An Exploratory Study on Wasteland Development through Watershed Development Programmes in Tamil Nadu

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Introduction and Background

A number of programmes for development of wastelands and rainfed lands with watershed approach are proposed under implementation in the state of Tamil Nadu. Further these programmes are funded by central and state Governments and External funding agencies (DANIDA and JAPAN Aid). Wastelands and rainfed lands are being treated through Integrated Watershed Management Approach.

Watershed is a piece of land that drains rain water into a common valley and watersheds may vary from small extent to large areas that eventually constitute river basins. The experience in watershed programme done in earlier years all over the country has shown that development of watersheds not completed with in short period. Hence, the development of wastelands with watershed approach may extent from three to five years in different programmes. The first year may be spent in organising the community, imparting training, and planning. Development activities like soil and moisture conservation measures and planting activities are taken up in subsequent years. The higher-grade wastelands with assured rainfall will be used for cultivation of medicinal and aromatic plants and creating horticulture orchards. The medium grade wastelands, oil plants comprising paradise tree and Jatropha will be planted for producing edible and fuel oil. Bio-mass plantation like casuarina will help in generating electricity in marginal wastelands.

Tamil Nadu has an area of about 130 lakh hectares of land. Out of this area, 16.5 per cent is forest, 3.5 per cent is barren and 15.1 per cent is put to non-agricultural uses. Only 43.3 per cent is cultivated. Of the rest, 2.7 per cent is cultivable waste, 1.2 per cent is grazingland, 1.8 per cent is land under miscellaneous tree crops, 7.4 per cent is current fallow and 8.5 per cent is "other fallow land". Cultivable waste, current and other fallows account for about 18 per cent of the land (24 lakhs hectares) (Government of Tamil Nadu, 2003). These lands which can be cultivated, but are not actually cultivated for want of water and other sources. In addition, a large extent 40 lakh hectares is under single crop dry cultivation dependent purely on rain fall (Government of Tamil Nadu, 2003) .

Watershed Approach

The watershed is a continuous area whose run-off water drains at a common point, so it facilitates water harvesting and moisture conservation. Integrated watershed management focuses on combining improved farm practices with soil and water conservation and appropriate land use. Watershed approach refers to both type of farming, i.e., irrigated and rainfed and

widely differ in their approach, but the concept remains more or less the same. It also includes both arable and non-arable lands and therefore, needs equal emphasis in terms of improvement for maintaining ecological balance and sustainable development. Watershed projects initiated in different states have demonstrated higher monetary returns and overall improvement of the region (R.P. Singh, 1993) number of evaluation studies indicate that watershed concept is quite useful in improving soil moisture and reducing soil erosion. These projects have helped in increasing income and employment opportunities. Major shifts in cropping systems in favour of superior high value crops and overall ecological improvement have been observed. But, on the other hand, they have also generated controversy about their effectiveness in improving the overall socio-economic condition of the farmers. The evaluation studies (R.P. Singh, 1993) also indicate that despite such a good performance, the farmers on a large scale have not accepted these projects. Because, these projects still have some problems such as, lack of adequate information about the local resources and requirements of the people of the area for proper planning of the project. Lack of people's participation, subsidies, inadequate arrangement of modern equipments and inputs, lack of group action, poor marketing and processing of new products, inadequate price incentive, lack of timely and adequate credit facilities and proper selection of technology suitable to soil type and local needs.

In this context, the concept of integrated treatment of all types of land on watershed basis to improve the moisture retention capacity of soil and to minimise the soil erosion by effectively checking the blow of excess run-off rain water is important, particularly in rainfed areas. Therefore, specific objectives of the watershed programme include promotion of soil and moisture conservation, optimal use of land and water resources. It is in this context the present study concentrates wasteland development watershed programmes in Tamil Nadu.

Components of works in the watershed

1. Treating of the land with conservation measures.
2. Introduction of an improved package of crop production.
3. Harvesting of rainwater and safe disposal of surface run-off through field channel.
4. Alternative land use systems like silvipasture, agro-forestry and agro-horticulture to provide land cover and fuel, fodder, and agricultural products.
5. To improve the socio-economic conditions of farmers, through agriculture and the agricultural related occupations and finally restore ecological balance.

Measures adopted in the watershed areas

The measures like productive Agronomical and Engineering area implemented under soil and *in situ* -moisture conservations. Under productive agronomical measures, the farm forestry is introduced. Farm forestry aims at raising tree crops in the ownership (patta) lands of the farmers. The spices cultivated are cashew and casuarina in the rainfed areas.

