

FLOATING TECHNOLOGY GROWS HOPE FOR BETTER FUTURE Climate Resilient Agriculture in Majuli District of Assam

Implemented by : South Asian Forum for Environment, SAFE and Supported by : NABARD, RO, Guwahati, Assam



Introduction :

Majuli district in Assam is the only island district in the country. It is truly a water world. The entire island is a giant wetland broken only by embankments which houses the primary human settlements and is in many ways the communication lifeline of the island. The two key issues faced by the inhabitants are the ever present threat of floods in the monsoon and the erosive capacity of the mighty Brahmaputra and the other rivers which are steadily eroding the island. In a changing world where climate related events are increasingly becoming common place the need of the hour is to increase the adaptive capacity of the inhabitants of such fragile landscapes in a manner which would contribute to their livelihood and preserves the social fabric of these communities. This is the main aim of this project is to carry out activities that would fulfill the above stated need. The objectives and activities envisaged are outlined below.



Project objectives

- To standardize a stable & farmer friendly hydroponic tray cultivation method for sustainable primary productivity during periods of ecological hazards.
- To identify a set of local cash crops for sustained fail-safe growth in the hydroponic system that can fulfill their food, feed and fodder needs.
- To promote PEN & CAGE culture based integrated aquafarming which will contribute to the wise utilization of the natural resources and wetland-scape of the island.
- To accentuate process of technology transfer with reference to production and maintenance of hydroponic cultivation as well as aquafarming.

- To assess the viability of probable large scale endeavours based on a community based implementation framework.

Being a flood prone area the project innovation is 'Agriculture in floating raft' and 'Aquaculture in cage'.



Agriculture in floating raft

- Indigenous materials used to set up the frame. Seasoned bamboo sticks painted with coal tar, strings made with coconut fiber, water hyacinth (*Eichomia cressipes*), jute geotextiles and hydro foam.
- The floating bed of 12ft long and 3-3.5ft in width, 1-1.5ft in depth constructed. Bamboo poles used as the outer frame.
- Thin bamboo sticks are used to prepare the mesh underneath the bed which is holding one layer of hydro foam for water retention topped with a layer of water hyacinth leaf-cut.
- Strings made of coconut fiber are used to make the mesh holding the above structure and then covered with jute geotextile matt.
- Vermicompost was used for the agriculture. The composition of the fertilizer is 30% of vermi+ 40% of sawdust+20-30% of light soil.
- A capacity building training was conducted in Nabani Majuli & Ujani Majuli with the farmers club of that society.



Key Action area

- Capacity building and training and construction of organic compost peats for plant nutrients and fertigation to meet the fertility requirements in rift farming. Campaign on household and agriculture solid waste management in dry days.
- Selection of crop was determined by the market assessment and community feedback, as well as the adaptive nature of the particular crop, productivity etc. Sugarcane, Mustered, Boa Paddy is their routine crops, but in flood season these are not suitable for farming.

Aquaculture in cage

- The local name of the Cage is *Hapa*.
- The cage is made up of a wooden framework with chain. Chain is used for keeping the fishes in the cage.
- Size of the framework is 10' / 4' & 5 no. of cages are made for the aquaculture.

Key Action area

- Capacity building and community training in



technology transfer for cage culture, using local knowledge economy for fish cultivation.

- Opting for piloting with all endemic fish, Rahu, katla, and the fish cage culture is under observation and final outcome study report will be done after the end of monsoon season.

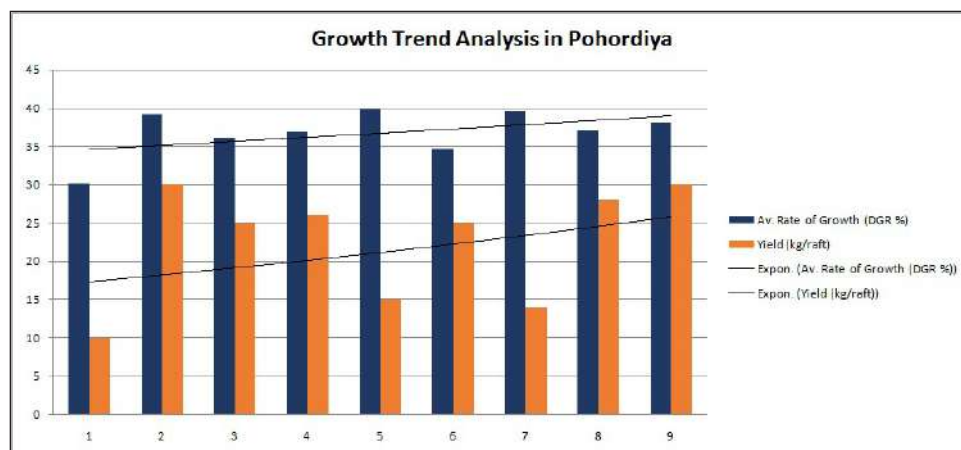
Project implementation & results

- High quality treated seeds would be used for the cultivation, which may either be placed directly on the compost layer or seeding may be grown on coco-peat inlets and then planted on the organic compost layer.
- This is a low maintenance low water consuming free float garden in which monitoring was required for which proper capacity building was done.

