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Knowledge on SRI (System of Rice Intensification) of Farmers in Tripura, India

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A B S T R A C T

The study was carried out in the two district of Tripura, viz., West Tripura and South Tripura with randomly selected 200 rice farmers from purposively selected 4 blocks of the districts. The State of Tripura is located between 22° 56" and 24° 32" North latitude and between 90° 09" and 92° 20" East latitude. Tripura is a landlocked State. System of Rice Intensification (SRI) method of paddy cultivation is important because it needs less seed, less water, less fertilizer and less attack of pest & disease but per hectare yield gain is more than traditional method of paddy cultivation. Rice is the major food crop in Tripura with 75 per cent of its cropped area devoted to the production of rice (Department of Agriculture, Govt. of Tripura). In terms of production it ranks next to Assam in North East states. In Tripura state as a whole a large section of the SRI farmers possessed knowledge high to medium level (39.5 % to 35.0 %) on SRI technology.

Introduction

Tripura is a state in North-East India which borders Bangladesh, Mizoram and Assam. It is surrounded by Bangladesh on its north, south and west. It shares a 53 km long border with Assam and 109 km long border with Mizoram. The State of Tripura is located between 22° 56" and 24° 32" North latitude and between 90° 09" and 92° 20" East latitude. Tripura is a landlocked State.

The System of Rice Intensification (SRI) methodology was synthesized in the early 1980s by Fr. Henri de Laulanié, S.J., who came to Madagascar from France in 1961 and spent the next (and last) 34 years of his life working with Malagasy farmers to improve their agricultural systems, and particularly their rice production, since rice is the staple food in Madagascar. SRI was developed by Father Henry de Laulanie who was striving to improve the lively hood of the poor rice farmers of Madagascar. SRI method of paddy cultivation is important because it needs less seed, less water, less fertilizer and less attack of pest and disease but per hectare yield gain is more than traditional method of paddy cultivation. Rice is the major food crop in Tripura with 75 per cent of its cropped area devoted to the production of rice. In terms of production it ranks next to Assam in North

East states. Despite all the rich profitability of the technology of system of rice intensification (SRI) practices the extent of its spread has still remained insignificant due to various reasons. The present study has been designed to investigate some factors which closely related with the knowledge and the adoption behaviour of rice farmers towards SRI, so that the knowledge could be used in rapid diffusion of the system of rice intensification technology to the rice farmers.

Materials and Methods

The present study was carried out in two districts viz., West Tripura and South Tripura district of Tripura. The two districts were selected purposively in view of the diverse land and agriculture resources ideally suited for taking up SRI technology and they have been situated in different agro ecological zones with minimum variation. Among seventeen development blocks in West Tripura district two blocks namely Jirania and Bishalgarh and eleven development blocks in South Tripura district two blocks namely Matabari and Bokafa were selected purposively for the study. From each block, five villages were selected with the help of a random number table following the method of simple random sampling. In total ten villages of each district are served as the representing unit for this study. A simple random sampling technique were followed in the selection of total 200 number of respondents, 100 respondents from each district, 50 respondents from each block and 10 respondents from each village for the final data collection. Total sample size is 200, of which 100 from each district.

In this study, knowledge refers to the body of information understood and retained by the respondents about system of rice intensification technology which comprises various improved method of rice cultivation and management practices for increased rice production from a unit area of land. For the purpose of the present investigation, a teacher made knowledge test was designed to measure the knowledge of the respondents about the SRI technology. The knowledge test consisted of 40 items covering different aspects of composite rice cultivation practices, with required management skills. All the items were objective type and the 'one score was given for the "correct response" and 'zero' for "wrong response". The summation of scores for the 'yes' responses over all the items for a particular respondent indicated his extent of knowledge. The maximum and the minimum score would be forty and zero respectively. Further, the raw knowledge score of each individual respondent was converted into a knowledge index, using the formula.

$$\text{Knowledge Index (Kl)} = \frac{\text{Number of correct responses}}{\text{Total number of knowledge items}} \times 100$$

Thus, after computing knowledge index scores, the respondents were categorized into three categories taking mean and standard deviation as a measure of check. The knowledge level was measured in two aspects, viz., overall knowledge level of rice farmers and knowledge level of rice farmer regarding specific aspects of practices recommended for SRI practices.

Results and Discussion

Knowledge level of rice farmers regarding System of Rice Intensification (SRI) practices

Overall knowledge level of rice farmers

West Tripura

As regards the knowledge level of rice farmers about SRI practices, it is found that out of 100

rice farmers most of the rice farmers i.e., 39 (39.0%) have high level of knowledge whereas 36 (36.0%) have a medium level of knowledge, followed by 25 (25.0%) with a low level of knowledge.

South Tripura

As regards their knowledge level about SRI practices, it is found that out of 100 rice farmers the majority of rice farmers i.e., 40(40.0%) have high level of knowledge whereas 34 (34.0%) have medium level of knowledge, followed by 26 (26.0%) with a low level of knowledge.

