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Socio-Economic Profile of Onion Growers of Kanpur Nagar of Uttar Pradesh, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The study was conducted in 5 villages block in Kakwan block of Kanpur Nagar district was selected purposively for the study because of the criteria of nearness to researcher's village and their accessibility. To ensure comprehensive coverage, a complete list of all onion growers in each selected village was compiled. Using a proportionate random sampling technique, 120 farmers were selected for the study. The majority of respondents exhibited various socio-economic characteristics: most fell within the age category of 32-51 years (62.50%), were literate (71.66%), belonged to other backward castes (50.00%), resided in nuclear families (60.84%), had family sizes

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ranging from 5 to 8 members (66.66%), were married (95.00%), and were marginal farmers with land holdings below one hectare (52.50%). Agriculture was observed as the primary occupation, with subsidiary agricultural labor occupations being prevalent (89.16%). Housing predominantly followed a kaccha type pattern (43.34%). Regarding income distribution, the highest proportion of respondents (44.17%) reported an annual income of 1 to 2 lakh. Material possessions varied among the respondents, with the majority owning farm power equipment such as diesel engines (79.16%) and agricultural implements like khurpi (84.16%). Transportation means mainly consisted of bicycles (88.34%), while household items such as gas cylinders and crockery were ubiquitous (100%), along with coats (99.16%). Economic motivation and scientific orientation were found to be at a medium level across the surveyed population.

Keywords: Income generation; employment across; onion growers; agriculture.

1. INTRODUCTION

Onion (*Allium cepa* L.) stands as one of India's most significant commercial vegetable crops, extensively cultivated across the country. Belonging to the family Alliaceae, onions are utilized in both their green and mature stages, adding flavor and pungency to a variety of dishes. The characteristic flavor is attributed to the presence of a volatile oil, 'allyl propyl disulphide,' rich in sulfur. Beyond flavor, onion bulbs are rich in minerals like phosphorus and calcium, as well as carbohydrates, proteins, and vitamin C [1,2]. This versatile vegetable is consumed fresh, frozen, dehydrated, or as green bunching types, with dehydrated variants particularly sought after for their reduced transport costs and storage longevity. Beyond culinary applications, onions boast medicinal value, containing anti-cancer agents that have shown promise in preventing cancer in animals [3,4]. Compounds like 'quercetin' found in onions exhibit potent antioxidant properties and are used in preventing conditions like atherosclerosis and coronary heart disease. Furthermore, onions play a crucial role in trade, income generation, and employment across various sectors [5-7].

Globally, onions are cultivated across 43.64 million hectares, yielding a total production of 873.44 million tons, with a productivity of 21.79 tons per hectare. China and India lead the world in onion cultivation, producing 247.00 and 159.40 million tons, respectively, in 2017 [8-12]. India ranks second globally, producing around 174 million tons annually. In India, Maharashtra ranks highest in both area and production of onions. (Source: <https://www.districts of india.com>).

In Uttar Pradesh the major onion producing districts are Fatehpur, Ghazipur, Jaunpur, Farrukhabad, Kannauj, Ballia, Sonbhadra,

Mainpuri, Gonda, Hardoi, and Kanpur Nagar in the Uttar Pradesh. The onion production of Kanpur Nagar district was recorded 10.62 MT in 2015 and 10.85 MT in 2016 with the area of onion cultivation of 0.67 M.ha. in 2016. (Source: <https://www.districts of india.com>).

2. MATERIALS AND METHODS

The study was conducted in the Kanpur Nagar district of Uttar Pradesh. Kanpur Nagar district was selected purposively for the study undertaken. It has four Tehsils, namely, Kanpur Nagar, Bilhaur, Kanpur Sadar, Ghatampur and Narval and 10 Community Development blocks, namely (i) Kakwan, (ii) Bilhaur, (iii) shivrajpur, (iv) Chaubepur, (v) Kalyanpur, (vi) Bidhnu, (vii) Ghatampur, (viii) Bhitergaon, (ix) Patara, (x) Sarsaul. Out of 10 Community Development blocks in Kanpur Nagar district, the Kakwan block were purposely selected according to need and availability of onion growers. The Block has been divided into three village development officers circle for carrying out the development activities. The revenue villages was arrange in descending order based on the maximum area and maximum number of onion grower, top 5 revenue villages were select from the one block On the basis of maximum area and production. 24 growers were selected from each selected village randomly with the help of progressive growers and village pradhan, thus the total sample size of 120 growers were selected for the present investigation. A structured schedule for data collection will be designed and pretest by interviewing few respondents or farm families to its validity and modify it structure as pre need of change, if any. Thereafter, the data will be gathered with the help of structure schedule by employing personal interview technique.

