

Introduction

Markets are always changing. To remain aware buyers and sellers must consistently update their market information. Most smallholder farmers consider only the most basic market information when making land management and crop production decisions. They have little understanding of market specifications or market channels, resulting in an unfavorable bargaining position and low prices received for their products. Market risk existed because market information is imperfect; there are information deficiency and information asymmetry. Information deficiencies include incomplete information or information that is expensive to obtain. Asymmetric information is 'when one party to an exchange has information that is not available at any cost to the other party, and that information affects the costs of the uninformed party'.

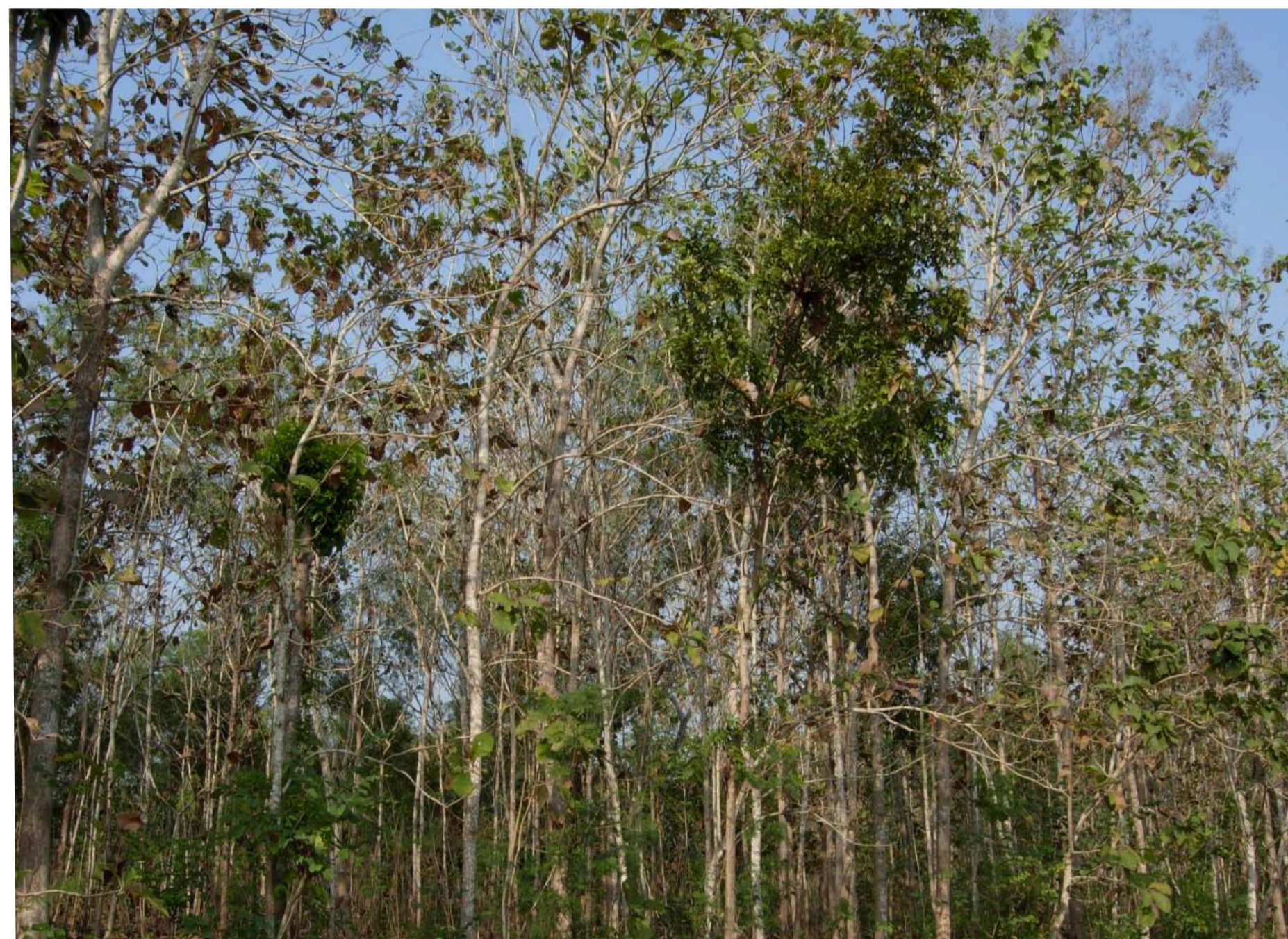


Figure 1. Common smallholder teak garden - uneven aged, non-uniform spacing, and not proactively managed.

