

Why smallholders plant native timber trees away from the forest margin

Lessons from Leyte, the Philippines

As long as natural forests can be accessed as local sources of timber, there is little incentive for farmers to grow timber on their own land. Early successes with national programs for farmer tree planting in the Philippines were achieved with fast growing trees – that brought disappointingly low levels of income once harvested, as the quality of wood was low. Meanwhile, some farmers took the initiative to grow high-value, slower-growing native timbers on their farms, planting trees between their maize. What are the prospects for this? Which types of farmers are doing it? Is it profitable? What policy measures could support or enhance such agroforestation of the landscape? A recent study looked at several of these questions at the island of Leyte in the Philippines. The results have implications for other forest margin locations.



Findings

1 Smallholder upland farmers plant native timber trees depending on several interlinked factors:

- If land is available and they can achieve security of land tenure.
- If access to natural forest is restricted or forbidden.
- If they have enough land and it is not divided into disparate portions.

2 A number of native timber species in early stages of domestication are suitable for intercropping with maize at a range of planting densities, matching labour availability and household livelihood strategy.

3 Farm-gate profitability of on-farm tree production is negatively affected by policies that tax timber as a 'forest product' and subsidize food crops and fertilizers.

4 Trees on farm can lead the way in a 'forest transition' in the Philippines

Implications

- Programs to support tree planting on-farm are more likely to succeed in areas that are already deforested or where remaining forests are effectively protected, and where farmers have secure land tenure.
- To support tree planting, governments can focus on enabling conditions, rather than providing tree seedlings.



Photo: Fernando Santos Martin

Background

The main objective of our study in the Philippinesⁱ was to determine the main factors influencing smallholder farmers to plant native timber trees. The study was part of a broader assessment of the use of native timber trees in upland farming, which included an analysis of farmers' management practices and determining the best trees for specific sites.

Leyte province was selected as the study site because it was representative of upland environments that were intensively cultivated and heavily degraded and in which farmers had started to plant native timber trees. We selected four rural communities based on:

- 1) whether there was still natural forest with open access (or there was no forest); and
- 2) the type of soil (productive or degraded). We surveyed a total of 148 household respondents, selected randomly from the communities.

1. Why smallholders plant native timber trees?

Where and why have farmers planted such trees?

We found that if natural forests were nearby and access was unrestricted, farmers used the forests for timber and did not see the need to plant their own timber trees.

If land was available then farmers were more likely to plant trees than if land was scarce and had to be intensively cultivated for food and income needs.

Further to this, the larger the area of land managed by a farmer, the easier it was for them to put aside part of the area to grow timber trees. However, if the total area of the farm was divided into several portions, farmers were less likely to plant timber trees.

If the smallholders owned or had other forms of secure tenure over land then they were more likely to make long-term investments such as planting trees.

In general, the study highlighted two main issues:

a) Agroforestation - that is, planting productive trees on farms - in the Philippines has little chance of increasing tree cover while access to native forests provides timber resources at harvesting costs only, not providing for full economic replacement cost.

b) The land controlled by the household - total area and number of parcels managed - and tenure security stand out as the main factors that affect farmers' decisions to plant native timber trees.

A direct conclusion from these results is that reforestation programs are more likely to be successful in areas with secure land tenure that are already deforested (or have high potential for degradation).

Interaction with regulations and profitability

In the Philippines, complicated government regulations and permit requirements are imposed on the harvest and use of farm-grown trees, particularly native tree speciesⁱⁱ. However, in

the study area this limitation on property rights did not seem to prevent tree planting. Lack of government control over public land may mean that initial occupation of forested areas is relatively easy and inexpensive and thus encourages further conversion of forest to agriculture. Past government policy changes have provided non-owners who cultivate public land with the opportunity to obtain a Certificate of Stewardship Contract on such land, which may ultimately grant them the right to own itⁱⁱⁱ. This institutional and policy environment provided the initial conditions to promote sustainable land-use systems in the Philippines.

The study also showed that access to markets has a positive influence on tree-planting activities, suggesting that improvements to rural infrastructure, including constructing or upgrading roads, encourages more intensive production of agricultural and tree crops. Low access to markets and closeness to forest are generally related, so the two effects may be confounded.