HYDROPONIC FLOAT-TRAY INTERVENTION FOR INTEGRATED FARMING IN MAJULI						
SOUTH ASIAN FORUM FOR ENVIRONMENT [SAFE]						
Site Name	Intervention	Tray No.	Cultivars	Growth Pd. (In Days)	Av. Rate of Growth (DGR %)	Yield (kg/raft)
Pohordiya	Floating Raft	1	Maricha	50-55	30.1	10
		2	Been	50-55	39.2	30
		3	Vendi	50-55	36.1	25
		4	Vendi	50-55	36.9	26
		5	Pudina	50-55	39.8	15
		6	Vendi	50-55	34.6	25
		7	Pudina	50-55	39.6	14
		8	Vendi	50-55	37.01	28
		9	Moricha	50-55	38.1	30
		10	Damaged		0	0
Jingriamukh	Floating Raft	1	Moricha	50-55	41.3	20
		2	Vendi	50-55	39.6	32
		3	Pudina	50-55	33.5	13
		4	Vendi	50-55	40.21	32
		5	Been	50-55	31.7	24
Lohanigaon	Floating Raft	1	Red Spinach		Reseeded	0
		2	Red Spinach			0
		3	Red Spinach			0
		4	Red Spinach			0
		5	Red Spinach			0
Saben' house	Floating Raft	1	Vendi	50-55	34.5	22
		2	Been	50-55	39.2	29
Bohorgulla	Floating Raft	1	Damaged			0
		2	Damaged			0
Sonari	Floating Raft	1	Damaged			0
TOTAL FLOATING RAFTS		26		50-55		375
Average Yield / Tray / Month						12

Result assessment

The project is undertaken with the intention of assessing the state of the interventions at all the project sites in the backdrop of severe floods that affected Majuli island in July and August 2017. The interventions carried out till date involved the installation of total of 26 floating rafts at six sites covering both upper and lower Majuli. A total of six cages were also installed to promote aquaculture.



The site wise outcome of the interventions as follows.

- Pohordiya Site:** The total number of floating rafts installed here were 10, and nine of them exhibited plant growth and there were four cages initially installed but now only two were operational. This was due to the high mortality rates of the fish fingerlings that had been released in these cages, mortality rate was over 50% as only around 150 of the fingerlings were alive out of the 300 released into the cages in June. The overall impression was that the interventions were more the reasonably successful and given the very heavy floods faced by this site this achievement was even more commendable.
- Jingriamukh Site.** This site had 5 rafts installed and all five showed copious growth and there is every reason to believe that the site will continue to flourish. There is a plan to introduce Cage culture here and according to community it would be an ideal site to do so.
- Lohanigaon site.** This site had 5 rafts installed and all of them had their protective coverings blown off and the seeds did not germinate due to the heavy rain, they have been re seeded with red spinach and hopefully it will grow successfully in future. This site needs to be more carefully managed in order to ensure it's success.
- Saben' house site.** There were 3 rafts installed here and only two have shown growth and one of them has no soil and vermicompost layer. These rafts need careful nurturing and could be used as seed beds.
- Bohorgulla site.** There were two rafts installed here and both have been damaged and they need to be taken to another site and refurbished.
- Sonari Site.** There was one raft installed here and has been damaged and they need to be taken to another site and refurbished.
- Fisheries wetland site.** This site near the block office offered us the opportunity to introduce Cage culture as an piscicultural technique. Two cages were installed and the initiative has been very successful with less than 10% mortality.
- All the operational rafts have shown good growth and it is estimated that they will lead around 25-30 kgs of vegetables per raft at the time of harvesting which will be in October.

Recommendations

- There should be different personnel monitoring the interventions in upper and lower Majuli. This will enable the management of sites in a manner which ensures their success.
- There needs to be interventions like heat management in the context of the Cage culture.
- We can extend the interventions to other sites and such replication will focus on development of floating rafts as seed beds with a special focus on organic red rice which is being promoted by the government.

Overall Impact at pilot phase

Though the project is still going but we have some social impact already. The local media appreciated the project and following their news other villages of Assam have shown their interest for this kind of farming technique. The community has a positive view on this Climate Resilient Farming, and the results are very encouraging.

Action ahead

In the next month we intend to increase the number of raft beds to twenty with fourteen more units slated to be installed in atleast 7 villages covering the entire geographical spread of the island. The number of farmers trained will be around 40-50. SAFE with local community Joint Liability groups will start cage and pen based pisciculture in atleast two wetlands in the next three months. This process will be tailored in accordance with the geographical and demographical need of the area.

"This is the future for Majuli, I appreciate the innovation and courage of SAFE and I am telling the farmers just to make the best of it as this is the only hope for poor people of Majuli,

Mr. Pallav Gopal Jha
DC
Majuli, Assam

"This is a new technology, initially we were not convinced but the floating rafts gave us 80 Kg bhindi this time, and the quality of the vegetable is also very good, this is amazing as during flood season we grow nothing"

Saben Kalita
Farmer
Majuli, Assam

At a glance...

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