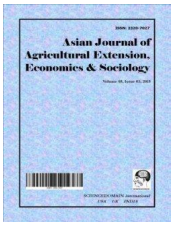

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Perception on Effect of Drought and Suggestions to Overcome Drought by Namakkal Farmers of Tamil Nadu State

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Authors' contributions

This work was carried out in collaboration between both authors. Author PS is the student researcher who conducted the research, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author KM is the chairman of the advisory committee who laid out the plan of the research and managed the analyses of the study. Both authors read and approved the final manuscript.

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ABSTRACT

Severity of drought leads to reduction in agricultural production that may result in reduced income for farmers and agribusiness, increased prices for food and finally which leads to affect the livelihood of the farming community as well as this also pave way for negative deviation on the Gross Domestic Product (GDP) contribution of agriculture of the country. The study was conducted in Namakkal district of Tamil Nadu state, with one of the objective to identify the perception of farmers towards the effect of drought and to document the suitable suggestive measures suggested by the farmers in different agro- ecosystem to overcome the drought. The simple random sampling method was used in the selection of 100 farmers each 50 belongs to annual and seasonal crops respectively. The findings revealed that considering various perception level of farmers in Namakkal district, more than 60.00 per cent of farmers perceived the effect of drought to the extent of 60.00

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per cent and above in their farming situations like reduction in water level, cultivable area, change in planting dates and change in cropping pattern. Followed by nearly 54.00 per cent of respondents perceived the effect of drought to the same extent in the agricultural allied sector (i.e), Selling of livestock. Regarding suggestions to overcome drought, Majority of respondents (82.00%) suggested that proper guidance should be given to farmers regarding state and centrally sponsored schemes and policies and complex procedure of the scheme should be simplified as one of the major suggestions, followed by 75.00 per cent of respondents who had stated that faster and necessary arrangements should be taken to provide compensation /insurance for crop loss during drought.

Keywords: Drought; perception; farming; mitigation.

1. INTRODUCTION

A drought is an extended period where water availability falls down below the statistical requirements for a region. Drought is not a purely physical phenomenon, but instead, it is the interplay between natural water availability and human demands for water supply. There is no universally accepted definition of drought. It is generally considered to be occurring when the principal monsoons, i.e. southwest monsoon and northeast monsoon, fail or deficient or scanty. A drought is a period of below-average precipitation in a given region; resulting in prolonged shortages in the water supply, whether atmospheric, surface water or ground water. A drought can last for months or years, or may be declared after as few as 15 days.

According to *National Disaster Management Authority, 2010* (Government of India) [1] dry regions in India include about 94 mha and about 300 million people (one-third of India's population) live in these areas; more than 50.00 per cent of the region is affected by drought once every four years. Since 2001, the country has experienced six major droughts, in the years of 2002, 2004, 2009, 2012, 2013 and 2016 severely affecting various sectors particularly agriculture and overall economic development of the country, the capacity to cope with the adverse impacts of drought is steadily increasing due to improved technology and agricultural development programmes and partly due to diversification of rural economic activities away from pure farm activity.

Tamil Nadu is facing worst drought due to uncertainty and failure of monsoon showers for the last few years. The state government declared the state as drought hit in 2012-2013, 2016-17as per guidance from central committee (*Tamil Nadu State Action Plan for Climate Change*, 2017) [2]. As per *Government of Tamil Nadu Gazette Revenue notification* [3] on 18th January 2017, Tamil Nadu receives rain fall from the North East Monsoon between 1st October and 31st December. The average rain fall during the North East Monsoon period is 440 mm. But, in the year 2016 the State has received only 168.3 mm which was 62 per cent less than normal. The rainfall deficit in the 32 districts ranges from 35 to 81 per cent. The order also revealed that, of the 16,682 revenue villages in the State, 13,305 revenue villages have been affected by drought and 87 per cent of the crops cultivated had been affected by drought. Such efforts are mainly concentrated on the aspects like access to risk-reducing and productivity-enhancing technologies, diversification of livelihoods, better access to crop insurance and improved infrastructure for reducing vulnerability of poor due to failure of monsoon. In order to assess the effect of those efforts the present study entitled as "An Explorative study of mitigation strategies followed by farmers to overcome drought situations in Namakkal district" with one of the objective to identify the perception of farmers towards effect of drought and to document the suitable suggestive measures suggested by the farmers in different agro- ecosystem to overcome the drought.