2. Options for intercropping

The study revealed that the availability of labour and capital did not have a significant influence on the decision to plant trees because smallholders plant trees not just as a production strategy for maximising profit but also as a response to changing resources and circumstances. In situations where capital and labour are scarce, trees can be planted as a low input, low management crop to make more productive use of land^{iv}. Therefore, the major advantage of a wide repertoire of tree production strategies is the flexibility to match farmers' needs and preferences to specific conditions and changing circumstances^v. Analysis of tree-site matching and possibilities for intercropping trees and maize showed a high degree of flexibility in the management options; tree density and spacing influences the number of years food crops can be grown between the trees, but has relatively small impact on the total system profitability^{vi}.

How important are cultural differences?

Contrary to our expectations, the 'cultural' and 'demographic' aspects of households (such as whether farmers were migrants or long-time settlers, had some education, were of particular ages and whether they had any experience of planting and managing tree crops) were found to have little impact on farmers' decisions to plant trees, once farm size, closeness to forest and distance to market were accounted for.

3. Farm-gate profitability and policies for forest and agricultural products

The profitability of a wide range of systems that vary from rapid to gradual transition from food crops to timber trees as main economic farm component depends on costs of inputs and prices for the products. Comparison of farm-gate (private) and national-scale (social) prices showed a strong discrepancy^{vii}. For the farmer the economic benefits of growing trees are small, although there is some advantage in risk reduction.

For Philippine society as a whole a more rapid tree transition would be economically desirable, even without accounting for environmental benefits. However, forest-based taxes and informal levies on getting farm-grown timber to the markets depress farmgate prices, while food crop production is supported. Interlinked review of agricultural and forest policies is needed to create conducive conditions for tree planting by farmers.

4. Trees on farm can lead the way in a 'forest transition' in the Philippines

Rudel and others^{viii} suggested two possible reasons why tree cover began to return after a period of deforestation. One is the 'economic development route': the farming population declines as industrialisation and urban migration increase and abandoned agricultural land is spontaneously reforested. The other is the 'forest scarcity pathway': scarcity of forest products drives up their price and stimulates tree planting. Rudel and others emphasised that overlaps can occur between these two types, but the implication is that different causes apply to these pathways.

In the Philippines, as industrialisation and economic development proceed, a key policy question is whether tree cover can increase despite existing barriers to planting native timber trees and whether agroforestry can help the economic transformation that is taking place in rural areas of the Philippines.

The 'forest transition' and agroforestry

The Philippines may be at the beginning of a national forest transition. The net loss of forests in Asia has halted^{ix}. From 2000 to 2005, there was an annual net gain averaging just over 1 million hectares, to which China, India and Vietnam were major contributors. Although such a transition has previously occurred in Europe and North America^x, Asia is the first continent to display a transition from net deforestation to net reforestation since systematic collation of data on global forest resources began in the 20th century^{xi}. During the same period, Indonesia lost 2% of its forest area (the second greatest annual net loss in the world), Cambodia lost 2%, Sri Lanka 1.5% and Myanmar 1.4%. The Philippines is now showing signs of joining the trend towards reforestation. Although the Global Forest Resources Assessment 2005 reported that the country experienced an annual deforestation rate of 157,000 hectares per year (-2.1%) during 2000–2005, a recent review of forest rehabilitation by Pulhin and others^{xii} noted that in 2003, the Philippines National Mapping and Resource Information Authority and the Forest Management Bureau generated a set of land and forest-cover statistics using LANDSAT ETM images from 2002 and 2003. The analysis used harmonised land and forest-cover terms and definitions in accordance with international standards. Results showed that the total forest cover in 2003 was about 7.2 million hectare or 24% of the country's land area. The new figure is 11% higher than the 1988 forest cover of 6.5 million hectare.

Agroforestry is based on the overall assumption that the integration of trees on farms and in the agricultural landscape diversifies and sustains production for increased social, economic and environmental benefits for land users at all levels^{xiii}. However, in many agroforestry projects, adoption rates are low and where adoption is successful, farmers often have to modify and adapt the proposed system to suit their requirements. Current *et al.* (1995) concluded that 'poorer farmers may find agroforestry profitable, but their rate and scale of adoption is often constrained by limited land, labour and capital resources and their need to ensure food security and reduce risks'.

Farmer decisions to adopt agroforestry are complex in nature and require knowledge (human capital) of the likely consequences (tree-crop competition), supportive village-level institutions (social capital), availability of suitable land and onsite tree germplasm (natural capital) and opportunities to invest time and money (financial capital)^{xiv}.



Photo: Fernando Santos-Martin

A farmer in Leyte, Philippines, with his tree.

The ASB Partnership for the Tropical Forest Margins is working to raise productivity and income of rural households in the humid tropics without increasing deforestation or undermining essential environmental services.

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