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A B S T R A C T

Climate changes distress the farming with droughts, floods, aberrant rainfall and changes in temperature which affects farming and livelihoods of millions of farm families in our nation. In drought prone areas, small and marginal farmers are affected by inadequate rainfall situation which affects their livelihood security. Avoidance of climate variability is not possible and is a new normal in farming today. The need of the hour is to integrate various component of farming to satisfy farmers needs with the available resources at their disposal. Farming community needs to be obtained more knowledge about climate change and its impact on farming and allied activities to mitigate climate change related issues. Namakkal district was selected for this study as it was prone to frequent natural vagaries as a result of climate change issues. Erumapatty block in Namakkal district was selected because of National Initiative on Climate Resilient Agriculture (NICRA) scheme was under implementation. Among the 24 village panchayats in Erumapatty block, Vadavathur village panchayat was selected for this study. The data was collected from 120 farm respondents through a pre-tested interview schedule. The findings of the study revealed that more than half (53.33 per cent) of the farmers had low level of knowledge followed by 3 0.00 per cent and 16.67 per cent of the farmers had medium and high level of knowledge on climate change.

***Key words*:** Climate change, Knowledge, Profile characters, Extension contacts, Media exposure

Climatic events like droughts, aberrant rainfall and changes in temperature have been affecting the farm operations which results low yield and livelihood losses of small and marginal farmers. Tackling the problems in farming due to climate change has been a long challenge [1]. The foremost thing is that the farmers need to be aware about climate change and gain more knowledge about how to mitigate the climate change related issues. Knowledge is a vital factor for implementation of all farming operations. Without appropriate knowledge, the farm activities could not be done effectively [2]. So, our farmers should know about climatic vulnerability of their respective areas and how to overcome from it.

Climate change is happening on worldwide, but the ecological impacts are often locally. Climate change has affected species and ecosystems across the globe [3]. The impact of the global climate change can occur directly or indirectly as well as appearing in a variable period of time, then the adaptation to climate change is badly needed. Strategy and well-managed plan should be made as early as possible and to take an advantage of technological innovation [4]. Climate change affects food production negatively, decreases food availability and limits access to food for a significant share of the population [5]. Climate changes affect both the environment and the humankind, whereas human health is affected by the ecological condition [6]. Considering the whole background, the present investigation was aimed to assess profile characteristics of farmers and their knowledge level on climate change in Namakkal district of Tamil Nadu.

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MATERIALS AND METHODS

In this study, Ex-post-facto research design was employed. Namakkal district of Tamil Nadu was selected for this study as it was prone to frequent natural vagaries as a result of climate change. The study was undertaken in Erumapatty block having 24 village panchayats. Among the 24 village panchayats, Vadavathur village panchayat was selected as it was seriously affected by drought. About 120 farm respondents were selected for this study.

RESULTS AND DISCUSSION

Profile characteristics of the farm respondents

In this section, the characteristics of the respondents viz., Age, Educational status, Occupation status, Farm size, Farming experience, Social participation, Extension agency contact, Mass media exposure, Innovativeness, Risk orientation, Scientific orientation, Training programmes undergone and Decision making ability were discussed.

Age: Age is a vital factor of the respondents to take decision for achieving the farming needs. Hence it has been considered in this research study. The result of the collected data on the age of the respondents have been presented in (Table 1). It could be observed from (Table 1), that more than half of the respondents (53.33 per cent) were found to belong to old age group followed by 36.67 per cent in middle age group and 10.00 per cent in young age group. This may be due to lack of interest in doing farming by our youth [7].

Table 1 Distribution of respondents according to their age

S. No	Category	Number	Percentage
1.	Young (upto 35 years)	12	10.00
2.	Middle (35 to 45 years)	44	36.67
3.	Old (above 45 years)	64	53.33
	Total	120	100.00

Educational status: The level of education is playing a crucial role in farming activities which influences the farmers to take decision in important farming operations. The literary level is creating direct impact on adoption of farm innovations. Hence, the data of educational level of the respondents had been collected and presented in (Table 2). It could be observed that 36.67 per cent of the respondents were educated upto primary education followed by secondary school education (18.33 per cent), middle school education (15.00 per cent), illiterate (11.67 per cent), collegiate education (10.00 per cent) and higher secondary school education (8.33 per cent) [8].