The Engineering measures include eight treatments: They are:

(i) contour bunding
(ii) insitu – moisture conservation
(iii) disc – ploughing
(iv) tank – silt application
(v) Gully control structures

(vi) Ground water extraction
(vii) water harvesting structure
(viii) pipe laying.

As far as Tamil Nadu State is concerned Watershed Development Programme (WSDP) is executed by three departments viz., Agricultural Engineering, Agriculture and Forestry, in each district. When the agricultural engineering department is the implementing agency, necessary technical assistance of various line departments, like Agriculture, Horticulture, Forestry, Animal husbandry, Revenue, Public works, co-operation, sericulture and Department of Statistics are utilised. Similarly, the activities of the agricultural department include floriculture, horticulture, bio-pesticides, bio-fertilizer and vegetable crops. The forest department activities include social forestry. The main aim of the social forestry is to develop plantations of a particular species to meet the requirements of fuel, fodder and timber at an economic cost. In this programme, major concentration is given for eucalyptus tree, which supplies raw materials for paper and rayan mills. The project expenditure is fully met by the Government of India through 90 percent central assistance. The village farmers' committee is formed to maintain and manage the assets created in the project. The works proposed in the project are to be completed over a period of four years (2002 – 03 to 2005-06).

Methodology

The present study is based on primary and secondary sources of data. The main purpose of the present study is to estimate the changes that are taking place on wastelands in proportion to total geographical area in the selected 12 districts in Tamil Nadu. As per the wastelands map prepared by National Remote Sensing Agency (NRSA) it is to be understood that about 12 districts were covered for assessment of wastelands through satellite data for the year 1985. The same districts were covered by the year 2000, in order to assess to the changes that have taken place on the components of wastelands for these 12 districts in Tamil Nadu. A total of 180 respondents are selected from the list of beneficiaries available with the District Rural Development Agency, Vellore and Cuddalore, by choosing 3 select departments in the project area. The distribution of respondents from the selected departments.

Results and Discussion

The coverage of various types of watershed development programmes (DPAP, NWDPRA, IWDP, CWDP and TAP) among the districts in Tamil Nadu state. Among the five types of Watershed Development programmes, 3 watershed programmes viz., Drought Prone Area, Programme (DPAP), Integrated Wasteland Development Programme (IWDP) and National Watershed Development Project for Rainfed Areas (NWDPRA), are proposed under the centrally assisted programme in the state. The other two watershed programmes viz., Comprehensive Watershed Development Programme (CWDP) and Tree Afforestation Project (implemented by forest department) are to be covered under externally aided (sponsored by DANIDA, Japan Aid and State Government). Among the five types of watershed programmes, the National Watershed Development Project for Rainfed Area (NWDPRA) is alone implemented in 763 watersheds spread over 23 districts in Tamil Nadu, except Thanjavur, Nagapattinam, Tiruvarur, Chennai, The Nilgiris, Kanyakumari and Krishnagiri.

The National Watershed Project in Rainfed Areas is a five year project starting from 2002-03 to 2006 – 2007. It is one of the major components of macro management mode. The approved pattern of assistance for the scheme is in the ratio of 90:10 for the centre and state, respectively. The Central assistance to the State will be in the ratio of 80 per cent grant and 20 per cent loan. The scheme is implemented in 763 watershed areas spread over 23 districts, having less than 30 per cent assured means of irrigation in arable lands and having slopes less than 8 per cent.

The executing agencies will spent unit cost of Rs.4500 per hectare for acre beneficiaries, in the form of kind ie., PVC Pipe laying, checkdam and so on. Departments like Agriculture, Agricultural Engineering, Forest and NGOs are to be involved as executing agencies.

The target and achievement made under this programme since inceptions (2002-03) are detailed below.

Table – 1: Target and Achievement of the NWDPRA programme

S. No.	Year	Physical (Area treated in hac.)		Financial (Rs. in lakhs)		No. of Beneficiaries
		Target	**Achievement**	**Allocation**	**Expenditure**	
1.	2002-03	31268	28513 (91.16)	1407.067	1284.350 (91.28)	138945
2.	2003-04	33888	31229 (92.15)	1525.000	1405.308 (92.15)	90666
3.	2004-05	46424	33632 (72.46)	2089.063	1513.445 (72.45)	115473
4.	2005-06	38378	28445 (70.12)	1727.000	1280.12 (70.28)	NA

Source: Agriculture Department, Policy note on Agriculture 2002-03, Government of Tamil Nadu, Chennai, 2003.