Teak is planted as a 'green cash deposit' to meet urgent cash needs. Frequently teak growers sell timber trees to traders with little knowledge of 'market prices' and 'quality standards'. Better market information would be an incentive for teak growers to cultivate trees and applying proactive silvicultural management. Farmers also face high risk due to production uncertainties. As a result, they need to implement multi products strategy in their limited resources.

Objectives

The objectives of market research are:

1. To analyze teak grower's behavior in land use management regarding identified market risk and production uncertainty.
2. To evaluate Agroforestry system as a livelihood strategy to enhance income sources of smallholder teak growers.

Methodology

Research was conducted in 7 villages of Gunungkidul District, Yogyakarta, Indonesia from July 2007 to June 2008. Sites and respondents were selected through a multistage-cluster random sampling method that considered village characteristics. Village selection criteria included: (1) type of topography; (2) geographic representative; (3) land fertility; (4) human population density; (5) community forest area; (6) existing similar research projects; and (7) inputs from district government of Gunungkidul.

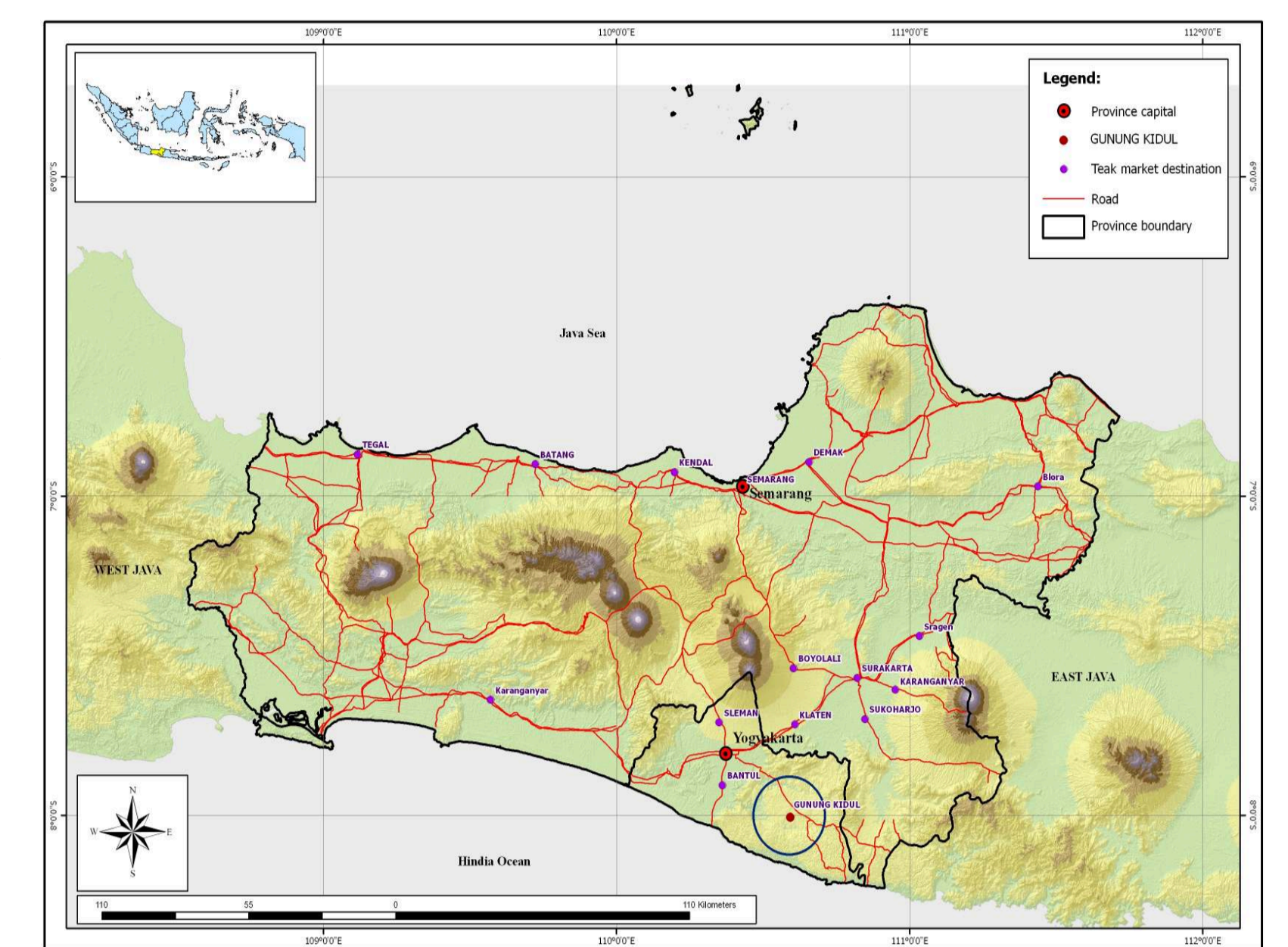


Figure 2. Research Project Site - Gunungkidul, Indonesia.

Data was collected through a household survey with 277 teak growing families, a tree garden inventory of 227 smallholder teak production systems, and Rapid Market Appraisal (RMA) with 20 local wood traders. The data was used to explain the role of teak production systems in income generation.

