

Constraints encountered by rice farmers of Tripura in adoption of system of rice intensification (SRI) technology

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ABSTRACT

The investigation was carried out in two districts of Tripura viz West Tripura and South Tripura on 200 respondents to find out the constraints faced by the rice farmers in adoption of system of rice intensification (SRI) technology. SRI method of paddy cultivation is having several advantages over the traditional system since the seed and water requirement and incidence of pests and diseases is lower than the traditional system and yield is also quite higher. The constraints encountered by the respondents were timely availability of skilled labour as a very serious (68.5%) and serious problem (24%) with rank I. High cost of labour was reported as a very serious problem by 64 per cent and serious problem by 28 per cent of the respondents whereas weed management as a very serious by 60.5 per cent and serious problem by 20.0 per cent of the respondents with II and III rank respectively. The other constraints faced by the respondents were assured irrigation, lack of farm mechanization, high cost of pesticides and insecticides, high cost of manures and fertilizers, complicated procedure of obtaining loan from the credit organizations, untimely release of loan by them, non-availability of assured market etc.

Keywords: SRI; rice; constraints; adoption; farmers; technology

INTRODUCTION

Tripura a land-locked state of northeastern region of India has a total geographical area of 10491.69 km² with altitude of 780 m (northeastern part) to 15 m (western part) amsl. Terrain of the state is parallel hills and ridges alternated with narrow valleys and vegetation in tropical forest type (Dutta et al 2009). Area under paddy in Tripura to the total cultivable area is 78.1 per cent with major rice seasons being April to June (Aush), July to Nov (Aman) and December to March (Boro). State's contribution to national paddy production is 0.66 per cent with an average productivity of 3.71 tons per ha and the all India rank in productivity is 7th (www.sri-india.net).

SRI method of paddy cultivation is having several advantages over the traditional system since the seed and water requirement and incidence of pests and diseases is lower than the traditional system and

yield is also quite higher (Biswas and Nath 2013). Farmers are facing several problems to adopt this technology viz low landholding and very poor economic status. Since SRI technology requires more labour per hectare than traditional methods of growing rice therefore the farmers have been showing less interest in adopting this technology though it is having great potentiality (Anon 2007). Despite all the rich profitability of SRI technology the extent of its spread has still remained insignificant due to various reasons. Therefore the present study was designed to find out the constraints encountered by the rice farmers for adopting the SRI technology.

METHODOLOGY

The study was carried out in two districts of Tripura viz West Tripura and South Tripura. The two districts were selected purposively in view of the diverse land and agricultural resources ideally

suited for taking up SRI technology. Among seventeen development blocks in West Tripura two blocks viz Jirania and Bishalgarh and among eleven development blocks in South Tripura district two blocks viz 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 were selected for the study. A simple random sampling technique was followed for the selection of 200 respondents (viz 100 respondents from each district, 50 from each block and 10 from each village) for the final data collection.

A set of constraints was prepared on the basis of adequate review of literature, discussions and preliminary survey in study area. The constraints or problems were classified into seven classes viz constraints related to seed, manures and fertilizers, pesticides and insecticides, social situation, marketing, credit, transportation and miscellaneous constraints. Although 32 problems were selected from seven areas respondents were requested to check any one of the response categories (level of seriousness) against each problem. The responses thus received were rated on a three point continuum viz very serious, serious and not so serious with score 2, 1 and 0 respectively. The intensity of each problem was worked out by summing up all the individual scores obtained by the respondents on each problem. The problems were then categorized into three categories viz very serious, serious and not so serious on their total seriousness scores as the respondents perceived.

RESULTS and DISCUSSION

Constraints encountered by rice farmers of West Tripura

The constraints encountered by the rice farmers of West Tripura district are presented in Table 1. The data reveal that problem of timely availability of skilled labour was expressed as a very serious problem by 67 and serious problem by 23 per cent of respondents. High cost of labour was reported as a very serious problem by 62 and serious problem by 27 per cent whereas assured irrigation a very serious by 58 and serious problem reported by 18.0 per cent of the respondents.

