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Evaluation of Watershed Activities and People's Participation in Mysore District of Karnataka

Agriculture

KEYWORDS: Conservation structures; Forest plantation; Horticulture plants; Focus group discussions; Peoples participation; Sustenance of livelihoods;

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ABSTRACT

The Govt. of India, initiated watershed programs with a mission to conserve the precious soil and water natural resources by using technologies, by working with the people,. One such watershed in Mysore district was selected for evaluation under Govt. funding during 2011-12. The study was conducted with the objectives of assessing the extent of soil and water conservation physical structures were achieved against the set target by the watershed Department, finding the status of forest and horticulture plantations survivability and finding nof extent of people's involvement in the watershed activities. The study found that though the watershed Dept., Department had achieved the progress with respect to achieving the set target of completing the physical structures 9bulders, check dams, ponds, bundling etc.) of soil and conservation, the utility of these structures by the farmers is less than the expected. Regarding the forestry and horticulture plants, survivability in the watershed area was 70% and 80% respectively, which required protection and maintenance through people's participation. The extent of people involvement, in the watershed programs was low (64%), as they were not fully motivated, to have sense of belonging and owning it and owe to preserve and undertake developmental activities with Govt., Private and NGOs; collaboration. This requires, the human resource developmental initiatives of capacity building activities involving all the stake holders, to reap the fruits of the watershed activities to the people and sustainable development and restoring the ecology.

The Mysore district is under Southern Dry Zone (Zone-6) in South Karnataka. It comprises of seven taluks viz., Heggadadevana Kote, Hunsur, K.R Nagar, Mysore, Nanjangud, Periyapatna and T.Narasipura. Ten watersheds located in three taluks of Mysore district under Hariyali-3 of DPAP were selected for mid-term evaluation, for the year 2008 and 2009 was evaluated during the year 2011-12, by Scientists of UAS Bangalore. Under this, the Watershed department had implemented soil and water conservation, greening of land area by planting of Horticulture and Forest plants through watershed farmers associations. The farmers had adopted some of the climate resilient technologies to cope with the changed climatic conditions. Ten Watersheds have been identified covering a geographical area of 6094.79 ha. Total land area taken for treatment consisted of 5000 ha. comprising of Government, Private and Community lands (Annexure). The activities were implemented in collaboration with Agriculture, Horticulture and Forest Departments of GoK. Works executed by the Watershed department in association with stake holders considering the adaphic, climatic conditions are: (i) Soil and water conservation measures (Contour/field bunds, boulder checks, Nala bund, check dams works, etc.), (ii) Land Greening (Planting Mango grafts and forest seedling like Teak, Silver, Honge, etc.). The Watershed Department had asked the UAS (B) representing the authors of this article as team leaders to evaluate the watershed activities. Thus, the study was conducted during 2010-11 in Mysore district with the objectives to find out the soil and water conservation measures undertaken; to assess the survivability of Horticulture and Forest plants and to find out the extent of people's involvement in watershed activities.

METHODOLOGY

Location of the study, it was conducted in Mysore district. The 10 villages in which micro - watershed activities are carried out were taken for the evaluation was shown in Table 1. The methods adopted were recording data, physical verification, interviewing the stake holders and institutional representatives. A total of 140 respondents were interviewed in the year 2012. Proportionate sampling method was adopted to select the respondents randomly and the opinion was elicited using pre- tested and structured format.

Table 1. Sample size

Sl. no.	Name of the watershed	Taluks	SC	ST	General	Total	Sample size
1	Dhanagally	Mysore	65	12	73	150	15
2	Udboor	Mysore	42	118	57	217	22
3	K.Hemmanahalli	Mysore	14	68	39	121	12
4	Koorgallu	Periyapatana	28	20	24	72	8
5	Doddabyalalu	Periyapatana	30	0	62	92	9
6	Ayathnahalli	Periayapatna	30	0	71	101	10
7	Doddabeechanahally	Hunsur	84	24	43	151	15
8	S. Maidananhally	Hunsur	69	18	67	154	16
9	Hunsegala	Hunsur	62	08	49	119	12
10	Singaramaranahalli	Hunsur	102	54	43	199	21
	Total		526	322	528	1376	140

N=140

The study was conducted with three objectives. The first objective, soil and water management variable was measured through physical observation, verifying the progress reports and records presented by the Watershed department. Focus group discussions were also held to seek their opinion, against target v/s achievement. The second objective, extent of greening of land area by planting horticulture and forest seedlings and their survivability was measured by conducting the field visits, taking photographic view of growth of crop stand. The survival percentage was calculated to draw the inference. The third objective, involvement of people was measured by adopting its relevant items. (Neeta khandelwal et al, 2007), which consist of 15 statements with a three point continuum of "High", "Medium" and Low", score of 3, 2, and 1 was awarded respectively. The maximum score was 45 and the minimum was 15. The score >30 was considered as high, score range 20-30 as medium and < 20 as low involvement. And the opinion of the stake holders was sought and quantified. The focus group discussions were held with respondents, the opinions was recorded in structured format to supplement the information and for interpreting data.

