

A study on profile of system of rice intensification (SRI) paddy growers of Karnataka*

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Abstract : The study was conducted during 2009 – 2010 in Haveri, Chikballapur and Uttara Kannada districts of Karnataka state to assess the profile characteristics of farmers growing SRI paddy. Totally 120 respondents were interviewed for the study. Majority of the respondents were middle aged having medium land holdings. Almost equal percent of respondents belonged to high and medium income categories. Majority of them hailed from nuclear and big families possessed local cow and bullocks. Majority of them owned herds of medium size and followed direct method of feeding fodder. Extension contact and extension participation of the respondents was found to be medium. Majority of the respondents belonged to low utilization group with respect to news paper and radio and high in television utilization. More than half of the respondents grew paddy alone in *Kharif*. High percent of them were practicing SRI method in an area of up to 0.51 acre. Majority of the respondents allotted a land holding of up to 2 acres for paddy cultivation. Almost half of the respondents possessed high experience in paddy cultivation and majority of them were cultivating paddy for grains.

Key words : Livestock production system, Paddy straw, Socio-economic status, System of rice intensification

Introduction

Rice (*Oryza sativa*) is the most widely grown crop in India. It is cultivated in 45.50 million hectares and has production of 96.43 million tonnes of grain. In Karnataka it is grown in an area of 14.42 lakh hectares with a production of 34.50 lakh tonnes of grain. India occupies the world's largest area under rice, grown under a wide range of agro-ecological conditions.

SRI is an acronym for system of rice intensification. This improved method of rice cultivation was developed in 1983 in Madagascar and has now spread to many parts of the world. SRI is neither a new variety nor a hybrid; it is an improved method of cultivating paddy. Any paddy variety can be cultivated by this method. Six key principles of SRI are young-aged seedlings, careful single seedling transplanting, wider spacing, water management, weeding and compost/organic manuring. It uses less water, less seed (2 kg/ac), fewer plants per unit area (25 cm x 25 cm), less chemical fertilizers, more organic manures and less pesticide.

SRI method of cultivating paddy differs from traditional method in various aspects, like seed rate, transplanting, spacing, irrigation, weeding etc. SRI method of cultivating paddy enjoys various advantages over the traditional method. Its major advantages are higher yields of both grain and straw, reduced duration of crop cycle (by 10-15 days), less chemical inputs, less water requirement, less chaffy grain (%), increased grain weight without change in grain size, higher head rice recovery rate, withstands cyclonic gales and soil health improves through biological activity.

Innovations are adopted early by those farmers who have attributes as listed by Rogers and Shoemaker (1971). Others would follow them slowly based on their resource matrix and various other parameters resulting in considerable time gap. Studying the profile of farmers' already practicing SRI method of Paddy cultivation would certainly help to develop suitable extension strategies to reach the slow adopters thus reducing

the time gap and increasing the adoption rate. The study thus aimed to document the profile characteristics of SRI paddy growers in Karnataka state.

Material and methods

The study was conducted during 2009 – 2010 in Haveri, Chikballapur and Uttara Kannada districts of Karnataka state. The ex-post facto research design was employed for the study. Data collection was done through personal interview method with the help of interview schedule. The target population was farmers practicing SRI method of paddy cultivation. Hundred and twenty respondents were selected for the study. Socio-economic characteristics of SRI paddy growers, livestock production system, information source utilisation and information on paddy cultivation by the respondents were studied. The data collected were analyzed with the help of statistical tools such as frequency, percentages, mean and standard deviation.

Results and discussion

Most (60.83%) of the respondents belonged to middle age group followed by old and young age groups (Table 1). The probable reason for this could be that the middle aged respondents with some years of farming experience might be more interested, eager and enthusiastic in trying out new things like SRI methodology. The similar results were reported by Sain (2008). With respect to education, equal percent (29.17%) of respondents studied up to middle and high school. One fifth (20.80 %) of the respondents had primary school education, followed by pre-university (15.83%) (Table 1). Better awareness about the importance of education and also existence of primary and high school facilities in the rural area could be the reasons for the finding. The similar results were reported by Gupta (1999) and Arvinda and Rakshesh (2006). Half (50.84%) of the respondents were medium land holders followed by big and

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Table 1. Socio - economic characteristics of System of Rice Intensification paddy growers

n= 120

Particulars	Categories	Total	
		Frequency	Percentage
Age (years)			
Young	Below 30	22	18.33
Middle	31 - 50	73	60.83
Old	Above 51	25	20.84
Mean	41.82		
S.D.	11.27		
Education			
Illiterate	0	4	3.33
Primary school	1 - 4	25	20.80
Middle school	5 - 7	35	29.17
High school	8 - 10	35	29.17
Pre university	11-12	19	15.83
Graduate	> 12	2	1.70
Mean	7.37		
S.D.	7.33		
Land holding (Acres)			
Marginal	up to 2.50 ac	1	0.83
Small	2.50 to 5.00 ac	24	20.00
Medium	5.01 to 10.00 ac	61	50.84
Big	Above 10.00 ac	34	28.33
Mean	9.00		
S.D.	7.67		
Irrigation source			
Bore well	62	51.66	
Canal	37	30.83	
Pond	35	29.16	
Pumping from river	30	36.00	
Annual income (Rs.)			
High	Above 51,000	44	36.67
Medium	34,001 to 51,000	38	31.67
Semi medium	17,001 to 34,000	33	27.50
Low	Below 17,000	5	4.17
Mean	44,636		
S.D.	20883.12		
Family size			
Small	4	56	46.67
Large	Above 4	64	53.33
Family type			
Nuclear		68	56.67
Joint		52	43.33

