

Technology Description

The coconut – based agroforestry system involving coconut + gmelina (*Gmelina arborea* Roxb.) interplanting under leaf pruned coconut is a scheme to save the coconut industry from being a sunset industry by providing 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 removal or pruning of coconut leaves to allow adequate sunlight for normal development and high yield of perennial and annual coconut intercrops.

Procedure

1. The existing bearing coconut are pruned from leaf 23 (with the oldest harvestable bunch and below, maintaining 22 living leaf fronds every nut harvest (Fig. 1).



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:

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

3. Pruned 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 planting at the 3rd year for banana props, fuel; another 25% on the 6th year and the remaining 50% on the 10th year for lumber (wood) and fuel purposes.

Advantages of the Technology

1. Improved vegetative (more pruned branches and bigger trunks) and yield (lumber) could be produced from gmelina planted under leaf pruned bearing tall coconuts.

2. Gmelina provides for other beneficial uses such as fodder (leaves) for animals, silkworms; as folk medicine (root and bark decoction) good for abdominal tumor, blood disorder, diabetes, fever, etc. and its flowers produced good quality honey.

3. Leaf 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, construction materials, carvings, furnitures) and its by-products (branches as fuel)-Table 1.



5. Intercropping gmelina under tall bearing coconuts prevents the cutting of coconut trees for lumber/timber purposes.

Myth and Truths uncovered about gmelina planting under coconut

1. On water - depleting capacity – Gmelina thru thick litter it forms at its base, increases the water –absorbing and water-holding capacity of the soil. There was no difference in soil moisture content on areas near gmelina and near coconut trees (Table 2).

2. On soil acidity – Soil pH at plots with and without gmelina showed statistically the same level of pH indicating that gmelina does not cause acidity of the soil (Table 2).

3. On allelopathic effect – no harmful or inhibiting effect on the growth of another plant, i.e. coconut was observed.

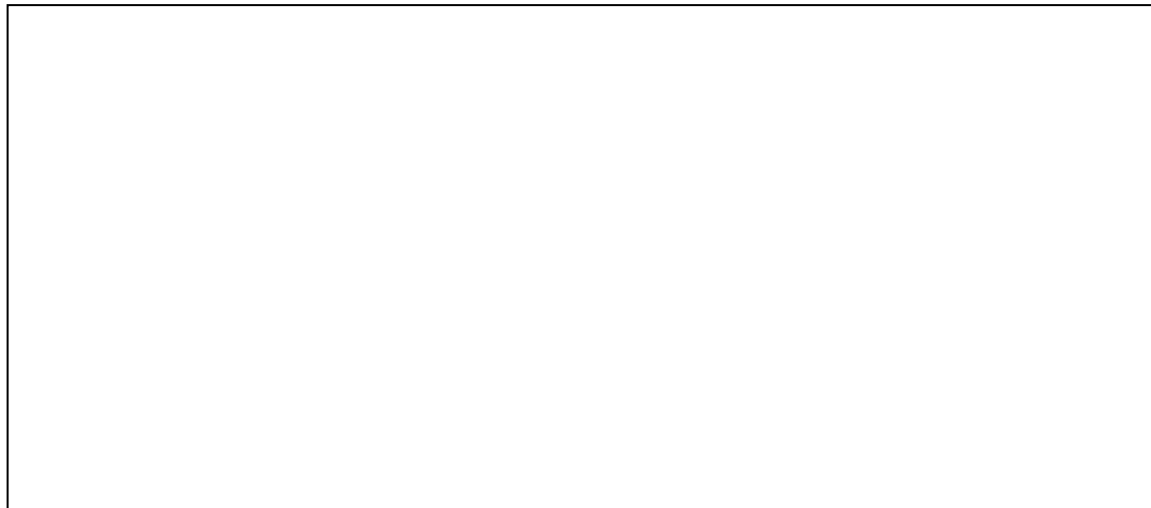
4. On depletion of organic matter – There was an increase in organic matter content in plots planted to gmelina possibly due to the accumulation of shedded leaves of gmelina on the soil, thus adding to the organic matter content of the soil (Table 2).

Table 1. Financial cash flow analysis (in Php) of cropping system under leaf-pruned coconuts at PCA- D City, 1993–2003.

**COCONUT +
GMELINA
CROPPING SYSTEM**



**A COCONUT-BASED
FARMING
SYSTEM**



* with gmelina harvest

Table 2. Properties of soil planted with and without gmelina at PCA-DRC,
Bago Oshiro, Davao City, 2003.

Trmt	Soil ph	%Moisture Near	%	Exch. Bases*	Exch.	CEC
% Base Sat.						

* mequiv/100g soil

For more information, refer to :

Secretaria, M. I. and S.S. Magat. 2004. Long-term effects of CLP on CBFS: Coconut + Gmelina agroforestry ecosystem. Paper presented during the 17th Regional Symposium on RDE Highlights, Aug. 4-5, 2004. USEP, Davao City.
Foronda, S. and C. Apolinar. 1997. The myth and truth about yemane tree. PCARRD

CEC-Cation Exchange Capacity

CALL, WRITE OR VISIT:

- 1) Agronomy & Soils Division
PCA-Davao Research Center
Bago Oshiro, Davao City
Tel No. (082) 293-0161
E-mail: pcadrc@pltdsl.net
or milsecretaria@yahoo.com
- 2) Agric. Research Mgt. Dept.

FOR INCREASED PRODUCTIVITY

Department of
Agriculture
Philippine Coconut Authority
Research, Development &
Extension Branch
Davao Research Center
Bago Oshiro, Davao City

