Vetiver grass system or Vetiver grass technology

Philippines - Mora, Moras, Amora and Modas in the different regions in the Philippines

Vetiver grass used as contour hedgerows in sloping agricultural land used for annual crops.

Vetiver grass is easy to propagate and establish as hedgerow. It is adopted to a wide range of soil and climatic condition. When planted correctly, vetiver grass will form a dense permanent hedge in one year. It has a strong root system that penetrates and binds the soil. Vetiver grass is perennial and requires minimal maintenance. It will not spread to the alleys since it does not multiply by rhizomes nor from seeds. Compare with other grass, it does not compete much with the crops it is protecting. Vetiver crown is below the ground surface which helps protect the plant against fire and overgrazing. Its leaves and roots are resistannt to insects and diseases. Vetiver can withstand, drought, flood and long period of water logging.

left: Hedgerow of full grown vetiver grass (Photo: Edwin Balbarino)
right: Sweet potato farm with vetiver grass hedgerow (Photo: Edwin Balbarino)

Location: Leyte
Region: Leyte
Technology area: 0.8 km^2
Conservation measure: vegetative
Stage of intervention: prevention of land degradation
Origin: Developed externally / introduced through project, traditional (>50 years ago)
Land use type:
Cropland: Annual cropping
Climate: humid, tropics
WOCAT database reference: T_PHI011en
Related approach:
Compiled by: Not registered
Date: 2002-08-02

Classification

Land use problems:

- Annual cropping of corn and othrer crops in hillyland using plow which makes the soil vulnerable to erosion. (expert's point of view)
Declining productivity and increasing input (fertilizer) to maintain yield. (land user's point of view)

Land use

Annual cropping
rainfed

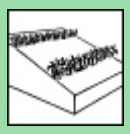
Climate

humid

Degradation

Soil erosion by water: loss of topsoil / surface erosion

Conservation measure

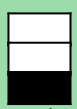


Vegetative

Stage of intervention

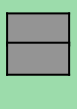
Prevention
Mitigation / Reduction
Rehabilitation

Origin



Land users initiative
Experiments / Research
Externally introduced: traditional (>50 years ago)

Level of technical knowledge



Agricultural advisor
Land user

Main causes of land degradation:

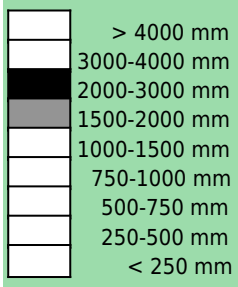
Main technical functions:
- control of dispersed runoff: retain / trap
- reduction of slope length

Secondary technical functions:
- control of concentrated runoff: retain / trap

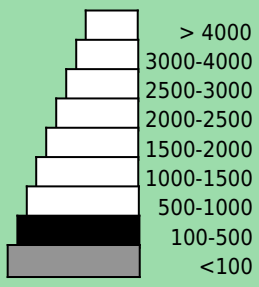
Environment

Natural Environment

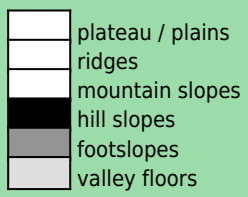
Average annual rainfall (mm)



Altitude (m a.s.l.)

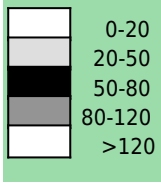


Landform



Slope (%)

Soil depth (cm)

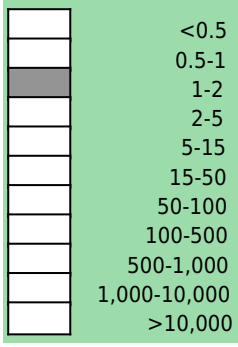


Growing season(s): 110 days(Apr - Dec)
Soil texture: medium (loam)
Soil fertility: low
Topsoil organic matter: low (<1%)
Soil drainage/infiltration: good

Soil water storage capacity: medium

Human Environment

Cropland per household (ha)



Population density: 50-100 persons/km2
Annual population growth: 2% - 3%
Land ownership: individual, titled
Land use rights: individual
Relative level of wealth: average, which represents 20% of the land users; 50% of the total area is owned by average land users

Importance of off-farm income: 10-50% of all income: Trading, carpentry, hired labour, overseas employment
Access to service and infrastructure:
Market orientation: subsistence (self-supply)
Mechanization: animal traction
Livestock grazing on cropland:

Implementation activities, inputs and costs

Establishment activities

-
- Planting vetiver grass along the contour
- Replacement/replanting of gaps

Establishment inputs and costs per ha

Inputs	Costs (US$)	% met by land user
Labour	50.00	100%
Agricultural		
- seedlings	100.00	100%
TOTAL	**150.00**	**100.00%**

Maintenance/recurrent activities

-
- pruning

Maintenance/recurrent inputs and costs per ha per year

Inputs	Costs (US$)	% met by land user
Labour	20.00	100%
TOTAL	**20.00**	**100.00%**

Remarks:
Labor is the most important factor (establishing contour, land preparation and planting). Planting materials can be asked for free from other farmers. Distance of grass strips, distance of planting within strips and frequency of maintenance (trimming).

Assessment

Impacts of the Technology

Production and socio-economic benefits	Production and socio-economic disadvantages
++ increased crop yield	+ increased labour constraints
Socio-cultural benefits	**Socio-cultural disadvantages**
+++ improved conservation / erosion knowledge	
Ecological benefits	**Ecological disadvantages**
+++ reduced soil loss	
++ increased soil moisture	
+ increase in soil fertility	
Off-site benefits	**Off-site disadvantages**
+++ reduced downstream siltation	+ reduced sediment yields
Contribution to human well-being / livelihoods	

Benefits /costs according to land user

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

Acceptance / adoption:

2% of land user families have implemented the technology with external material support. estimates
5% of land user families (50 families; 2% of area) have implemented the technology voluntary. estimates
There is moderate trend towards (growing) spontaneous adoption of the technology. Farmers have recognized the benefit of the technology. Even the Local Government Units (LGU's) are supportive of the technology and have adapted it as one of their banner programs.

Concluding statements

Strengths and → how to sustain/improve	Weaknesses and → how to overcome
Easy to establish and maintain → Follow regular maintenance procedure	Prevents easier mobility within the farm → Appropriate farm lay-out
Vetiver grows well even in fertile soil → More vigorous support from the LGU's.	Vetiver grass can serve as sanctuary for pests (rats, snakes, etc) → Cleanliness
Easy to establish and maintain → Establishment should be done during the early part of the rainy season.	Prevents easier mobility within the farm → Proper farm design
	Sanctuary for pests → Cleanliness, rat eradication, etc.