

WATER CRISIS IN TAMILNADU AND ITS ECONOMIC IMPACT ON SMALL HOLDING AGRICULTURE

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ABSTRACT

Recurring the water crisis and the economic impact is a major challenge in the area of tamilnadu state in India is the major income activity of over 56% of the state population. The objective of this study is to analyses the economic conditions of small holding agriculturists and the economic impact of water crisis in smallholding agriculture. This study is based on both primary and secondary data collected via survey a 300 farming smallholding agriculture. The results show the decrease in yields of crops, livestock production and lost if employment are related associated with decreased income of farmers. Here the most immediate economic impact of water crisis in smallholding agriculture. Social impacts such as population migration impacts of hopelessness and sense of loss, conflicts in society for water, then due to changed food preferences were also reported. The environmental impacts such are increase in atmospheric temperature, deteriorated water quality and groundwater depletion were perceived by farmers to high extend. In spite of good preference of serving of water crisis and economic Impact of small holding agriculture by farmers and their familiarity their various adaptations option, there preference given for their adaptations in agriculture was not-good enough. Also the mitigate the water crisis, the government provided various mitigate measures, but the level of satisfaction amongst the farmers are decreases. It is expected that their study will help policy makers to developing the agriculture sectors for more appropriate the water crisis adaptation policies of tamilnadu at India.

Keywords: Water Crisis, Water Scarcity, Agriculture, Economic impacts, Small Scale holders, Livelihood, India, Groundwater, Rainwater, Canal Water.

INTRODUCTION

Among, all the natural hazards, the water crisis ranks is first in terms of the number of people are directly affected. Then, water crisis is a creeping phenomenon, difficult to understand and define due to differences in socioeconomic factors and meteorological variables along with the stochastic nature of water demand in various regions of the world, ([Vibhu Nayar,2013](#)). Although the particular definitions of water crisis may be changes by sector and religion. It is basically an extended the time of months (or) years , in which perception is less than the annual average resulting in water scarcity in agricultural land, ([Rojali Maharana, Aradha Basu, Nabin kumar Dhal,2017](#)). Generally, drought are classified as either a meteorological drought (Lack of perceptions own an area for a time frame), hydrological drought (a period with insufficient surface and subsurface water resources, agricultural drought (a period with the declining the soil moisture and consequent crop failures due to lack of surface water resources), or socio - economic drought (failure of water resources system to meet water demand which impacts human activities of both directly and indirectly affects of farmers, ([Ramesh Bhatin, R.P.S, Malik, A.Palaniswami, etla, 2015](#)).

India, which confronted to water crisis at least once every three years over the last few decades, is amongst the most recent vulnerable and water crisis in agricultural land of prone countries in the world, ([Lakshmi Prassana, Aruna Singh, sant kumar. P.k.,2015](#)). India has been experienced delayed a widespread water crisis in consecutive years, with increased frequency in recent times. It is now well accepted that water crisis in agriculture will pose an increased threat to climate sensitive an economic sectors in India at tamilnadu, especially agriculture. About two-third of india's population depends on agriculture activities and allied activities. Hence water crisis in agriculture land are likely to threaten the overall economy of the state of tamilnadu, ([Narayanamoorthy.A, N.Devika and M.Bhattarai](#)).

According to a National Rainfed Area Authority, says that about 56% of the total cultivated area in India, still relies on (natural agriculture) and hence changes to rainfall perception are a significant threat to India's agrarian economy, ([Peter.B.R. Hazell, 2015](#)). The directly impacts of water crisis on tamilnadu agriculture is decrease in crop (food grains, oil

seeds, groundnut, etc.), vegetable and fruit production and natural creation. This creates of radical reductions in farmers income. The circumstances becomes worse in the water crisis is prolonged and ground water availability for irrigation also declines, ([Kiruthika.N](#)). Moreover drought (or) water demand impact of livestock, poor-productivity, health and fertility. In addition, water crisis is increasingly of food security, shortage of drinking water, mental and physical health problems, mitigated of work to debt, ([Eshazavier, Daniele S. George, Karan fisher Vandan, Etl.,.](#)). Then impacts can change the fundamentally from one region to another region. For example, such as increasing the water demand and poor water management can further exacerbate the water crisis and economic impact of agriculture land. Because the resulting of exchange between natural drought events and various from factors drought perceptions The amongst the people from region to region, ([Andrew Keler , R.Sakthivel, David Seckler, 2012](#))