2.1 Statistical Methods Used

1 Percentage (%):

The frequency of a particular cell was divided by the total number of respondents or (MPS) in that particular category and multiplied by 100 for calculating the percentage.

2 Average (\bar{X}):

The average (\bar{X}) was calculated by adding the total scores obtained by the respondents and divided it by the total number of respondents using the following formula:

$$(\bar{X}) = \frac{\sum X}{N}$$

Where,

\bar{X} = Average or mean
 $\sum X$ = Total number of scores obtained by respondents
 N = Total number of respondents

3 Standard deviation (σ):

S.D. is the square root of mean of the squares of all deviations, the directions being measured from the arithmetic mean of the distribution. It is commonly developed by symbol (σ).

$$S.D. (\sigma) = \frac{\sqrt{\sum d^2}}{n}$$

Where,

σ = Standard deviation
 d = Deviation of variables mean
 M = Total number of items

4 Correlation Coefficient (r):

The coefficient of simple correlation (r) in a measure of the mutual relationship between two variables that in *i.e.* x and y, where relationship is

measured and commonly termed as product movement correlation coefficient and is computed by the following formula:

$$Correl(X, Y) = \frac{\sum (x-\bar{x})(y-\bar{y})}{\sqrt{\sum (x-\bar{x})^2 \sum (y-\bar{y})^2}}$$

Where,

r = Correlation in coefficient
 X = mean of all the observation
 xi = observation of the variable
 Yi = observation of the variables
 \bar{Y} = mean of all the observation

3. RESULTS AND DISCUSSION

1-Age of respondents:

Revealed that the majority of the respondents *i.e.* 62.50% were belonged to middle age (32-51years) group, followed by 16.66% were young age (Up to 31 years) and 20.83% belonged to old age (above 52years) group respectively. So, the majority of the onion growers fall in the category of 32-51 years of age group.

2. Education:

Revealed that 71.66 percent of respondents were Literate and 28.34 percent respondents were Illiterate. Further, the educational standard of literate respondents in descending order was found as 7.50%, 21.66%, 20%, 10%, and 12.5%, percent for Primary level, Middle level, Intermediate, High school, and Graduate respectively.

3. Caste:

Thus, it is concluded that majority of onion growers (50.00%) belonged to Other Backward Caste (OBC) in Kakwan block.

Table 1. Distribution of the respondents on the basis of age (years)

S. No.	Age categories (years)	Respondents	
		Number	Percentage
1.	Young (Up to 31years)	20	16.66
2.	Middle (32-51 years)	75	62.50
3.	Old (Above 52 years)	25	20.83
	Total	120	100.00

Mean= 41.71, S. D. =10.39, Min. =22 Max. =63

Table 2. Distribution of the respondents on the basis of education

S. No.	Education level	Respondents	
		Number	Percentage
1.	Illiterate	34	28.34
2.	Literate	86	71.66
	Total	120	100
3.	Primary Level	9	07.50
4.	Middle level	26	21.66
5.	High school	24	20.00
6.	Intermediate	12	10.00
7.	Graduate	15	12.50
	Total	86	71.66

Table 3. Distribution of the respondents on the basis of caste

S. No.	Caste	Respondents	
		Number	Percentage
1.	Scheduled Caste (SC)/ Scheduled Tribe(ST)	43	35.84
2.	Other Backward Caste (OBC)	60	50.00
3.	General Caste	17	14.16
	Total	120	100.00

Mean=1.78, S. D. =0.67, Min. =1, Max. =3

Table 4. Distribution of the respondents on the basis of type of family

S. No.	Family type	Respondents	
		Number	Percentage
1.	Nuclear family	73	60.84
2.	Joint family	47	39.16
	Total	120	100.00

Mean=1.39, S. D. =0.49, Min. =1, Max. =2

Table 5. Distribution of the on the basis of size of family

S. No.	Categories	Respondents	
		Number	Percentage
1.	Small family – up to 4 members	22	18.34
2.	Medium family- 5-8 members	80	66.66
3.	Large family- above 9 members	18	15.00
	Total	120	100.00

Mean=6.42, S. D =2.46, Min. = 2, Max. = 16

Table 6. Distribution of the respondents on the basis of marital status

S. No.	Marital status	Respondents	
		Number	Percentage
1.	Married	114	95.00
2.	Unmarried	6	05.00
	Total	120	100

4. Type of family:

Show that majority of respondents 60.84 percent belong to nuclear family of the total sample and 39.16 percent onion growers were found in joint type of family. Hence, the dominance of

nuclear/single family system was found in the area.

