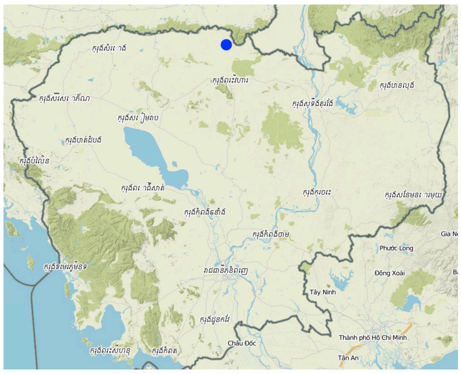
(Cambodia)

DESCRIPTION

(MPWT et al., 2016)

(MoE et al., 2016)

LOCATION



Location: Cambodia

No. of Technology sites analysed: single site

Geo-reference of selected sites
- 104.92638, 14.21679

Spread of the Technology: evenly spread over an area (approx. < 0.1 km2 (10 ha))

In a permanently protected area?:

Date of implementation: 2007; 10-50 years ago

Type of introduction
- [x] through land users' innovation
- [ ] as part of a traditional system (> 50 years)
- [ ] during experiments/ research
- [ ] through projects/ external interventions

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CLASSIFICATION OF THE TECHNOLOGY

Main purpose

- [x] improve production
- [ ] reduce, prevent, restore land degradation
- [x] conserve ecosystem
- [ ] protect a watershed/ downstream areas – in combination with other Technologies
- [ ] preserve/ improve biodiversity
- [ ] reduce risk of disasters
- [ ] adapt to climate change/ extremes and its impacts
- [ ] mitigate climate change and its impacts
- [x] create beneficial economic impact
- [ ] create beneficial social impact

Land use

Land use mixed within the same land unit: Ja - Agroforestry

Cropland

- Perennial (non-woody) cropping: pineapple
- Tree and shrub cropping: citrus, mango, mangosteen, guava

Number of growing seasons per year: 1

Water supply

- [ ] rainfed
- [x] mixed rainfed-irrigated
- [ ] full irrigation

Purpose related to land degradation

- [x] prevent land degradation
- [x] reduce land degradation
- [ ] restore/ rehabilitate severely degraded land
- [ ] adapt to land degradation
- [ ] not applicable

Degradation addressed

soil erosion by water - Wt: loss of topsoil/ surface erosion

chemical soil deterioration - Cn: fertility decline and reduced organic matter content (not caused by erosion)

water degradation - Ha: aridification

SLM group

- agroforestry
- improved ground/ vegetation cover

SLM measures

agronomic measures - A1: Vegetation/ soil cover, A2: Organic matter/ soil fertility

TECHNICAL DRAWING

Technical specifications

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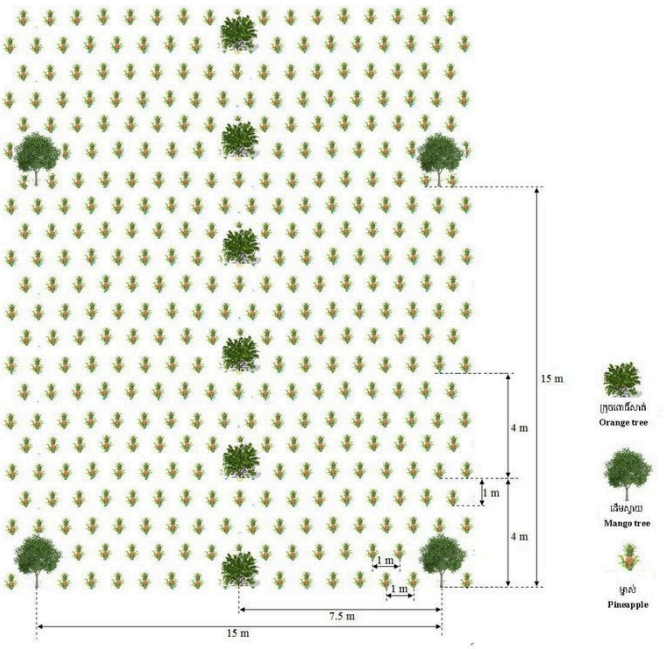

Author:

ESTABLISHMENT AND MAINTENANCE: ACTIVITIES, INPUTS AND COSTS

Calculation of inputs and costs

- Costs are calculated: per Technology area (size and area unit: X =)
- Currency used for cost calculation:
- Exchange rate (to USD): 1 USD = 4000.0
- Average wage cost of hired labour per day:

Most important factors affecting the costs

Establishment activities

1. - (Timing/ frequency:)
2. - (Timing/ frequency:)
3. (Timing/ frequency:)
4. (Timing/ frequency:)
5. (Timing/ frequency:)
6. (Timing/ frequency:)

Establishment inputs and costs (per X =)

