Pressing of Cogon Grass (Imperata cylindrica)

Philippines

An indigenous technology of enhancing wildling growth by pressing of cogon grass.

Cogon pressing is a simple low-cost technique of deterring the rapid growth of grasses that serve as competitors of wildlings for nutrient, water and light in the natural forest. The technology is described as the pressing down of cogon grass using a wooden plank tied in a rope, manually-operated by foot of the land user. Instead of cutting or burning the cogon, this technology is being used by the land user it was proven to be more effective in controlling cogon grass to grow fast. Wildlings are seedlings derived from seeds scattered by birds, insects, animals and wind without human intervention. By pressing the cogon, the wildlings can grow faster in the natural forest.
Cogon grass is a weed which grows quickly. It is difficult to control due to its small seeds carried by wind and rhizomes that are very resilient even to low soil fertility and harsh environment. In regenerating wildlings in the natural forest, these invasive weeds are the main competitor for nutrients water and space. The land users' common practice is to cut or burn the cogon grass in order to plant trees. However, this cannot be done in a natural forest because it destroys the flora and fauna. Thus, the indigenous technology of pressing the cogon grass was adapted to nurture wildlings of indigenous tree species. It allows the wildlings to grow naturally by reducing the competition from weedy species. It also provides an alternative technique of controlling weeds/grasses without burning. Burning grasses release greenhouse gases to the atmosphere.
Prior to the pressing of cogon grass, the selection of wildlings for natural regeneration is done by marking it with a peg. The wildling must be a robust/healthy indigenous tree species. Ring weeding is done at least one half meter radius around the wildling. Then, the surrounding cogon grass are suppressed through a method called " pressing" or "lodging" using a wooden plank approximately 1" x 6-12" x 3-4'. A rope is knotted on both ends of the plank and looped over the shoulder of the land user for support and ease the pressing operation. The length of the rope is adjusted according to the height of the land user. The land user holds the rope on both side to lift the plank, and then, stepping on it to press the cogon grass repeatedly. The activity is done before and after the onset of rainy season. It is best to practice the technology when the stems od the cogon grass are still soft. The pressed cogon will last up to six months before it will produce new shoot and regenerate again.
The area is part of the forest reserve in Danao, Bohol primarily intended for nature conservation and protection. It is about 100-500 m.a.s.l with moderately rolling to hilly slopes. It is under humid tropics climate with an average annual rainfall of 1500-2000 mm per year. The soil is loam, shallow depth, low fertility, with good drainage and medium water storage capacity. The area has high biodiversity as indicated by the presence of different indigenous trees and plants species, and wild birds. The land users who apply the technology are small holder farmers. They are members of a local cooperative. The population density is about 10-50 persons per sq. km. Since extraction of resources from the forest is prohibited, off-farm income is very important to the land users. Access to basic services and infrastructures are low.

left: Mr. Alberto Padilla, caretaker of the ANR site pressing the cogon. (Photo: Engr. Djolly Ma. P. Dinamling)
right: Pressed cogon around the wildlings (Photo: Engr. Djolly Ma. P. Dinamling)

Location: Brgy. San Miguel
Region: Danao, Bohol
Technology area: 0.2 km^2
Conservation measure: vegetative
Stage of intervention: prevention of land degradation
Origin: Developed through land user`s initiative, traditional (>50 years ago)
Land use type:
Forests / woodlands: Natural
Climate: humid, tropics
WOCAT database reference: T_PHI055en
Related approach: Assisted Natural Regeneration (A_PHI010en)
Compiled by: Philippine Overview of Conservation Approaches and Technologies, Bureau of Soils and Water Management
Date: 2015-06-11
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Classification

Land use problems:

- Competition with speedy species and recurring disturbances such as fire (expert's point of view)

Land use	Climate	Degradation	Conservation measure
Natural Deforested land	humid	Biological degradation: loss of habitats	Vegetative: Others (Suppressing of cogon grasses)

Stage of intervention

- Prevention
- Mitigation / Reduction
- Rehabilitation

Origin

- Land users initiative: traditional (>50 years ago)
- Experiments / Research
- Externally introduced: recent (<10 years ago)

Level of technical knowledge

- Agricultural advisor
- Land user

Main causes of land degradation:
Direct causes - Human induced: deforestation / removal of natural vegetation (incl. forest fires), other human induced causes, fire

Main technical functions:
- control of fires

Secondary technical functions:

Environment

Natural Environment

Average annual rainfall (mm)

- > 4000 mm
- 3000-4000 mm
- 2000-3000 mm
- 1500-2000 mm
- 1000-1500 mm
- 750-1000 mm
- 500-750 mm
- 250-500 mm
- < 250 mm

Altitude (m a.s.l.)

