RESEARCH ARTICLE :

# Performance of water users' association in Theni district of Tamil Nadu

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**SUMMARY :** Water is the elixir of life, a precious gift of nature to mankind and millions of other species living on the earth. It is fast becoming a scare commodity in most part of the world.. A water user's association (WUA) is an organization of water users administered on the principles of cooperation and its role is to implement water institutions, and in the process to achieve a fair water allocation across different locations. Given the existing water supply scenarios, the demand management strategies will be considered more relevant for the efficient management of the available supplies. Therefore, what is needed is the clear understanding of the value of water in alternate uses as well as the incentive to allocate the water among competing crops and uses in different river basins. This will also help to work out the performance of both irrigation and agriculture sectors at basin level. Accordingly, the following objectives are set forth: to discuss the characteristics of WUAs and the impact of such characteristics on the water use efficiency of the selected farms. to examine the participation of farmers under WUAs in the selected area The deliverables will be a boost for water user association and find a way possible ways for the water use in a economic prospects.

**How to cite this article :** Baskar, V. David Chella and Raman, M.S. (2017). Performance of water users' association in Theni district of Tamil Nadu. *Agric. Update*, **12** (TECHSEAR-10) : 2943-2946.

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## BACKGROUND AND OBJECTIVES

The Periyar Vaigai is the largest system in Tamil Nadu, next only to the Cauvery system. The Periyar River originates in the Western Ghats and traverses westward before ending its journey in the Arabian Sea. Constructing a dam across the river and make it run eastward through a tunnel is an engineering marvel. The dry tracts of Madurai district benefited by the diversion.

The Periyar contour canal runs almost parallel to the Vaigai river on its left side as the Periyar main canal and on its right side as the Thirumangalam main canal. Sivagangai and Thirupathur taluks of Ramnad district were dry and experienced difficulty even in getting drinking water. The Orani tanks meant for house hold water supply remained dry during several months of the year. Underground water potential was poor. When the Vaigai dam was constructed, water scarcity in Ramnad district was taken into consideration. The extension of water supply to Thirupathur and Sivagangai was ordered and also the Periyar Main Canal was extended

to irrigate additional area of these regions through a number of tanks.

## Objectives of the study :

In order to test the above hypotheses, the overall objective of the study was fixed as to study the impact of Water Users' Associations on productivity and farm income in the study area with the following specific objectives:

– to examine the participation of farmers under Water Users' Associations in Periyar-Vaigai river basins of Tamil Nadu.
– to identify the constraints and suggest policy measures for improving the water use efficiency in the farms covered by the selected Water Users' Associations.

## RESOURCES AND METHODS

The present study was conducted in Periyar-Vaigai river basins which had the largest number of WUAs' (132) in 250 villages. Hence, they were purposively selected to study the impacts and characteristic features of WUAs. Tamil Nadu is pioneer in Water Users' Association especially southern Tamil Nadu. Theni district in Periyar-Vaigai river basin have been selected. The study covered 60 farmers under WUAs and 40 farmers under Non-WUAs in each of the selected river basins and thus making the total sample size at 100 farmers.

## Review of Literature :

Palanisami and Subramanian (1983) observed that the farm water supply in tail portion is affected by size of holding, distance of field location and possession of wells. The social character was found significantly affecting water supply in the head portion only. Canal lining and changes in water allowance along with on-farm development activities and conjunctive use of surface and ground water are suggested to eliminate the difference in water receipt of the farms at different locations.

Sampath (1985) made a comparative analysis of four methods of water distribution with a view to assess the efficiency in terms of output generated and equity implications in terms of relative (i) practice of relating water needs to farm size (ii) volumetric water pricing, (iii) productivity criteria and (iv) allocation according to

demand expressed by farmers. He concluded that the common practice of relating water needs to farm size was less efficient and less equitable of the four methods of water distribution.

The water should be distributed by fixing irrigation timings for individuals in proportion to the area to be irrigated and making allowances for conveyance losses in field channels based on their distance from the outlet.

Sudha (2005) employed Garrett's scoring technique to find the constraints involved in adoption of Integrated Pest Management Technology (IPM). She found that high wage of labour as the major problem with the score of 75.65 followed by non availability of labour, lack of IPM inputs, lack of extension follow up practices, lack of proper training facilities, lack of confidence, complex practice, fragmented land holdings and lack of assured irrigation.

Gnanaprakasam (2006) using Garrett's ranking technique found that delay in input supply as the major problem faced by coleus contract farmers followed by insufficient input supply, seasonal labour scarcity and high cost of labour, forced insurance, yield loss due to climate and lack of fixed price policy.

In the present study, Water Use Efficiency (WUE) is defined as the amount of banana produced only canal or supplemented by tank or well divided by the amount of water used by the crop in producing it.

## OBSERVATIONS AND ANALYSIS

The results obtained from the present study as well as discussions have been summarized under following heads :

**Optimality of resource use in the selected crops :**
In order to examine the resource use efficiency, the MVP to factor price ratio has been taken as the measure. Equality of MVP to factor price ratio would indicate the optimum resource use efficiency of a particular input. Deviation of MVP to factor price ratio from unity would indicate the degree of resource use inefficiency. The ratio of marginal value of product (MVP) to factor price per unit of input was calculated only for significantly influencing variables for rice/banana cultivation for both members and non-members and the results are presented in Table 5.23.