Tripura

As regards their knowledge level about SRI practices, it is found that out of 100 rice farmers, majority of rice farmers i.e., 79 (39.5%) have high level of knowledge, whereas 70 (35.0%) have medium level of knowledge, followed by 51 (25.5%) with a low level of knowledge.

Data presented in Table 1 reveals that the majority of the rice farmers have high to medium level of knowledge regarding SRI practices in the state of Tripura. Scientific knowledge of any technology is an essential prerequisite for increased productivity. The present findings are in conformity with the findings of Beerannavar (1995), Mahandra Kumar (1996) and Meti (1998).

Knowledge level of rice farmer regarding specific aspects of practices recommended for SRI practices

West Tripura

The Table 2 indicates that a more or less high percentage of rice farmers have precise knowledge on the principle of SRI in such vital matters or item as SRI method is followed in (paddy cultivation/vegetable cultivation) (100%); SRI method of cultivation requires (more / less seed) (100%); Age of the seedling should be (8-12/15-20 days)(100%); Per hectare seed requirement is (5 kg /15-20 kg) (100%); In SRI method followed (line sowing/traditional sowing) (100%); Depth of sowing (effect tillering/ flowering) (100%); Transplanting must be in SRI method (shallow/deep) (100%) (Fig. 1).

Table.1 Distribution of respondents according to knowledge level (N=200)

Category	West Tripura (n= 100)		South Tripura (n=100)		Tripura (N= 200)	
	Frequency	%	Frequency	%	Frequency	%
Low	25	25	26	26	51	25.5
Medium	36	36	34	34	70	35.0
High	39	39	40	40	79	39.5

Table.2 Knowledge level of rice farmers regarding specific items of recommended System of Rice Intensification (SRI) practices (N=200)

SN	Practices	Response Category					
		West Tripura (n= 100)		South Tripura (n=100)		Tripura (N= 200)	
		F	%	F	%	F	%
1	SRI method is followed in (paddy cultivation/vegetable cultivation)	100	100	99	99	199	99.5
2	SRI method of cultivation requires (more / less seed)	100	100	100	100	200	100
3	Requirement of water in SRI method (more/less)	96	96	92	92	188	94
4	SRI method of paddy cultivation is costly (Yes/No)	69	69	55	55	124	62
5	In SRI method no chemical fertilizer is required (Yes/No)	79	79	58	58	137	68.5
6	Requirement of manures & fertilizers is more (Yes/No)	65	65	46	46	111	55.5
7	In SRI method only organic fertilizer is applied (Yes/No)	97	97	83	83	180	90
8	Seedling raising requires in SRI method(more care/less care)	87	87	91	91	178	89
9	Assured irrigation is required in SRI method (Yes/No)	77	77	80	80	157	78.5
10	In SRI method weed infestation is more (Yes/No)	58	58	81	81	139	69.5
11	In SRI method good drainage facility is not required (True/False)	88	88	77	77	165	82.5
12	SRI method of paddy cultivation is variety neutral (True/False)	90	90	87	87	177	88.5
13	Bio-fertilizer application is helpful (True/False)	96	96	90	90	186	93
14	In this method yield increases minimum $^{1}/_{3rd}$ than traditional. (True/False)	55	55	88	88	143	71.5
15	Timely availability of labour is one of the problem (Yes/No)	100	100	88	88	188	94
16	It requires more labour than traditional (Yes/No)	53	53	48	48	101	50.5
17	Seedling requirement per hill more than one (True/False)	90	90	79	79	169	84.5
18	Age of the seedling is more than traditional method (Yes/No)	99	99	87	87	186	93
19	Age of the seedling should be (8-12/15-20 days)	100	100	97	97	197	98.5

20	Per Hectare seed requirement is (5 kg /15-20 kg)	100	100	98	98	198	99
21	Traditional farmers are not fit for SRI method (true/false)	82	82	60	60	142	71
22	Water management is one of important factor(True/False)	95	95	88	88	183	91.5
23	Disease and pest attack is more in this method (True/False)	86	86	68	68	154	77
24	SRI method requires very fertile soil (True/False)	75	75	64	64	139	69.5
25	In SRI method followed (line sowing/traditional sowing)	100	100	95	95	195	97.5
26	Depth of sowing (effect tillering/flowering)	100	100	96	96	196	98
27	All types of paddy soil not fit for SRI (Yes/No)	77	77	76	76	163	81.5
28	Cost benefit ratio is high (Yes/ No)	60	60	82	82	142	71
29	Standing water interfere crop growth and tillering(Yes/ No)	83	83	79	79	162	81
30	Transplanting must be in SRI method (shallow/deep)	100	100	98	98	198	99
31	Not much care is required in uprooting seedling (Yes/ No)	79	79	65	65	144	72
32	Seed bed preparation is as like as traditional method (Yes/ No)	93	93	83	83	176	88
33	SRI method is beneficial because need less seed, water, manures and fertilizers/ ultimate benefit cost is less. (need less seed,less water/benefit cost is less)	97	97	97	97	194	97
34	There is no difference between SRI and traditional method of paddy cultivation. (Yes/ No)	97	97	70	70	167	83.5
35	Frequent spraying is needed in SRI method of Paddy cultivation.(True/False)	97	97	75	75	172	86
36	SRI method requires sound education (Yes/ No)	98	98	91	91	189	94.5
37	There are No. of principle to be followed in SRI (6/8/10 Nos.)	95	95	76	76	171	85.5
38	People say SRI method of paddy cultivation gainful (True/False)	96	96	92	92	188	94
39	SRI method is not alternative to increase production (True/False)	57	57	51	51	108	54
40	In SRI method disadvantage is more than advantage (Yes/No)	90	90	75	75	165	82.5