- > 4000
- 3000-4000
- 2500-3000
- 2000-2500
- 1500-2000
- 1000-1500
- 500-1000
- 100-500
- <100

Landform

- plateau / plains
- ridges
- mountain slopes
- hill slopes
- footslopes
- valley floors

Slope (%)

- flat
- gentle
- moderate
- rolling
- hilly
- steep
- very steep

Soil depth (cm)

- 0-20
- 20-50
- 50-80
- 80-120
- >120

Soil texture: medium (loam)
Soil fertility: medium
Topsoil organic matter: medium (1-3%)

Soil water storage capacity: medium
Availability of surface water: medium
Biodiversity: high

Sensitive to climatic extremes: temperature increase

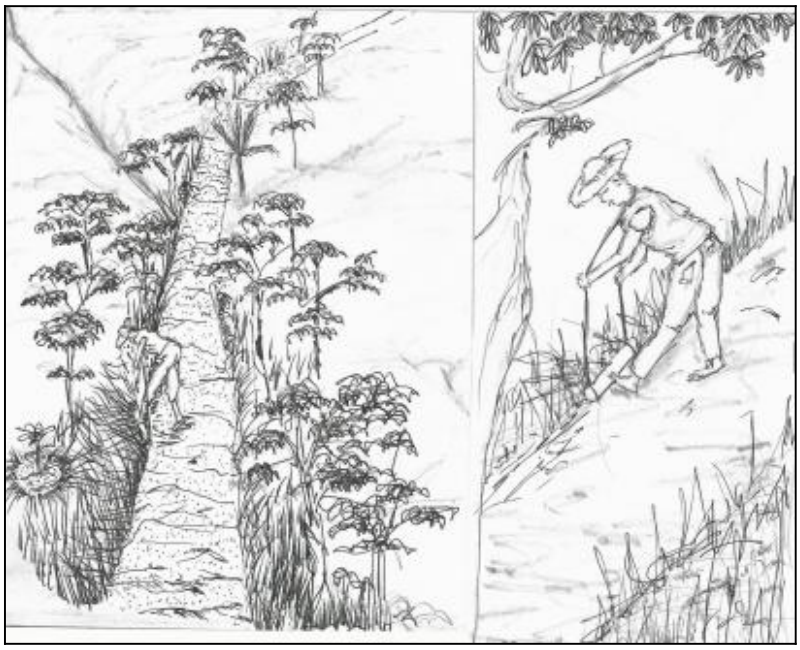
Human Environment

Forests / woodlands per household (ha)

- <0.5
- 0.5-1
- 1-2
- 2-5
- 5-15
- 15-50
- 50-100
- 100-500
- 500-1,000
- 1,000-10,000
- >10,000

Land user: employee (company, government), medium scale land users, common / average land users, men and women
Population density: 10-50 persons/km2
Annual population growth: 1% - 2%
Land ownership: state
Land use rights: open access (unorganised)

Importance of off-farm income: > 50% of all income: Since extraction of resources from the forest is prohibited, off- farm income is very important to the land users.
Access to service and infrastructure: low: health, education, market, energy, roads & transport; moderate: technical assistance, employment (eg off-farm)
Market orientation: Forest conservation
Purpose of forest / woodland use: nature conservation / protection, protection against natural hazards, increase biodiversity



Technical drawing

Pressing grass with the use of wooden board (Mr. Patricio A. Yambot)

Implementation activities, inputs and costs

Establishment activities

- Identification of wildlings (2 feet high)
- ring weeding
- pressing of cogon away from wildlings
- Application of fertilizer

Establishment inputs and costs per ha

Inputs	Costs (US$)	% met by land user
Labour	20.00	100%
Construction material		
- wood	2.22	100%
- rope	1.78	100%
TOTAL	**24.00**	**100.00%**

Maintenance/recurrent activities

- Pressing of Cogon

Maintenance/recurrent inputs and costs per ha per year

Inputs	Costs (US$)	% met by land user
Labour	4.44	100%
TOTAL	**4.44**	**100.00%**

Remarks:

Assessment

Impacts of the Technology

Production and socio-economic benefits	Production and socio-economic disadvantages
+++ reduced risk of production failure	++ increased labour constraints

Socio-cultural benefits	Socio-cultural disadvantages
+++ community institution strengthening	
++ improved conservation / erosion knowledge	

Ecological benefits	Ecological disadvantages
+++ reduced hazard towards adverse events	+++ increased fire risk
+++ improved soil cover	
+++ increased biomass above ground C	
+++ increased nutrient cycling recharge	
+++ increased soil organic matter / below ground C	
+++ reduced emission of carbon and greenhouse gases	
+++ increased plant diversity	
+++ reduced invasive alien species	
+++ increased beneficial species	
+++ increased / maintained habitat diversity	
+++ increased regeneration of indigenous species	
+++ climate change adaptation	
++ increased soil moisture	
++ reduced evaporation	
++ reduced surface runoff	

Off-site benefits	Off-site disadvantages
++ reduced damage on neighbours fields	
++ reduced damage on public / private infrastructure	

Contribution to human well-being / livelihoods

\+ Job generation

Benefits /costs according to land user

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

Acceptance / adoption:

100% of land user families have implemented the technology with external material support. The Department of Environment and Natural Resources (DENR) provided financial and technical support for the implementation of the technology. The Local Government Unit (LGU) of Bohol provided additional labor force for the maintenance.

Concluding statements

Strengths and → how to sustain/improve	Weaknesses and → how to overcome
Low cost technology → Re-use of materials and proper safe keeping	Labor intensive → Thorough "pressing" of cogon grass to deter growth
Limits height of fire → Frequent regular conduct of "pressing" activity	Labor may cause some injury to workers → Extra care in conducting pressing activity particularly in steep areas
	Increased dry matter susceptible to forest fire → Maintenance of fire lines