

## **Analytical Study of Wheat Cultivation Practices in Irrigated Sub Tropics of Jammu District of Jammu & Kashmir**

**Rakesh Kumar, Narinder Paul\* and PS Slathia**

Division of Agriculture Extension Education, Faculty of Agriculture,  
Sher-e-Kashmir University of Agriculture Sciences and Technology of Jammu

\*Krishi Vigyan Kendra Doda, Sher-e-Kashmir University of Agriculture Sciences and Technology of  
Jammu

### **Abstract**

*In order to ascertain the impact of various cultivation practices adopted by the wheat growers and different factors affecting its productivity, a research pursuit was conducted in the year 2016-17 in Jammu district with 80 randomly selected wheat growing farmers. It has been found that majority of the farmers sow their wheat crop by broadcasting method, 40 percent farmers reported to have sown their wheat crop as early crop up to 25<sup>th</sup> Nov, only 36 percent farmers replaced their wheat seed and same number if farmers were found following seed treatment, All the respondents reported applying DAP and urea as basal dose at the time of sowing. Besides, 45 percent of the farmers apply first irrigation at the Crown Root Initiation (CRI) stage. 100 percent farmers were found applying second dose of urea fertilizer after first irrigation and 60 percent of them were found using third dose of urea. All the farmers were found using herbicides for the management of narrow and broad leaves weeds. However, none of the farmers was found using any fungicide and/or insecticide spray. 80 percent of the farmers reported harvesting wheat crop with hired combine harvester and only 20 percent followed manually harvesting mainly for keeping wheat straw for fodder purpose. The average productivity of wheat crop of respondents in the study area was 27.73q/ha.*

**Key Word :** *Wheat, adoption, yield gap, constraints, productivity.*

### **Introduction**

In Jammu and Kashmir (J&K) agriculture plays a crucial role in development and about 70 percent population is directly or indirectly dependent upon the agriculture and its allied sectors for earning their livelihood. Paddy, wheat and maize are the three main crops which contribute about 90 percent of the total food grain production in the state and rest is contributed by other cereals and pulses. In Jammu division wheat is the main crop followed by maize, paddy, pulses and oilseeds.

In Jammu division wheat is grown under both irrigated and rain-fed conditions and also there is large variation in wheat productivity in both the situations. However, major contribution in state wheat production comes from irrigated areas of Jammu, Samba and Kathua districts. The present research pursuit was undertaken to analyze different wheat cultivation practices being followed by farmers and how these practices affect the productivity of wheat crop in irrigated area of Jammu district.

## Materials and Methods

The present study was conducted inpurposively selected Jammu District of Jammu and Kashmir (J&K) state of India because of maximum irrigated area under wheat crop in the District. Further, from Jammu district two blocks viz; R.S.Pura and Suchetgarh block were taken up because maximum irrigated area under wheat crop due to existing network of canals in this area. Four villages from each of the selected blocks were selected randomly for the investigation. From each

of the selected village 15 farmers undertaking wheat cultivation were selected with the help of random number generator. Thus, the study sample consisted of a total of 120 farmers, 60 from each of the block. The data were collected through personal interviews on a comprehensively constructed interview schedule containing open and close ended questions. The data so collected was analyzed with the help of SPSS.

## Results and Discussions

**Socio-personal profile of the farmers:** Socio-personal profile of the sampled farmers has been analyzed in table 1 which reveals that overall average age of the respondents was 55.29 years, average number of schooling years completed was 8 years. Average operational land holding was 1.28 ha which was higher than the average state land holding of 0.76ha. Overall average family size was five members. Overall average farming experience was 35 years. Social participation was very less as only 10 percent sampled farmers reported to have some degrees of social participation and that too in village panchyats. In addition to their own decisions, private

input dealers were the main source of information regarding various aspects of wheat cultivation practices. It was interesting to note that none of the farm household was found exclusively dependent upon agriculture occupation for their livelihood although they reported that agriculture is one of the sources which contribute significantly in their respective household incomes. It indicates that farmers are in the stage of diversifying their households' source of income. P-value indicates that there is significant difference regarding average number of schooling years completed and operational land holding between sampled farmers of R.S. Pura and Suchetgarh Block.

