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## Research Article

### CONTRIBUTION OF TRADITIONAL TCHOUKOU CHEESE FROM NIGER TO THE FOOD SECURITY OF HOUSEHOLDS IN NIGER

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#### ABSTRACT

Tchoukoucheese from Niger, a pastoral product, has been manufactured for a long time by women farmers in order to preserve dairy surpluses during periods of high production and thus constitute food reserves for the lean season. The objective of this study is to evaluate the contribution of Tchoukou to the food security of the populations. Thus, investigations into the use of income from the sale of Tchoukoucheese in the Filingué area are carried out. The sale of Tchoukou cheese is the main source (64%) of producers' cash incomes. These incomes contribute significantly to the food and nutrition security of producing households and strengthen their resilience. They are mainly injected into economic access to food (25.80%), access to health services (4.35%), good family practices of care (hygiene (18.24%), schooling of children (5.95%)) and livelihood protection (purchase of livestock feed (22.67%), purchase of animals (19.92%), veterinary care (2.75%), and agricultural equipment (0.31%)). It appears from the study that the revenue from sales, tchoukou in Niger contributor to food security and community resilience.

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#### INTRODUCTION

Due to their high biological value, animal proteins play a major role in household food and nutrition security. They come from hunting, fishing and breeding activities. Livestock farming, practiced all over the world, is the main activity that provides animal proteins through multiple animal productions such as meat, eggs, milk and products, including cheese. It is a major socio-economic activity (UNDP, 2014).

In Niger, livestock is the second most important economic activity after agriculture. Livestock activities contribute an average of 15% to household income and 25% to meeting their food needs (INS, 2011).

The milk (a nutritious and very perishable product) is the staple food for Nigerian farmers. Large quantities of milk are produced in the winter season causing huge losses. On the other hand, the productions are insufficient in the dry season

according to a study carried out by the Cabinet African Council and Accompanying (AFCA), in 2013.

The losses are greater in pastoral systems because the fresh milk collection network is very weak or non-existent in the pastoral zone. This has led pastoralist women to develop strategies for processing this commodity to ensure the conservation of surplus produce. It concerns the production of butter, curd and home-made dry cheese called 'Chuku' in Hausa and Fulani and 'Tikomart' in Tamachek. This technique makes it possible to build up food reserves for the dry period. The sale of Tchoukou surplus also makes it possible to buy indispensable items for the family (JC Lambert and A. Soukehal, 1994). In the agropastoral zone, unlike pastoral farming systems, dairy surpluses are valued in the form of dairy products (curd, cheese, butter, etc.) and sold on the markets (UEMOA, 2013).

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Tchoukou is produced throughout the pastoral zone of Niger (AFCA Studies, 2013). This zone concerns 7 regions, 23 departments and 40 municipalities. In addition to these localities, Livestock Multiplication Centers (CMBs) also produce Tchoukou.

The choice is focused on the Urban Municipality of Filingué (CUF) where the production of Tchoukoucheese is the work of private producers. These women are organized into groups spread over some villages. Tchoukou cheese has become a popular luxury item. But what does it bring to producers?

Faced with increasing urban demand, the sale of Tchoukou cheese is a significant source of income for women producers. But do these incomes contribute to household food security?

## MATERIALS AND METHOD

### Framework of the study

Located 178 km north-east of Naimey, the Urban District of Filingué (CUF) has 17 districts and 57 administrative villages. The villages, objects of our study, are located in the north-east and north of the capital of the town. These are the administrative villages of Makani Souleymane, Toukounous station, Garin Kimba and Tamagorgek (Figure 1); Potential Tchoukou production sites.

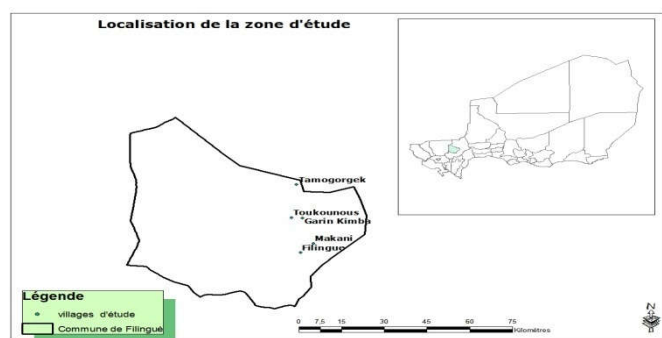


Figure 1 Location of the study area

Source: Our study.

### Materials

To achieve the objectives assigned to this study, surveys were conducted. Thus, for surveys, the tools used consist of questionnaires administered in individual interviews, an interview guide used for group focus.

### Questionnaire

This sheet is structured in 3 (three) large by:

- Identification of the respondent;
- Marketing / Sources of Monetary Income;
- Use of income.

Interview guide for focus group members and some resource persons. It supports information on the use of Tchoukoucheese, strengths, weaknesses, opportunities and threats for the production and marketing of Tchoukou cheese. It allowed us to triangulate with certain information contained in the questionnaire.

