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RESEARCH ARTICLE :

Factors influencing extent of community participation of project and non project tank users in tank management

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SUMMARY : : Community participation is critical to improve on-farm water management and crop productivity under the Tank Development programmes. This paper reports the factors which are influencing extent of community participation of project tank users of Andhra Pradesh Community based tank management project and non project tank users of both Telangna and Andhra Pradesh, in which, tank users participation through tank user groups was measured, and it was linked to various profile characteristics of the tank users. Multiple linear regression analysis reveals that adequate, timely and equitable availability ofwater is cardinal to ensure effective tank users participation in the community based tank management projects.positive and significant relationship between extent of community participation of project tank users in tank management and the variables*viz.* education, farming experience, socio-political participation, extension contact, empathy, training received, scientific orientation,and decision making behaviour whereas positive and significant relationship between the extent of community participation of non-project tank users in tank management and the variables *viz.* education, farming experience, extension contact, empathy and decision making behavior. Whereas, farm size is negatively and significantly related with extent of community participation.

KEY WORDS :
Community participation, Tank users, Tan user group, Tank management

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BACKGROUND AND OBJECTIVES

Lack of operation and maintenance, encroachment, financial support from government, weakened community spirit in the command areas of irrigation projects, often results in poor water use efficiency at the farm-level. To overcome this problem, the Government of Andhra Pradesh introduced the concept of involvement of tank users in community. In Andhra Pradesh, there are 3000 minor irrigation tankscovered under the APCBTMP. In general, APCBTMP aim at improved tank based livelihoods and adoption of scientific agricultural practices to enhance agricultural productivity through tank users

participation. The registered tank usergroups (TUGs) are thought to be critical links in the CADA activities.

They are generally responsible for the construction/ maintenance of field channels below the outlets, timely and equitable water distribution among the farmers, prevention of unauthorised and unfair use of water, besides undertaking group-farming and rotational water supply activities (CADA, 1997). Tank usersparticipation in tank management, however, is a behavioural manifestation. Several attempts were made to identify the personal/community characteristics that influence the adoption process (Bora, 1989 and Parikh and Shah, 1994). This paper reports the profilecharacteristics of tank users in the Andhra Pradeh Community based tank management project that influences the extent of their community participation in the TUG activities.

RESOURCES AND METHODS

Ex-post facto research design was adopted.The state of Andhra Pradesh, three regions and three districts of the state (Mahaboobnagar from Telangana, Vizianagaram from Coastal Andhra and Chittoor from Rayalaseema)were selected purposively. From each district four tanks (two from project and two from non-project area) were selected randomly. A total of 240 (120 under project area and 120 under non-project area)tank users selected from 12 tanks were considered as sample for the study. Sixty officials (10 from project and 10 from non-project areas) were selected randomly to study the management behaviour Dependent variables *i.e.* extent of community participation, independent variables *i.e.* age, education, farm size, farming experience, socio-political participation, participation in extension methods, extension contact, information seeking behavior, empathy, training received, scientific orientation, risk taking ability, decision making behavior, marketing behavior were selected for the study.

A project tank user is a tank user involved in managing the tanks operated by the APCBTMP continuously for the last three years.In order to study the relationship of extent of community participation with the profile characteristics of project and non-project tank users, the correlation co-efficient (r) values were computed. Multiple linear (step down) regression analysis was carried out to assess the contribution of all the 14 independent variables towards explaining variation in extent of community participation of project and non-project tank users in tank management to select the minimum number of variables necessary to account for almost as much of the variance as it is accounted by the total set of independent variables. The increase in R^2 was tested for its significance at each step and stopped at step where the further increase in R^2 was not significant.

OBSERVATIONS AND ANALYSIS

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

Correlation of extent of community participation with the profile characteristics of tank users in tank management under project and non-project tank areas :

There will be significant relationship between extent of community participation of project and non-project tank users and their profile characteristics and both of these are dependent.

It is revealed from the Table 1 that, calculated 'r' values between education, farm size, farming experience, extension contact, empathy, training received, scientific orientation, and the extent of community participation of the project tank users in tank management were greater than table 'r' value at 0.05 level of probability. Whereas, the calculated 'r' value of the variables socio-political participation and decision making behaviour was greater than table 'r' value at 0.01 level of probability. Hence, null hypothesis was rejected and empirical hypothesis was accepted. Therefore, it can be concluded that there was a positive and significant relationship between extent of community participation of project tank users in tank management and the variables *viz.*, education, farming experience, socio-political participation, extension contact, empathy, training received, scientific orientation and decision making behaviour.

It is revealed from the Table 1 that calculated 'r' values between education, farm size, empathy, decision making behaviour and the extent of community participation of non-project tank users in tank management were greater than table 'r' value at 0.05 level of probability, whereas, the calculated 'r' values of the variables farming experience and extension contact were greater than table 'r' value at 0.01 level of probability. Therefore, it can be concluded that there was

a positive and significant relationship between the extent of community participation of non-project tank users in tank management and the variables *viz*., education, farming experience, extension contact, empathy and decision making behavior. Whereas, farm size is negatively and significantly related with extent of community participation. Hence, null hypothesis was rejected and empirical hypothesis was accepted incase of these variables.

