

Knowledge and Attitude Farmers Towards Improved Wheat Production Technology

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ABSTRACT

The present study was conducted during 2009-10 in Bharatpur district of Rajasthan with a sample size of 300 small farmers as respondents; they were cultivating wheat (HVY) for the last 5 years. To know knowledge level of the wheat growers and to ascertain the association between socio- economic and personal characteristics of the respondents with knowledge level attitude and adoption behaviour about improved production technology of high yield varieties of wheat. The study revealed that majority of farmers were middle aged ranging from 31 to 45 years age group and belonged to backward caste, half of the respondents were middle to sr. secondary standard educated, majority of respondents were living in single type of family system and majority of them was not the member of any organization, annual income was in the range of Rs. 30.0 to 60.0 thousand. Most of them were living in pucca house and engaged in agriculture. Majority of the respondents were running their farm operation with poor Agricultural infrastructure facilities. To find out relationship between independent variables with knowledge, adoption behavior and attitude towards, HVY wheat technology. 14 independent variables were included in the study. A negative relationship was found between age, family size and urban contact, whereas, only two variables i.e. family type and change agent linkage were found non- significantly associated with attitude of small farmers towards wheat production technology. In case of adoption behavior of wheat production technology study highlighted that very highly and positive significant correlation was found between seed, nitrogenous fertilizers, plant protection, use of weedicide and irrigation technology with the knowledge of small farmers.

Key words: Wheat production technology; Change agent linkage; Urban contact; Knowledge;

The green revolution gave a best to the production and productivity of the major cereal crops like rice and wheat in India. About 91 per cent of the Indian wheat production confined in six states including Uttar Pradesh, Punjab, Haryana, Madhya Pradesh, Rajasthan and Bihar. In 2003- 2004 Uttar Pradesh with 25.6mt. was the highest producer of wheat followed by Punjab (14.9mt.) and Haryana (9.30mt.), much of the contribution from Haryana and Punjab is due to their high productivity (4.0 to 4.3 tones/ha). The contribution of other states such as Uttar Pradesh, Madhya Pradesh and Rajasthan (24.50mt.) is also appreciable (*The Hindu survey of Indian Agriculture 2007*). Rajasthan state contributes about 2.4 million hectare area with 7.5mt. production with productivity of 3.1tonnes per hectare. Bharatpur district has maximum area (1.6million hectare) production 0.65mt. with productivity of 3.9

tones per ha. is more than the state average yield. But still there is a gap between yield obtained and potential yield of the crop. (Rajasthan Agricultural statistics at a glance 2009-10, statistical cell crop of Rajasthan Jaipur).

The contribution made by Department of Agriculture and Agricultural Universities helped not only to increase production and productivity of food crops but it also helped in socio- economic up-liftment of the state. State Agriculture universities in Rajasthan have generated number of farm innovation since last forty years. For instance S. K. Rajasthan Agricultural University developed many improved varieties, farm implement for high tech agriculture, water management and integrated pest management practices for the farming community. Efforts have been made by the personnel of KVK and Agriculture Department for transfer of these technologies to farming community.

The present study was designed to know the extent of the knowledge of farmers and adoption of farm technologies with the following specific objectives.

1. To study the personal and socio- economic characteristics of wheat growers.
2. To study the knowledge level of the farmers about improved package of practices of wheat.
3. To ascertain the relationship between, knowledge level, attitude towards wheat production technology and selected personal, socio- economic and situational characteristics of wheat growers.
4. To find the relationship among, knowledge, attitude towards wheat production technology and behavior of farmer in respect to wheat production technology.

METHODOLOGY

The study was conducted in the purposively selected Bharatpur district of Rajasthan. Bharatpur district was selected on the basis of maximum area and production in the state. Out of nine panchayat samities in the Bharatpur district, three panchayat samities namely Kumher, Sewar and Bayana were selected randomly. From each panchayat samities four villages were selected randomly thus twelve villages were selected. Comprehensive list of wheat grower in the village was prepared with of patwari. Twenty five farmers who were growing wheat crop for last 5 years were selected from each village, thus in all 300 small farmers were selected as respondents from 12 villages. To determine the level of knowledge of the respondents a knowledge test was developed. To calculate knowledge score one score was assigned to each correct answer. The total of all the practices makes knowledge score of the individual farmer.

