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Factors influencing in availing and adoption of drought mitigation interventions of government schemes and policies

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Abstract

Farmers in Irrigated ecosystem indulged in intensive crop cultivation suffer more due to uncertainty of the drought event than their counterpart in dry land eco system. They were supported by drought relief programmes of government. The extend of benefit derived through such support strategies through different programmes was studied. The result revealed that more number of farmers availed monitory benefits from government programmes but only less number of farmer have adopted mitigation technologies on their own. Conducting demonstration, training and supply of critical mitigation inputs through development department must be continued to educate the farmers to adopt the mitigation measures.

Keywords: Climate change, drought mitigation and adoption of technologies

Introduction

Drought is persistent problem in Madurai district of Tamil Nadu where the occurrences are happening 5 to 7 years in a decade. Due to uncertainty of drought event, farmers in Irrigated ecosystem often faced losses for their investment in crop production. To reduce the degree of risk and to sustain the productive capacity, government have implemented action specific drought Mitigation short and long term programs such as Pradhan Mantri Krishi Sinchayee Yojna, Padhan Mantri Fasal Bima Yojana, Watershed Development Programme, National Rain fed Area Development Programme and Relief distribution etc. However, the outcome of such efforts was not known. Hence, this study was under taken to explore the Drought mitigation strategies adopted by the farmers in irrigation eco system.

Research Methodology

Four blocks of Madurai district of Tamil Nadu namely Allanganullur, Vadipatti, Chellampatti and Melur were purposively chosen because of prevalence of irrigated area. Explorative research and Ex-post-facto design was followed. The study was carried through semi - structured interview schedule among 100 randomly selected samples of 25 respondents per block. Information on Agronomical mitigation coping strategies, Technological mitigation strategies and availing benefits from different drought mitigation programmes were collected to construct the mitigation index. The outcome of the strategies promoted in these programme and influence of independent variables towards adoption of Mitigation Strategies is discussed.

Results and Discussion

To compensate the crop failures due to severe drought, government have initiated certain mitigation strategies which is listed out as schemes and policies. People participation in such ventures of government is present in below tables.

Table 1: Extent of Awareness of Schemes and Policies related to Drought Mitigation Strategies (n=100)

S. No	Schemes and policies	No. of respondents aware	No. of respondents availed
1.	Obtaining of crop loan	100	72
2.	Waiving of interest of crop loan	78	69
3.	Obtaining of drought relief fund	51	25
4.	Pradhan Mantri Fasal Bima Yojana (PMFBY)	66	23
5.	Pradhan Mantri Krishi Sinchayee Yojana (P M K S Y)	52	19

Source: Own survey data

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The extent of awareness of availing benefits from the schemes and policies promoted by the government to mitigate the drought was found to be higher. As more than 50 per cent of them express their awareness about the schemes and policies related to drought mitigation. In recent years the credit institutions and the extension agencies of development departments were promoting these schemes in the villages might be the reason for high awareness.

Among the state sponsored schemes, Crop loan is one of the major avenues in which most of the farmers (72%) got benefit followed by waiving of interest to the crop loan (69.00 %) and drought relief fund (25.00%) respectively. Through the centrally sponsored schemes 23.00 per cent and 19.00 per cent of respondents availed benefits from the schemes like PMKSY and PMFBY respectively. Since, the Regional Rural Banks (RRB) and Primary Agricultural Co-operative Societies (PACS) are at the foot step of the farmers, most of the benefits like obtaining crop loan, waiving of interest and drought relief fund are being easily availed to them.

In order to derive benefits from the centrally sponsored schemes like Pradhan

Mantri Krishi Sinchayee Yojana (PMKSY) and Pradhan Mantri Fasal Bima Yojana (PMFBY) one has to go through

rigorous formalities and procedures within a stipulated time. Moreover, to get insurance for crop losses due to drought, farmers has to wait for more than a year might be the reason that less number of farmers availed benefit from these schemes compared to the state sponsored schemes. This can be overcome by revising the complex procedures and designing the schemes based on the index based compensation measures.

