

Integrated Alga-culture in Inundated Coastal Farmlands of Indian Sundarbans as Sustainable Adaptation for Marginal Communities Towards Climate Risk Reduction

Dr Dipayan Dey: South Asian Forum for Environment



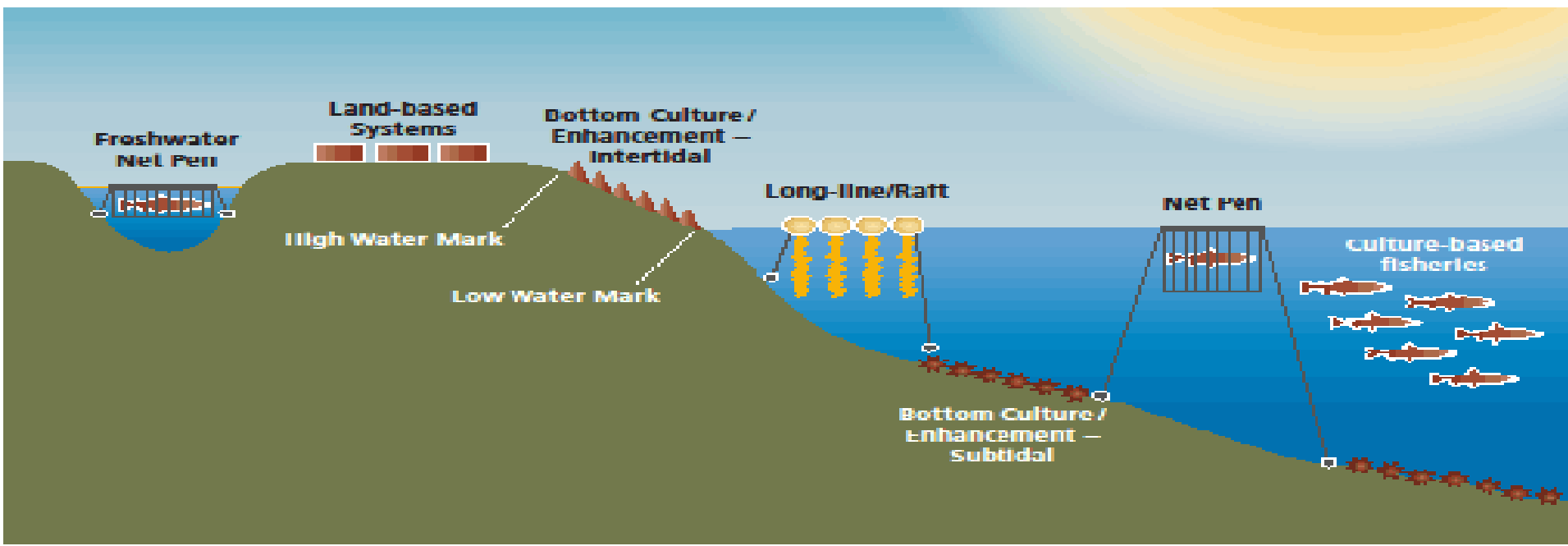
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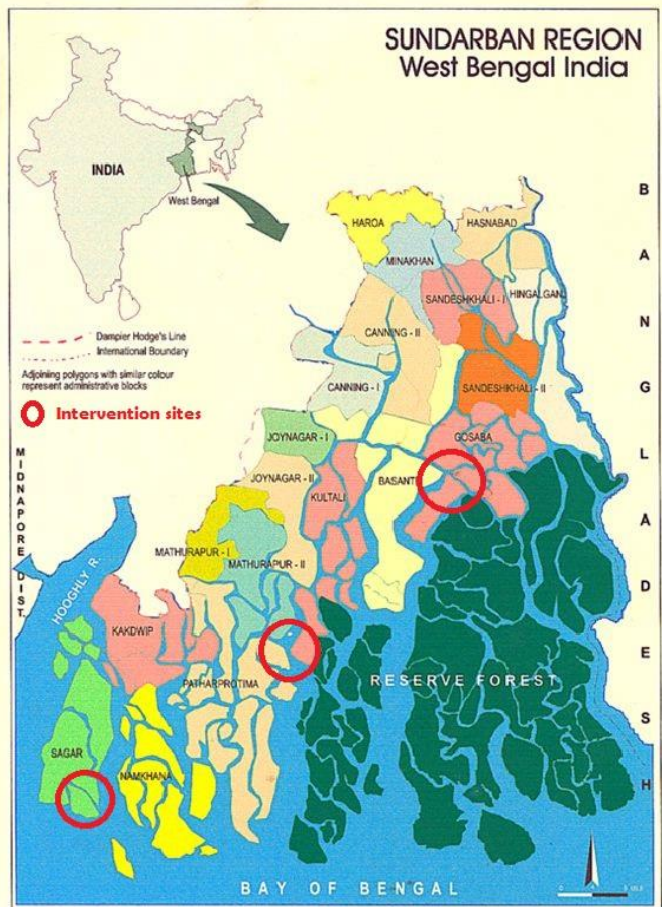
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Aqua-farming in Inundated Areas

