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## Farmer's knowledge and constraints in adoption of manures and fertilizers in rice

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**Abstract**

The study on knowledge and constraints in adoption of recommended practices in rice crop was conducted during the year 2016. The sample of 160 farmers was drawn from randomly selected eight villages of four randomly selected blocks of Baramulla district of Jammu and Kashmir through stratified random sampling technique proportional to size. The study revealed that about 40% of the respondents had poor knowledge of manures and fertilizers. Inadequate capital for purchase of manures and chemical fertilizers (45.00%), non-availability of fertilizers at the time of sowing (53.12%) and transplanting (43.12%) of rice and lack of awareness about recommendations of SKUAST-Kashmir with respect to manures and chemical fertilizers (89.37%) etc were some of the main constraints in adoption of manures and fertilizers in rice crop.

**Keywords:** Adoption, manures, fertilizers, knowledge, constraints

**1. Introduction**

Rice (*Oryza sativa*) extensively grown as a cereal crop in the world 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 particularly India which is one of the most important producer as well as consumer of rice. In India, rice is cultivated over an area of 42.65 million hectares with a production of 104.32 million tones and productivity of 2228 kg/ha (Economic Survey 2013-14). Rice accounts for about 43 percent of total food grain production and 55 percent of cereals production in the country (FAOSTAT, 2013) [2]. It is the staple food, grown as a kharif crop in Kashmir and plays a significant role in livelihood of the farmers. Although area under rice accounts for about 0.27 m ha only, yet it plays an important role in the state economy. The productivity (3.2MT/ha) in the valley is higher as compared to the national average productivity of about 1.9 MT/ha (Sharma *et al.*, 2011) [4]. In Baramulla District of J& K, area under rice during the years 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 tonnes (Directorate of Economics & Statistics, J&K 2015-16) [1]. It has been observed that the imbalance use of nutrients adversely affected soil health, nutrient reserve and ultimately the yield. The soil test based fertilizer application is on the basis of nutrient required by the crop to produce substantial yield. Using judicious combination of chemical and organics for achieving enhanced and sustainable production by adopting integrated nutrient supply is imperative. Integrated use of organic manures and inorganic fertilizers are however most desirable for stability in production through maintaining the soil productivity and soil health. Looking to all the aspects of integrated nutrient management (INM), soil test based crop requirement could be the best option to ensure balanced fertilizer application. It has been found that the production levels over the decade had 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 chemical fertilizers and manures properly due to lack of knowledge. Keeping this in view the present study was undertaken with the following specific objectives:-

1. To determine the level of knowledge of the respondents regarding manures and fertilizers in rice crop.
2. To identify the constraints in the adoption of recommended manure and fertilizer practices in rice crop

**Material and Methods**

The present study was conducted in Baramulla District of Jammu and Kashmir. Out of 26 development blocks in District Baramulla, four Development Blocks were selected randomly

for the present study. Two villages were randomly selected from each of the four Development Blocks. List of rice growers in eight selected villages was prepared in consultation with the concerned Agriculture Extension Officers (AEOs), Junior Agriculture Assistants (JAAs), Village Agriculture Extension Assistants (VAEAs) and other extension functionaries. Out of the list, 160 farmers were selected through stratified random sampling technique. The size of the sample from each stratum was proportional to the number of farmers in it and the data were collected through personal interviews with the help of pretested interview schedule. Finally, the data were digitized, processed and analyzed with frequencies and percentages.

### Results and Discussion

It has been observed from the data in Table 1 that majority of the respondents (39.38%) had poor knowledge about manures and fertilizer practices in rice, whereas 35 percent of them had excellent knowledge.

The study implies that rice growers should be educated regarding nutrient management practices by conducting awareness / training programmes before sowing of nursery through method demonstrations on how to collect soil samples in the field. The farmers need to be educated to apply the dose/s of chemical fertilizers as per the soil test results.

**Table1:** a) Knowledge of the respondents of Integrated Nutrient Management (INM) practices in rice crop (n=160)

Knowledge score	Number of respondents	Percentage
i) Poor <5	63	39.38
ii) Good 5to7	41	25.62
iii) Excellent 7 & above	56	35.00

**Table 3:** Constraints / Problems faced by the rice growers in the adoption of nutrient management practices (n=160)

Constraints*	No. of respondents	% age	Rank
<b>Economic constraints</b>			
i) High cost of fertilizers	56	35.00	III
ii) Inadequate capital for purchase of manures and fertilizers	72	45.00	I
iii) Huge investment for purchasing manures and fertilizers	70	43.75	II
<b>Availability constraints</b>			
i) Non-availability of fertilizers at the time of sowing	85	53.12	I
ii) Inadequate availability of fertilizers at the time of transplanting	72	45.00	II
iii) Untimely availability of fertilizers at the time of sowing	52	32.50	V
iv) Non-availability of fertilizers at the time of transplanting	69	43.12	III
v) Inadequate availability of fertilizers at the time of transplanting	53	33.12	IV
<b>Technical constraints</b>			
i) Lack of awareness about recommendations of SKUAST Kashmir with respect to manures and fertilizers	143	89.37	I
ii) Lack of technical advice	92	57.50	II

### \*Multiple responses

The main economic constraints as expressed by the respondents in the adoption of nutrient management practices were: inadequate capital for the purchase of manures and chemical fertilizers (45.00%), huge investment for purchasing of manures and chemical fertilizers (43.75%) and high cost of fertilizers (35.00%). The major availability constraints faced by the respondents in the adoption of nutrient management practices were: non-availability of chemical fertilizers at the time of sowing (53.00%), inadequate availability of chemical fertilizers at the time of transplanting (45.00%), non-availability of fertilizers at the time of transplanting (43.12%). Inadequate availability of fertilizers at the time of transplanting (33.12%), untimely availability of fertilizers at the time of sowing (32.50%). The data presented in Table3

The data presented in Table 2 indicated that 67.50 of the respondents have availed credit facility from the banks. Among the respondents availing credit facility from the banks, 41.67% percent obtained credit facility from banks with ease whereas 58.33 per cent of them experienced difficulty in obtaining credits from the banks. Since the extension personnel are encouraging the farmers to obtain Kissan Credit Cards from the banks for meeting their requirements of various inputs, they should ensure that the farmers do not face difficulties in the release of loan payments. Meetings of extension personnel with bank officials involving farmers as well should be convened regularly so that the delays caused by bank authorities in sanctioning credits to the farmers could be sorted out amicably.

**Table 2:** Response on availability of credit facility

Availing of credit facility	Number of respondents	Percentage
Availed credit facility from banks	108	67.50
i) Availed with great ease	18	16.67
ii) Availed with ease	27	25.00
iii) Availed with difficulty	42	38.89
iv) Availed with great difficulty	21	19.44

b) Constraints/ Problems faced by the farmers in adoption of manures and fertilizers:

Some of the main constraints identified in the adoption of manures and fertilizers by the rice growers are presented in Table-3

further revealed that Lack of awareness about recommendations of SKUAST-Kashmir with respect to manures and chemical fertilizers (89.37%) and lack of technical advice (57.50%),etc were some of the other main constraints encountered by the farmers in adoption of manure and fertilizers in their rice crop.

### Conclusion

It has been concluded from the study that a substantial percentage of farmers had poor knowledge about recommended manures and fertilizers in rice crop. Non-availability, high cost and lack of awareness about the manure and fertilizers etc were the main constraints. Hence, the study stresses the need to create awareness among the rice growers

through. scientific guidance for proper usage of manures and fertilizers in their crop.

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