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Integrated Paddy- Cum - Fish Cultre "A Sustainable Approach for Livelihood and Nutritional Security in Mid Hill Areas of West Kameng District, Arunachal Pradesh: A Success Story

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INTRODUCTION

The tribal community of North East Region largely depends upon diverse agricultural activity ranging from a variety of shifting agriculture systems, fallow systems, home gardens and sedentary system such as wet-rice cultivation. The indigenous farming systems developed by these tribal communities with long history and traditions are energy efficient, and at the same time provide high economic returns to the farmers. The North East Region of India lies between 21° 57' and 29° 28' N and 97° 25' E, comprising seven states namely, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. Recently, Sikkim has been included in this region also. The North East Region is home of about more than 40 million people and over 100 tribal groups. The state of Arunachal Pradesh endowed with various culture and traditions, having geographical area of about 83742 Km^2 with a population of 13, 82,611 (Census of 2011, provisional data). This system of Integration is thought to be one of the most productive and efficient agricultural system of the region.

Integrated farming system is an age-old practice in India, historically popular in South East Asian countries and more popular in China and North Eastern States of India. Nearly, 25% of freshwater fish production in China comes from this technology. Apart from its high-income value, this system provides an example of a high degree of ecological efficiency too. In this system, fishes get better nutrition due to manuring of paddy fields and their growth becomes better due to availability of larger surface area during full submergence of paddy fields. Thus, both paddy fields and fishes produced together by proper managerial practices. About 6.0 million hectares are under rice cultivation in our country, only 0.03 per cent of this is utilized under rice-fish culture, particularly in West Bengal, Bihar and Kerala and some other suitable areas.

Rice-fish culture is very much popular in Arunachal Pradesh among all North Eastern states. The state is having globally appreciated technology especially used in the Zero valley. Rather than this valley, state has much more suitable areas (in the form of valleys) where the paddy cum fish farming technology may become a very good tool for sustainable livelihood generation and nutritional security. In this reference an experimental trial was carried out during the year 2016-2019 in Salari and Chug village (potentially paddy grown areas) of Dirang and Thembang circle under West Kameng district lying approximately between 91° 30' to 92°40' East longitudes and 26° 54' to 28° 01' North latitudes, endowed with very good natural resources.

MATERIAL AND METHODS

The paddy fields were prepared very well before transplanting of rice plants and the bunds from periphery of fields were made fully strong with all suitable means and given the height from 30-45 cm. The prepared fields of rice were manually transplanted with two varieties of rice which includes local variety in some fields and Ranjeet variety in rest of the fields. In this system, a small pit is dug in each terrace in a series of terraces where paddy is grown. The stocking of advanced fingerlings of common carp was done in these water pits. When water supply is sufficient in monsoon season, the whole paddy field is kept under shallow submergence of 5-10 cm and fishes come out of the pits and move around the whole submerged area of the terrace field. During the time of water scarcity, when water remains only in pits, fishes run back to the pits and grow. In this system, fishes get better nutrition due to manuring of paddy fields and their growth is better due to availability of larger surface area during full submergence of paddy fields. Thus, both paddy fields and fishes produced together by proper management of rain water.

Site for IFS on Paddy-Fish farming

Preparation of Site for IFS on Paddy-Fish farming

During the experiment, the data like variety of paddy, fish used for trial, time of paddy transplantation and fingerling stocking, health and growth monitoring of both the components, harvesting time of fish and paddy and the yield from each site were recorded properly. The data were analyzed and economic analysis was also done properly to observe the impact of technology in terms of production, productivity and change in socio-economic status of practicing farmers.

RESULTS

During the experimental trial about 23.4 % increment was observed in rice production in comparison to their traditional rice production system rather than a good harvest of fishes @ 1.7 to 2.1 t/ha having size about 250gm to 400 gm of fishes.

Production of Common carp from IFS on Paddy Fish culture

CONCLUSION

The result clearly indicates that the expansion of such type of suitable and ecologically balanced technology is need of hours for the overall development of farming community of the region as it is still at the stage of subsistence level on the agricultural front.