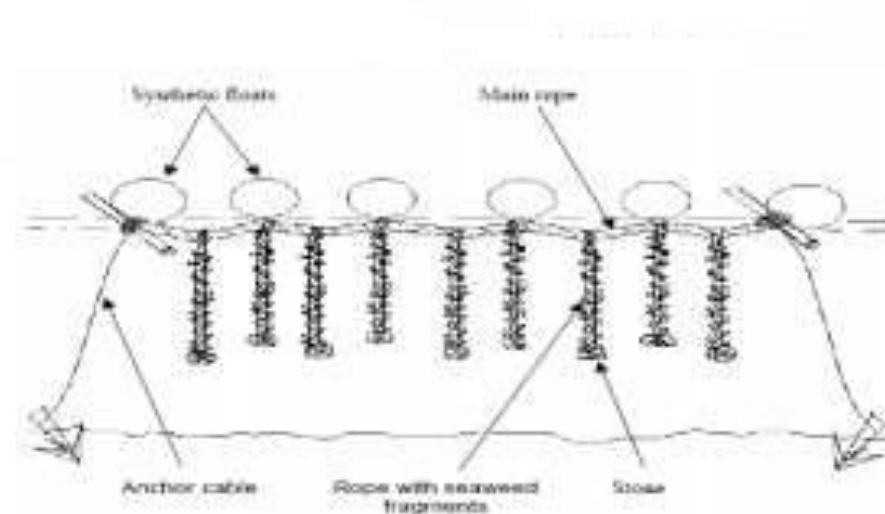
- Restoration of Coastal Habitats
- Developing Climate Resilience
- Multi-Usage prospects of algae culture
- Market linkage and standardizing production

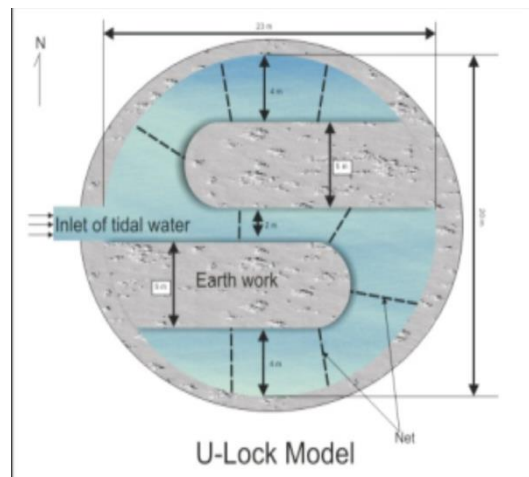
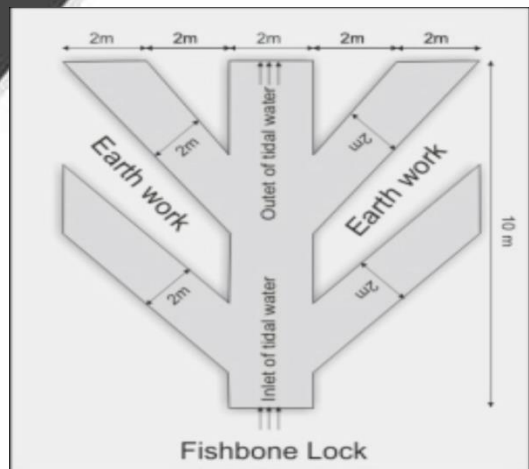


