

# Knowledge Regarding Climate Change by Rural Women in Haryana

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## ABSTRACT

The article highlights that, women play a core role in agriculture and contribute to sustainable development. They are caretakers to the land as well as for their families. They play a critical role in sustaining not only their homes but also the entire food system and this is especially true in developing nations. A study on “**Knowledge regarding climate change by rural women in Haryana**” was conducted in Hisar district with a sample size of 120 rural women from four villages (30 from each village), two villages from Hisar-I and two villages from Hisar-II were selected randomly. The data was collected regarding dependent and independent variables with the help of developed interview schedule and a set of 19 independent variables and 1 dependent variable were selected for the study. The objective of the study were to assess the knowledge by rural women regarding climate change. The collected data were analyzed with suitable statistical tools and techniques such as frequency, percentage to reveal major findings. The data represents that the rural women had medium knowledge regarding climate change followed by high and low level. It is vital to take action to develop some programmes to raise knowledge of the effects of climate change on agriculture and its allied activities, as well as to develop mitigation techniques.

**KEYWORDS:** climate change, knowledge, adaptation, rural women, developing nations, vulnerable, problems

## INTRODUCTION

India is a country that depends heavily on agriculture because more than two thirds of it's people depends on agriculture for their survival. India is a sizable nation with a diversified climate, seasons, crops and farming practices. Agriculture depends heavily on monsoon rains and there is a direct connection between climate and water availability. Haryana state is mainly an agricultural one. Haryana produces enough food for itself and is the second-largest supplier of grains to the nation as a whole. It made a significant contribution to the green revolution. The quality of the water and air is getting worsen day by day due to increase of various pollutants in the atmosphere. Such calamities have a variety of negative effects such as including loss of livelihoods and income and vulnerability to disease. According to the United Nations Framework Convention on Climate Change (UNFCCC), in addition to the natural climate variability shown over comparable time periods, climate change can be directly or indirectly attribute to human activity that changes the composition of the earth's atmosphere. Women play a significant and crucial role in agricultural development and its allied fields. Rural women aside from

additional duties they carry out like cooking, doing washing, collecting water and gathering firewood, women execute the highest majority of farming work globally. Consequently, as a result of this, women in rural regions experience increased levels of poverty and food insecurity (Nyahunda and Tirivangasi, 2020).

## REVIWS OF LITERATURE

Dietz *et al.* (2007) reported that two-thirds of the sample in a research on "Support for climate change policy" claimed having some understanding about climate change, while (28.00%) stated they knew little about it. Only (9.00%) of the respondents had a great deal of knowledge and only (8.00%) had not learned anything about climate change from any of the sources.

Nhemachena and Hassan (2007) noted that extension services are a valuable resource for information on agricultural management and production techniques as well as climate change. Farmers who were well-connected to extension personnel were more likely to be aware of shifting climatic circumstances.

Tulokhnov *et al.* (2008) observed that the vast majority of the farm men and women (90.00%) were aware of global warming. The majority of them (59.00%) said that global warming would likely had a negative effect. Almost (18.00%) voiced the opposing viewpoint and (23.00%) believed that it is difficult to predict.

Swaminathan (2009) indicated that increasing local community knowledge of climate issues could benefit them in better coping with the negative effects of climate change. Additionally, he created the idea of Local Level Climate Risk Managers, who may increase genetic and climate literacy and raise public understanding of climate change.

Singh *et al.* (2011) studied that Arunachal Pradesh's *Adi* people community in the Eastern Himalayas: bio-cultural diversity, climatic change and livelihood security. They documented their extensive knowledge of bio-cultural resources and their interactions with climate change and their impact on the sustainability of livelihoods. According to their analysis, their bio-cultural resources and way of life may be threatened by climate change. A little half of the older women (48.90%) spoke about their past and painted a picture of weather differences they had experienced during the session.

Rani *et al.* (2013) noted that in the context of climate change, temperature is currently one of the most significant environmental elements influencing the growth, development and yield of rice crops. Temperature directly affects yield by affecting the length of each phenological stage. This study's goal was to give a broad picture of how high temperatures affect the phenology of rice and the total number of growth days.

Bhan *et al.* (2014) found that the vast majority of farmers surveyed from various villages expressed the opinion that a rise in temperature and rainfall has a positive impact on the population of diseases that cause disease and insect pest.

Sarkar and Padaria (2015) found in their study titled "Measuring farmers' awareness and knowledge level about climate change and formulating future extension strategies" the researchers discovered that just (43.00%) of respondents had information about the many human-induced causes of climate change. According to the survey, sample farmers had poor level of knowledge and awareness.

