Adoption of recommended package of practices by rice growers in District Baramulla [Jammu & Kashmir]

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Abstract
The present study was conducted to measure the adoption levels of rice growers in 3 tehsils of Baramulla district namely Sopore, Bomai and Pattan. Four villages from each tehsil were selected randomly which makes a total of 12 villages and 10 rice growers from each village those were having above half an acre under rice were purposively selected that makes a sample of 120 rice growers for the study. It was found that majority (55.00 %) of the respondents had medium level of adoption. Majority of the respondents had full adoption of recommended rice varieties (55.83%), sowing time (93.33%), number of ploughings for puddling (71.66%) time of application nutrients for nursery (100%), dosage of nutrients (50.83%), time of application of FYM (97.50%) and time of application of weedicide(74.16%) whereas no adoption regarding seed treatment and dosage for seed treatment (76.66%) and none of respondents had adopted either disease management practices or pest management practices. The main reasons for non adoption were very poor knowledge about SKUAST-K recommendations (51.66%), producing only for consumption purpose (36.66%), poor contacts with officials of agriculture department about acquiring of knowledge regarding rice cultivation (27.50%) as mentioned by rice growers. The present study was not focused solely on adoption level of rice growers but also on constraints in adoption of recommended package of practices which can be the basis for further studies.

Keywords: Adoption, Package of practices, Rice, Rice growers

INTRODUCTION

Rice is extensively grown as a cereal crop in the world and is staple food of about 2.9 billion people (Lal, 2011). As a matter of fact, rice is the life line of people in the Asian countries and among them India is one of the most important producer as well as consumer of rice. Rice is the leading food crop of world cultivated over an area of about 160.8 million hectares with the production of about 746.8 million tons globally (Anonymous, 2016a). Among the rice growing countries, India has the largest area (43.38 million hectares) followed by China and Indonesia. In respect of production, India ranks second next to China 200 million tons of rice. In India, rice is cultivated over an area of 43.38 million hectares with a production of 104.32 million tones and productivity of 3093 kg/ha. Rice accounts for about 41.36 % of total food grains production and 44.34 % of cereals production of the country (Anonymous, 2017).

The area under rice in Jammu and Kashmir is 0.3 million hectares with a productivity of 2123.4 kg/ha and in Kashmir valley rice is grown over an area of 1.44 lakh hectares with a production of 3.8 lakh tons and a productivity of 2688.3 kg/ha

(Anonymous, 2016b). In Baramulla District of J&K, the area under rice during 2011-12 to 2014-15 has increased from 8094 to 8514 hectares whereas production during the said period has decreased from 194.39 to 144.39 thousand metric tons (Anonymous, 2016). It has been found that the production levels over the decade have remained stagnant mainly due to poor and deteriorating soils. One of the probable reason could be that the farmers are not adopting the recommendations of SKUAST-Kashmir with respect to rice crop. Keeping the above mentioned issues, the study on adoption of recommended package of practices by rice farmers of Baramulla district of Jammu and Kashmir was planned with the specific objectives- i) To know the level of adoption of rice growers regarding various practices of rice cultivation as recommended by SKUAST-K, ii) To identify the reasons for non-adoption of recommended practices of rice cultivation by rice growers.

MATERIALS AND METHODS

The study was carried out in 3 tehsils namely Sopore, Bomai and Patttn of Baramulla district of Jammu and Kashmir which were purposively selected, where rice is grown. Ex- post- facto research design was adopted for the study. From each tehsil four villages were randomly selected thus twelve villages were selected for the present study. The list of the villages was mentioned in Table-1. A sample of 120 farmers from twelve villages were purposively selected those who cultivate rice over an area of half an acre. The data were collected by personal interview method containing questions regarding rice cultivation, which were prepared after consulting experts from Divi-

sion of Agronomy, Plant Pathology and Agricultural Extension and by referring to the package of practices of cereals crops published by the Sher-e -Kashmir University of Agricultural Sciences and Technology of Kashmir. Later the responses were tabulated, analyzed and results were presented.

