RESEARCH NOTE

Knowledge of Farmers on Climate Change in Rangareddy District, Telangana

1. Gottipalli Jaya Pravallika and 2. Syed H. Mazhar

1. PG Scholar (Agril. Ext.), 2.Asso. Prof., (Agril. Ext.), SHUATS, Prayagraj, UP

Corresponding author e-mail : pravallikarajesh0826@gmail.com

Paper Received on November 05, 2020, Accepted on December 20, 2020 and Published Online on January 01, 2021

ABSTRACT

Climate change is a harsh reality which affects agriculture and also indirectly affecting the farmers. Most of the farmers are not well aware about climate change and its effects on agriculture. So it is important to let the farmers know about climate change or give them proper and complete information about it. Hence the study, knowledge of farmers about climate change was conducted. To analyze the level of knowledge they have. The present study, 'knowledge of farmers about climate change in chevella block of Rangareddy district, Telangana', was conducted in 2019-2020. Total 120 respondents were selected randomly from 6 different villages present in the chevella block.The study revealed that the farmers had medium level of knowledge on climate change, and the knowledge level of farmers had significant relationship with the independent variables (age, education, annual income, land holding, mass media exposure, extension contact, innovativeness and risk orientation).

Keywords : *Climate change; Knowledge;*

Climate change is the long-term alteration of temperature and typical weather patterns in a place. Climate change could refer to a particular location or the planet as a whole. Climate change may cause weather patterns to be less predictable. These unexpected weather patterns can make it difficult to maintain and grow crops in regions that rely on farming because expected temperature and rainfall levels can no longer be relied on. Climate change has also been connected with other damaging weather events such as more frequent and more intense hurricanes, floods, downpours, and winter storms (*National Geographic Society*). The agriculture sector is already facing problems relating to sustainability, stagnant yields, water logging, and soil erosion, volatility in prices, natural calamities and small size of farms. Population is increasing which in turn puts additional pressure on sustainable food production. To those already daunting challenges, climate change adds further pressure on agriculture affecting the poor *(Dev,2011)*.

Climate change is occurring mainly due to the changes in the natural greenhouse. Over the last century the burning of fossil fuels like coal and oil has increased the concentration of atmospheric carbon dioxide (CO_2). This happens because the coal or oil burning process combines carbon with oxygen in the air to make CO_2. To a lesser extent, the clearing of land for agriculture, industry, and other human activities has increased concentrations of greenhouse gases (*Global Climate Change, 2008)*. Plastic is also a main factor that is leading to climate change, all the single use plastic that we use in our houses being dumped in the oceans which come in contact with the sunlight and heat and cause the plastic to release powerful greenhouse gases (*World Wildlife Fund, 2019)*. And many other factors that are causing climate change and effecting agriculture vastly.

Rural areas are highly vulnerable to climate change, since people there depend heavily on natural resources such as local water supplies and agricultural land. In fact, about 70 per cent of the population in developing countries lives in rural areas, where agriculture is their main source of income (*Global Climate Change, 2008)*. And farmers' are the most affected when it comes to climate change and agriculture. So it is

necessary for them to have a complete idea on what is climate change and how is it affecting agriculture. The present study focuses on assessing the knowledge of farmers on climate change. It helps in identifying how much knowledge farmers' have about climate change.

The following specific objectives are discussed in the paper:

1. Socio- economic profile of the respondents.
2. Knowledge of farmers' on climate change.
3. Relationship between dependent and independent variables.

METHODOLOGY

The present study was conducted in Chevella block of Rangareddy District of Telangana and has been purposively selected in 2019-20. As it is closely located to the urban areas. Six villages namely chevella, palgutta, Rammanaguda, Kesaram, Damaragidha, Aloor were randomly selected. A well-structured interview schedule with relevant questions was prepared and pre-tested for the study. The sample population of 120 respondents was selected through random sampling method from the 6 villages. Relevant questions about climate change were asked through personal interview method and the responses were recorded.

Descriptive research design was used for the study. Knowledge responses were recorded in the 3 point continuum scale viz. fully correct, partially correct and not correct by assigning scores 3, 2 and 1 respectively. Overall knowledge level was determined and the respondents were categorized as low (up to 29 score), medium (30-37 score), high (38-43 score). Chi-square test was performed to analyze the relationship between selected independent variable and knowledge level of farmers' i.e. Dependent variable.

$$\text{Expected cell freq.} = \frac{(\text{row total}) \times (\text{column total})}{\text{Grand total}}$$

$$\chi 2 = \sum \frac{(\text{row total}) \times (\text{column total})}{\text{Grand total}}$$

with

D.F= (R-1)(C-1)

Where,

$\sum$ = Summation overall differences

R= no. of rows,

C= no. of columns

D.F =Degree of freedom

D.F = 2

Significance level = 0.05 (5%)

RESULTS AND DISCUSSION

Socio economic profile of the respondents : From the above Table 1, it is evident that, the majority of respondents from the study i.e. 50 per cent belonged to (30-45) years age group, followed by 31.67 per cent belonged to (45-60) years age group and 18.33 per cent belonged to 60 years above age group.