5. Size of Family:

That majority of the respondents belong to medium size family. This family size (5-8

members) constituted 66.66 percent of the total sample and followed by 18.34 per cent respondents were from small family size (below 4 members) and 15 percent respondents large families size were found above 9 members in their families.

6. Marital status:

The Table 6 indicates that the majority of the respondents (95%) were found married and 5.00% Unmarried respondents.

7. Land holding size:

It is indicates that the majority (52.50%) of the respondents were found in the land holding category of marginal farmers (<1 ha) followed by 30% in the categories of small farmer (1.0-2.0 ha), 15.84% in the category of medium farmers (2-4 ha) and 1.66% in the category of large farmers (above 4.0 ha) respectively.

8. Occupation:

Indicated that, the Agriculture was emerged as main occupation (89.16%) followed by service (5%), and business (2.5), Caste based occupation (2.5%), Agri-based enterprises (0.84%) and Agricultural based labour there are no any response of the respondents in main occupation. In case of subsidiary occupation, the maximum (24.16) percent of the respondents agriculture labour followed by caste based occupation (10%), agriculture (5.84.%), Business, Agricultural based enterprise and service there was no any response as a subsidiary occupation respectively.

(9) Material possession:

(A) Farm materials:

(I) Farm power:

That the reveals majority of the onion growing farmers were found having their farm power mainly diesel engine (79.16%) followed by 37.50% 26.66%, 15.0%, 13.34% 8.0%, 6.66 were tube well, tractor, electric motor, Solar light, power tiller and Bullock respectively.

9(A) (II) Agricultural Implements:

Indicated that majority of the onion growing respondents farmer's (84.16%) were reported that khurpi, followed by chaff cutter, (80.00%), kudal, (75.84%), Pata, Sprayer machine

(53.34%), Ditcher, Seed bed preparation equipments (41.66%), Shorel (37.50%), Fogging machine (29.16%), Winnower, Deshi plough (25.84), Cultivator(25), Savel (22.5), Thresher (20.84), Disc plough (16.66), Zero till cum machine (15.84%), Stakepuller (5.84), Habby seeder, Rotavator and Tractor drawn ridger (15%), Seed drill (9.16%), Plastic mulch retriever and Drip tape layer with auto breake, respectively.

9 (B) Transportation materials:

The data indicates that majority of the respondents (88.34%) were found having Bicycle as a means of transportation followed by bike (56.66%), tractor trolley (25.84%), Jeep (15.84%), pick up (10%), and Bullock cart (6.66) respectively.

9(C) Household materials:

The indicates that majority of the onion growing respondents (100%) were reported that gas-cylinder and crockery followed by cots (99.16%), fan (80%), Pressure cooker (62.5%), Electric press (36.66%), Cooler(28.84%), Double bed (25.84%), Smokeless stove (15%), Solar light (13.33%), Dining table (12%), Patromax (11.66%), Sofa set (6.66%), Dressing table and Heater (5.84%) respectively. The condition of house hold materials seems to be good.

9(D) Communication media possession:

Indicated that majority the respondents farmers (87.50%) was observed possessing Mobile phone followed by T.V. (30.84%), Radio, D.T.H. ((28.84) %), internet (23.33%), Agricultural magazines (13.34%), magazines (12.50%), newspaper (10%), Agricultural journal (9.16%), Tape recorder and V.C.D./D.V.D. player (5.84%), Agriculture book (5.80) and Journal (2.50%) respectively. Thus, it may be concluded that the communication media possession viz. mobile phone, T.V., internet, D.T.H., radio and newspaper were main sources for getting information's and recreation purposes.

10. Housing pattern:

Revealed that majority of respondents of onion growers farmers possessed Pacca type of house (51.16%) followed by mixed type of house only (38.34%) and Kaccha type of house (10.00%) was found respectively.

