UNDERSTANDING THE ACCEPTANCE OR REFUSAL OF AGROFORESTRY SYSTEMS BY FARMERS IN THE NORD –PAS-DE-CALAIS (NPDC) REGION (NORTHERN FRANCE)

Andrianarisoa KS, Delbende F
Montpellier, May 25th, 2016
Characteristics of the NPDC region
Characteristics of the NPDC region

- Formerly Nord – Pas-de-Calais
- 817,000 ha UAA with 13,500 farmers (61 ha/farm)
Characteristics of the NPDC region

- 817,000 ha UAA with 13,500 farmers (61 ha/farm)
- First producer of potato, peas, chicory and endive

Sauvage et al., 2014
Fertile soils, deep loam

Source: Schwartz C. (Pers. Com.)
Fertile soils, deep loam

<table>
<thead>
<tr>
<th>Price</th>
<th>NPDC (€)</th>
<th>France (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free land</td>
<td>13,000</td>
<td>5,910</td>
</tr>
<tr>
<td>Leased land</td>
<td>5,200</td>
<td>4,410</td>
</tr>
</tbody>
</table>

Source: Schwartz C. (Pers. Com.)

Price

Free land 13,000 5,910
Leased land 5,200 4,410

Source: Schwartz C. (Pers. Com.)
## Very productive land

<table>
<thead>
<tr>
<th>Crop</th>
<th>NPDC yields (mean 2007-2011) (Mg ha(^{-1}))</th>
<th>2011 (Mg ha(^{-1}))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NPDC</td>
</tr>
<tr>
<td>Bread wheat</td>
<td>8.7</td>
<td>9.2</td>
</tr>
<tr>
<td>Barley</td>
<td>8.2</td>
<td>8.3</td>
</tr>
<tr>
<td>Sugarbeet</td>
<td>88.1</td>
<td>98.8</td>
</tr>
<tr>
<td>Rapeseed</td>
<td>4.0</td>
<td>4.8</td>
</tr>
<tr>
<td>Silage maize</td>
<td>14.3</td>
<td>14.9</td>
</tr>
<tr>
<td>Potato</td>
<td>47.5</td>
<td>52.4</td>
</tr>
</tbody>
</table>

(Source: *Draaf Nord-Pas-de-Calais – Srise*)
## Very high level of tenant farming

<table>
<thead>
<tr>
<th>Land tenure</th>
<th>NPDC (ha)</th>
<th>France (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land owner</td>
<td>99 000</td>
<td>6 285 000</td>
</tr>
<tr>
<td></td>
<td>(12%)</td>
<td>(23%)</td>
</tr>
<tr>
<td>Tenant farming</td>
<td>709 300</td>
<td>20 445 200</td>
</tr>
<tr>
<td></td>
<td>(87%)</td>
<td>(76%)</td>
</tr>
<tr>
<td>Other</td>
<td>9 600</td>
<td>223 000</td>
</tr>
<tr>
<td></td>
<td>(1%)</td>
<td>(1%)</td>
</tr>
</tbody>
</table>

Source: Agreste – Recensements agricoles 2010

NPDC: Nord – Pas-de-Calais
Least-forested region of France

Forest cover per commune in NPDC

NPDC : 9%
France : 27%

Source: CRPF, 2002
Regional forest plan (Novembre 2011)

Double the forested area in NPDC in 2040
Regional forest plan (Novembre 2011)

Double the forested area in NPDC in 2040

• Overall reluctance of the agricultural profession to reintroducing trees to agroecosystems.
Regional forest plan (Novembre 2011)

Double the forested area in NPDC in 2040

• Overall reluctance of the agricultural profession to reintroducing trees to agroecosystems.

• The aim of this study was to understand the acceptance or refusal of agroforestry systems (AFs) by farmers in the socio-agro-environmental context of Nord - Pas-de-Calais.

