Diversifying sources of farmer income and transformation of cotton growing zones in eastern Senegal

Case example of the Federation Yakaar Niani Wulli accompanied by Enda Pronat
Le Sénégal

Koussanar

Tambacounda

Echelle de la Carte: 1 cm = 60 km
Source: Project AP3A - Centre Régional AGRHYMET

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Starting objectives

• To prove the technical feasibility of organic cotton production as an alternative to agrochemicals;

• To contribute to improving income of-farm household enterprises;

• To put in place a solid organisation of farmers.
History

- 1994 : 1st trials of organic cotton production
- 1997 : birth of the Yakaar Niani Wulli Federation and gain 1st organic certification
- 1998 : trials in producing quality peanut
- 2001 : 1st activities in processing organic cotton
- 2003 : 1st activities in processing fonio
- 2004 : introduction of sesame into the organic crop rotation
- 2005 : gain association statutes for YNW Federation and 1st organic + fair trade certification for fonio
- 2006 : achieving 1st certification for fair trade cotton
- 2007 : 1st extraction of organic sesame oil and introduction of high quality red bissap
- 2008 : 1st textile collection YNW
Promoting safe and sustainable agriculture

- Strengthening organisational and decision making capacities of the Federation YNW
- Improving food security
- Developing and promoting an alternative farming system based on natural products
- Improving income sources through farming diversification and product processing
Strategies and methods

• Awareness-raising
• Experimentation
• Capacity strengthening
• Participatory Action Research & Training: village approach; farmer field schools; workshops with policy makers and scientists
Why diversify?

- secure and improve income
- develop local consumption
- export
- processing
## Trends in organic and fair trade certified production *

<table>
<thead>
<tr>
<th>COTTON</th>
<th>Surface (ha)</th>
<th>No. of Farmers</th>
<th>Produce traded (kg)</th>
<th>Value (F CFA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004-2005</td>
<td>15,75</td>
<td>39</td>
<td>4 338</td>
<td>845 910</td>
</tr>
<tr>
<td>2005-2006</td>
<td>57,75</td>
<td>174</td>
<td>17 883</td>
<td>4 275 105</td>
</tr>
<tr>
<td>2006-2007*</td>
<td>188,5</td>
<td>531</td>
<td>63 258</td>
<td>19 341 342</td>
</tr>
<tr>
<td>2007-2008*</td>
<td>290</td>
<td>650</td>
<td>85 000</td>
<td>26 010 000</td>
</tr>
<tr>
<td>FONIO</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004-2005*</td>
<td>22,5</td>
<td>85</td>
<td>8 193</td>
<td>1 433 775</td>
</tr>
<tr>
<td>2005-2006*</td>
<td>6,25</td>
<td>251</td>
<td>8 346</td>
<td>1 460 550</td>
</tr>
<tr>
<td>2006-2007</td>
<td>37</td>
<td>204</td>
<td>5 306</td>
<td>950 080</td>
</tr>
<tr>
<td>2007-2008</td>
<td>49,75</td>
<td>220</td>
<td>6 000</td>
<td>En cours</td>
</tr>
<tr>
<td>SESAME</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005-2006</td>
<td>12,75</td>
<td>53</td>
<td>230</td>
<td>40 250</td>
</tr>
<tr>
<td>2006-2007</td>
<td>37,5</td>
<td>127</td>
<td>2 886</td>
<td>505 050</td>
</tr>
<tr>
<td>2007-2008</td>
<td>72,5</td>
<td>121</td>
<td>7 786</td>
<td>2 450 000</td>
</tr>
</tbody>
</table>
Rainfed agriculture, livestock and gathering wild foods

Rotation crops of organic cotton: millet, sorghum, maize, peanut, sesame

Secondary crops: cowpea, fonio, rice

Opportunities

- 800 mm rain per year
- availability of land and animal traction
- mixed cropping
- rotation-fallowing

Constraints:

- Lack of control over water (uncertain rains)
- inadequate equipment on farms
- deforestation leading to soil degradation
- difficult marketing
Choice of crops

Previous decisions and today:

• Household food requirements
• Ecological conditions in the environment and agronomical consequences
• Financial needs and capacities for pre-financing
• Availability of agricultural equipment
• Availability of family labour (and of land in certain localities)
A family farm of 10 people

- 0.75 ha small millet
- 1 ha sorghum
- 0.25 ha peanut for household consumption
- 0.25 ha peanut for sale
- 0.25 ha maize
- 0.25 ha organic and « fair trade » certified cotton
- 3 ha under fallow
Examples of crop rotations