Statistical analysis was done with the Sphinx1 4.5 software.

## Methodology

### Sampling

#### For investigations

Given the size of the population (producing 175), it was conducted a systematic census in accordance with the table, RV and Morgan, DW, 1970 with a confidence level of 95% wanted.

Table I Sample surveyed.

localities	Female group	year of creation	Total workforce	Staff surveyed	Proportion surveyed (%)
Garin Kimba	<i>Mougnal</i>	2014	26	24	92
Tamagorgek	<i>Dadin zama</i>	2014	24	21	88
Tamagorgek	<i>Fara'a</i>	2014	20	15	75
Makani	<i>Adaltchi</i>	2014	27	21	78
Souleymane	<i>Anfani</i>	2014	31	23	74
Toukounous Station	<i>AFPEN-Weli</i>	2000	25	15	60
	<i>Ni-ima</i>	2014	22	12	55
Total			175	131	75

Overall, 75% of women producers could be surveyed. The other producers were absent at the time of the survey.

**Individual interviews:** they consisted in administering the questionnaire individually to each producer in her household in the vernacular language of the medium

**Semi-structured interviews (focus group):** These interviews consisted of exchanges with group members on the conduct of their associative activities as well as a critical analysis of their business environment.

## RESULTS

### Surveys

#### Demographic characteristics of the respondents

The sample is made up of 100% women, 19.8% of whom are household heads.

They are distributed in all age groups with a slight majority for those aged over 41 (35%).

With regard to the vocation of the population, agro-pastoralists are dominant (77%) compared to pastoralists (21%). The others practice agriculture and petty trading as their main activities.

The Hausa are the majority with 62.6% followed by Fulani, 36% (Table IV).

Table II Distribution of the surveyed population by ethnicity and main activity

Ethnic group	Core business				Total	Proportion (%)
	Agriculture and Livestock	Agriculture	Breeding	Other		
Hausa	79	0	3	0	82	62.59
Peul	20	1	25	1	47	35.87
Touareg	1	0	0	0	1	0.76
Zarma	1	0	0	0	1	0.76
Total	101	1	28	1	131	
Proportion (%)	77.09	0.76	21.37	0.76		

#### The supply of Tchoukoucheese in the study area

Like milk, the production of Tchoukou is variable according to the seasons:

- In winter season: the average daily production per producer is about 19 leaves (18.92), or 3249 leaves per day for the 171 producers of the zone;
- In cold dry season: average daily production of about 10 leaves (9.62) per producer, or 1710 leaves per day for the area;
- In hot dry season: average daily production of about 4 leaves (3.75), or 684 leaves for the whole area.

The daily average of the area is 11 sheets per producer all seasons combined. Which gives an annual production (commercial year: 360 days) of 662,591 sheets.

Sales are in order of importance on the spot, at Filingue Market and Sabongari Market (CUF). The frequency of sales is weekly at market level (Sunday for Filingue and Tuesday for Sabongari).

The Tchoukou sheet is sold at FCFA 150 in Toukounous and Garin Kimba; FCFA 100 in Makani and Tamagorgek. With an average price of CFAF 125 per sheet, the average income of female producers is CFAF 37 125 / month, minus 10% of losses.

The constraints mentioned by the producers are the lack of sales space (stand or shop) and the distance from the Filingué market.

**Contribution of Tchoukoute household food and nutrition security**

In addition to self-consumption, the analysis of producer expenditure items (Figure 3) allowed us to assess the contribution of income from Tchoukoucheese to household food and nutrition security. The expenditures listed do not necessarily relate to all producers (Table V). This contribution is observed through determinants of food and nutritional security that are consumption, economic access to food, access to health services, good family practices of care (hygiene, schooling) and the protection of existence (animal care, purchase of livestock feed, fattening animals and agricultural equipment).

**Table III** Proportions of the producers concerned by the different expenses.

Spent	Number of women concerned	Proportion (%)
Food	111	84.7
Human health	51	38.9
Schooling of children	60	45.8
Clothing / Makeup / Braids	98	74.8
Feed for cattle	109	83.2
Veterinary care	36	27.5
Purchase of animals	97	74
Agricultural equipment	4	3.1
Other	1	0.8

**The consumption**

Tchoukoucheese is consumed in all households surveyed. The consumption concerns the leaves lost by breaks, those produced the days of sale and the leaves possibly not sold after

a week. Self-consumption is estimated at around 10% of production. Added to this is the consumption of whey.

**Contribution of Tchoukoucheese incomes to total household income**

In the study area, households ensure their food security through the combination of resources from rainfed agriculture, livestock and petty trade. Among the breeding activities, the production of Tchoukoucheese occupies a prominent place.

