Strategies of Coconut farmers coping with the Yellow lethal disease

International Workshop on Lethal Yellowing Disease on Coconut
Accra 3-6 June 2008

Francois Ruf

with the collaboration of
Serge Bini and Kwame Ampadu
1. From Wealth to Chaos
   A model
FOREST = Land + Forest rent

COCOA BOOM
- Consumption of the forest rent
- Ageing of plantations
- Ageing of migrants
- Indebtedness
- Development of land rents and a land market

Structural ecological change and increasing costs
- weeds
- pests and diseases
- disturbed rainfall pattern
- winds
- timber scarcity
- protein scarcity

Ecological accidents

MIGRATIONS
- Pulling factors
  - Roads and tracks,
  - Logging companies recruitment
  - Information
  - Planting material

- Pushing factors that free up labour flows from neighbouring regions
  - drought, flooding
  - Economic collapse
  - Technical progress and savings (green revolution)

Market supply Surplus
- Fall in local yields and local supply
- Technical, institutional and financial Replanting difficulties

Fall in absolute prices and relative prices

DIVERSIFICATION
- if alternative crops and activities

Exogenous informations and Copying effect

COCOA RECESSION
- Price rise often benefiting another region or another country
Ecological accidents

Structural ecological change and increasing costs
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- pests and diseases
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- protein scarcity

More difficult access to land

Structural emergence of land and inter-generational conflicts

Fall in local yields and local supply
Technical, institutional and financial Replanting difficulties

Market supply Surplus

DIVERSIFICATION

COCOA BOOM

- Consumption of the forest rent
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Pulling factors
- Roads and tracks,
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MIGRATIONS

FOREST
= Land

+ Forest rent

- timber scarcity
- protein scarcity

Technical, institutional and financial Replanting difficulties

Market supply Surplus

DIVERSIFICATION

Structural ecological change and increasing costs
- weeds
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Fall in local yields and local supply
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Market supply Surplus

DIVERSIFICATION
Fall in local yields and local supply
Technical, institutional and financial
Replanting difficulties

Pushing factors that free up labour flows from neighbouring regions
- drought, flooding
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- Technical progress and savings (green revolution)

Market supply
Surplus

Fall in absolute prices and relative prices

Cocoa recession

Diversification if alternative crops and activities

Exogenous informations and copying effect

Price rise often benefiting another region or another country
Cocoa. Production and real producer price in Ghana.
1960/61-2006/07

Production (X 1000 tonnes)

1994 real price (1994 cedis / kg)

- Production
- Price
The ‘cocoa shifting cultivation’ pattern in Ghana Cocoa production per region. 1960-2000.
Among the other lessons taught by cocoa ‘monoculture’: the weight of Indebtedness

**Indebtedness** was one of the major issues raised by Beckett (1944), even before he started talking about cocoa! (p 30-45).

Lack of cash, **late** payments, **seasonal** payments leads to structural indebtedness
Hence a strong need of
• education, external help as said by Beckett, ....
• but also and more importantly : **Diversification** of revenues
How does this model apply to the coconut industry?

2. Life Cycle: Ageing coconuts and Ageing farmers

Various diagnosis before and after 2005 (before and after the Nigerians buyers come)
## Coconut acreage, a function of the age of the head of family
(Axim region, Nzema district, 2005)

<table>
<thead>
<tr>
<th>Smallholders’ age</th>
<th>Coconut acres</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Moy.</td>
</tr>
<tr>
<td>&gt; 40</td>
<td>61</td>
</tr>
<tr>
<td>&lt; 40</td>
<td>32</td>
</tr>
<tr>
<td>All</td>
<td>49</td>
</tr>
</tbody>
</table>
How does this model apply to the coconut industry?

