

RURAL DEVELOPMENT FORESTRY NETWORK

FROM THE FIELD

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Research and Extension Practices Initiative in East Africa**

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Kaingin in the Philippines: is it the end of the forest?

Anna Lawrence

Introduction

Kummer (1992) writes that a lack of data and confusion over terms has given the impression that shifting cultivation, often known as *kaingin* (in tagalog), is the predominant form of agriculture in the Philippines, and that it is responsible for deforestation. His view is that both of these assertions are overstatements, and detailed work by Olofson (1980) shows that the word *kaingin* has a range of meanings which reveal the diversity of hillside farming systems in the Philippines. This paper explores the meaning of land-use terms in Filipino languages, to support the argument that upland farming systems are specific to local contexts, and that while shifting cultivation has most certainly contributed to deforestation it also provides a context for reforestation under certain conditions.

Research Sites

This paper is based on research carried out in six communities on the islands of Leyte and Bohol, two of the poorest parts of the Philippines where little forest remains except on steep mountainsides. All the *barangays* (villages) are settlements of migrants from the coastal areas and with the exception of Ormoc date from the beginning of this century, or earlier. All have some lowland rice but are predominantly upland *barangays* dependent on subsistence production of maize and sweet potato, and cash cropping of coconut, *abaca* (*Musa textilis*, used for fibre) and a little coffee (usually by tenants who share the produce with the owner). Because some of the results are sensitive, they are described here only under the names of the municipalities in which they are located. Table 1 provides a brief summary of conditions at each research site.

Table 1: Summary Description of Research Sites

Community	Villaba	Ormoc	Baybay 1	Baybay 2	Matalom	Trinidad
Location	Leyte	Leyte	Leyte	Leyte	Leyte	Bohol
Area	Degraded soils; complete deforestation	New community started by refugees in 1980s; forest abundant but protected by Philippine National Oil Corporation	Small traditional upland community on forest edge; forest protected by steep slopes	Close to Baybay 1; larger, with recent immigrants from Ormoc after flash flood disaster; older residents plant lowland rice; migrants and poor grow upland crops expanding into mountain forest	Very isolated; no forest except on limestone outcrops. <i>Abaca</i> more important than coconut	Highly deforested; lowland rice production with wide use of agrochemicals
Tenure	Insecure; all land privately owned, mostly by single landlord	Highly insecure; squatters on public land	Relatively secure; ranges from ownership to long-term share-cropping	As for Baybay 1, plus govt. stewardship scheme giving 25 year leases to farmers on forest land	Secure	High level of equity due to agrarian reform
Agricultural extension	None	Some extension provided by State Oil Corporation	None recently	Some extension	Two development projects support tree-growing	One project promotes exotic plantations and fruit trees
Market access	5 km; motorcycle and occasional jeepney access	Good access to city food markets encourages fruit and vegetable production	Footpath access only; little marketing except for copra from plantations	Good access to town markets; daily jeepneys	10 km walk; motorcycle access in dry weather	15 km from road; motorcycle access in dry weather, weekly jeepney
Timber markets	None	Local timber markets dominated by illegal loggers				Legal market for locally-grown lumber

Are the upland farmers shifting cultivators?

The tagalog term *kaingin* is used to describe the upland farming systems in several Filipino languages. Olofson (1980) notes 'there is utter confusion in the use of the term', which is also used to refer to permanent hillside farming. This study explores farmers' own interpretations of *kaingin* and words from their own language, cebuano, as the key to understanding their farming systems.

In Trinidad farmers no longer practise *kaingin*, which they say has evolved into more permanent farming methods. According to them, their grandparents converted the forest by *kaingin*, which means they cleared the big trees and planted maize, then cassava, then banana and coconut. They could cultivate maize for a maximum of three years before it was shaded out by the coconuts, or *Imperata cylindrica* would invade. '*Kaingin* involves cutting trees and manual cultivation because there are lots of stones and roots. It is only found in the forest. We call the farming system now *darohan*. With *darohan* you can use buffalo because there are no stumps. If you have many parcels, you can fallow the land for one year, but if you have only a little land you have to concentrate on cropping on that land.' In southern Leyte, and Bohol, farmers use the cebuano term *ba-ol* to refer to *kaingin* or forest shifting cultivation. However it is not shifting cultivation in any cyclical sense; the end product is either perennial plantations or *Imperata* wastelands which may be managed under *darohan*, shifting only in the sense of crop rotations and short-term fallow.

