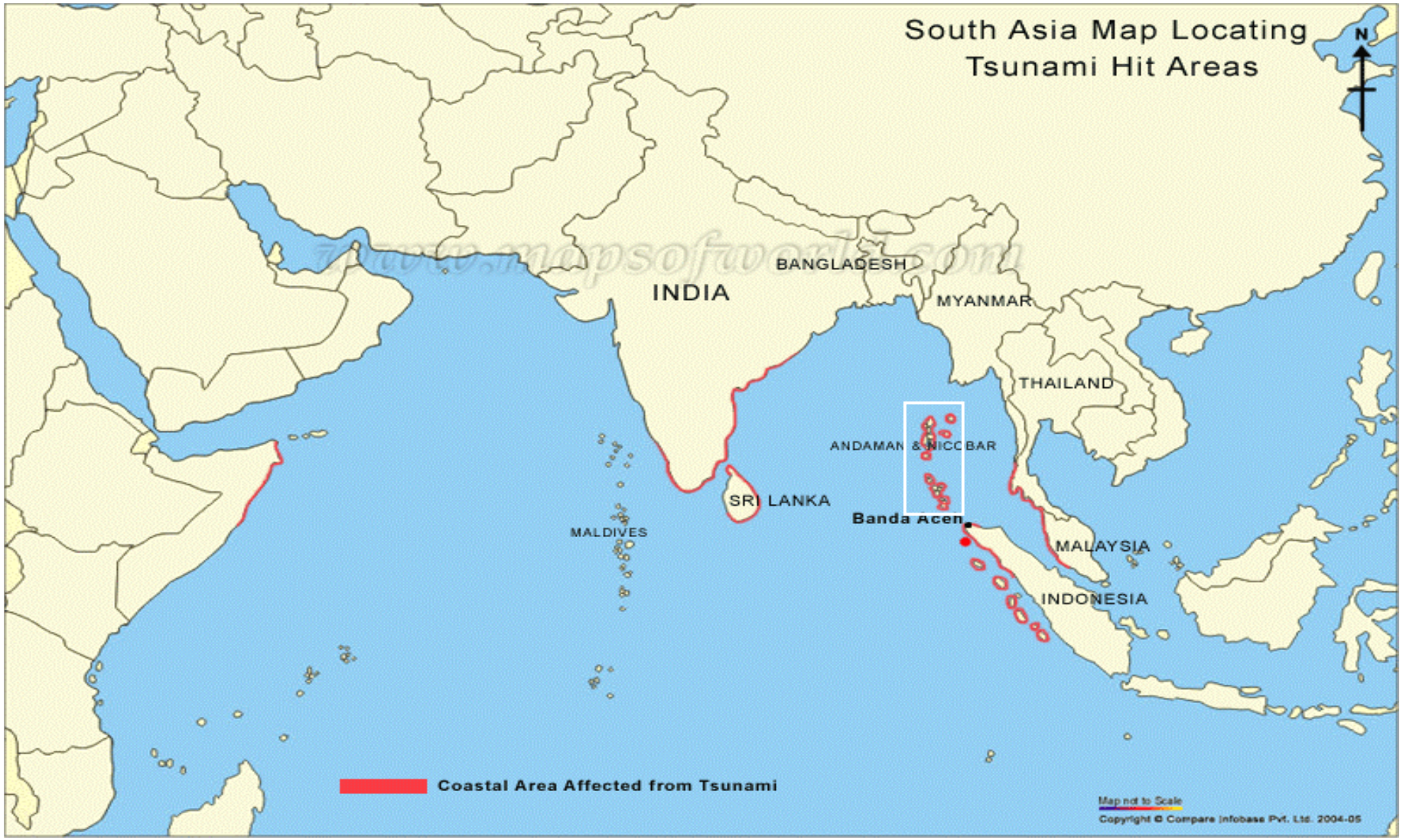
Management options for restoring crop production in tsunami affected agricultural lands of Andaman and Nicobar Islands

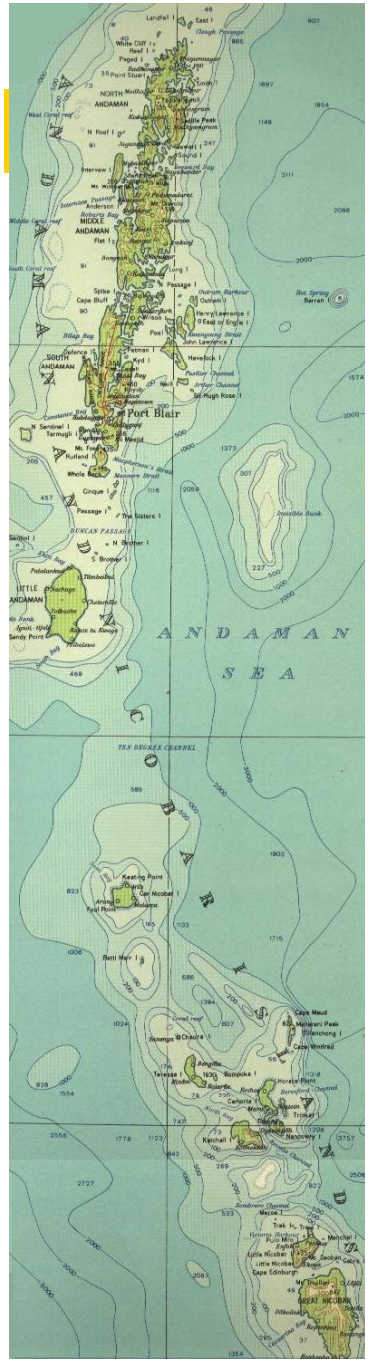
R.Raja, S.K.Ambast, S. Ghoshal Chaudhuri,
S.K.Gupta*, Gurbachan Singh* and N.P.S.Yaduvanshi*

