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Suggestions of tribal farmers for effective utilization of water resource creation and management technology in Palghar District of Maharashtra

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Abstract

The present study was conducted to ascertain the suggestions of tribal farmers for overcoming the constraints encountered in deriving benefits from Water Resource Creation and Management Technology (WRCMT) in Palghar district of Maharashtra. The study was conducted among 250 tribal farmers. The data were collected personally with the help of a pre-tested structured interview schedule. The respondents were asked to suggest suitable measures for overcoming the constraints experienced by them in getting benefits from WRCMT. The responses were analysed using frequency and percentage and ranked according to their relative importance. The results revealed that increasing the number of Jalkunds sanctioned under the Tribal Sub-Plan (TSP) and ensuring their equitable distribution across villages was the most important suggestion (91.20%), followed by establishment of coordination committees between agriculture and water departments (82.80%), promotion of micro-irrigation systems like drip and sprinkler irrigation (80.00%), conduct of regular awareness campaigns regarding government schemes (78.40%) and provision of financial support or low-interest credit facilities for construction (72.00%). Improvement in rural road infrastructure and market connectivity (70.00%), promotion of solar-operated or diesel backup irrigation systems (65.20%) and conduct of village-level training on water-saving technologies and management (60.00%) were also suggested by a considerable proportion of the respondents. The findings indicated that strengthening water harvesting infrastructure along with institutional coordination, efficient irrigation, awareness, financial support, capacity building and improved rural infrastructure is essential for enhancing the benefits of WRCMT among tribal farmers.

Keywords: Tribal farmers, suggestions, water resource creation, water management, Jalkund, Tribal Sub-Plan, Palghar

Introduction

Water is one of the most important natural resources influencing agricultural production and livelihood security of rural households. The importance of water becomes more pronounced in rainfed and tribal areas, where agricultural production largely depends upon the availability and distribution of monsoon rainfall. Creation, conservation and efficient management of available water resources are therefore essential for achieving sustainable agricultural development.

The Konkan region of Maharashtra receives high rainfall during the monsoon season. However, the region experiences considerable water scarcity during the post-monsoon and summer periods due to high rainfall intensity, rapid surface runoff, undulating topography and limited water-storage capacity. The problem is particularly evident in tribal areas, where agriculture is predominantly rainfed and the majority of farmers possess limited resources.

Palghar district is one of the important tribal-dominated districts of Maharashtra. In the tribal areas of the district, particularly Jawhar, Mokhada and Vikramgad, agriculture constitutes an important source of livelihood. Despite

receiving substantial rainfall, farmers experience seasonal water scarcity, which adversely affects crop production and restricts opportunities for cultivation during the post-monsoon period.

Various Water Resource Creation and Management Technologies have been promoted to improve the availability and efficient utilization of water in such areas. These include Jalkunds, farm ponds, and water harvesting structures, soil and water conservation measures and micro-irrigation systems. Such technologies have considerable potential for providing protective irrigation, improving cropping opportunities and increasing agricultural productivity.

However, effective utilization of WRCMT depends upon several supporting factors such as adequate infrastructure, timely financial assistance, technical guidance, and awareness about government schemes, institutional coordination and farmers' participation. The effectiveness and sustainability of water-resource interventions can therefore be improved by understanding the suggestions of the beneficiaries who directly experience the operational difficulties associated with these technologies.

Farmers' suggestions provide practical information regarding

the measures required for improving the accessibility, implementation and utilization of water-resource interventions. Incorporation of beneficiary-oriented suggestions in development programmes can help implementing agencies formulate more realistic and need-based strategies.

Keeping this in view, the present study was undertaken to ascertain the suggestions of tribal farmers for overcoming the constraints encountered in deriving benefits from Water Resource Creation and Management Technology in Palghar district of Maharashtra.

Objective

To seek the suggestions of tribal farmers to overcome the constraints in getting benefits of Water Resource Creation and Management Technology.

Methodology

The present study was conducted in Palghar district of Maharashtra. The study area represents an important tribal region where agriculture is predominantly dependent upon rainfall. A total of 250 tribal farmers constituted the sample for the investigation.

