



## WINDBREAKS

### Philippines

#### Planting of herbaceous plants or trees along property boundaries to serve as windbreaks and as sources of fodder and fuel

The main characteristic of the technology is the planting of herbaceous crops, grasses or trees along property boundaries. The grasses and herbs are occasionally cut and served as fodder or fuel. The trees are allowed to grow up to maturity which will then be felled for timber (construction) or for boat making. With time, especially when trees are used for boundary planting, individual fields look like boxes from the air. The choice of plants between two adjacent farms is agreed upon by the two landowner.

The boundary planting serves as windbreak to protect agricultural crops from wind damage. Other uses are fodder and fuelwood. The planting especially when done along the contours also trapped eroded soil from the upper portions of the field.

Planting is done once. The herbs and grasses are regularly cut to serve as animal feed. Trees are allowed to grow to maturity. Dead branches are gathered to be used as fuel. The area where the technology is applied is frequently visited by typhoons. The climate is maritime and even at times when there are no typhoons, wind speed is still strong enough to cause damage to crops. Susceptibility to wind damage is further aggravated by the nature of the terrain which is mostly hilly.

**left:** Tall grasses and trees along lot boundaries. (Photo: Jose D. Rondal)

**right:** Windbreaks established on lot boundaries to protect crops from wind damage and erosion. (Photo: Jose D. Rondal)

Location: Batanes, Philippines

Region: Batanes

Technology area: 10 - 100 km<sup>2</sup>

Origin: Developed through land user's initiative,

Land use type:

Mixed: Agro-silvopastoralism

Climate: subhumid, tropics

WOCAT database reference:

T\_PHI013en

Related approach:

Compiled by: Not registered

Date: 2006-01-19

Contact person: JOSE RONDAL, Bureau of Soils and Water Management  
Elliptical Road, Diliman, Quezon City  
1100, PHILIPPINES

## Classification

### Land use problems:

- Crop damage due to frequent typhoons and strong winds. (expert's point of view)

Low crop yield due to wind damage, poor crop quality and lack of market. (land user's point of view)

#### Land use



Agro-silvopastoralism  
rainfed

#### Climate



subhumid

#### Degradation



Soil erosion by wind: loss of  
topsoil

#### Conservation measure

#### Stage of intervention

<input type="checkbox"/>	Prevention
<input type="checkbox"/>	Mitigation / Reduction
<input type="checkbox"/>	Rehabilitation

#### Origin

<input checked="" type="checkbox"/>	Land users initiative
<input type="checkbox"/>	Experiments / Research
<input type="checkbox"/>	Externally introduced

#### Level of technical knowledge

<input type="checkbox"/>	Agricultural advisor
<input type="checkbox"/>	Land user

#### Main causes of land degradation:

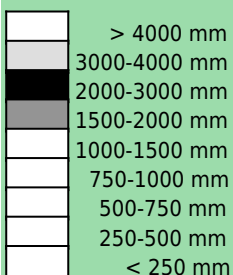
**Main technical functions:**  
- reduction in wind speed

**Secondary technical functions:**  
- improvement of ground cover

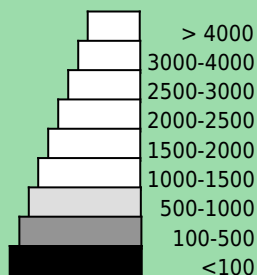
## Environment

### Natural Environment

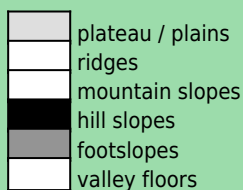
#### Average annual rainfall (mm)



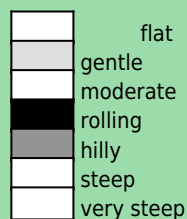
#### Altitude (m a.s.l.)