To know the level of adoption of rice growers regarding various practices of Rice cultivation, the present study was operationalized as the continued use of package of practices by rice growers as recommended by SKUAST-K. The questions covering full range of cultivation practices of the crop were framed. The actual practice followed by the respondents for the year 2017 was noted down. For the response of full adoption 2 score was given, for partial adoption 1 score was assigned and zero score for no adoption was assigned. The mean adoption score obtained by respondents is 26.85 and standard deviation (S.D) is 2.63, based on which the adoption has been classified into three categories as low, medium and high adoption and have been measured as Low: [Below mean-S.D (<26.85-2.63 = 24.22)], Medium: [Between mean±S.D (24.22-29.48)] and High: [Above mean + S.D (>26.85±2.63 = 29.48)].

RESULTS AND DISCUSSION

Overall adoption level of respondents: From the Table-2, it is evident that, majority 55.00 % of the respondents were having medium level of adoption, whereas 25.00 % and 20.00 % of the respondents were having high and low level of adoption respectively. This findings are in line with the findings of Karangami (2017) conducted in Palghar district of Maharastra.

Adoption of cultural practices by respondents: From the data presented in Table-3 it is evident that majority of the respondents had full adoption of recommended rice varieties (55.83%), sowing time (93.33%) and number of ploughings for puddling (71.66%) whereas majority of the respondents had partial adoption regarding seed rate (91.83%), seed bed size (100%), age of seedlings (70.00%) and number seedlings per hill (100%). However, majority of the respondents had no adoption regarding seed treatment and dosage of seed treatment chemicals (76.66%). Similar results were obtained previously by Meena *et al.* (2012) farmers adopted more seed rate, and seed treatment was adopted by very few farmers and Dhenge *et al.* (2013) observed same type of results pertaining to farmers adoption of recom-

Table 1. Sampling Plan of the study from tehsils of District Baramulla (J&K).

S.N.	Tehsils	Villages
1		Tarzoo-A
2	Sopore	Nowpora-A
3		Mazbug
4		Audipora
5		Nathipora
6	Bomai	Wadoora
7		Seloo
8		Tujar
9		Palhallam
10	Pattan	Tilgam
11		Tapper
12		Indergam

Table 2. Overall adoption level of rice growers of District Baramulla (J&K).

Variable	Categories	Respondents	
		Frequency	Percentage
Adoption	Low (Below mean-S.D)	24	20.00
	Medium (Between mean±S.D)	66	55.00
	High (Below mean+S.D	30	25.00
		Mean: 26.85, S.D :2.63	

Table 3. Practice-wise adoption of rice growers about recommended cultural practices.

| S. N. | Practices | Level of adoption (N=120) | | | | | |
| | | Full adoption | | Partial Adoption | | No adoption | |
		F	%	F	%	F	%
1	Varieties (Jhelum, SR-1)	67	55.83	58	48.33	0	0.00
2	Seed Rate (2.5-3Kg/kanal)	11	9.16	109	91.83	0	0.00
3	Seed treatment(Captan 80 WP / Mancozeb 75 WP)	28	23.33	0	0.00	92	76.66
4	Dosage for seed treatment (3gms/ kg seed)	28	23.33	0	0.00	92	76.66
5	Seed bed size for 1 kanal of main field (1marla)	0	0.00	120	100	0	0.00
6	Sowing time (April-3rd week to May-2nd week)	112	93.33	8	6.66	0	0.00
7	No. of ploughings for puddling (2-3)	86	71.66	34	28.33	0	0.00
7	Age of seedlings while transplanting (25-30 days)	36	30.00	84	70.00	0	0.00
8	No. of seedlings/hill (2-3)	0	0.00	120	100	0	0.00

Note: F= Frequency, %= Percentage, 1 ha= 20kanals , 1 kanal=500 m^2 and 1 marla =25m^2

Table 4. Practice-wise adoption of rice growers about recommended nutrient management practices.

| S.N. | Practices | Level of adoption (N=120) | | | | | |
| | | Full adoption | | Partial Adoption | | No adoption | |
		F	%	F	%	F	%
I	**Nursery**						
1	275gms urea, 450gms DAP and 200gms MOP per 1marla	61	50.83	59	49.16	0	0.00
2	Time of application (basal dose)	120	100	0	0.00	0	0.00
II	**Main field**						
1	FYM (500kgs/ kanal)	27	22.50	90	75.00	3	2.50
2	Time of application (basal dose)	117	97.50	0	0.00	3	2.50
3	Urea (10kgs/ kanal)	55	45.83	65	54.17	0	0.00
4	Time of application (1/3rd as basal, 1/3rd at tillering and 1/3rd at panicle initiation)	34	28.33	86	71.66	0	0.00
5	DAP (6.5 kgs/ kanal)	48	40.00	72	60.00	0	0.00
6	Time of application (basal dose)	45	37.50	75	62.50	0	0.00
7	MOP (2.5 kgs/ kanal)	52	43.33	68	55.83	0	0.00
7	Time of application (basal dose)	45	37.50	75	62.50	0	0.00
8	Micro-nutrients (ZnSO$_4$ 0.5kgs/kanal)	0	0.00	0	0.00	120	100

