International Board for Soil Research and Management networks (IBSRAM)

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Introduction

IBSRAM was created in 1983 with a view of promoting soil management research within national agricultural research systems (NARS) in developing countries. Through it network approach, it has forged links with some thirty NARS in Africa, Asia and the South Pacific, and has assisted interactions between developing countries in these areas and institutions in the developed word.

In particular, IBSRAM has initiated programmes on sloping lands in Asia and in South Pacific. It integrates information obtained from within and between sites belonging to these two networks.

The main interest of these networks concerning Erosion under Global Change consists in the valuable data related to the impact of changes in land use upon soil losses in a variety of soil and climate conditions.

The Management of Sloping Lands networks

Table I presents some characters of the projects of the two networks related to sloping lands in Asia and South Pacific (IBSRAM, 1993)

Some results

In most cases soil conservation techniques are highly effective in reducing soil losses (Table 2). However, during years with strong-rainfall events, very erodible soils require mechanical measures such as hillside ditches or terraces (IBSRAM, 1992). Results obtained in Indonesia, Philippines and Thailand clearly showed that the use of fertilizer decreased the soil loss by more than 50%. In most case, however, this reduction in erosion rates is not sufficient to maintain the sustainability of the system.

A comparison between different experimental plots indicate that there are strong differences in erosion rates from site to site. These differences are related to the rainfall, the slope, or the soil cover; but the major soil effect on erosion is through aggregate stability. In Chiang Dao, Thailand, on an Alfisol developed on shales, the soil loss was limited, and a simple mulch formed from crop residues was sufficient to reduce losses to an acceptable level. On Inceptisols developed on volcanic material in Philippines and Ultisols developed on sandstones in Indonesia, contour barriers were essential to ensure that soil loss was kept within acceptable limits, ant the erosion control measure adopted in this instance led to the formation of terraces. On Ultisols developed on granite in Chiang Rai, Thailand, hillside ditches were adopted as the preferred method of erosion control. The fact that three different solutions were used makes the point that soil conservation measures need to be adapted to the site. Soil conservation has a price which will vary according to the erodibility of the site, and if the price is too high agricultural development is precluded.

Conclusion

IBSRAM Networks on sloping lands might be regarded as beyond the scope of Soil Erosion under Global Change since they are primarily soil-conservation oriented and do not seem to be much concerned with soil erosion processes and modelling. However, the data collected on soil erosion should not be overlooked for several reasons:

- Only few data are available in the wet tropics on water erosion.
- The conservation techniques being tested by farmers, at the scale of their own fields, can reflect possible changes in land use in the not too remote future.
- These networks represent one of the first International attempt to coordinate experimentation and data collection, really integrating International Agricultural Research Centers (IARCs), NARs, Institutes of higher education from the developed countries, extension officers andfarmers.

Consequently appropriate links should be forged between the Soil Degradation Task of GCTE and IBSRAM.

References

IBSRAM, 1992. Highlights. IBSRAM, Bangkok, 48 p.

IBSRAM, 1993. Highlights. IBSRAM, Bangkok, 48 p.

Table 1 Progress in the sloping lands network in Asia and South Pacific.(after IBSRAM, 1993)

Country	Number of Sites	State of Project 1993	Treatments
China	2	Second year	Farmer's practice, Alley cropping
Indonesia	3	Fifth year	Farmer's practice, Alley cropping
Papua New Guinea	1	First year	Sweet potato
Vanuatu	1	Second year	Sweet potato
Malaysia	2	Fifth year	Farmer's practice, Rubber + corn + peanut, Rubber + pineapple, Rubber + corn/peanut + pineapple
Philippines	3	Fifth year	Farmer's practice, Alley cropping (low input), Alley cropping (high input), Banana hedgerow (high input)
Thailand	3	Fifth year	Farmer's practice, Alley cropping, Bahia grass strips, Hillside ditches
Vietnam	3	Fourth year	Farmer's practice, Alley cropping (low input), Alley cropping (high input),
Fidji	1	Second year	Ginger/taro, Cassava
Western Samoa	1	Second year	Taro

Table 2 Effect of soil conservation practices on soil loss in the sloping lands network in Asia between 1990 and 1992. (after IBSRAM, 1993).

Site	Slope (%)	Treatment	Soil 1990	Loss 1991	(t ha^{-1})1992
China	30-46	Farmers'pratice	-	57.8	84.0
		Alley cropping	-	40.6	14.9
Indonesia	8-18	Farmers'pratice	27.0	88.0	55.0
		Alley cropping	12.0	11.0	8.0
Malaysia	10-15	Farmer's practice	51.8	9.0	0.7
		Rubber + corn + peanut	38.2	13.5	20.5
		Rubber + pineapple	89.6	1.1	0.8
		Rubber + corn/peanut + pineapple	14.5	2.5	4.5
Philippines	15-25	Farmers'practice	97.0	18.4	56.1
		Alley cropping (low input)	2.0	0.2	ND*
		Alley cropping (high input)	1.0	0.1	ND*
		Banana hedgerow (high input)	2.0	0.1	ND*
Thailand	20-50	Farmer's practice	68.7	224.3	146.5
		Alley cropping	13.8	89.1	41.7
		Bahia grass strips	17.2	64.6	7.1
		Hillside ditches	10.0	15.9	3.5
Vietnam	5-7	Farmer's practice	3.3	2.2	1.0
		Alley cropping (low input)	2.2	0.6	0.5
		Alley cropping (high input)	2.2	0.6	0.5

ND* : not detectabel

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