Table 7. Distribution of respondents on the basis of size of land holdings (in ha.)

S. No.	Size of land holdings (in ha.)	Respondents	
		Numbers	Percentage
1.	Marginal farmers (<1 ha.)	63	52.50
2.	Small farmers (1.0-2.0)	36	30.00
3.	Medium farmers (2.0-4.0)	19	15.84
4.	Large farmers (Above 4.0 ha.)	2	01.66
	Total	120	100.00

Table 8. Distribution of the respondents on the basis of occupation

S. No.	Particulars	Respondents			
		Main occupation		Subsidiary	
		No.	%	No.	%
1.	Agriculture Labour	00	00.00	29	24.16
2.	Caste based occupation	03	02.50	13	10.84
3.	Service	06	05.00	00	00.00
4.	Agriculture	107	89.16	07	05.84
5.	Business	03	02.50	00	00.00
6.	Agro-based enterprises	01	00.84	00	00.00
	Total	120	100.00	49	40.84

Table-9(A) (I). Distribution of the respondents on the basis of farm Power

S. No.	Farm power	Respondents	
		Scores	Percentage
1.	Tractor	32	26.66
2.	Power tiller	10	08.33
3.	Diesel engine	95	79.16
4.	Electric motor	18	15.00
5.	Bullock	8	06.66
6.	Tube well	45	37.50
7.	Solar light	16	13.34

11. Social participation:

The indicates that out of 120, the majority of the respondents (35%) had no any participation followed by two organization (35%), participation more than two organizations (13.33%) and participation in one organization (15.83%), participation of Public leader (0.84%) respectively.

12. Family annual income:

The Data presented that the family annual income of majority of respondents farmers 35.84 was found in the very low category of (Up to Rs. 40000) followed by 34.16 percent low category (Rs. 40001 to 60000), 16.66 percent very high (Rs. 100000 and above) 15 percent medium (Rs. 60001 to 80000) and 3.34 percent high (Rs. Rs. 80001to 100000) respectively.

It is concluded that the majority of the respondent's farmers (35.84%) belonged to very

low category (Rs. Up to Rs. 40000) annual income of family respectively. The average annual income was observed to be for minimum Rs. 24000 and maximum Rs. 650000 respectively.

13. Scientific orientation:

The reveals that 68.33 per cent of respondents belonged to medium level (19-24) of scientific orientation, followed by 19.16 and 12.50 per cent of had low level (up to 18) and them high (up to 25) of scientific orientation respectively.

14. Economic motivation:

The reveals that, 65.84 percent of the respondents belonged to medium level of economic motivation category. Whereas, 18.3 per cent respondents belonged to high and 15.84 per cent respondents of low level of economic motivation category respectively.

Table-9(A) (II). Distribution of respondents on the basis of agriculture Implements

S. No.	Implements	Respondents	
		Scores	Percentage
1.	Cultivator	30	25.00
2.	Seed drill	11	09.16
3.	Zero till cum machine	19	15.84
4.	Happy seeder	18	15.00
5.	Thresher	25	20.84
6.	Rotavator	18	15.00
7.	Winnower	31	25.84
8.	Chaff cutter	96	80.00
9.	Disc plough	20	16.66
10.	Deshi plough	31	25.84
11.	Khurpi	101	84.16
12.	Kudal	91	75.84
13.	Savel	27	22.5
14.	Plastic mulch retriever	1	00.84
15.	Ditcher	50	41.66
16.	Seed bed preparation equipments	50	41.66
17.	Tractor drawn ridger	18	15.00
18.	Drip tape layer with auto breake	1	00.84
19.	Stakepuller	7	05.84
20.	Pata	64	53.34
21.	Fogging machine	35	29.16
22.	Sprayer machine	64	53.34
23.	Shorel	45	37.50

Table 9 (B). Distribution of the respondents on the basis of medium of transportation

S. No.	Medium of Transportation	Respondents	
		Scores	Percent
1.	Jeep	19	15.84
2.	Pick up	12	10.00
3.	Tractor trolley	31	25.84
4.	Bike/Scooter	68	56.66
5.	Bullock cart	08	06.66
6.	Bicycle	106	88.34