3. Ecological Change and Production Shifts

Various diagnosis before and after 2005 (before and after the Nigerians buyers come)
3.1 A East-West shift

Diagnosis in 2005
(before the Nigerians buyers come)
Fig. 2 Age distribution of coconuts at Asanta and Bobroma (littoral zone)
All Indigenous farmers
Fig. 3 Age distribution of coconuts at Nkroful (5km far from the sea)  
All Indigenous farmers
Fig. 5 Planting Profile of Coconut farms at Sowodadzem (35 km far from the sea)
3.2 A South-North shift

Diagnosis in 2008
(After the Nigerians buyers come)
Investment in Planting
Half-Assini

<table>
<thead>
<tr>
<th>Planting periods</th>
<th>Coconut</th>
<th>Oil Palm</th>
<th>Cocoa</th>
<th>Rubber</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1960</td>
<td>150</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1960-69</td>
<td>120</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1970-79</td>
<td>320</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1980-89</td>
<td>80</td>
<td>20</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1990-99</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2000-08</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Investment in Planting
Sameneye

<table>
<thead>
<tr>
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<th>Acres</th>
</tr>
</thead>
<tbody>
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<tr>
<td>1990-99</td>
<td></td>
</tr>
<tr>
<td>2000-08</td>
<td></td>
</tr>
</tbody>
</table>

- **Coconut**
- **Oil Palm**
- **Cocoa**
- **Rubber**
3.3 A Inter-Province shift

towards Ashanti and Brong Ahafo for the fresh nut market in Northern Ghana and Burkina Faso
How does this model apply to the coconut industry?

4. The expected output: an all strategy of diversification, mostly tree crop diversification

Various diagnosis before and after 2005
(before and after the Nigerians buyers come)
March 2005

Planting and cocoa hybrid adoption
Axim-Asasetre area. Western region, Ghana

Planting Periods

<table>
<thead>
<tr>
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<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1960</td>
<td></td>
</tr>
<tr>
<td>1960-69</td>
<td></td>
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<td></td>
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<tr>
<td>1980-89</td>
<td></td>
</tr>
<tr>
<td>1990-99</td>
<td></td>
</tr>
<tr>
<td>2000-05</td>
<td></td>
</tr>
</tbody>
</table>

Coconut
Oil Palm
Cocoa
Rubber
Structure of farms, a function of the age of the head of family (Axim region, Nzema district, 2005)

<table>
<thead>
<tr>
<th>Age of smallholders</th>
<th>Acreage (acres)</th>
<th>Coconut</th>
<th>Palm</th>
<th>Cocoa</th>
<th>Rubber</th>
<th>Dependence/coconut</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Moy.</td>
<td>Local</td>
<td>Hybrid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 40</td>
<td>61</td>
<td>14.2</td>
<td>0.8</td>
<td>1.3</td>
<td>6.5</td>
<td>4.0</td>
</tr>
<tr>
<td>&lt; 40</td>
<td>32</td>
<td>0.5</td>
<td>0</td>
<td>2.8</td>
<td>5.6</td>
<td>2.6</td>
</tr>
<tr>
<td>All</td>
<td>49</td>
<td>8.9</td>
<td>0.5</td>
<td>1.9</td>
<td>6.2</td>
<td>3.4</td>
</tr>
</tbody>
</table>
July 2005, showcases of specific institutional support in favour of Rubber Diversification

Age distribution of Planting per crop and migrations at Yediyesele

- Cocotier
- Cacao
- Palmier
- hêvéa
- Migrations cumulées

Planting periods


Acres

0 10 20 30 40 50 60 70
How does this model apply to the coconut industry?

5. Application to the ‘price increase’ factor and how it reveals some of the institutional traps related to monoculture

Diagnosis after 2005
(after the Nigerians buyers come)
5.1 A true increase

Nominal prices paid to coconut farmers
2001 to May 2008 (cash payment)
5.2 … but with some nuances:

a) Inflation and real terms
b) extra costs to get a direct access to Nigerian buyers’ prices

<table>
<thead>
<tr>
<th></th>
<th>Oil processing (farm gate price)</th>
<th>Direct sale to Nigerians ('Store' price)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price (Cash payment)</td>
<td>4 to 6</td>
<td>8 to 11</td>
</tr>
<tr>
<td>Peeling</td>
<td>0</td>
<td>0.5 to 0.6</td>
</tr>
<tr>
<td>Transportation</td>
<td>0</td>
<td>0.5 to 1.5</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>1.0 to 2.1</td>
</tr>
<tr>
<td>Farm gate price (Cash payment)</td>
<td>4 to 6</td>
<td>5.9 to 10.0</td>
</tr>
</tbody>
</table>
c) Geographical nuances: Nigerian buyers are in places with still a large supply of nuts

- Entire villages such as Asanta and Akobra, devastated by the LYD have logically no Nigerian buyers (but keep some oil processors)

- Villages such as N’Kroful, where the disease is currently striking but which still have many coconut farms, are not producing enough from Nigerians buyers’ perspective

- Actually, the true high prices of 8 to 11 GH cedis / 100 nuts are essentially concentrated in the major producing regions.
d) A gap between Researchers’ technical breakthrough and a certain type of regional demand

Nigerian buyers are mostly interested in local nuts because of their easy storage

Rapid germination of hybrid nuts is thus considered as a severe constraint for buyers who send their nuts hundreds of miles away
5.3 Price responses?

