Integrated Soil and Water Conservation Approach in Improving Biophysical Condition of Mt. Kitanglad Agri-Development Corporation (MKADC) Pineapple Production

Philippines

Integration of soil and water conservation technologies primarily aim to protect the area from loss of biodiversity and land degradation.

Aim/objectives: (1) To improve biodiversity in the area; (2) To prevent on-site erosion; and (3) To minimize off-site impacts like siltation of natural water bodies.

Methods: MKADC is internationally renowned producer of export quality fresh pineapples. They cater different countries in Asia as a proof of their excellent service in pineapple production. Along with this success in MKADC, environmental management system are incorporated in their production area which gave additional merit in the protection of our ecology. This system includes various soil and water conservation technologies namely: 1) buffer zones; 2) sediment traps, brush dams and catch basins; 3) contour straight block lay-out technology; 4) natural vegetative strip; 5) pineapple as erosion control commodity; and 6) relay cropping which aim to minimize soil erosion and improve biodiversity in the area.

Stages of implementation: (a) Site development for 4 to 6 months; (b) Land preparation for 3 months; (c) Planting and replanting; (d) Plant care and crop management which include fertilization and weed control when the pineapple is at 2 to 11 months; (e) Flower induction, fruit development, fruit care and fruit estimates when pineapple is at 12 to 17 months; (f) Degreening and harvesting at 18 months; (g) Ratooning; and (h) Maintenance i.e manual weeding (as needs arises).

Role of stakeholders: The primary stakeholders are the land owners of the leased lands and MKADC.The approach of MKADC ensures that at the end of the contract between the company and the land owners, the land is still productive.

left: Tree growing area planted with mangium (Photo: Engr. Djolly Ma. P. Dinamling)

right: Pineapple plant serves as silt traps along trenches (Photo: Baldwin M. Pine)

Location: Brgy. Lurugan, Valencia City, Bukidnon
Approach area: 13.03 km^2
Type of Approach: recent local initiative / innovative
Focus: mainly on conservation with other activities
WOCAT database reference: A_PHI009en
Related technology(ies): Contour Straight Block Layout (T_PHI046en), Sediment Trap (T_PHI048en), Trees as Buffer zones (T_PHI054en)
Compiled by: Philippine Overview of Conservation Approaches and Technologies, Bureau of Soils and Water Management
Date: 2015-07-15
Contact person: Jerry M. Manubag, Mt. Kitanglad Agri-Development Corporation, Lurugan, Valencia City, Bukidnon, (088) 221 4302, manubagjerry@gmail.com

Problem, objectives and constraints

Problems

Soil-related problems i.e. soil erosion, siltation; Biodiversity Loss; Occurrence of insect pest that affects production yield and income of the company

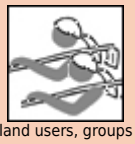
Aims/Objectives

The main objectives of the approach are to prevent soil erosion and improve biodiversity.

Constraints addressed		
	Constraint	**Treatment**
workload	Increase in labour requirements	Compliment labor needs from field operations thru internal environmental management services. Filling up the labor requirement thru reassignment of regular labor from other areas.
other	Initial trees planted were destroyed due to the entry of stray animals.	Fences were built along boundaries to prevent the entry of stray animals and assignment of watchmen in critical areas.
legal / land use and / water rights	Pineapple production area is privately-owned. The company lease these areas for production.	Contract leasing minimum of ten years. After ten years and the owner wish to have its land back, the company is obliged to return the land to its original state/ or productivity. They conduct before and after fertility sampling to ensure the area is productive for cultivation.

