Water resource management and sustainable development – with special reference to Paddy Production in Nagapatinam

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Abstract

Irrigation is the important determinant of Agricultural productivity. Depletion of ground water and the surface water have cautioned the need for alternative solution to sustain the agricultural activities which found to be the important source for food security. Optimum utilization of the water became more important to ensure sustainable agricultural development especially among water intensive crops like Paddy. The present study examines the perceptions of the farmers about the importance of water management by using innovative modern technology. The study conducted with 480 farmers in Nagapatinam district. The findings revealed that majority of the farmers inclined to use various modern technique to utilize the available water at optimum level. The study also urged the need to provide subsidized machineries to enhance the water resource management technique to ensure sustainable paddy production.

Introduction

Agriculture which is considered as the main source of food to millions of people living on earth is challenged with its handicap to adapt to the changing scenarios in technology and its working patterns, especially in India. The high rate of growth in population makes it even more difficult for agriculture to meet to the growing needs of crop cultivation and productivity. Adding to the miseries are the natural constraints like dry years, floods and other catastrophe's that haunt even the small dream of any farmer. The effect of climate change and indebtedness of the farmers in India is a very significant challenge which not just doubles the risk in farming but also demotivates the farmers from even thinking about pursuing farming as an occupation.

Significance of Water Resource management

The water sources should be invigorated, the water bodies should be restocked, and the riparian regions should be definitely rebuilt extensively, so that the natural balance is reestablished. This calls for a very effective Water Management strategy. Decrease, Reuse and Recycle should be the watchwords, while we exploit the water resources. Recharge, Rejuvenate and Rebuild should be the commandment when it comes to the sources. Honoring the future stakeholders of water should be the concern. Material progress is necessary, but disfiguring and mutilating the natural assets for material progress cannot be justified. Sustainable development should be inviolable. Water is indispensable for the existence of life in this beautiful planet. The need and significance of water can be well understood if we look at the evolution of life in this planet. 65 percent of water is there in all the living beings and 65 to 99 percent of water is there in plants. The economy of any country is resource based. Man has used his technical skills and knowledge in utilizing the resources in one way or the other. Natural resources vary greatly in quantity, mutability, and reusability in space and time.

Water is manufactured by the nature and hence, it is a vital natural resource. The existence of life on this earth is due to this substance – water. All plants and animals invariably need water for their survival. Cooking, washing, recreation, farm crops, farm stocks, industrialization, transports, etc; depend on water. Water is a super solvent. Most of the substances dissolve in it. Moreover, it is the only substance on earth that is in the form of liquid. Water in the human body carries nutrients to cells and carries wastes away through urine and faces. The uses of water are, thus, unlimited but the supply of readily usable water is limited. Hence, there is an urgent need for economizing the use of water and replenishing the various sources of water.

Objectives of the study

- ❖ To examine the perceptions of water resource management by the selected farmers in the study area
- ❖ To map out the significance of water resource management on paddy cultivation in the study area

Data and methodology

The relevant data collected from Primary survey. The study was conducted in Nagapattinam, Mayiladuthurai, Tharangambadi, Sirkali taluks of Nagapatinam district of Tamil Nadu. The study chosen 480 samples for the study.

Analysis

Table-1: Descriptive Statistics

	Mean	Std. Deviation
Area under cultivation of Paddy	36.4	20.1
Water Resource management	53.3	29.3

Table-2: Correlations for Area under cultivation of Paddy and Water Resource management

		Area under cultivation of Paddy	Water Resource management
Area under cultivation of Paddy	Pearson Correlation	1	.705*
	Sig. (1-tailed)		0
	Sum of Squares and Cross-products	733.59	791.15

	Covariance	42.3	46.9
	N	480	480
Water Resource management	Pearson Correlation	.705*	1
	Sig. (1-tailed)	0	
	Sum of Squares and Cross-products	791.1	1658.5
	Covariance	41.9	80.97
	N	480	480
*. Correlation is significant at the 0.01 level (1-tailed).			

Result and discussion

The results of the empirical analysis depicted the socio-economic profile and the awareness about the usage of water resource management in Paddy cultivation. Majority of the selected farmers are male as 85 percent constitute the same even though women engaging in agricultural activities considerably but the farming and other decision making taken by the male farmers only. Significant proportion of the people represents from the age group up to 50, nearly 64.8 percent of them are in the age group. Nearly 76.3 percent got education up to primary level followed by 26.9 percent have qualified with 10th Std majority of the selected respondents have studied up to school. Nearly 92 percent as they have been engaging in agriculture for more than 20 years. Almost 76 percent have familiar with the modern practice of cultivation and water resource management, 78.9 percent revealed lack of irrigation is the important determinant of Paddy cultivation, 79.3 percent familiar with check dam, cleaning of canals, preservation of tanks and distilling the water resources to preserve the irrigation facilities for paddy cultivation in the study area. The study also utilized correlation to map out the significant connection between water resource management and area under cultivation for paddy cultivation. The results of the correlation two variables namely water resource management and area under cultivation for Paddy's coefficient are displayed that there is perfect positive correlation existed between the variables. Each variable are perfectly correlated with itself so r= 1 along the diagonal of the table. The water resource management operations is positively associated to area under cultivation for Paddy crops with the Pearson coefficient of 0.705 and there is more than .01 probability that a correlation coefficient that have occurred .This significance value implies that probability of the correlation is high. Therefore, it could be inferred from the outcome that the correlation between effective water resource management expand the scope for area under cultivation as the proper irrigation facilities enhances the area under cultivation thereby enrich production of Paddy across the study area.

Conclusion

Agriculture plays a significant role in building our economy, its role just not ends with enacting as the main contributor towards generating largest income in rural sector but also towards providing the main and only

source of food to millions of people living on this planet. The food security of the nation also depends upon a technology aided agriculture. Revolution in cropping patterns, advanced cropping and farming methods, proper warehousing and marketing facilities help the farmers look beyond this sector as a profit-making industry. However, irrigation is the prominent source for the water intensive crop like Paddy and the availability of the water also decelerating consistently. Thus, effective usage of the available water through innovative modern techniques have enhanced the area under cultivation for the paddy crop across the study area implied the need for expanding the innovative technology to enrich Paddy cultivation not only ensure food security but also preserve the ecological balance. Thus, optimum utilization of the available scared water found to be crucial element in Paddy cultivation.

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