Location



Interventions





Results

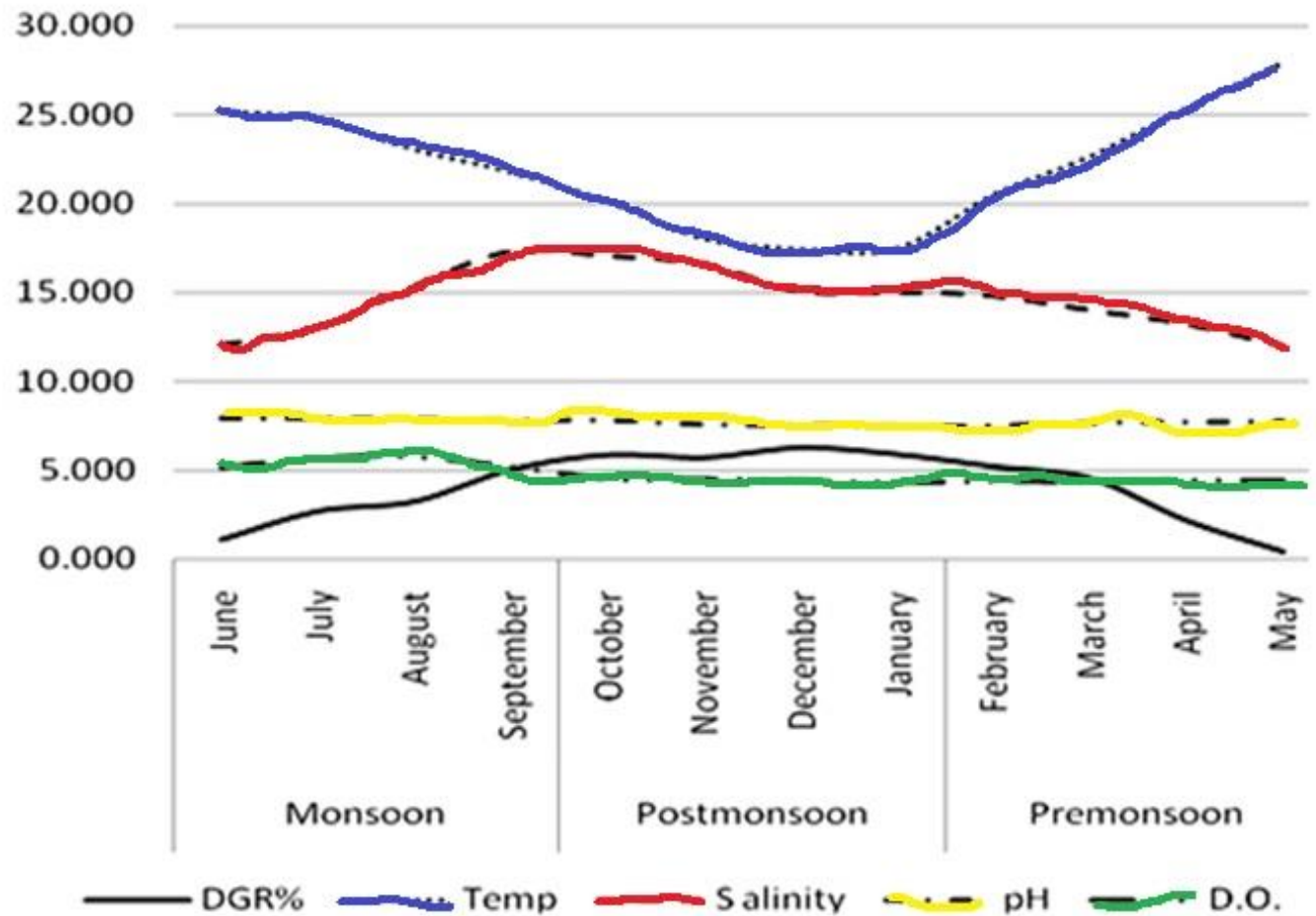


Fig.2: Comparative Analysis of Limnological Features & DGR% Trends in *Enteromorpha*