The study was conducted using an ex-post-facto research design. A structured interview schedule was developed in

accordance with the objectives of the investigation. The interview schedule was prepared after consultation with experts and review of relevant literature. It was pre-tested among tribal farmers outside the actual study area and necessary modifications were incorporated before finalization.

The data were collected personally by the researcher through face-to-face interviews using the pre-tested structured interview schedule. The tribal farmers were asked to provide their suggestions for overcoming the constraints experienced by them in deriving benefits from Water Resource Creation and Management Technology.

The responses obtained from the tribal farmers were recorded and analysed. Frequency and percentage were used for analysis of the suggestions. The suggestions were subsequently ranked according to the percentage of respondents reporting each suggestion, with the suggestion receiving the highest percentage being assigned the first rank.

Results and Discussion

The suggestions made by the tribal farmers for minimizing the constraints encountered in getting benefits of Water Resource Creation and Management Technology are presented in Table 1.

Table 1: Distribution of respondents according to their suggestions for getting benefits of Water Resource Creation and Management Technology (n = 250)

Sl.No	Suggestions	Respondents (n=250)		
		Frequency	Per cent	Rank
1	Conduct regular awareness campaigns in villages about government schemes.	196	78.40	IV
2	Ensure timely release and transparency in subsidy disbursement.	132	52.80	XI
3	Strengthen extension contact through frequent field visits by experts.	137	54.80	X
4	Provide financial support or low-interest credit facilities for construction.	180	72.00	V
5	Allocate funds for timely repair and monitoring of structures.	142	56.80	IX
6	Promote solar-operated or diesel backup irrigation systems.	163	65.20	VII
7	Promote micro-irrigation systems like drip and sprinkler to save water.	200	80.00	III
8	Introduce soil and water conservation technologies (contour bunding, trenches).	121	48.40	XII
9	Improve rural road infrastructure and connectivity to markets.	175	70.00	VI
10	Conduct village-level training on water-saving technologies and management.	150	60.00	VIII
11	Establish coordination committees between agriculture and water departments.	207	82.80	II
12	Increase the number of Jalkunds sanctioned under TSP and ensure equitable distribution across villages.	228	91.20	I

The data presented in Table 1 revealed that the most important suggestion made by the tribal farmers was to increase the number of Jalkunds sanctioned under the Tribal Sub-Plan (TSP) and ensure their equitable distribution across villages, as reported by 91.20 per cent of the respondents and ranked first. The finding indicates that the existing number of Jalkunds is inadequate to meet the water requirements of tribal farmers. The respondents therefore expressed the need for increasing the coverage of Jalkunds so that a larger number of farmers could obtain access to stored water. Equitable and need-based distribution of Jalkunds would improve water availability, provide protective irrigation during critical periods and contribute to increased agricultural productivity and livelihood stability.

The second-ranked suggestion was to establish coordination committees between agriculture and water departments, as expressed by 82.80 per cent of the respondents. The finding indicates the need for better coordination among the departments involved in water-resource development. Effective coordination among concerned departments would

facilitate proper planning, timely implementation, technical guidance, monitoring and maintenance of water-resource interventions. It would also help to minimize duplication of efforts and improve the delivery of financial and technical support to tribal farmers. The promotion of micro-irrigation systems such as drip and sprinkler irrigation to save water was suggested by 80.00 per cent of the respondents and ranked third. The result indicates that the respondents recognized the importance of efficient utilization of available water. Since the quantity of water stored in Jalkunds and other small water-harvesting structures is limited, efficient irrigation methods are necessary to maximize the benefits of the available water. Promotion of drip and sprinkler irrigation would help to minimize conveyance and application losses and enable farmers to irrigate a comparatively larger area with limited water resources. The fourth-ranked suggestion was to conduct regular awareness campaigns in villages regarding government schemes, as reported by 78.40 per cent of the respondents. The finding reflects the need for strengthening information dissemination at the village level.

Regular awareness programmes would enable tribal farmers to obtain information regarding various water-resource development schemes, subsidy provisions, eligibility criteria and procedures for availing benefits. Such programmes would also facilitate greater participation of farmers in government-supported water conservation activities.

