Fufu processing and the sustainability of livelihoods in southwest Nigeria

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Abstract
Cassava has traditionally been a subsistence crop of predominantly low income families in rural and urban areas in Nigeria. The five locations used for this study were selected after an extensive scoping visit to 23 *fufu* processing sites. The key livelihood activities for income were disaggregated by gender in each study location. It was found that women are involved in a wider range of livelihood activities than men in all locations. *Fufu* processing was found to make an important contribution to household security in all locations. However, the overall importance of *fufu* processing to household incomes and the levels of commercialisation of *fufu* enterprises differed quite markedly across locations. The study then recommended that new, capital intensive technical interventions aimed at commercialising *fufu*, if found to be technically and economically feasible, could most easily be targeted at large scale processors who possess substantial financial capital and are interested in expanding their activities.

Introduction
Agricultural production and the sale of fresh and processed crops dominate rural livelihoods throughout Nigeria. In semi-urban and urban areas, a wider range of activities are inevitably undertaken. Among others, cassava has traditionally been a subsistence crop of predominantly low income families in rural and urban areas (Gebremeskel, 1989a). But the place of cassava in livelihood systems may be changing. It has already been reported that cassava products are consumed at least once a day by most families (Gebremeskel, 1989b).

Fufu is the product of cassava which can be produced the quickest. It is prepared in Nigeria by the submerged fermentation of peeled cassava roots. *Fufu* processing is known to be widespread in rural areas (Henry *et al.*, 1999), produced at household level or on a small-scale, particularly in those locations with an abundant water supply. Yet this conventional understanding of *fufu* processing may yet be challenged. Gradual improvements in access to markets and the packaging of this product has extended its shelf life, thus, market demand for *fufu* has been reported to be increasing (Adegeye, 1999; Dipeolu *et al.*, 2001). However, individual enterprises run by women dominate the existing *fufu* processing industry and there seems to be limited solidarity amongst processors, which limits their access to capital and other vital resources. The main objective of this study was to develop an overall understanding of the contribution of cassava processing to the livelihoods of village-based *fufu* processors in southwest Nigeria.

Approach
This study was based primarily in five study locations (Ode Remo, Ereji, Ilaro, Soso and Ilewo Orile) in southwest Nigeria. Each location was selected after an extensive scoping visit to 23 *fufu* processing sites. Considerable effort was placed on the selection of study sites to enable data to be obtained from a range of locations with differing resource bases and varying dependence on the processing of *fufu* and other cassava products. It was envisaged that such a range of locations

would be conducive to developing an understanding of variations in livelihoods, the reasons behind differences in livelihood activities and the outcomes of these differences.

A preliminary exercise carried out in conjunction with villagers was the creation of a map of each location, highlighting key resource points (water sources, shops, health centres etc.) as well as the location of the households of processors of *fufu* and other cassava products. After initiating dialogue with villagers and explaining the aims of the study, arrangements were made for researchers to stay in the five locations for two, two-week periods (one in the dry season and one in the rainy season). Researchers were tasked with collecting in-depth information on up to 30 family units.

In Ode Remo, Ereji, Soso and Ilewo Orile all active *fufu* processors were included in the study. However in Ilaro, which is more urban than all the other locations, one of the *fufu* processing sites with the best access to Lagos (via Ifo market) was selected (Odo Oshun). At this processing site, data were collected from 15 randomly selected processors out of the 35 found on the site. Interviews were carried out using household level interview guides. The data collected included background information on access to resources and general livelihood activities and detailed information on cassava processing activities, particularly the production of *fufu*. Wherever possible, information was collected on the relationships between cassava processing and the five 'capital assets' (defined by Carney 1998 in the Sustainable Livelihoods framework as human, social, physical, financial and natural assets), which structures and processes influence livelihood activities and the potential for livelihood diversification.

To build trust with respondents, glean further information and confirm some of the of the more formal interviews, researchers spent considerable periods of time carrying out participant observation, which involved visiting *fufu* processors and their families at their processing sites, their homes and farms. After the initial analysis of findings, a small-scale validation exercise was carried out in the three locations producing wet paste *fufu* which were emerging as the main focus of the project: Ereji, Ode Remo and Ilaro. Focus group discussions were held with a random sample of *fufu* processors. Researchers also used this opportunity to feed-back the overall findings of the project to date and potential future activities.

Results and Discussion

Table 1 details the livelihood activities pursued by both men and women to generate income in the five study locations. This is not a comprehensive analysis, but it provides an overview of main activities.