On the other hand, it is witnessed from the Table 1 that, the calculated 'r' values of profile characteristics age, farm size, participation in extension methods, information seeking behavior, risk taking ability and marketing behaviour of project tank users and age, socio-political participation, participation in extension methods, information seeking behavior, training received, scientific orientation, risk taking ability and marketing behavior of non-project tank users are less than table 'r' value with their extent of community participation in tank management. Hence, null hypothesis was accepted. Therefore, it can be concluded that there was no significant relationship between extent of community participation of project and non-project tank users with regard to the above variables in tank management.

It was clear from the Table 1 that, there was a positive and significant relationship between education and extent of community participation of both project and non-project tank users. Higher the education more will be the interaction of individuals with all the members and increase the ability to understand the facts and analyze and interpret them in a proper way. Educated farmers will have more information seeking habit and better access to all communication sources. This phenomena may drive them to participate extensively as a community to take up tank management activities.

The formal schooling possessed by the farmer and the training received from any organisation on tank management definitely enhances the extent of community participation of tank users on tank management because the education acts as the bed rock and facilitate to synthesise comprehensively the external information into the given situation. These results were in conformity with the findings of Prasad (2004); Bhawanishanker *et al.* (2008); Chandran and Chackacherry (2008); Gupta *et al.* (2010) and Nanthakumaran and Palanisami (2010).

There was a significant and positive relationship between farming experience and extent of community participation of both project and non-project tank users. This trend may be due to the fact that, naturally more the farming experience higher would be the knowledge on the farming under tank irrigation system. Additional knowledge on tank based agriculture and water management could have been acquired as they are the practicing farmers from many decades back and during this period they might have been exposed to vast sources of information which might drove them to understand the importance of community participation in tank management. This conforms with the results of Chandran

Table 1 : Relationship of extent of community participation with the profile characteristics of project and non-project tank users in tank management (n=120)

Sr. No.	Variables	Project tank users Correlation co-efficient (r)	Non-project tank users Correlation co-efficient (r)
1.	Age	-0.107 NS	-0.124NS
2.	Education	0.317*	0.357*
3.	Farm size	0.114NS	-0.199*
4.	Farming experience	0.427*	0.379**
5.	Socio- political participation	0.189**	0.034NS
6.	Participation in extension methods	0.123NS	0.14NS
7.	Extension contact	0.245*	0.276**
8.	Information seeking behaviour	0.145NS	0.127NS
9.	Empathy	0.287*	0.299*
10.	Training received	0.379*	0.036NS
11.	Scientific orientation	0.427*	0.119NS
12.	Risk taking ability	0.023NS	0.178NS
13.	Decision making behaviour	0.245**	0.203*
14.	Marketing behaviour	0.054NS	0.129NS

* and ** indicate significant of values at P=0.05 and 0.01, respectively level of probability NS=Non-significant

and Chackacherry (2008) and Golyanaik (2008).

There was a positive and significant relationship between socio-political participation and extent of community participation of project tank users. The project tank users with high socio-political participation usually venture to become member of formal and informal institutions and concentrate more on activities of public life rather than orientation towards their self interest. The APCBTMP might have facilitated the tank users under its jurisdiction to involve directly/indirectly in decision making activity of social organizations. Therefore, the above trends were observed with respect to extent of relationship between socio-political and extent of community participation among the tank users and in this line similar finding were also observed by Prasad (2004).

The significant and positive relationship between extension contact and extent of community participation was observed in both the cases of project and non-project tank users. It is quite obvious that the direct or indirect interaction with officials of various line departments influenced them to apply the modern scientific technology in real time situation and it was more so incase of attending the management activities in the tank. These results were in conformity with the findings of Vidhyanand (2004) and Golyanaik (2008).

There was a positive and significant relationship between empathy and extent of community participation of both project and non-project tank users. Empathy is nothing but entering into the shoes of others. Higher level of empathy will lead to understand the other person's views and thoughts. It will help to improve more cooperation and collective actions. As tank based irrigated communities are generally small and isolated, all the farmers will have close relations to each other and exchange their ideas freely. This will lead to more participation of the community in managing their own resources.

There was a positive and significant relationship between training received and extent of community participation of project tank users. Training is an investment to upgrade the human resources. It brings change in knowledge, attitude, skill and perception of the tank users on importance of participation in tank management. Training provides refreezing of old behaviour and acquiring of new behaviour for application leading to their success in managing their resources as well as realizing the benefits of collective management. With more and more training farmers might have got better understanding of the process of participatory management of their irrigation resources. Hence, the above trend was observed. These results were in line with the findings of Prasad (2004) and Bhagyavathi *et al*. (2008).

