



## Research Article

# SOCIOECONOMIC PROFILE OF THE FARMERS AND THEIR CORRELATION WITH TECHNOLOGICAL ADOPTION OF RICE WHEAT- CROPPING SYSTEM IN EASTERN UTTAR PRADESH

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Received: October 14, 2016; Revised: October 26, 2016; Accepted: October 27, 2016; Published: November 12, 2016

**Abstract-** This study was conducted in 2013-14 and aims to assess the socioeconomic status and their correlation with technological adoption in rice wheat cropping system in Milkipur & Amaniganj block of Faizabad district of eastern Uttar Pradesh. A total number of 200 farmers were selected through proportionate random sampling technique from eight sample villages. The structured schedule was developed keeping in view the objectives & variables under study. The respondents were contacted personally for data collection. The study depicted that the highest number of respondents (57%) were found in the age category of 35-45 years belonged to joint families and having 6-9 members in their families (54%). The general caste respondents were more in comparison to other categories of caste. The risk orientation was observed of low level while economic motivation and scientific orientation were observed of medium level. The contact of respondents with Gram Pradhan among formal sources, family members among informal sources and television was observed important among media. The agriculture was observed as main family occupation of the respondents (55%) and having annual income of up to Rs. 40000 (40%). An overwhelming majority of the respondents were using cellular phone as their main sources of communication. Among 14 variables studied seven variables namely Education, Landholding, Occupation, Family income overall material possessions, extension contact with information sources, Economic motivation had highly significant and positive correlation ship with technological adoption. Thus the study reveals socioeconomic status of the farmers and their correlation with technological adoption in rice – wheat cropping system.

**Keywords-** Age, Education, Scientific Orientation, Risk Orientation, Extension Contact.

**Citation:** Tiwari Garima, et al., (2016) Socioeconomic Profile of the Farmers and Their Correlation with Technological Adoption of Rice Wheat- Cropping System in Eastern Uttar Pradesh. International Journal of Agriculture Sciences, ISSN: 0975-3710 & E-ISSN: 0975-9107, Volume 8, Issue 55, pp.-2960-2965.

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**Academic Editor / Reviewer:** Ashish Dwivedi

## Introduction

The gap between technologies generation and its practical implication is the major concerning issue in the field of agriculture. In the developing world today, it is not the lack of technologies that worries, but it is the rate of transfer of technology from the point of generation /production to the points of its utilization. In the field of Agriculture alone farmers in the most of developing countries do not keep pace with fast developing technology. So in the field of agriculture, there is a wide gap between technology generation and its practical implication /utilization. Rice and wheat are two main pillars for the food security in India. These two crops, together account for over 58% of the area and over 77% of the production of food grains in the country [1]. The Indian agriculture has changed during the past about 50 years mainly due to development of agricultural technologies. The introduction of improved and high yielding varieties, better cultivation practices, extended irrigation facilities, availability of other inputs such as fertilizers and pesticides, use of farm machinery, etc. have been the prime concern of every government for development of agriculture in India [2]. The Rice-wheat cropping system is India's most widely adopted cropping system practiced on an estimated area of around 11 million hectares. This system is prevalent in Indo-gangetic plains (IGP) and is found in Indian states of Uttar Pradesh, Punjab, Haryana, Bihar, West Bengal, Madhya Pradesh etc. The rice-wheat system is being practised in Uttar Pradesh (UP) since 1872 AD and the area under rice-wheat (R-W) sequence in India was estimated to be nearly 11 million hectares during 1996-98. Nearly half of this area

is in UP and within the state, the system is largely concentrated in the eastern region to the extent that about 22 % of the total area under R-W system of the area in the country [3]. The crop has vast potential for improving its production and productivity by adoption of improved production technology. The agricultural scientists have generated location specific improved production technologies for the benefit of the farmers but it seems that the majority of the farmers are not adopting these technologies. Lack of irrigation is not only the factor for non-adoption of the technologies but some socio-personal, economic and communication factors also influence the adoption. The independent variables such as knowledge experience in farming, socio-economic status, family education, social participation, sources of information and farm size were positively and significantly associated with the adoption of scientific technological practices of agriculture by the farmers [4]. The education, size of land holding, annual income, social participation, cosmopolitans, extension contacts and knowledge were associated with adoption behaviours [5]. Awasthi [6] found that the variables education, housing pattern, annual family income, farm power, agriculture implements, household materials, transportation materials, communication media possessions and overall material possessions were found to be highly significant and positively correlated with the extent of knowledge of respondents.