Central Agricultural Research Institute, Port Blair (A&N Islands)

* Central Soil Salinity Research Institute, Karnal (Haryana)

Tsunami Affected Countries





A&N Islands

- 36 of 572 islands inhabited
- 8,249 sq km land area
- 87% area is under forest
- 50,000 ha area under cultivation

Losses due to tsunami in Andamans

- Human lives lost - more than 3513
- Total population affected - 0.6 million
- Agricultural areas affected - more than 11,000 ha
- Estimated loss (Rs) - 38366 million

Key Activities

1. Appraisal of the agriculturally productive waterlogged and saline lands

2. Suggest recommendations for (i) reclamation of waterlogged saline agricultural lands (ii) rainwater management, (iii) soil management and (iv) agronomic and alternate land use practices for immediate restoration of agricultural activities

3. Model building in a few villages to demonstrate and promote the sustainable livelihoods models

4. Knowledge and capacity building through interaction, meeting and trainings to stake-holders

Beyond Tsunami

- Recommendations are based on an integrated approach for the rehabilitation of agriculture in the Islands
- We must move beyond the status-quo (An improved scenario over pre-tsunami)
- People are ready to take risk when appropriate capacity building back up is ensured
- Administration is already sensitized to the issue of relief and rehabilitation

Methodology

- Rapid rural appraisal
- Soil and ground water samples were collected, processed and analyzed for ECe, pH, soluble cations and anions content



Farming systems being practiced in Andaman

a) **Arecanut-coconut farming:** In Andaman Islands,on the upper hills, the farmers plant coconut and arecaunt plantations after clearing the natural forests. This is inter-cropped with spices like *black pepper and clove*. It gives high returns

b) **Paddy based cropping:** On the gentle slopping land in the foothills, the farmers are practicing paddy-vegetables, paddy-cereals and paddy-fallow. With reference to the mean sea level, these areas are relatively at higher levels and form a part of terrace system

c) **Paddy-fallow:** In the low land valley area, which is near the sea front, the farmers are following paddy-fallow as a standard practice

Farming systems being practiced in Car-Nicobar



Coconut and arecanut plantation are practiced. After tsunami, farmers introduced vegetable farming

Categorization of land after tsunami

Situation I

- Low lying coastal areas where sea water has intruded only during *Tsunami* and then receded permanently
- Salts accumulated got leached after one monsoon



Situation II	❖ Low lying coastal areas where sea water reaches with every high tide and recedes with low tide ❖ Here soil and groundwater became saline