Note: More than one source mentioned under 'irrigation source'

small landholders (Table1). In the study area farmers had very good access for irrigation facilities in the form of tube wells, river water and canal and on applying conversion factor of one acre of irrigated land is equivalent to 2.50 acres of dry land, many would belong to big land holdings category. This could be the reasons for the majority belonging to large land holding category. Similar findings were reported by Joshi (1992) and Saikrishna (1998).

Slightly more than half (51.66 %) of the respondents were dependent on bore well for irrigation followed by river water, canal and pond. Canal and river water irrigation is convenient for those farmers having lands adjacent to them. But borewell

provides freedom for the farmers to operate as per their convenience and would be dug right in their field. Many of the respondents belonged to high income group which might have enabled them to invest in bore well. More than one-third (36.67%) of the respondents belonged to high income group followed by medium (31.67%) and semi medium (27.50%) income groups. The strong reason for this could be availability of assured irrigation facility for crop cultivation. This enabled the farmers to opt for crops intensification and diversification to earn better. Subsidiary to agriculture, livestock husbandry was also followed as a source of supplementary income by the respondents. Similar findings were reported by Bheemappa (2001).

The results presented in Table 1 indicated that more than half (53.33%) of the respondents belonged to large family (>4 members). Agriculture is considered to be a family occupation requiring active participation of all members of the family, hence many of the respondents may prefer to live in big families and also in the study area respondents were practicing mixed farming (crop-livestock) which requires more man power. These could be the probable reason for majority belonging to big family size. Similar findings were reported by Balamatti (1993). More than half (56.67%) of the respondents were from nuclear families and 43.33 percent of them lived in joint families. Probably the respondents preferred to have better quality of life as nuclear family demands less sharing of facilities or resources. Similar results were reported by Balamatti (1993) and Saikrishna (1998).

Most of the respondents (60.83%) possessed bullocks and 46.66 percent of the respondents possessed local cow. Fifteen and 23.33 percent of the respondents possessed buffaloe and cross bred cow, respectively. High cost, sophisticated feeding and health management systems for cross bred cow could be the reasons for less number of respondents owning them. Tractorisation is less prevalent in paddy grown areas. The persistent dependence on bullocks in paddy fields could be the reason for more number of cows found in the study area as compared to buffaloes. Similar findings were reported by Singh *et al.* (2001) and Biradar *et al.* (2007).

The results obtained from Table 2 indicated that majority (73.33%) of the respondents owned medium herd size. Big herd size demands more manpower to take care. Majority of the respondents had nuclear family where in availability of manpower is limited. Also many respondents might have restricted the herd size according to the availability of crop residue to feed the livestock. Hence many respondents might have owned medium herd size. Similar results were reported by Mundhwa and Padheria (1998) and Pushpa (2006). Majority (85.33%) of the respondents followed the method of direct feeding. This could be attributed to the fact that the paddy straw is fed directly and as is available in abundance chaffing is

not followed for efficient use.

More than half of the respondents (65.84%) had medium extension contact. About 19.16 and 15.00 percent of respondents had high and low extension contacts, respectively. Selection of the study area where NGOs were active could be the reason for medium to high extension contact as it results in better awareness about various other such agencies. Forty one percent of the respondents belonged to medium extension participation group followed by high (34.16%) and low extension participation categories (25.00%). As mentioned earlier the active presence of NGOs in the study area would have certainly increased the participation of respondents in programs like trainings, field days, meetings etc. Also the SRI method is an entirely different method from traditional practice of paddy cultivation. The inquisitiveness to learn about it could also be the reason for the present finding where medium to high extension participation among respondents was found.

Majority (80.00%) and 50.00 percent of the respondents were in low utilization group with respect to news paper and radio, respectively. In case of television 73.67 percent of them were medium to high utilisation group. Nearly 68 percent of the respondents belonged to medium and high income groups, reflecting better purchasing power. Indeed, television is one of the most important miracles of science. It has brought about a revolution in the field of entertainment, education and communication. Its strong visual impact as compared to only reading in case of news paper and listening in case of radio replaced them. Also the illiterates get very good educative programs from this much stronger medium. Hence the present finding. All the respondents invariably grew paddy. More than half (56.67%) of the respondents grew paddy alone in *Kharif*. The probable reason for this may be suitability of soil in the area and availability of adequate quantity of water for paddy cultivation. Paddy, ragi and maize were cultivated by 11.67 percent of the respondents, while 10 percent of the respondents cultivated paddy and maize followed by meager percent (5.00%) of respondents cultivated paddy and ragi. Similarly in rabi,