**Materials and Methods** The study was conducted during 2014-2015 in order to study extent of adoption of technology regarding rice-wheat cropping system. At first the list of villages in the blocks were obtained from blocks headquarter. There after eight villages were selected randomly from the list. Then a sample of 200 respondents from all eight villages was selected by random sampling technique. The personal interview schedule was prepared in the light of decided objectives and variables undertaken. Constraints were measured by open-ended responses of the respondents with the help of a pre - tested schedule developed for the purpose. The data were collected personally by the author through the personal interview with the respondents. The study is justified because of its appropriate approach to trace out the constraints in technological adoption of rice-wheat cropping system.

### Socio economic profile of the farmers

**Table-1** distribution of respondents according to age. N=200

S. No.	Age Categories (Years)	Respondents	
		Number	Percentage
1.	Up to 34	32	16.00
2.	35 to 45	114	57.00
3.	46 & above	54	27.00
	Total	200	100.00

Mean = 39.95, S.D. = 5.89, Min = 26, Max = 52

It is observed from the [Table-1] that majority of the respondents (57%) were observed in the middle age category followed by 46 and above (27%) and up to 34 (16%) respondents respectively. It means the farmers of middle age category were mostly adopted the technologies in rice – wheat cropping system.

**Table-2** Distribution of respondents according to education N= 200

S.No.	Categories	Respondents	
		No.	Percentage
A.	Illiterate	46	23.00
B.	Literate	154	77.00
	Total	200	100.00
A.	Literate	154	77.00
1.	Can read and write	10	06.50
2.	Primary	26	16.90
3.	Middle	32	20.77
4.	High school	16	10.38
5.	Intermediate	36	23.37
6.	Graduate	28	18.18
7.	Post Graduate	06	03.90
8.	Total	154	100.00

The [Table-2] reveals that the majority of the respondents were literate (77%) as against 23 percent as illiterate. Among literate respondents the level of education ranged between primary and postgraduate. The literacy levels were found as intermediate (23.37), middle (20.77), graduate (18.18), high school (10.38), can read and write (6.50) and postgraduate (3.90) respectively. Hence, it means that the education level of the respondents is more than the level of U.P. state.

**Table-3** Distribution of respondents according to caste:

S.No.	Categories	Respondents	
		No.	Percentage
1.	General caste	74	37.00
2.	Backward caste	60	30.00
3.	Scheduled caste	66	33.00
	Total	200	100.00

The [Table-3] focuses that a maximum number of the respondents (37%) belonged to general caste followed by scheduled caste (33%) and backward caste (30%) respectively. It means that there is a general distribution of caste category in the locale of the study. The similar study found by Singh [7].

**Table-4** distribution of respondents according to family type: N=200

S.No.	Categories	Respondents	
		No.	Percentage
1.	Single	76	38.00
2.	Joint	124	62.00
	Total	200	100.00

The [Table-4] reveals that 62 percent respondents were observed in joint families, while 38 percent respondents belonged to single-family system hence the joint family system was dominated in the study area.

**Table-5** Distribution of the respondents according to family size N=200

S.No.	Categories	Respondents	
		No.	Percentage
1.	Up to 5 members	28	14.00
2.	6 to 9 members	108	54.00
3.	10 and above	64	32.00
	Total	200	100.00

Mean = 7.18, S. D. = 2.77. Min = 2, Max = 15

It is evident from the [Table-5] that 54.00 percent respondents were observed such who had 6 to 9 members in their families and 32 percent had more than 10 members and only 14 percent respondents were found having up to 5 members in their families. It may be concluded that still there is dominance of joint families with 6 to 9 member in the study area.

**Table-6** Distribution of respondents according to size of land holding N=200

S.No.	Categories	Respondents	
		No.	Percentage
1.	Landless	00	00.00
2.	Marginal (below 1.0ha)	138	69.00
3.	Small (1 to ha)	38	19.00
4.	Medium (2 to 3ha)	13	6.50
5.	Big (3ha and above)	11	5.50
	Total	200	100.00

The [Table-6] indicates that most of the respondents (69%) were found in the land holding category of marginal farmers followed by small (19%), 6.5 percent in the medium category and 5.5 percent in the big category of farmers respectively. The average size of land holding was found to be 0.583 hectare. Hence, it means that the land is being marginalized in the study area. The result was in consonant with Singh [8].