Results and Discussion

In most forest product sectors, access to and understanding of market information equates to economic and bargaining power. Teak growers face market risk because they do not have adequate market information and face difficulty in accessing that information. Additionally, there are no standard prices for purchase of standing teak trees. Table 1 provides information regarding the wide range prices farmers have received for their standing trees.

Table 1. Range of prices for standing teak trees compare to log value.

Tree Age (Year)	DBH (cm)			Farmer's Received Price (USD/tree)			Volume (M3)			Total Gross Log Value (USD)		
	Min	Max	Median	Min	Max	Median	Min	Max	Median	Min	Max	Median
10	12	18	14	3	6	4	0.045	0.189	0.142	3	25	15
15	13	31	17	5	30	7	0.060	0.515	0.217	6	123	33
20	21	45	27	10	265	60	0.307	1.061	0.487	57	284	107
25	23	49	34	20	296	110	0.320	1.321	0.664	54	329	166

Note: USD 1 = Rp 10,000.00; Harvesting cost USD 73.73 /m³
Source: Primary data

Teak is a premium quality timber that requires 15-25 years to obtain economic maturity (20-30 cm diameter). Teak growers in Gunungkidul produce small quantities of timber, of various qualities. Biological or economic maturity of tree is not main factor that determines when farmers harvest their trees. Household economics, family's cash needs, are the main factor influencing farmers' harvesting decisions (see Figure 3). This system is called *Tebang Butuh* or harvesting for needs.