The other constraints in order of seriousness were weed management, lack of farm mechanization,

high cost of manures and fertilizers, high cost of pesticides and insecticides and complicated procedure for obtaining loan from the credit organizations.

Constraints encountered by rice farmers of South Tripura

The constraints encountered by the rice farmers of South Tripura district are presented in Table 2. Problems of timely availability of skilled labour was expressed as a very serious by 70 and serious problem by 25 per cent of the respondents with rank I followed by high cost of labour wages as a very serious by 66 and serious problem by 29 per cent (rank II) and weed management reported as a very serious by 63.0 per cent and serious problem by 22.0 per cent (rank III) of the respondents. The other constraints faced by the respondents were assured irrigation, lack farm mechanization, high cost of pesticides and insecticides, high cost of manures and fertilizers and complicated procedure of obtaining loan from the credit organizations.

Constraints encountered by rice farmers of Tripura state

Table 3 reveals that problems of timely availability of skilled labour was expressed as a very serious by 68.5 and serious problem by 24 per cent of the respondents with rank I. High cost of labour was reported as a very serious by 64 and serious problem by 28 per cent and weed management as a very serious by 60.5 and serious problem by 20.0 per cent of the respondents with II and III rank respectively.

The other problems in order of importance were assured irrigation, lack of farm mechanization, high cost of pesticides and insecticides, high cost of manures and fertilizers, complicated procedure for obtaining loan from the credit organizations, untimely release of loan by the credit organizations and non-availability of assured market for paddy. Seasonal labour, weeds and water management are the problems that have also been observed by Moser and Barrett (2002). Karki (2010) also reported that a downfall in SRI adoption was found which was mainly attributed to the declining institutional support. Weed management, water management and lack of institutional support were the major constraints for SRI adoption.

Johnson and Vijayaragavan (2011) found that important reasons for non-adoption of SRI practices

Table 1. Constraints encountered by the rice farmers in adoption of SRI technology in West Tripura (n= 100)

Constraint	Not so serious		Serious		Very serious		Total score	Rank
	F	%	F	%	F	%		
Constraints related to seed								
Lack of knowledge about the quality seed	69	69	13	13	18	18	49	22
High cost of paddy seed	62	62	17	17	21	21	59	20
Occasional supply of low quality seed	60	60	17	17	23	23	63	19
Non-availability of seed of different varieties at proper time	72	72	11	11	17	17	45	23
Constraints related to manure and fertilizer								
Lack of adequate knowledge about manure and bio-fertilizer (dose, time of application, method of application etc)	55	55	19	19	26	26	71	17
High cost of manure and bio-fertilizer	26	26	29	29	45	45	119	6
Lack of manure and bio-fertilizer	58	58	18	18	24	24	66	18
Miscellaneous constraints								
Lack of soil and water testing facility to the amount and type of bio-fertilizer to be used	77	77	7	7	16	16	39	24
Weed management	27	27	20	20	53	53	126	4
Assured irrigation	24	24	18	18	58	58	134	3
Constraints related to pesticides and insecticides								
Lack of adequate knowledge about the use of different pesticides, insecticides	47	47	23	23	30	30	83	15
High cost of pesticides, insecticides	27	27	32	32	41	41	114	7
Non-availability of desired pesticides, insecticides	79	79	7	7	14	14	35	25
Lack of technical knowledge on judicious use of pesticides, insecticides	44	44	24	24	32	32	88	14
Constraints related to social situation								
Problem of timely skilled labour availability	10	10	23	23	67	67	157	1
High cost of labour	11	11	27	27	62	62	151	2
Lack of farm mechanization	22	22	32	32	46	46	124	5
Problem of tenant farmer	37	37	27	27	36	36	99	12
Constraints related to marketing								
Price fluctuation	66	66	15	15	19	19	53	21
Lack of support price	32	32	29	29	39	39	107	10
More involvement of middle men	94	94	2	2	4	4	10	32
Non-availability of assured market	34	34	28	28	38	38	104	11
Constraints related to credit								
Non-availability of credit facility in the locality	49	49	22	22	29	29	80	16
Complicated procedure for obtaining loan from the credit organizations	28	28	31	31	41	41	113	8
Inconvenience due to distance to the credit organization	81	81	6	6	13	13	32	26
Untimely release of loan by the credit organizations	30	30	30	30	40	40	110	9
Unyielding behaviour of bank personnel in advancing loan	43	43	24	24	33	33	90	13
Professional money lenders charging high interest rate on loan	83	83	6	6	11	11	28	27
High interest rate on loan	85	85	5	5	10	10	25	28
Transport related constraints								
Non-availability of self-made transport to bring produce to the market	87	87	4	4	9	9	22	29
Non-availability of government/public transport to bring produce to the market	91	91	4	4	5	5	14	30
Harassment caused by police during Transportation	92	92	4	4	4	4	12	31

