, operations of co-operatives, storage of wet fish and marketing strategies.

It was not surprising that credit acquisition came first on the list because inadequate capital was identified as the most prominent constraint (see Table 2). Therefore, training on how to acquire and manage capital should be handled as a priority. Record keeping and workings of co-operatives which placed third and fourth, respectively on the list are also related to credit acquisition since credit acquisition in present times is easier for women belonging to a group or co-operative, and are capable of keeping records on their business.

Table 3. Ranking of Women Fish Processors' Perceived Training Needs in the Central Region (n=150).

Training Need	Needed Mean(a)	Possessed Mean(b)	Discrepancy (a-b)	Training Need score (a-b) R	t-value
Credit acquisition	4.81	2.33	2.48	10.64	41.60
Management of storage pests	4.60	2.35	2.25	9.65	22.65
Record keeping	4.41	2.39	2.02	8.67	19.70*
Workings of co-operatives	4.75	2.83	1.92	8.24	24.17
Storage of wet fish	4.14	2.53	1.61	6.91	17.90*
Marketing strategies	4.19	2.72	1.47	6.31	16.54*
Hygienic handling of wet fish	4.45	3.12	1.33	5.71	17.01
Maintenance of Chorkor oven	4.45	3.13	1.32	5.66	8.54
Maintenance of Chorkor trays	4.37	3.09	1.28	5.49	14.25
Time management	3.95	2.79	1.16	4.98	9.41*
Processing techniques	4.50	3.38	1.12	4.8	13.33*
Use of Chorkor oven	4.25	3.32	0.92	3.95	9.13
Construction of Chorkor trays	3.76	2.87	0.82	3.82	7.89
Construction of Chorkor smoker	3.83	2.95	0.88	3.78	8.27*
Use of smoking trays	4.20	3.37	0.83	3.56	8.54
Fish packaging	4.04	3.53	0.51	2.19	5.23
Overall Mean	4.29	2.89	1.40	6.01	29.09*

Note. Training need score reflects the weight or priority given to specific training area. It is the product of the difference between needed and possessed scores (a-b) and average needed score for all respondents, R=4.29. *Significant at $p < .05$.

Management of storage pests, which came second on the list, is one of the most important training areas that would need attention. The group discussion revealed that storage of smoked fish for long period of time had not been the practice of most fish processors due to lack of capital, even though this would be more profitable. The fish processors buy fish, process and sell it immediately so as to pay off creditors or to keep needed capital in the business. When respondents were asked to describe how they control storage pests, the following control

measures were mentioned: periodic reheating of the processed fish on the storage oven when pests (insects) or mould are detected, use of pepper in the burning fire to smoke the fish, use of salt in fire to smoke the fish, sprinkling of granulated pepper on fish in storage, sprinkling “magic powder” an insecticide on the immediate surrounding and peripheries of the storage oven, and covering of the fish securely with polythene and other materials. It would be very important if research were conducted into some of these practices used in storage pest control by these fish processors to ascertain their effectiveness, economics and safety.

Storage of wet fish, hygienic handling of wet fish, marketing strategies and maintenance of Chorkor smokers were also identified on the training priority list in a decreasing order. Respondents in the group discussion reported that during periods of good fish harvests (August and September) it is necessary to work day and night. This is due to the lack of storage facilities and/or techniques to help them keep fresh fish for longer periods without spoilage.

Processing techniques, construction and use of Chorkor smokers and trays, and fish packaging were ranked lowest on the list of training priorities. The fish processors indicated that they have considerable amount of knowledge in these aspects. To support this perception, the results from Table 1 indicated relatively higher degrees of adoption (means were above 3.0) for these training areas except fish packaging which recorded 2.6. But this low value for fish packaging may also be attributable to the fact that only few AEAs (36.7%) had had training in that technology.

An important conclusion from the discussions with the key informants was that women fish processors preferred that extension agents teach them via a combination of demonstration and discussion methods. The reason given for their choice of the two methods was that this allows for participation and better understanding.

Conclusions and Educational Importance

The role of the extension services in supporting women in fish processing needs to be strengthened to make the fish processing enterprise viable. The process should take into account the role of the existing power structures. It took chief fishermen, their wives and opinion leaders in the communities to organise the fish processors for the key informants group discussions.

The conclusions were that the degree of adoption of fish processing technologies transferred to women fish processors ranged between slight adoption to moderate adoption which necessary call for further training of women fish processors in the Central Region of Ghana. This training must cover all aspects of fish processing but emphasis and priority should be given to the management aspects where their training needs are great. These include credit acquisition techniques, management of storage pests, record keeping, workings of co-operatives, storage of wet fish and marketing strategies. Training in workings of co-operatives should be emphasized and the women should be encouraged to form co-operatives to qualify them for loans, which is their most important constraint. A revolving loan scheme could also be established by District Assemblies in the coastal districts to make capital more accessible to fish processors.

The findings also presuppose that increasing extension contact between AEAs and fish processors would improve the adoption of fish processing technologies by fish processors. There is, therefore, the need to encourage and support more AEAs to visit women fish processors to give them practical training in fish processing technologies through demonstration and discussion methods.

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