Specify input	Unit	Quantity	Costs per Unit ( )	Total costs per input ( )	% of costs borne by land users
Labour					
	/	7.5	20000.0	150000.0	100.0
	/	3.0	20000.0	60000.0	100.0
Equipment					
		1.0	8000.0	8000.0	100.0
		1.0	15000.0	15000.0	100.0
		2.0	13000.0	26000.0	100.0
Plant material					
		15.0	4000.0	60000.0	100.0
		10.0	15000.0	150000.0	100.0
Total costs for establishment of the Technology				**469'000.0**	
Total costs for establishment of the Technology in USD				*117.25*	

Maintenance activities

1. (Timing/ frequency:)
2. (Timing/ frequency:)
3. (Timing/ frequency:)
4. (Timing/ frequency:)

Maintenance inputs and costs (per X =)

Specify input	Unit	Quantity	Costs per Unit ( )	Total costs per input ( )	% of costs borne by land users
Labour					
	/	52.0	20000.0	1040000.0	100.0

	/	20.0	20000.0	400000.0	100.0
	/	1.0	20000.0	20000.0	100.0
Equipment					
		1.0	2000000.0	2000000.0	100.0
		1.0	300000.0	300000.0	100.0
		1.0	4700000.0	4700000.0	100.0
Fertilizers and biocides					
		100.0	200.0	20000.0	100.0
Construction material					
		30.0	3500.0	105000.0	100.0
		260.0	3500.0	910000.0	100.0
Total costs for maintenance of the Technology				**9'495'000.0**	
Total costs for maintenance of the Technology in USD				*2'373.75*	

NATURAL ENVIRONMENT

Average annual rainfall

- [ ] < 250 mm
- [ ] 251-500 mm
- [ ] 501-750 mm
- [ ] 751-1,000 mm
- [x] 1,001-1,500 mm
- [ ] 1,501-2,000 mm
- [ ] 2,001-3,000 mm
- [ ] 3,001-4,000 mm
- [ ] > 4,000 mm

Agro-climatic zone

- [ ] humid
- [x] sub-humid
- [ ] semi-arid
- [ ] arid

Specifications on climate

Average annual rainfall in mm: 1429.3

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Name of the meteorological station:
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Slope

- [x] flat (0-2%)
- [ ] gentle (3-5%)
- [ ] moderate (6-10%)
- [ ] rolling (11-15%)
- [ ] hilly (16-30%)
- [ ] steep (31-60%)
- [ ] very steep (>60%)

Landforms

- [x] plateau/plains
- [ ] ridges
- [ ] mountain slopes
- [ ] hill slopes
- [ ] footslopes
- [ ] valley floors

Altitude

- [x] 0-100 m a.s.l.
- [ ] 101-500 m a.s.l.
- [ ] 501-1,000 m a.s.l.
- [ ] 1,001-1,500 m a.s.l.
- [ ] 1,501-2,000 m a.s.l.
- [ ] 2,001-2,500 m a.s.l.
- [ ] 2,501-3,000 m a.s.l.
- [ ] 3,001-4,000 m a.s.l.
- [ ] > 4,000 m a.s.l.

Technology is applied in

- [ ] convex situations
- [ ] concave situations
- [x] not relevant

Soil depth

- [ ] very shallow (0-20 cm)
- [ ] shallow (21-50 cm)
- [ ] moderately deep (51-80 cm)
- [ ] deep (81-120 cm)
- [x] very deep (> 120 cm)

Soil texture (topsoil)

- [ ] coarse/ light (sandy)
- [ ] medium (loamy, silty)
- [x] fine/ heavy (clay)

Soil texture (> 20 cm below surface)

- [ ] coarse/ light (sandy)
- [ ] medium (loamy, silty)
- [x] fine/ heavy (clay)

Topsoil organic matter content

- [x] high (>3%)
- [ ] medium (1-3%)
- [ ] low (<1%)

Groundwater table

- [ ] on surface
- [ ] < 5 m
- [x] 5-50 m
- [ ] > 50 m

Availability of surface water

- [ ] excess
- [x] good
- [ ] medium
- [ ] poor/ none

Water quality (untreated)

- [ ] good drinking water
- [ ] poor drinking water (treatment required)
- [x] for agricultural use only (irrigation)
- [ ] unusable

Water quality refers to:

Is salinity a problem?

- [ ] Ja
- [x] Nee

Occurrence of flooding

- [x] Ja
- [ ] Nee

Species diversity

- [ ] high
- [ ] medium
- [ ] low

Habitat diversity

- [ ] high
- [ ] medium
- [ ] low

CHARACTERISTICS OF LAND USERS APPLYING THE TECHNOLOGY

Market orientation

- [ ] subsistence (self-supply)
- [ ] mixed (subsistence/ commercial)
- [x] commercial/ market

Off-farm income

- [x] less than 10% of all income
- [ ] 10-50% of all income
- [ ] > 50% of all income

Relative level of wealth

- [ ] very poor
- [ ] poor
- [x] average
- [ ] rich
- [ ] very rich

Level of mechanization

- [x] manual work
- [ ] animal traction
- [x] mechanized/ motorized

Sedentary or nomadic

- [x] Sedentary
- [ ] Semi-nomadic
- [ ] Nomadic

Individuals or groups

- [x] individual/ household
- [ ] groups/ community
- [ ] cooperative
- [ ] employee (company, government)