Attitude was measured by the attitude scale developed by *Nair (1969)*. The scale followed the Linkert scaling pattern. The response patterns were strongly agree, agree, undecided, disagree and strongly disagree. The scoring procedure followed by 5,4,3,2 and 1 for positive and 1,2,3,4 and 5 for the negative statements respectively. Adoption of recommended wheat production technology was measured by means of adoption index. The purpose was to quantify the extent of adoption of wheat production technology and not to arrive at individual's adoption index. This procedure was followed for 5 major production technologies for

the study. The technologies are seed, fertilizer (nitrogenous, phosphate and pottassic fertilizers), Plant protection measures, weedicide and irrigation management technology were calculated in the responses regarding adoption of wheat production technology. The data collected with the help of well structured interview schedule and analyzed with the help of frequency, average, percentage, chi- square and correlation coefficient.

RESULTS AND DISCUSSION

It is evident from the Table 1 that the majority (46.67%) of the respondents were middle aged ranging from 31 to 45 year age group and belong to backward caste (42.33%). Half of the respondents were educated from middle to sr. secondary. While majority (71.00%) of the respondents were living in single type of family system and majority of them were not member of any organization. The data presented in same table also indicate that 52.34% respondent's were having annual income ranging from Rs. 45, 000-60,000. Majority of them were living in pucca house and engaged in agriculture occupation *Khan et. al. (2004)*, *Sharma et. al. (2005)*, *Singh et. al. (2010)* and *Singh et. al. (2012)* also lending support to the present findings.

The Table 2 clearly indicates that the availability of irrigation facilities among small farmers were 32.67 per cent average, 30.00 per cent satisfactory, 30.67 unsatisfactory and 6.66 per cent very high. On the part of accessibility to credit it is noticed that 30.00 per cent respondents were having average, 31.67 per cent (satisfactory), 28.33 per cent (unsatisfactory) and only 10.00 per cent very high credit facility. Regarding electricity power 52.34 per cent respondents having unsatisfactory facilities, 19.34 per cent Average, 16.66 per cent satisfactory and 11.66 per cent very high. In case of input supply, it was revealed that 43.34 per cent respondents were having average facility 29.00 per cent unsatisfactory and 21.66 per cent satisfactory while 6.00 per cent respondents getting very high facility. Further data present in table show that 36-67 per cent respondents were having average transportation facilities. Besides that 36.67 and 18.66 per cent respondents were availing average and unsatisfactory of transportation respectively and only 15.00 per cent respondents have very high transport.

Table 1. Personal and socio- economic features of small farmers (N=300)

Variables	Group/ categories	No.	%
Age	Young (Upto 30 years)	130	43.33
	Middle (31 to 45 years)	140	46.67
	Old (Above 45 years)	30	10.00
Caste	High Caste	116	38.67
	Backward Caste	127	42.33
	Schedule Caste	48	16.00
	Other Caste	09	03.00
Education	Illiterate	16	5.33
	Can read only	36	12.00
	Primary	68	22.67
	Middle	75	25.00
	HS/ Sr. secondary	78	26.00
	Graduate	27	09.00
Family type	Single	231	77.00
	Joint	69	23.00
Social participation	No participation	171	63.67
	One organization	60	20.00
	>1 organization	23	7.67
	Office holder	13	4.33
Urban contact	Public leader	13	4.33
	Not even once	63	21.00
	Thrice a weekly	03	1.00
	weekly	75	25.00
	Fortnightly	59	19.67
	Monthly	45	15.00
	Quarterly	29	9.67
	Half yearly	14	4.66
	Yearly	12	4.00
	Size of holding	70	23.34
Annual Income	Below 2 acres	153	51.00
	2-3 acres	69	23.00
	3-4 acres	08	2.66
	4-5 acres	20	6.66
	Upto Rs. 15,000	22	7.34
	15,000-30,000	48	16.00
	30,000-45,000	157	52.34
	45,000-60,000	30	10.00
House pattern	60,000-75,000	18	6.00
	75,000-90,000	05	1.66
	Above Rs. 90,000	54	18.00
	Kaccha	189	63.00
Occupation	Pucca	57	19.00
	Mixed	34	11.33
	Labour	42	14.00
	Caste occupation	59	19.67
	Business	152	50.67
	Cultivation	13	4.33
	Service		