The suggestion to provide financial support or low-interest credit facilities for construction was reported by 72.00 per cent of the respondents and ranked fifth. Construction of water harvesting structures and installation of irrigation equipment require considerable financial investment. The limited financial capacity of tribal farmers may restrict their ability to undertake such investments independently. Therefore, adequate financial assistance and affordable institutional credit would enable farmers to construct, improve and effectively utilize water-resource structures.

Improvement of rural road infrastructure and connectivity to markets was suggested by 70.00 per cent of the respondents and ranked sixth. Adequate road connectivity is essential for transportation of construction materials, agricultural inputs, irrigation equipment and farm produce. Improved connectivity would reduce transportation difficulties and facilitate better access to input and output markets.

The promotion of solar-operated or diesel backup irrigation systems was suggested by 65.20 per cent of the respondents and ranked seventh. The finding indicates that availability of water alone is not sufficient unless farmers have a reliable mechanism for lifting and distributing the stored water. Alternative energy arrangements would enable farmers to utilize available water during periods of irregular electricity supply and facilitate timely irrigation of crops.

The suggestion to conduct village-level training on water-saving technologies and management was expressed by 60.00 per cent of the respondents and ranked eighth. Training programmes would improve farmers' knowledge and skills regarding efficient water utilization, operation and maintenance of irrigation systems, irrigation scheduling and appropriate water-conservation practices. The suggestion to allocate funds for timely repair and monitoring of water-resource structures was reported by 56.80 per cent of the respondents and ranked ninth. Water harvesting structures require periodic monitoring and maintenance to retain their storage capacity and operational efficiency. Provision of adequate funds for repair and renovation would increase the functional life of existing structures and ensure continued benefits to the farmers. Strengthening extension contact through frequent field visits by experts was suggested by 54.80 per cent of the respondents and ranked tenth. Regular visits of agricultural and water-resource experts would provide farmers with timely technical guidance regarding construction, operation, maintenance and efficient utilization of water-resource technologies. The suggestion to ensure timely release and transparency in subsidy disbursement was expressed by 52.80 per cent of the respondents and ranked eleventh. Timely financial assistance is essential for completing water-resource development activities within the appropriate period. Transparency in the subsidy-disbursement process would improve farmers' confidence in government programmes and facilitate effective utilization of available financial support. The comparatively least-ranked suggestion was to introduce soil and water conservation technologies such as contour bunding and trenches, which

was reported by 48.40 per cent of the respondents and ranked twelfth. Although this suggestion received the last rank, nearly half of the respondents considered soil and water conservation measures necessary. Such interventions would help to reduce surface runoff, increase infiltration, conserve soil moisture and improve the overall effectiveness of water-resource management. Overall, the findings revealed that the suggestions expressed by tribal farmers were primarily related to expansion of water-resource infrastructure, institutional coordination, and efficient utilization of available water, extension education, financial assistance, rural infrastructure and technical support. The predominance of suggestions regarding Jalkunds, institutional coordination and micro-irrigation indicates that tribal farmers emphasized not only the creation of additional water resources but also their efficient and coordinated management.

These observations substantiate the importance of integrated institutional, financial, extension and infrastructural support for improving the benefits of development interventions among tribal communities.

Conclusion

The present investigation revealed that tribal farmers expressed several practical suggestions for overcoming the constraints encountered in deriving benefits from Water Resource Creation and Management Technology. Among the identified suggestions, increasing the number of Jalkunds sanctioned under the Tribal Sub-Plan and ensuring their equitable distribution across villages (91.20%) emerged as the most important suggestion. It was followed by establishment of coordination committees between agriculture and water departments (82.80%), promotion of micro-irrigation systems such as drip and sprinkler irrigation (80.00%), regular awareness campaigns regarding government schemes (78.40%) and provision of financial support or low-interest credit facilities (72.00%).

The findings indicate that tribal farmers require not only increased access to water harvesting structures but also appropriate institutional, financial, technical and infrastructural support for their effective utilization. Expansion of Jalkunds needs to be accompanied by efficient irrigation technologies, awareness regarding government programmes, timely financial assistance, regular training and technical guidance. The study therefore concludes that an integrated and need-based approach involving water-resource creation, efficient water utilization, institutional coordination, financial assistance, capacity building and infrastructure development is essential for improving the effectiveness and sustainability of Water Resource Creation and Management Technology among tribal farmers.

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