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Techno Guide on Coconut Intercropping
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Coconut-Gmelina Intercropping

Technology Description

The coconut – based agroforestry system involving coconut + gmelina (*Gmelina arborea* Roxb.) cropping systems under leaf pruned coconut provides a practical substitute to the cutting of coconut trees.

Gmelina arborea is a fast growing forest tree planted to produce wood for light construction, crafts, decorated veneers, pulp, fuel/charcoal, furnitures etc.

Coconut leaf pruning (CLP) involves the pruning of coconut leaves to allow adequate sunlight for normal development and high yield of perennial and annual intercrops.

Advantages of the Technology

1. Improved vegetative (more pruned branches and bigger trunks) and yield (lumber) of Gmelina
2. Provides fodder (leaves) for animals, silkworms; as folk medicine (root and bark decoction) good for abdominal tumor, blood disorder, diabetes, fever, etc. and its flowers produce good quality honey.
3. Fronds pruned from coconuts can be used as raw materials in handicraft cottage industry products such as baskets, seat cover, brooms and as fuel/charcoal.
4. Increased net farm income from gmelina products (as lumber and construction materials) and its by-products (branches as fuel).
5. Intercropping gmelina under bearing coconuts prevents the cutting of coconut trees.

Procedure

1. The bearing palms are pruned of lower green fronds from leaf 23 (supporting the oldest harvestable bunch and below, maintaining 22 living fronds every nut harvest) (Fig.1).

1 a 1b

Age of plants	Rate of 14-14-14/ tree (g)
3 mos from planting	5
6 mos	10
1 year	20
2 years	30
3 years	35
4 years	45
5 years & above	50

Fig. 1. Coconut leaf pruning (CLP) from leaf # 23 (1a) in contrast to no CLP (1b)

2. Plant two (2) rows of gmelina seedlings at 3 x 3 m in between two rows of coconut trees. Fertilize gmelina plants with 14-14-14 following these rates:
3. Prune the lateral branches of 1-3 years old gmelina trees below 3 m height to promote straight and bigger trunks.
4. Harvest 25% of the total gmelina trees at the 3rd year for banana props and fuel; another 25% on the 6th year and the remaining 50% on the 10th year for lumber (wood) and fuel purposes.

Highlights of the technology

1. On water-depleting capacity – Gmelina thru its thick litter formed at its base, increases the water–absorption and water-holding capacity of the soil. There was no difference in soil moisture content on areas near gmelina and near coconut trees.
2. On soil acidity – Soil pH in plots with and without gmelina showed statistically the same level of pH indicating that gmelina does not cause acidity of the soil.
3. On allelophatic effect – no harmful or inhibiting effect on the growth of another plant, i.e. coconut was observed.
4. On depletion of organic matter – There was an increase in organic matter content in plots planted to gmelina possibly due to the accumulation of shed leaves of gmelina on the soil, thus adding to the organic matter content of the soil.

Table 1. Economics of Intercropping Coconut with Gmelina

Trial		3. Gmelina*	- Coconut w/o LP	- Coconut w/ LP
Copra Yield	(kg/ha)		3,003.00	3,417.70
Yield of Inter-crops	Kg/ha	Pruned Branches	513.6	974.7
	m^3/ha	Trunk	31.8	47.7
Gross	Income (P)		318,865.20	508,722.68
Total Variable Cost (P)			124,523.00	156,465.00
Net Benefit (P)			194,342.20	352,257.68
* harvesting was done 3 years after planting				

SOCIO-ECONOMIC ANALYSIS

The coconut and gmelina agroecosystem is a highly profitable investment (Table 1)