The women producers earn most of their cash income from livestock activities (about 96%); the sale of Tchoukouis the most dominant (64% of total revenues). The sale of agricultural products concerns women who exploit plots of land to produce okra, peanuts, sesame and Woandzou. As for the small business, it is dominated by the sale of donuts, the resale of condiments, cola, moringa, etc.

**Contribution of Tchoukoucheese incomes in food accessibility**

According to our surveys, food expenditures are not just about household heads. For women living with their husbands, it usually involves buying condiments and other ingredients. The majority of women producers (84.7%) say they contribute to the household's diet. This is the largest expense item consuming an average of 25.8% of producer income.

**Contribution of Tchoukoucheese incomes in access to health services**

Inadequate access to health care is an underlying determinant of malnutrition. It includes, among other things, access to essential medicines and preventive care such as vaccinations, and impregnated mosquito nets. ; 38.9% of women contribute to the health of their household members. These expenses amount to an average of 4.35% of the revenue derived from Tchoukoucheese.

**Contribution of Tchoukoucheese incomes in family care practices**

Good family practices of care are related to hygiene practices and the education of children.

Hygiene practices include the purchase of clothing, braids, soaps, and others. More than half of women producers (74.8%) spend on average 18.24% of their income from Tchoukoucheese.

The schooling of children concerns 45.8% of women producers and consumers an average of 5.95% of income.

**Contribution of Tchoukoucheese incomes in livelihood protection**

Revenue from the sale of Tchoukoucheese allows producers to protect and / or enhance household livelihoods. Livelihood protection translates into the purchase of livestock feed and animal health expenses. According to our survey, 83.2% of women producers contribute 22.67% of their income to the purchase of livestock feed. Expenditure on animal health, which averages 2.75%, concerns 27.5% of women producers. Livelihood enhancement concerns the rebuilding of livestock and the purchase of agricultural equipment.

A large majority (74%) of respondents buy animals generally for fattening and to a lesser extent for multiplication. They

inject an average of 19.92% of their income from the sale of Tchoukoucheese.

The agricultural equipment mentioned consists of feeders, milking equipment and farm equipment. These expenditures are cited by 3.1% of women producers. On average 0.31% of income is injected.

## DISCUSSION

In Niger, there are three main farming systems: pastoral livestock systems, agro-pastoral livestock systems and farming systems.

Within these farming systems, there are variations with regard to the possibilities of valorization of milk (UEMOA, 2013). We will limit ourselves to pastoral and agropastoral farming systems, the main producers of Tchoukou.

### *Contribution of Tchoukoucheese to the nutritional security of households*

In addition to the consumption of Tchoukoucheese, the consumption of whey provides a lot of nutrients. According to the FAO (1991), the nutritional quality of whey is due to the presence of both lactose and serum proteins (20% of milk proteins). The functional properties related to serum proteins make them interesting products both for the feeding of livestock, but also in human nutrition. These proteins are used in infant feeding for their nutritional qualities (richness in essential amino acids), for the preparation of cooked meals (water retention), for their solubility at any pH scale (milk drinks, lemonade) and for their foaming power (confectionery, nougaty). The whey recovered for human or animal nutrition comes mainly from cheese making.

### *Contribution of Tchoukoucheese to household food security*

Agro-pastoral, transhumant and semi-intensive farming systems are most often found in the agro-pastoral zone, a transition zone between the pastoral and agricultural zones. Fattening and milk production are the two functions of the farms.

In this zone, despite livestock mobility, dairy surpluses are valued in the form of dairy products (curd, cheese, butter, etc.) and sold on the markets (UEMOA, 2013).

The sale of Tchoukoucheese generates revenue. With an average production of 11 leaves / producer / day, the producer earns a net monthly income of CFA 37,125.

The main uses of these revenues contribute directly or indirectly to enhancing food and nutrition security at the household level. This shows the place occupied by this activity in the strategies of household life. Indeed, the analysis of the sources of money income shows that in an area where the majority of the population (77%) lives on agriculture and livestock, most of the money income (96%) comes from 'breeding. Tchoukouproduction enhances livestock activities as it contributes to veterinary care and the purchase of feed supplements for animals. The stuffed animals are sold during the lean season or in case of exceptional events to adapt to the shock. Tchoukou is therefore a resilient product as it helps to reduce risks (animal care and feeding) and to develop household resilience (purchase of animals).

The use of Tchoukou's income in access to food allows households to use the products of the harvest over a long period.

Finally, the contribution of Tchoukou's income to access to health services, schooling of children and hygiene, spares households from resorting to the sale of the products of the harvest (focus group).

## CONCLUSION

The production of Tchoukou is a dynamic sector of activity in the urban district of Filingué. It is consumed by both rural people and townspeople (Filingue, Niamey, etc.).

Surveys have enabled us to obtain information on the use of income from his sale in the Filingué area. The sale of Tchoukou is the main source (64%) of producers' cash incomes. These revenues from Tchoukou contribute significantly to the food and nutrition security of producing households and strengthen their resilience.

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