Table 2 Distribution of respondents according to their educational status

S. No	Category	Number	Percentage
1.	Illiterate	14	11.67
2.	Primary education	44	36.67
3.	Middle school education	18	15.00
4.	Secondary school education	22	18.33
5.	Higher secondary school education	10	8.33
6.	Collegiate education	12	10.00
	Total	120	100.00

Occupational status: Farming is an inevitable profession for food and livelihood security of the nation. Research studies on occupational status will helps to know the willingness and involvement of the farmers on farming. Hence it has been selected for this research study and the results of data related to the occupational status had been presented in (Table 3). It could be observed that more than half of the respondents (63.33 per cent) had agriculture as their secondary occupation followed by 36.67 per cent of the respondents having agriculture as their primary occupation. In this study area, the dairy animals are assisting the farmers to get daily income and ensuring their livelihood security. The by-products of agriculture crops are used to feed animals which fetch them more remuneration than agricultural crops. This is the possible reason for many farmers in the study area to take up agriculture as secondary occupation and rearing of animal as a primary occupation [9].

Table 3 Distribution of respondents according to their occupational status

S. No	Category	Number	Percentage
1.	Agriculture as primary occupation	44	36.67
2.	Agriculture as secondary occupation	76	63.33
	Total	120	100.00

Farm size: Generally, the size of the farm is vital factor for getting abundant income. Farm size is a momentous factor for adoption of new farm innovations. Studies on farm size will help to understanding the prosperity of the respondents. Hence it has been selected for this study and the result from the collected date has been presented in (Table 4). From the above data, it could be observed that more than half of the respondents (53.33 per cent) in the study were small farmers followed by marginal farmers (25.00 per cent) and big farmers (21.67 per cent). These findings reveal that majority of the farmers were small farmers in this NICRA village and the reason may be ancestral transfer of land from generation to generations and fragmentation of lands [10].

Table 4 Distribution of respondents according to their farm size

S. No	Category	Number	Percentage
1.	Marginal farmers (Below 2.5 acres)	30	25.00
2.	Small farmers (2.5-5 acres)	64	53.33
3.	Big farmers (Above 5 acres)	26	21.67
	Total	120	100.00

Farming experience: Farming experience plays a crucial role for adoption of innovative farm practices. It helps the farmers to take important decision in all farming operations. Therefore, it has been selected for this study and results has been presented in (Table 5). It could be observed that more than half of the respondents (51.67 per cent) had medium level of farm experience followed by high (25.00 per cent) and low (23.33 per cent) level of farming experience respectively. This may be due to the fact that majority of the respondents selected for this study belonged to middle and old age category [11].

Table 5 Distribution of respondents according to their farming experience

S. No	Category	Number	Percentage
1.	Low (3–20 years)	28	23.33
2.	Medium (21-37 years)	62	51.67
3.	High (38-54 years)	30	25.00
	Total	120	100.00

Social participation: Social participation is an imperative factor for acquiring knowledge and day to day information about the farming profession. It will be helpful to maintain gradual relationship in the social system. The collected data on social participation were incorporated in (Table 6). It could be observed that more than half of the respondents (60.00 per cent) had medium level of social participation followed by 30.00 per cent of the respondents had low level of social participation. Only 10.00 per cent of the respondents had high level of social participation. The reason is dearth of awareness about the importance social participation in carrying out farming activities [12].

Table 6 Distribution of respondents according to their social participation

S. No	Category	Number	Percentage
1.	Low (3 to 12)	36	30.00
2.	Medium (13 to 21)	72	60.00
3.	High (22 to 31)	12	10.00
	Total	120	100.00

Extension agency contact: Extension worker is called as "Change agent". Changes occur in Knowledge, Attitude and Skill. Transfer of Technology (TOT) is made possible by extension workers. So, the farmers must be aware about the extension workers and their role in agricultural extension. Extension agency contact is must needed one for this research study. Hence, it has been selected and collected data tabulated in the (Table 7). It could be observed that 46.67 per cent of the respondents had medium level of extension agency contact followed by 36.00 per cent of the respondents had high and 16.67 per cent of the respondents had low level of extension agency contact. These findings revealed that majority of the respondents had medium and high level of extension agency contact because ICAR-KVK has established close contact with this village farmers through the implementation of NICRA Scheme.