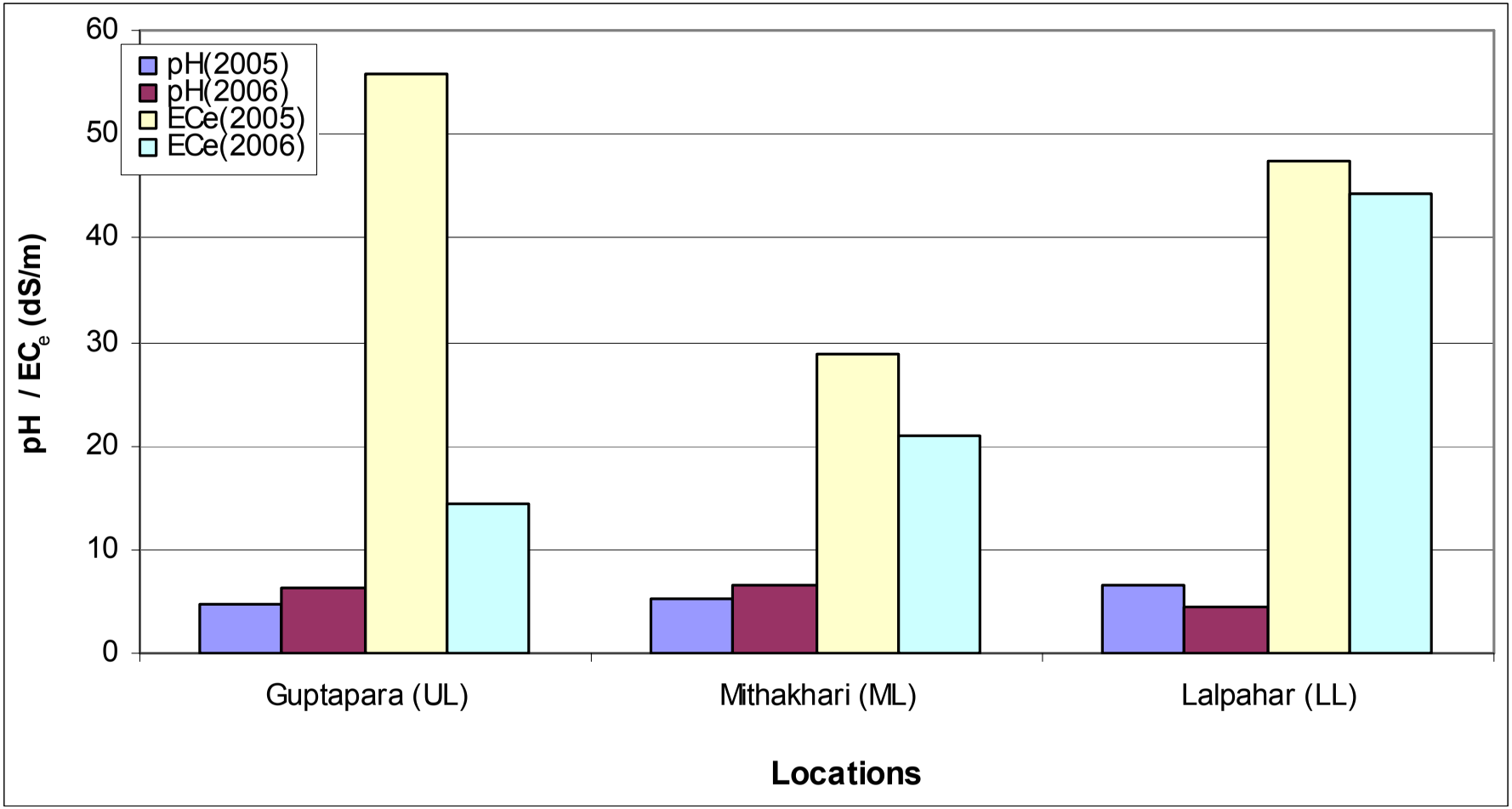
Situation III	Low lying coastal areas where there is permanent stagnation of sea water and the depth of impounding increases with high tide