Table 5. Practice-wise adoption of rice growers about recommended weed management practices.

| S.N. | Practices | Level of adoption (N=120) | | | | | |
| | | Full adoption | | Partial Adoption | | No Adoption | |
		F	%	F	%	F	%
I	**Chemical control**						
1	Butachlor @ 0.075Kg/Kanal	46	38.33	43	35.83	31	25.83
2	Time of Application(2-4 days after transplanting)	89	74.16	0	0.00	31	25.83
II	**Mechanical control**						
1	No.of hand weedings (2)	120	100	0	0.00	0	0.00
2	Time of first weeding (15-20 days after transplanting)	120	100	0	0.00	0	0.00
3	Time of second weeding (15 days after first weeding)	77	64.16	43	35.43	0	0.00

mended rice varieties.

Adoption of nutrient management practices by respondents: The data given in Table-4 shows that majority of the respondents had full adoption regarding time of application nutrients for nursery (100%) and dosage of nutrients (50.83%). In the nutrient management of main field majority of respondents had full adoption about time of application of FYM (97.50%) and partial adoption of quantity of FYM (75.00%), quantity of urea (54.17%), time of application of urea (71.66%), quantity of DAP (60.00%), time of application of DAP (62.50%), quantity of MOP(55.83%) and time of application of MOP (62.50%) whereas respondents had no adoption regarding micronutrient ap-

plication(100%) to main field.

Adoption of weed management practices by respondents: The data in Table -5 depicts that only (38.33%) of the respondents had full adoption of recommended weedicide and majority (74.16%) of the respondents had full adoption of time of application of weedicide. However all the respondents had full adoption of number of hand weedings and time of first weeding whereas only (64.16%) of the respondents had adopted the second weeding at recommended time. Sreekanth *et al.* (2018) earlier reported such type of findings where the farmers of Kadapa district of Rayalaseema region in Andhra Pradesh followed two manual weedings. **Adoption of plant protection measures by re-**

Table 6. Practice-wise adoption of rice growers about recommended plant protection practices.

S.N.	Practices	Level of adoption (N=120)					
		Full adoption		Partial Adoption		No adoption	
		F	%	F	%	F	%
I	**Disease management**						
1	Rice blast& Brown spot (Mancozeb 75WP +Carbendazium 50WP (50g/100 liter water)	0	0.00	0	0.00	120	100
II	**Pest management**						
1	Rice Grass hopper(Chloropyriphos 20EC@100ml/100 liter water)	0	0.00	0	0.00	120	100

Table 7. Reasons for non-adoption of recommended practices (N=120).

S.N.	Reasons	F	%	Rank
1	Very poor knowledge about SKUAST-K Recommendations	62	51.66	I
2	Producing only for consumption purpose	44	36.66	II
3	Poor contacts with officials of agriculture department about acquiring of knowledge regarding rice cultivation.	33	27.50	III
4	Less income from rice	32	26.66	IV
5	Very less area under Rice production	19	15.83	V
6	Farmers belief on traditional methods	16	13.33	VI
7	Following the practices as co-farmers do	15	12.50	VII
8	Irregular visits of officials of department of agriculture.	12	10.00	VIII
9	No follow up from agriculture department	11	09.16	IX
10	Following as suggested by Village Agriculture Extension officer	10	08.33	X
11	No faith on suggestions given by agriculture department officers	08	06.66	XI
12	Costly inputs	06	05.00	XII
13	Lack of Knowledge	04	03.33	XIII

spondents: The data in Table-6 shows that none of respondents had adopted either disease management practices or pest management practices. This is because of that the disease infection has not crossed the threshold level and respondents were having tractor mounted sprayers which cannot be taken to paddy field as the road facilities are not available. Regarding the pests usually grass hoppers feeds on the grasses on the bunds it rarely affects the crop.