Farm power	Bullock cart/ Camel cart	19	6.33
	Tube well	100	33.34
	Diesel pump	90	30.00
	Chaff cutter	70	23.33
	Electric motor	13	4.33
Farm implement	Tractor	08	2.67
	Deshi plough	45	15.00
	M.B. Plough	18	6.00
	Disc harrow	07	2.33
	Cultivator	08	2.67
	Sprayer/ duster	49	16.33
	Seedrill	29	9.67
	Thresher	03	1.00
	Triphala plough	45	15.00
	Wheel hand hoe	96	32.00

Note: More than one farm power and farm implements have been possessed by the respondents, hence total percentage exceeds to 100.

Table also revealed that in case of communication media 38.34 per cent of respondents were having average facility, 18.33 per cent unsatisfactory, 25.00 per cent have satisfactory communication facility. Those who have very high facility constitute only 18.33 per cent. In case of technical assistance table reveals that 38.67 per cent respondents were having unsatisfactory facility, 33.67 per cent average, 17.66 per cent satisfactory and only 10.00 per cent respondents have very high facility of technical assistance on their farming conditions.

Regarding marketing facilities, 41.00 per cent respondents were having average facilities followed by satisfactory (26.67%) and unsatisfactory (16.33%). Whereas, 16.00 per cent of respondents were having very high marketing facilities in respect to wheat. Table further indicated that 37.67 per cent respondents have farm building and storage facilities unsatisfactory 28.00 per cent average and 20.00 per cent respondents have satisfactory level of farm building and storage facilities respectively. While, 14.33 per cent respondents have very high facilities of farm building and storage in their farm.

Thus from the foregoing explanation, it may be concluded that majority of the respondents were running their farm operations with poor infrastructure facilities and those are well to do and rich with infrastructure facilities were very few or less than 19 per cent respondents of the total respondents examine under this study.

The data presented in Table 3 show that (44.67%) respondents belong to low socio- economic status and rest 34.33 & 21.00 per cent respondents belong to medium and high socio- economic status respectively.

Table 2. Availability of infrastructure facilities among the wheat growers

Agrl. Infrastructure facilities	Availability of infrastructure facilities							
	Very high		Satisfactory		Average		Unsatisfactory	
	No.	%	No.	%	No.	%	No.	%
Irrigation facilities	20	6.66	90	30.0	98	32.67	92	30.67
Credit institutions	30	10.0	95	31.67	90	30.0	85	28.33
Electricity power	35	11.66	50	16.66	58	19.34	157	52.34
Input supply	18	6.0	65	21.66	130	43.34	87	29.00
Transportation	45	15.0	89	29.67	110	36.67	56	18.66
Communication	55	18.33	75	25.00	115	38.34	55	18.33
Technical Assistance	30	10.0	53	17.66	101	33.67	116	38.67
Marketing facilities	48	16.0	80	26.67	123	41.0	49	16.33
Farm building/ storage	43	14.33	60	20.0	84	28.0	113	37.67

Table 3. Overall SES of the wheat growers

Socio- economic status	No.	%
High status	63	21.00
Medium status	103	34.33
Low status	134	44.67
Total	300	100.00

Thus from the foregoing discussion, it can be concluded that more than half of the respondent were in medium to high socio- economic status in the study area. Findings are in accordance with the findings of the Singh *et al* (2010) and Singh *et al* (2012).