From the Table 1, it could be inferred that, in case of members in Thamirabarani river basin for rice

cultivation, the MVP to factor price ratios for seed, phosphorus and potash were found to be greater than unity indicating under-utilization of resources. The MVP to factor price ratios for farm yard manure, machine power and irrigation were less than unity indicating over-utilization of resource and return can be increased by

decreasing the use of these resources to optimum level.

For non-members, nitrogen had the marginal value product and acquisition cost per unit ratio of more than unity indicating under utilization of the nitrogenous fertilizer whereas the ratio farm yard manure, human labour and irrigation and lesser than unity indicating over-

**Table 1 : Marginal value product of inputs to acquisition cost per unit for the selected river basins.**

| Sl. No | Particulars | MVP/MIC |
|--------|-------------|---------|
| | **Members** | |
| 1. | Seed | 8.21 |
| 2. | Farm yard manure | 0.69 |
| 3. | Phosphorus | 2.21 |
| 4. | Potash | 7.74 |
| 5. | Machine labour | 0.19 |
| 6. | Irrigation | 0.01 |
| | **Non-Members** | |
| 1. | Farm yard manure | 0.62 |
| 2. | Nitrogen | 5.24 |
| 3. | Human labour | 0.07 |
| 4. | Irrigation | 0.01 |

**Table 2 : Marginal value product of inputs to acquisition cost per unit of banana cultivation in periyar-vaigai river basin**

| Sr. No. | Particulars | MVP/MIC |
|---------|-------------|---------|
| | **Members** | |
| 1 | Suckers | 125.92 |
| 2 | Human labour | 94.54 |
| | **Non-Members** | |
| 1 | Phosphorus | 1092.33 |
| 2 | Machine power | 41.68 |

**Table 3 : Water use efficiency of banana cultivation in the selected districts**

| Sr. No. | Yield | Banana | |
|---------|-------|---------|-------------|
| | | Members | Non-Members |
| 1. | Yield (Kg/ha) | 49875 | 43736 |
| 2. | Net Return | 167573.2 | 122891.4 |
| 3. | Water Use (ha. cm) | 118 | 103 |
| 4. | Water Use Efficiency (Kg/ha. cm) | 422.67 | 424.62 |

**Table 4 : Constraint faced by water users' association of periyar-vaigai river basin using garrett's ranking technique**

| Sr. No. | Constraints | Periyar-Vaigai | |
|---------|-------------|-------|------|
| | | Score | Rank |
| 1. | Fund Constraints | 4 | V |
| 2. | Poor attendance of members | 20 | III |
| 3. | Inadequate Water availability | 8 | VI |
| 4. | Conflicts among members | 25 | II |
| 5. | Political interference | 12 | IV |
| 6. | Unremunerative price for the produces | 31 | I |

**Source:** Primary data collection

utilization of these resource. Therefore return can be increased by increasing the use of nitrogen to optimum level and decreasing the use of farm yard manure, human labour and irrigation. In case of both members and non-members who involved in rice in the study area, irrigation was over utilized and it should be optimized by reducing the use of it.

From the above table, it could be inferred that for the members under Periyar-Vaigai river basin the MVP to factor price ratios for suckers and human labour were was greater than unity indicating under-utilization of such resources and in case of non-members variables like phosphorus and machine power were greater than unity indicating under utilization of resources and return can be increased by increasing the use of these resources to optimum level.

**Water use efficiency for members and non-members of the periyar-vaigai river basins :**

The details about the water use efficiency for Members and Non-Members of the Selected River Basins. are given in Table.

In case of Banana cultivation the water use was recorded to 118 ha.cm for members and 103 ha.cm for non-members The highest water use efficiency was found among the non-members (425 kgs/ha.cm) of banana cultivation than that of members (423 kgs/ha.cm).

**Constraints faced by the water users' association in periyar-vaigai river basin :**

Garrett's ranking technique was employed to find out the constraints faced by Water Users' Association in river basin and the results are presented in Table 4.

The results on the analysis of constraints under WUAs by the sample farmers in Periyar-Vaigai River Basin using Garrett's ranking technique indicated that there was no remunerative in the price for their produces in the market followed by conflicts which occurred in most of the meetings. The attendance in the meetings was very thin and this was due to the political interference

in the association. For running the association, funds flow is one of the constraints in this selected area.In case of water availability, it was considered as least important constraint in the irrigation system.

**Summary and Conclusion :**

In case of the members in Periyar-Vaigai river basin the MVP to factor price ratios for suckers and human labour were greater than unity indicating under-utilization of those resources and in case of non-members, the ratios for the variables like phosphorus and machine power were greater than unity indicating under utilization of resources and return can be increased by increasing the use of these resources to optimum level.

In case of Banana cultivation the water use was recorded to 118 ha.cm for members and 103 ha.cm for non-members The highest water use efficiency was found among the members (422.67 kgs/ha.cm) of banana cultivation than that of non-members (424.62 kgs/ha.cm)

In Periyar-Vaigai River Basin, there was no remunerative price for their produces in the market followed by conflicts which occurred in most of the meetings. The attendance in the meetings was very thin and this was due to the political interference in the association activities. For efficient operation of the association, funds flow was one of the constraints in this selected area.In case of water availability, it was considered as least important constraint in the irrigation system, as adequate water was available in both river basins.

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