Despite all these nuances, we still have a significant price increase within the last two-three years.

According to basic economic theories, producers should respond to these incentives.

Is that the case?
Maintenance:
Number of weed control: No impact

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigerians</td>
<td>1.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>&lt; 1</th>
<th>23%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>40%</td>
</tr>
<tr>
<td>2</td>
<td>21%</td>
</tr>
<tr>
<td>3</td>
<td>16%</td>
</tr>
</tbody>
</table>

100%
b) Fertilizers: No purchase, hardly no use,

No impact

<table>
<thead>
<tr>
<th>Number of farmers applying fertilizers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
</tr>
<tr>
<td>Nigerians</td>
</tr>
<tr>
<td>24%</td>
</tr>
<tr>
<td>(from 1982 to 2004)</td>
</tr>
</tbody>
</table>
b) Replanting:

No impact of the price increase

<table>
<thead>
<tr>
<th></th>
<th>Before 2001-2004</th>
<th>After 2005-2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigerians</td>
<td>0.14</td>
<td>0.08</td>
</tr>
</tbody>
</table>
c) New planting of local coconuts

No impact of the price increase

Investment in New planting of local coconuts

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigerians</td>
<td></td>
</tr>
<tr>
<td>2001-2004</td>
<td>2005-2008</td>
</tr>
<tr>
<td>0.07</td>
<td>0.05</td>
</tr>
</tbody>
</table>
d) New planting of hybrids

No impact of the price increase

<table>
<thead>
<tr>
<th>Investment in New planting of local hybrids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
</tr>
<tr>
<td>0,05</td>
</tr>
</tbody>
</table>
5.4 Why ‘no response’, at least until 2008?

A come back to the model .. and to the reality
a) **Indebtedness = No price increase!**

To a certain extent, it reflects some of the most dangerous institutionnal traps related to monoculture.

<table>
<thead>
<tr>
<th>Price (GH Cedis)</th>
<th>Number of farmers</th>
<th>74% have no access to the Nigerian buyers' price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>39</td>
<td>64</td>
</tr>
<tr>
<td>4</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>12 14% have a limited and indirect access</td>
</tr>
<tr>
<td>7</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>10 12% have a full access to the Nigerian buyers' price</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>86</strong></td>
<td><strong>86 100%</strong></td>
</tr>
<tr>
<td>Reason</td>
<td>Count</td>
<td>Percentage</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>1. stuck by indebtedness</td>
<td>39</td>
<td>61%</td>
</tr>
<tr>
<td>2. No access to credit with Nigerians</td>
<td>8</td>
<td>13%</td>
</tr>
<tr>
<td>3. Additional cost of peeling and transport</td>
<td>10</td>
<td>16%</td>
</tr>
<tr>
<td>4. No trust. Lack of confidence</td>
<td>7</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>64</td>
<td>100%</td>
</tr>
</tbody>
</table>
A more realistic profile of nominal prices paid to more than 50% of coconut farmers 2001 to May 2008 (cash payment)
A more realistic profile of Real prices paid to more than 50% of the coconut farmers
2001 to May 2008 (cash payment)
b) Inter-generational conflicts and theft by the young generation (according to old farmers):

Here, there is a price impact: the higher price introduced by Nigerians buyers did increase the level of theft.