Soil and Water Quality

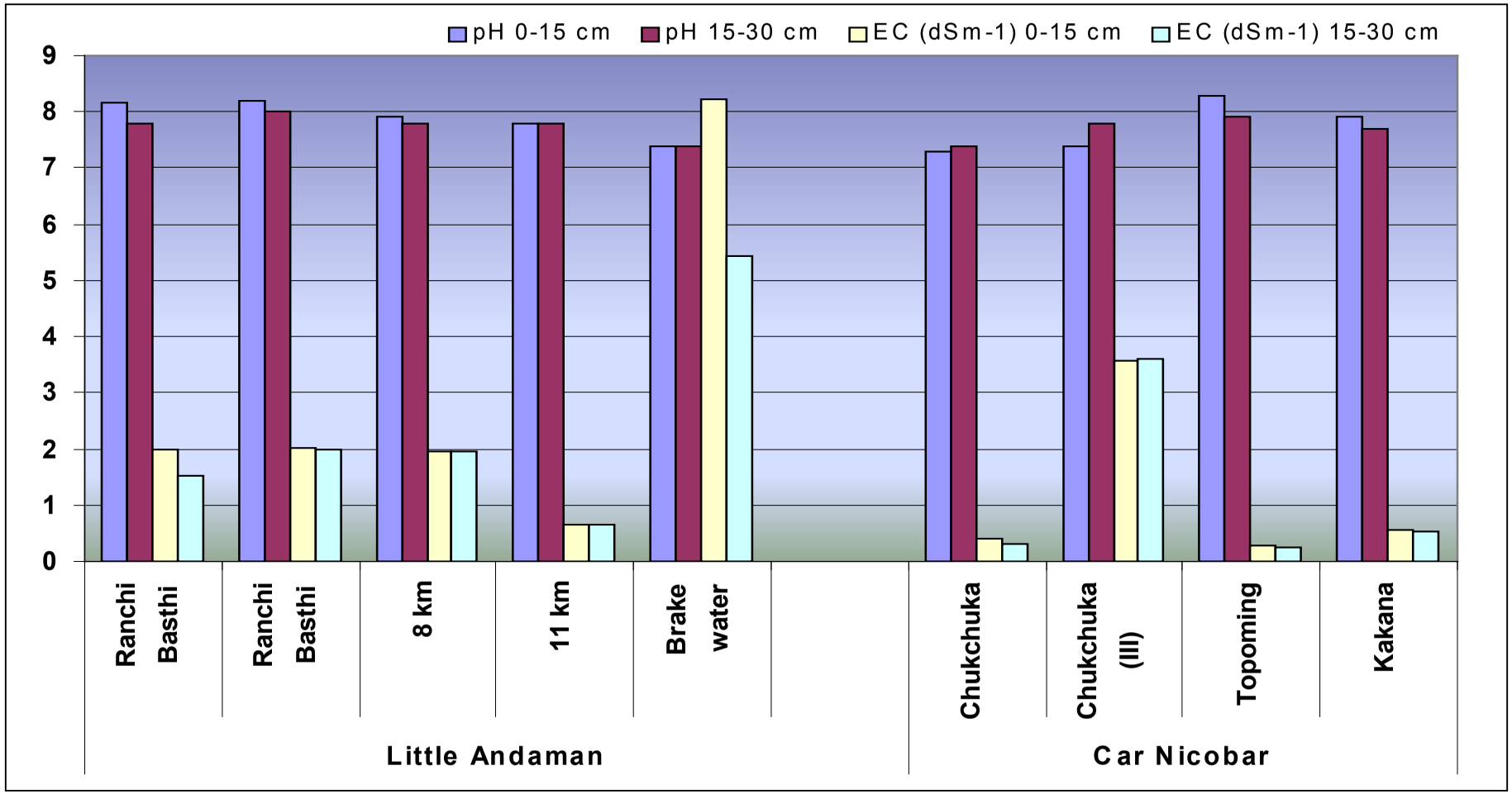




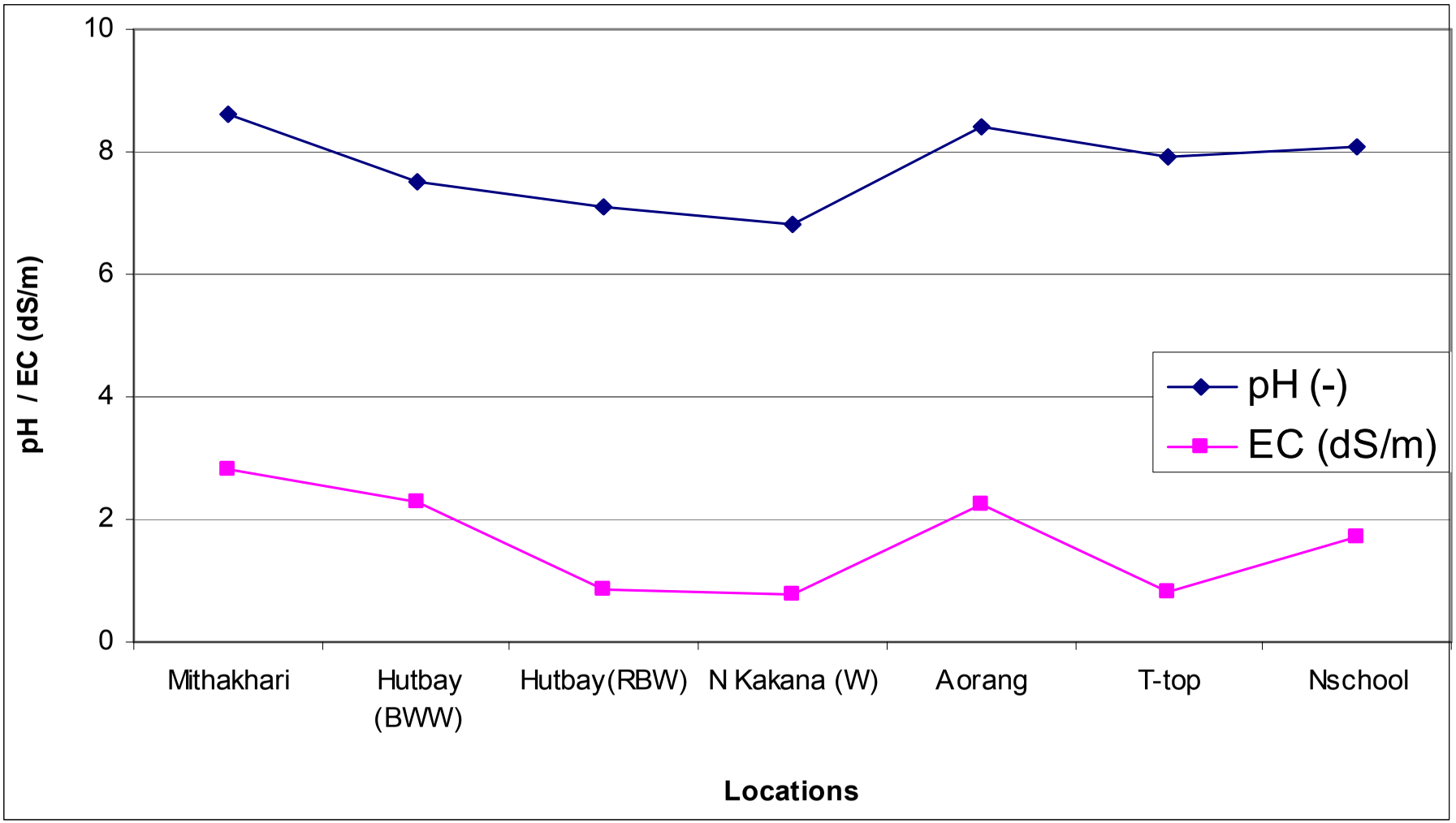
Soil Salinity in South Andaman



Soil Salinity in Little Andaman & Car Nicobar



Water Quality in A&N Islands