### Housing Pattern:

**Table-7** Distribution of the respondents according to housing pattern N=200

S.No.	Categories	Respondents	
		No.	Percentage
1.	Cuchcha	54	27.00
2.	Mixed	110	55.00
3.	Pucca	36	18.00
	Total	200	100.00

It is evident from the [Table-7] that more than half of the respondents were found having houses of mixed type followed by chukka (27%) and pucca houses (18%) respectively. Thus it can be inferred that the majority of the respondents (55%) had mixed type of houses. This finding might be due that there has not replaced the mud houses by pucca houses in the study area.

**Table-8** Distribution of the respondents according to their family occupation  
N = 200

S. No.	Categories	Respondents			
		Main		Subsidiary	
		No.	Percentage	No.	Percentage
1.	Agriculture based labour	18	9.00	42	21.00
2.	Caste based occupation	14	7.00	10	5.00
3	Service	18	9.00	18	9.00
4.	Agriculture	110	55.00	104	52.00
5.	Business	36	18.00	18	9.00
6.	Agro based enterprises	4	2.00	8	4.00
Total		200	100.00	200	100.00

In the case of main occupation, it is clear from the [Table-8] that the majority of the respondents (55%) reported service as their main occupation followed by business (18%) and service (9%) and agriculture based labor (9%) and caste-based occupation (7%), agro based enterprise (2%) respectively. While, in case of subsidiary occupation, maximum of the respondents (52%) have adopted agriculture as subsidiary occupation followed by agriculture based labor (21%), service and business (9% each), caste based occupation (5%) and agro based enterprise (4%) respectively.

**Table-9** Distribution of the respondents according to social participation. N = 200

S.No.	Categories	Respondents	
		No.	Percentage
1.	No participation	110	55.00
2.	Participation in one organization	78	39.00
3	Participation in two organizations	12	6.00
4.	Participation in more than two organizations or office bearer	00	00.00
Total		200	100.00

A cursory glance over the data depicted in the [Table-9] indicates that most of the respondents i.e. 55 per cent did not participate at all in any organization while 39 per cent respondents participated in one organization & 6 per cent respondents participated in 2 organizations in descending order. Thus it may be selected that social participation of the respondents was considerable avoid because of the positive attitude and more interest in social activities. The similar result was also given by Rohila [9] and Singh *et. al* [10].

**Table-10** Distribution of the respondents according to family income.  
N = 200

S.No.	Categories (Rs.)	Respondents	
		No.	Percentage
1.	Up to 40,000	80	40.00
2.	40001 to 80000	58	29.00
3	80001 to 120000	16	8.00
4.	120001 to 160000	20	10.00
5.	Above 160000	26	13.00
Total		200	100.00

It is obvious from [Table-10] that a maximum (40%) of the respondents was from those families whose annual income were found in the category of Rs. up to 40000 followed by other categories viz., 29 per cent Rs/ 40001 to 80000, 8 per cent Rs. 80001 to 120000, 10 per cent Rs. 120001 to 160000 and 13 per cent Rs.

160000 and above respectively. Hence, it may be said that the respondents were not having considerable good economic condition.

**Table-11** Distribution of the respondents according to availability of farm power.  
N = 200

S.No.	Categories	Respondents	
		No.	Percentage
1.	Bullock	10	5.00
2.	Tractor	20	10.00
3	Pumping set	70	35.00
4.	Electric motor	52	26.00
5.	Do not have farm power	98	49.00
Total		200	100.00

Note: More than one items have been shown by the respondents, hence the total percentage of all the items would be more than 100.

The [Table-11] indicates that among all the respondents who had farm power the majority (35%) possessed pumping set followed by electric motor (26%), tractor (10%) and bullock (5%) respectively. A majority of respondents (29%) were found who do not have farm power. Hence it may be said that the condition of the farm power with half of the respondents was not good.

**Table-12** Distribution of the respondents according to agricultural implements.  
N = 200

S.No.	Categories	Respondents	
		No.	Percentage
1.	Cultivator	18	09.00
2.	Disc plough	14	7.00
3.	Mould board plough Desi Plough	08	04.00
3	Thresher	42	21.00
4.	Leveler	4	2.00
5.	Sprayer	26	13.00
6.	Winnower	38	19.00
7.	Pata	28	14.00
8.	Kudal	184	92.00
9.	Shovel	180	90.00
10.	Sickle	200	100.00

Note: More than one items have been shown by the respondents, hence the total percentage of all the items would be more than 100.

