**6 months internship proposal – Agro-environmental assessment**

**Assessing agro-environmental performances of independent oil palm smallholders in Jambi province, Indonesia**

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<th>Research Institute</th>
<th>: CIRAD</th>
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<td><strong>Research unit</strong></td>
<td>UPR34 Systèmes de pérennes</td>
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| **Internship location** | UPR34 Systèmes de pérennes, Montpellier  
| Petaling village, Jambi Province, Indonesia |

| **Duration/date** | 6 months, from September 2019 to February 2020 (more or less flexible) |

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<th><strong>Expected profile:</strong></th>
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| - M1/M2 student in agricultural sciences (engineer school/master). Open to gap year student.  
  The student should have a key interest on agricultural practices assessments in tropical areas. |
| - Autonomous, but adapted to work under multi-cultural team |
| - Used to work in the field under tropical conditions |
| - Good English skills both oral and writing |
| - Background on survey implementation and statistical analysis with R would be much appreciated |

**Context**

Oil palm cultivation has remarkably expanded in Indonesia over the past four decades, reaching more than 12 millions hectares today. Indonesia is the first producing country worldwide (54% of global oil palm production). This rapid increase has induced strong environmental, economic and social changes in the country, including deforestation, economic development, transmigrations etc. To understand the full impact of oil palm production, it is critical to integrate the various pillars of sustainability all together (Baudoin et al., 2015).

In Indonesia, oil palm planters may be classified into three categories that are: privately-owned companies, state-owned companies and smallholders. Moreover, smallholders types are very diversified and can be further distinguished between independent ones and those who are bound with companies through contracts (e.g. plasma smallholders). Land management between and even within those various categories may be very diverse (Baudoin et al., 2015; Moulin et al., 2017; Woittiez et al., 2018). Despite their importance in term of surface (40%), the diversity and performances of smallholders plantations remain poorly studied (Jelsma et al., 2019; Moulin et al., 2017). The assessment of the diversity of smallholders’ performances seem especially important in the current context of certifications (such as RSPO, ISPO...) that will encourage smallholders to modify their practices.
Under this context, there is a strong need to understand how the diversity of agricultural practices as implemented by independent smallholders influence their performances in terms of environmental, socio and economic components.

**Objectives**

1. To assess the various impacts of agricultural practices on agro-environmental indicators
   a) To understand the diversity of practices of oil palm producers within the context studied.
   b) To propose a first analysis of agro-environmental performances within oil palm systems.
2. To assess synergies and trade-offs between indicators, as affected by smallholder’s agricultural practices in order to identify the bottlenecks and levers
3. To make recommendations on how to improve practices towards best performances

**Details of the studied zone**

The study will take place in Jambi province, in the Petaling region. Independent smallholders from the supply chain of a mill will be studied.

**Methodology**

1. **Selection of indicators and building a priori pathway (France, 1 month)**

   The first steps will be to select the indicators that will further be used both for the typology and for the agro-environmental analysis. This work will be inspired from existing assessment methods but will be adapted to oil palm perennial system and local context. This preliminary step will be put in place in relationship with specialists of socio-economic analysis, oil palm performance, and environmental assessment specialists.

2. **Building farmer typology based on agricultural practices (Indonesia, 2.5 months)**

   Extensive surveys will be implemented to understand the diversity of farmers in terms of agricultural practices, and especially linked to the input and management (Chambon et al., 2018).

   The typology will raise a gradient of agroecological intensification. This gradient will then be used for further agro-environmental performances analysis.

3. **Environmental and plant in-field analysis (Indonesia, 1.5 month)**

   The selected gradient of intensification will then be analysed in the field to assess the environmental and production performances of the systems, according to the indicators selected (see part 1). Biofunctool® set for soil quality (Thoumazeau et al., 2019) and foliar diagnosis for plant nutrient quality, among others, will especially be integrated in the assessment.

4. **Data analysis and report witting (France, 1 month)**
**Expected output**

- Provide a consistent typology of independent farmer agricultural practice diversity from the mill supply chain.
- Make an analysis of farmers agro-environmental impacts, regarding the practices implemented.
- Link soil quality indicator (Biofunctool®) with nutrient balance diagnosis (foliar diagnosis)
- Propose recommendations on how to improve practices towards best performances.

**Practical details**

Internship allowance (~560€/month) and flight tickets taken in charge

**Supervision and contact**

Supervision by Alexis Thoumazeau and Jean Ollivier (CIRAD UPR34 Systèmes de pérennes) in France and with local interaction with Hans Smitt in Indonesia (SNV International).

Please address your application both to Alexis Thoumazeau and Jean Ollivier before the **7 April 2019**
alexis.thoumazeau@cirad.fr (04 67 61 59 82); jean.ollivier@cirad.fr (04 67 61 56 34)
References


**Tentative schedule of the internship**

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<tr>
<th>Month 1</th>
<th>Month 2</th>
<th>Month 3</th>
<th>Month 4</th>
<th>Month 5</th>
<th>Month 6</th>
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<tr>
<td>Preparation of the internship, training on typology and selection of indicators <em>(CIRAD, Montpellier)</em></td>
<td>X</td>
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<tr>
<td>Training on Biofunctool® and foliar diagnosis <em>(Jambi province, Indonesia)</em></td>
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<tr>
<td>Implementation of field surveys to build farmer typology <em>(Jambi province, Indonesia)</em></td>
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<td>Environmental in-field analysis (Biofunctool®, foliar diagnosis ...) in plots of the defined typology <em>(Jambi province, Indonesia)</em></td>
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<td>Final data analysis and report writing <em>(CIRAD, Montpellier)</em></td>
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