In general, a cycle of 4 years cropping with 2-3 or more years under fallow:

- Peanut - 2 years of cereals (‘Souna’ millet- Sorghum-Maize- fonio)-cotton-fallow
- Cotton - 2 years cereals- peanut
- With sesame: peanut- sesame- millet (or millet-sesame) -cotton-fallow
- With fonio but without cotton: peanut- fonio- Maize- Sorghum- fallow (or fonio in the last stage)
- With fonio: peanuts- fonio- Sorghum/Maize- cotton-fallow
Restrictions on choice

• Cost of certifications
• Costs of monitoring and internal control system

Consequences:
restriction of cropping zones to cotton, fonio, sesame and bissap and disintegration of the rotation system

Goal:
Gain profitability through better equipment and yields
Problems in the cotton supply chain

• No influence in markets: lack of controls on price, seeds and supply chain actors for organic/fair trade (certification, ginning, spinning, distribution)

• **Consequences:**
  - Unfair distribution of profits,
  - Delays in payment,
  - Dependence on subsidy,
  - Farmer benefits reduced and difficulties in renewing agricultural materials
  - Stagnation in yields and difficulties in growth for farm plans and in general
# Profitability of organic/fair trade cotton

<table>
<thead>
<tr>
<th>Per hectare</th>
<th>F Cfa</th>
<th>euros</th>
</tr>
</thead>
<tbody>
<tr>
<td>32kg Seeds</td>
<td>6 400</td>
<td>10</td>
</tr>
<tr>
<td>Knapsack sprayer</td>
<td>2 000</td>
<td>3</td>
</tr>
<tr>
<td>Labour</td>
<td>12 000</td>
<td>18</td>
</tr>
<tr>
<td>Picking labour</td>
<td>20 000</td>
<td>30</td>
</tr>
<tr>
<td>Organic certification (subsidy)</td>
<td>4 000</td>
<td>6</td>
</tr>
<tr>
<td>Fair trade certification (subsidy)</td>
<td>5 000</td>
<td>8</td>
</tr>
<tr>
<td>Monitoring (subsidy)</td>
<td>26 667</td>
<td>41</td>
</tr>
<tr>
<td><strong>total expenses</strong></td>
<td>76 067</td>
<td>116</td>
</tr>
<tr>
<td>Income from harvest (350 kg/ha x 250F/kg)*</td>
<td>87 500</td>
<td>133</td>
</tr>
<tr>
<td>Income from harvest (800 kg/ha x 250F/kg)**</td>
<td>200 000</td>
<td>305</td>
</tr>
<tr>
<td>Profits per year per farmer *</td>
<td>11 433</td>
<td>17</td>
</tr>
<tr>
<td>Profits per year per farmer with subsidy *</td>
<td>47 100</td>
<td>72</td>
</tr>
<tr>
<td>Profits per year per farmer **</td>
<td>123 933</td>
<td>189</td>
</tr>
<tr>
<td>Profits per year per farmer with subsidy **</td>
<td>159 600</td>
<td>243</td>
</tr>
</tbody>
</table>
Local processing of cotton

Spinning  weaving  Taille  natural dyes
Fonio supply chain

- Local adapted crop grown by women for ceremonial use
- Main constraint: extremely demanding in terms of labour requirements for harvest and processing
- Small acreages (0.1 ha on average)
- Low yields (100-500 kg/ha)
- Difficulties in collecting large volumes: importance of pre-finance at the moment of harvesting (producers’ need for money!!!)
- Competition with other countries: Mali, Guinea Conakry
Marketing of fonio

In 2006 harvest of around 15 ton of Ecocert-certified organic and fair trade fonio was exported by the enterprise Gaia Bio Solidaire France after having been processed (de-husking and pre-cooking)

Unhappy with this commercial partnership which they consider ‘unfair’, Federation farmers preferred to set up their own processing unit

Sales experience through network of shops in Dakar at too low price did not enable decent distribution of benefits to the women growing and processing fonio
### Fonio processing 2007