Still, the few studies have attempted to identify the complexity of water crisis and economic impact of small holding agriculturists at the local and regional scale. Given projections for increasing the water crisis impacts, it is important to inform policy makes on the reason of water demand, its impact different adaptations responses and possible mitigation measures prevented a local trends in order to ease of human suffering, ([Parveen kumar and M.S. Nain July 2013](#)). Likewise, the concept of providing the short-term of water crisis relief without much reference to the major constraint and issues doesn't essential help the region or the poor. The objective of the study is to analyses the economic conditions of small holding agriculturists and the economic impact of water crisis in smallholding agriculture.

MATERIALS AND METHOD

This study used primary data with multi-stage stratified systematic sampling technique. The data collected from 300 respondents from the target population. The response rate was almost 100% during the face-to-face interview due to the respondent's interest to know and discuss more about the water crisis and economic impact in agriculture and their availability at home in off season for agriculture.

RESULTS

A total of 300 small household agriculture were interviewed from the water crisis and economic impact of agriculture strata of which 72% were household heads and 28% were relatives of household heads. From, the analysis the survey has been from the smallholding agriculturists for water crisis in tamilnadu and economic impact of small holding agriculture. In this survey the majority are answered the male compared to the female, the Male 64.7% are answered then Female 35.3% are answered. Type of farmer is most of the Small scale farmers 58.4% between the Progressive farmers 41.6%. Age respondents are below 25 age 35.5% , 25-35 age 23.7%, 35-50 age 24.4% and Above 50 age 16.4%. Land size of small householder are 2 Acres 27% , 3 Acres 31.7%, 5 Acres 22.3%, 7 Acres 19.3%. Tenancy status of land of a agriculturists are Owners are 34.1%, Owner-cum-tenant are 38.1%, and Tenant are 27.8%. Monthly income of farmers are Below 2000 are 18%, 2000-4000 are 23%, 4000-8000 are 26.7%, Above 8000 are 21.3% and No income are 11.1%. Main source of income are Agriculture 8%, Livestock 18.3%, Agricultural labour 23%, Small business 19.1% and Others 11.7%.

Small householder another works are Unemployed 4.7%, Unpaid family workers 22.4%, Self-employees/Small business 23.7%, Wages/Salaried 19.4% and Others 9.7%. The main available source of water of agriculture land are Tubewell 31%, Canal water 39% and Rainwater 30%. Resource of water more convenient for farming activities in agricultural land are Tubewell 29.3%, Canal water 25%, Rainwater 26.3%, Groundwater 19.3%. In crop season the smallholding agriculturists are facing water scarcity problems in Wheat 13.4%, Paddy 31.8%, Sugarcane 21.7%, Groundnut 22.11% and Others 11.1%. In Tamil Nadu agriculture department to resolve the water issues and conditions of farmers the most of people are answered the No are 39.9% then May be are 30.5% and Yes are 29.5%. The smallholders are satisfied with the availability of water throughout the year the majority are answered the No 51.2% comparing to the Yes 48.8%. In this question to extent the water storage affecting the agriculturists livelihood most are answered the Affecting 46.6% then High affecting 32.9% and Least affecting is 20.5%. Impact of drought are Drying of water source 13%, Makes surrounding dyer 18.7%, Famine 19.4%, Crop failure 21.7%, Loss of livestock 10%, Poor health of humans 11% and other impacts on livelihood 6%.