The results of NWDPRA programmes in terms of physical area treated and expenditure incurred for the last 4 years ie., 2002-03 to 2005 – 06 in Tamil Nadu state are presented. The physical watershed treated area achieved to the target fixed declines from 91.16 per cent to 70.12 per cent between 2002-03 and 2005-06. Similarly, expenditure incurred to the allocation of financial resources, has declined from 91.28 per cent to 70.28 per cent between 2002-03 and 2005-06. It is inferred from the results that there is a decline in the programme implementation in terms of physical area treated as well as the actual expenditure incurred. It is interesting fact to note that the actual expenditure share is 70 per cent to the total allocation of funds, thereby indicating that much of funds allocated are shown under 'unspent balance'. It arises mainly due to various technical and administrative problems. This has to be reduced drastically by identifying these problems and early completion of these watershed projects.

Table – 2: Distribution of Respondents in Relation to ecuting Departments

S. No.	Departments	Landless labourers	SmExall farmers	Medium farmers	Total
I	Vellore				
	Agricultural Engineering Department	10 (33.33)	10 (33.33)	10 (33.34)	30 (100)
	Agriculture Department	10 (33.33)	10 (33.33)	10 (33.34)	30 (100)
	Forest Department	10 (33.33)	10 (33.33)	10 (33.34)	30 (100)
	Total	30 (100)	30 (100)	30 (100)	90
II	Cuddalore				
	Agricultural Engineering Department	10 (33.33)	10 (33.33)	10 (33.34)	30 (100)
	Agriculture Department	10 (33.33)	10 (33.33)	10 (33.34)	30 (100)
	Forest Department	10 (33.33)	10 (33.33)	10 (33.34)	30 (100)
	Total	30 (100)	30 (100)	30 (100)	90 (180)

Source: Computed. Note: Figures in parentheses indicate percentage to the column total.

It is seen from the results in Table–2 that out of the 180 farmers, about 60 farmers are covered in each of executing agency, viz., Agricultural Engineering Department, Agriculture Department and Forest Department, by covering the sample districts of Vellore and Cuddalore.

Table -3: Respondents' Awareness of the objectives of Watershed Development Programme

Type of respondents	Conservation of water / rainfed agriculture and increase in water level	Soil and water conservation	Conservation of check dam & increase in yield programmes	Supply of fuel wood	Use of barren land	Increase in rainfall	Total	χ^2 value
Landless labourers	--	--	--	35 (58.33)	15 (25.00)	10 (16.67)	60 (100)	52.18*
Small farmers	16 (26.67)	14 (23.33)	11 (18.33)	8 (13.33)	4 (6.67)	7 (11.67)	60 (100)	
Medium farmers	14 (23.33)	12 (20.00)	7 (11.67)	13 (21.67)	10 (16.17)	4 (6.67)	60 (100)	
Total	30 (16.67)	26 (14.44)	18 (10.00)	56 (31.11)	29 (16.11)	21 (11.67)	180 (100)	

Source: Computed

Figures in parentheses indicate percentage to the row total.

* Significance of χ^2 value at 5 per cent level

A study of data in Table-3 indicates the respondents' awareness of the objective of watershed development programme. In general, all respondents are aware of the watershed development programme, but they differ in respect of the level of their awareness. It could be noted that out of the 180 respondents, 16 per cent understand the objectives of watershed development programme in terms of conservation of water resource, rainfed agricultural practice and increase in water level. However, there is not much opinion difference of this issue in between small and medium farmers.

Out of the 180 respondents, 14 per cent have indicated the objectives of watershed development programme in terms of soil and water conservation practices and 10 per cent as conservation of check dams along with increase in yield per acre of agriculture production. About 31 per cent of respondents have specified the supply of firewood as the aim of this

programme, 16 per cent of the respondents said that the use of barren land is the aim of this programme and the remaining 11 per cent for implementation to increase the rainfall.

It is an interesting point to note that about 17 per cent of the medium farmers have expressed the objectives of WSDP is to bring cultivation of barren lands. It is clear from the perception of these farmers that they earlier cultivated a part of the land that too one crop due to non-availability of water before WSDP. Now with copious supply of water due to this programme, they bring more land including barren under cultivation, besides cultivating more than once. Therefore, the impact of WSDP towards barren land cultivation is clearly seen in the case of medium farmers.