Table 2. Constraints encountered by the rice farmers in adoption of SRI practices in South Tripura (n= 100)

Constraint	Not so serious		Serious		Very serious		Total score	Rank
	F	%	F	%	F	%		
Constraints related to seed								
Lack of knowledge about the quality seed	62	62	18	18	20	20	58	22
High cost of paddy seed	56	56	19	19	25	25	69	20
Occasional supply of low quality seed	53	53	21	21	26	26	73	19
Non-availability of seed of different varieties at proper time	64	64	16	16	20	20	56	23
Constraints related to manure and fertilizer								
Lack of adequate knowledge about manure and bio-fertilizer (dose, time of application, method of application etc)	46	46	25	25	29	29	83	17
High cost of manure and bio-fertilizer	21	21	31	31	48	48	127	6
Lack of manure and bio-fertilizer	49	49	23	23	28	28	79	18
Miscellaneous constraints								
Lack of soil and water testing facility to the amount and type of bio-fertilizer to be used	69	69	13	13	18	18	49	24
Weed management	22	22	22	22	56	56	134	4
Assured irrigation	15	15	22	22	63	63	148	3
Constraints related to pesticides and insecticides								
Lack of adequate knowledge about the use of different pesticides, insecticides	38	38	28	28	34	34	96	15
High cost of pesticides, insecticides	19	19	36	36	45	45	126	7
Non-availability of desired pesticides, insecticides	71	71	12	12	17	17	46	25
Lack of technical knowledge on judicious use of pesticides, insecticides	37	37	28	28	35	35	98	14
Constraints related to social situation								
Problem of timely skilled labour availability	5	5	25	25	70	70	165	1
High cost of labour	5	5	29	29	66	66	161	2
Lack of farm mechanization	18	18	33	33	49	49	131	5
Problem of tenant farmer	31	31	30	30	39	39	108	12
Constraints related to marketing								
Price fluctuation	61	61	18	18	21	21	60	21
Lack of support price	28	28	31	31	41	41	113	10
More involvement of middle men	91	91	3	3	6	6	15	32
Non-availability of assured market	29	29	31	31	40	40	111	11
Constraints related to credit								
Non-availability of credit facility in the locality	42	42	26	26	32	32	90	16
Complicated procedure for obtaining loan from the credit organizations	21	21	36	36	43	43	122	8
Inconvenience due to distance to the credit organization	76	76	9	9	15	15	39	26
Untimely release of loan by the credit organizations	23	23	34	34	43	43	120	9
Unyielding behaviour of bank personnel in advancing loan	34	34	29	29	37	37	103	13
Professional money lenders charging high interest rate on loan	78	78	8	8	14	14	36	27
High interest rate on loan	80	80	7	7	13	13	33	28
Transport related constraints								
Non-availability of self-made transport to bring produce to the market	82	82	6	6	12	12	30	29
Non-availability of government/public transport to bring produce to the market	86	86	5	5	9	9	23	30
Harassment caused by police during transportation	89	89	4	4	7	7	18	31

Table 3. Constraints encountered by the rice farmers in adoption of system of rice intensification (SRI) practices in Tripura (n= 200) s