Gender

- [ ] women
- [x] men

Age

- [ ] children
- [ ] youth
- [ ] middle-aged
- [x] elderly

Area used per household

- [ ] < 0.5 ha
- [ ] 0.5-1 ha
- [ ] 1-2 ha
- [x] 2-5 ha
- [ ] 5-15 ha
- [ ] 15-50 ha
- [ ] 50-100 ha
- [ ] 100-500 ha
- [ ] 500-1,000 ha
- [ ] 1,000-10,000 ha
- [ ] > 10,000 ha

Scale

- [x] small-scale
- [ ] medium-scale
- [ ] large-scale

Land ownership

- [ ] state
- [ ] company
- [ ] communal/ village
- [ ] group
- [ ] individual, not titled
- [x] individual, titled

Land use rights

- [ ] open access (unorganized)
- [ ] communal (organized)
- [ ] leased
- [x] individual
- [x]

Water use rights

- [x] open access (unorganized)
- [ ] communal (organized)
- [ ] leased
- [ ] individual

Access to services and infrastructure

health	poor	good
education	poor	good
technical assistance	poor	good
employment (e.g. off-farm)	poor	good
markets	poor	good
energy	poor	good
roads and transport	poor	good
drinking water and sanitation	poor	good
financial services	poor	good

IMPACTS

Socio-economic impacts

Crop production

decreased — increased

crop quality

decreased — increased

risk of production failure

increased — decreased

product diversity

decreased — increased

land management

hindered — simplified

expenses on agricultural inputs

increased — decreased

farm income

decreased — increased

workload

increased — decreased

Socio-cultural impacts

health situation

worsened — improved

SLM/ land degradation knowledge

reduced — improved

Ecological impacts

soil moisture

decreased — increased

soil cover

reduced — improved

soil crusting/ sealing

increased — reduced

soil compaction

increased ✓ reduced

nutrient cycling/ recharge

decreased ✓ increased

soil organic matter/ below ground C

decreased ✓ increased

plant diversity

decreased ✓ increased

invasive alien species

increased ✓ reduced

beneficial species (predators, earthworms, pollinators)

decreased ✓ increased

pest/ disease control

decreased ✓ increased

drought impacts

increased ✓ decreased

( )

micro-climate

worsened ✓ improved

Off-site impacts

COST-BENEFIT ANALYSIS

Benefits compared with establishment costs

Short-term returns: very negative ✓ very positive

Long-term returns: very negative ✓ very positive

Benefits compared with maintenance costs

Short-term returns: very negative ✓ very positive

Long-term returns: very negative ✓ very positive

CLIMATE CHANGE

Gradual climate change

annual temperature increase	not well at all	very well	Answer: not known
seasonal temperature increase	not well at all ✓	very well	Season: wet/ rainy season
seasonal temperature increase	not well at all ✓	very well	Season: dry season
annual rainfall decrease	not well at all	very well	Answer: not known
seasonal rainfall decrease	not well at all ✓	very well	Season: wet/ rainy season

not well at all very well

Climate-related extremes (disasters)

local thunderstorm	not well at all	very well	Answer: not known
heatwave	not well at all ✓	very well	
cold wave	not well at all ✓	very well	
extreme winter conditions	not well at all ✓	very well	
general (river) flood	not well at all ✓	very well	
flash flood	not well at all ✓	very well	
epidemic diseases	not well at all ✓	very well	

Other climate-related consequences

extended growing period	not well at all ✓	very well
reduced growing period	not well at all ✓	very well

ADOPTION AND ADAPTATION

Percentage of land users in the area who have adopted the Technology

- ✓ single cases/ experimental
- 1-10%
- 11-50%
- > 50%

Of all those who have adopted the Technology, how many have done so without receiving material incentives?

- 0-10%
- 11-50%
- 51-90%
- ✓ 91-100%

Has the Technology been modified recently to adapt to changing conditions?

- [ ] Ja
- [x] Nee

To which changing conditions?

- [ ] climatic change/ extremes
- [ ] changing markets
- [ ] labour availability (e.g. due to migration)

CONCLUSIONS AND LESSONS LEARNT

Strengths: land user's view

-
-
-
-

Weaknesses/ disadvantages/ risks: land user's viewhow to overcome

-

Weaknesses/ disadvantages/ risks: compiler's or other key resource person's viewhow to overcome

-

Strengths: compiler's or other key resource person's view

-
-
- ( )
-
-

REFERENCES

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Resource persons
- land user
-
Phol Prom -
Cheng Kuychoan -
SOEM DA -

Full description in the WOCAT database
https://qcat.wocat.net/af/wocat/technologies/view/technologies_2843/

Linked SLM data
n.a.

Documentation was faciliated by

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Project
- Scaling-up SLM practices by smallholder farmers (IFAD)

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