It could be seen clearly from the above discussion that though all the respondents are aware of watershed development programme, the small and medium farmers are quite familiar with the overall objectives as compared to the landless labourers. The ability of re-charging of ground water, land leveling, construction of farm ponds, pasture development, gully plugging, supply of fuel food, use of barren land, increase in rainfall, are expressed by these farmers. It is to be noted that the objectives of watershed development programme in terms of land related activities are not mentioned by the landless labourers and hence they are not aware of these issues.

The χ^2 analysis is adopted to find out the association between the types of respondents and awareness of the objectives of WSDP. The calculated value of χ^2 is 52.18, which is found to be statistically significant at χ^2 table with value at 5 per cent level. It means that there is a significant association between the types of respondents and objectives of WSDP. In other wards, when the status of respondents is lower, the awareness about the objectives of WSDP increases. It is an interesting fact that the land related activities viz., conservation of water / rainfed agriculture, soil and water conservation and conservation of check dams are specifically mentioned with high intensity level by the small farmers, as compared to medium farmers. On the other hand, other than agriculture related activities, viz., supply of fuel wood, use of barren land and increase in rainfall, are highly responded by the landless agriculture labourers as compared to small and medium farmers. Therefore, one could see a significant association between the status of respondents and the objectives of WSDP in corresponding to the sources of utility attained by the types of respondents.

Table -4: Respondents' sources of Knowledge of Watershed Development Programme

Type of respondents	Fellow Respondents / local leaders	Block Officials and DRDA Officials	Watershed Development Agency and Agricultural Extension Officer	Poster	Film	Total	χ^2 value
Landless labourers	42 (70.00)	8 (13.33)	10 (16.67)	_	_	60 (100)	31.09*
Small farmers	22 (36.67)	19 (31.67)	14 (23.33)	_	5 (8.33)	60 (100)	
Medium farmers	14 (23.33)	17 (28.33)	18 (30.00)	4 (6.67)	7 (11.67)	60 (100)	
Total	78 (43.33)	44 (24.44)	42 (23.34)	4 (2.22)	12 (16.67)	180 (100)	

Source: Computed

Figures in parentheses indicate percentage to the row total

*Significance of χ^2 value at 5 per cent level

Data presented in Table-4 indicate respondents' sources of knowledge about watershed development programme. It is observed that out of 180 respondents, 43 per cent of them are aware of watershed development programme through their fellow farmers and local leaders. This source of knowledge is observed among the majority of the landless labourers (70 %) than others. Out of the total respondents, 24 per cent of them are familiar with watershed development programme through interaction with the block development and DRDA officials. The small farmers are the major receivers of knowledge from this source. This study shows that another 23 per cent of them are aware of the activities of watershed development programme through watershed development and agricultural extension agencies. Moreover, 16 per cent of the respondents are familiar with watershed development programme through film and 2 per cent of them are aware of watershed development programme through posters. The small and medium farmers have become quite familiar with watershed development programme through various sources rather than one or two sources. The role of poster and film mass media has a limited role in propagation of the knowledge of the watershed development programme than other sources.

The χ^2 analysis is adopted to find out the association between the type of respondents and sources of knowledge of WSDP. The calculated value of χ^2 is 31.09, which is found to be statistically significant at χ^2 table value at 5per cent level. It means that there is a significant association between the types of respondents and knowledge of WSDP. In other words, when the status of types of respondents is lower, the sources of knowledge in terms of officials of the WSD agency increase. The fact to note that knowledge is related to WSDP activities, viz., fellow respondents/ local leaders, block officials and District Rural Development Area (DRDA) officials, officials of the watershed development agency and agricultural extension officer, specifically mentioned with high intensity level by the small farmers, and the landless labourers. On the other hand, the media related activities, viz., poster and film are highly responded by the medium farmers as compared to land less labourers and small farmers. This is mainly attributed to high literacy level prevailing among the medium farmers, who are strongly influenced by the mass media communications. On the other hand, the concentration of illiteracy is higher in the case of landless labour and small farmer, who have been more influenced by the officials of WSD agencies. The effect of mass media influence is nil in their cases.

