

Joint experimentation of women innovation on fish smoking in Banda, Niger

Gender write-shop, Entebbe 03-07/11/2008



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Introduction

- Insufficient wood for fish smoking (3/4 of Niger land surface is desert)
- Spoilage and loss of fresh fish during transport to urban markets (250 km from Niamey)
- Decreasing fish capture and women's incomes due to climate change effects on river Niger
- Constraints encountered by women with traditional smoking oven:
 1. **Limited banda (or smoking oven) capacity,**
 2. **Excessive consumption of wood and time,**
 3. **Labour intensive,**
 4. **Low products quality and added value,**
 5. **Impossibility of smoking in rainy and windy conditions**
 6. **Loss of fish due to dust contamination and spoilage,**
 7. **Burning of children and babies,**
 8. **Attacks by rodents, dogs and birds,**
 9. **Individual surveillance requirements etc.**

2. Methodology

- **Inventory of local innovations and farmer innovators;**
- **Selection of the innovation by national workshop participants using the following criteria:**
 1. Innovativeness, 2. Origin/locally evolved by farmers, 3. Socio economic impact, 4. Environmental effect, 5. Benefits, 6. Replication, 7. Capitalization
- **Planning and implementing joint experimentation**
- **Monitoring and evaluation**
- **Sharing the results and strengthening the process.**

Fish smoking in traditional banda



3. Innovators motivations and state of the innovation

- **Location of the experiment site:** South West of Niger, about 200 km from capital Niamey and 2 km from protected W Park forest
- **Women main activity:** Smoking fish bought or caught by their husbands and reselling smoked fish in neighboring markets & villages.
- **Brief innovation description:** Banda is a traditional local oven built one metre in height with local bricks in circular or rectangular form
- **Type of the innovation:** Tradition modified jointly by women fish processors and men masons
- **Motivations:** Improve smoking conditions, fish quality, shelf life and add market value
- **Benefits:** Reduced transportation cost and spoiling, staggered selling, incomes used to satisfy family needs (eg. clothing, schooling).

4. Planning joint experimentation of fish smoking

4.1 Restitution to women fish processors results of innovation selection workshop

4.2 Negotiation and selection of farmer experimenters

(composed of farmer innovators, volunteers and community delegated villagers for joint experimentation)

4.3 Organization of joint experimentation and PID training workshop (19 participants among them 8 farmer innovators/experimenters and 11 researchers and extensionists)

4.4 Improvements/ways set to be tested

- 1. Reduction of wood consumption**
- 2. Environment protection**
- 3. Increasing the smoking capacity**
- 4. Smoking fish even during rainy and windy conditions**
- 5. Conservation of smoked fish against dust, rodents, dogs and birds**
- 6. Reduction of smoked fish contamination**
- 7. Safety for children and babies being taken care of by their mothers**
- 8. Saving time that can be used for other activities**
- 9. Increasing sensory and nutritive qualities of smoked fish**
- 10. Socio economic impacts of using a new 'Banda'**

4.5 Experimental design (negotiated and flexible)

- ✓ **4 new innovative “Banda” tested together with 4 traditional Banda as “control”**
- ✓ **Repetition:** 4 innovators/experimenters (2 women and 2 men)
- ✓ **Set up:** 1 new banda and 1 traditional banda of same size built side by side in each farmer experimenter house
- ✓ **Local monitoring:** one (1) farmer monitor selected by the community to coordinate, monitor and fill experiment sheets
Market information communicated to him by women using banda,
- ✓ **Monitoring and Evaluation mechanisms**
 - Field visits
 - Discussions in village assemblies,
 - Meetings and reports.