RESULTS AND DISCUSSION

To find out the soil and water conservation measures undertaken: The major works carried out were Loose Boulder checks, Check dams, De-silting Structures, Diversion Channels, Nala bund, Recharge Pit, Contour bunding, Farm ponds. There are 8 soil and water conservation measures undertaken by the Department. The targets set by the Department were achieved satisfactorily as per the norms set by expert committee was depicted in Table 2.

Table 2. Soil and water conservation works completed

Activities	Target		Achievement	
	Numbers	ha	Numbers	ha
Loose Boulder Checks	86	-	86	-
Check Dams	11	-	10	-
De-silting Structures	4	1.0	4	1.0
Diversion Channels (RMT)	2000	-	2000	-
Nala Bund	1	-	1	-
Recharge Pit	18	-	18	-
Contour bunding	-	1247.83	-	1247.0
Farm Pond	28	-	28	-

The above physical structures were found functional, the water stored, conserved was used for protective irrigation to the Ragi, Maize crops and also for filling ponds for drinking water for animals and raising Tobacco and Vegetables nurseries during pre-monsoon.

To assess the survivability of Horticulture and Forest plants: The Mango (var. Alphanso) grafts raised under the supervision of the technical staff Department of Horticulture were distributed to beneficiaries as per Table 3. A total of 8361 grafts were planted and the survival rate (81%) as per the field observations, and it was satisfactory. The mortality was observed to the small extent (<20%), this is mainly due to damages caused to grafts at the time of sowing and inter cultivation practices carried out for agriculture crops and also by browsing animals etc, but attempts were also made to replace them with the new ones. The crop stand was good.

Table 3. Horticulture: Mango grafts, supplied and their survivability (N=140)

Sl. No.	Watershed	Taluk	Area proposed (ha)	Area covered (ha)	No. of beneficiaries	Mango (var. Alphanso)		
						Supplied	Survived	Survival (%)
1	Dhanagally	Mysore	26.66	6.66	45	659	550	83.46
2	Udboor	Mysore	6.60	5.33	23	527	386	73.24
3	K.Hemmanahally	Mysore	6.59	6.59	13	659	525	79.67
4	Koorgallu	Periyapatana	40.00	20.36	68	809	650	80.35
5	Doddabyalalu	Periyapatana	26.70	6.70	35	670	540	80.59
6	Ayathnahalli	Periyapatana	33.32	33.00	70	832	690	82.93
7	Doddabeechanahally	Hunsur	12.05	12.05	26	1205	970	80.49
8	S. Maidananhalli	Hunsur	40.00	40.00	114	1000	750	75.00
9	Hunsegala	Hunsur	10.00	10.00	16	1000	845	84.50
10	Singarmaranahalli	Hunsur	10.00	10.00	14	1000	830	83.00
	Total		211.92	150.69	424	8361	6736	80.56

Further, it is evident from the Table 4 that the various forest seedlings were distributed to 255 farmers; they are Teak (*Tectona grandis,* 10455 nos), Neem (*Azadirachta indica,* 685 nos), Pongamia, (*Pongamia pinneta*, 1124 nos) and Casuarina (*Casuarina equisitifolia,* 2242 nos). The total seedlings supplied was 14506, out of this, 10122 were survived which constitutes overall survival was more than 70 per cent (Fig 1). This implies that the survival rate in all the tree species was maintained with adequate protection against threats. The field observation also revealed that the plants were healthy and crop stand was good. Planting was done all along the farm bunds (revenue lands), The tree species were planted with spacing of 10 m apart. These seedlings were obtained from Hilavala, K.R. Nagar and Dharmapura forest nurseries of Mysore district.

Table 4. Forest seedlings planted and survival rate (N=140)

Sl.	Watershed	Taluk	Teak		Neem		Pongamia,		Casuarina		Over All Total		
			Supplied	Survived	Supplied	Survived	Supplied	Survived	Supplied	Survived	Supplied	Survived	Survival(%)
1	Dhanagally	Mysore	1300	1000	165	85	200	125	-	-	1665	1210	72.67
2	Udboor	Mysore	1345	1025	120	60	200	130	-	-	1665	1215	72.97
3	K.Hemmanahally	Mysore	1260	756	200	135	175	110			1635	1001	61.22
4	Koorgallu	Periyapatana	840	700	-	-	100	80	500	300	1440	1080	75.00
5	Doddabyalalu	Periyapatana	800	700	-	-	149	75	300	150	1249	925	74.06
6	Ayathnahalli	Periyapatana	1000	550	-	-	-	-	-	-	1000	550	55.00
7	Doddabeechanahally	Hunsur	900	800	200	80	300	200	-	-	1400	1080	77.14
8	S. Maidananhally	Hunsur	1702	1400	-	-	-	-	-	-	1702	1400	82.26
9	Hunsegala	Hunsur	608	355	-	-	-	-	742	446	1350	811	59.33
10	Singarmaranahalli	Hunsur	700	420	-	-	-	-	700	430	1400	850	60.71
	Total		10455	7706	685	360	1124	720	2242	1326	14506	10122	69.78
	Survival (%)			73.71		52.55		64.06		59.14			