Data on Agronomical mitigation coping strategies, Technological mitigation strategies and availing benefits from different drought mitigation programmes were collected to construct the mitigation index. To calculate the extent of adoption of mitigation measures of individual farmers, mitigation index was used through the formula given below

$$\text{Mitigation index} = \frac{\text{No. of measures adopted by the farmers}}{\text{Total number of measures recommended}} \times 100$$

After derived the individuals' mitigation score through mitigation index, the respondents were classified in to three categories viz., low, medium and high as given in the table 3.

Table 2: Distribution of Respondents According to their Mitigation score

Sl. No.	Adoption of Mitigation measures (based on mitigation score)	No. of Respondents
1.	High (From 45 to upto 32 score)	17
2.	Medium(Below 32 to upto 20 score)	64
3.	Low (Below 20 score)	19

Source: Own survey data

From the scores in the table 2, it can be understood that the mitigation measures followed by the farmers are very low as the high category itself secured the score between 32 to 45. Moreover, less than 20 percent of respondents alone found under that category. Further, another 20 percent of respondents were found with the mitigation score below 20. Majority of them were found under medium category between

the mitigation score of 20 to 32.

Relationship and Influence of Independent Variables towards adoption of Mitigation Strategies

The results of correlation co-efficient analysis and multiple regression analysis of twelve independent variables with mitigation index are as follows.

Table 3: Association and contribution of Independent Variables with Mitigation index

Variable No.	Independent variables	'r' values	Regression co- efficient	'P' value	't' value
X1	Age	-0.056 NS	0.057 NS	0.302	-1.038
X2	Educational status	0.226*	0.029*	0.016	2.789
X3	Farm size	-0.040 NS	0.147 NS	0.314	-1.013
X4	Farming experience	0.016 NS	0.026 NS	0.235	1.195
X5	Occupational status	-0.031 NS	0.049 NS	0.687	-0.404
X6	Annual income	0.181 NS	0.144 NS	0.455	0.751
X7	Social participation	0.067 NS	0.026 NS	0.542	-0.613
X8	Information seeking behaviour	0.810**	0.051**	0.000	6.629
X9	Innovativeness	0.085 NS	0.004 NS	0.828	-0.219
X10	Access to weather forecasts	0.166 NS	0.076 NS	0.206	1.273
X11	Decision making behaviour	-0.145 NS	0.073 NS	0.606	-0.517
X12	Perception of farmers towards effects of drought	0.734**	0.067**	0.000	3.834

R2 value =0.745, F value = 21.214**, NS – Non- Significant.

** - Significant at one per cent level, * - Significant at five per cent level

It is observed from the table that out of twelve variables, three variables found to be positively associated with mitigation index. The variables namely information seeking behaviour (X8) and perception of farmers towards effect of drought (X12) are positively associated with one per cent level of probability. Education status found to be positively associated with level of mitigation at five per cent level of probability.

It could be seen that co-efficient of multiple regression viz,

R2 value 0.745, which meant that 74.50 per cent of the variation in the dependent variable is explained by the independent variables chosen for the study. The partial regression co-efficient value found to be positive and significant for the variable namely information seeking behaviour (X8) and perception of farmers towards drought (X12) at one per cent level of probability and the educational status at five per cent level of probability. The results indicate

that a unit increase in educational status (X2), information behaviour (X8) and perception towards effect of drought (X12) would increase the adoption of mitigation strategies by 0.029, 0.051 and 0.067 units respectively.

The findings derive support from Sanjeevi (2019) [4] who revealed that both educational status and information seeking behaviour had a positive and significant relationship with the adaptation behaviour of farmers on climate change. Increased educational level would have led them to seek more information about mitigation strategies that increased knowledge level. While there was high information flow from various institutional, non institutional and mass media sources, that would increase their knowledge level which ultimately increased the level of adoption of mitigation strategies of the respondents.

Conclusion

The mitigation strategies in terms of monetary schemes promoted by the government programmes were effectively utilized by the farmers. However, adoption of technological mitigation strategies is wanted. In this context, the State Department of Agriculture and Horticulture in collaboration with Agricultural University and KVKs (Krishi Vigyan Kendras) conduct demonstrations, trainings and supply of critical farm inputs like drought resistant crops seed materials, chemical sprays at subsidy rate to farmers is required.

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