Table 4. Extent of knowledge regarding improved package of practices about HYV wheat cultivation

Knowledge level	No.	%
Poor (score up to 20)	36	12.0
Fair (score from 21 to 40)	119	39.67
Good (score from 41 to 60)	95	31.67
Very good (score above 60)	50	16.66
Total	300	100.00

Table 4 reveals that majority of the respondents (71.34%) were found to have fair and good knowledge of improved wheat production technology. The average knowledge of such farmers was 39.67 per cent (fair). About 48.33 per cent of farmers were found to have (good and very good) high level of knowledge. The mean value of the knowledge score calculated for small farmers was 25.00 per cent. Thus, the findings reveals that the majority of small farmers of Bharatpur district were having fair to good knowledge about improved package of practices of wheat cultivation. Similar result was also reported by Singh & Singh (2001) in their studies.

The data in Table 5 shows that more than half of the farmers (56.34%) had favourable and most

favourable attitude towards improved technology of wheat cultivation, 20.33 per cent small farmers had unfavourable and most unfavourable attitude, while 23.33 per cent farmers showed neutral attitude towards improved technology of wheat cultivation. Thus, from the foregoing explanation, it may be concluded that majority of small farmers (79.67%) had favourable attitude towards improved technology of wheat cultivation. Sharma *et al* (2005) also observed this type of results in their investigation.

Table 5. Attitude of small farmers towards improved package of practices of HYV wheat cultivation

Attitude	No.	%
Most unfavourable	22	7.33
Unfavourable	39	13.00
Neutral	70	23.33
Favourable	95	31.67
Most unfavourable	74	24.67
Total	300	100.00

It is evident from Table 6 that there is significant positive relation between 'caste', 'education', 'family type' 'income', 'size of land holding', 'social participation', 'farm power', 'change agent- Linkage', 'contact with extension agency', 'socio- economic status', 'agricultural infrastructure' and the knowledge of the small farmers regarding improved technology of wheat cultivation. A significant relation is observed between 'age', 'education', 'type of family size', 'income', 'size of land holding', 'social participation', 'farm power', 'socio- economic status', 'contact with extension agencies', 'urban contact', 'Agricultural infrastructure' and attitude of small farmers towards improved technology.

It is evident from Table 7 that there is positive and

significant relation between the agricultural infrastructure such as technical assistance, irrigation facilities, input supply agencies and communication facilities and the extent of adoption of seed technology, nitrogenous and phosphatic fertilizers technology. The non- significant result is noticed in case of credit institutions with seed technology, phosphatic fertilizer, weedicides and irrigation, input supply agencies with irrigation technical assistance with phosphatic fertilizer and irrigation, communication facility with phosphatic and irrigation, marketing with seed technology, phosphatic fertilizer, plant protection measures, weedicide and irrigation practices storage facility with all the six technology except

Table 6. Relationship between knowledge and attitude of small farmers towards improved technology and socio-economic characteristics of wheat growers

Variables	Knowledge	Attitude
Age (r)	0.217 ^{NS}	0.198**
Caste (X ₂)	28.450**	23.546**
Education (X ₂)	76.423**	63.456**
Family type (X ₂)	7.660**	4.747 ^{NS}
Family size (X ₂)	2.582 ^{NS}	11.927**
Income (r)	0.227**	0.343**
Size of land holding (r)	0.189**	0.248**
Social participation (X ₂)	24.056**	22.338**
Farm power (r)	0.506**	0.392**
Change Agent Linkage (X ₂)	29.426**	9.590 ^{NS}
Contact with Ext.agencies (X ₂)	18.729**	58.986**
Urban contact (r)	0.109 ^{NS}	0.561**
Socio- economic status (r)	0.385**	0.483**
Agri. Infrastructures (r)	0.255**	0.488**

**Significant at 0.01 level of probability, NS Non- Significant

* Significant at 0.05 level, r=correlation coefficient

The significant result clearly indicate that the extent of adoption is certainly influenced by the proper availability of agricultural infrastructures on the part of the small farmers and the results which is not found to be significantly related with the extend of adoption of improved technology clearly explain that poor is the infrastructure on the part of the small farmers, lower will be his adoption level regarding new technology.