Sarkar and Padaria (2017) indicated that nearly (38.00%) of the respondents had heard about climate change, according to a survey on farmers' awareness and risk perceptions regarding it and that was conducted in West Bengal. About two-thirds of them claimed that industrialization was a major cause of climate change, while nearly three-fifth said that the growth in deforestation, extensive use of

transportation and usage of oil-based motor boats for fishing and communication in the area were the main causes to climate change.

Sarvade *et al.* (2020) discovered in a socio-economic research of farming communities, their awareness of climate change and their agro-forestry practices in the collection of villages in the Chhattisgarh plain region. They discovered that there was a rise in vehicle use (86.67%), an increase in population (74.17%), an increase in industrialization and urbanization (72.50%) and an increase in the use of insecticides, pesticides, fertilizers *etc.* (65.00%) were the primary contributors to climate change.

Bansal *et al.* (2022) conducted a study titled “Awareness and knowledge of farm women regarding climate change” the researcher found that (58.00%) of the farm women had medium level of knowledge about the cause of climate change. According to the investigation, some had high level of information and awareness about the cause of climate change, while only some of farm women seemed not to be aware of climate change.

### METHODOLOGY

The present study was conducted in Hisar district of Haryana state. The Hisar district was purposively selected for the investigation because of convenience, easy accessibility and familiarity with the area to the investigator. Out of nine blocks of Hisar district, two blocks were selected randomly for the present study. The study was conducted in Hisar-I block and Hisar-II block for the research problem. The present study was targeted the randomly selected four villages (two villages of each block) of Hisar district to meet out the above said objectives of present investigation. Two villages *i.e.* Kaimri and Mangali were selected randomly from block Hisar-I and two villages *i.e.* Neoli Kalan and Arya Nagar were selected randomly from block Hisar-II for the investigation. For the present study, a sample of 120 rural women was taken by random sampling method (30 women from each village) for the final data collection and implementation of the objective of the present study.



Fig. 1.1 Selected Hisar district of Haryana

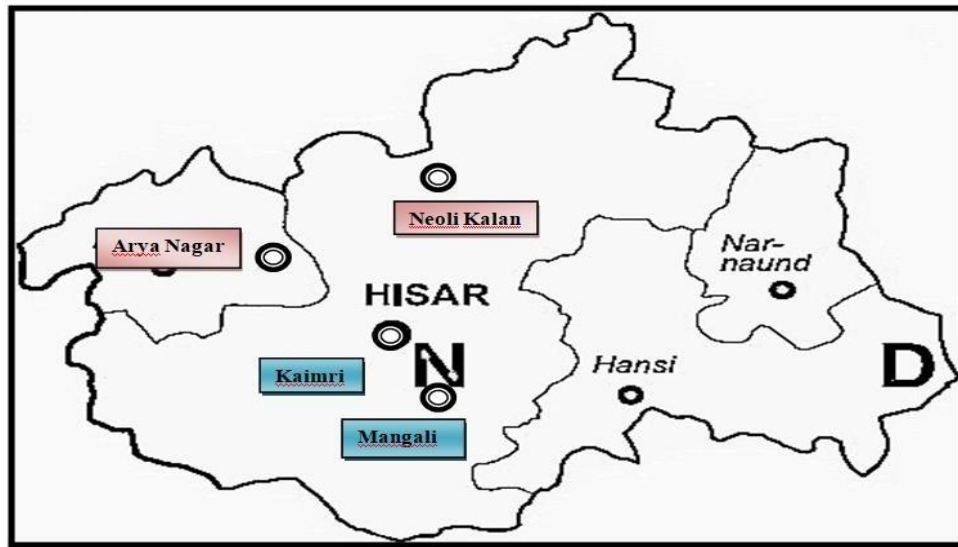


Fig. 1.2 Selected villages of Hisar

**RESULTS**

**Personal-economic profile of the respondents**

Table 1 describes the personal-economic profile of the respondents in terms of frequency and percentage distribution according to age, educational status, marital status, family type, family size, family occupation, family annual income and annual income from crop production. A cursory look on the data of Table 1 gives us an idea about the personal-economic profile of the respondents. Majority of the respondents belonged to age group 30-42 years (48.34%) followed by 35.83 per cent in age group of 18-30 years and 15.83 per cent were in the age group of 42-54 years.

Further, with respect to education of respondents, it was evident that majority of the respondents were having secondary/senior secondary level of education *i.e.*, 36.67 percent followed by illiterate (21.67%) and middle (6-8 std.) level of education (15.84%). The respondents were having primary (up to 5 std.) level of education (9.16%) and 6.67 per cent were graduate and above. Only 5.83 per cent can read and write and 4.16 per cent were found to have any diploma, ITI *etc.* (Table 1).