Results

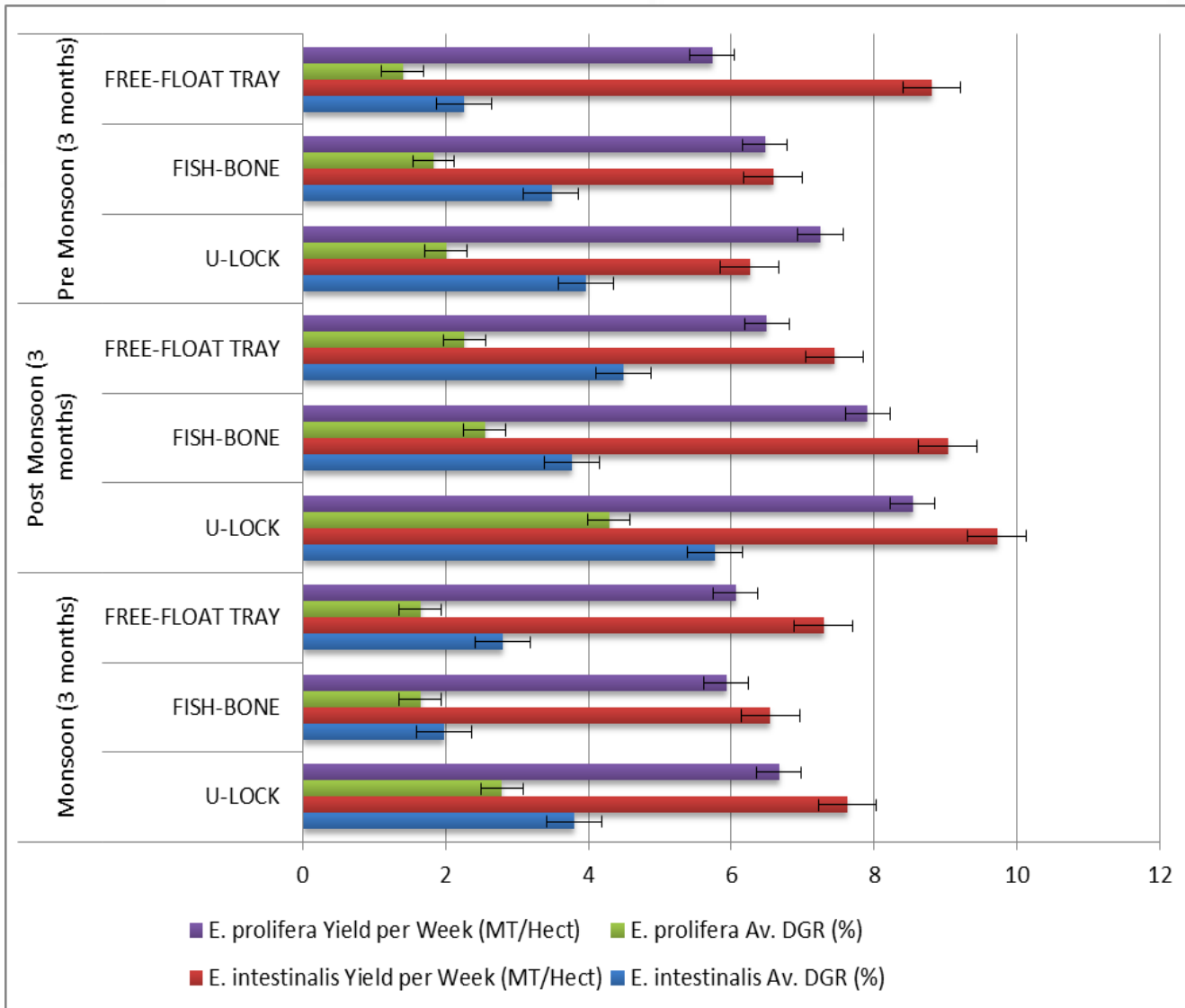
