



Attitude of Farm Women towards the Effects of Climate Change in Agriculture and Allied Activities: A Study in Imphal, East Districts of Manipur, 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

Farm women play a significant role in agricultural production across the world. Agriculture is the backbone of the Indian economy and climate change significantly affects agriculture productivity due to the increased frequency and intensity of extreme weather events such as droughts, floods, and cyclones. Manipur, a northeastern state of India, is highly dependent on climatic-sensitive sectors like agriculture, forestry, and fishing for their economy and livelihood. The present study

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was carried out in Sawombung Block and Heingang Block from Imphal East District of Manipur with a sample size of 100, which were selected randomly. The objective of the study was to assess the attitude of farm women towards the effects of climate change on agriculture and allied activities. The data were collected with the help of structured interview schedule and were analysed using statistical methods including percentage, frequency, category interval method and Pearson's correlation coefficient. The study revealed that majority of the total respondents had moderately favorable attitude followed by 20 per cent of the respondents had a highly favorable attitude towards the effects of climate change in agriculture and allied activities. The correlation test revealed that from both the Blocks, age had a positive and significant relationship with the respondent's attitude towards effects of climate change in agriculture and allied activities. Moreover, it was also found that from Block 2, education has a positive and significant relationship with the respondent's attitude and from Block 1, farming experience has a positive and significant relationship with the attitude of farm women towards the effects of climate change in agriculture and allied activities. Thus, it is suggested that it is necessary to provide climate awareness, education and support of improved climate smart agricultural technologies to the farm women that can empower them to adapt to changing climate effectively.

Keywords: Farm women; attitude; climate change; effects; agriculture and allied activities.

1. INTRODUCTION

Climate change refers to any change in climate, including long-term alterations in weather patterns, temperature, and precipitation, primarily caused by human activities, particularly the emission of greenhouse gases like carbon dioxide from burning fossil fuels, deforestation, and industrial practices. Many farm women play critical role in agriculture and are often directly or indirectly affected by the changing climate all over the world. They are involved in various aspects of farming, including planting, harvesting, tending to livestock, and managing farm operations. In addition to their hands-on work, they often contribute to decision-making, financial management, and sustainable practices of the farm [1]. Agriculture is one of the most important sectors for sustaining the development prospects of the human economy all over the world and is largely dependent on climatic conditions as agriculture and climate change are both intensely interconnected. Climate change is one of the major factors affecting the development of agriculture and related activities and adversely affects agriculture and allied activities directly or indirectly through soil, crops, livestock, and pests [2] and [3].

Climate change is also a major concern in the state of Manipur. In the recent years, Manipur has witnessed drastic change in the climatic condition affecting weather patterns, with changing monsoon patterns, increased intensity of rainfall and prolonged dry spells. These climatic variations have significant impact on agricultural productivity, threatening food security

and rural income and livelihood of people [4]. The state's agricultural sector is primarily rain-fed, making it highly vulnerable to climate change and increased temperature have led to reduced water availability, leading to irrigation problems, decreased crop yields, altered planting and harvesting cycles, and increased vulnerability to pests and diseases. This has particularly affected paddy cultivation, which is a staple crop in the state [5].

Attitude is a complex mental construct (perception) that emerges out of the integration of an individual's beliefs and value system [6]. In this study, attitude is operationally defined as the farm women's recognition that is essential to identify the responses towards climate change, evaluate its effect on agriculture and allied activities and its production. Research on the attitude of farm women towards adapting to climate change will therefore promote evidence-based advocacy. By knowing their attitude towards adapting to climate change, vulnerability to climate change will be minimized. Therefore, this study was conducted to assess the attitude of farm women towards the effects of climate change on agriculture and allied activities.

2. METHODOLOGY

The study was conducted at Sawombung Block and Heingang Block under Imphal-East District of Manipur; both the blocks were selected purposively for data collection. Again, 50 farm women from each of the Block were selected randomly to make the sample size of 100. The primary data was collected with the help of a

structured interview schedule and informal discussion. The responses were measured using a five-point Likert scale. They consisted of 10 statements that were rated on a five-point scale (where strongly disagree = 1, disagree = 2, undecided = 3, agree = 4, and strongly agree = 5) accordingly. The results were tabulated and attitude levels were calculated from the overall response scores. The data were analysed using statistical methods including percentage, frequency, category interval method, and Pearson's correlation coefficient to test the relationships between the selected variables like age, educational qualification, family size, income and farming experience.