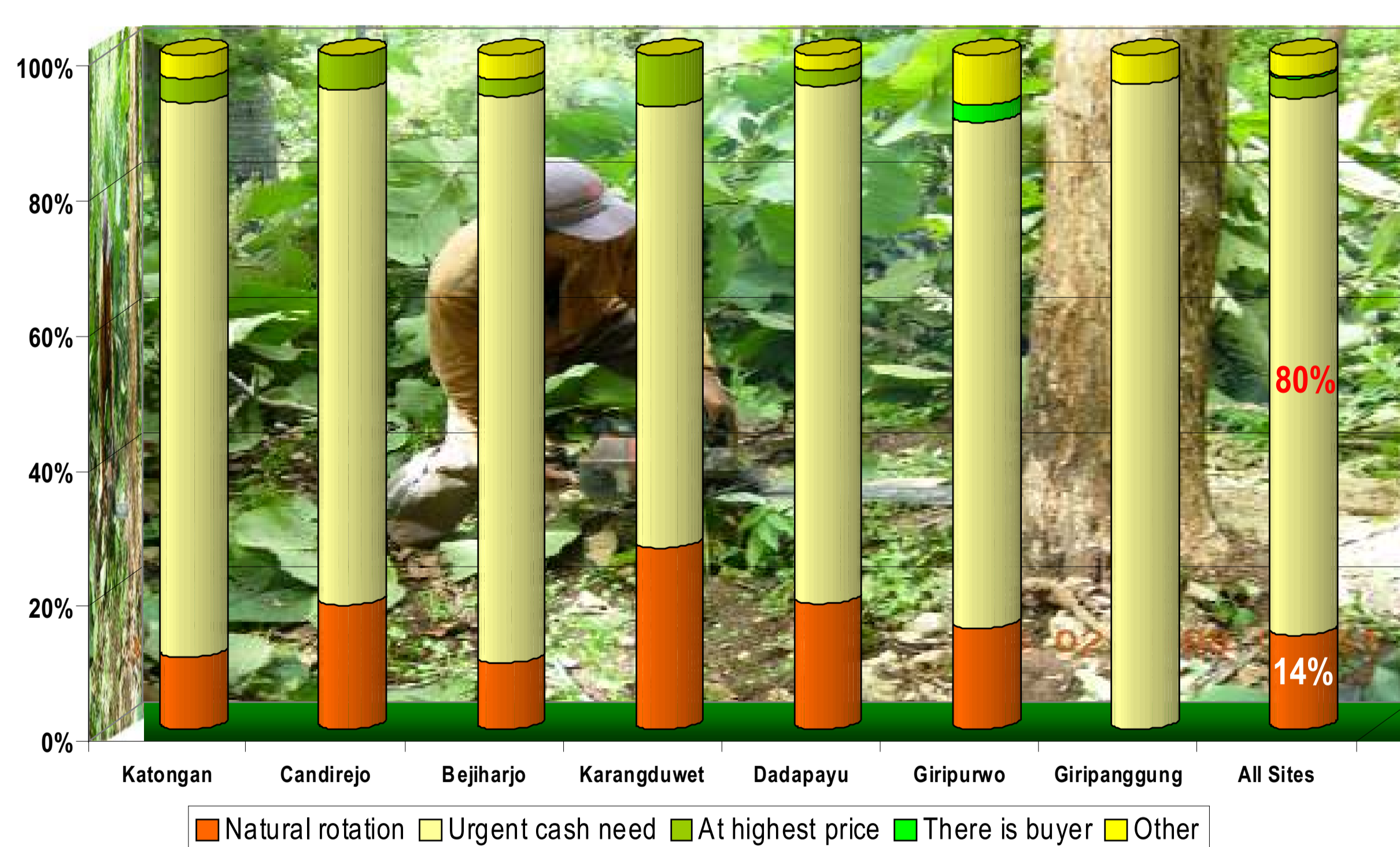


Figure 3. Farmers' reasons for harvesting teak trees.

Teak growers are characterized as having small land holdings, limited capital, and a lack of knowledge regarding silvicultural management and timber quality. Because of limited resources, teak growers do not prioritize teak management. Most farmers allocated their resources to agricultural crop production. Planting and managing teak is second priority conducted during lulls in agriculture activity. There are four main types of teak production system, i.e: upland tree systems (*kitren*), border plantings around agricultural fields, dry upland fields (*tegalan*), and homegardens (*pekarangan*). See Figure 4.