It is clear from the data included in the above [Table-12] that percent respondents were reported having sickle, cultivator (9%), Disc plough (7%), Mould board plough Desi Plough (4%), thresher (21%), Leveler (2%), Sprayer (13%), Winnower (15%), Pata (14%), Kudal (92%) and Shovel (90%). Hence, it may be said that the condition of agricultural implements with the respondent was quite good. Household materials:

**Table-13** Distribution of the respondents according to household materials.  
N = 200

S.No.	Categories	Respondents	
		No.	Percentage
1.	Electric Fan	137	68.00
2.	Cooler	25	12.50
3	Pressure cooker	200	100.00
4.	Electric heater	18	9.00
5.	Stove	12	6.00
6.	Double bed	34	17.00
7.	Electric press	88	44.00
8.	Watch	200	100.00
9.	Chair	200	100.00
10.	Sofa set	8	4.00
11.	Dressing table	64	32.00
12.	Gas chulha	128	64.00
13.	Sewing machine	140	70.00
14.	Cot	200	100.00

Note: More than one items have been shown by the respondents, hence the total percentage of all the items would be more than 100.

The above [Table-13] reveals that percent respondents had cot, pressure cooker, watch & chair as well as cooler (15%), electric heater (9%), stove (6%), double bed (17%), electric press (44%), sofa set (4%), dressing table (32%), gas chulha (64%), electric fan (68.5%) and sewing machine (70%).

**Table-14** Distribution of the respondents according to transportation materials.  
N = 200

S.No.	Categories	Respondents	
		No.	Percentage
1.	Bicycle	200	100.00
2.	Motor cycle / Scooter	184	92.00
3.	Jeep/Car/Autoriksha	20	10.00
4.	Tractor trolley	10	5.00

Note: More than one items have been shown by the respondents, hence the total percentage would be more than 100.

It is clear from the [Table-14] that cent percent respondents were found possessing bicycle as a main conveyance and those having motor cycle / Scooter (92%), tractor trolley (5%), and Jeep/car/autoriksha (10%) respectively. It is inferred that cycle was observed to be a major source of conveyance with the respondents. Some other worker also proposed same findings [8, 11, 12].

**Table-15** Distribution of the respondents according to communication media possession. N = 200

S.No.	Categories	Respondents	
		No.	Percentage
1.	Radio	08	04.00
2.	T.V.	172	86.00
3.	V.C.D.	68	34.00
4.	Newspaper	36	18.00
6.	Cell-phone	200	100.00
7.	General magazine	12	06.00

Note: More than one items have been shown by the respondents, hence the total percentage would be more than 100.

It is evident from the [Table-15] that cent percent respondents reported having mobile with them followed by T.V. (86%), V.C.D. player (34%), news paper (18%), General magazine (6%) and radio (4%) respectively, in descending order. Radio and mobile was main communication media with the respondents.

**Table-16** Distribution of the respondents according to overall material possession. N = 200

S.No.	Categories (scores)	Respondents	
		No.	Percentage
1.	Low (up to 19)	60	30.00
2.	Medium (20 to 29)	86	43.00
3.	High (30 & above)	54	27.00
Total		200	100.00

Mean = 23.64, S.D. = 5.60, Min = 0, Max = 56

The overall material possession was categorized into three main categories on the basis of scores as low (up to 19), medium (20 to 29) and high (30 and above). The data given in [Table-5.1.16] reveals that the maximum (43%) respondents were observed in the medium category of material possession followed by low and high categories of materials possession i.e. 30% and 27% respectively.