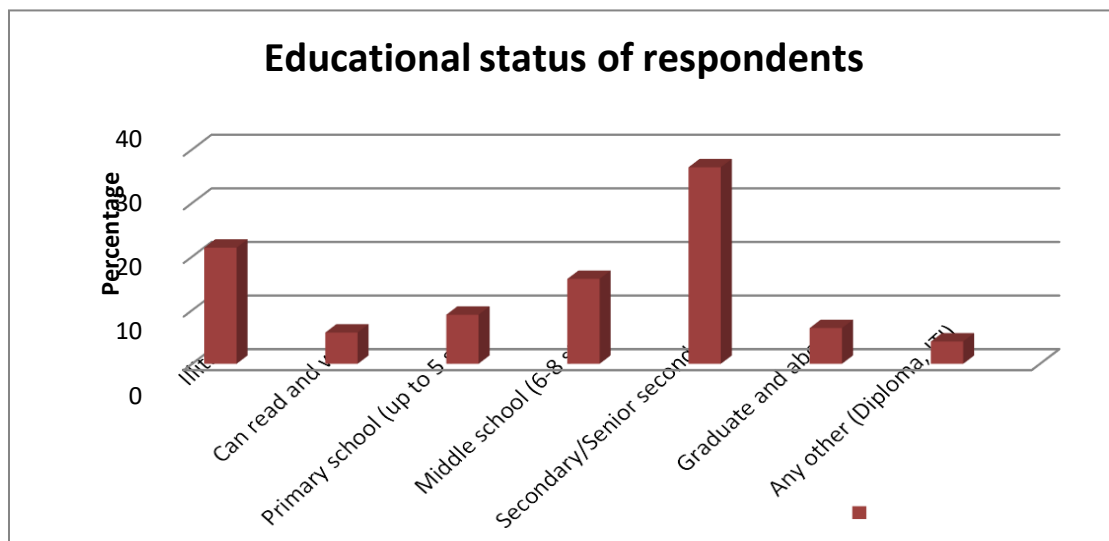


Fig. 1.3 Educational status of respondents

The data regarding marital status in Table 1 showed that majority of the respondents were married (82.50%) followed by 10.00 per cent of the respondents were found to be unmarried and 7.50 per cent of the respondents were widow. Regarding family type the Table 1 revealed that majority of the respondents belonged to nuclear family (56.67%) followed by joint family (40.83%) and only 2.50 per cent having extended family type. In case of family size the data in Table 1 indicates that majority of the respondents had the family size ranging from 5 to 6 members (45.00 %) followed by family size ranging up to 4 members (30.00%) and 25.00 per cent with more than 6 members, respectively.

The data in Table 1 regarding family occupation showed that majority of the respondents *i.e.*, 76.66 per cent had reported farming as their main family occupation followed by 7.50 per cent with having services, 5.83 per cent had their own business, 6.67 per cent as agriculture labour, while only 3.34 per cent were involved in caste occupation.

**Table 1: Personal-economic profile of the respondents**

N=120

S. No.	Personal and economic variables	Frequency	Percentage
<b>1.</b>	<b>Age group (in years)</b>		
	18-30	43	35.83
	30-42	58	48.34
	42-54	19	15.83
<b>2.</b>	<b>Educational status</b>		
	Illiterate	26	21.67
	Can read and write	07	05.83
	Primary school (up to 5 std.)	11	09.16
	Middle school (6-8 std.)	19	15.84
	Secondary/Senior secondary	44	36.67
	Graduate and above	08	06.67
	Any other (Diploma, ITI)	05	04.16
<b>3.</b>	<b>Marital status</b>		
	Married	99	82.50
	Unmarried	12	10.00
	Widow	09	07.50
<b>4.</b>	<b>Family type</b>		
	Nuclear	68	56.67
	Joint	49	40.83
	Extended	03	02.50
<b>5.</b>	<b>Family size</b>		
	Up to 4 members	36	30.00
	5-6 members	54	45.00
	Above 6 members	30	25.00
<b>6.</b>	<b>Family occupation</b>		
	Farming	92	76.66
	Agriculture labour	08	06.67