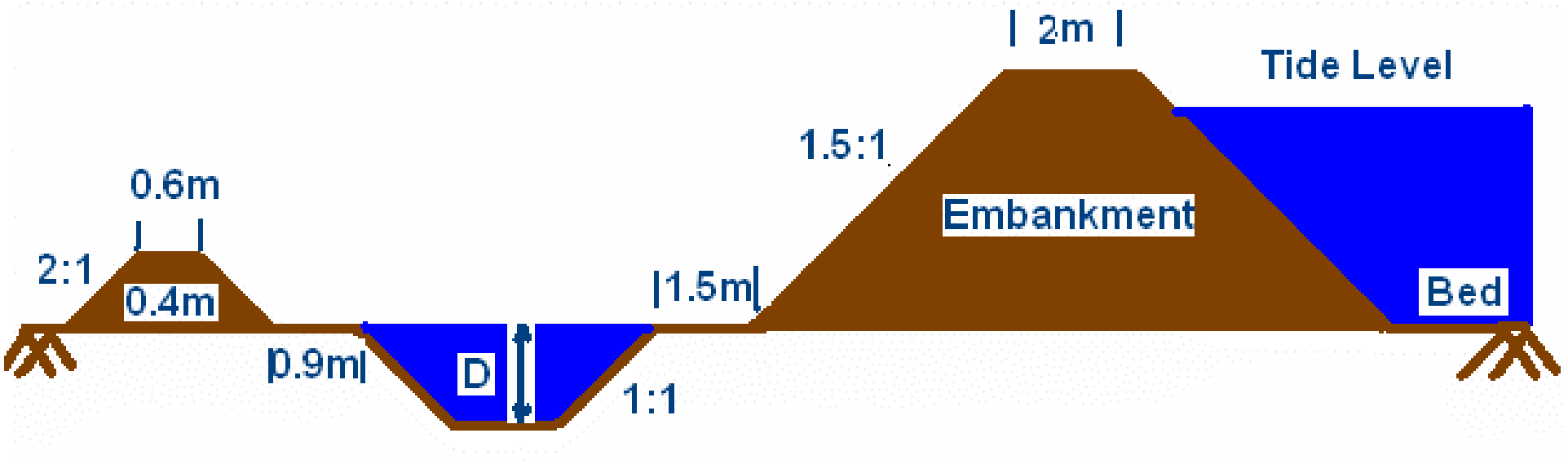
Technological Options

Earthen Embankment





Earthen Embankment - Design



One Way Sluice Gate





Land Drainage





Selection of salt tolerant crops and varieties



Rice

Morinda citrifolia (Noni)





