J Krishi Vigyan 2018, 6(2) : 262-263 DOI : 10.5958/2349-4433.2018.00083.1

Short Communication

Rice-Fish Rotation in Valley District's of Manipur

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ABSTRACT

First crop/ pre-kharif/ spring rice (February, March – June, July) is dying down in Manipur due to many factors such as non-availability of suitable variety, susceptibility to lodging and sprouting because of rain during harvest, meager irrigated area, submergence of shallow lake areas due to Loktak Hydel Power Project, etc. and improper land preparation due to lack of time. A study was conducted during 2014 to 2016 at twelve farmers' field under refined SRI method (without ploughing, fertilizer or manure). After the harvest of fish in the month of February, rice nursery was raised and after the harvest of rice, fishes raised from the previous years in a separate nursery pond was stocked in the ratio of grass carp (500 no.), silver carp (500 no.), rohu (1000 no.), mrigal (1000 no.) and common carp (1000 no.). This practice has enabled the farmers to earn an average annual gross income of Rs. 348850/ha giving a B: C ratio of 2.56.

Key Words: Benefit Cost ratio, Manipur, Refined SRI method, Spring rice.

INTRODUCTION

Manipur is located in the north eastern part of India. The people of North-East India depend on diverse agricultural practices ranging from a variety of shifting aquaculture systems, fallow systems, home gardens and sedentary systems, such as wet-rice cultivation (Ramakrishna, 1992). Manipur is predominantly an agrarian state. However, the area of first crop/ pre-kharif/ spring rice (February-March to June-July) was decreasing in Manipur due to many factors. The factors were non availability of suitable, preferred rice variety, lodging and sprouting of mature grains the existing rice variety during harvest due to rain, out yielding of only one proper main crop to the total of two crops i.e. first and second crops, meagre area of irrigated fields, expansion of Loktak and other major lakes due to Loktak Hydel Power Project, conversion of rice fields into fish ponds etc. Hence, the present study was carried out to improve or alter the existing practice to rice fish rotation.

MATERIALS AND METHODS

The study was carried out for three consecutive years (2014-2016) in the valley districts of Manipur viz. Imphal East, Imphal West, Thoubal and Bishnupur districts. 20 fish farms with an area of 0.5 ha each was selected and studied under refined system of rice intensification method (without ploughing, fertilizer or manure). After the harvest of fish in the month of February, rice nursery was raised. As the nursery was ready by 15-17 days (longer due to low temperature) the water from the farm was completely removed and the soil bed was allowed to settle down. Plots were made and seedlings transplanted in the usual SRI manner. After the harvest of rice, fishes raised from the previous years in a separate nursery pond were stocked in the ratio of grass carp (500 no.), silver carp (500 no.), rohu (1000 no.), mrigal (1000 no.) and common carp (1000 no.) in the month of July at the onset of monsoon. Rice variety: PAC 807 (A short duration hybrid of 120-125 days in spring) were used. Seed

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Table 1. Economics of Rice-Fish rotation

Parameter	Rice			Fish		
	2014	2015	2016	2014	2015	2016
Yield (t/ha)	9.42	9.58	9.62	2438.8	2470.75	2436.42
Gross return (Rs)	65940	77325	87925	275607	306715	332023.5
Cost of cultivation (Rs)	26530	30930	35170	104250	11574.5	131750
Net return (Rs)	39410	46395	52755	171357	295140.5	200273.5
B:C	2.49	2.50	2.56	2.64	2.65	2.52

Average B: C of Rice = 2.51, Average B: C of Fish = 2.60, Pooled B: C for rice and fish = 2.56

rate was 5Kg/ha and spacing was 25 x 25 cm. Beds/ plots were prepared on the naturally leveled pond beds. The data was collected on cost of production, yield and selling cost from all the farms, averaged and tabulated.

RESULTS AND DISCUSSION

The average Benefit Cost ratios for rice and fish were 2.51 and 2.60, respectively (Table 1). This practice has enabled the farmer to earn an average annual gross income of Rs. 3,48,850/-ha giving rise to a B: C to 2.56. An improvement in the existing production system in these areas was expected to revive the decreasing trend of first crop. An average annual fish production from concurrent rice-fish farming of 180 kg/ha has been reported although fish yields exceeding 750 kg/ha can be achieved (MacKay, 1995). Production was approximately twice as high in rotational rice-fish farming systems. So, fish farming in rice fields is officially promotes in National Aquaculture Development Plan in China (FAO and NACA, 1997). In India, rice-fish farming is considered particularly suitable for the less productive rainfed areas. However, governments focus on sustainable rural development, food security, and poverty alleviation, rice-fish farming systems had received a great deal of attention in the recent past (Choudhury, 1995). Compared with concurrent rice-fish culture systems, rice and fish did not have a close symbiotic relationship in alternate farming systems. However, alternative rice plantation and fish culture were beneficial to each other in many aspects. Alternative rice-fish culture was relatively easy and did not require extensive earthwork to modify the structure of the field.

CONCLUSION

In the shallow lake areas of Manipur, where the paddy fields had been converted into fish farms there by reducing the area of rice, the farmers can profitably took up the practice of rice-fish rotation and as a result the standard of living of these farmers could be improved.

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Received on 24/09/17 *Accepted on 24/12/17*