3. RESULTS AND DISCUSSION

3.1 Attitude of Farm Women towards the Effects of Climate Change in Agriculture and Allied Activities

The data in the Table 1 represent the attitude of farm women on the effects of climate change in agriculture and allied activities. The data show that majority of the respondents (80%) from Block 1 had strongly agreed for the statement "Agricultural expenses is increasing due to climate change" in comparison to 62 per cent had strongly agreed from Block 2. While more respondents from Block 1, i.e., 72 per cent compared to 58 per cent of the respondents from Block 2 had strongly agreed for the statement "Agricultural labour of villagers has been reduced as a result of climate change". Majority of the respondents (68%) from Block 1 had agreed that "Food availability of villagers is disturbed due to climate change" in comparison 58 per cent of the respondents had agreed from Block 2. Again, more than half of the respondents (54%) from Block 1 had agreed that "Germination of seeds is affected as a result of climate change" in comparison to 46 per cent of the respondents from Block 2 were undecided towards the same. On the other hand, majority of the respondents (70%) from Block 1 disagreed towards the statement "Migration of families is increasing due to climate change" in comparison to 90 per cent of the respondents from Block 2 had disagreed. Also a large proportion of the respondents i.e., 40 per cent from Block 1 strongly disagreed towards the statement "There is no crop failure due to climate change" in comparison to 44 per cent of them disagreed from Block 2. Moreover, 48 per cent of the respondents from Block 1 had agreed with the statement "Increased poultry diseases due to climate change" compared to 54

per cent were undecided from Block 2. While more respondents i.e., 46 per cent of them from Block 1 had agreed with the statement "Vaccination is required to prevent the diseases caused by climate change" in comparison 80 per cent of the respondents from Block 2 were undecided. Further, majority of the respondents (72%) had strongly agreed from Block 1 for the statement "Drudgery of farmers has increased due to climate change" in comparison to 60 per cent of the respondents had agreed from Block 2. More than half of the respondents (58%) from Block 1 had agreed that "Traditional irrigation sources has reduced because of climate change" compared to 52 per cent of the respondents had agreed from Block 2 [7-10]. Similar findings were observed by Patel P et al. [11].

3.2 Distribution of the Respondents Based on their Level of Attitude towards the Effects of Climate Change in Agriculture and Allied Activities

The data in the Table 2 indicate the distribution of the respondents on the basis of their level of attitude towards the effects of climate change in agriculture and allied activities. Majority of the respondents (60%) from Block 1 and majority of the respondents (64%) from Block 2 had moderately favorable level of attitude towards the effects of climate change in agriculture and allied activities. Similar findings were reported by Islam et al. [12] who revealed that more than half of the respondents had moderately favorable attitude towards climate change effects. This was followed by 28 per cent of the respondents from Block 1 and 12 per cent of the respondents from Block 2 having highly favorable level of attitude. On the other hand, only 12 per cent of the respondents from Block 1 and 24 per cent of the respondents from Block 2 had less favorable level of attitude. Overall majority of the total respondents i.e., 62 per cent had favorable attitude towards the effects of climate change in agriculture and allied activities [13-15].

3.3 Relationship between the Dependent and Independent Variables

Pearson's coefficient of correlation (r) was computed in order to explore the relationship among the selected socio economic characteristics and the attitude of the respondents on climate change in agriculture and allied activities. The Table 3 revealed the relationship of independent variables with

Table 1. Distribution of the respondents on the basis of their attitude on the effects of climate change in Agriculture and allied activities n=100

SI no	Statements	BLOCK 1 (Sawombung) n ₁ =50										BLOCK 2 (Heingang) n ₂ =50									
		Strongly agree		Agree		Undecided		Disagree		Strongly disagreed		Strongly agree		Agree		Undecided		Disagree		Strongly disagree	
		f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
1	Agricultural expenses is increasing due to climate change	40	80	10	20	0	0	0	0	0	0	31	62	19	38	0	0	0	0	0	0
2	Agricultural labour of villagers has been reduced as a result of climate change	36	72	14	28	0	0	0	0	0	0	29	58	21	42	0	0	0	0	0	0
3	Food availability of villagers is disturbed due to climate change	0	0	34	68	12	24	4	8	0	0	0	0	29	58	21	42	0	0	0	0
4	Germination of seeds is affected as a result of climate change	9	18	27	54	14	28	0	0	0	0	0	0	20	40	23	46	7	14	0	0
5	Migration of families is increasing due to climate change	0	0	0	0	10	20	35	70	5	10	0	0	0	0	5	10	45	90	0	0
6	There is no crop failure due to climate change	0	0	0	0	11	22	19	38	20	40	0	0	0	0	16	32	22	44	13	26
7	Increased poultry diseases due to climate change	14	24	24	48	12	24	0	0	0	0	0	0	23	46	27	54	0	0	0	0
8	Vaccination is required to prevent the diseases of climate change	13	26	23	46	14	28	0	0	0	0	0	0	10	20	40	80	0	0	0	0
9	Drudgery of farmers has increased due to climate change	36	72	14	28	0	0	0	0	0	0	20	40	30	60	0	0	0	0	0	0
10	Traditional irrigation sources has reduced because of climate change	7	14	29	58	14	28	0	0	0	0	6	12	26	52	18	36	0	0	0	0

