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Study on socio personal characteristics of the farmers regarding crop residue management practices of Western Uttar Pradesh

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Abstract
The study was conducted in Western Uttar Pradesh during the year 2021-22 to find out the Socio personal characteristics of the farmers practicing crop residue management. In the study 180 farmers were selected as respondent. The independent variables such as age, caste, education, marital status, family type, etc were measured. Data were collected through structured personal interview method. The statistical methods and tests such as frequency, percentage, mean, standard deviation etc. were used for analysis of data. The result of the data showed that the majority of the farmers 33.89 percent belonged to lower medium age group followed by higher medium age group, 68.33 per cent farmers belonged to Other Backward Caste. The majority 26.67 per cent of respondents were educated up to intermediate, 87.22 per cent were married, 65.00 per cent belong to joint family system, 43.88 per cent were having 4 to 8 members in a family, 78.89 per cent were having pucca house, 64.44 per cent respondent were engaged in agriculture as main occupation, 52.78 per cent were having medium size (2-4 ha) of land holding, 84.44 per cent were used private tube well for irrigation, maximum farmers 90.56 per cent were having Motorcycle followed by 86.67 per cent used Buggy for the purpose of transportation, and 11.67 per cent respondents were having membership of only one social organization. In the study 82.22 per cent respondents were getting information from KVKs.

Keywords: Independent variables, crop residue management, agriculture etc

Introduction
Crop residues are parts of the plants left in the field after crops have been harvested and threshed. The recycling of crop residues has the advantage of converting the surplus farm waste into useful product for meeting nutrient requirement of succeeding crops.

According to the Indian Ministry of New and Renewable Energy (MNRE), India generates on an average 500 Million tons of crop residue per year. The same report shows that a majority of this crop residue is in fact used as fodder, fuel for other domestic and industrial purposes. However, there is still a surplus of 140 Mt out of which 92 Mt is burned each year. Table 1 compares the agricultural waste generated by selected Asian countries in Mt/year. It is also interesting to note that the portion burnt as agricultural waste in India, in volume is much larger than the entire production of agricultural waste in other countries in the region.

A Large amount of rice residue is annually produced in the rice growing countries. Moreover, the adoption of mechanized farming has resulted in leaving a sizeable amount of rice straw in the field after harvesting the grain. There is enormous potential of recycling these residues in the crop production systems. Total amount of crop residue produced in India is estimated at 350 x 10^6 kg yr^{-1}, of which wheat residue constitutes about 27% and that of rice about 51%[3]. Another estimate shows that 120 x 10^6 kg yr^{-1} rice residue, out of 180 x 10^6 kg yr^{-1} (assuming that 1/3rd of the residue is used as feed for animals and other purposes) can be returned to the soil to enhance soil quality; it will contribute to soil 2.604 million tonnes of $N+P_2O_5+K_2O$, considering the nutrient contents in rice straw as 0.61% N, 0.18% P_2O_5 and 1.38% K_2O[4].

A major contributor to air pollution is the seasonal burning of crop residue left on agricultural fields by farmers after each harvest season. Crop residue burning (CRB) is prevalent in many countries across Asia and Africa. Developing countries such as India, Nepal, China, Thailand, and Egypt are periodically affected by air pollution caused by CRB (Pant, 2013) [9]. CRB leads to emissions of carbon monoxide, carbon dioxide, and methane, and increases airborne particulate matter and heavy metals.

These pollutants contribute to external social and environmental costs such as damage to the pulmonary health of local farming communities (Agarwal *et al*. 2012) [1] and the cost of air pollution in neighbouring urban centres. Keeping in view the present study related with crop residues management practices has been carried out to know the situation.

Table 1: Agricultural waste generation in India compared to other select nations in the same region

Country	Agricultural Waste Generated (million tons/year)
India	500
Bangladesh	72
Indonesia	55
Myanmar	19

Methodology

The present study was carried out in Meerut and Muzaffarnagar district of Western Uttar Pradesh. Meerut district comprises of twelve blocks and Muzaffarnagar also have nine blocks, out of each district two blocks were selected from Meerut district i.e. Hastinapur, Kharkhoda, and from Muzaffarnagar district Khatouli and Jansath blocks were selected. From each block5 villages selected purposively and from each selected village 9 respondents were selected on the basis of systematic random sampling method. Thus the total sample size was of 160 respondents for the investigation. The independent variables such as age, caste, education, marital status, family type, size, occupation, land holding etc were measured by using modified Socio –Economic Status Scale of Trivedi (1963) was used for the purpose. The data was collected through personal interview and collect data was coded then analyzed using relevant statistical tools and technique and find out frequency, percentage, standard deviation etc.