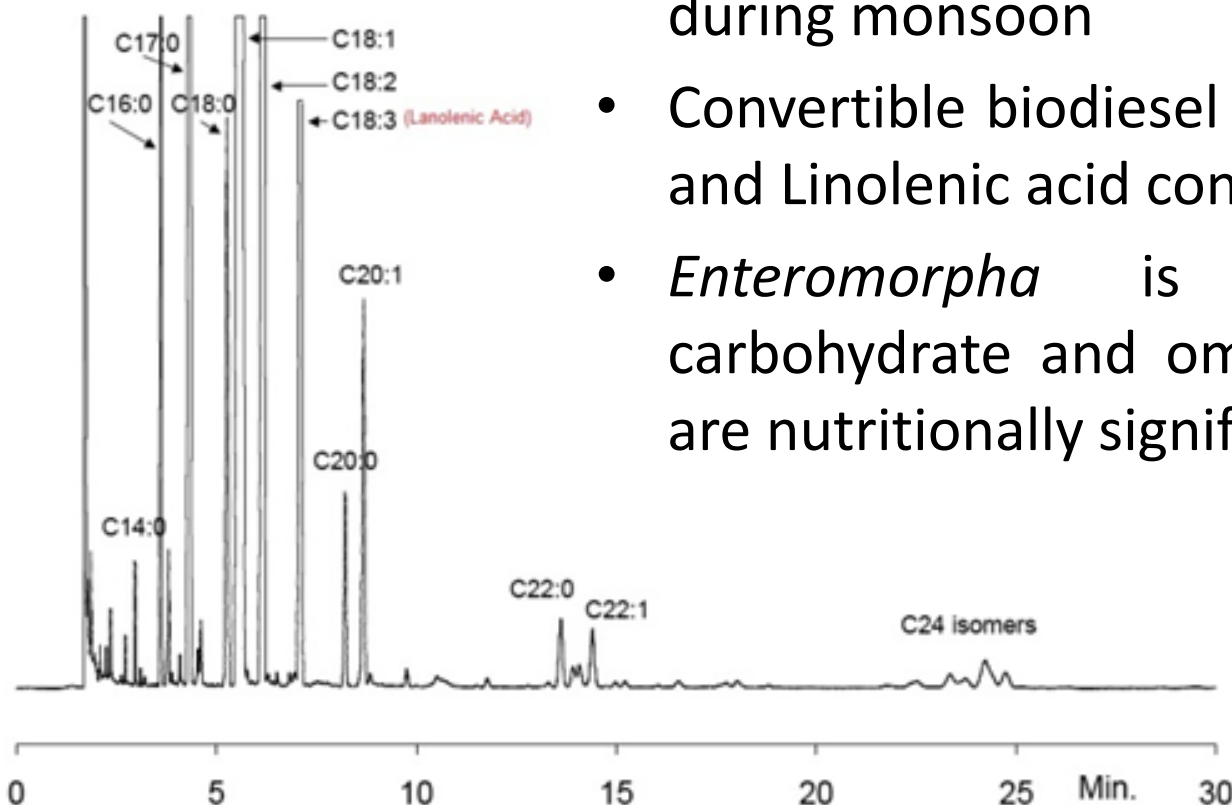