#### Extension contact with information sources:

**Table-17** Extent of contact of respondent with different information sources

S. No.	Categories of information sources	Mean scores	Rank order
<b>A. Formal sources</b>			
1.	B.D.O.s	0.52	X
2.	A.D.O.s	0.64	VII
3.	V.D.O.s	0.76	VI
4.	Kisansahayak	0.62	VIII
5.	Gram pradhan	3.4	I
6.	Cooperative	1.10	IV

7.	Agri. College/uni	1.12	III
8.	Mandisamiti	0.56	IX
9.	Fertilizers/seed stores	2.48	II
10.	Agri. Scientist	0.12	XI
11.	K.V.K./K.G.K.	0.86	V
Average		1.107	
B.	Informal sources		
1.	Family members	1.78	I
2.	Neighbors	1.60	II
3.	Friends	1.37	III
4.	Relatives	1.32	IV
5.	Local leaders	0.3	VI
6.	Progressive farmers	0.31	XV
Average		1.113	
C.	Mass media exposure		
1.	T.V.	1.32	II
2.	Cell Phone	1.77	I
3.	Newspaper	1.31	III
4.	Agri. Books	0.26	VI
5.	News bulletins	0.24	VII
6.	Farm magazines	0.16	X
7.	Radio	0.25	VII
8.	Farmers fair	0.34	IV
9.	Demonstrations	0.23	IX
10.	Posters	0.27	V
Average		6.15	
Over all average		2.79	

The data furnished in [Table-17] pertains to extent of contact of respondents with different information sources as used by them for receiving general informations as well as about various practices of paddy crop production. Information sources were categorized in three categories namely formal sources, informal sources and mass media to find out the extent of contact of respondents. So far as contact with formal sources was concerned, Gram Pradhan Fertilizers/seed store, Agri colleges/Uni co-operative society, VDOs, KGK/KVK A.D.Os, Kisan Sahayak, Mandi Samiti, BDOs and Agri Scientist had got the rank orders I, II, III, IV, V, VI, VII, VIII, IX, X & XI respectively. The mean of scores for all the formal sources was found as 1.107.

As far as contact with informal sources was concerned family members, neighbours, friends, relatives, locale leaders and progressive farmers had got rank orders I, II, III, IV, V and VI respectively. The mean of scores for informal information sources was found as 1.113.

Among the mass media sources, Cell Phone, T.V., Newspapers, farmers fair, posters, Agri. Books, news bulletins, Radio, Demonstrations, farm magazines got rank order I, II, III, IV, V, VI, VII, VIII, IX, and X respectively. The mean of scores for mass media exposure was found as 6.15

Hence, it can be concluded that informal sources of information seemed to be most important as generally utilized by most of the respondents. The formal and mass media information sources were also utilized by the respondents with considerable extent. The overall mean of sources was found to be 2.79, which may be considered as fair contact with information sources.

#### Scientific orientation:

**Table-18** Distribution of the respondents according to scientific orientation. N = 200

S.No.	Categories (scores)	Respondents	
		No.	Percentage
1.	Low (upto 18)	30	15.00
2.	Medium (19 to 23)	124	62.00
3.	High (24 and above)	46	23.00
Total		200	100.00

Mean = 20.27, S.D. = 2.55, Min = 14, Max = 25

It is clear from the [Table-18] that 72 per cent of the respondents were found having medium level of scientific orientation followed by high (23%) and low levels (15%) respectively. The mean of scores was observed to be 20.07 with a range of minimum 14 and maximum 25 scores. It may be said that the scientific orientation



of the respondents was low.

### Economic motivation:

**Table-19** Distribution of the respondents according to economic motivation:  
N = 200

S.No.	Categories (scores)	Respondents	
		No.	Percentage
1.	Low (up to 16)	30	15.00
2.	Medium (17 to 20)	58	29.00
3.	High (21 and above)	112	56.00
Total		200	100.00

Mean = 18.02, S.D. = 2.21, Min = 13, Max = 28

It is clear from the [Table-19] that half of the respondents (56%) were found having high level of economic motivation followed by medium (29%) and low levels (15%) respectively. The mean of scores for value orientations was found to be 18.02 with a range of minimum 13 and maximum 28. Hence, it can be inferred that most of the respondents (56%) had medium level of economic motivation.

### Risk orientation

**Table-20** Distribution of respondents according to risk orientation: N = 200

S.No.	Categories (Scores)	Respondents	
		No.	Percentage
1	Low (up to 14)	118	59.00
2	Medium (15 to 24)	46	23.00
3	High (25 & above)	36	18.00
Total		200	100.00

Mean = 18.94, S.D. = 5.12, Min = 12, Max = 25

It is apparent from the [Table-20] that an overwhelming majority of respondents (59%) was found having low level of risk orientation followed by medium (23%) and high level (18%). The mean score for risk orientation was observed to be 18.94 with a range of minimum 12 and maximum 25. Hence, it can be inferred that almost all the respondents (94%) had medium level of risk orientation.