Alternate Land Use

Raised and Sunken Beds



Raised and Sunken Beds in tsunami affected lands





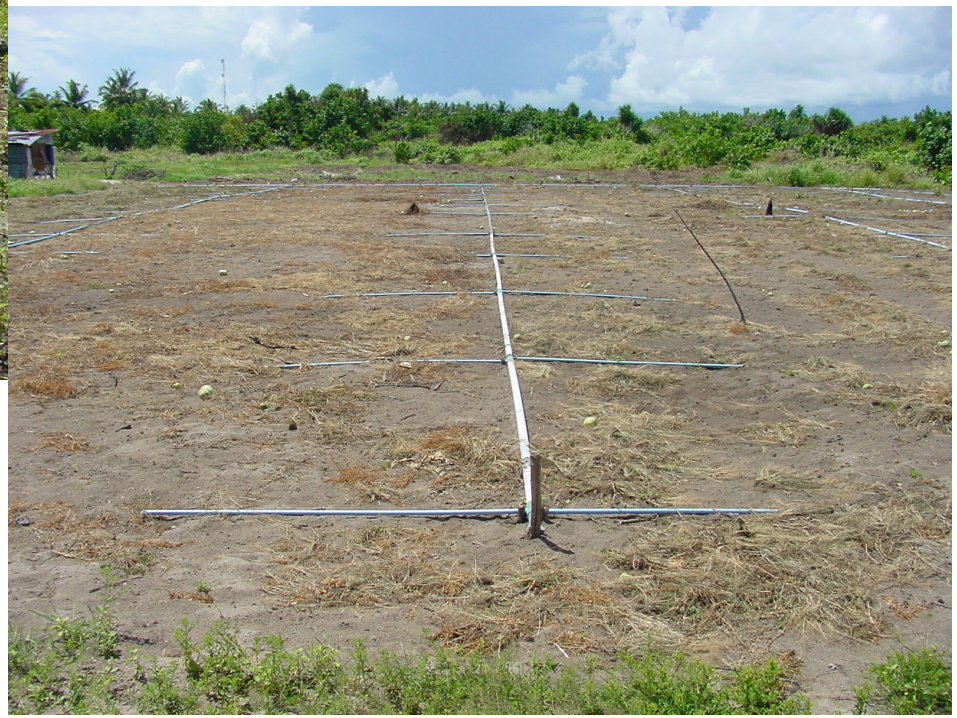
Rainwater Management





Water Management





Use of micro irrigation system with proper irrigation scheduling

Scope for Brackish Water Aquaculture







Coconut Forest
Vs
Plantation



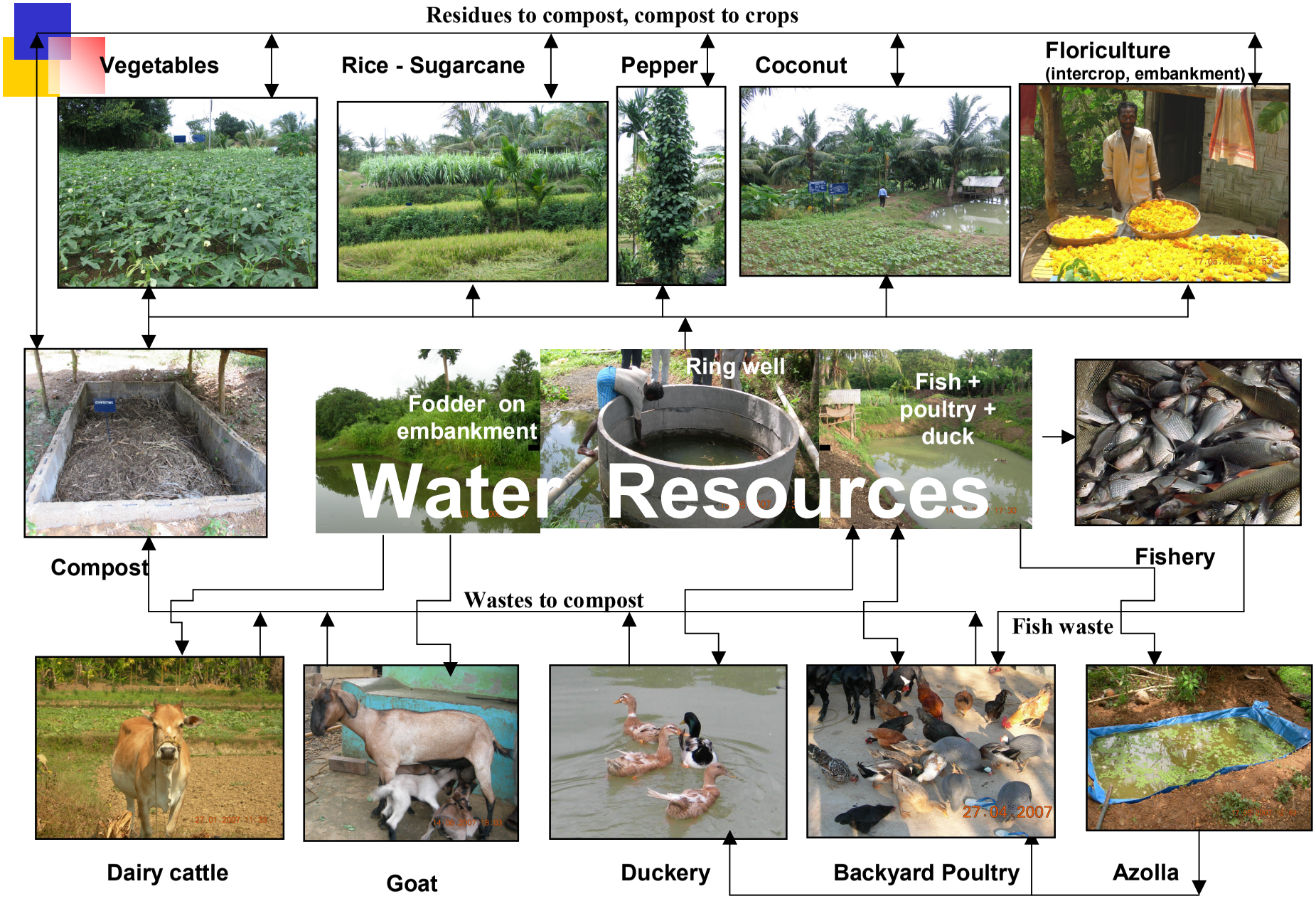
Integrated Nutrient Management





Compost making

Integrated Farming System (IFS)