Result and Discussion

Table 2: Distribution of the respondents according to their socio economic profile

Sr. No.		Particulars	Frequency	Percentage
1	Age	Young age group (up to 30 years)	25	13.89
		Lower medium age group (31- 45 years)	61	33.89
		Higher medium age group (46-60 years)	58	32.22
		Old age group (above 60 years)	36	20.00
2	Caste	Schedule caste/Schedule tribe	21	11.67
		Other Backward caste	123	68.33
		General category	30	16.67
		Others	6	3.33
3	Education	Illiterate	5	2.78
		5th Pass	10	5.56
		8th Pass	27	15.00
		10th Pass	41	22.78
		12th Pass	48	26.67
		Graduation	37	20.56
		Post-Graduation and above	10	5.56
4	Marital Status	Unmarried	23	12.78
		Married	157	87.22
5	Family Type	Nuclear family	63	35.00
		Joint Family	117	65.00
6.	Size of Family	Up to 04 members	46	25.56
		04- 08 members	79	43.89
		Above 04 members	55	30.56
7.	Type of house	Mixed	38	21.11
		Pucca	142	78.89
8.	Occupation	Agriculture	116	64.44
		Agriculture with allied	28	15.56
		Agriculture with Business	23	12.78
		Agriculture with Service	13	7.22
9.	Land holding	Marginal (Up to 1 ha)	4	2.22
		Small (1-2 ha)	37	20.56
		Medium (2-4 ha)	95	52.78
		Large(Above 4 ha)	44	24.44
10.	Irrigation Facilities	Government tube well	15	8.33
		Private tube well	152	84.44
		Canal + Private tube well	63	35.00
11.	Home appliances	Low (Below 7 number)	43	23.89
		Medium(7 to 19 numbers)	93	51.67
		High(Above 19 numbers)	44	24.44
12.	Farm machinery	Low (Below 3 number)	57	31.67
		Medium(3 to 13 numbers)	73	40.56
		High (Above 13 numbers)	50	27.78
13.	Transport Facilities	Cycle	141	78.33
		Motorcycle/Scooty/Scooter	163	90.56
		Bullock cart (Jhota- buggy)	156	86.67

		Tractor trolley	109	60.56
		Car/Jeep/Taxi	48	26.67
14.	Social Participation	No member of any organization	159	88.33
		Membership of one social organization	21	11.67
15.	Annual Income	Up to Rs. 1,00000	45	25.00
		Rs. 1,00000 –2,00000	56	31.11
		More than Rs. 2,00000	79	43.89

Age
Table 2 indicates that majority of the respondents (33.89%) belong to lower medium age group, followed by higher medium age group, (20.00%) old age group and the remaining belongs young age (13.89%). It could be stated from the above finding that majority of the respondents were found in lower medium age group.

Caste
The data shows that maximum number of respondents (68.33%) belonged to other backward caste followed by general category (16.67%), the remaining belongs to schedule caste/schedule (11.67%) and others (minority class, 3.33%). It could be stated from the finding the majority of the respondents were found in other backward caste.

Education
Maximum number of respondents (26.67%) were having 12th Pass level of education followed by 10th Pass (22.78%), Graduation (20.56%), 8th Pass (15.00%), 5th, Post-Graduation and above (5.56%) respectively while remaining (2.78%) were Illiterate. It may be concluded that maximum numbers of respondents were having 12th Pass level of educational status.

Marital Status
Maximum number of respondents (87.22%) were married and remaining (12.78%) respondents were found unmarried.

Family Type
The maximum number of respondents (65%) was living in joint family type of concept and the remaining (35%) respondents were living in the nuclear family system. Here study find that, maximum respondents were lives in joint family system because most of the people think the idea of joint family is one of the reasons of their happiness and believe in unity.

Size of Family
Highest numbers (43.89%) of respondent were having four to eight members in their family followed by more than four members (30.56%) and the remaining (25.56%) up to four members in family. It can be concluded that the majority of respondents were having in four to eight members of family size because of joint family concept.

Type of House
The data in (Table 2) reveals that highest number (78.89%) of respondents was lives in pucca house and the remaining (21.11%) respondents lives in Mixed (kuchha + Pucca) house. Study concluded that majority of the respondents were lives in pucca housing pattern.