Knowledge Index Scores

Category (Knowledge)	Scores		
	West Tripura (100 respondents)	South Tripura (100 respondents)	Tripura (200 respondents)
Low (up to X- $\frac{1}{2}$ SD)	Up to 71.5207	Up to 73.0642	Up to 72.3011
Medium (X- $\frac{1}{2}$ SD to X + $\frac{1}{2}$)	71.5207 to 86.8292	73.0642 to 87.1857	72.3011 to 86.9988
High (above X+ $\frac{1}{2}$ SD)	Above 86.8292	Above 87.1857	Above 86.9988
	Mean: 79.175 SD : 15.3085	Mean : 80.125 SD : 14.1214	Mean: 79.65 SD : 14.6976

Fig.1 Distribution of respondents based on their level of knowledge
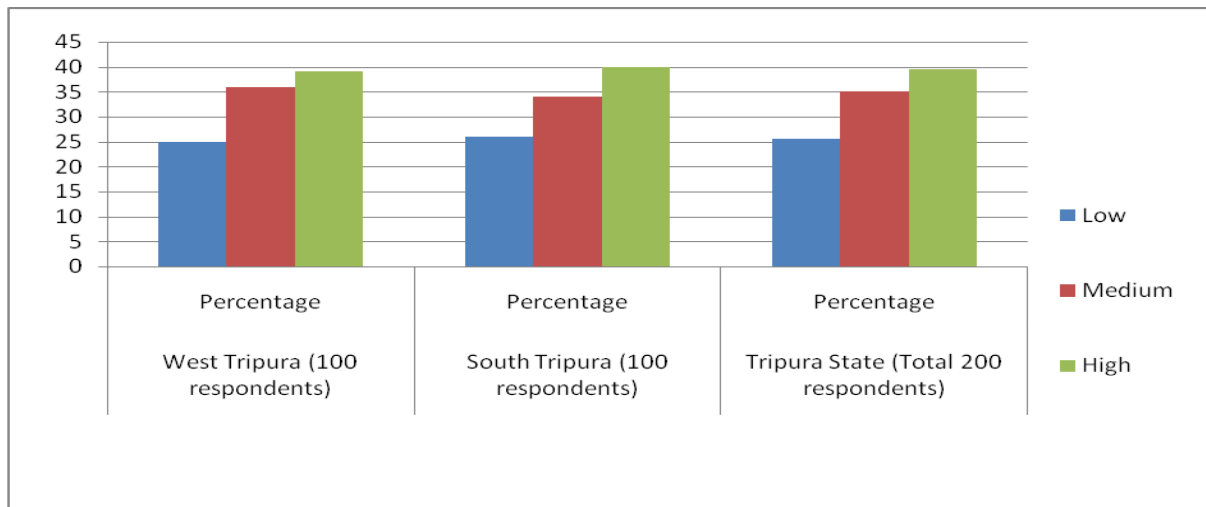
South Tripura

The Table also indicates that 100 per cent of rice farmers have precise correct knowledge regarding SRI method of cultivation requires (more / less seed).

Tripura

The Table indicates that 100 per cent of rice farmers have precise knowledge on SRI practices in such vital item as correct knowledge regarding SRI method of cultivation requires (more / less seed).

In Tripura state as a whole a large section of the SRI farmers possessed knowledge high to medium level (39.5 % to 35.0 %) on system of rice intensification (SRI) technology. Majority of rice farmers were aware of the six principles of SRI like sowing of tender seedling, per hill single seedling, depth of transplanting, water management, weed management and about the benefit of application of bio-fertilizer/ organic manure. This showed that knowledge on SRI technology was mostly percolated to the SRI farmers' level but they had constraint in the adoption of the technology fully due to some other factors like timely availability of skilled labourers, high cost of labour wages, problem of assured irrigation, weed management problem, farm mechanization, high cost of manures and fertilizer, high cost of pesticides-

insecticides, complicated procedure for obtaining loan from the credit organization, untimely release of loan by the credit organization and lack of support price. The majority of the farmers have obtained high adoption score. The mean adoption score (83.0) obtained by the SRI farmers also revealed the high level of adoption.

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