**Table 1 Descriptive statistics of respondent farmers**

Parameters	R.S.Pura (60)	Suchetgarh (60)	Difference	(p-value)	Overall (120)
Average age (in years)	54.62(±10.18)	55.95(±12.66)	1.33	0.457	55.29 (±11.46)
Average schooling years (No. of years)	6.40 (±3.96)	9.75(±3.73)	3.35	0.000**	8.13 (±4.15)
Average operational land holding (ha)	0.97(±0.74)	1.57(±1.20)	0.60	0.001**	1.28 (±1.04)
Average family size (no.s)	5.20	5.13	0.07	0.911	5.16

Average farming experience (in years)	33.37(±10.26)	34.13(±13.51)	0.76	0.654	33.75 (±11.95)
Social participation (yes/no)	3(5)	9(15)	10.00	0.067	12(10)
Input dealers as the major source of information	45(75)	40(67)	8.00	0.332	85(70.83)
Agriculture only source of income of farm households	0	0	-	-	0

**Cropping system in the study area:** Data presented in table 2 depict the prevalent cropping system followed by farmers in the study area. Paddy is the main crop grown in Kharif season whereas wheat is the major grain and berseem main fodder crop in Rabi season. However, 12.5 and 4 percent farmers also reported that they had grown pea and oat crop

respectively in Rabi season also. 35 percent of the farmers reported that they had grown summer vegetables mainly of cucurbitaceae family in Zaid season. Thus, paddy-wheat, paddy-berseem, paddy-wheat-vegetable were the main crop rotation pattern followed by sampled farmers in study area.

**Table 2 Cropping system practiced by farmers in study area**

Season	Crops	R.S. Pura (60)	Suchetgarh (60)	Overall (120)*
Kharif	Paddy	60(100)	60(100)	120(100)
Rabi	Wheat	60(100)	60(100)	120(100)
	Berseem	40(66.66)	48(80)	88(73.33)
	Oat	5((8.33)	0	5(4.16)
	Pea	10(16.66)	5(8.33)	15(12.50)
Zaid	Summer vegetables	25(41.66)	18(30)	43(35.83)

\*Multiple responses

**Extent of adoption of wheat cultivation practices:** A perusal of data incorporated in table 3 reveals that only 33 percent of the farmers used new seed for sowing their wheat crop in study year. Among different wheat-varieties being used in the area, farmers mostly preferred HD 2967 cultivation. Besides, 33 percent farmers were found used the treated wheat seed for sowing. Average seed rate used by the respondent farmers was 1.14 quintals

per ha which was slightly higher than the recommended 1 quintal/ha. Almost hundred percent respondent farmers used urea and DAP in wheat cultivation. However, average quantity of urea used was 1.15 quintal/ha and of DAP it was 1.05 quintal/ha. About 37 percent of the farmers reported that they use to apply FYM after three to four years gap and due to which they reduce the dosages of different chemical fertilizers. Besides, 37

percent of the farmers apply irrigation at the critical stage of Crown Root Initiation (CRI) and rest of the respondent farmers applied irrigation after this stage which also affects its productivity. Production of wheat is largely affected by the non-availability of irrigation water<sup>[1]</sup>. With regards to the use of herbicides, 100

percent farmers used post emergence herbicides for controlling narrow leaves and 77 percent farmers also sprayed herbicide for controlling broad leave weeds. None of the farmers used any sort of insecticide and fungicide spray which indicates that use of these pesticides is very negligible in wheat crop.