Table 2. Livestock production system of respondents (n=120)

Particulars	Categories	Total	
		Frequency	Percentage
Herd composition			
	Local cow	56	46.66
	Cross bred cow	28	23.33
	Buffaloe	18	15
	Bullocks	73	60.83
	Sheep and goats	2	1.66
Herd size (ACUs)			
	Small (mean - 0.425*SD)	25	20.83
	Medium (mean + 0.425*SD)	88	73.33
	Large (mean + 0.425*SD)	7	5.84
	Mean	3.85	
	SD	5.59	
Feeding pattern			
	Direct feeding	103	85.33
	Soaking	43	35.83

Multiple answers sought for Herd composition and Feeding pattern. So total exceeds sample size

Table 3. Information source utilisation and cropping patterns of respondents

(n=120)

Table 5: Information source utilization and cropping patterns of respondents (n=126)			
Particulars	Categories	Total	
		Frequency	Percentage
<u>Extension contact</u>			
	Low (mean - 0.425*SD)	18	15
	Medium (mean + 0.425*SD)	79	65.84
	High (mean + 0.425*SD)	23	19.16
	Mean	4.12	
	SD	1.45	
<u>Extension participation</u>			
	Low (mean - 0.425*SD)	30	25
	Medium (mean + 0.425*SD)	49	40.84
	High (mean + 0.425*SD)	41	34.16
	Mean	3.75	
	SD	2.28	
<u>Mass media utilization</u>			
<u>News paper</u>			
	Low (mean - 0.425*SD)	96	80
	Medium (mean + 0.425*SD)	2	1.66
	High (mean + 0.425*SD)	22	18.34
	Mean	0.29	
	SD	0.62	
<u>Radio</u>			
	Low (mean - 0.425*SD)	60	50
	Medium (mean + 0.425*SD)	26	21.67
	High (mean + 0.425*SD)	34	28.33
	Mean	0.40	
	SD	0.61	
<u>Television</u>			
	Low (mean - 0.425*SD)	31	25.83
	Medium (mean + 0.425*SD)	46	38.33
	High (mean + 0.425*SD)	43	35.83
	Mean	1.51	
	SD	0.68	
<u>Cropping pattern-Kharif</u>			
	Paddy	68	56.66
	Paddy, Ragi, Maize	14	11.66
	Paddy, Maize	12	10
	Paddy, Ragi	6	5
<u>Cropping pattern-Rabi</u>			
	Paddy	71	59.16
	Paddy, Sunflower	21	17.5

most of the respondents (59.16%) cultivated paddy alone and only 17.50 percent of them took up sunflower. The crops cultivated by the respondents were certainly influenced by the type of farm land owned, availability of irrigation facilities and weather.

Majority (75.83%) of the respondents were practicing SRI method in an area of up to 0.5 acre, 22.50 percent of respondents were practicing SRI method in an area of 0.6 to 1 acre. This might be due to the fact that the farmers have taken up SRI methodology as trial and hence only a small portion of land was committed to this intervention. Similar results were reported by Sinha (2009). A cursory look at Table 4 revealed that 55.83 percent of the respondents allotted a land holding up to 2 acres for paddy cultivation, 37.50 percent of them cultivated the same in 2 to 5 acre and only 6.67 percent cultivated it in above 5 acre land. Area cultivated under paddy by the farmers, as reported earlier depends on the availability

of land with the farmer which is suitable for paddy cultivation.

As depicted in Table 4, high experience in paddy cultivation was possessed by 50.83 percent of the respondents and 34.16 percent of them had medium experience in it. Availability of irrigation sources like borewell, river and canal in some parts of the study area had made the farmers to cultivate paddy as a principal crop. More than 60 per cent of the farmers belonged to middle age group and hence there is all the possibility of many respondents having more experience in paddy cultivation. These might be the reasons for the present finding. More than half of the respondents (62.50%) were cultivating paddy for grains. More than one third (37.50%) of the respondents were cultivating paddy for grains and straw was also important. Paddy almost ruled as sole crop in the study area, respondents possessing livestock must have to get straw to feed their animals from paddy crop itself. This could be the probable reason for the present findings.

Table 4. Information on paddy cultivation by the respondents

		n=120	
Particulars	Categories	Total	
		Frequency	percentage
Area Under SRI Paddy	Up to 0.5 acre	91	75.83
	0.6 to 1 acre	27	22.5
	Above 1 acre	2	1.67
	Mean area	0.51	
Area under traditional paddy	Up to 2 acre	67	55.83
	2.10 to 5 acre	45	37.5
	Above 5 acre	8	6.67
	Mean area	2.47	
Experience in paddy cultivation	Low (Up to 10 years)	61	50.83
	Medium (11- 16 years)	18	15.00
	High (above 16 years)	41	34.17
	Mean	12.87	
Purpose for cultivating paddy	For grains only	75	62.5
	For grains and straw	45	37.5

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