



Seed Production of Multipurpose Shrubs/Legumes Philippines

Seed production of multipurpose shrubs and legumes, a soil conservation practice in sloping areas wherein Flemingia (*Flemingia macrophylla*) and Indigofera (*Indigofera tinctoria*) are densely planted along contours.

Seed production of multipurpose legumes is introduced through Conservation Farming Village (CFV) project in Barangay Elecia, La Libertad, Negros Oriental. Flemingia and Indigofera in particular are drilled along contour lines and maintained until seeds are matured enough for harvesting. Flemingia is a leguminous perennial, deep rooting and leafy shrub with plant height ranging from 0.5 -2.5 m. Indigofera is also a perennial shrub with height of 0.4-1.3 m. The leaves and other plant parts of these shrubs are used as mulch, green manure, feeds for livestock while hard portions and branches are used as firewood. It is regarded as high drought resistant, staying green even during dry periods of 3-4 months. Seeds produced are sold to the local government of La Libertad for the CFV project expansion.

Seed production of forage legumes like Flemingia and Indigofera is practiced by farmers primarily to enrich the soil and supplement the seed requirement of expansion areas of the CFV project in the municipality. The technology improves ground cover and traps dispersed or concentrated run-off in sloping areas.

In a hectare, contour establishment using an A-frame requires eight man-days while land preparation (i.e plowing and furrowing) requires at least 30 person-animal-days. Flemingia and Indigofera seeds are drilled along contours at rate of 24kg/ha and 8kg/ha, respectively. Weeding and hilling-up are done in 30 person-animal-day. Harvesting of pods starts during the months of February, May and October. Meanwhile, Indigofera produces seeds three months after flowering which starts a year from planting. Matured pods are harvested twice a year by hand-picking then sun-dried for at least two days. Seeds are removed from pods manually.

The area is under a humid climate condition with an average annual rainfall of 1000-1500 mm per year and elevation ranging from 500-1000 m above sea level. Flemingia and Indigofera are grown by small scale farmers with a cropland size of 0.5-1 ha. Water supply for crop development mainly relies on the occurrence of rain. The area has a low access to services and infrastructure such as education, market, road and transport.

left: Herminehilda Cabasag, a CFV forage seed grower (Photo: Engr. Djolly Ma. P. Dinamling)

right: Flemingia planted in the CFV area. (Photo: Engr. Djolly Ma. P. Dinamling)

Location: Brgy. Elecia, La Libertad

Region: Negros Oriental

Technology area: 13.75 km²

Conservation measure: vegetative

Stage of intervention: rehabilitation / reclamation of denuded land

Origin: Developed externally / introduced through project, recent (<10 years ago)

Land use type:

Cropland: Tree and shrub cropping

Land use:

Forests / woodlands/rests / woodlands:

Natural (before), Cropland: Tree and shrub cropping (after)

Climate: humid, tropics

WOCAT database reference:

T_PHI050en

Related approach: Conservation Farming Village (A_PHI008en)

Compiled by: Philippine Overview of Conservation Approaches and Technologies, Bureau of Soils and Water Management

Date: 2015-05-27


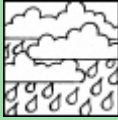

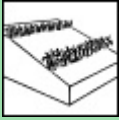
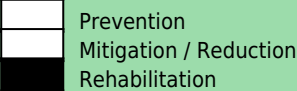
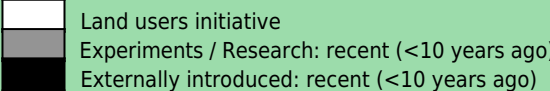
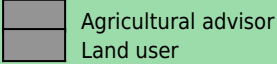
Contact person: Albert F. Gutierrez, LGU of La Libertad, Negros Oriental, alfergu@yahoo.com



Classification

Land use problems:

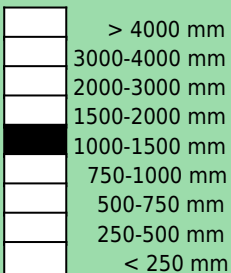
- Land degradation, soil erosion, poor soil fertility condition (expert's point of view)
- Problem in flooding, soil erosion, lack of vegetation to control erosion (land user's point of view)

Land use	Climate	Degradation	Conservation measure
			
Tree and shrub cropping Forests / woodlands/rests / woodlands: Natural (before) Cropland: Tree and shrub cropping (after) rainfed	humid	Soil erosion by water: loss of topsoil / surface erosion, Chemical soil deterioration: fertility decline and reduced organic matter content, Biological degradation: reduction of vegetation cover	Vegetative: Tree and shrub cover
Stage of intervention	Origin	Level of technical knowledge	
			
Main causes of land degradation: Direct causes - Human induced: deforestation / removal of natural vegetation (incl. forest fires), over-exploitation of vegetation for domestic use			
Main technical functions:		Secondary technical functions:	
<ul style="list-style-type: none"> - control of dispersed runoff: retain / trap - control of concentrated runoff: retain / trap - improvement of ground cover - promotion of vegetation species and varieties (quality, eg palatable fodder) 		<ul style="list-style-type: none"> - reduction of slope angle - reduction of slope length - increase of surface roughness - increase in organic matter - reduction in wind speed 	

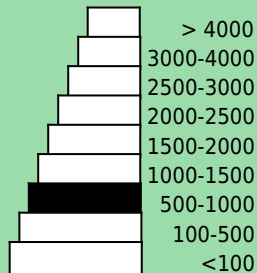
Environment

Natural Environment

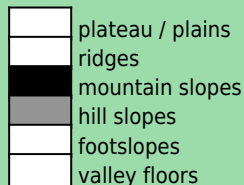
Average annual rainfall (mm)



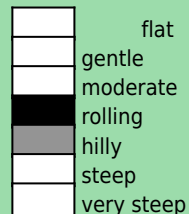
Altitude (m a.s.l.)



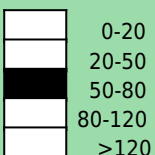
Landform



Slope (%)



Soil depth (cm)



Soil texture: fine / heavy (clay)
Soil fertility: medium
Topsoil organic matter: high (>3%)
Soil drainage/infiltration: medium

Soil water storage capacity: medium
Ground water table: < 5 m
Availability of surface water: good
Water quality: good drinking water
Biodiversity: medium

Tolerant of climatic extremes: seasonal rainfall increase, heavy rainfall events (intensities and amount)

Sensitive to climatic extremes: temperature increase, seasonal rainfall decrease, droughts / dry spells

If sensitive, what modifications were made / are possible: Mitigating measure is recommended such as drip irrigation if it is for commercial seed production.

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

Land user: Individual / household, Small scale land users, common / average land users, men and women

Population density: < 10 persons/km²

Annual population growth: 1% - 2%

Land ownership: individual, titled

Land use rights: individual

Water use rights: open access (unorganised)

Relative level of wealth: average, which represents 60% of the land users; 60% of the total area is owned by average land users

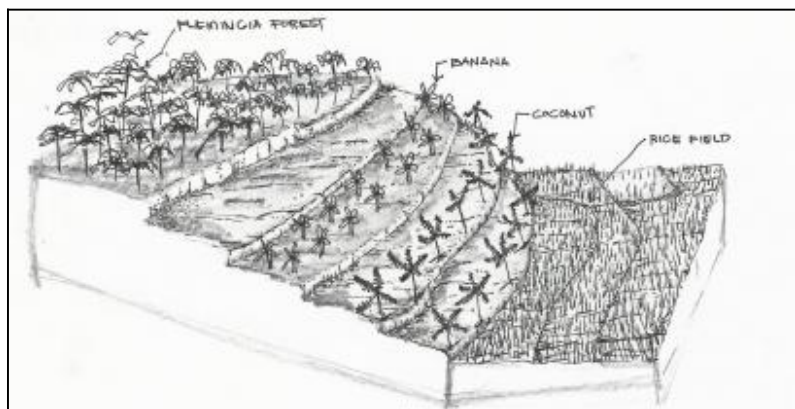
Importance of off-farm income: :