In Matalom, farmers said that *kaingin* means 'slash and burn'. On their hillside plots, they grow maize and sweet potato followed by one year of fallow, often cleared by burning. In recent years many people have stopped burning the fallow (to conserve more organic matter) and consider that without burning, the system is no longer *kaingin*. Like the farmers in Trinidad, they call these intensified systems *darohan*.

Moving north to the more forested *barangays* of Baybay, *kaingin* is still practised under that name. In Baybay 2 it is seen as an early form of agriculture from which the older settlers have moved on. Only the new (poorer) settlers on the forest margins do *kaingin*, which they take to mean 'clearing and burning, then taking a crop or two of maize and sweet potato, then planting perennial crops.' Those who are slashing and burning, leave the bigger trees because of their value for

construction or (illegal) sale. Before they got land title in the 1920s-30s, the early settlers also practised *kaingin*, growing upland rice. With tenure security, they began irrigating the lowland fields, which are excluded from the term *kaingin*.

In Baybay 1 farmers are also practising *kaingin*, and again it is more a practice of the poor (Belsky, 1984). Farmers said *kaingin* meant they cleared the forest, using small wood for fuel and selling the big logs (illegally), burnt it, cropped it for two years (maize and sweet potato) then interplanted coconuts and *abaca* and converted it to perennial plantation. Again, *kaingin* is not necessarily cyclical, although farmers agreed that in the past their ancestors would have let the fallow return to forest; now they plant coconuts because they have to continue using the scarce land. The farming system is the most closely involved with the forest of all the case studies, and includes a cropping cycle of maize and taro under *abaca* under forest trees. Some of the land which has title is still referred to as old *kaingin*, but the new *kaingins* continue to advance up the steep mountainsides. One resident estimated that the boundary had moved up 5 km in 25 years. Unlike Baybay 2, the expansion is more by growing families than by new migrants.

In Ormoc farmers are practising *kaingin* illegally in the forest, and were reluctant to discuss it, while around their homes they have permanent vegetable and citrus plantations. Only in the northernmost *barangay*, Villaba, is the term *kaingin* used to refer to all hillside farming. As in all the other *barangays*, the original shifting cultivation has intensified over the last few decades, and while the first round of *kaingin* at the beginning of the century was allowed to return to *libon* or secondary forest, hillside plots are now fallowed for a brief period (often only one season within the year), or planted to perennial crops, usually coconuts. Farmers recognised that *kaingin* meant the ‘original making of a farm from the forest’, but said it also included hillside farming, bringing fallow back into productivity; cutting and burning. In this *barangay*, because most farmers are sharecroppers, annual crops are often grown under widely spaced coconuts, and burning is sometimes used to clear the undergrowth – even where it is not burnt, the system is still called *kaingin*. People in Villaba felt that the words *kaingin*, *ba-ol* and *oma* (a more general term for farming) all meant the same thing to them – the hillside farming which they practise.

Where did the forest go to?

Unlike in many other areas of the Philippines, in most of the case study sites farmers are quite clear that there was little or no commercial logging and that their ancestors (or they themselves) are responsible for deforestation through agricultural clearance. In Trinidad, farmers said, 'Quality timber trees are very rare here. Before there were lots; but it is good lumber and people liked to cut it for construction, not for sale.' And another said, 'There was never any commercial logging. The forest all went because of *kaingin*. They burnt it all. It is difficult to run after wild pig if big trees are lying on the ground.' In Matalom a similar story is told: 'There was lots of forest then, but in the war people migrated up here from the town and did *kaingin*, so the forest disappeared.' According to them there have never been logging companies in the area. In Baybay however, the settlers were preceded by loggers, and although farmers were originally *kaingineros* the way was opened for them by concessionaires. One woman said, 'There was no large-scale logging but in the end small-scale becomes large-scale; and *kaingin* is still happening. But the loggers are really responsible because they cut on the really steep land. There is no *kaingin* on slopes like that.' The logging now is illegal, but it has been given impetus by the arrival of chainsaws in the 1980s, allowing labourers to cut in a day what used to take weeks. Finally, in Villaba, farmers claim that they cut and burnt the forest. There was some small-scale logging, but for home construction and local sale, not by timber companies. Small farmers claimed land by clearing it, and the large landowners of today accumulated their domains by buying cleared plots at nominal prices. As in Baybay, lowland rice came later.