Recent researchers have aimed at documenting the perception of farmers towards drought strategies followed by suggestions given by farmers to overcome drought situations using some of the technological, policies based practices. Udmale et al. [4] reported various drought preparedness measures adopted by farmers in Maharashtra. Drought mainly affects the crop and livestock production, about 78.80 per cent of farmers preferred not to sell their crop produce, and instead they stored it to deal with anticipated droughts. About 47.90 per cent of farmers stored their crop residues to fulfill the fodder requirement of livestock during drought and 51.00 per cent of farmers reduced their expenses and saved money. Dhanya & Ramachandran [5] studied the adaptation requirements made by the farmers during dry spell revealed that construction of small check

dams in the Palar river would facilitate their irrigation needs. This opt mnzxvbnm,./ion was proposed by 82.6% of; lkjhgfsASthe respondents. Around 60.2% of the farmers had an opinion that conserving the existing farm ponds will increase the water storage potential, and as there is increasing unpredictability in the onset and amount of monsoon rainfall, and for changing the farm operations and crop calendar should be given more preference.

2. METHODOLOGY

Namakkal District of Tamil Nadu was purposively selected for this study, as it received normal rainfall only 2 years out of the past five years (District rainfall data 2008-2017, Veterinary College and Research Institute, TANUVAS, Namakkal). Since this study is focused on coping up strategies being adopted by the different farmers, the experts opined that this study should cover both the seasonal crops and annual crops cultivated in this district. Keeping these in mind, two blocks namely Kabilarmalai block and Vennandur block out of 15 blocks of Namakkal district was chosen for major area of annual crops (namely Sugarcane and Tapioca) and Seasonal crops (Maize and Groundnut) respectively. Villages were chosen based on major area under cultivation and the respondents were chosen randomly to constitute the sample size of 100 from five villages. Data was collected through semi-structured interview schedule during Feb- March 2018.

Perception is the process by which information or a stimulus from the environment is transformed of into psychological awareness. The Percentage of effect of drought perceived by the farmers in their farming situation was depicted in eight statements was considered as Perception of farmers. The statements were developed by Udmale et al. [4] with slight modification is used for this study. The responses for eight statements were placed under a five point as follows.

Statements	80%-100%	60%-80%	40%-60%	20%-40%	Less than 20%
Scores	5	4	3	2	1

The data collected for the study were scored, tabulated and parametric & non-parametric tests were applied to analyse the data. The statistical tools were used through computer based statistical package viz., Statistical Package for Social Sciences (SPSS) for analysis and the interpretation of data was done.

3. FINDINGS AND DISCUSSION

3.1 Perception of Farmer towards Effects of Drought

Perception is the process of recognising and interpreting sensory stimuli. Drought exerts effect not only in farming system but also in social and daily walk of life of farmers. Affected by the drought in the farming system there must be reduction in water level that resulted in reduction in cultivable area and yield loss. Apart from these, farmer would have sold their livestock due to unavailability of fodder to compensate their financial need. As the result of these, farmers would have lost their employment, reduction in household income and marginal spending in cultural celebrations. Extent of such effect of drought in the farming and socio economic conditions as specified by the farmers were studied and presented in the Table 1.