Table 1: Average Biochemical Composition of *Enteromorpha*

Biochemical Components	Pre Monsoon	Monsoon	Post Monsoon
Total Lipid (% dry wt)	12.25±0.57	4.58±0.33	14.91±1.03
Protein (% dry wt)	14.66±1.94	12.9±1.58	15.79±1.33
Carbohydrate (% dry wt)	52.6±2.26	53.69±0.91	53.66±1.25

- Enteromorpha has nutritional qualities to serve as Food, Feed and Fodder for the coastal marginal communities
- It can be converted to bio-manures, mulch and soil conditioner and can improve soil functions
- It can be a potential fuel and source of Bio-diesel in future

- Post-monsoon, available oil in *E. intestinalis* was up to 0.37% which declined to 0.31% during monsoon
- Convertible biodiesel was as high as 93.27% and Linolenic acid content was 0.24% only
- *Enteromorpha* is rich in protein, carbohydrate and omega fatty acids which are nutritionally significant



Outcome

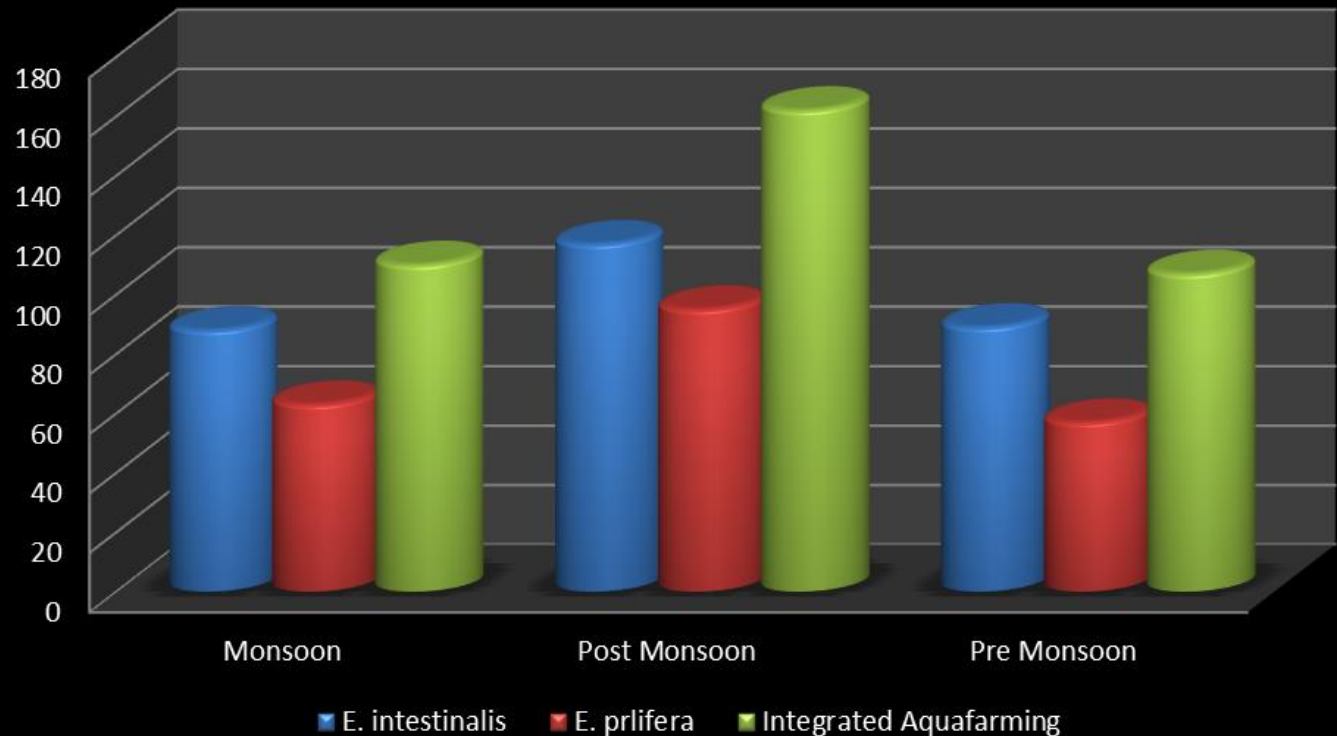


- Nearly 37 Sq Km of coastal habitat has been restored with nearly 4500 mangrove plantation.

Local fish biodiversity has improved and now being integrated with alga-culture

IUCN is scaling up the project under the global program 'Mangroves for Future'

Seasonal Carbon Mitigation Potential



Total CO₂ fixation = K × biomass productivity X fixation efficiency
(wherein K is the rate constant with a value 1.89)