Reasons for non-adoption of recommended package of practices mentioned by Rice growers: The data in Table-7 indicates the reasons for non-adoption recommended practices as mentioned by rice growers. The problems expressed by the respondents were tabulated along with frequency, percentage ranks and presented.

In order of priority, majority 51.66 % of the respondents indicated 'Very poor knowledge about SKUAST-K Recommendations', 36.66 % of the respondents indicated 'Producing only for consumption purpose', 27.50 % of the respondents indicated 'Poor contacts with officials of agriculture department about acquiring of knowledge regarding rice cultivation', 26.66 % of the respondents indicated 'Less income from rice' and 15.83 % of the respondents indicated 'Very less area under rice production'.

Whereas 13.33 % of the respondents indicated 'Farmers belief on traditional methods', 12.50 % of the respondents indicated 'Following the practices as co-farmers do', 10.00 % of the respondents indicated 'Irregular visits of officials of department of agriculture', 9.16 % of the respondents indicat-

ed 'No follow up from agriculture department', 8.33 % of the respondents indicated 'Following as suggested by Village Agriculture Extension officer'. 6.66 % of the respondents indicated 'No faith on suggestions given by agriculture department officers', 5.00 % of the respondents indicated 'Costly inputs' and 3.33 % of the respondents indicated 'Lack of Knowledge'. Ram (2015) reported the rice Farmers in Kurnool District of Andhra Pradesh has indicated similar results regarding low income from rice, costly inputs and lack of knowledge.

Conclusion

Adoption is a mental and continuous process. In the modern era new things are being invented by agricultural scientists but all the innovations are not being adopted by many of the members of social system. It was concluded from the study that nearly half of the respondents had not adopted the recommended varieties and respondents are using very high seed rate and more number of seedlings/hill while transplanting for the cultivation of rice. Majority respondents were not following the recommended dosages of nutrients and their time of application and weed management practices. None of the respondents had adopted plant protection measures. In overall adoption nearly half of the respondents were not adopting the recommended rice cultivation practices. The main reasons for not adopting the recommended package of practices were very poor knowledge about SKUAST-K recommendations which need to be

improved by organizing training programmes, discussions and by providing leaflets regarding rice cultivation, producing only for consumption purpose, poor contacts with officials of agriculture department about acquiring of knowledge regarding rice cultivation and less income from rice. These findings can help the future investigators to work on the aspects to overcome the above mentioned constraints as rice is the solo crop that feeds more people than any other cereal crop in Kashmir.

REFERENCES

1. Dhenge, S.A., Mankar, D.M., Shambharkar, Y.B. and Ovhar, N.D. (2013). Adoption of integrated pest management practices by paddy growers. *Indian J. Appl. Res.,* 8(3): 163-165.
2. Meena, S.L., Lakhera, J.P., Sharma, K.C. and Johri, S.K. 2012. Knowledge level and adoption pattern of rice production technology among farmers. *Rajasthan Journal of Extension Education.* 20: 133-137.
3. Ram, K.T. (2015). A Study on Technological Gap in Adoption of Recommended Cultivation Practices by the Rice Farmers in Kurnool District Of Andhra Pradesh. Department Extension Education and Communication Management, Agricultural College, Mahanandi, ANGRAU.
4. Anonymous, (2016). Directorate of Economics and Statistics, Department of Agricultural and Cooperation, Jammu and Kashmir.
5. Anonymous, (2016 a). Rice Market Monitor, Food and Agriculture Organization of United states. 19(2): (www.fao.org)
6. Anonymous, (2016 b). Digest of Statistics, Directorate of Economics and Statistics, Jammu and Kashmir, pp: 149.
7. Anonymous, (2017). Annual report (2016)-17, Department of Agriculture, Co-operation and Farmers welfare. (www.agricorp.nic.in)
8. Karangami, R. S. (2017). Adoption of recommended Rice cultivation practices by the farmers from palghar district. *M. Sc. (Ag.) Thesis*. Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli.
9. Sreekanth, M., Peer, Q.J.A., Ragavendra, C.K., Ganai, N.A., Bhat, B.A. and Farhana (2018). A study on knowledge and adoption of integrated pest management (IPM) by rice growers. *Agric. Update,* 13(2): 178 -182; DOI : 10.15740/HAS/AU/13.2/178-182.
10. Lal, R. (2011). Response of Rice to integrated nutrient management, *Climate Change,* 65: 277-296.