Drought are Natural disaster 43.4% and Man-made disaster 55.5%. Have the small holding of agriculturists ever experienced any other drought expect the current drought the most of

people answered the Yes 56.4% compared to the No 43.6%. Agriculturists are think drought are becoming more or less frequent in last to 10-12 years are answered the More 32.8% , Less 31.4%, No difference 23.7%, Don't know 12%. The farmers get information on weather forecasting the majority are answered the Television 23.5%, Newspaper 17.4%, word of mouth (friend/neighbor) 17.1%, No information 16.4%, Self-Judgement 12.1%, Traditional Knowledge Source 7% and Others (specify) 6%. Small holding agriculturists are considered the Yourself to deal with the drought are majority of the people are answered the Medium 32.3%, High 24.4%, Very high 18.4%, Less 14.1% and very less 10.4%. Drought threatened the household food security are answered the Very high 16.6%, High 24.7%, Medium 27%, Less 18.6% and Very less 12.9%. Drought caused the conflict for water in society are answered the Very high 25.9%, High 23.9%, Medium 28.6% and Less 21.5%. Small householder are delay the repayment of loans due to drought are answered the Inability to pay by fulfilling household needs 25.3%, Subsidy expectation from government 30.4%, Reduction in income due to drought/Crop failure 30.4% and Others 13.9%. Reasons of farmers suicide are answered the Indebtedness 22.6%, Drought 34.3%, Family problems 27.6% and others 15.5%. Smallholders have satisfied with the getting the awareness in agriculture are Satisfied 27.3%, Dissatisfied 42% and Neutral 30.7%. In this question the small householder are share of their production and their family sells are Sell nearby everything 17.6%, Sell most 29.4%, Option of 3 Sell about half 33.8%, Sell less than half 19.3%. Primarily barriers to save for small holding business are Lack of cash 20.7%, Lack of institution 27.1%, Not being able to immediately get merely 28.8%, Don't must financial institution 16.9% and Others 8%. The average sowing cost per Acres are answered the 2000-4000 19.6%, 4000-6000 33.1%, 6000-8000 27.7% and Above 8000 19.9%. Source of irrigation water during the cultivated lands are answered the Dug well 16.3%, Bore well 28.5%, River 22.7%, Lake/Pond 16.9%, Canal 18% and Others 7%.

Environmental impacts of drought caused by the water scarcity in surface water bodies are answered the Very high 24.6%, Medium 22.6%, Very Less 9.1%, High 30.3% and Less 13.5%. Environmental impacts of drought caused by the water scarcity in surface water bodies are Very high 24.6%, High 30.3%, Medium 22.6%, Less 13.5% and Very Less 9.1%. Environmental impacts of drought caused decline in groundwater levels are answered the Very high 18.2%, High 22.3%, Medium 29.1%, Less 16.9% and Very Less 13.5%. Environmental caused by drought to determinate the water quality is Very high 13.6%, High 20.3%, Medium

29.5%, Less 23.7% and Very Less 12.9%. Agricultural adaptation used to mitigate drought impacts the small householder use the water harvesting for agricultural land throughout the farm pond, in-situ conservation practices people are answered the Very high 15.4%, High 25.1%, Medium 29.8%, Less 15.4% and the Very Less 14%. Small householder satisfied with government water supply tankers Very high 11.5%, High 22.3%, Medium 27.4%, Less 23% and Very Less 15.9%. Small household agriculture satisfied with government crop insurance schemes Very high 11.4%, High 17.4%, Medium 28.9%, Less 24.5% and Very Less 17.8%. Agriculturists have some restrictions on water use for dam/ reservoir according to priorities get by government authority are answered the Yes 46.8% and No 53.2%. The government Satisfied the economy level of agriculture for the farmers says the Yes 35.9%, No 37.9% and May be 26.2%. In future there will be demand for the agriculture answered the small scale household for agriculturists is Yes 39.1%, No 32% and May be 29%.