Access to service and infrastructure: low: education, employment (eg off-farm), market, roads & transport, financial services; moderate: health, energy; high: technical assistance, drinking water and sanitation

Market orientation: commercial / market

Mechanization: manual labour

Livestock grazing on cropland: yes little



Technical drawing

Flemingia stand at the top portion of Herminigilda Cabasag's farm. (Patricio A. Yambot)

Implementation activities, inputs and costs

Establishment activities

- Land Preparation: Plowing Harrowing and Furrowing
- Establishment of contour lines/ laying out

Establishment inputs and costs per unit

Inputs	Costs (US\$)	% met by land user
Labour	49.44	100%
Equipment		
- bamboo sticks/ pegs	2.22	100%
Agricultural		
- seeds	44.44	0%
TOTAL	96.10	66.67%

Maintenance/recurrent activities

- Weeding/ Hilling-up
- Harvesting
- Sun Drying
- Manual Threshing
- Harvesting of Flemingia and Indigofera

Maintenance/recurrent inputs and costs per unit per year

Inputs	Costs (US\$)	% met by land user
Labour	43.10	100%
TOTAL	43.10	100.00%

Remarks:

Assessment

Impacts of the Technology	
Production and socio-economic benefits	Production and socio-economic disadvantages
<ul style="list-style-type: none"> +++ increased crop yield +++ increased farm income +++ diversification of income sources +++ increased product diversification 	
Socio-cultural benefits	Socio-cultural disadvantages
<ul style="list-style-type: none"> +++ community institution strengthening 	
Ecological benefits	Ecological disadvantages
<ul style="list-style-type: none"> +++ improved soil cover +++ increased nutrient cycling recharge +++ reduced soil loss ++ improved harvesting / collection of water 	
Off-site benefits	Off-site disadvantages
Contribution to human well-being / livelihoods	
<ul style="list-style-type: none"> +++ Added income to the landuser which were used in the education of children 	

Benefits /costs according to land user			
	Benefits compared with costs	short-term:	long-term:
	Establishment	positive	positive
	Maintenance / recurrent	positive	positive

Acceptance / adoption:

63% of land user families (10 families; 63% of area) have implemented the technology with external material support. External support in terms of seed subsidy and trainings provided for the land user.

37% of land user families (6 families; 37% of area) have implemented the technology voluntary.

There is moderate trend towards (growing) spontaneous adoption of the technology. Other neighboring villages are adopting the technology to supplement the production of forage seeds used as hedgerows in the municipality.

Concluding statements

Strengths and → how to sustain/improve	Weaknesses and → how to overcome
Multipurpose shrubs/legumes planted along contour control soil erosion, increased soil fertility and serve as wind break. → Continuous practice and support from the local government.	Low seed production during long dry season or drought → Provision of irrigation system
Available market for the seeds. Flemingia and Indigofera seeds are sold to the Local Government Unit of La Libertad at 250 pesos (5.56 dollar) per kilogram to be used in other CFV barangay as hedgerows. → Improvement of the packaging of the forage seeds to increase its viability and marketability outside the municipality.	Prone to pod-popping when seeds are over matured resulting in low seed harvest → To harvest on time
Increased and diversified income of the land users to support their families and send their children to school. →	Lack of post-harvest facility on the seed storage area → Provision of storage facility to maintain seed viability and prolong seed shelf life.
Strong LGU support through provision of trainings on vermi composting, nursery establishment, farm planning, forestry, vegetable production, determining soil erosion and rapid composting. → Establishment of training centers for farmers and agricultural technician of the LGU for knowledge sharing.	



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