Illustration of experimental design set up and monitoring



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4.6 Partners involved and input of each stakeholder

- ✓ **Innovators and other villagers**
 - Construction of 4 banda (control)
 - Provision of local resources such as bricks, water, roofing wood, labor, mason and places
 - Follow up construction by farmer monitor
- ✓ **PROLINNOVA Niger**
 - Provision of complementary resources: cement, metallic grillages and bars, balances, metallic doors and windows,
 - Financial support to farmer innovators, experimenters
 - Provision of material and financial planning
 - experiment costs: training, vehicles & field trips fuel
- ✓ **Extension: NGO D2000 and regional services**
 - Provision of vehicle for local field trips by DDDA Gaya, no hiring
 - Awareness and guidance in construction of bandas



Partners involved and input of each stakeholder (Ctnd)

- ✓ **Researchers** (INRAN and Faculty of Agronomy/University)
 - Strengthening farmers capacities
 - Awareness and sensitization in designing experiment
 - Architecture: drawing and formatting new bandas sizes based on traditional bandas measurements
 - Documentation of sharing and decision making meetings

- ✓ **Municipality of Falmey** (New partner)
 - Dissemination of the innovation
 - Facilitation in getting official document to Banda Guiyara Rayuwa Ka cooperative
 - Advocacy for access to foreign markets (Bénin et Nigeria)

- ✓ **Non formal education of Gaya** (New partner)
 - Guidance and support
 - Methodological support to farmers in FLD
 - Adult training monitoring and evaluation

5. Joint experimentation process

5.1 Levels of monitoring and evaluation

- ✓ **National level**
Working Group (WG) composed of farmers, researchers and extensionists

- ✓ **Departmental level**
farmer innovators/experimenters and departmental services

- ✓ **Community level**
A farmer monitor selected by the community for his literacy, willingness and availability to support women together with women innovators and experimenters follow up and register trials

- ✓ **International level**
Backstopping visits, field visits etc.

5.2 Criteria used to evaluate the findings

- **Quantitative criteria**

1. Weight of fish before and after smoking
2. Quantity of smoked fish compared to wood consumed
3. Products market value compared to smoking quality
4. Estimation investment costs and benefits
5. Number of visits and visitors to farmer experimenters
6. Products nutritive and hygienic value etc.

- **Qualitative criteria**

1. Product sensory evaluation: color, taste, odor, texture and general acceptability
2. Difficulty of work and security
3. Working time saved
4. Shelf life of smoked fish
5. Functionality and replication of smoking tools
6. Socio-economics impacts including uses of products

Training events and Participatory Monitoring and Evaluation



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6. Outcomes

Table 1: Comparing smoking capacities of *Clarias gariepinus* using 4 types of banda

Types of banda	Capacity of 2 fresh fish layers (kg)	Quantity of smoked fish / kg de bois (kg/kg)	Quantity of wood consumed /ton smoked clarias gariepinus (kg/t)	Quantity of smoked fish (kg/h)	Yield (kg/24hs)
Big traditional banda	80	1	1000	2	48
Big innovative banda	350	6	167	9	216
Small traditional banda	50	2	500	3	72
Small innovative banda	250	10	100	12	288

1. Banda capacity increased (250– 350 kg innovative banda against 50-80 kg traditional banda, yield 216-288 kg/24hrs innovative banda against 48-72 kg/24 hrs traditional banda, cf. table 1)
2. Wood consumption reduced (167 kg wood innovative banda against 1000 kg wood in traditional banda, table 1)
3. Products commercial value and Boumba fish traders credibility/honour increased
4. New banda protects well against dogs, rodents and birds
6. Possibility of smoking fish in wind, rain and night conditions created
7. Fish smoking and conservation conditions improved (no risk of children burning, house fires or stealing)

Evaluation of sensory qualities and economic impacts of smoked fish



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Table 2: Sensory evaluation results of smoked *Clarias gariepinus* using 4 types of banda

Types of smoking banda	Color	Texture	Odour	Taste	Acceptability
Big traditional banda	2,8	3,8	3,9	3,1	3,2
Big innovated banda	5,0	4,9	4,7	5,0	5,0
Small traditional banda	4,3	4,1	3,7	4,1	4,2
Small innovated banda	5,0	4,5	4,0	5,0	5,0
Boumba market (traditional banda)	3,4	4,3	3,8	3,9	3,7