Table 7 Distribution of respondents according to their extension agency contact

S. No	Category	Number	Percentage
1.	Low (9 to 14)	20	16.67
2.	Medium (15 to 19)	56	46.67
3.	High (20 to 25)	44	36.66
	Total	120	100.00

Table 8 Distribution of respondents according to their mass media contact

S. No	Category	Number	Percentage
1.	Low (13 to 24)	34	28.33
2.	Medium (25 to 35)	64	53.33
3.	High (36 to 46)	22	18.34
	Total	120	100.00

Mass media exposure: Communication is the foremost factor for transfer of agricultural technologies. Without communication no extension can be done. For this purpose, mass media plays a significant role in transfer of farm technologies. Mass media exposure is very essential for this research study and hence it has been selected and presented the collected data in the (Table 8). It could be seen from (Table 8), that majority of the respondents (53.33 per cent) had medium level of mass media exposure followed by 28.33 per cent had low level of mass media exposure. The reason behind this outcome is attributed to their relatively small farm size, medium level of social participation and farming experience. About 18.34 per cent had high mass media exposure as they are big farmers with more land holdings and have high socio-economic status. They employ farm labourers to cultivate their land and have established contact with extension agency. Their possession of many mass media sources are also reasons behind there high level of mass media exposure.

Innovativeness: Learner (1981) indicated that, concern for success in an activity and optimism that will be attained, can only be sustained by a commitment to the activism, which requires, not only passive acquiescence towards innovations from the outside but also a vigorous sense of initiative from within one self to activate new ways, which is usually referred to as innovativeness. The innovativeness of the farmers was measured and it has been presented in (Table 9). It could be observed that more than half of the respondents (58.33 per cent) had low level of innovativeness because they are not ready take risk and fall under late majority category on the basis of innovativeness. They will adopt a new technology after many have already adopted the innovation and are getting the benefit out of it. After successful adoption of many nearby farmers, they will be adopting new climate resilient technologies. And 28.33 per cent and 13.34 per cent of the respondents had medium and high level of innovativeness [13].

Table 9 Distribution of respondents according to their innovativeness

S. No	Category	Number	Percentage
1.	Low	70	58.33
2.	Medium	34	28.33
3.	High	16	13.34
	Total	120	100.00

Table 10 Distribution of respondents according to their risk orientation

S. No	Category	Number	Percentage
1.	Low (8 to 10)	36	30.00
2.	Medium (11 to 13)	76	63.33
3.	High (14 to 16)	8	6.67
	Total	120	100.00

Risk orientation: It refers to individual`s orientation towards encountering risks and uncertainties in carrying out farming operations. The collected data has been presented in the (Table 10). It could be observed that more than half of the respondents (63.33 per cent) had medium level of risk orientation followed by low (30.00 per cent) and high (6.67 per cent) level of risk orientation. These findings revealed that only 6.67 per cent of the respondents had high risk

orientation. This may be due to their low socio-economic status and land holdings [14].

Scientific orientation: The scientific orientation of the respondents shown in (Table 11) revealed that more than half of the respondents (55.00 per cent) had medium level of scientific orientation followed by high (33.33 per cent) and low (11.67 per cent) level of scientific orientation [15].

Table 11 Distribution of respondents according to their scientific orientation

S. No	Category	Number	Percentage
1.	Low (8 to 10)	14	11.67
2.	Medium (11 to 13)	66	55.00
3.	High (14 to 16)	40	33.33
	Total	120	100.00

Training programmes undergone: Extension workers need to organize training programmes to the farmers. It will assist the farmers to gain knowledge and skill. Hence it has been selected for this research study and it has been presented in (Table 12). It could be observed that majority of the respondents (86.67 per cent) had attended the training programmes by KVK on climate resilient farm technologies. And only 13.33 per cent of the respondents had not attended any training programmes.

Table 12 Distribution of respondents according to their training programmes undergone

S. No	Category	Number	Percentage
1.	Training attended	104	86.67
2.	Training not attended	16	13.33
	Total	120	100.00

Table 13 Distribution of respondents according to their decision-making ability

S. No	Category	Number	Percentage
1.	Low (11 to16)	16	13.34
2.	Medium (17 to 22)	52	43.33
3.	High (23 to 28)	52	43.33
	Total	120	100.00

Decision making ability: Taking decision is the main factor to do all activities and choosing best alternatives in crucial situations. Hence it has been selected for this research study and the results from the collected data has been presented in (Table 13). The table further revealed that about 43.33 per cent of the respondents had medium to high level of decision-making ability. The climate change issues and the resultant farm management practices to be carried out to mitigate them and protect their economic and livelihood security might be the possible reason behind this response. About 13.34 per cent had low decision-making ability and they remain and continue to carry out traditional farm cultivation practices with the resources at their disposal.

Knowledge level of farm respondents about climate change

Knowledge is a vital factor for implementation of all farming operations. Without appropriate knowledge, the farm activities could not be done effectively. At present climate change is a momentous issue which affects the crop yields and livelihoods of farmers. So, our farmers should know about climatic vulnerability of their respective areas and how to overcome from it. The findings on overall knowledge of farmers on climate change has been presented in below (Table 14). The table revealed that about more than half (53.33 per cent) of the farmers had low level of knowledge on climate change. The reason might be due to their inadequate educational status and dearth of social participation and mass media exposure. About 30.00 per cent and 16.67 per cent of the farmers had medium and high level of knowledge on climate change.

