



Research Article

## An analysis of farmer's opinion and their adaptation behavior to climate change in Bidar district

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**SUMMARY :** A study was undertaken to know about the farmers opinion on climate change and to understand the adaptive measures, if any, implemented by these farmers in the Bidar district of Karnataka which is known for the uneven distribution of rainfall. The required data and information were collected through direct interview study. The results indicated that 94% farmers experienced unusual hot weather, 93% of them expressed unpredictable and uneven rainfall and 49% of them observed unpredictable wind blowing direction since last two decades. Our findings reveal that farmers in the area perceived that climate has been changing over the years due to the diverse human activities. The threat of climate change is more on the livelihood of farmers viz., in food supply, biodiversity loss and livestock, then on business and it is the poor who has to face the consequences of climate change since they depend heavily on the natural resources that are most affected by incidence of climate change. Having experienced the climate change by all farmers, they followed adaptation strategies with regard to farming to mitigate climate change; cultivation of different crops (73%), cultivation of different varieties of crops (69.17%), mulching (22%), and change in farming practices like wider spacing (49.17%), increased frequency of irrigation (63%) were the important adaptation strategies followed by them. Results further emphasized that lack of knowledge about modern adaptation strategies (89%), access to water for irrigation (86.67%), capital (85%) and awareness about climate change scenario (96%) were the hindering factors to the adaptation of modern techniques of combating climate changes in the area. Hence, there is a need to encourage the farmers to follow more adaptive strategies based on their experience and also to organize training programs for the farmers about climate resilient technologies that will help them overcome climate change more effectively.

**KEY WORDS:**

Climate change, Bidar district, Irrigation, Crops

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### BACKGROUND AND OBJECTIVES

Climate change is expected to have a serious environmental, economic, and social impact on the farming systems. In particular, rural farmers in India, whose livelihoods depend on the use of natural resources, are likely to bear the brunt of adverse impacts (Janssen, 2010). The extent to which these impacts are felt depends largely on the extent of adaptation in response to climate change. The risk of income losses and productive means due to adverse weather conditions associated with climate change can differ significantly among farmers sharing a productive landscape. In order to understand the adaptation patterns to changes in climatic conditions, it is important to learn more about how our farmers

react to different levels of risk under both measurable and unmeasurable uncertainty.

Climate change is generally detrimental to the agriculture sector; but with adaptation, vulnerability can largely be reduced (Smit and Skinner, 2002). Hence, adaptation is widely recognized as a vital component of any policy response to climate change. Identifying technological trends and exploring possible adaptation strategies is crucial for designing future farming systems and effective agricultural and environmental policies. Identification of feasible and profitable farm practices and assessment of many alternative adaptation options is necessary for comprehensive explorations. The increased occurrence of extreme events, price volatility,

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variation among individual farms (in terms of available resources and objectives) and investment decisions should be also taken into account (Kanellopoulos *et al.*, 2010).

## RESOURCES AND METHODS

The required data and information were collected from direct field study based on the results of 120 questionnaires that were administered in five taluks namely Bidar, Basavakalyan, Humanabad, Bhalki and Aurad. Four villages each from the five taluks, six farmers were selected from each of the twenty selected villages following random sampling procedure. Thus, a total of 120 farmers formed the sample for the study. Information used in this article is generally qualitative in nature based on field observation, household survey and informal discussions with key informants conducted. Only villages which are easily assessable were randomly selected. For the purpose of administering the questionnaires, household heads above the age of forty years were purposefully selected. For analysis of data we have used frequency and percentage as statistical tool.

## OBSERVATIONS AND ANALYSIS

In this study, about 98% of the inhabitants of the villages studied were farmers and even those who claimed not to be

farmers engage themselves in little farming activities. Out of those studied 77.50 % were males while 22.50 % were females and 12.5% of the respondents fall between 40-50 years while the remaining 87.50% fell between 51-75 years age (Table 1). More experienced and matured farmers were administered questionnaires because they are better at distinguishing the climate change from merely inter annual variation of weather scenarios. Considering the issues of environmental change, majority (82.50%) of the respondents opined that the environment has been changing over the years due to human activities such as farming, deforestation either by cutting down trees for fuel, roofing, farm lands extension, furniture, over grazing, bush burning, urbanization and industrialization. In analyzing the issues of climate change, 86.67 % of the respondents agreed that the environment and the climate in particular are changing due to diverse human activities. 83.33 % of the respondents opined that climate change is a critical environmental issue that needs immediate attention. In the same way 94.17 % of the respondents believed that temperature has been rising over the past few decades, 93.33 % of them expressed the unpredictable and uneven rainfall, 49.17 % of them observed unpredictable wind blowing direction since the past 20 years.