• Focus on hedges (H) and alley cropping (AC) systems
Survey of 108 farmers
Survey of 108 farmers

- October 2013 to May 2014
- 3 sub-areas (95,151 ha UAA)
- Questionnaire combining closed and open-ended questions
## Level of acceptance of alley cropping

<table>
<thead>
<tr>
<th>Level of acceptance of hedges</th>
<th>Favorable</th>
<th>Undecided</th>
<th>Opposed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable</td>
<td>24</td>
<td>17</td>
<td>22</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>(22%)</td>
<td>(16%)</td>
<td>(20%)</td>
<td>(58%)</td>
</tr>
<tr>
<td>Undecided</td>
<td>3</td>
<td>7</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>(3%)</td>
<td>(6%)</td>
<td>(7%)</td>
<td>(17%)</td>
</tr>
<tr>
<td>Opposed</td>
<td>0</td>
<td>3</td>
<td>24</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>(0%)</td>
<td>(3%)</td>
<td>(22%)</td>
<td>(25%)</td>
</tr>
<tr>
<td>Total</td>
<td><strong>27</strong></td>
<td><strong>27</strong></td>
<td><strong>54</strong></td>
<td><strong>108</strong></td>
</tr>
<tr>
<td>Level of acceptance of alley cropping</td>
<td>Favorable</td>
<td>Undecided</td>
<td>Opposed</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-----------</td>
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<td>---------</td>
<td></td>
</tr>
<tr>
<td>Favorable</td>
<td>24 (22%)</td>
<td>17 (16%)</td>
<td>22 (20%)</td>
<td></td>
</tr>
<tr>
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<td>3 (3%)</td>
<td>7 (6%)</td>
<td>8 (7%)</td>
<td></td>
</tr>
<tr>
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<td>0 (0%)</td>
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<table>
<thead>
<tr>
<th>Total</th>
<th>27 (25%)</th>
<th>27 (25%)</th>
<th>54 (50%)</th>
</tr>
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<tr>
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<td></td>
<td></td>
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Advantages (Andrianarisoa et al., 2016)

- Agronomic 7%
- Environment 74%
- Field boundaries
- Technical 10%
- Socio-economic 61%

- Increase soil fertility*
- Unfruitful lands valuation*
- Windbreak and erosion
- Limitation of agricultural negative impacts
- Animal welfare
- Income diversification or increase
- Farm’s image
- Subvention and regulation compliance
- Patrimony*
- Hunting
- Long term profitability*

**AFs+**  - **AFs0**  - **AFs-**  - **wrong definition**
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- Income diversification or increase
- Farm's image
- Subvention and regulation compliance
- Patrimony*
- Landscape aesthetic
- Windbreak and erosion
- Limitation of agricultural negative impacts
- Animal welfare
- Biodiversity

Andrianarisoa et Delbende, in press
Disadvantages (Andrianarisoa et Delbende, 2016)

- Agronomic 46%
  - Higher humidity*
  - Weeds proliferation
  - Crop yield decreasing
  - Tree-crop competition (light, nutrient, water)
  - Practise reorganization*
  - Incompatible with drainage system*
  - Lack of local reference*
  - Needs of support* Unadapted to small plots

- Environmental 7%
  - Games proliferation
  - Increasing labor
  - Loss of arable area
  - Tenant farming
  - Economical investment
  - Conflict with neighboring
  - Long-term commitment
  - Uncertain profitability*
  - Hindrance for agricultural works

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- Socio-economic 72%
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- Socio-economic 72%
Farmers who were **favorable** to AFs were those who were already **familiarized with Afs** and those with an **important scoring for technical and agro-ecological innovative practices**.
Farmers who were favorable to AFs were those with low land areas in off-family tenant farming.
Conclusions

- Farmers perceive AFs as sustainable farming system providing numerous environmental advantages, but they were still skeptical of its profitability and adaptation in the NPDC context.
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- Farmers feared the increase in labor costs, the competition between trees and crops, the hindrance caused by tree rows for some mechanized agricultural works and the loss of arable land due to uncropped land currently immobilized by tree rows.

- Land tenure was a serious obstacle, and the familiarization with trees and innovative practices was a driving force in the development of AFs in the region.
Conclusions

The three main strategies to develop AF in NPDC are as follows:

(i) **Increase awareness** of the different advantages of AFs, particularly in terms of economic and technical aspects

(ii) **Initiate a farmer group dynamic** to provide a better exchange on AFs

(iii) **Implement serials of AF demonstration-experimentation plots** to provide local references.
Thank you for your attention.