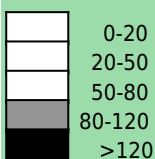
#### Landform



#### Slope (%)



#### Soil depth (cm)



**Growing season(s):** 180 days(May - Dec)

**Soil texture:** medium (loam)

**Soil fertility:** medium

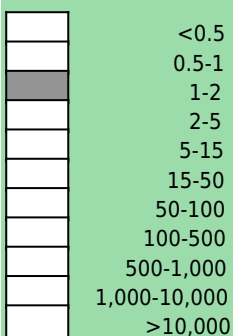
**Topsoil organic matter:** medium (1-3%)

**Soil drainage/infiltration:** good

**Soil water storage capacity:** medium

### Human Environment

#### Mixed per household (ha)



**Population density:** 10-50 persons/km2

**Relative level of wealth:** average, which represents 5% of the land users; 8% of the total area is owned by average land users

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

**Access to service and infrastructure:**

**Market orientation:** subsistence (self-supply)

## Implementation activities, inputs and costs

### Establishment activities

- Seedling/planting

#### Establishment inputs and costs per ha

Inputs	Costs (US\$)	% met by land user
Labour	40.00	100%
Equipment		
- tools	5.00	100%
Agricultural		
- seedlings	6.00	100%
- stem cuttings	10.00	100%
<b>TOTAL</b>	<b>61.00</b>	<b>100.00%</b>

### Maintenance/recurrent activities

- Removal of dead branches (trees)  
- Cutting (grass)

#### Maintenance/recurrent inputs and costs per ha per year

Inputs	Costs (US\$)	% met by land user
Labour	8.00	100%
Equipment		
- tools	5.00	100%
<b>TOTAL</b>	<b>13.00</b>	<b>100.00%</b>

**Remarks:**

Perimeter length (m) of area to be treated/planted.

**Assessment**

Impacts of the Technology	
<b>Production and socio-economic benefits</b> ++ <input type="checkbox"/> increased crop yield ++ <input type="checkbox"/> increased fodder quality ++ <input type="checkbox"/> increased wood production ++ <input type="checkbox"/> increased farm income	<b>Production and socio-economic disadvantages</b>
<b>Socio-cultural benefits</b> ++ <input type="checkbox"/> improved conservation / erosion knowledge	<b>Socio-cultural disadvantages</b> + <input type="checkbox"/> <input type="checkbox"/> socio cultural conflicts
<b>Ecological benefits</b> +++ <input type="checkbox"/> reduced wind velocity ++ <input type="checkbox"/> improved soil cover ++ <input type="checkbox"/> increase in soil fertility ++ <input type="checkbox"/> biodiversity enhancement + <input type="checkbox"/> <input type="checkbox"/> reduced soil loss	<b>Ecological disadvantages</b> + <input type="checkbox"/> <input type="checkbox"/> shading effect of trees
<b>Off-site benefits</b> + <input type="checkbox"/> <input type="checkbox"/> reduced downstream siltation + <input type="checkbox"/> <input type="checkbox"/> reduced wind transported sediments	<b>Off-site disadvantages</b>
<b>Contribution to human well-being / livelihoods</b>	

Benefits /costs according to land user			
	<b>Benefits compared with costs</b>	<b>short-term:</b>	<b>long-term:</b>
	<b>Establishment</b>	slightly positive	very positive
	<b>Maintenance / recurrent</b>	positive	very positive

**Acceptance / adoption:**

100% of land user families (200 families; 80% of area) have implemented the technology voluntary. estimates  
 There is little trend towards (growing) spontaneous adoption of the technology. Almost all the agricultural areas have adopted the technology

**Concluding statements**

Strengths and → how to sustain/improve	Weaknesses and → how to overcome
Easy to establish and maintain → Encourage adoption for other land users	Loss of space for crops → Use narrower strips for windbreaks
Provides other benefits such as fodder and fuelwood. → Frequent cutting in the case of reeds/grasses to stimulate new growth.	Possible sanctuary for pests → Practice integrated pest management
Provides residue for organic matter build-up → Frequent cutting and spreading of vegetative parts	Shading effect in the case of tree windbreaks → Use of shade tolerant crops. Trees should be pruned regularly.
Trap for eroded soil → Close-spacing of trees and grass	Competition with crops for space → Use narrower strips for hedgerows
Good for eco-tourism → Aggressive promotion and marketing	Shading effect of trees → Planting of "taro" in shaded area. Frequent cutting of branches
Low maintenance cost → Frequent removal of unnecessary foliage	
Protect crops from wind damage → Maintenance of canopy and foliage	
Improves soil fertility → Use vegetative parts as mulch.	



Copyright (c) WOCAT (2015)