In "situ" Decomposition of Banana Stalk

Philippines - "Palata System"

Leaving the trunk of a newly harvested banana standing beside a follower plant to provide nutrients and moisture especially during period of drought.

Traditionally, banana is cut at the base (ground level) during harvesting and the stem is used as mulch. This has been the practice of the banana plantations for many years. Lately however, it was found out by research that by leaving the trunk standing beside a follower plant, yield could be improved because the trunk contains nutrients and moisture which could be used by the succeeding plants. The banana crown is cut just below the fruit and the leaves used as mulch. After a few months the trunk disintegrates and decomposes and the follower plants grow unimpeded utilizing the nutrients and moisture contained in the decomposing trunk..

left: Trunk of a newly harvested banana left standing beside a follower plant which upon decay will provide moisture and nutrient to it. (Photo: Henry Apolinares)
right: Trunk of a newly harvested banana left standing beside a follower plant which upon decay will provide moisture and nutrient to it. (Photo: Henry Apolinares)
Region: Davao del Norte, Maguindanao, Comval Province
Technology area: 14 km²
Conservation measure: agronomic
Stage of intervention: mitigation / reduction of land degradation, rehabilitation / reclamation of denuded land
Origin: Developed through experiments / research,
Land use type:
Cropland: Perennial (non-woody) cropping
Climate: subhumid, tropics
WOCAT database reference: T_PHI045en
Related approach:
Compiled by: Henry Apolinares, Bureau of Soils and Water Management
Date: 2006-10-18

Classification

Land use problems:

- Large requirement of banana for nutrients and moisture which is insufficient during period of drought. (expert's point of view)
Decreasing yield due to nutrient depletion and the frequent occurrence of drought (land user's point of view)

Land use

Perennial (non-woody) cropping
full irrigation

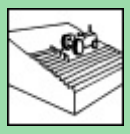
Climate

subhumid

Degradation

Chemical soil deterioration: fertility decline and reduced organic matter content, Water degradation: aridification

Conservation measure



Agronomic

Stage of intervention

- Prevention
- Mitigation / Reduction
- Rehabilitation

Origin

- Land users initiative
- Experiments / Research
- Externally introduced

Level of technical knowledge

- Agricultural advisor
- Land user

Main causes of land degradation:

Main technical functions:

- increase / maintain water stored in soil
- increase in soil fertility

Secondary technical functions:

Environment

Natural Environment

Average annual rainfall (mm)

- > 4000 mm
- 3000-4000 mm
- 2000-3000 mm
- 1500-2000 mm
- 1000-1500 mm
- 750-1000 mm
- 500-750 mm
- 250-500 mm
- < 250 mm

Altitude (m a.s.l.)

- > 4000
- 3000-4000
- 2500-3000
- 2000-2500
- 1500-2000
- 1000-1500
- 500-1000
- 100-500
- <100

Landform

- plateau / plains
- ridges
- mountain slopes
- hill slopes
- footslopes
- valley floors

Slope (%)

- flat
- gentle
- moderate
- rolling
- hilly
- steep
- very steep

Soil depth (cm)

- 0-20
- 20-50
- 50-80
- 80-120
- >120

Growing season(s): 270 days(May - Feb)
Soil texture: medium (loam)
Soil fertility: low
Topsoil organic matter: medium (1-3%)
Soil drainage/infiltration: good

Soil water storage capacity: medium

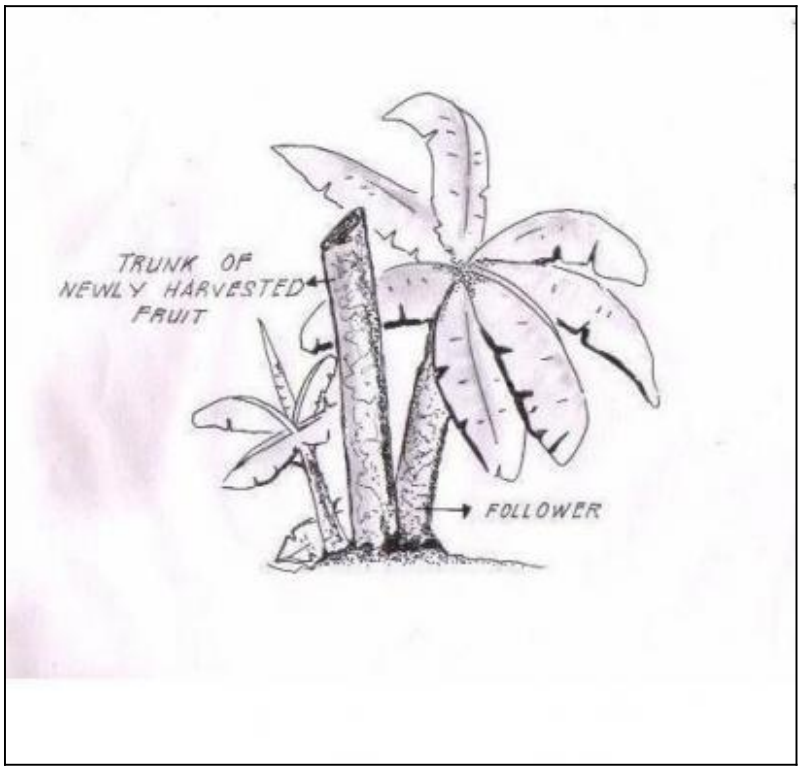
Human Environment

Cropland per household (ha)

- <0.5
- 0.5-1
- 1-2
- 2-5
- 5-15
- 15-50
- 50-100
- 100-500
- 500-1,000
- 1,000-10,000
- >10,000

Population density: 50-100 persons/km2
Land ownership: company
Land use rights: leased
Relative level of wealth: rich, which represents 60% of the land users; 60% of the total area is owned by rich land users

Importance of off-farm income: > 50% of all income: For small time growers, they work in the banana processing plant. For some, their children have other employment, either locally or abroad.
Access to service and infrastructure:
Market orientation:
Mechanization: mechanised
Livestock grazing on cropland:



Technical drawing

(Jose D. Rondal)

Implementation activities, inputs and costs

Establishment activities

Maintenance/recurrent activities

- Cutting of crown of newly harvested plant
-

Maintenance/recurrent inputs and costs per ha per year

Inputs	Costs (US$)	% met by land user
Labour	50.00	100%
Equipment		
- tools	10.00	100%
TOTAL	**60.00**	**100.00%**

Remarks:
Based on the plant population per hectare.

Assessment

Impacts of the Technology

Production and socio-economic benefits

++ increased farm income
+ increased crop yield

Production and socio-economic disadvantages

Socio-cultural benefits

Socio-cultural disadvantages

Ecological benefits

+ increased soil moisture
+ increase in soil fertility

Ecological disadvantages

Off-site benefits

Off-site disadvantages

Contribution to human well-being / livelihoods

Benefits /costs according to land user

	Benefits compared with costs	short-term:	long-term:
	Establishment	slightly positive	slightly positive
	Maintenance / recurrent	slightly positive	slightly positive

Acceptance / adoption:

70% of land user families (100 families; 70% of area) have implemented the technology voluntary. estimates
There is moderate trend towards (growing) spontaneous adoption of the technology. The beneficial effect has been proven in increasing yield and in input cost reduction.

Concluding statements

Strengths and → how to sustain/improve	Weaknesses and → how to overcome
Easy to apply → Sustained IEC	It could be a way by which pests and diseases multipl. → Burning or proper disposal of plants affected by disease.
Easy to apply and practically no added cost → Sustained IEC	Perpetuation of disease for affected plants. → Plant eradication.