There was a positive and significant relationship between scientific orientation and extent of community participation of project tank users. Tank irrigated farmers with higher scientific orientation were also aware of all the ill-effects of miss management of their irrigation resources. In mitigating many contingency aspects farmers might have been prompted to think and collect more scientific methods and information regarding better participatory management of their tank irrigation system. The APCBTMP project might have triggered the scientific temperament of the project tank users in the process of attending various tank management activities. This observation was in cognizance with the results of Chandran and Chackacherry (2008) and Ghosh *et al.* (2010).

There was apositive and significant relationship between decision making behaviour and extent of community participation of both project and non-project tank users. The decision making behaviour of tank users depends on the ability to form clear opinion and acting on them. The degree of forming clarity on such opinions depends on the extent of community participation in various activities. It is quite obvious that if a farmer is getting continuous guidance from the external personnel on tank management his extent of community participation on these practices will be high. As majority of the tank users are highly experienced and this experience definitely force them to weigh various options in attending the tank management activities.

Prediction of independent variables contribution for maximum variation in extent of community participation of project tank users in tank management :

The value of the co-efficient of multiple determination (R^2)as given in Table 2 indicated that the five independent variables (education, farming experience, extension contact, training received and scientific orientation) put together explained 68.28 per cent of variation in the dependent variable *i.e.* extent of

Table 2 : Multiple linear regression analysis of selected independent variables of project tank users on extent of community participation in tank management

No.	Variable	'b' value	SE	't' value
X_2	Education	1.2634**	0.0423	4.2345
X_4	Farming experience	0.7275**	0.0392	2.4342
X_7	Extension contact	2.4342**	0.0794	2.6421
X_{10}	Training received	5.6933**	0.0693	2.3834
X_{11}	Scientific orientation	3.4982**	0.2834	5.2814

R^2 = 0.6828 F value = 23.86

** indicates significance of value at P=0.01 level of probability

community participation of the project tank users.

The computed F-value and corresponding partial regression coefficient (b) values of these five variables were found significant at 0.01 level of probability. Hence the null hypothesis was rejected and empirical hypothesis was accepted for these five variables and *vice-versa* for the other nine variables.

The officials of public, private and non governmental organizations should focus their efforts on increasing the education levels of tank users by conducting maximum androgogical campaigns, adult literary missions, functional literacy programmes, etc., make use of experience of the farmers as the best valid input to inspire fellow farmers. Enabling farmers to access as many formal sources as possible to quench the thirst of their technical information with high priority. Trainings definitely support the farmers to acquire the new knowledge and latest need based skills to perform various tank management activities meticulously and diligently, hence the tank users should be trained on various new areas of tank management activities. Enough space maybe given to the farmers to deal with many sophisticated and local specific technologies for quick implementation for better tank management as their scientific orientation was quite high. They have to be given opportunity to apply the learnt new knowledge and skills by providing suitable infrastructure and key inputs for implementation.

Prediction of independent variables contribution for maximum variation in extent of community participation of non-project tank users in tank management :

The value of the coefficient of multiple determination (R^2) as given in Table 3 indicated that, three independent variables (education, farming experience and extension contact) put together explained 48.63 per cent of variation in the dependent variable *i.e.* extent of community participation of the non-project tank users.

The computed F-value and corresponding partial regression coefficient (b) values of these three variables were found significant at 0.01 level of probability. Hence the null hypothesis was rejected and empirical hypothesis was accepted for these three significant variables and *vice-versa* for the other 11 variables.

The Table 3 highlighted that the variables education, farming experience and extension contact were found to be contributing maximum variation towards the extent of community participation of non-project users in tank management. It could be inferred that steps may be initiated to improve the schooling of young folk to inculcate the spirit of applying water technologies as a community in general and tank management in particular. Experience definitely counts to participate emotionally and contribute effectively for better tank management. Experience is considered as the best teacher for any individual to initiate and apply new technologies. It is quite obvious that as the contacts of an individual increase it unfolds to a great extent his perception and understanding of contemporary issues. Hence, the farmers should be motivated to retrieve information by getting in contact with many formal and informal organizations.

Table 3 : Multiple linear regression analysis of selected independent variables of non-project tank users on extent of community participation in tank management

No.	Variable	'b' value	SE	't' value
X_2	Education	1.9343**	0.0934	3.7834
X_4	Farming experience	2.1832**	0.1272	3.3484
X_7	Extension contact	1.9434**	0.0934	3.3143

R^2 = 0.4863 F value = 23.86

** indicates significant of value at P= 0.01 level probability

Conclusion :

It was found that education, farming experience, extension contact, training received and scientific orientation were the major profile characteristics affecting project tank users extent of community participation in APCBTMP. Study also reveals that both project and non project tanks, steps may be initiated to identify major stakeholders or beneficiaries in the process of tank management by giving more preference to educated, experienced, more socio-politically active people by adopting improved tank based livelihoods and adoption of scientific agricultural practices to enhance agricultural productivity through tank users participation.

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