Bamboo development for rehabilitation of degraded land

Executive Summary

Forest degradation including bamboo tree in Afengile micro watershed, was a serious problem that caused the community to travel far distance more than 6:00 hours to collect bamboo for construction and make home furniture and SLMP was then; introduced since 2008 to overcome the problem and apply different types of biophysical soil and water conservation measures of land rehabilitation practices. Thanks to its long root systems, bamboos are able to grow in “poor soils” and on steep slopes, giving them great potential for eco system restoration of degraded lands. The planted materials stabilized the soil embankment and covered the bare ground. Due to this coverage, soil erosion had reduced dramatically. The matured bamboo forest area also served as habitat for wild animals and maintained the ecosystem. The natural and planted Bamboo clamps/stand management should be given attention to the sustainability of the practice, should be studied for further documentation, and has to be shared for scale up.

Context and Challenge

Afengile micro watershed is located in Benishangul Gumuze region Asosssa zone Oura woreda Hoha Major Watershed with Latitude of 10° 8'12.12"N and Longitude of 34°35'4.40"E and at an average altitude of 1509m above sea level. The woreda is dominantly fall in wet kola agro ecological zone with mean annual temperature of 26°c (Annual high temperature 31.63°C Annual low temperature 20.59°C) and mean annual rainfall of 980-1200 mm with average annual precipitation of 99.16mm (3.9in). According to FAO soil classification, the dominant Soil type in that particular area is Humic Nitosols.

Land degradation caused by deforestation and mismanaged land use was identified to be the prior problem of the micro watershed. Forest degradation including bamboo tree in Rubameyo micro watershed, was a serious problem that caused the community to travel far distance more than 6:00 hours to collect bamboo for construction and make home furniture and SLMP was then; introduced in 2008 to overcome the problem

and apply different types of biophysical soil and water conservation measures of land rehabilitation practices. Bamboo development on degraded land was the one most popular and effective type of land restoration practice implemented on more than 165 hectare of communal land and homesteads area by the community.

Bamboo has many unique biological characteristics, which make it such a valuable means for land restoration projects. Its root system – an extensive network of fibrous rhizomes and roots - can control floods and landslides and prevent erosion by binding the soil particles firmly together. Its extensive root system makes it very resilient, capable of surviving even when the ground above is destroyed, such as by fire. Thanks to its long root systems, bamboos are able to grow in “poor soils” and on steep slopes, giving them great potential for ecosystem -restoration of degraded lands.

Bamboo is also one of the fastest-growing plants in the world, with reported growth rates of up to 1 meter per day for some species. It is, therefore, able to revegetate and restore productivity to even the most damaged of landscapes within a short period. Many studies have confirmed the effective role of bamboo in soil conservation and in the rehabilitation of degraded lands. According to the State Minister for Agriculture in Ethiopia, “bamboo is considered the most important, fast-growing, strategic intervention for afforestation and reforestation in the mountainous and degraded areas in the country.” Since it is a plant with high nutritional value that, young bamboo shoots can be cooked and used as a vegetable in the local communities, highly preferred by cattle and some wild animals and the shortage of seed challenged the development of the plant as well as to reach its maturity stage at proper time.

Action Steps and Solution

The community were faced a challenge to get appropriate planting materials that can survive in highly degraded and acidic soil with very shallow soil depth Bamboo plantation is introduce in the watershed to rehabilitate the degraded communal land and gradually expanded to homesteads and individuals farm land. It was acknowledged with its tolerance to termites, poor soil nutrients and fast growing and biologically rehabilitate the physical soil and water conservation measures

implemented. This practice was implemented in wider agro ecological zone the region and in all slope classes even with shallow soil depth.

The screening process

Table 1: screening the impact of Bamboo development for rehabilitation of degraded land practice in Oura woreda

Technology /practice	Location	Criteria	Weight (WT)	Rate & score based on the informants response		Total weight
				%	Score (SC)	
Bamboo development for rehabilitation of degraded land	Amba-2 kebele, Afengile micro watershed in the Hoha major watershed (Oura woreda)	Acceptance	0.22	90	3	0.66
		Effectiveness	0.22	90	3	0.66
		Efficiency	0.14	80	3	0.42
		Relevance	0.14	95	3	0.42
		Sustainability	0.14	70	2	0.28
		Scalability	0.14	85	3	0.42
Total			1		18	2.86

Results

In the micro watershed, more than 165 ha of degraded communal land has treated with physical soil and water conservation measures like Fanayajoos and trenches. Finally, the physical measures supported by biological measures like grass planting and bamboo tree planting on terrace. The planted materials stabilized the soil embankment and covered the bare ground. Due to this coverage, soil erosion had reduced dramatically. The matured bamboo forest area also served as habitat for wild animals and maintained the ecosystem. This woody plant (bamboo) has been use for communities living in the watershed as a raw material for traditionally building and it has used for making numerous household utensils, basketry, and handicrafts, and the foliage has used as animal fodder source.

Lessons Learned

Highly degraded land can be rehabilitate with a very short period using bamboo plantation with support of some physical soil and water conservation measures. Soil erosion reduced due to the fact that, the canopies of bamboo clamps covers wider radius area to reduce rain drop hit the bare ground and its extensive root system network of fibrous rhizomes and roots can control floods and landslides and prevent erosion by binding the soil particles firmly together.

Recommendations

- ✓ Seedling production through alternatives from of Vegetative Propagation measure to be introduce and practiced in the central nurseries.
- ✓ The natural and planted Bamboo clamps/stand management should given attention to the sustainability of the practice
- ✓ The practice should be studied for further documentation and has to be shared for scale up
- ✓ Further scientific study on the cost benefit analysis of reducing land degradation and soil erosion due to runoff.
- ✓ Further study to be conducted on the impact of the technology in reducing run off and soil erosion,

References

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