



Research Article

PROBLEMS FACED BY THE FARMERS IN ADOPTION OF MITIGATION AND ADAPTATION OF CLIMATE CHANGE PRACTICES IN AGRICULTURE

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Abstract- India is facing the challenges of sustaining its rapid agricultural growth while dealing with the global threat of climate change. The first strategy is to mitigate/reduce the rate and magnitude of climate change itself through reducing the emissions of human causes of climate change, for example, mitigation of greenhouse gases, prevention of soil erosion etc. The second (and complementary) option is to promote adaptation to climate change to decrease the impacts and take advantage of new opportunities, for example, boost existing production systems by using different practices (e.g. altering sowing patterns) and new technologies (e.g. irrigation systems, adapted varieties etc.). The study had been conducted at Manasa block of Neemuch district and Malhargarh block of Mandsaur district of Madhya Pradesh. Two villages were selected purposively from each of the selected blocks thereby constituting four villages for the study. A total of 60 farmers were selected by way of proportionate random sampling method. Lack of information on appropriate adaptation option was the major problem faced by the farmers in adoption of mitigation and adaptation of climate change practices in agriculture. The study recommends that appropriate information based on level of knowledge and based on felt needs of identified farmers for on climate change mitigation and adaptation practices should be provided by Knowledge Management Portal on real and correct time

Keywords- Adaptation, Climate Change, Knowledge, Mitigation, Sampling.

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Introduction

There exists a great variety of geographical regions, a large emerging economy, biodiversity and natural resources in India. In spite of these, the country is most vulnerable to climate change risks. More than half of India's population of over 1 billion people lives in rural areas and depends on climate-sensitive sectors like agriculture, fisheries and forestry for their livelihoods (MoEF&CC, 2011) [1]. Agriculture is one of the largest contributors to India's Gross Domestic Product (GDP) sharing approximately 15%. It is the main source of livelihood for almost 60% of the country's total population. The impacts of climate change on agriculture will therefore be severely fingered in India. It has been projected that under the scenario of a 2.5 °C to 4.9 °C temperature rise in India, rice and wheat yields will fall by 32–40% and 41–52% respectively. This would cause GDP to fall by 1.8–3.4% (Gol, 2011; Guiteras, 2007 and OECD 2002) [2-4]. The present study was conducted with the following objective: To analyze problems faced by the farmers in adoption of mitigation and adaptation of climate change practices in agriculture.

Materials and Methods

Research Design

Exploratory research design was adopted in the study to obtain pertinent and precise information with respect to the identified variables of the study.

Study Area

Madhya Pradesh has been selected purposively for the study. The two districts viz., Neemuch and Mandsaur were purposively selected based on the criteria that agriculturally important and climate affected areas felled within a particular zone, as such to represent Moderate and High vulnerable zone of Malwa Plateau Agro-Climatic Zone (ACZ), respectively. The study had been conducted at Manasa block of Neemuch district and Malhargarh block of Mandsaur district of Madhya Pradesh. Two villages were selected purposively from each of the selected blocks thereby constituting four villages for the study.

Sample Size

A total of 60 farmers were selected by way of proportionate random sampling method.

Data Collection

The data were collected through structured interview schedule. The collected data were analyzed by using statistical technique viz. Garrett's Ranking Technique for interpreting the results and to draw conclusion from the findings.

The Garrett's Ranking Technique was determined as per the following formula: (Garett and Woodworth, 1969) [5].

$$\text{Percent position} = 100(R_{ij} - 0.5)/N_j$$

Where,

R_{ij} = Rank given for the i^{th} variable by j^{th} respondents

N_j = Number of variable ranked by j^{th} respondents

Results and Discussion

Problems faced by the farmers in adoption of mitigation and adaptation of climate change practices in agriculture

Respondents were requested to express and share the problems faced in adoption of mitigation and adaptation of climate change practices in agriculture, they were also asked to give a rank to the problems faced by them. [Table-1] showed the common problems faced by the respondents from most important to least.