Occupation
The data reveals that majority of the respondents (64.44%) were having agriculture as primary occupation followed by agriculture with allied activities (15.56%), agriculture with business (12.78%) respectively while remaining (7.22%) were having agriculture along with service. It can be concluded that the majority of the respondents were having agriculture as a primary and predominating occupation. In this study area maximum rural livelihood depends on agriculture.

Land holding
Majority of the respondents (52.78%) were having 2-4 ha. of land which was belonged to medium farmers followed by large farmers (24.44%) were having above 4 ha. of land, small farmers (20.56%) were having 1-2 ha. of land and the remaining (2.22%) respondents were having up to 1 ha. of land which was belonged to marginal farmers. It may be concluded that the majority of the respondents were having 2-4 ha. Of land which comes under medium farmers category.

Irrigation facilities
It is evident from the Table 2 that majority (84.44%) of the respondents were used private tube well for irrigation followed by both canal and private tube well (35%) for irrigation facilities because some of the farmers have their land in side of canal and some land were away from canal side so both facilities were using for irrigation purpose. Whereas only 8.33 per cent of the respondents were using government tube well facilities for irrigation purpose. It may be concluded that the maximum of the respondents were used private tube well for irrigation facilities.

Home appliances
As regards home appliances in the Table 2., majority of the respondents (51.67%) were having medium level of home appliances (below 7 numbers) followed by (24.44%) of the respondents were having high level of home appliances (above 19 numbers) remaining (23.89%) of the respondents were having low level of home appliances (below 7 numbers) respectively. It may be concluded that the maximum of the respondents were having a medium level of household appliance.

Farm machinery
In case of farm machinery concern, majority of the respondents (40.56%) were having medium level of farm implements (3 to 13 numbers) followed by (31.67%) of the respondents were having low level of farm implements (below 3 numbers) and (27.78%) of the respondents were having of high level of farm implements (above 13 numbers) respectively).

Transport facilities
Majority of respondents were having Motorcycle/scooty/scooter (90.56%) as used for transport facility. followed by Bullock cart (Jhota-buggy) (86.67%), Cycle (78.33%) and Car/Jeep/Taxi (26.67%).It may be concluded that, maximum of the respondents were having Motorcycle as a transport facility and then Bullock cart

(Jhota-buggy).

Social participation

It reveals that majority of respondents were having no membership of any organization (88.33%) followed by membership of one social organization (11.67%). It may be concluded that farmers are poorly represented through social organisation existing in rural societies.

Annual income

Majority of respondents were having more than Rs. 2,00000 income per annum (43.89%) followed by Rs. 1,00000 – 2,00000 (31.75%), and the remaining were having income Rs. 50,000- 1,00000 (25.00%).It may be concluded that, majority of the respondents were having annual income Rs. more than Rs. 2, 00,000 because of maximum numbers under medium land holding category.

Extension contact

Table 3: Distribution of respondents according to their extension contact

Sr. No.	Particulars	Frequency	Percentage
1	Neighbour/Relative	46	25.56
2	Progressive Farmers	83	46.11
3	Agriculture Development Officer	33	18.33
4	Village Development Officer	28	15.56
5	District Agriculture officer	21	11.67
6	District Plant Protection Officer	27	15.00
7	Scientist of KVK	148	82.22
8	Scientist of ICAR	7	3.89
9	Scientist of University	41	22.78

The distribution of respondents according to source of information presented in Table 3 which shows the majority of respondents (82.22%) were received information from Scientist of KVKs/ SMS followed by Progressive farmers (46.11), Neighbours/Relative (25.56%), Scientists of university (22.78%), Agriculture Development Officers (18.33%), Village Development Officer (15.56%), District P.P.O. (15.00%), District Agriculture officer (11.67%), while only 3.89 percent respondent getting information from scientist of ICAR.

It can be concluded that majority of respondents are getting information regarding crop residues management from the Scientist of KVKs.

Conclusion

It may be concluded of the respondents were having medium socio economic status with middle age, having intermediate level of education, belong to Other Backward Caste, lives in joint family system, having 4-8 members of the family, having 2-4 ha. of land, pucca house with medium material possession, low social participation, and most of the respondents having annual income of above 2 lakhs while in case of getting knowledge, the scientist of KVK were found the main source of information regarding crop residue management practices.

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