Thus from the foregoing explanation, it may be concluded that the extent of adoption is influenced by the availability of infrastructure facilities on the part of small farmers. The data presented in Table 8 reveal that very highly significant and positive correlation between seed, nitrogen fertilizers, plant protection, and use of weedicide and irrigation technology with the knowledge of small farmers regarding the new technology of wheat.

The study also revealed that phosphatic and potassic fertilizer have been found non significant with the knowledge of new technology.

Table 8. Correlation coefficient between knowledge, attitude and adoption of improved wheat technology

Adoption of improved practices	Knowledge (r value)	Attitude (r value)
Seed technology	0.216**	0.202**
Fertilizer technology		
·Nitrogenous technology	0.305**	0.230**
·Phosphatic technology	0.067 ^{NS}	0.196**
·Pottassic technology	0.015 ^{NS}	0.036**
Plant protection measures	0.210**	0.244**
Weedicide technology	0.264**	0.064 ^{NS}
Irrigation management tech.	0.196**	0.276**

**P < 0.01; NS= not significant

Table 7. Correlation coefficients between the availability of agricultural infrastructure facilities of small farmers and the extent of adoption of new technology

Agricultural infrastructure	Adoption of new technology					
	Seed Tech.	Nitrogenous Fertilizer	Phosphatic Fertilizer	Plant protection	Weedicides	Irrigation Tech.
Irrigation facilities	0.306**	0.1913**	0.1466**	0.1394**	0.0754**	0.3610**
Credit institutions	0.088 ^{NS}	0.138*	0.069 ^{NS}	0.2647**	0.055 ^{NS}	0.046 ^{NS}
Input supplying agencies	0.2190**	0.1296*	0.2067**	0.3120**	0.2119*	0.057 ^{NS}
Technical Assistance	0.3827*	0.3416**	0.075 ^{NS}	0.1889**	0.1284*	0.047 ^{NS}
Communication facility	0.1363*	0.1708**	0.049 ^{NS}	0.3418**	0.3664**	0.076 ^{NS}
Marketing facilities	0.026 ^{NS}	0.1801**	-0.109 ^{NS}	0.038 ^{NS}	0.033 ^{NS}	0.118 ^{NS}
Storage facilities	0.043 ^{NS}	0.053 ^{NS}	-0.0137 ^{NS}	0.066 ^{NS}	0.068 ^{NS}	0.047 ^{NS}

**Significant at 0.01 level of probability

*Significant at 0.05 level

NS-Non- Significant

Findings helped to conclude that there was highly significant relationship exists between seed, nitrogenous and phosphatic fertilizer, plant protection and irrigation technology with the attitude of small farmers, weedicide and potassic fertilizer technology were found non-significant associated with the attitude of small farmers towards wheat technology. Besides, there were several socio- physiological correlates to it. A similar finding is in line with the finding of *Singh et al (2010)*.

CONCLUSION

Findings help to conclude that majority of farmers were 31 to 45 years age group and belonged to backward caste, half of the respondents were educated middle to senior secondary, majority of respondents were having single type of family system and majority of them were not the member of any social organization, annual income was in the range of Rs. 30.0 to 60.0 thousand. Most of them were living in pucca house and engaged in agriculture, majority of the respondents were running their farm operation with poor agricultural infrastructure facilities. More than half of the respondents belonged to medium to high level of socio- economic status. The study further revealed that majority of the small farmers

were having fair to good knowledge about improved wheat production technology. However, more than half (56.34%) of the small farmers had favourable and most favourable attitude towards improved production technology wheat. To find out relationship between independent variable. 14 independent variables with knowledge, adoption behavior and attitude towards, HYV wheat technology were included in the study. A negative relationship was found between age, family size and urban contact, whereas, only two variables i.e. family type and change agent linkage were found non-significantly associated with attitude of small farmers towards wheat production technology. In case of adoption behavior of wheat production technology study highlighted that high and positive significant relation was found between seed, nitrogenous fertilizers, plant protection, use of weedicide and irrigation technology with the knowledge of small farmers. While, non-significant association was found between potassic and weedicide technology of wheat towards attitude of small farmers. Besides there were several socio-psychological correlates to its.

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