Table – 5: Respondents Awareness about the meeting

Type of respondents	Yes	No	Total	χ^2
Landless labourers	36 (60.00)	24 (40.00)	60 (100)	9.73*
Small farmers	45 (75.00)	15 (25.00)	60 (100)	
Medium farmers	51 (85.00)	9 (15.00)	60 (100)	
Total	132 (73.33)	48 (26.67)	180 (100)	

Source: Computed
Figures in parentheses indicate percentage to the row total
* Significance of χ^2 value at 5 per cent level

Table-5 indicates whenever a development programme is launched; there should be a council or an organisation to help and guide the people and to create the awareness about the

programme. If there is no such organisation, it is not possible for the people of the area to know about the programme. Wherever this watershed programme is launched, the concerned department is conducting a periodical meeting with the help of their own officials or the voluntary organisations. Out of the 180 respondents, 73 per cent have awareness about the meeting. Out of these, 51 (85%) respondents are medium farmers, 45 (75%) respondents are small farmers and 36 (60%) respondents are landless labourers. However, about one fourth of the respondents 48 (26.67%) do not have any awareness about the meeting, in which; landless labourers formed 40 per cent, that is 24 (40%) respondents, followed by 15 (25%) small farmers and 9 (15%) medium farmers. The people who do not have awareness about the meeting are illiterates. The illiterates particularly the landless labourers are not interested to know about the meeting. A question on why they are not interested is asked? They reply that whatever decision is taken in the meeting, they accept it and hence they don't want to know about the proceedings of the meeting. It is mainly due to their illiteracy and low social status in the society.

The χ^2 analysis is adopted to find out the association between the types of respondents and awareness about the WSDP meeting. The calculated value of χ^2 is 9.73, which is found to be statistically significant at χ^2 table value at 5 per cent level. It means that there is a significant association between the types of respondents and WSDP meeting. In other words, when the status of respondents is higher, the awareness about the meeting by the department officials and the voluntary organization also increases. The fact to note is that the conduct of meeting by the officials is specifically mentioned with high intensity level by the medium farmers, and the small farmers. This is mainly due to high literacy and social status by the medium and small farmers in the rural areas. Another interesting observation is that the conduct of any official activities including meeting has always been communicated only to the top level people in terms of education and socio-economic condition in rural areas. It has not been related to the low status and illiterate group.

Table -6: Respondents Awareness about the Decision-Making

Category	Landless Labourers	Small Farmers	Medium Farmers	Total	χ^2 value
Decided by the village leader	8 (13.33)	6 (10.00)	8 (13.33)	22 (12.22)	
Decided in the village meeting	14 (23.33)	10 (16.67)	22 (36.67)	46 (25.56)	
Joint decision of officials and Panchayats	38 (63.34)	44 (73.33)	30 (50.00)	112 (62.22)	7.87*
No idea	--	--	--	--	
Total	60 (100)	60 (100)	60 (100)	180 (100)	

Source: Computed

Figures in parentheses indicate percentage to the column total

*Significance of χ^2 value at 5 per cent level

It is seen from the results in Table -6, that out of the 180 respondents, about 112 respondents (62.22%) have indicated that the decision about the selection of watershed programme components, sites and spices by the joint decision between the officials of various executing departments and the village panchayats. About 26 per cent of them have explained the decision-making on the implementation of watershed through the village meeting. The balance 12.22 per cent of the decision is done by the village leaders. A majority of respondents

(irrespective of the size of land holders) have specified that the decisions about the watershed implementation are done by the joint meetings of officials of various executing agencies and village people.

The χ^2 analysis is adopted to find out the association between the type of respondents and awareness about decision-making. The calculated value of χ^2 is 7.87, which is found to be statistically significant at χ^2 table value at 5 per cent level. It means that there is a significant association between the type of respondents and decision-making about the implementation of WSDP. In other words, when the status of respondents is lower, the awareness about the WSDP decision-making also increases. It is an interesting fact to note that the decision about the implementation of WSDP by the officials and panchayat leaders is shared maximum with respective type of respondents. This is because of the fact that the department officials suggest various activities and their finance allocation involved in WSDP. However, their suitability and location are to be suggested only by the panchayat leaders. Therefore, it is the meeting place in which these groups can take elaborate discussion and find the solutions for proper implementation of WSDP.

Data presented in Table-7, indicate a farmwise respondents awareness of watershed development action plan and survey. It is noted that 66 per cent of the respondents have awareness of watershed action plan and the rest do not have any awareness. Though the majority of the respondents have knowledge of this action plan, the small farmers lag behind the medium farmers. There is a shortfall of opinion (52%) among the respondents as from the survey conducted for the preparation of action plan.

The analysis of respondents' view on information through survey conducted in respect of watershed action plan reveals the following results. This analysis covers over 80 respondents who are aware of conducting survey for preparation of action plan. It is observed that among the 80 respondents, about 30 per cent of them have mentioned the collection of soil sample and land survey in their fields. About 25 percent of the farmers refer to the cropping pattern and livestock possession. Moreover, 45 per cent of the respondents are familiar with various types of information through action plan survey such as collection of soil sample, land use pattern, cropping pattern, livestock, besides the water levels measured in the wells of the village.