Constraint	Not so serious		Serious		Very serious		Total score	Rank
	F	%	F	%	F	%		
Constraints related to seed								
Lack of knowledge about the quality seed	131	65.5	31	15.5	38	19	107	22
High cost of paddy seed	118	59	36	18	46	23	128	20
Occasional supply of low quality seed	113	56.5	38	19	49	24.5	136	19
Non-availability of seed of different varieties at proper time	136	68	27	13.5	37	18.5	101	23
Constraints related to manure and fertilizer								
Lack of adequate knowledge about manure and bio-fertilizer (dose, time of application, method of application etc)	101	50.5	44	22	55	27.5	154	17
High cost of manure and bio-fertilizer	46	23	68	34	86	43	240	7
Lack of manure and bio-fertilizer	107	53.5	41	20.5	52	26	145	18
Miscellaneous constraints								
Lack of soil and water testing facility to the amount and type of bio-fertilizer to be used	146	73	20	10	34	17	88	24
Weed management	49	24.5	42	21	109	54.5	260	4
Assured irrigation	39	19.5	40	20	121	60.5	282	3
Constraints related to pesticides and insecticides								
Lack of adequate knowledge about the use of different pesticides, insecticides	85	42.5	51	25.5	64	32	179	15
High cost of pesticides, insecticides	47	23.5	60	30	93	46.5	246	6
Non-availability of desired pesticides, insecticides	150	75	19	9.5	31	15.5	81	25
Lack of technical knowledge on judicious use of pesticides, insecticides	81	40.5	52	26	67	33.5	186	14
Constraints related to social situation								
Problem of timely skilled labour availability	15	7.5	48	24	137	68.5	322	1
High cost of labour	16	8	56	28	128	64	312	2
Lack of farm mechanization	40	20	65	32.5	95	47.5	255	5
Problem of tenant farmer	68	34	57	28.5	75	37.5	207	12
Constraints related to marketing								
Price fluctuation	127	63.5	33	16.5	40	20	113	21
Lack of support price	60	30	60	30	80	40	220	10
More involvement of middle men	185	92.5	5	2.5	10	5	25	32
Non-availability of assured market	63	31.5	59	29.5	78	39	215	11
Constraints related to credit								
Non-availability of credit facility in the locality	91	45.5	48	24	61	30.5	170	16
Complicated procedure for obtaining loan from the credit organizations	49	24.5	67	33.5	84	42	235	8
Inconvenience due to distance to the credit organization	157	78.5	15	7.5	28	14	71	26
Untimely release of loan by the credit organizations	53	26.5	64	32	83	41.5	230	9
Unyielding behaviour of bank personnel in advancing loan	77	38.5	53	26.5	70	35	193	13
Professional money lenders charging high interest rate on loan	161	80.5	14	7	25	12.5	64	27
High interest rate on loan	165	82.5	12	6	23	11.5	58	28
Transport related constraints								
Non-availability of self-made transport to bring produce to the market	169	84.5	10	5	21	10.5	52	29
Non-availability of government/public transport to bring produce to the market	177	88.5	9	4.5	14	7	37	30
Harassment caused by police during transportation	181	90.5	8	4	11	5.5	30	31

were risk involved in adopting new practices, shortage of agricultural labour and psychological fear of loss. Biswas and Nath (2013) observed that timely weed management of the crop, intensive care required at seedling stage and more labour needed at the time of cultivation practices were the constraints perceived by more than 85 per cent of the farmers in the large scale adoption of SRI technology.

CONCLUSION

It can be concluded that there existed a wide gap between development of technologies and their transfer to actual farming situations. Hence these constraints encountered by the farmers could be overcome by following proper strategies like suitable and intensified training and demonstration programmes on production technologies.

High yielding varieties recommended for the state should be made available to the farmers. State department of agriculture and zonal research stations may take concerted initiatives in this regard supported by financial institutions to provide credit facilities in terms of short-term loan to the farmers. Moreover the state government should prepare policy to provide the minimum support price, irrigation facility, agricultural chemicals, subsidy for farm machinery etc in the state which would encourage the growers for extensive cultivation of paddy in the state.

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