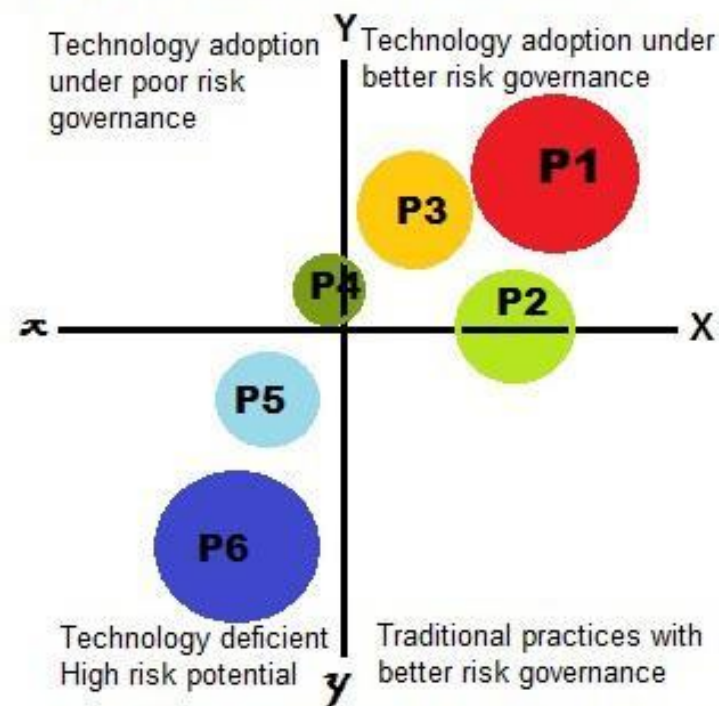
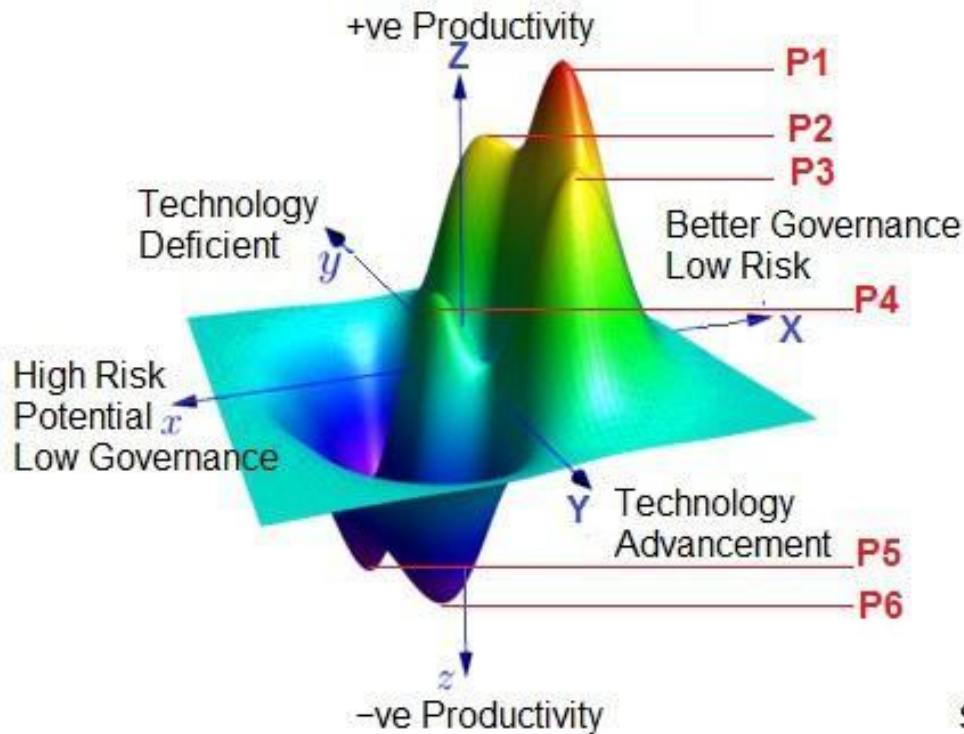
Outcome



- Presently around 500 households (2500 farmers) are practicing integrated aqua-farming in Sundarbans with an increased earning of 17-23%.
- The project is scaling up in other coastal states of India and Bangladesh, as well.
- It has the market potential for a million-dollar industry based on clean technology initiative in South Asia.

Impact Assessment

3-D SIMULATION OF PRODUCTION, RISK GOVERNANCE AND TECHNOLOGY ADOPTION



Schematic representation of production in 4 quadreates

We Sincerely Acknowledge



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THANK YOU

