Experiences from Bhutan

Chencho Norbu,
Department of Agriculture/UNCCD
Focal Person

Country : Overview

- Forest cover of 70.46 % of the total area
- Total cultivated area is around 2.93 %
- One of the 10 Hotspots for biodiversity
- Water availability per capita, one of the highest,
- Rice consumption, one the highest in Asia (172kg/year)
- Development Focus on GNH instead of GDP..

Dry land Farming

Land Degradations

Changing land scape

Agro-Ecological Zones.

Agro-Ecological Zones	**Altitude (masl)**	**Rainfall (mm)**	**Temperature (mean C)**
1.Cool Temperate	2500 - 3500	650-850	9.9
2.Warm Temperate	1800-2500	650-850	12.5
3.DrySub-Tropical	1200-1800	850-1200	17.2
4.Humid Sub-tropical	600-1200	1200-2500	19.5
5.Wet Sub-tropical	150-600	2500-5500	23.6

Soil/Land Degradation

- Very low available P and K in cultivated soils,
- Imbalance between exchangeable bases,
- Soil loss through surface erosions ranges from 3.34 to 24.61 t/ha.
- Annual Increase in sediment loads of local stream prominent,
- Gullies, ravines, landslips and land slides occurs frequently in a season

Soil Properties from 5 years

Year	pH	P (mg/k)	C (%)	K (mg/kg)	CEC (me/100g)	BS (%)
2002	5.37	2.20	2.14	22.21	11.85	66.84
2003	5.58	3.00	2.43	31.48	13.37	53.66
2004	5.56	1.44	2.44	27.37	10.98	56.23
2005	5.72	1.73	1.77	33.21	8.47	74.38
2006	5.52	1.86	2.39	39.29	10.47	59.81
mean	5.55	2.04	2.23	30.71	11.03	62.18

Overview of Soil erosion rates for 2009 for 5 sites and 4 practices.

Site	**Plot 1 (t/ha)**	**Plot 2 (t/ha)**	**Plot 3 (t/ha)**	**Plot 4 (t/ha)**
Logchina	111.92	20.25	8.67	12.78
Nangkor	1.75	2.6	1.53	2.4
Yangneer	4.38	6.25	4.05	3.83
Lumang	4.31	2.13	1.81	1.49
Goshing	0.68	0.88	0.67	0.88
mean	**24.61**	**6.42**	**3.34**	**4.28**

Mainstreaming SLM

- National Land Management Campaign
- Preparation of SLM Project
- Implementation of SLM Project
- Proposals from districts for SLM activities
- Packaging and Sharing of Soil/land Management information

Local Soil management to store Soil Carbon

- Farmyard Manure, Main source of Plant nutrients
- Promotion of integrated soil and plant nutrition
- SLM technologies to store carbon
- Reducing fallow period/ cropping intensity

Concluding thoughts

- Loss of top soils is a big concern for food security, poverty alleviation and global warming
- Importance of connecting soil information with current global challenges of Sustainable Development
- Outputs of soil scientists must be heard loud and clear to create future for coming generations.
- Building partnership at local, regional and global is one approach.