



POLICY BRIEF

INTEGRATED FARMING SYSTEMS: A CASE OF PADDY CUM FISH CULTURE IN ARUNACHAL PRADESH



Ministry of Environment,
Forest and Climate Change
Government of India



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BACKGROUND:

Understanding the attributes of traditional, location specific land use system will provide insights for its improvement and wider applicability. The integrated rice cum fish culture system developed by the Apatani tribe of Ziro valley, Arunachal Pradesh is a unique system. Faced with shortages of the staple food items (rice and fish), these subsistence farmers developed this ingenious system in preference to wide spread shifting cultivation in the region, by capitalizing on the good water supply (from rainfall supplemented by natural flow from hills surrounding the valley (Dollo,M,Samal,P.K.). Two rice crops are grown annually and fish is reared in the paddy fields during the main rainy season. Crop residues and animal waste are the sources of nutrients to the crops. Based on the research it showed a great deal of interest on which this culture creates sustainable management and conservation through its mechanism and are expected to enhance both the crop and land conservation of the state as a whole. The resilience and the sustainability of the system could be attributed to efficient nutrient cycling and nutrient input through water seeping in from surrounding hills, which have not been, but deserve to be quantified.



Fig: Paddy cum fish farming field at Ziro.

APPROACH:

The study site was Lower Subansiri, Ziro. The study included intensive review of secondary literature and peer reviewed research articles. Field interviews with progressive farmers; key person interviews and focused group discussions with officials of line departments such as Agriculture, Horticulture and other experts and practitioners were undertaken. Participatory rural appraisal approach was also used to capture the timeline of planting, calendar, perception of weather change, impacts on the community, coping and adaptation practices to undertake environmentally friendly activities that can help maintain these system.

FINDINGS:

The use of pesticides, insecticides, weedicides and fungicides which even in minute quantities are highly toxic to aquatic life and have degraded both the quality of soil and fish that are reared. Lack of management, pond culture at Ziro is observed. Traditionally they use herbal poisonous plant to kill in order to catch fish. Further it causes imbalancing of ecological niche and thereby damaging the river bank. Therefore local conservation practices needs to be followed in a sustainable manner for the conservation of the biodiversity.

When agriculture's contribution to gross domestic product is declining throughout North Eastern region, large populations are still based in rural areas, depending on agriculture directly or indirectly for employment and income (ARUNACHAL-SAPCC). The Eastern Himalayan region is likely to face the highest reductions in agricultural potential due to climate change. As a result climate change will place an additional burden on efforts to meet long-term development goals in Arunachal Pradesh in particular.

RECOMMENDATIONS:

The ingenious integrated rice with fish farming system of the Apatani is in urgent need of dynamic conservation. The traditional conservational attitude of local farmers to managing the rich natural resources helps them reap economic self-sufficiency and ecosystem services in this ecologically-fragile Arunachal Himalaya, north eastern India.

To cope with current crisis, the ongoing development initiatives need to be strengthened to reduce vulnerability to climate change by adopting suitable policies and technologies. The adaptation will require improvements that take existing development policies above and beyond their current capacity that encompasses innovative policies like changing investment allocations within and cross sectors, increasing the focus on risk-sharing and risk-reducing, disaster preparedness, capacity building and proper indigenous traditional knowledge on farming to compliment the scientific recommendation for wide acceptability. Thus the agriculture and the farming system of the state must make necessary adjustment and readjustment with the changing climate to enhance the resilience of the sector.

Implementing this mechanism requires a credible institutional setup. The study recommends the local bodies along with the administrative sector could work together to manage and create a sustainable farming system. The government support in implementing the recommendations forwarded by the Arunachal Pradesh State Action Plan on Climate Change could also support the system and could finance the work needed to improve the quality and effectiveness of this system (Arunachal-Pradesh-SAPCC.)

Lack of technical knowledge of farmers, and risks associated with flood and drought is a significant challenge for the adoption of integrated rice with fish farming. Hence, proper training should be imparted that would help enriching the knowledge of rural farmers' improving productivity and reducing risks. A full recognition of its multi-ecological functions must be achieved, such as its role in preserving biological diversity, protecting food security, enriching soil and lowering the emission of greenhouse gases.

The farmers and the local people out there are willing to create a constructive and sustainable way for the farming methods and reduce the use of chemical fertilizers and pesticides in farmland if provided with proper channelized funds and proper guidance and training methods from the agricultural administration



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