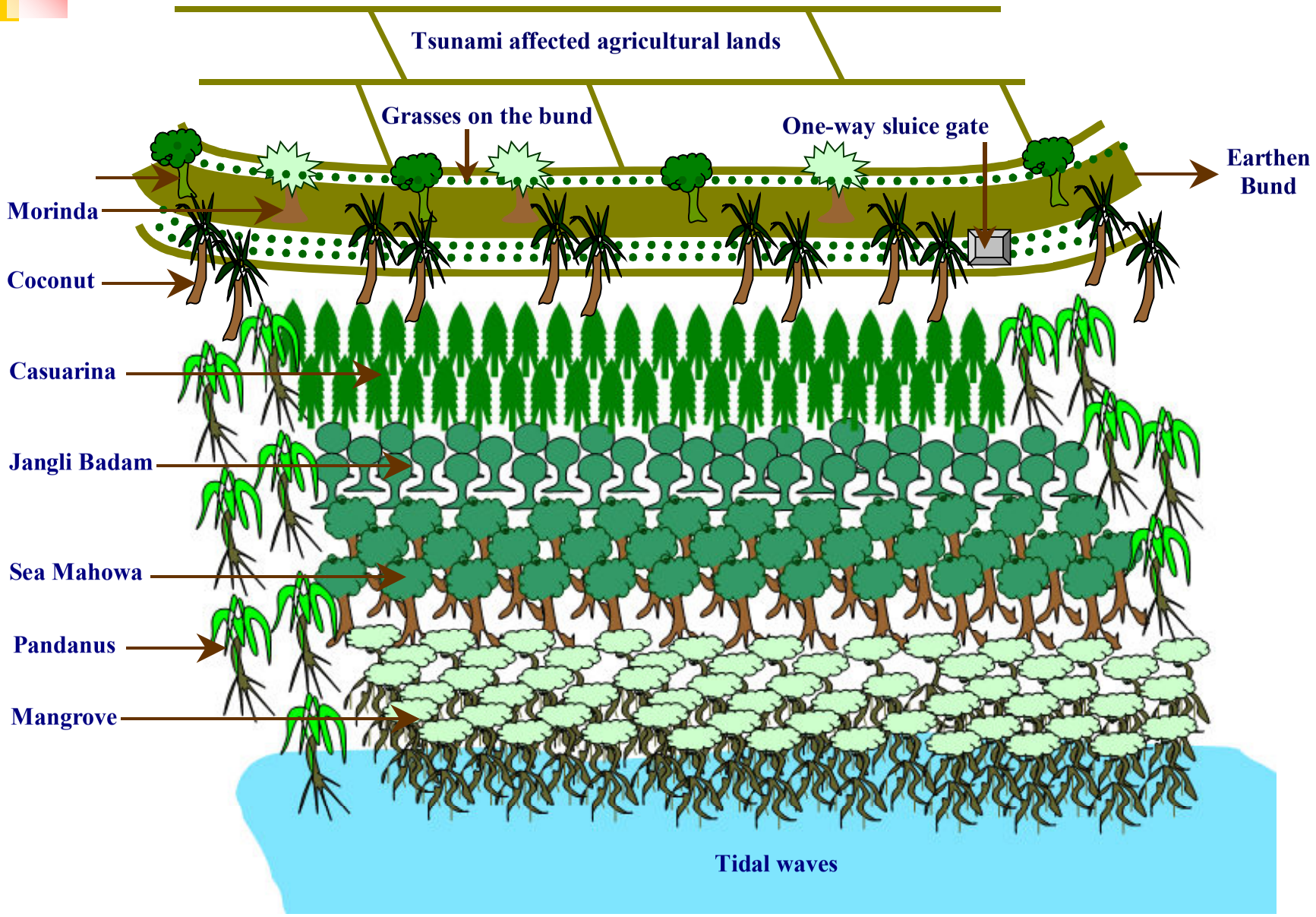


Shelter Belts





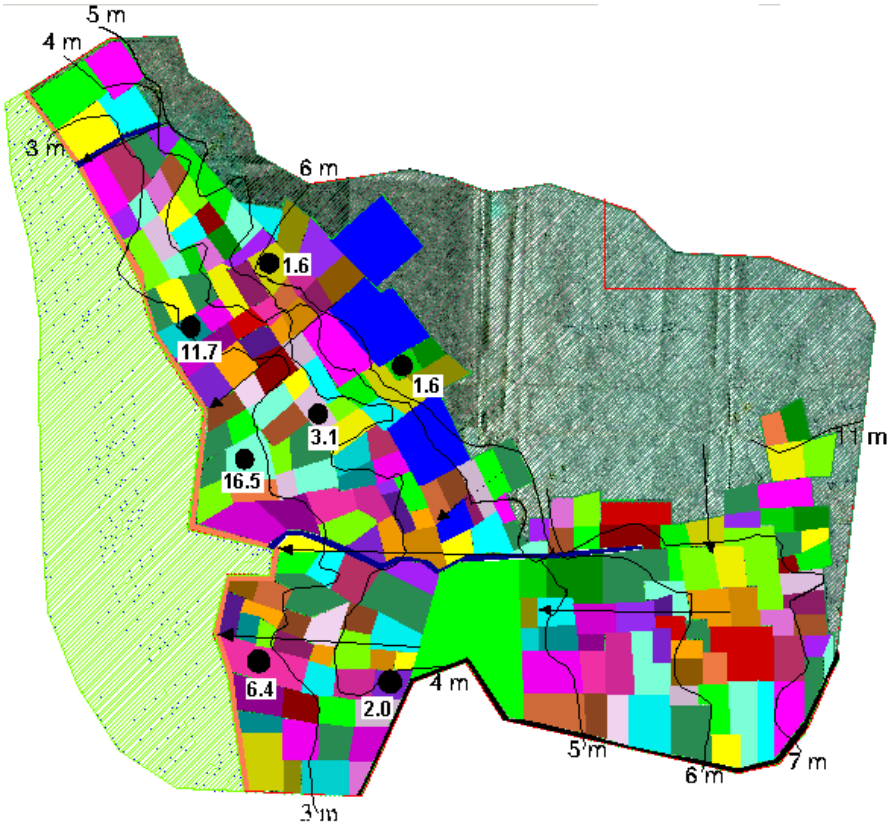
Layout of a Bio-shield

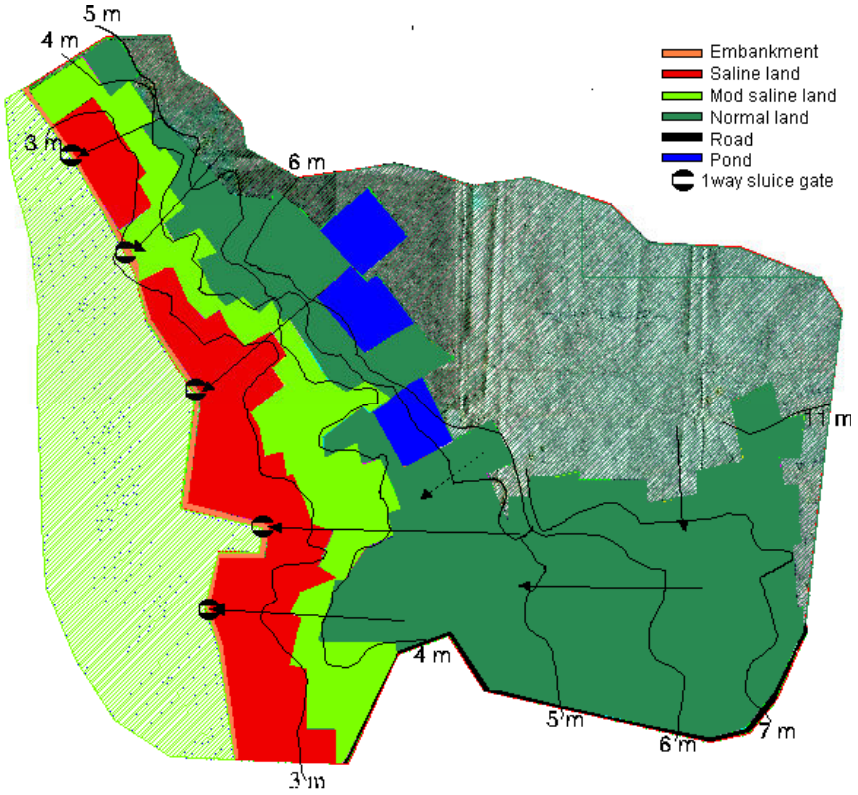




The Pilot Areas for Model Development

Manglutan Pilot Area





Land Drainage






BT524




CSR23



New Manglutan

Situation	Variety	Grain yield (kg/ha)
Unaffected area	CSR 23	2883
	CSR 36	3146
	BTS 24	2569
	Jaya	2483
Situation I	CSR 23	2492
	CSR 36	2825
	BTS 24	2238
	Jaya	1836
Situation II	CSR 23	1638
	CSR 36	1887
	BTS 24	1259
	Jaya	1019

	SEd	CD (0.05)
Situation	93.7	194.2
Variety	108.1	224.3

Loha Barrack

Situation	Variety	Grain yield (kg/ha)
Unaffected area	CSR 23	2831
	CSR 36	3428
	Jaya	2517
Situation I	CSR 23	1887
	CSR 36	2209
	Jaya	1256
Situation II	CSR 23	1573
	CSR 36	1762
	Jaya	947

	SEd	CD (0.05)
Situation	112.6	235.8
Variety	139.3	302.1

Capacity Building - Key to Success







Thank you

Impact of *Tsunami* ....







Erstwhile village at Car Nicobar



Damaged Roads at Stewart Gunj



Damaged paddy field at Chauldhari


Damaged Arecanut plantation


Damaged Arecanut plantation…. After some months


Damaged Banana Plantation

Damaged Banana Plantation… After some months





Affected mangroves at Crikabad