<table>
<thead>
<tr>
<th>Percentage of stolen nuts</th>
<th>Before</th>
<th>Now</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nigerians</td>
<td>20%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2004/05</th>
<th>2007/08</th>
<th>Increase</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price / 100 nuts</td>
<td>2,6</td>
<td>4,3</td>
<td>1,7</td>
<td>67%</td>
</tr>
<tr>
<td>Estimated revenue / every 3 months</td>
<td>241</td>
<td>305</td>
<td>63</td>
<td>26%</td>
</tr>
</tbody>
</table>
To a certain extent, the indebtedness of the old farmers might be a direct encouragement for sons to steal nuts because, young people (probably) sell the nuts straightforward to the Nigerians and escape the indebtedness trap...
c) Lack of land, occupied by the coconut monoculture

d) Lack of energy, lack of labour
Farmers’ declared hierarchy of their constraints (If explicitly asked why they do not plant /replant)

* In disease-free regions, hybrids are still viewed positively

<table>
<thead>
<tr>
<th></th>
<th>Replanting</th>
<th>New Planting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1= No energy, leave it for the children to come</td>
<td>18 (25%)</td>
<td>37 (49%)</td>
</tr>
<tr>
<td>2 = lack of money</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 = 1+2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 = No change but he will replant the hybrid type if he get it</td>
<td>25 (35%)</td>
<td>17 (22%)</td>
</tr>
<tr>
<td>5 = No dead coconuts = no reason to replant / plant</td>
<td>19</td>
<td>5</td>
</tr>
<tr>
<td>6. Lack of land</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>7. Because of the theft</td>
<td>4 (6%)</td>
<td>5 (7%)</td>
</tr>
</tbody>
</table>

Total: 71 (Replanting) 76 (New Planting)
6. Farmers’ perceptions of Hybrids in 2008

In villages where the disease is currently striking coconuts, including hybrids, almost no farmer willing to think to coconuts again.

In villages where the LYD already swept coconut farms:
- the ‘coconut’ disgust remains high
- although a number of hybrid farms did not die,
- or did not die because of the LYD but rather due to a lack of maintenance,
- although many farmers believe that the disease has now gone and will not come back any time soon.

In currently LYD-free villages, there is still some relatively strong confidence in hybrids. But the planting material is too expensive for them.
5. Conclusion.

What next for the future of coconut farmers and the coconut industry?

Diagnosis in June 2008
1. Coconut farmers in the Westen region of Ghana

In villages devastated by LYD, and 4 years of project and research, the ‘survivors’ remain enormously frustrated and impoverished. Many passed away a short time after their coconuts.

They faced a disaster and finally the immense majority received NO help at all.

In LYD free regions, farmers remain extremely poor. They hardly benefit the price surge.
The attempt of the 1999-2003 Coconut replanting project was going in the right direction. It is a partial failure because of

- **only one hybrid**, which proved to be poorly tolerant when the LYD is fully active, (even more sensitive than the tall African coconut, according to some farmers)

- **Relatively ill-targeted farmers** (absenteists, old farmers) and possibly insufficient information about the hybrid requirements (weeding, fertilizer, .)

- **Some of the extremely difficult but key problems such as indebtedness and dependency on credit and ageing farmers** were not clearly understood, at least not targeted by the ‘fathers’ of this project.
But it is also a (relatively hidden) success:

through the planting material, despite its sensitiveness to the disease, with a formal and unformal trade of planting material towards Kumasi and Brong Ahafo.

Hybrids may not fit Nigerian buyers’ requirements but seem to have a great potential to meet the demand for fresh nuts in the north.
2. **The coconut industry** in the Westen region of Ghana

= A classical and enormous **paradox** between

- a suddenly **booming demand** for a commodity (here coconuts)
- and a **structural decline of supply**
The supply/demand adjustment will thus be probably made through further *shifts of production*

- towards the north of Jomoro and Nzema,

  and beyond that,
  - up to Ashanti and Brong Ahafo regions in Ghana.

* Côte d’Ivoire will also benefit the booming demand. Farmers respond to Nigeria buyers’ prices. Investments in (mostly local) coconuts have resumed in this country.
Nevertheless, an almost obvious « conclusion of the conclusion »:

- Not to let down thousands of individuals and families

- to test other hybrids and resume research on coconuts in the western region, at least with a small number of farmers and a more participative approach.

- approach the problem of youth and inter-generational conflicts

- seriously address this issue of credit and chronic indebtedness.

To a large extent, this coconut story the proof in itself of disastrous flaws of monoculture in the long run and a strong need of DIVERSIFICATION : may be the only advantage of this coconut crisis.
Many Thanks from the Western Region