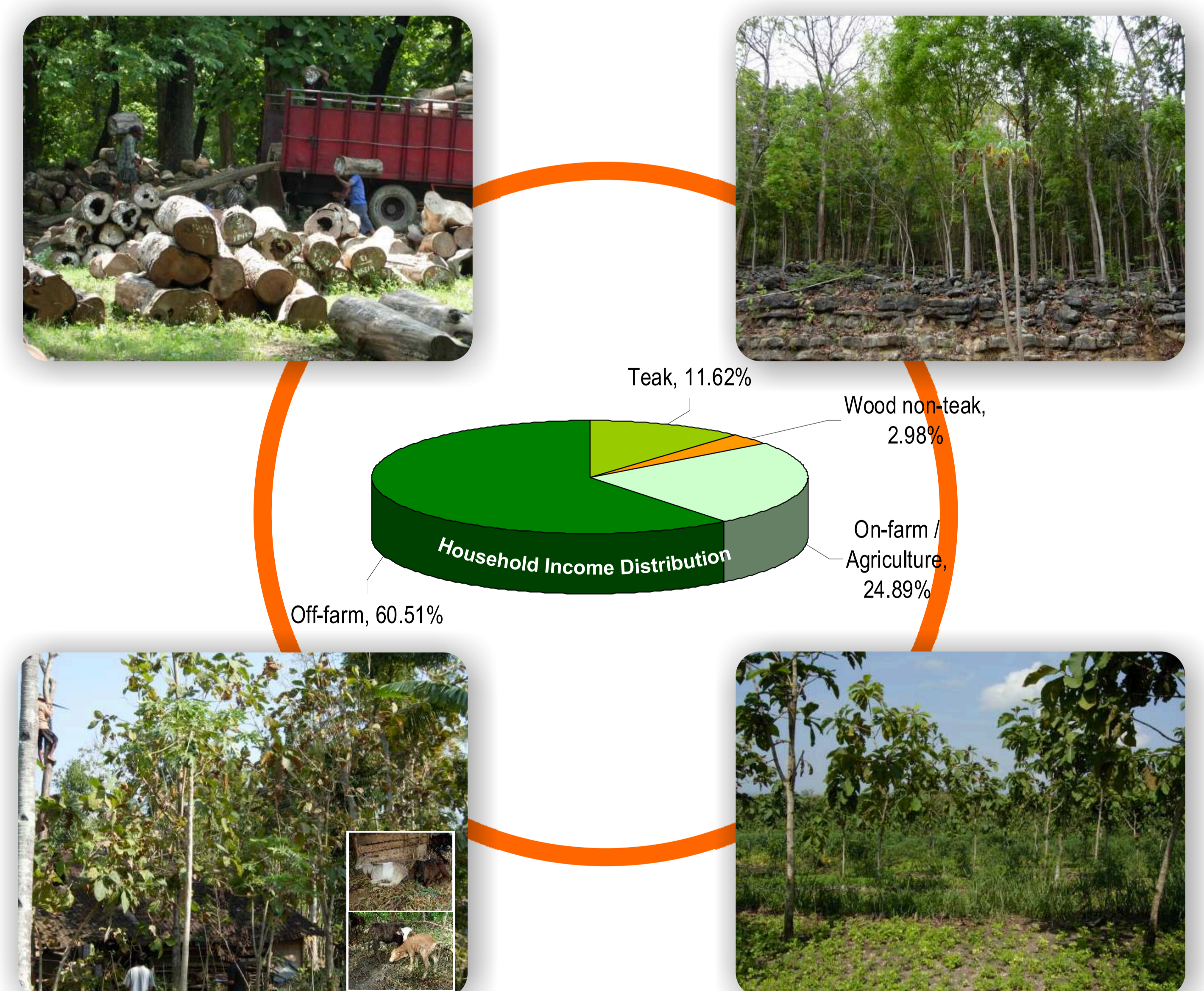


Figure 4. Smallholders diverse teak land use systems

This land use systems reflected farmers' livelihood strategy. Teak is planted as a 'green cash deposit' to meet urgent cash needs. They will decide the number of trees to sell based on the amount of money needed. If they have no unusual cash need, farmers usually will not sell tree even when a buyer offers a high price. Daily cash needs are secured by selling food crops. If additional funds are needed, farmers sell chickens, goats or cattles. Teak is reserved for large cash needs.

Summary

1. Teak represents a standing bank account for most of the farmers. Trees are sold when families need cash, particularly for emergencies. Ninety percent (90%) of respondent have no specific plans to sell trees in the next 1-3 years, but will do so if they need cash.
2. Diversification of teak land use systems contribute to farmers' livelihood security by addressing market risk and production uncertainty.
3. To maximize returns and adapt to changing markets, teak growers need to:
 - Improve their understanding of market specifications and market channels;
 - Develop tree management scenarios that respond to market demand and market channels;
 - Produce commodity that have a high market demand and generate high returns; and
 - Conduct collective marketing to overcome smallholders marketing constraints;

Acknowledgement

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