**Table-21** Correlation coefficient (r) between different variables and technological adoption in rice crop.

S. No.	Variables	Correlation coefficient
		Rice
1.	Age	0.23631*
2.	Education	0.4668684**
3.	Caste	-0.20964
4.	Family type	0.06173
5.	Family size	0.03278
6.	Land holding	0.30161807**
7.	Housing pattern	0.092135
8.	Occupation	0.292135**
9.	Family income	0.37052**
10.	Overall material possession	0.28437**
11.	Contact with information sources	0.26451**
12.	Scientific orientation	0.22483*
13.	Economic motivation	0.28483**
14.	Risk orientation	0.20151*

\*significant at 0.05 probability level = 0.1946

\*\* significant at 0.01 probability level = 0.2540

It is clear from the values of correlation coefficient as appeared in [Table-21] that out of 16 variables, the 7 variables, i.e. education, land holding, family income,

occupation, overall material position contact with information sources and economic motivation were found to be highly significant and positively correlated with technological adoption in rice crop at 0.01% probability. The variables Age, Risk Orientation and Scientific Orientation were found to be significant and positively correlated with degree of technological adoption in rice crop system at 0.05% probability level. The variables like –Family type and family size were found non-significant but positively correlated. The variable like–caste was found non-significant and negatively correlated with degree of technological adoption in rice crop. It may be concluded that the variables, which had positive correlation among each other, were having inference and contributing towards positive means that the value of r is increases the value of inference will also be increased among independent and dependent variables. Hence, contribute vice-versa.

**Table-22** Correlation coefficient (r) between different variables & technological adoption in wheat crop.

S.No.	Variables	Correlation coefficient
		Wheat
1.	Age	0.17891*
2.	Education	0.36749**
3.	Caste	-0.1433
4.	Family type	0.03278
5.	Family size	0.01356
6.	Land holding	0.27679**
7.	Housing pattern	0.11782
8.	Occupation	0.327437**
9.	Family income	0.26714**
10.	Overall material possession	0.30249**
11.	Extent of contact with information sources	0.3244**
12.	Scientific orientation	0.2273*
13.	Economic motivation	0.286982**
14.	Risk orientation	0.185445*

\*significant at 0.05 probability level = 0.1946

\*\* Significant at probability level = 0.2540

It is clear from the values of correlation coefficient as appeared in [Table-22] that out of 16 variables, the 7 variables, i.e. education, land holding, family income, occupation, overall material position contact with information sources and economic motivation were found to be highly significant and positively correlated with technological adoption in wheat crop at 0.01% probability. The variables Age, Risk Orientation and Scientific Orientation were found to be significant and positively correlated with degree of technological adoption in wheat crop system at 0.05% probability level. The variables like–Family type and family size were found non-significant but positively correlated. The variable like–caste was found non-significant and negatively correlated with degree of technological adoption in wheat crop. It may be concluded that the variables, which had positive correlation among each other, were having inference and contributing towards positive means that the value of r is increases the value of inference will also be increased among independent and dependent variables. Hence, contribute vice-versa.

### Conclusion

The extension agencies can best use the farmers with high innovativeness economic motivation, socio economic status and education status to establish such resource like technology in the field for sustainable food security of the country. The deep study of technological adoption will give a ground level strategy for input supply and interventions in technology management for adoption. The promotion and establishment of rice-wheat technologies in the field is very essential to have a sustainable food production system ensuring food security and enhancement of farmers' income. For bringing socio-economic transformation in farming society and understanding of their socio-economic setting in which they are working, is essential in formulating effective extension/ communication and research strategies for agricultural development.

**Conflict of Interest: None declared**

**Acknowledgement:** Author thankful to Division of Agricultural Extension, ICAR - Indian Agricultural Research Institute (IARI), New Delhi, 110012

**Abbreviations:**

AD - after decade  
KVK - krishi vigyan kendra  
KGK - krishi gyan kendra  
Uni. - University  
T.V. - Television  
VDOs - village development officers  
ADOs - agriculture development officers  
i.e. - that is  
VCD - video compact disc  
SD - standard deviation  
BDOs - block development officers  
Min. - minimum  
Max. - maximum  
et al - and other

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