Table 1. Key livelihood activities for income generation. Responses have been dis-aggregated by gender in each study location

Gender	Ereji	Ode Remo	Ilaro	Ilewo Orile	Soso
Men	Farming Hiring out labour Hunting	Farming Cassava processing (*fufu*) Sale of water Hiring out labour (farming) Civil service work Petty trading Artisan-ship	Farming Civil service work Teaching Artisan-ship Large-scale trading Petty trading Transport sector employment Hiring out labour	Farming Teaching Artisan-ship	Farming Hunting Hiring out labour
Women	Farming Cassava processing (*fufu*) Collection/ sale of firewood Petty trading Hiring out labour (farming, *fufu* and *gari* processing)	Farming Cassava processing (*fufu* and *gari*) Home gardening Hiring out labour (cassava processing) Petty trading	Farming Civil service work Teaching Artisan-ship Petty trading Cassava processing (*fufu* and *gari*) Hiring out labour	Farming Teaching Cassava processing (*lafun, gari* and ready –to-eat *fufu*) Petty trading	Farming Cassava processing (ready-to-eat *fufu*) Hiring out labour

A number of factors were found to influence the choice of livelihood activities as well as the potential of residents to diversify their livelihood choices in all locations(Table 2). Wet paste processors operate on a range of scales (Table 3).

Table 2. Relative importance of factors affecting livelihood activities.

Factor	Ereji	Ode Remo	Ilaro	Ilewo Orile	Soso
Access to land	Vital for the key activities of farming and *fufu* processing.	Important for farming , ownership of water supplies and *fufu* processing sites.	Not important- range of off-farm livelihood activities available.	Important for key activity – farming.	Important for key activity – farming, especially production of kola nuts.
Access to labour	No problems in labour availability.	No problems in labour availability, though cost of casual labourers highly competitive.	Problems in labour availability for some activities due to range of employment opportunities.	Few labour constraints.	Few labour constraints.
Access to water	Critical. Water supply is limited in dry season and has to be Purchased.	Very important – water is limited and has to be purchased all year round	Important. In town water is purchased all year round. Specialised livelihood activities (e.g. *fufu* processing) utilise natural sources.	Freely available all year round.	Freely available all year round.
Access to credit	High dependency on informal credit (esp. family support and deferred payments for goods).	Some dependency on informal credit (esp. family, deferred payments for goods, moneylenders). Relatively high levels of capital available.	Important (esp. family and friends).	Important informal credit (informal groups savings, co-operatives and deferred payments for goods).	Important informal credit (savings group and cooperatives)
Access to markets	Limited access, especially in rainy season. Traders visit village from outside.	Essential. The town's good access to markets is critical to most livelihood activities.	Essential. Good market access influences most livelihood activities.	Important. Limited access constrains livelihood options.	Important. Limited access constrains livelihood options.
Infrastructure	Poor roads limit access. Lack of services (e.g. electricity) perceived as major constraint.	Very good infrastructure at all levels.	Very good infrastructure at all levels.	Poor roads. Electricity and communication systems in place.	Poor roads and electricity.
Ethnicity	Most residents are native Yoruba.	Yoruba and Ibo present. Some links between livelihood activities and ethnicity.	Heterogeneous ethnic population but no links with important factor.	Not important – most residents are native Yoruba.	Not important. Most residents are non-native, but homogenous group.

Table 3. Dominant characteristics of wet paste *fufu* processing in three of study locations where product is produced.

Characteristic	Ode Remo	Ereji	Ilaro
Nature of location	Peri-urban	Rural	Peri-urban
Social group which dominates processing	Medium scale: Female and some male non-natives; Large-scale: Male natives	Female natives	Female natives and non-natives
Processing method	Ibo method - two-stage fermentation ("dry sieving")	Yoruba method	Yoruba method
Period of processing	All year round	All year round	All year round
Use of improved processing technology	Graters; concrete water tanks (owned or rented)	Some water tanks (owned -recently introduced)	None
Size of workforce	2-20	3-12	4-7
Total range of output	(28 – 480) x 60kg bags per month (1,680 - 28,800 kg per month)	(8 – 24) x 60 kg (480 - 1,440kg per month)	(35 – 150) x 25 kg (875 – 3,750 kg per month)
Income	N 19,600 – N 336,000 per month (US$ 196 – 3,360)	N 2,640 – 15,840 per month (US$ 26 – 158)	N 9,100 – N 39,000 per month (US$ 91 – 390)
Management of enterprise	Individual women and individual male entrepreneurs	Individual women	Individual women
Main markets	Lagos	Lagos	Ifo
Market access	Good	Good	Good all year round
Market relationships	Pre-ordered. Processors transport goods to traders.	Pre-ordered. Buyers purchase at processing site.	Not pre-ordered. Processors sell at market place.
Access to informal credit	Deferred payment for cassava. Loans from family/friends.	Deferred payment for cassava. Loans from family/friends.	Loans from family /friends.
Access to formal credit	Money lender	None	None
Importance of *fufu* processing as income-generating activity	Small proportion of population very dependent	All households very dependent	All processors very dependent