Table 3: Sensory evaluation results of smoked Labeo coubie (Du'bi) using 4 types of banda

Types of smoking banda	Color	Odour	Texture	Taste	Acceptability
Big traditional banda	3,2	4,8	4,8	4,5	3,9
Big innovated banda	4,8	4,9	4,9	4,8	4,8
Small traditional banda	4,3	4,5	4,2	4,4	4,0
Small innovated banda	4,5	4,9	4,5	4,7	4,4

1. Sensory qualities and shelf life (Color, texture, taste, odor) improved (tables 2 & 3)
2. Women freed, no conflict with husbands, no requirements of surveillance (they can care for the children, cook or go to the farm while fish is smoking)
3. Increase of demand locally (Boumba, Dosso and Gaya) outside country (Benin and Nigeria traders)
4. Seven (7) new bandas built without any external support by villagers
5. Women innovators organized in a cooperative called “Banda Guiyara Rayuwa Ka” and capacities strengthened (16 women and 9 men learn to read and write)

Evaluation of economic timber species in fish smoking

1. **Four (4) economic timber species identified in fish smoking:**
Combretum nigricans, *Terminalia avicennoides*, *Piliostigma reticulatum* et *Anogeisus leocarpus*
2. ***Anogeisus leocarpus*** species is disappearing despite its recognized importance by women: ash used by pregnant women to make cereal porridge and wound curing. Leaves and coarse used to treat haemorrhoids
3. **When preferred species are lacking, women add fresh leaves, plants nuts to improve organoleptic qualities and marketing value.**
 1. *Ipomoea* sp. (Lakoua-lakoua/Hana Guébé) ;
 2. *Manguifera indica* (Kalon mangoro) ;
 3. *Hyphaena thebaica* (L) (Kalon goriba) ;
 4. *Butyrospermum parkii* (Bawan Kadé);
 5. *Arachis hypogea* (Kolfan gougia) et
 6. *Pennisetum thyphoides* (Sochia Dawa/sochia Hatchi).

7. Results sharing

1. Channels used in sharing results

✓ Village level

- Markets attended by farmers
- Farmer meetings, naming and wedding ceremonies
- Farmer-to-farmer visits and exchange

✓ National

- NSC and poles meetings
- Workshops and seminars (e.g.: PID institutionalization workshop)
- Media: ORTN, radio ANFANI FM etc.

✓ International level

- Ghana IPM workshop, March-April 2008
- Cross visit to Ghana North, October 2008
- Communication APPRI2008 workshop Ouagadougou, 20-24/10/2008
- Writing and visual documentation: Photographs, Microsoft & PowerPoint reports, brochures (English and French versions), posters and CD
- Documents published on website www.Prolinnova.net

Results sharing (Ctnd)

2. Outcomes of the sharing

- Support from DEP/MDA for lobbying and advocacy
- Prolinnova Ghana North women showed interest for cross visit
- Support from Falmey municipality authorities and NGO Farmer Platform for innovation dissemination
- Methodological support from non formal education inspection of Gaya for adult training of innovators



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8. Lessons, challenges and recommendation

Lessons

1. Active participation and adoption of the innovation by immediate farmer experimenters families. We observed a new form of trading. one man is buying poor smoked fish and recycling it in new banda and reselling at a better price.
2. Large quantity of fish smoked in banda handled by women than those handled by men
3. Joint experimentation is a negotiation approach that requires time, patience and motivation

Challenges

1. How can all farmer innovators and experimenters monitor and evaluate themselves their experiments (in Niger majority of farmers are illiterate especially old ones),
2. How to mobilize locally policy-makers and necessary funds for development and sharing the innovations

Recommendation

Influence policy makers to consider Participatory Innovation Development (PID) as a strategic approach for alleviating poverty and improving rural communities living conditions

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YOUR ATTENTION



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