Table 1. Distribution of the respondents according to their perception towards effect of drought (n=100)

S. no	Statements	80-100%	60-80%	40-60%	20-40%	Less than 20%
1.	Reduction in cultivated areas	20.00	50.00	26.00	4.00	0.00
2.	Reduced water level in wells	45.00	23.00	10.00	14.00	8.00
3.	Change in cropping calendar and pattern	50.00	19.00	13.00	8.00	10.00
4.	Decrease in crop yield and crop failure	42.00	24.00	20.00	14.00	0.00
5.	Reduction in household income	25.00	28.00	22.00	14.00	11.00
6.	Loss of employment	10.00	12.00	25.00	30.00	23.00
7.	Reduction in spending on festivals	12.00	18.00	20.00	16.00	34.00
8.	Selling of livestock due to unavailability of fodder and financial needs	30.00	24.00	16.00	21.00	9.00

From Table 1, it could be observed that, more than 60.00 per cent of farmers perceived the effect of drought to the extent of 60.00 per cent and above in their farming situations like reduction in water level, cultivable area, change in planting dates and change in cropping pattern. Followed by nearly 54.00 per cent of respondents perceived the effect of drought to the same extent in the agricultural allied sector (i.e), Selling of livestock.

As the result of the effect of drought in the farming system, 53.00 per cent of the respondents perceived a reduction in household income to the extent of above 60.00 per cent. However, loss of employment to the extent of less than 60.00 per cent was perceived by 78.00 per cent of the respondents that indicates that many farmers are engaged in other than farming occupations which is duly supported by the occupational profile of the respondents in the above table. Moreover, it is interesting to note that drought did not affect in greater extent in spending of cultural celebrations.

3.2 Documentation of Suggestive Measures to Cope up with Drought

The farmers who were affected by drought in their farming in the study area are providing some suggestions to overcome the effects of drought. The suggestions expressed by the farmers are presented in the Table 2.

From the Table 2, it could be observed that majority of respondents (82.00%) suggested that proper guidance should be given to farmers regarding state and centrally sponsored schemes and polices and complex procedure of the scheme should be simplified as one of the major suggestions, followed by 75.00 per cent of respondents who had stated that faster and necessary arrangements should be taken to provide compensation /insurance for crop loss during drought.

Nearly two-third (64.00%) of the respondents expressed that providing sufficient water during cropping season through canal and rivers. More than half (53.00%) of respondents suggested, moving to other occupation such as agricultural allied sector likes poultry farming, MGNREGA wage earner and non- farm activities. 48.00 per cent of respondents suggested that, vocational training related to improved agronomical and technological mitigation practices should be provided by agricultural department for providing technical know- how of adaptation strategies. And only 30.00% of respondents suggested, timely availability of farm inputs like seed materials of drought resistant crops, chemical sprays like PPFM, anti-transpirant chemicals should be provided at subsidy rate to the farmers.

Table 2. Suggestion of farmers to cope up with drought (n=100)*

S. no	Suggestions	No. of respondents
1	Moving to other occupation like agricultural allied sector likes poultry farming, MGNREGA wage earner and non- farm activities	53
2	Proper guidance should be given to farmers regarding state and centrally sponsored schemes and polices and complex procedure of the scheme should be simplified	82
3	Vocational Training related to improved agronomical and technological mitigation practices should be provided by agricultural department for providing technical know- how of adaptation strategies	48
4	Faster and necessary arrangements should be taken to provide compensation /insurance for crop loss during drought	75
5	Providing sufficient water during cropping season through canal and rivers	64
6	Timely availability of farm inputs like drought resistant crops seed materials, chemical sprays like PPFM, anti-transpirant chemicals should be provided at subsidy rate to farmers	30

(*) Multiple responses obtained

4. CONCLUSION

From the perception of farmers towards the effect of drought, it can be concluded that the severity of drought and its consequences resulted in heavy loss and failure to the farming community in the study area. The suggestions given by the farmers in the study area shows that the schemes and policies provided by both state and central government and innovative technologies by universities, Krishi Vigyan Kendra were theoretically well structured by policy makers and scientists. But their practical applicability in farming level is very less. Hence these need to be revised based on the suggestions provided by the farming community.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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