Participation and decision making

Stakeholders / target groups


land users, groups

Approach costs met by:

other (MKADC (land owner company))	100%
Total	**100%**

Annual budget for SLM component: US$ 10,000-100,000

Decisions on choice of the Technology(ies) by land users* alone (self-initiative / bottom-up)

Decisions on method of implementing the Technology(ies): by land users* alone (self-initiative / bottom-up)

Approach designed by: land users

Implementing bodies: private sector (Mt. Kitanglad and Agri Development Corporation (MKADC))

Land user involvement

Phase	Involvement	Activities
Initiation/motivation	Self-mobilisation	Sustainability of pineapple production inspite of identical issues on soil erosion, slope protection, and soil fertility loss.
Planning	Self-mobilisation	Yearly review and modification of farm field layout to correct deficiencies and to enhance control measures.
Implementation	Self-mobilisation	Integrated in the pineapple field production approaches.
Monitoring/evaluation	Self-mobilisation	Internal audits / self-monitoring during high rainfall.
Research	Self-mobilisation	Bench marking on new approaches to address identified issues.

Differences between participation of men and women: Yes, little
Higher demand for male workers due to the labour requirement. More male participation are form on field activities relative to the issue. Women participation is thru tree planting activities during special events (e.g. birthday celebration).

Involvement of disadvantaged groups: Yes, moderate
The program created job opportunities for the people in the barangay and also neighboring communities.

Technical support

Training / awareness raising:
Training provided for field staff/agricultural advisor
Training was on-the-job

Advisory service:

Research:
Yes, moderate research. Topics covered include technology
Mostly on station research.
Collection of sediment/ silt from sediment traps and catch basins. Attempt to conduct research by third party, however cost constraints are foremost. In-house are conducted thru practical approaches and benchmarking.

External material support / subsidies

Contribution per area (state/private sector): No.

Labour: Paid in cash. Regular payroll, emergency labor, casual and permanent laborers

Inputs:

Credit: Credit was not available

Support to local institutions: No

Monitoring and evaluation

Monitored aspects	Methods and indicators
technical	Ad hoc observations by land users
bio-physical	Ad hoc measurements by land users: silts were transported, but did not measure the exact silt/sediments collected from the cascading canals, silts are recycled instead
economic / production	Regular observations by land users

Changes as result of monitoring and evaluation:
There were few changes in the approach.

There were several changes in the technology. The design of the SWC technologies were modified to improve the functionality of the structures.

Impacts of the Approach

Improved sustainable land management: Yes, moderate; Retention of soil fertility since eroded soils are trapped in the catchment canals, embankments and other structures to prevent the further movement of the soil downstream.

Adoption by other land users / projects: Yes, few; Some private companies are starting to adopt the approach. Small-scale farmers nearby the plantation are also encouraged in establishing SWC structures but most of them did not adopt the technology as it lessened the production area and would entail additional cost for them.

Improved livelihoods / human well-being: Yes, moderate; The program of MKADC encourages additional job opportunities for the people in the barangay and neighboring communities especially if other companies and individual farmers adopt the system.

Improved situation of disadvantaged groups: Yes, moderate; It provided additional source of income for laborers to support their families.

Training, advisory service and research:

- Training effectiveness

  Agricultural advisor / trainers: good
  Land users*: good
  SLM specialists: good
- Research contributing to the approach`s effectiveness: Little
  Research is being conducted but there is lack of documentation on the analysis of data.

Land/water use rights:
Help - moderately in the implementation of the approach. The land used for the pineapple production are leased from private owners. If the owner decided not to renew the lease of contract then the company needs to revert back the state of the land before returning to the owner.For this, soil fertility analysis is being practiced.Water rights use is exclusive under National Irrigation Administration (NIA). Need for water are arrange thru fees.

Long-term impact of subsidies:

Concluding statements

Main motivation of land users to implement SLM:

Production

Environmental consciousness, moral, health

Increased profit(ability), improve cost-benefit-ratio

Well-being and livelihoods improvement

Aesthetic

Sustainability of activities:

Yes the land users can sustain the approach activities without support.
The company has the financial capabilities to sustain the program since it is part of their workplan.

Strengths and → how to sustain/improve	Weaknesses and → how to overcome
Physical environment is favorable for pineapple production.	Physical destruction of field planted with trees providing additional environmental depletion by outside parties (eg. charcoal making, firewood, others).
Pineapple produced are exported in Japan, Korea, Middle East and China.	High input and labour requirements.
Financial capabilities of the company to implement and sustain the program.	
Improves livelihood of farmers/ land-users without compromising the productivity of the land since it is ecologically viable.	