Table 1. Distribution of respondents based on their socio economic profile

Independent Variables	No.	%
Age (30-45) years	60	50.00
(46-60) years	38	31.67
Above 60 years	22	18.33
Education Primary	40	33.33
High school	48	40.00
Intermediate	30	25.00
Graduation	02	01.67
Gender Male	68	56.67
Female	52	43.33
Occupation Farming	114	95.00
Farming+ business	06	05.00
Caste General	101	84.16
OBC	15	12.50
SC	04	03.34
Family Type Nuclear	108	90.00
Joint	12	10.00
Type of House Semi- Cemented	14	11.67
Cemented	106	88.33
Land Holding < 1 ha	64	53.34
1-2 ha	41	34.16
>2 ha	15	12.50
Annual Income <50,000	44	36.67
50,000- 1 lakh	58	48.33
>1 lakh	18	15.00
Mass media exposure Low	54	45.00
Medium	64	53.33
High	02	01.67
Extension Contact Low	50	41.67
Medium	36	30.00
High	34	28.33
Innovation Low	18	15.00
Medium	61	50.84
High	41	34.16
Risk orientation Low	26	21.67
Medium	51	42.5
High	43	35.83

Regarding education majority of respondents had primary education i.e. 40 per cent followed by 33.33 per cent are illiterates, 25 per cent having higher education and 1.67 per cent having intermediate education. Regarding gender, majority were males (56.67%) and 43.33 per cent were females. Regarding occupation, majority i.e. 95 per cent are engaged in farming, followed by 5 per cent in farming & business. Regarding caste 84.16 per cent belonged to general caste, followed by 12.50 per cent OBC and 3.34 per cent SC. Regarding family type majority i.e. 90 per cent belong to Nuclear family, followed by 10 per cent as joint family. Regarding type of house, 88.33 per cent live in cemented house and 11.67 per cent live in semi-cemented house. Regarding land holding, majority of respondents i.e. 53.34 per cent having below 1 ha land, followed by 34.16 per cent having 1-2 ha land and 12.50 per cent having more than 2 ha land. Regarding annual income, 48.33 per cent having 50,000 to 1 lakh annual income, 36.67 per cent having below 50,000 annual incomes and 15 per cent having more than 1 lakh annual income. Regarding mass media exposure, majority of respondents have medium level 53.33 per cent mass media exposure, followed by low 45 per cent and high 1.67 per cent. Regarding extension contact, majority of respondents have low level i.e. 41.67 per cent of extension contact, followed by 30 per cent have medium level and 28.33 per cent have high level. Low extension contact was because of almost all the farmers either took suggestions from the fellow farmers or depended on the elders of their family. Regarding innovation, majority of respondents have medium level i.e. 50.84 per cent innovation followed by 34.16 per cent having high level and 15 per cent having low level. Regarding risk orientation, majority of respondents have medium level i.e. 42.5 per cent of risk orientation followed by 35.83 per cent having high level and 21.67 per cent having low level innovation.

Knowledge of farmers on climate change : Table 2 reveals that majority of farmers 77.5 per cent had full knowledge about increased temperatures and 79.16 per cent had full knowledge about untimely monsoons. Farmers were able to easily identify the changes in the weather 43.33 per cent farmers had partial knowledge about increase in duration of seasons.

Majority of farmers had partial knowledge 60.83 per cent on climate change is resulting in failure of crops and 60 per cent farmers had full knowledgeon climate change resulting in health hazards and 54.16 per cent had partial knowledge on climate change affecting food security. Only few farmers were able to identify that climate change was affecting their livelihood.

Majority of farmers were unaware about the fact that burning of agriculture waste was one of the causes for climate change. Majority of farmers 70.84 per cent had no knowledge about burning of agriculture waste was one of the causes for climate change. Farmers responded that, if we do not burn the waste then what

Table 2. Distribution of farmers based on their knowledge about climate change

Statements	Fully correct		Partially correct		Not correct	
	No.	%	No.	%	No.	%
Temperature has increased from past years	93	77.50	19	15.83	08	06.67
Duration of seasons has increased	46	38.33	52	43.33	22	18.33
There are untimely monsoons	95	79.16	25	20.84	_	_
Climate change is resulting in failure of crops	39	32.50	73	60.83	08	06.67
climate change is resulting in health hazards	72	60.00	32	26.67	16	13.33
One cause of climate change is burning of agricultural waste	05	04.16	30	25.00	85	70.84
Climate change is affecting on food security	38	31.67	65	54.16	17	14.16
Climate change is causing heavy floods	50	41.67	59	49.16	11	09.16
Use of plastic is also a cause of climate change	63	52.50	38	31.67	19	15.83
Climate change affecting the soil fertility that is by strong winds and heavy rainfall	28	23.33	58	48.33	34	28.33
Income from agriculture is adversely affected by climate change	50	41.67	57	47.50	13	10.83
High chances of infection by pests and diseases is due to heavy rainfall which is caused by climate change	30	25.00	69	57.50	21	17.50

to do with it, we can't just leave it like that it occupies most of the land.