	Caste occupation	04	03.34
	Business	07	05.83
	Service	09	07.50
<b>7.</b>	<b>Family annual income (Rs.)</b>		
	1,20,000 to 2,80,000/-	45	37.50
	2,80,000 to 4,80,000/-	40	33.34
	4,80,000 to 6,00,000/-	35	29.16
<b>8.</b>	<b>Annual income from crops production (Rs.)</b>		
	0.5 lac to 2.0 lacs/-	61	50.83
	Above 2.0 lacs to 3.5 lacs/-	23	19.16
	Above 3.5 lacs to 5.0 lacs/-	08	06.66

An analytical study of the data regarding family annual income showed 37.50 per cent of the respondents were having family annual income between Rs. 1,20,000 to 2,80,000 followed by Rs. 2,80,000 to 4,80,000 *i.e.*, 33.34 per cent and 29.16 per cent were having Rs. 4,80,000 to 6,00,000 per annum (Table 1). The data in Table 1 revealed that majority of the respondents *i.e.*, 50.83 per cent were having annual income from crops production between Rs. 0.5 lac to 2.0 lacs followed by Rs. 2.0 lacs to 3.5 lacs *i.e.*, 19.16 per cent and 6.66 per cent were having income between Rs. 3.5 lacs to 5.0 lacs per annum.

### Social participation of the respondents

Table 2 describes the results regarding social participation of the respondents. Majority social participation of the respondents was in voluntary work 29.16 per cent followed by Self Help Group (12.50%) and 1.67 per cent had participation in the Gram Panchayat and in Co-operative Society, respectively.

**Table 2: Social participation of the respondents**

N = 120

S. No.	Social groups	Yes F(%)	No F(%)
1.	Gram Panchayat	02 (01.67)	118 (98.33)
2.	Co-operative society	02 (01.67)	118 (98.33)
3.	Self Help Group	15 (12.50)	105 (87.50)
4.	Voluntary work	35 (29.16)	85 (70.84)

### Knowledge regarding climate change among rural women

This section deals with the knowledge regarding different parameters of climate change among rural women in terms of climate & weather, temperature, crop, monsoon & rainfall, insects pest & diseases, animal husbandry, food security, human health, drought, irrigation and season. The data shows in Table 1 was formulated, tabulated and presented below in frequency and percentage.

The knowledge on different parameters of climate change was reported by rural women among climate & weather, the climate had been changed over the years (60.84%), among temperature, the annual mean temperature had been increased (46.66%), in terms of crops, there was an impact on crop growth period (76.66%), knowledge regarding monsoon & rainfall, the information on rainfall variability was useful in taking farm decisions (74.16%), knowledge among insects pest & diseases, an impact of climate on the incidence of diseases and insect pest was (79.16%), regarding animal husbandry, health of livestock was affected by high temperature (74.16%). Knowledge of rural women in terms of food security, climate change effected the production of food (76.66%), knowledge regarding human health, extreme weather events caused diseases in human health (61.66%), in terms of drought, the occurrence during last 5-10 years had been increased (5.00%), regarding irrigation, depletion of ground water over the years (13.34%), among season, climate change effected the length of season (74.16%).

**Table 1: Knowledge regarding climate change among rural women**  
N = 120

S. No.	Statement	Frequency	Percentage
<b>Climate and weather</b>			
1.	The climate had been changed over the years	73	60.84
2.	Due to climate change there was extreme in weather	69	57.50
3.	Climate change was the change in climate parameters	37	30.83
4.	Pollution was a cause of climate change	41	34.16
5.	Global warming was an effect of climate change	54	45.00
<b>Temperature</b>			
1	The annual mean temperature during last 10 years had been increased	56	46.66
<b>Crop</b>			
1	There was an impact of climate on crop growth period over the years	92	76.66
2	As an impact of climate change caused crop diversified	84	70.00
<b>Monsoon and rainfall</b>			
1	There was a shift in date of commencement of monsoon	64	53.33
2	The monsoon rainfall during the last 10 years had been increased	34	28.33
3	The number of rainy days per year during last 5 years had been increased	45	37.50
4	Information on rainfall variability was useful in taking farm decisions such as crop selection, sowing date, harvesting and irrigation scheduling	89	74.16
5	An impact of climate change on distribution of rainfall over the years	37	30.83