Table 2. Distribution of the respondents on the basis of their attitude level towards the effects of climate change in agriculture and allied activities

Sl no.	Attitude level	Block1 (Sawombung) n ₁ =50		Block2 (Heingang) n ₂ =50		Total n=100	
		F	%	f	%	f	%
1	Less favorable (<33.82)	6	12	12	24	18	18
2	Moderately favorable(33.82-38.7)	30	60	32	64	62	62
3	Highly favorable (>38.75)	14	28	6	12	20	20

Table 3. Relationship between attitude of the respondents towards effects of climate change in agriculture and allied Activities and their socio economic characteristics

Dependent variable	Independent variable	Block1 (Sawombung)	Block 2 (Heingang)
		r value	r value
Attitude on climate change in Agriculture and Allied activities	1. Age	0.307*	0.365**
	2. Education	0.128	0.262*
	3. Family size	-0.022	0.023
	4. Income	0.161	0.165
	5. Farming experience	0.182*	-0.089

*5% level of significance; **1% level of significance

attitude level on climate change in agriculture and allied activities [16-20]. On analyzing the relationship, it was found that, for both the Blocks, age of the respondents has a positive and significant relationship with their attitude towards effects of climate change in agriculture and allied activities. On the other hand, findings in studies by Habib [21] reported that age of the farmers had no significant relationship with their attitude which is not in line with the present study. Moreover, it was also found that from Block 2 (Heingang), education has a positive and significant relationship with the respondent's attitude towards effects of climate change in agriculture and allied activities. Similar findings were reported by Nurzaman [22] and Paul [23] reported that an educated farmer have more favorable attitude compared to illiterate ones. Besides that, the analysis revealed a positive and significant relationship of farming experience of respondents from Block 1 (Sawombung) with their attitude towards effects of climate change in agriculture and allied activities. This finding is in line with the findings of Hossain [24].

4. CONCLUSION

The study revealed that majority of the total respondents had moderately favorable attitude towards the effects of climate change in agriculture and allied activities followed by 20 per cent of the respondents a highly favorable attitude. In order to improve the attitude of the respondents on the effects of climate change in agriculture and allied activities, the policy makers should consider policies which are in line with the climate smart agriculture and climate resilient

agriculture strategies, in order to cope up with the impacts on agriculture brought about by the changing climate. The correlation test revealed that age, education and farming experience has a positive and significant relationship with the respondent's attitude on climate change. Thus, it is suggested that it is necessary to provide targeted education and support of improved climate smart agricultural technologies to the farm women that can empower them to adapt to changing climate effectively.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

- SOFA Team and Doss C. The role of women in agriculture. 2011;1-46. Accessed 01 september 2023. Available: Accessed on 25 August 2023. Available: <https://www.fao.org/3/am307e/am307e00.pdf>
- Rani Anj, Tokas J, Datten R. Impact of Climate Change on Agriculture and Allied Sector. 2022;2(12):1-2. Accessed 29 August 2023. Available: https://kiran.nic.in/pdf/ijhf/vol27_1_new/5.%20assessmentofagriculturalvulnerabilitytoclimatechange.pdf
- Gupta AK, Yadav D, Gupta P, Gupta V, Ranjan S, Badhai S. Effects of Climate. Accessed 02 september 2023. Available: https://www.researchgate.net/publication/344064949_Effects_of_Climate_Change_on_Agriculture