DISCUSSION

Government provided assistant or alleviation fund to support for the agricultural crop loss due to the water crisis. In year of 2013-2014, the government provided the funds 147.2 and 55.3 per hectare as compensation for the agricultural crops damaged by the water crisis in agricultural land respectively. Also, from the DPA bought the crop insurance. In these should be an occurrence of worst and prolonged drought, the government also provided loan, the subsidy schemes, waviest internet and increases loan payments periods relief measures to the agriculturists. According to the Government of Tamilnadu, total drought cost the evaluated for the year 2012-2013 was approximately USD 133 million. The relief measures had some negative impact such as some farmers didn't pay the bank loans regardless of their capacity and waited form the government. A comparable case was observed in seen of electricity bill payment. On, an average the level of satisfaction from this relief and mitigation was extremely of the responsibilities of small householding agriculturists.

Provisions of employment schemes, cattle camps, feed steps and water supply tankers and remunerations for damaged agricultural crops and the organic product and fruits gardens were the major drought the mitigate meadow found in the tamilnadu. According to water crisis memondardum the Government of Tamilnadu states, these mitigate measures the (expect the NREGA) brought about the cost of approximately USD 332 million for drought 2012-2013.

Despite the fact that these administrative drought mitigation measures, have given some alleviation to the affected the household, the level of satisfaction was still low among them. According, to the few farmers get information and benefiting from the emergency course of action. There was lack of awareness and information on administrative drought mitigation measured the observed amongst potential beneficiaries. Also, the according to Indian Agriculture Ministry's crisis management plan, drought is not a disaster, it is administration issues and management issues; improvement in the management of these help measures a important to relieve the water crisis and economic impact on farming community.

CONCLUSION

Water crisis is a recurrent phenomenon in state of tamilnadu. Recently, Tamilnadu state has experienced a drought the moderate severity which started in 2011 and proceeded, extended and the continued, expanded and further deteriorated in 2012. This water crisis, alongside the alternative drought that have happened already, threatened the agrarian economy of the state of tamilnadu and caused considerable the social economic impacts on farming communities. Farmers are aware of water demand in agricultural land and the furthermore the well perceived the different socio-economic and environmental impacts of the water crisis in tamilnadu. Failure of the agriculture worse according resulted the lack of employment for unskilled labour, which additionally. The exertable their livelihood situation and ultimately weakened the financial situation of farmers. Poor farmers affected by water crisis could not affect to participate in the festival of celebrations and demonstrated by a typical propensity of drought the wedding ceremonies due to the water crisis. Less educated farmers reported by drought are driven the water scarcity of agricultural land has caused the clashes in the society. It is likewise the found that farmers form the frequent and serious drought affected the cultivated lands considered the water scarcity as the main source of suicidal tendencies due to lower incomes to high indebtedness. Environmental impact of drought were perceived to high to high.

To mitigate the water crisis and the economic impact of agriculturists of various water scarcity preparedness and adjustment measures. With anti-capped drought, agriculturists put away to started the crop harvest (grains) stored crop residues for live stock, sold livestock for income generation (and further they were variable to provide the food and water for the livestock and sought alternative source of income through the employment under NREGA, working by

labor of local construction, sand mining etc., and so on. In spite of farmers were familiar with the independent adjustment options in agriculture less preference was given to their appropriation. It is found that the low education, small holding size and low incomes were major constraints in selection of these adjustment system the strategies discussed earlier. Special consideration ought to be given to these limitations while designing and formulating policies for increasing community strength to future water scarcity in demand events. Also, the extent of water system (or) irrigation method into found to not affect the farmers perception of water crisis and economic impact of farmers and adaptation and appropriation of adjustment techniques, mainly due to a prolonged water with moderate to severe intensity the whole catchment. Emphasis should be given to water collecting strategies the extent of irrigation coverage. Besides the household level adaptation, measures, administrative strategies assumed an exceptionally urgent apart in adjusting the water crisis. It was observed that alleviation measures gave help to influence the households to some extent, but the level of stratification were still how amongst beneficiaries due to ineffective planning and management.

Reactions to water crisis and economic impact of agriculturists in state of tamilnadu are generally re-active in terms of crisis management and poorly co-eradicated. Consequently, the state needs to changes form re-active crisis management strategy to more pro-active strategy. This steady with the finding form different nations, where lessons can be learnt and existing the strategies considered for implementation in India.

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