Fufu processing makes an important contribution to household security in all locations. However, the overall importance of *fufu* processing to household incomes and the levels of commercialisation of *fufu* enterprises were found to differ quite markedly. One early finding of the study was that in locations where wet paste *fufu* is produced for sale (Ereji, Ilaro and Ode Remo) the output of this enterprise is much higher than that of ready-to-eat processors.

The previous understanding amongst researchers was that *fufu* processing was a predominantly rural activity, less integrated in market systems than other cassava products (Adegeye, 1999). This study found quite a different situation. In locations such as Ode Remo and Ilaro, and even more remote places such as Ereji, wet paste *fufu* processors have long-standing connections to urban markets and market their produce on a relatively large scale. It is estimated that the largest scale wet paste processors who sell at Lagos earn up to US$3,360 per month, although a more common income is in the range of US$196-378. These figures do not reveal the overall level of profit. The relation between income and profitability were not part of this specific study, but is reported by ????? *et al.* ????. Even wet paste processors further from market points who do not sell directly at Lagos but rely on middlemen or intermediary markets can earn up to US$390 per month.

Women processors described *fufu* processing as a flexible activity that can be taken up easily with little investment. It can therefore be used to raise money as a precursor to venturing into other livelihood pursuits. In fact, some processors in Ilaro and Ode Remo described how they plan to use the income generated from *fufu* processing to progress into other livelihood activities. In some cases, therefore it is seen as a stepping stone to more lucrative enterprises.

The key constraints to *fufu* processing identified by respondents in most location were: unavailability of cassava roots, shortage of water and competition due to the increase in the number of new entrants. Processors have found different ways to adjust to these constraints, which are inevitably linked to the local livelihood system in each case. For instance, in all locations processors wherever possible maximise their relationships with cassava farmers to enable them buy roots on credit. Those who can afford it may hire transport and purchase roots outside the local vicinity where supplies may be better and/or prices more to their advantage. In Ode Remo, where water is in short supply, traditional *fufu* processing methods would probably be unfeasible on a large scale. Instead, native processors have adopted the Ibo processing method imported by in-migrants to the town. This 'double fermentation' method requires substantially less quantities of water and processors have a reliable Lagos market for the high-starch wet paste produced. In Ereji, which also faces water supply problems, processors re-use water as much as possible and have used their high levels of community organisation to lobby and pay for a tube-well to be installed in the village.

At Odo Oshun, the specialised processing site in Ilaro, membership of the site's *Fufu* Processors Association is compulsory for every one of the tight-knit group of processors based at this site. The Association provides an important source of social capital for all members, even to the extent that it can ensure all processors receive a consistent income from the key market point at Ifo. In this highly organised system, the total level of production from each processing site is mutually agreed to maintain demand and ensure an optimum price is maintained for the wet paste produced.

Recommendations

At this juncture, it is important to address some recommendations which are of primary benefit to the specific locations studied in this study, which nonetheless may bear some usefulness in other *fufu* processing locations with similar characteristics.

- Efforts to improve *fufu* processing should focus on locations that produce wet paste. This is because currently the wet paste production and marketing system has the widest impact on local livelihoods.
- The market dynamics of the Ibo-influenced "double fermented" product needs to be confirmed through consultation with traders in Lagos and elsewhere.
- If the potential to absorb increased output of the "double fermented" product is confirmed, the use of processing techniques to produce this form of *fufu* should be promoted, particularly at locations that have problems with water supplies. This may involve linking processors with appropriate traders.
- Low-tech, low cost improvements to processing observed at certain locations, such as the construction of water tanks and the use of double packaging to prolong the shelf life of *fufu*, should be promoted at other relevant locations.
- New, capital intensive technical interventions aimed at commercialising *fufu*, if found to be technically and economically feasible, could most easily be targeted at large scale processors. They have substantial financial capital and appear to be interested in expanding their activities. However, there is a risk that this approach may provide more direct advantages to richer members of the community (although, of course, more employment opportunities may be created). Efforts can be made to encourage the participation of less elite groups, by utilising the co-operative mechanisms for pooling resources.

The findings reported in this paper clearly relate to one type of food product in one region of Nigeria. The approach adopted may prove useful elsewhere where there is a desire to promote interventions that have an impact of the livelihoods of people who depend upon them.

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