<b>Insects pest and diseases</b>			
1	There was an impact of climate change on the incidence of diseases and insect pest	95	79.16
2	The crop insect and diseases that were minor earlier become major due to climate change	76	63.33
<b>Animal husbandry</b>			
1	Health of livestock was affected by high temperature due to climate change	89	74.16
2	Decreased feed consumption due to climate change	67	55.83
3	Increased water intake in livestock due to climate change	94	78.33
4	Livestock immunity affected by new disease due to climate change	53	44.16
5	Decreased milk production due to climate change	69	57.50
<b>Food security</b>			
1	Climate change effected the production of food due to climate change	92	76.66
2	Decreased nutrition level due to climate change	67	55.83
<b>Human health</b>			
1	Harmed human health by air pollution	38	31.66
2	Extreme weather events caused diseases in human	74	61.66
<b>Drought</b>			
1	The occurrence of droughts during last 5-10 years had been increased	06	05.00
<b>Irrigation</b>			
1	There was depletion of ground water over the years due to climate change	16	13.34
<b>Season</b>			
1	Climate change had effected the length of season	89	74.16

**\*Multiple response**

### **Knowledge level regarding climate change among rural women**

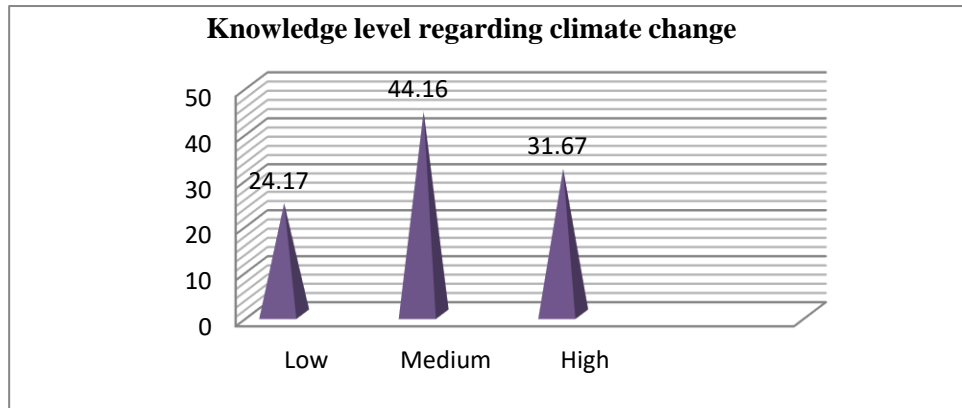
The data presented in Table 2 indicates the knowledge level of rural women regarding climate change. It was concluded that maximum knowledge level of the rural women (44.16%) was medium followed by (31.67%) with high level of knowledge. Only (24.17%) of the rural women of selected villages had low level of knowledge regarding climate change.



**Table 2: Knowledge level regarding climate change among rural women**

N = 120

S.No.	Categories	Frequency	Percentage
1.	Low (1-9)	29	24.17
2.	Medium (10-18)	53	44.16
3.	High (19-27)	38	31.67



**Fig. 1: Knowledge level regarding climate change**

### SUMMARY AND CONCLUSION

- Nearly half of the rural women had knowledge regarding climate change and 24.17 per cent had of rural women low level of knowledge regarding climate change.
- Majority of the rural women had maximum knowledge about the impact of climate on crop growth period over the years and information on rainfall variability is useful in taking farm decisions such as crop selection, sowing date, harvesting and irrigation scheduling.
- The rural women had minimum knowledge about the occurrence of droughts during last 5-10 years has been increased and there was depletion of ground water over the years due to climate change.

### DISCUSSION

The findings revealed that almost half of the rural women (44.16%) had medium level of knowledge regarding climate change followed by high (31.67%) and low (24.17%) knowledge level, respectively. The findings are in line with studies of Bansal *et al.* (2022) which found that (58.00%) of the farm women had medium level of knowledge about the cause of climate change. According to the investigation, some had high level of information and awareness about the cause of climate change, while only some of farm women seemed not to be aware of climate change and with Dietz *et al.* (2007) who also reported that two-thirds of the sample having some understanding about climate change, while (28.00%) stated they knew little about it. Only (9.00%) of the respondents had a great deal of knowledge and only (8.00%) had not learned anything about climate change from any of the sources. It was observed that majority of the rural women *i.e.*, 76.66 per cent had maximum knowledge about the impact of climate on crop growth period over the years, the findings were in line with Rani *et al.* (2013) also found that temperature is currently one of the most significant environmental elements influencing the growth, development and yield of crops. Temperature directly affects yield by affecting the length of each phenological stage. Majority of the respondents *i.e.*, 74.16 per cent had the knowledge about

information on rainfall variability is useful in taking farm decisions such as crop selection, sowing date, harvesting and irrigation scheduling, while only 5.00 per cent had minimum knowledge about the occurrence of droughts during last 5-10 years has been increased and 13.33 per cent about the depletion of ground water over the years due to climate change, the results were match with Chaudhary and Bawa (2011) also indicated that the water supplies grew less accessible as the environment warmed up.

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