4. Feroze SM, Aheibam M, Singh R, Ray LIP, Rai M, Sighn KJ et. al. Assessment of Agricultural Vulnerability to Climate Change in Manipur: A District Level Analysis. *Indian J. Hill Farming*. 2014; 27(1):22-29.
5. Donald Takhell. Manipur farmers blame institutional failures for low yield and demand compensation. Accessed 02 September 2023. Available:<https://india.mongabay.com/2023/01/manipur-farmers-blame-institutional-failures-for-low-yield-and-demand-compensation/> Accessed on 2-08-2023.
6. Dimelu MU, Ojo OF, Iwuala NO. Knowledge and Attitude to climate change among undergraduate students in the faculty of Agriculture, University of Nigeria, NSUKKA. *Asian.J. Sci and Tech*. 2017; 08(09):5605-5610.
7. Sethi G, and Sharma AB. Climate change and Manipur: Preparations, problems and awareness to face it. *Int. J. Appl. Res*. 2017;3(1):710-716.
8. Shankar KR, Nagashree K, Guddanti N, Rama Rao CA, Raju BMK, Beevi ACN, et al. Perceptions, Attitudes and Adaptation towards Climate Change in Selected Semi-Arid Districts of India: Implications from an Adaptation view. *Curr. Appl. Sci. Technol*. 2021;39(48):379-395. DOI: 10.9734/CJAST/2020 /v39i4831246
9. Sheikh FM, Aheibam M, Singh R, Ray LIP, Rai M, Singh J, Singh RJ. Assessment of Agricultural Vulnerability to Climate Change in Manipur: A District Level Analysis. *Indian J. Hill Farming*. 2014; 27(1):22-29.
10. Varadan R J, Kumar P, Jha GK, Pal S, Singh R. An Exploratory Study on Occurrence and Impact of Climate Change on Agriculture in Tamil Nadu, India. *Theor. Appl. Climatol*. 2015;127(3-4):993–1010. DOI: 10.1007/s00704-015-16
11. Patel P, Gupta S, Verma M, and Surya M. Impact of climate change on agriculture and allied activities. *J. Pharmacogn. Phytochem*. 2019;8(3):1997-1999.
12. Islam MRM, Biswas JHM, Akanda GR, Amin MR, Mehedi HI, Asif AA, et al. Attitude of the farmers towards climate change effect on agriculture. *Asian J. Med. Biol. Res*. 2015;1(2):367-379. DOI: 10.3329/ajmbr.v1i2.25631
13. Ansari AM, Joshi S, Raghuvanshi R. Understanding farmers perceptions about climate change: a study in a North Indian State. *Adv. Agr. Environ. Sci*. 2018;1(2):85-89. DOI: 10.30881/aaeoa.00015
14. Bharath D, Velusamy R, Pushpa J, Prabakaran K. Scale to Measure the Attitude of Perennial Crop Farmers towards Climate Change in Tamil Nadu. *Int. J. Environ. Clim. Chang*. 2021;11(12):291-298. DOI: 10.9734/ijecc/2021/v11i1230578
15. Gera A. Climate change and women in agriculture: Navigating challenges and fostering resilience. 2023;16:34 IST. Available:<https://www.financialexpress.com/opinion/climate-change-and-women-in-agriculture-navigating-challenges-and-fostering-resilience/3211237/>
16. Kumari N, Bara N, Jha BK, Kumar Ramesh. Effect of climate change on Agriculture and Allied Activities Jharkhand: An Inference from Farmer Perception. *Indian Res. J. Ext. Edu*. 2020;20(1):77-79.
17. Niranjan DA, Bose DK. Farmer's Attitude towards effects of climate change and Climate Resilient Practices in Virudhunagar District of Tamil Nadu. *Int. Arch. App. Sci. Technol*. 2019;10(3):87-91.
18. Olooto FM, Yusuf OJ, Ayanda IF, Salawu OL. Perceive effects of climate change on vegetable production among women farmers in Kwara State, Nigeria. *Int. J. Agric. Environ. Bio-res*. 2018;3(03):75-86.
19. Paramasivam S and Vivekanathapatmanaban G. Perception of Farmers towards Climate Change in Southern Parts of Tamil Nadu: A critical Analysis. *Asian j. Agric. Ext. Economics Social*. 2021;39(12):45-53. DOI:10.9734/AJAEES/2021/v39i1230802
20. Prasad R, Pandey RK, Dhyani SK, Saroj NK, Tripathi D. Farmers' perception about climate change and its impact of agriculture in Panna district of Bundelkhand region (Madhya Pradesh), Central India. *J. soil water conserv. India*. 2012;11(4):356-364.
21. Habib M. Attitude of Block Supervisors towards the Use of Agrochemicals. M.S. Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh; 2000.
22. Nurzaman M. Knowledge, Attitude and Practice of FFS and Non-FFS Farmers in Respect of IPM. A11-5. (Ag. Ext. Ed.) Thesis, Department of Agricultural

- Extension Education, Bangladesh Agricultural University, Mymensingh; 2000.
23. Paul SK. Attitude of Farmers towards the Use of Urea Super Granule on Rice Cultivation. M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh; 2000.
24. Hossain K. Adoption of Selected High Yielding Variety of Rice by the Farmers of Rajpat Union under Kasiani Upazila in Gopalganj District. M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh; 2006.

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