



Contour Straight Block Layout Philippines

It is a package of soil and water conservation technology that integrates contouring, bedding, and blocking.

The main commodity used in the area is pineapple planted in each bed within blocks. Each block contains around 23-25 beds. Spaces between blocks with a dimension of 2-3 meters (width) served as vegetative strips where grass is being utilized and maintained. Grass as natural vegetative strips served as control for soil erosion by water. Vegetative strips are used as roads for accessibility purposes in times of planting and harvesting season. Pineapple production would last for 18-20 months for normal season and these requires massive land preparation. Plowing is done through a modified moldboard plow.

Pineapple were planted in beds within blocks, which is efficient and effective in water-induced soil erosion control.

Deep plowing, around one meter deep is a normal practice in the area. This practice would ensure proper root development of pineapple which is crucial for their growth; also it ensures re-introduction of pineapple trashes from the previous cropping as organic matter. Next activity is harrowing, which is usually done twice to pulverize the soil properly. Plastic mulching is a also a practice after bedding to suppress weeds and conserve water. Weeding is done manually. Foliar fertilizer spraying is done to induce flowering.

The area is under humid agro-climate condition with a topography ranging from 1-10% slope. It receives an annual average rainfall of approximately 3072 mm/year. The elevation ranges from 370-890 meter above sea level. Mt. Kitanglad and Agri Development Corporation (MKADC) operates the area where the technology are being practiced. The technology has been introduced through experiments and adoption from neighboring farms. Farmers living within the area are the laborers of the company, they do all needed activities from preparation of the land, planting and harvesting.

left: Grass as Vegetative Strips (Photo: Baldwin M. Pine)

right: Contour Straight Block Lay-out (Photo: Google Eath)

Location: Valencia City, Bukidnon
Technology area: 1 - 10 km²

Conservation measure: agronomic

Stage of intervention: prevention of land degradation

Origin: Developed through experiments / research, 10-50 years ago

Land use type:

Cropland: Perennial (non-woody) cropping

Climate: humid, tropics

WOCAT database reference:

T_PHI046en

Related approach: Integrated Soil and Water Conservation Approach in Improving Biophysical Condition of Mt. Kitanglad and Agri-Development Corporation (A_PHI009en)

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

Date: -


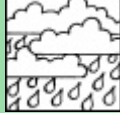

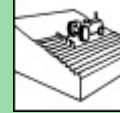
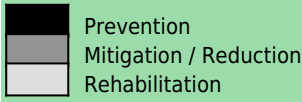
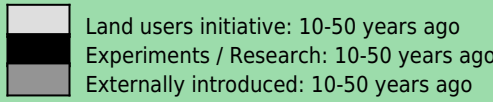
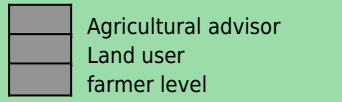
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Classification

Land use problems:

- Presence of hardpan which causes water logging, this has an adverse effect on the growth and harvest rate of pineapple. (expert's point of view)

| | | | |
|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Land use  Perennial (non-woody) cropping | Climate  humid | Degradation  Soil erosion by water: loss of topsoil / surface erosion | Conservation measure  Agronomic: Vegetation/soil cover |
| Stage of intervention  | Origin  | Level of technical knowledge  | |

Main causes of land degradation:
 Direct causes - Human induced: soil management
 Direct causes - Natural: Heavy / extreme rainfall (intensity/amounts)
 Indirect causes: land tenure

Main technical functions:

- control of raindrop splash
- control of dispersed runoff: retain / trap
- control of dispersed runoff: impede / retard
- control of concentrated runoff: retain / trap
- control of concentrated runoff: impede / retard
- control of concentrated runoff: drain / divert
- stabilisation of soil (eg by tree roots against land slides)

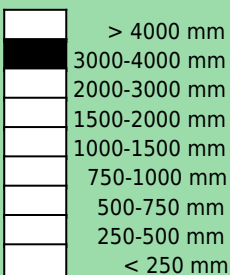
Secondary technical functions:

- improvement of ground cover
- increase / maintain water stored in soil

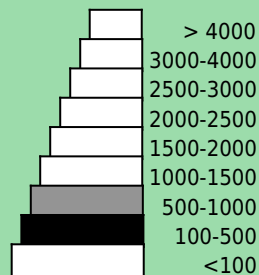
Environment

Natural Environment

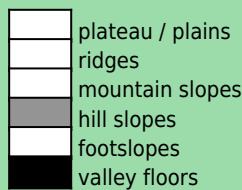
Average annual rainfall (mm)



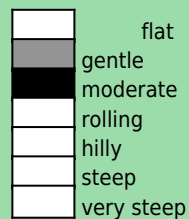
Altitude (m a.s.l.)



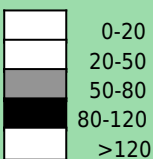
Landform



Slope (%)



Soil depth (cm)



Growing season(s): (growing period is 18 months)(ratooning would last for 24 months)

Soil texture: medium (loam)

Soil fertility: medium

Topsoil organic matter: medium (1-3%)

Soil drainage/infiltration: medium

Soil water storage capacity: medium

Ground water table: 5 - 50 m

Availability of surface water: medium

Water quality: good drinking water

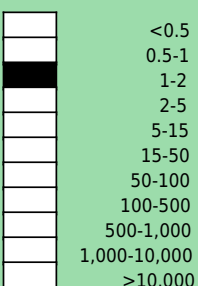
Biodiversity: medium

Tolerant of climatic extremes: droughts / dry spells

Sensitive to climatic extremes: seasonal rainfall increase, heavy rainfall events (intensities and amount), wind storms / dust storms, floods

Human Environment

Cropland per household (ha)



Land user: employee (company, government), large scale land users, common / average land users, men and women

Population density: < 10 persons/km²

Annual population growth: < 0.5%

Land ownership: individual, titled

Land use rights: leased

Relative level of wealth: average, which represents 100% of the land users; 100% of the total area is owned by average land users

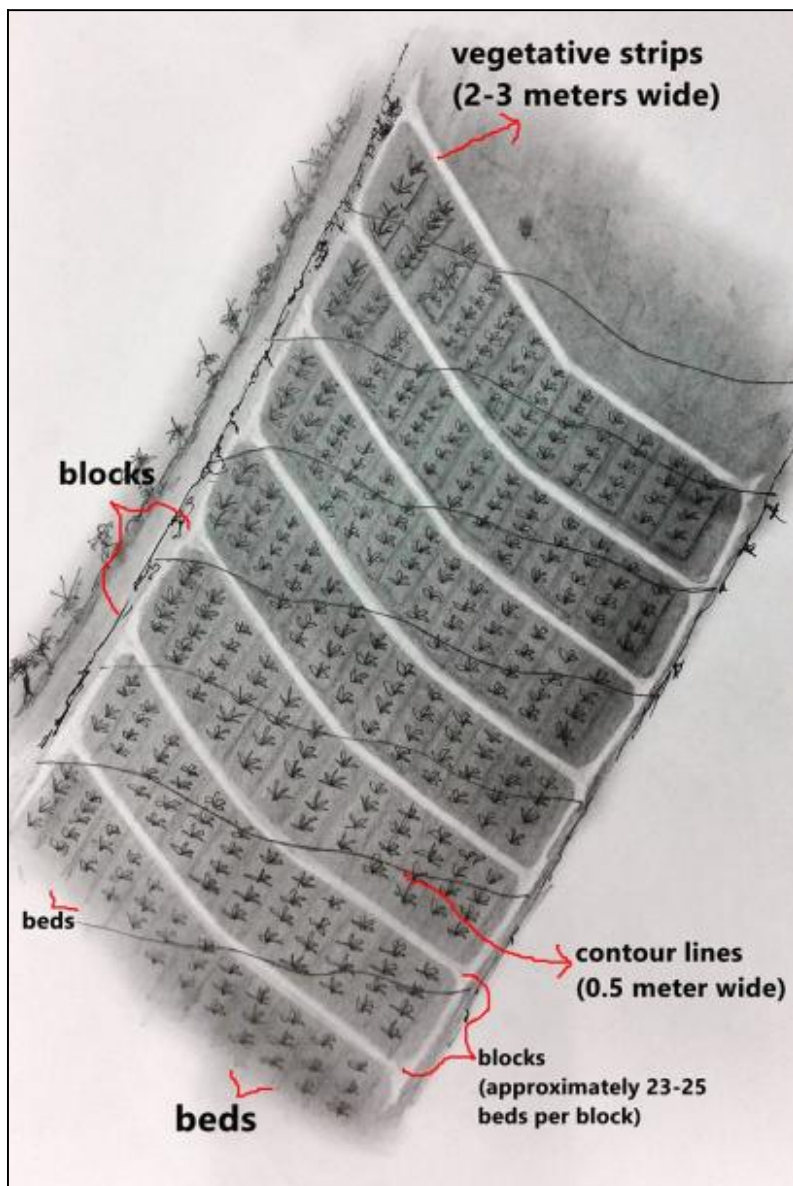
Importance of off-farm income: less than 10% of all income:

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

Market orientation: mixed (subsistence and commercial)

Mechanization: mechanised

Livestock grazing on cropland: no



Technical drawing

Each bed is within blocks. Vegetative strips width is approximately 2-3 meters. Contour lines with an approximate 0.5 meters width served as diversion ditches. (Patricio Yambot)

Implementation activities, inputs and costs

Establishment activities

- Bedding
- Harrowing
- Mulching
- Planting
- Planting Material (Pineapple Strips)
- Plowing, also included the preparation of vegetative strips.
-
- Construction of vegetative strips. Vegetative strips has been prepared and laid out during land preparation (agronomic measures) and is part of the paid labor .

Establishment inputs and costs per ha

| Inputs | Costs (US\$) | % met by land user |
|--------------------|---------------|--------------------|
| Labour | 143.00 | 100% |
| Equipment | | |
| - machine use | 225.00 | 100% |
| Agricultural | | |
| - pineapple strips | 217.00 | 100% |
| TOTAL | 585.00 | 100.00% |

Maintenance/recurrent activities

- Spraying
- Ratooning
- Harvesting
- Fertilizer Application
- Weeding
- Trimming of grasses

Maintenance/recurrent inputs and costs per ha per year

| Inputs | Costs (US\$) | % met by land user |
|--------------|---------------|--------------------|
| Labour | 279.00 | 100% |
| TOTAL | 279.00 | 100.00% |

Remarks:

Planting materials and labour

Assessment

Impacts of the Technology

Production and socio-economic benefits

+++ increased crop yield

Production and socio-economic disadvantages

Socio-cultural benefits

+++ improved conservation / erosion knowledge
 ++ improved food security / self sufficiency

Socio-cultural disadvantages

Ecological benefits

+++ reduced soil loss
 ++ increased soil moisture
 ++ reduced surface runoff
 ++ improved soil cover

Ecological disadvantages

Off-site benefits

+++ reduced downstream flooding

Off-site disadvantages

Contribution to human well-being / livelihoods

+++

Benefits /costs according to land user

Benefits compared with costs

Establishment

Maintenance / recurrent

short-term:

neutral / balanced

neutral / balanced

long-term:

positive

positive

Acceptance / adoption:

100% of land user families have implemented the technology voluntary. Mt. Kitanglad and Agri Development Corporation (MKADC) operates the area where the technology are being practiced. The technology has been introduced through experiments and adoption from neighboring farms.

Concluding statements

Strengths and → how to sustain/improve

Easiness of the technology to establish/Simpleness → More scientific research

Transferrability/ Acceptability →

Good for erosion control → Continued practice of the technology

Weaknesses and → how to overcome

Somehow labor intensive → Mechanization but should be regulated, productivity of the soil should not be compromised.

More researches should be done to prove the effectivity and efficiency of the technology as soil and water conservation technology. → Allow research authorities to conduct researches in their farm.



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