In conclusion, an overview of farmers' own accounts of their farming systems and terminology indicates that *kaingin* has had an active role in forest conversion in Leyte and Bohol. Even within the small area studied, the term *kaingin* has a range of interpretations, some of them consistent with 'shifting cultivation' but usually more allied to 'slash and burn' as a means to opening new land. These interpretation problems have led policy makers to blame 'shifting cultivation' rather than 'forest conversion' for the loss of forest. In some communities farmers consider that they have moved on from *kaingin* to a more permanent form of agriculture for which they have a distinct name, whereas in other communities the same name is used for this more sedentary system. In still other, more forested areas, *kaingin* interacts with logging activities to expand the agricultural frontier. What is the effect of these different contexts on farmers' responses to

environmental pressures?

Kaingin: is it all downhill?

Research into the dynamics of farming systems in Leyte and Bohol showed that farmers recognise the effects of deforestation and soil erosion (mainly climate change, loss of fertility and water supplies, and lack of timber supply for construction), and are exploring new ways to adapt to the problems (Lawrence, 1995) including tree planting and use of natural regeneration. A more detailed survey asked farmers about the trees which they are growing on their farms in the six case studies described, and the results are very revealing in the context of debate about both shifting cultivation and land tenure (Table 2).

Table 2: Trees planted and protected in the six case study sites

	Villaba	Ormoc	Baybay 1	Baybay 2	Matalom	Trinidad
Trees planted/ household	38	93	18	27	32	979
Spp planted/ village	35	24	30	31	24	32
Spp planted/ household	3.2	2.8	5.1	4.4	4.9	8.2
Spp regenerated/ village	19	21	28	38	25	39
Spp regenerated/ household	2.3	1.6	4.5	4.0	5.0	5.2
Total spp/ village	43	40	53	61	39	62
Total spp/ household	5.4	4.4	9.6	8.1	9.4	13.0
% farmers planting	66	70	95	85	86	100
% regenerating	77	50	100	85	93	85
% with no trees	22	27	0	6	7	0

The differences in numbers of trees planted can be related to project support (Trinidad), but more convincingly to the existence of markets (legal timber markets

in Trinidad, city fruit markets in Ormoc). Species diversity tells a different story. Even where there is no extension or project support, diversity of planted species is at levels similar to more favoured *barangays*. More surprisingly, in half of the case study areas, more species are in fact reproducing naturally and being protected by farmers, than are planted by them. This should not in itself be surprising, but must have a clear message for foresters and policy-makers who focus on tree-planting as a measurable output.

Perhaps the most surprising result is that species diversity is highest in the Trinidad *barangay*. This community has almost no remaining forest and is on an island which is more denuded even than Leyte. Furthermore, it has been the focus of a project which overwhelmingly supported plantations of two exotic species, and the great majority of planted trees are the fast growing *Gmelina arborea*, for which there are local markets. It does not seem to be a context to encourage biodiversity – yet farmers report growing 62 species, 30 of them by natural regeneration alone. There seem to be two explanations for this. First, discussions with residents indicated a strong awareness of environmental improvement over the last ten years (many claim higher rainfall, more evenly distributed rainfall, and a cooler environment), so there is an appreciation of the non-financial benefits of trees.

Second, very importantly, Trinidad is the community with greatest equity and security of tenure amongst its residents. A further look at the data in Table 2 supports this theme. The two communities in which tenure insecurity is one of the outstanding problems, are the only two with a large minority of farmers who are growing no trees at all (22% in Villaba, 27% in Ormoc). In Baybay 2 and Matalom, where long-term tenancies predominate but some farmers are landless, only a small minority have no trees. Again, in Villaba and Ormoc, on-farm species diversity per household is lower than in all the other cases (only a third to a half of the levels found in the other communities); in particular diversity of natural regeneration is low. This clearly indicates that insecure tenure is bad for biodiversity.

There is an anomaly in this interpretation, in that the lowest overall species diversity is found in Matalom, a community with relatively secure land tenure and patches of remaining forest nearby. Significantly, however, it is the only community where *abaca* is preferred to coconut. Coconut plantations seem to be a particularly good and accessible environment for encouraging biodiversity through forest regeneration. In fact farmers, where they are able to, are reverting to

a much fuller type of shifting cultivation by allowing forest regeneration to co-exist with their perennial crops. This forest regeneration may be cleared at a later stage for annual cropping or selected timber species retained in a multistorey system with taro and bananas.

Despite the apparent conversion of land to permanent agriculture, a much more complex system has evolved where an extraordinary diversity of native tree species may be found in some farms, including endangered and valuable dipterocarp species. It is clear that this type of system only evolves where the tiller is the owner and has sufficient land to leave some out of production, or where the tenant has a long-standing and trusting relationship with the owner. Insecure tenure, as demonstrated by the data in Table 2, prevents farmers from developing innovative and more sustainable systems which are creative variations on shifting cultivation.

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