To find out the extent of people's involvement in watershed activities: The data in Table 5 indicates that the money contributed by the farmers share was less compared to an amount sanctioned by Government. However, the farmers' involvement regarding physicals and other resources sharing was found to be low (Fig 2).

Table 5. Development fund and stakeholders' share for different micro watersheds (N=140)

Sl. No.	Watershed	Development fund (Rs in lakh)	Stakeholders share (Rs. In lakh)
1	Dhanagally	13.50	0.52382
2	Udboor	13.50	0.43414
3	K.Hemmanahally	13.50	0.58800
4	Koorgallu	13.50	0.56430
5	Doddabyalalu	13.50	0.57100
6	Ayathnahalli	13.50	0.51542
7	Doddabeechanahally	13.50	0.43410
8	S. Maidananhally	13.50	0.40860
9	Hunsegala	13.50	0.30263
10	Singaramaranahalli	13.50	0.33605
	Total	135.00	4.67806
	% of contribution by watershed associations		3.45

The Table 6 implies that the majority of the farmers (>50%) involvement was less in planning, execution and follow up stages of watershed activities. The reason could be that, the activities might have been imposed in the farmers' lands without pursuing the significance of watershed activities. Further, the immediate benefits from watershed activities not accrued might have disappointed to them as the results could be realized in long run. Mean while, the watershed department could have demonstrated the visible results of watershed activities (recharged open wells bore wells, crop sustenance during long dry spell because of soil conservation measures etc.), should have been demonstrated to the farmers and given wide publicity in the media so that farmers become aware and appreciate the significance. This kind of initiates would create an interest for involvement in protecting, maintaining and making use of structures and facilities created for their benefit.

Table 6. Involvement of respondents in the watershed activities (N=140)

Sl. no.	Items (Activity)	Low		Medium		High	
		No	%	No	%	No	%
A.	**Planning**						
1	Motivating other members to attend the watershed activities	60	42.86	50	35.71	30	21.43
2	Organizing preliminary meeting of the programs	80	57.14	40	28.57	20	14.29
3	Preparing general plans to undertake watershed activities	65	46.43	55	39.28	20	14.29
4	Identification of site and enterprises for watershed	68	48.57	56	40.00	16	11.43
5	Estimation of cost and benefits	72	51.43	40	28.57	28	20.00
B.	**Execution**						
6	Involve in undertaking advertisement and publicity of watershed activities	61	43.57	60	42.86	19	13.57
7	Fixing date, time and venue for watershed meetings	75	53.57	33	23.57	32	22.86
8	Deciding the watershed activities and distribution of works among the members	72	51.43	30	21.43	38	27.14
9	Distribution of inputs and other benefits of the program to the members	81	57.86	49	35.00	10	7.14
10	Sharing of land preparation activities	85	60.71	25	17.86	30	21.43
11	Involvement in decisions making and their implementation	90	64.29	35	25.00	15	10.71
C.	**Fellow up**						
12	Attending maintenance works of watershed activities	60	42.86	70	50.00	10	7.14
13	Giving collective feedback to the Department for rectification.	75	53.58	64	45.71	1	0.71
14	Undertaking initiative for maintenance of works	85	60.71	35	25.00	20	14.29
15	Encouraging the neighbors to adopt the technologies and giving the publicity	90	64.29	30	21.43	20	14.29

CONCLUSION

The target was achieved with respect soil and water conservation works by the Watershed department. The physical structures founds functional. In case of forest seedlings the survival rate was 70% and in case of Mango it was 81%, and the people's involvement in watershed activities was low. The implication of the study being the physical structures created under watershed program for soil and water conservation should be maintained by the stake holder associations, with continued support (technical, financial etc.) from the public, private, NGOs till the farmers develop a sense of belonging and commitment to maintain and carry forward progress further. Similarly, the grown up horticulture and forest plantations need immediate protection from the threats and their nutritional management to reap the fruits of the efforts tomorrow. Initiatives of non-monetary incentives and making the farmers to realize the paramount importance of watershed activities from the point of making available of the fruits of watershed for next generations and greening the earth would go a long way towards sustainability of rural livelihoods.

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