Majority of farmers 49.16 per cent had partial knowledge on climate change causing heavy floods and 48.33 per cent farmers had partial knowledge on climate change affecting soil fertility by strong winds and heavy rainfall.

Majority of farmers 52.5 had full knowledge on use of plastic is one of the reasons for climate change. They were aware of this information mostly through social workers who did campaigns about single use plastic in the village. Majority of farmers 47.5 had full knowledge about climate change affecting the income from agriculture and majority of farmers 57.5 per cent had partial knowledge on climate change causing disease and pest infections through heavy rainfall which is mostly unseasonal.Majority of farmers 56.67 per cent had full knowledge on fluctuations in market price due to most of the crop loss and spoilage that is also due climate change.

Majority of famers 49.16 per cent had partial knowledge on climate change is a result of cutting down trees and forests (deforestation). Majority of farmers 51.67 per cent had partial knowledge on high use of automobiles is also the cause of climate change. High automobile use increases the CO_2 levels and due to cutting down of trees the CO_2 level is being increased gradually which is harming the earth and the lives in it.

From the above findings' farmers are not fully aware about the climate change.

Table 3. overall distribution of respondents based on their level of knowledge

Knowledge	No.	%
Low (20-29)	16	13.33
Medium (30-37)	83	69.16
High (38-43)	21	17.50
Total	120	100.0

Overall distribution of respondents based on their level of knowledge : Table 3reveals that majority of farmers (69.16%) had medium level of knowledge on climate change, followed by 17.5 per cent respondents had high level knowledge and 13.33 per cent respondents had low level knowledge.since majority of farmers had low extension contact, they do not have much information about the current scenario of climate change. Farmers received this medium level of knowledge from students that visited their village during their field visits, and from the social workers who did the no plastic usage campaigns. And from the mass media exposure they had, that is radio and television. Farmers had very low contact with the agriculture officer or the extension officers. They mostly depended on the fellow farmers for new information, or continued on the knowledge given by their ancestors. However few farmers had good contact with the agriculture officers and extension officers. Which was useful for them in having knowledge about climate change.

Relationship between independent variables and dependent variable : Table 4 shows that independent variables like age, education, annual income, land holding, mass media exposure, extension contact, innovativeness, risk orientation were having significant relationship with knowledge level of farmers at 5 per cent level of significance.

The reason might be that as the age increased, the education level of respondent also increased simultaneously resulting in the increase in knowledge level of respondent. Education helps an individual in acquisition of knowledge and broadening the vision.

Table 4. relationship between selected independent variables and dependent variable

Independent variables	χ^2 value
Age	42.22*
Education	21.90*
Annual income	17.70*
Land holding	44.02*
Mass media exposure	38.77*
Extension contact	39.12*
Innovativeness	09.91*
Risk orientation	17.58*

Tabulated chi square value is 5.99, *= significant at p = 0.05

For annual income the possible reason might be that as the annual income of the farmer decreases gradually, he tries to find out the various reasons that are affecting his livelihood, this leads to the increase in knowledge about climate change. The reason for land holding might be that, the farmer with land holding, usually tries to find out the reasons for low crop yield or failure of the crop or disease affected crops, this process leads to knowing about climate change and increases the knowledge of the farmer.

Mass media exposure, extension contact, innovativeness, risk orientation has significant relationship

with the knowledge of farmers, this might be due to radio and television are the most widely used mass media which helps the farmers to have knowledge about climate change through various agriculture programs that are being telecasted. Farmers though they have low extension contact, their main source of information is usually the market representatives, the fellow farmers and the knowledge that is shared by their elders.

Innovativeness and risk orientation are usually referred as doing something new and having the ability to take a risk (risk bearing capacity) simultaneously. The farmer with such characters usually has good knowledge about the new practices. To adapt to the climate change the farmer must have the knowledge about climate change. Since the majority of farmers had medium innovativeness and medium risk orientation,they tend have knowledge on climate change.

CONCLUSION

Findings of the present study revealed that farmers are not completely aware about climate change they are just starting to understand about it. And majority of the farmers had medium level of knowledge on climate change. And there was significant relationship between selected independent variables and knowledge level of the farmers. And due to low extension contact majority of the farmers were unable to have complete knowledge about climate change.

REFERENCES

Global Climate Change (2015). Causes. NASA Global Climate Change and Global Warming: Vital Signs of the Planet. Jet Propulsion Laboratory / National Aeronautics and Space Administration, 15 June 2008. Web. 14 Jan. 2015. <http://climate.nasa.gov/causes/>.

Dev, Mahendra S. (2011). Climate change, Rural livelihoods and Agriculture (focus on food security) in Asia-pacific region. Indira Gandhi Institute of Development research (IGIDR), Goregoan(E), Mumbai- 400065, INDIA.

National geographic society. Climate change, National Geographic Headquaters', Washington DC 20036. nationalgeographic.org/encyclopedia/climate change

World Wildlife Fund (2019). Plastic waste and climate change – what's the connection? https://www.wwf.org.au/news/blogs/plastic-waste-and-climate-change-whats-the-connection#gs.n7onzd

• • • • •