Can family rubber-farms match global challenges?

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The challenges ahead to agriculture

• Feeding the planet but also feeding the farmers

• Food and non food products to meet growing demands

• Climatic and economic uncertainties

• Increasing land pressure and labour competition

• Natural resources management and environment sustainability
Will family farming be able to answer to complex and interdependent challenges?
Small farms and family farming

Repartition of holdings by class area in the 81-country subset of FAO-WCA

Source: HLPE, 2013
1\textsuperscript{st} criterion: Strong organic linkage between family and farm

**Definition of family farming (Bosc et al)**

Farm
- Crops, livestock, on-farm processing

Household
- Embedded in extended family and rural communities

Capital
- Labour

Self-provision of food
- Income

Source: adapted from HLPE, 2013
2\textsuperscript{nd} criterion: Strictly based on family labour without permanent hired labour

Family farms:
- Are not systematically small farms
- Can be technically and economically very performant
- Are integrated in market economy
Rubber: a sector dominated by small farms

Percentage of smallholders in the 3 main rubber producing countries (% of ha planted)

Sources: RRIT, 2013; GAPKINDO, 2013; MRB, 2012
Thailand case (situation in 2012)

- 3 millions ha planted
- 3,78 millions tonnes of rubber
- 1,450 millions rubber holders

Source: Somboonsuke & Wettayaprasit, 2013
Rubber: a sector dominated by small farms

- Long term crop
- Regular income throughout the year
- Capital: saving / life insurance / retirement / heritage for kids
The planter’s bet

Conditions will remain favourable for rubber plantations during more than 20 years

Immature plantation  Tapped plantation  Felling the trees
A reasonable bet?

A permanently changing environment

Climate changes

Land use changes

Socio-economic changes

Fox and Castella 2013
• Most models predict a more variable climate (risk)

• Erratic and irregular rain pattern

• Farmers’ adaptation of harvesting systems to such irregular conditions
Land Uses Change

Sustainability in new plantation areas

• Expansion in NE and N Thailand
  • A drier and less balanced climate
  • Poor soils in some areas (sandy, low fertility)
  • Development of rubber plantations on slope
  • Lack of experience to assess long-term behavior of trees
Land Uses Change

Sustainability in ancient plantation areas

- **Repeated planting in South Thailand**
  - Third to fourth rubber cycle on the same land
  - Export of wood / loss of minerals
  - Consequences on soil fertility and disease (leaf and root fungi)?
Socio-economic changes

Market uncertainties

- **Volatility of the rubber price**
  - **Global demand / global market**
  - Trend of increase of rubber price with several unpredicted crisis
  - Dependence of livelihood on rubber vs diversification?
Socio-economic changes

Global and local mutations

- **The labor issue**
  - Population increasing and ageing
  - Labor concentration in cities
  - Low interest of young generation for field work
  - Low qualification of the labor for tapping (important issue for Thailand)

- **New investors**
  - Competition for land and labor
A multi-disciplinary approach

• Sustainability of the plantations for sustainability of the household

• Several thematic involved

Agronomy
Physiology

Soil ecological
science

Ecophysiology

Socio-economy
The impact depends largely on the previous land use.
Rubber plantations and environment

Soil Organic Content

Macrofauna biomass

Cassava fields
Rubber plantations 1 to 25 years old

Cassava fields
Rubber plantations 1 to 25 years old

(MsC. M. Lafaye and S. Saengtharatip)
Rubber plantations and environment

BILJOU model (Granier et al.)

Rubber plantations and sustainable productivity

Good yields for small farms: 1650 kg/ha (Chambon, 2013)

Tapping frequency (% of 399 plots)

Average bark consumption (132 plots)

Source: Chambon et al, unpublished
Rubber plantations and family farm sustainability

Farming systems

- Diversified: 76%
- Specialised: 24%

Other crop: 51%
Animal & crop: 38.5%
Animal: 10.5%

Source: Chambon et al, unpublished
Rubber plantations and family farm sustainability

Household level

- 69% non farm
- 23.5% off-farm
- 5% rent or pension
- 2.5% natural resources collection

60% of the farms have additional income

Only 12% of the farms completely dependent on rubber income

Source: Chambon et al, unpublished
Future : HEVEADAPT

WP4 Integration at Plant, plot, farm and household level / viability assessment

WP1 Socio-economic changes and risks
- Market / Price volatility
- Farm structure / investor type
- Labour, contract, crop sharing

WP2 – Climate and rubber plantations
- Plant Status
  - Water stress
  - Carbon budget
- Soil status
  - Water/biology/structure
- Climatic scenarios

WP3 - Agricultural practices, adaptations
- Land management
  - Cover/associated crop
  - Terracing
  - Manure/ fertiliser...
- Latex harvesting system

Source: HEVEADAPT, ANR scientific document
HEVEADAPT
How tree-based family farms can adapt to global changes?
2015-2017

Dr. Philippe Thaler, CIRAD
To conclude

• Most rubber family farms able to face global challenges
• Spontaneous adaptations and coping strategies
• Support and improve these strategies
Thank you for your attention

The Hevea Research Platform in Partnership