'Lack of information on appropriate adaptation option' was the most prioritized problem as reported by of the respondents with the Garrett Mean Score (GMS) of 66.60. This might be due to poor mass media usage and poor information seeking and sharing behaviour of respondents as it had been observed during the data collection. Farmers, further indicated that 'Shortage of cultivable land and unpredictable weather' was second ordered problem (GMS of 64.33) being faced by farmers. This might be due to fast fragmentation land ownership due to increase in population thereby agricultural lands were used in non-agricultural pursuits. It was also observed that fast urbanisation and industrialization has diminished agricultural land. Vagaries of natural calamities, due to climate change which led to uncertain weather forecasting as well as deviations from normal cropping calendar were main reasons for the identified problem.

The third major problem (GMS of 62.33) lingered with as reported by farmers was 'High cost of technologies'. This issue was due to fast devaluation of Indian rupee thereby amounting the cost of a product higher when the income of the farmers remained unchanged or decreased. Policy on subsidization of cost of important implement/technologies had been discouraged instead VAT had been coupled in agricultural machineries as it was observed during the time of survey and data collection. With GSM of 47.48, 'Shortage of Labour' remained the next important problem being faced by farmers. Owing to mass exodus of labour force in urban areas as well as non-remunerative nature of agricultural labouring, availability of labour during peak agricultural man days were harshly difficult.

Due to improper management of regulated market, farmers faced long queue in terms of days and weeks in order to commit the sale of their produce. No alternatives found, as shared by respondents (GMS of 41.15) they had to contact middle men nexus thereby the profit were compromised. Since, agricultural and allied systems were capital intensive coupled with high uncertainty right from sowing till marketing, respondents (GSM of 35.66) shared 'Lack of finance' one of the important problems being faced at present. Further, the little hope of Indian farmers–crop insurance did not exist well in the study area (GSM of 32.43). Availing crop insurance by farmers were a great hurdle due to lot of proofs and paper works where farmers were not so accustomed and ultimately they got rid of it after several attempts.

The above research findings were in consonance with the findings of Onyeneke and Madukwe (2010), FAO (2012), Idrisa *et al.* (2012), Esham and Garforth (2013), Dang *et al.* (2014) and MacGregor & Dijk (2014)[6-11].

Table-1 Problems faced by farmers in adoption of mitigation and adaptation of climate change practices in agriculture

Problems	Garrett Mean Score	Rank
Lack of information on appropriate adaptation option	66.60	I
Shortage of cultivable land and unpredictable weather	64.33	II
High costs of technologies	62.33	III
Shortage of labour	47.48	IV
Poor access to market	41.15	V
Lack of finance	35.66	VI
Lack of insurance	32.43	VII

Conclusion

Based on the findings of the study, it may be concluded that „Lack of information

on appropriate adaptation option” was the most prioritized problem as reported by of the respondents. This might be due to poor mass media usage and poor information seeking and sharing behaviour of respondents as it had been observed during the data collection.

Further, the little hope of Indian farmers–crop insurance did not exist well in the study area. Availing crop insurance by farmers were a great hurdle due to lot of proofs and paper works where farmers were not so accustomed and ultimately they got rid of it after several attempts.

The study recommends that appropriate information based on level of knowledge and based on felt needs of identified farmers for on climate change mitigation and adaptation practices should be provided by Knowledge Management Portal on real and correct time.

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Author Contributions

Pankaj Kumar Meghwal is main researcher of the present study for whole research work and Dr. Rajkumar Josmee Singh is my Major Advisor and Chairperson of the Advisory Committee and he guided me till publication of this research paper.

Abbreviations

ACZ: Agro-Climatic Zone, FAO: Food and Agriculture Organization, GDP: Gross Domestic Product, GoI: Government of India, GMS: Garrett Mean Score, MoEF&CC: Ministry of Environment and Forests and Climate Change, OECD: Organisation for Economic Co-operation and Development, VAT: Value Added Tax, viz.: Namely.

Conflict of Interest: None declared

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