Experienced farmers and more elderly inhabitants were more inclined that temperature has increased and rainfall

**Table 1: Distribution of respondents according to their gender age and knowledge about the climate change (n=120)**

Particulars	Frequency	Percentage
Male	93.00	77.50
Female	27.00	22.50
Age between 40-50	15.00	12.50
Age between 51-75	105.00	87.50
Environment change over the years due to human activities	99.00	82.50
Environment change due to human activities	104.00	86.67
Immediate attention needed	100.00	83.33
Rise in temperature	113.00	94.17
Unpredictable and uneven rainfall	112.00	93.33
Unpredictable wind blowing direction since the past 20 years	59.00	49.17

**Table 2 : Distribution of farmer's according to their opinion and adaptation behavior to climate change (n=120)**

Particulars	Frequency	Percentage
Cultivation of major crops	88.00	73.33
Cultivation of different varieties of crops	83.00	69.17
Wider spacing	59.00	49.17
Mulching	26.00	21.67
Frequency of irrigation	76.00	63.33
Access to water for irrigation	104.00	86.67
Lack of knowledge of modern adaptation strategies	107.00	89.17
Lack of capital	102.00	85.00
Lack of awareness and knowledge of climate change scenario	115.00	95.83

quantity is falling. Because of indigenous increase in experience over the years, they claimed that there is less rainfall, more likely to notice change in the frequency of droughts and floods as well as crop infestation and output drop. Having experienced the climate change by almost all farmers, they followed adaptation strategies with regard to farming to mitigate climate change. Cultivation of different major crops (73.33%), cultivation of different varieties of crops (69.17%), change in farming practices like wider spacing (49.17%), mulching (21.67%), increased frequency of irrigation (63.33%) were the important adaptation strategies followed by them (Table 2). Results further emphasized that lack of access to water for irrigation (86.67%), lack of knowledge of modern adaptation strategies (89.17%), lack of capital (85%), lack of awareness and knowledge of climate change scenarios (95.83%) were the hindering factors to the adaptation of modern techniques of combating climate changes in area. So there is need to encourage farmers to follow more adaptive strategies based on their experience and also to organize training programs for the farmers on climate resilient technologies that help them more affectively to mitigate the climate change.

#### Conclusion:

Farmers' perceptions of climate change are in line with climatic data records. Indeed, farmers in this district are able to recognize that temperatures have increased and there has been a reduction in the volume of rainfall but only a few of them seem to take steps to adjust their farming activities. Farmers with access to extension services are likely to realize changes in the climate because extension services provide information about climate and weather. Having access to water for irrigation increases the resilience of farmers to climate variability; therefore, they do not need to pay as much

attention to changes in the patterns of rainfall and temperature. Government policies should ensure that farmers have access to affordable credit to increase their ability and flexibility to change production strategies in response to the forecasted climate conditions. Because access to water for irrigation increases the resilience of farmers to climate variability, irrigation investment needs should be reconsidered to allow farmers increased water control to counteract adverse impacts from climate variability and change. Furthermore, government should also improve off-farm income-earning opportunities.

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#### REFERENCES

- Janssen, Sander, Louhichi, Kamel, Kanellopoulos, Argyris, Zander, Peter, Flichman, Guillermo, Hengsdijk, Huib, Meuter, Eelco, Andersen, Erling, Belhouchette, Hatem, Blanco, Maria, Borkowski, Nina, Heckelei, Thomas, Hecker, Martin, Li, Hongtao, Lansink, Alfons Oude, Stokstad, Grete, Thorne, Peter, van Keulen, Herman, and van Ittersum, Martin K.** (2010). A generic bio-economic farm models for environmental and economic assessment of agricultural systems. *Environ. Manage.*, **46** (6) : 862-877.
- Kanellopoulos, Argyris, Berentsen, Paul, Heckelei, Thomas, Van Ittersum, Martin and Lansink, Alfons Oude** (2010). Assessing the Forecasting Performance of a generic bio-economic farm model calibrated with two different PMP variants. *J. Agric. Econ.*, **61** (2) : 274-294.
- Smit, B. and Skinner, M.W.** (2002). Adaptations options in agriculture to climate change: A typology. *Mitigation & Adaptation Strategies Global Change*, **7**: 85-114.