Table -7: Respondents Awareness of the Watershed Development Action Plan and Surveys

Type of Respondents	Knowledge of action plan		Survey conducted for preparation of action plan		Information obtained through survey				Grand Total
	Yes	No	Yes	No	Collection of soil sample / land survey	Cropping pattern and livestock	All	Total	
Landless labourers	--	--	--	--	--	--	--	--	--
Small farmers	38 (63.33)	22 (36.67)	35 (58.33)	25 (41.67)	15 (39.47)	8 (21.05)	15 (39.47)	38 (100)	60
Medium farmers	42 (70.00)	18 (30.00)	33 (55.00)	27 (45.00)	9 (21.43)	12 (28.57)	21 (15.00)	42 (100)	60
Total	80 (66.67)	40 (33.33)	68 (56.67)	52 (43.33)	24 (30.00)	20 (25.00)	36 (45.00)	80 (100)	120

Source : Computed

Figures in parentheses indicate percentage to the row total.

Note : The landless labourers are not included to assess wasteland development programme action plan and surveys, because of the fact that these items are necessary only for land holders i.e., small farmers and medium

farmers, who are covered under watershed development programme executed by the Agricultural Engineering and Agriculture Departments.

In general, medium farmers occupy the first position at 42 respondents; with respect to awareness of detailing more information through action plan survey.

It is seen clearly from the above discussion that more than three fourths of the respondents have a better knowledge about the action plan. However, some of them do not know anything about the survey conducted in respect of preparation of action plan.

Table -8: Respondent's opinion about the choice of sites

Type of Respondents	Appropriate	Not Appropriate	No Idea	Total	χ^2 value
Landless labourers	10 (16.67)	8 (13.33)	42 (70.00)	60 (100)	6.00^{NS}
Small farmers	9 (15.00)	6 (10.00)	45 (75.00)	60 (100)	
Medium farmers	8 (13.33)	5 (8.33)	47 (78.34)	60 (100)	
Total	27 (15.00)	19 (10.56)	134 (74.44)	180 (100)	

Source: Computed

Figures in parentheses indicate percentage to the row total.

Table-8 indicates normally the community forestry programme implemented in the common property lands to help the rural poor in the particular village. The main aim of the programme is to utilise the unused land and to enhance the economy of the rural poor. Similarly, the projects included under Agricultural Engineering department are check dams, tanks, fishponds, etc., where the proper selection of site beneficial to weaker sections is necessary.

The site is selected by the officials of the concerned departments with the help of the district authorities. This information should at least be known to the people of the village. A question whether the selection of site is appropriate or not appropriate is given to them. Out of the 180 respondents, 134 (74.44%) have mentioned no idea about this site selection, among whom almost 47 (78.34 %) are medium farmers, 45 (75%) are small farmers and 42 (70%) are landless labourers. Only 19 (10%) said that it is not appropriate. It is quite disheartening to note that almost 75 per cent of the respondents view that they have no idea. Though the programme is implemented in the district, many of respondents are not aware of the site selection. This is mainly due to the selection of site for the project is highly technical in nature. Therefore, before spotting a project in a particular place, it is the responsibilities of the department officials to look into various logistic and technical features. In fact in most of the areas the local people are not at all involved for their purpose.

The χ^2 analysis is adopted to find out the association between the type of respondents and opinion about the choice of sites. The calculated value of χ^2 is 6.00, which is found to be statistically not significant as χ^2 table value at 5 per cent level. It shows that there is no association between the type of respondents and opinion about the choice of sites. In other words, the choice of sites irrespective of type of respondents is more or less similar. In other words, many of the respondents irrespective of the status have indicated no idea for selection of sites of WSDP projects.

Conclusion

It is clear from the results the perceptions relating to effectiveness of NWDPRA among the beneficiaries covered under various departments such as agriculture, agricultural engineering and social forestry. Though all the respondents are aware of watershed development programme, the small and medium farmers are quite familiar with the overall objectives as compared to the landless labourers. The ability of re-charging of ground water, land leveling, construction of farm ponds, pasture development, gully plugging, supply of fuel food, use of barren land, increase in rainfall, are expressed by these farmers. It is to be noted that the objectives of watershed development programme in terms of land related activities are not mentioned by the landless labourers and hence they are not aware of these issues.

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