Table 14 Distribution of respondents according to their overall knowledge level about climate change

S. No	Category	Number	Percentage
1.	Low (22 to 24)	64	53.33
2.	Medium (25 to 27)	36	30.00
3.	High (28 to 30)	20	16.67
	Total	120	100.00

CONCLUSION

The findings of the study on profile characteristics and knowledge level of farmers on climate change reveal that more than half (53.33 per cent) of the farmers had low level of knowledge followed by 30.00 per cent and 16.67 per cent of the farmers had medium and high level of knowledge on climate change. The reason for the low level of knowledge is the lack of education, social participation and mass media exposure. To gain more knowledge about climate change, the farmers need to be explored themselves to more social participation. Moreover, our extension workers should create more awareness among the farming community about climate change and its impact on farming and allied sectors. Further our policy makers, administrators, extension professionals and extension workers need to develop new extension strategies for creating awareness and assist to gain knowledge about climate change issues and how to mitigate it effectively.

LITERATURE CITED

1. Sulistyawati S, Mulasari SA, Sukesi TW. 2018. Assessment of knowledge regarding climate change and health among adolescents in Yogyakarta, Indonesia. *Hindawi Journal of Environmental and Public Health* 2018: 9716831. https://doi.org/10.1155/2018/9716831
2. Wong KY. 2005. Critical success factors for implementing knowledge management in small and medium enterprises. *Jr. of Industrial Management and Data System* 105(3): 261-279.
3. Williams C, Fenton A, Huq S. 2015. Knowledge and adaptive capacity. *Nature Climate Change* 5(2): 82-83.

4. Raghuvanshi R, Ansari MA, Amardeep. 2017. A study of farmers' awareness about climate change and adaptation practices in India. *International Journal of Applied Agricultural Sciences* 3(6): 154-160.
5. Dhanya P, Ramachandran A. 2016. Farmers' perceptions of climate change and the proposed agriculture adaptation strategies in a semi-arid region of south India. *Journal of Integrative Environmental Sciences* 13(1): 1-18.
6. Islam M, Kabir M, Ali M, Sultana M, Mahasin M. 2019. Farmers' knowledge on climate change effects in agriculture. *Agricultural Sciences* 10: 386-394.
7. Ritu Chakravarty. 2017. Development of climate resilient model for gender mainstreaming in crop and dairy enterprises. *Ph. D. Thesis*, ICAR – National Dairy Research Institute, Karnal, Haryana
8. Chouhan G. 2017. Farmers knowledge of climate change in relation to crop management. *Unpublished M. Sc. (Agriculture) Thesis*, Vasanthrao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra.
9. Verma SK. 2017. A study on awareness and adaptation strategies of climate smart agriculture in Sultanpur district of Uttar Pradesh. *Unpublished M. Sc. (Agriculture) Thesis*, Banaras Hindu University, Varanasi, Uttar Pradesh.
10. Uddin MN, Bokelmann W, Dunn ES. 2017. Determinants of farmers perception of climate change: A Case Study from the Coastal region of Bangladesh. *American Journal of Climate Change* 6: 151-165.
11. Roy D, Kowsari MS, Nath TD, Taiyebi KA, Rashid MM. 2018. Smallholder farmers' perception to climate change impact on crop production: Case from Drought Prone Areas of Bangladesh. *International Journal of Agricultural Technology* 14(7): 1813-1828.
12. Abhishek PS. 2017. Effect of climate change on Alphonso mango as perceived by the farmers from South Konkan Coastal zone of Maharashtra. *Unpublished M. Sc., (Agriculture) Thesis*, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Maharashtra.
13. Kathiresan S. 2020. Developing new extension strategies for climate change issues in Namakkal district. *Unpublished M. Sc., (Agriculture) Thesis*, Annamalai University. Annamalai Nagar, Tamil Nadu.
14. Archana P. 2012. A study on farmers adaptability to climate variability in castor in Mahnoobnagar district of Andhra Pradesh, *Unpublished M. Sc., (Agriculture) Thesis*, Acharya N.G. Ranga Agricultural University, Hyderabad, India.
15. Vijayakumar S. 2017. Impact of various development schemes on sustenance of tribal people in Kolli Hills of Namakkal district. *Unpublished M. Sc. (Agriculture) Thesis*, Annamalai University, Annamalai Nagar, Tamil Nadu.