Introduction

- Oil palm production is expanding rapidly in Indonesia. The resulting transformation of rainforest into oil palm plantations is associated with a loss of biodiversity and ecosystem functioning [1].
- Enriching already established plantations with native trees has been proposed as one sustainable management option [2].

Which policy options are effective in promoting native tree planting in oil palm?

Experimental design, method and material

- Randomized control trial
- Stratified random assignment of 36 oil palm growing villages
  - Two treatment and one control group (each 12 villages)

Treatment 1
Informational intervention
Assumption: “Farmers lack information”

Treatment 2
Structural intervention
Assumption: “In addition to information, farmers do not have access to high quality seedlings”

Results

Impact of interventions

<table>
<thead>
<tr>
<th></th>
<th>(1) Intention to plant trees</th>
<th>(2) Actual tree planting</th>
<th>(3) Actual tree planting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informational</td>
<td>0.213***</td>
<td>0.085</td>
<td>0.086</td>
</tr>
<tr>
<td></td>
<td>(0.042)</td>
<td>(0.061)</td>
<td>(0.061)</td>
</tr>
<tr>
<td>Structural</td>
<td>0.204***</td>
<td>0.409***</td>
<td>0.385***</td>
</tr>
<tr>
<td></td>
<td>(0.036)</td>
<td>(0.051)</td>
<td>(0.057)</td>
</tr>
<tr>
<td>Intention to plant trees</td>
<td>0.177***</td>
<td>0.153***</td>
<td>0.153***</td>
</tr>
<tr>
<td></td>
<td>(0.051)</td>
<td>(0.051)</td>
<td>(0.051)</td>
</tr>
<tr>
<td>Perceptions</td>
<td>0.032***</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(0.012)</td>
<td></td>
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</tr>
</tbody>
</table>

Econometric model: Intention-to-treat effects

\[ Y_{it} = \beta_1 + \beta_2 T_{inf} + \beta_3 T_S + \beta_4 S + \nu_i + u_{it} \]

| Y_i : Dummy variable of whether a farmer plants in oil palm |
| S : Stratification and other control variables |
| \nu_i : Village effects |

Note: Inverse probability weights for attrition applied

Conclusion

- Perceptions of ecosystem services provided by trees in oil palm improved in the short term due the interventions. But perceptions decreased on the medium term if only information is provided.
- Both interventions have a positive and significant effect on the intention to plant native trees in oil palm. Furthermore, the structural intervention has positive and significant effect on actual tree planting, both directly and through intentions and perceptions.

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References