Table- 9(C). Distribution of respondents on the basis of household materials

S. No.	Particulars	Respondents	
		Scores	Percentage
1.	Double bed	31	25.84
2.	Sofa set	08	06.66
3.	Dining table	10	12.00
4.	Dressing table	07	05.84
5.	Gas cylinder	120	100.00
6.	Electric press	44	36.66
7.	Smokeless stove	18	15.00
8.	Pressure cooker	75	62.50
9.	Crockery	120	100.00
10.	Fan	96	80.00
11.	Cooler	34	28.84
12.	Solar light	16	13.33
13.	Heater	07	05.84
14.	Cots	119	99.16
15.	Patromax	14	11.66

Table 9(D). Distribution of the respondents on the basis of Communication media possession

S. No.	Particulars	Respondents	
		Scores	Percent
1.	T.V.	37	30.84
2.	Radio	31	28.84
3.	Mobile Phone	105	87.50
4.	Tape recorder	07	5.84
5.	Agricultural journal	11	9.16
6.	Agricultural magazines	16	13.34
7.	D.T.H.	34	28.34
8.	Journal	03	2.50
9.	Agriculture book	12	5.80
10.	Newspaper	25	10
11.	Internet	28	23.33
12.	V.C.D./D.V.D. player	07	5.84
13.	Magazines	15	12.50

Table 10. Distribution of the respondents on the basis of housing Pattern

S. No.	Housing pattern	Respondents	
		Numbers	Percentage
1.	Kaccha	12	10.00
2.	Pacca	62	51.16
3.	Mixed	46	38.34
	Total	120	100.00

Table 11. Distribution of respondents on the basis of social Participation:

S. No.	Social participation	Respondents	
		Number	Percentage
1.	No participation	42	35.00
2.	Participation one organization	19	15.83
3.	Participation in two organization	42	35.00
4.	Participation more than two organization	16	13.33
5.	Public leader	1	00.84
	Total	120	100.00

Table 12. Distribution of the respondents on the basis of annual family income (in rupees)

S. No.	Annual income (In Rs.)	Respondents	
		Numbers	Percentage
1.	Very low (Up to Rs. 40000)	43	35.84
2.	Low (Rs. 40001 to 60000)	41	34.16
3.	Medium (Rs. 60001 to 80000)	18	15.00
4.	High (Rs. 80001to 100000)	04	03.34
5.	Very high (Rs. 100000 and above)	14	16.66
	Total	120	100.00

Table 13. Distribution of respondents on the basis of Scientific Orientation

S. No.	Scientific orientation (scores)	Respondents	
		Number	Percentage
1.	Low (up to 18)	23	19.16
2.	Medium (19-24)	82	68.33
3.	High (Above 25)	15	12.50
	Total	120	100.00

Mean = 21.15, S.D. = 3.45, Min. = 5, Max. =28,

Table 14. Distribution of the respondents on the basis of Economic Motivation

S. No.	Economic motivation (scores)	Respondents	
		Number	Percentage
1.	Low (up to 19)	19	15.84
2.	Medium (20-24)	79	65.84
3.	High (Above 25)	22	18.33
	Total	120	100.00

Mean = 22.05, S.D. =2.62, Min. = 16, Max. = 29

Table 15. Distribution of respondents on the basis of Risk orientation

S. No.	Categories (Scores)	Respondents	
		Number	Percentage
1.	Low (up to 16)	28	23.33
2.	Medium (17-22)	49	40.84
3.	High (Above 23)	43	35.83
	Total	120	100.00

Mean = 19.40, S.D. = 4.03, Min. = 10, Max. = 27

15. Risk orientation:

It can be observed from reveals that, 40.84 percent of respondents belonged to medium level of risk bearing ability, whereas 35.84 and 23.33 percent of them had high and low risk bearing ability respectively.

Hence, it can be concluded that majority of the respondent onion growers (40.84%) had medium level of risk bearing ability.

4. CONCLUSION

It is concluded that majority of the respondents' belong to middle age group. The maximum of respondents was found literate. The majority of the other backward caste, Single families were more in number than joint families. Respondents belonged to single families. Majority of the medium size family. The majority of the respondents married, land holding category of marginal farmers, medium material possession. That majority of respondents of onion growers farmers possessed Pacca type of house, participation followed by two organization. It is concluded that the majority of the respondent's farmers belonged to very low. Majority of the respondents belonged to medium level of scientific orientation. Reveals that of the respondents belonged to medium level of economic motivation category. Majority of respondents in medium level of Risk orientation.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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