<table>
<thead>
<tr>
<th>Item</th>
<th>kg</th>
<th>nb months</th>
<th>unit price (F Cfa/U)</th>
<th>Total cost (F Cfa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase from farmers</td>
<td>6 000</td>
<td>180</td>
<td>1080 000</td>
<td></td>
</tr>
<tr>
<td>Organic certification (subsidy)</td>
<td>6 000</td>
<td>100</td>
<td>600 000</td>
<td></td>
</tr>
<tr>
<td>Monitoring (subsidy)</td>
<td>2 animateurs/1 moto</td>
<td>800 000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport to processing unit</td>
<td>6 000</td>
<td>20</td>
<td>120 000</td>
<td></td>
</tr>
<tr>
<td>Fuel wood</td>
<td>2</td>
<td>8 500</td>
<td>17 000</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>2</td>
<td>20 000</td>
<td>40 000</td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td>2</td>
<td>35 000</td>
<td>70 000</td>
<td></td>
</tr>
<tr>
<td>Salary 6 processing women</td>
<td>2</td>
<td>45 000</td>
<td>90 000</td>
<td></td>
</tr>
<tr>
<td>Salary for 1 driver</td>
<td>3</td>
<td>45 000</td>
<td>135 000</td>
<td></td>
</tr>
<tr>
<td>Packaging</td>
<td>3 300</td>
<td>40</td>
<td>132 000</td>
<td></td>
</tr>
<tr>
<td>Transport to Dakar</td>
<td>3 300</td>
<td>40</td>
<td>132 000</td>
<td></td>
</tr>
<tr>
<td>Maintenance of dehusking machine</td>
<td></td>
<td>forfait</td>
<td>100 000</td>
<td></td>
</tr>
<tr>
<td>Interest on credit 11% (6 months)</td>
<td></td>
<td></td>
<td>220 000</td>
<td></td>
</tr>
<tr>
<td><strong>Total expenses</strong></td>
<td></td>
<td></td>
<td>3 536 000</td>
<td></td>
</tr>
<tr>
<td><strong>Gross income</strong></td>
<td></td>
<td></td>
<td>3 300 000</td>
<td></td>
</tr>
<tr>
<td><strong>Net income</strong></td>
<td></td>
<td></td>
<td>-236 000</td>
<td></td>
</tr>
</tbody>
</table>
Supply chain for sesame

- An undemanding crop which fits well into the cotton rotation
- Medium level acreages and yields (380 kg/ha) comparable to those of cotton
- An export market exists without the need for certification, with an extremely good price around 300 F/kg
- Local extraction of oil for local consumption, market opportunity for cosmetic products
- **Constraints**
  
  National market: not much eaten locally, quality of oil is unstable, competition export prices compete with development of local processing
  
  Export markets: exclusive contracts, lack of control over prices and origin of seed for export production
Other products

Bissap (red petals of hibiscus):
• Orders for 5t from juice processing plant through a pilot project for fair trading in Senegal
• Pre-financing of quality seeds and monitoring/training by the processing plant and Pronat
• A relatively easy crop and well-known, grown along the edge of cotton fields

Peanut:
• Well known and integrated, opportunities in national markets for eating peanuts, peanut oil and peanut butter
Fair trade?

Critique of organic/fair trade certification under the European approach

- Heavier burden on farmers than on other downstream actors in the chain (compliance demands, control and costs)
- Little transparency at the level of European exporters, manufacturers and processors

Process for developing guarantee systems for organic and/or fair trade produce in Senegal since 2006:

- platform for value criteria (ethical, economic, social, environmental), national charter for fair trade, generic protocols
- Set-up of 4 pilot product lines
Developing the local organic-fair trade market

Good market reward for these products requires:

• Organisation of quality production
• Adequate infrastructure for storing, processing and preservation (quality, hygiene)
• Packaging and distribution locations should reinforce visibility
• Good understanding among the actors in the chain on procedures and methods which guarantee transparency for the benefit of farmers and processors

Medium-term support from the YNW Federation to strengthen capacities at commercial level
For or against exports?

- Regarding food security and negative impacts on local market supply: sesame is the least problematic, followed by be SAP, cotton, peanut. Fonio is questionable. Millet, sorghum, rice and maize are not really appropriate (production at national level is insufficient, programme of cereal banks)

- Export of primary materials could compromise the development of local supply chains (processing, distribution, transport etc) which could create high added value and jobs through finished products

- Export of processed products with high added value: sesame and cotton oils for cosmetic use and cosmetic products, textiles at handicraft or semi industrial levels
Conclusions (1)

In order for family farms to benefit from opportunities in national and international market outlets and to improve their living standards significantly in a safe and sustainable way, we underline:

Improving farmers’ and processors’ technical capacity through an adequate system of financing (productivity, quality, diversification)

• Development and promotion of finished products
• Real sharing of profits along the supply chain and avoiding pointless intermediaries
Conclusions (2)

Export earnings should enable:

• necessary investment to facilitate sustainable development of organic family farming and processing units of the Yakaar Niani Wulli Federation

• allowing farm families to choose between developing the right combinations of food crops for domestic consumption and for sale and professionalising their cash crops, according to their own aspirations, but without putting in danger supply to national cereal markets