**Table 3 Adoption of different cultivation practices of wheat crop (% farmers)**

Particulars	R.S.Pura (60)	Suchetgarh (60)	Difference	Z& (p-value)	Overall
Seed replacement of wheat crop	22 (37%)	18(30%)	7.00	(0.8123) (0.4179)	40 (33%)
Variety of wheat crop used					
HD-2967	32(53%)	28(47%)			60(50%)
Green choice	08 (14%)	05(8%)			13(22%)
Ankur	05 (8%)	10(17%)	-	-	15(25%)
Non-descript	15(25%)	17(28)			32(27%)
Seed treatment	22(37%)	18(30%)	5	-	40(33%)
Average seed rate (kg/ha)	110	118			114
Applied irrigation at CRI* stage	15	22			37(31%)
Number of farmers used urea	60(100%)	60(100%)	-	-	120(100%)
Average quantity of urea used (kg/ha)	110	120	10	-	115
Farmers used DAP	60(100%)	60(100%)	4	-	120 (100%)
Average quantity of DAP used (kg/ha)	120	100	10	-	105
Farmers used potash	08(13%)	12(20%)			20(17%)
FYM used ( yes/no)	24(40%)	20(33%)	7	0.796(0.423)	44(37%)
Herbicide (post-emergence for narrow leave weed)	60(100%)	60(100%)	4	-	120(100%)
(post emergence for broad leaves)	40(50%)	52(55%)	5	-	92(77%)
Insecticide spray	0	0	0	0	0
Fungicide spray	0	0	0	0	0

CRI\*= Crown root initiation

**Area, production and productivity of wheat crop of sampled farmers**

The perusal of data presented in table 4 shows that overall average productivity of wheat crop in study area was 27.73 quintals/ha. The productivity of

respondents of R.S. Pura block was higher than the Suchetgarh which might be due to better knowledge and adoption of recommended wheat cultivation practices<sup>[2]</sup>.

**Table 4 Area, production and productivity of wheat crop of sampled farmers**

Particulars	R.S.Pura (60)	Suchetgarh (60)	Difference	Z & p-value	Overall (120)
Total wheat area (in ha)	53.30	92.70	39.40	.000**	146.00
Total production (in q)	1545.70	2502.90	957.20	-	4048.60
Productivity (q/ha)	29.00	27.00	2.00	-	27.73

**Constraints encountered by the farmers**

Constraints reported by the sampled farmers in cultivation of wheat crop in irrigated sub-tropics were analyzed and have been presented in table 5. Uncertainty in canal irrigation was the major constraint reported by the 83

percent sampled farmers followed by lack of adequate subsidy in installation of electric motor pump sets for irrigation(66%), unfavorable weather conditions (58.33%) and poor quality of herbicides in the market (50%)

**Table 5 Constraints reported by farmers in wheat cultivation**

S.No	Constraints	Frequency N=120
1	Uncertainty in canal irrigation	100(83.00)
2.	Lack of subsidy in installation of electric motor pump sets for irrigation	80(66.00)
3.	Poor quality of herbicides	60(50.00)
4.	Abnormal weather conditions at maturity time affects productivity	70(58.33)

**Conclusion**

On the basis of results it is concluded that HD 2967 variety of wheat is most preferred variety for wheat cultivation in the study area. Despite good network of field extension functionaries, private input dealers are mainly consulted by the farmers for obtaining information regarding different agriculture activities

including wheat cultivation. Seed replacement of wheat crop is very low and has been found to be the major factor for its low productivity. Practice of seed treatment need to be properly encouraged among farmers. Use of herbicides in wheat cultivation is a regular feature in the study area because weed infestation in wheat

crop severely reduces its productivity. Further on the basis of conclusions, it is recommended that field extension functionaries should organize timely

awareness and training programmes for imparting adequate knowledge to farmers about recommended wheat cultivation practices.

### References

1. Ahmed, M.F. and Haseen S. (2012). The Performance of India's Food grain Production: A Pre and Post Reform Assessment. *International Journal of Scientific and Research Publications*. 2930 : 1-15.
2. Ramdas, S., Singh, R. and Sharma, P. (2012). Exploring the performance of wheat production in India. *Journal of Wheat Research*, 4(2) :37-44.