TREE PLANTING ON FARMS IN SUB SAHARAN AFRICA AND HAITI
LIVELIHOOD DIVERSIFICATION AND ENVIRONMENT

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OVERVIEW

International donors promote tree planting to achieve sustainable development and environmental goals. Tree planting is:

- An agricultural investment by farmers so as to improve soil fertility, to control for erosion, and to reduce wind damage
- A livelihood diversification strategy so as to have access to more food, to cash, to insure risks, and to cope with shocks

HOWEVER ADOPTION OF TREE PLANTING IS LOW

OBJECTIVE

Identify socioeconomic and environmental factors encouraging households to plant trees on farms across seven sites

DATA

Socioeconomic and environmental data seven sites in seven distinct agroecological zones from years 2010/11
- Sites are in Ethiopia, Ghana, Haiti, Kenya, Malawi, Nigeria and Uganda
- Socioeconomic data come from the Millennium Village Project and are demographic, activities, agriculture, land tenure and use, and tree planting
- Environmental data is from Land Degradation Surveillance Framework, which is an intensive biophysical inventory

MODEL 1

Probit model assesses households’ participation in tree planting in each village and across all villages (pooled data) taking into account household characteristics when working at the household level and both household and environmental characteristics when working at the village level (marginal effects)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Ethiopia</th>
<th>Ghana</th>
<th>Haiti</th>
<th>Kenya</th>
<th>Malawi</th>
<th>Nigeria</th>
<th>Uganda</th>
<th>Pooled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elder</td>
<td>0.021***</td>
<td>-0.0249</td>
<td>-0.0189</td>
<td>-0.19**</td>
<td>0.0215</td>
<td>-0.0504</td>
<td>-0.103**</td>
<td>-0.0847**</td>
</tr>
<tr>
<td>Male</td>
<td>0.108</td>
<td>0.138**</td>
<td>-0.00937</td>
<td>0.159</td>
<td>0.145**</td>
<td>0.0847**</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Sec edu</td>
<td>0.00721</td>
<td>0.103*</td>
<td>0.0471</td>
<td>0.0263</td>
<td>0.0110</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>-0.140**</td>
<td>-0.106**</td>
<td>-0.20**</td>
<td>-0.138**</td>
<td>-0.28**</td>
<td>-0.156**</td>
<td>-0.0928</td>
<td>-0.183**</td>
</tr>
<tr>
<td>Food inse</td>
<td>-0.0135</td>
<td>-0.133**</td>
<td>-0.0446</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel inse</td>
<td>0.460**</td>
<td>0.0625</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit</td>
<td>0.0983</td>
<td>0.134*</td>
<td>0.0397</td>
<td>0.124**</td>
<td>0.270**</td>
<td>0.125**</td>
<td>0.117**</td>
<td>0.144**</td>
</tr>
<tr>
<td>Strat_4</td>
<td>0.0620</td>
<td>0.00718</td>
<td>-0.0792</td>
<td>-0.160**</td>
<td>0.0721</td>
<td>0.102</td>
<td>0.0125</td>
<td></td>
</tr>
<tr>
<td>Land size</td>
<td>0.00094</td>
<td>0.00086</td>
<td>0.00026</td>
<td>0.16**</td>
<td>-0.00827</td>
<td>0.00497</td>
<td>0.0613</td>
<td>0.00819</td>
</tr>
<tr>
<td>Own land</td>
<td>-0.0594</td>
<td>0.154**</td>
<td>-0.217**</td>
<td>0.0851</td>
<td></td>
<td>-0.042</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nb plot</td>
<td>0.055**</td>
<td>0.0483</td>
<td>0.114**</td>
<td>-0.0332</td>
<td>0.0319</td>
<td>0.041**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RESULTS 1

Main findings are poverty and credit at village and overall sample
- Poor households less likely to plant trees than non-poor ones
- Households with credit more likely to plant trees than households without access to credit
- Off-farm + farm strategy has negative effect in Malawi
- Land size has expected positive effect only in Kenya. Land ownership has a positive effect in Haiti but negative one in Kenya
- Number of plots has expected positive effect in Ghana, Malawi and pooled data
- Households living in villages with higher precipitation levels and steeper slope are less likely to plant trees
- Better access to tree has a positive effect on tree planting

RESULTS 2

Reporting only intensity of tree planting after controlling for participation main finding is credit and poverty
- Poor households plant fewer trees than non-poor ones
- Households with credit plant more trees than households without credit
- Land size has a negative effect in Nigeria
- Households living in villages with higher precipitation levels and higher elevation plant on average more trees

CONCLUSION

Poverty and access to credit are the two most important determinants explaining why households plant trees and the number of planted trees.

Environmental characteristics also important; precipitation has different effects on participation and intensity.