

## EVALUATION OF WATERSHED PROGRAMMES IN VILLAGES OF MOHINDERGARHDISTRICT

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ABSTRACT

The distribution of the evaluation and land resources on land holding size reveals this about two third sample households own land. Majority of top caste households' individual land while it's the intermediary and lower caste groups, which are landless. The scale of landholding in sample villages remains five to six acres each home. So far as irrigation infrastructure is worried, two third of land is actually irrigated. Watering facility is better among big producers as compared to medium and small farmer households. It might nonetheless, be mentioned that irrigation intensity in sample villages and in both watersheds is a lot better compared to district average, however, in comparison to Haryana, this is quite small. In both the watersheds, pearl millet (Bajra) in mustard and kharif in rabi seasons are actually significant plants and occupies half of net sown region in respective season of all of the villages of both watersheds. The yield of crops shows correspondence with size of landholding indicating higher yield among small producers. Mustard is mainly sown by big and medium producers. As it's a minimal successful crop pearl millet is broadly harvested in most land size farmer. So far as efficiency is worried, Dohan watershed shows much better performance compared to Krishnawati watershed. Both the watersheds have adopted "mixed crop livestock farming system" that is a norm under rain fed state. Results show this approximately eighty six % households own livestock. Probably the most typical livestock is buffaloes that are owned and operated by eighty two % households in nearly all villages. The economic viability or even secondary source of revenue as buffaloes is economic and productive more as compared to any other creatures. Just about all giant farmers have buffaloes and the ownership decrease of it is with regard to economic condition of households in both the watersheds. Huge proportion of sheep and goats, ownership is discovered among landless households in Dohan and Krishnawati watershed.

**Keywords:** *Watershed Programme, Crop, Soil, Policy*

### 1. INTRODUCTION

The basic explanation of a watershed is actually studied by the characterization of it is and also the characterization offers a concept about the reaction of it is to various hydrological tasks. Watershed characterization entails measurement of parameters which influence the distinctive behavior of a watershed. The larger assortment of variables which can have an effect on the behavior of a watershed fall in 2 categories: (i) the long lasting attributes of the watershed, like, the drainage density of its or maybe hydro geomorphology and (ii) transient or maybe adjustable qualities, like the quantity of rainfall, kind of land use etc.

It might additionally be mentioned that Government of India (All India soil as well as land use survey, 1990) gives big scale watershed boundaries at different levels of hierarchy. Nevertheless, it does point out

the significance of delineation of mini, mili and micro watersheds. It further states that in case of semi-arid and arid places, it's essential to save as well as produce materials at smaller device, i.e. watershed of a size ranging between hundred as well as 500 ha. Thus, the job of delineation of smaller watersheds as well as the characterization of theirs goes quite a distance in preparing and cost-efficient implementation of development pursuits.

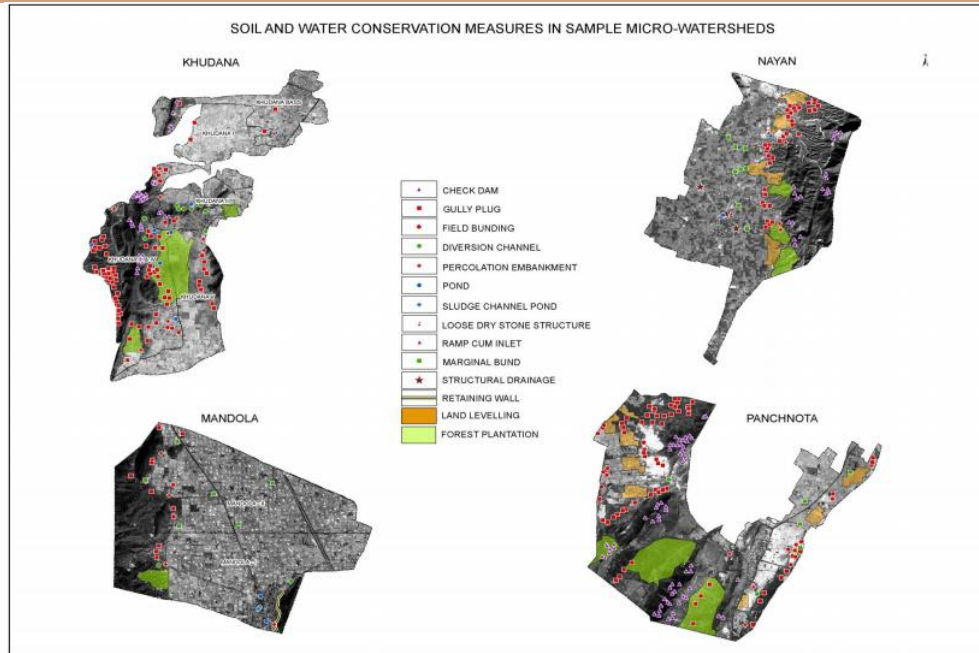
## 2. CONSERVATION MEASURES

The secondary energy sources as received from government information on watershed management programme propose that an assortment of methods have been undertaken to augment soil as well as water conservation. Some of them the prominent procedures are actually the building of Check Dam, Gully Control Measures, Pond, Structural Drainage, Percolation Embankment, Field Bunding, Diversion Channel, Marginal Bund, Land Leveling, Ramp cum Inlet and Forest Plantation etc. Table 4.38 reveals that total of 192 soil as well as water conservation structures in the Dohan watershed had been built by the Department of Agriculture Haryana. Inside Krishnawati watershed, a total of 233 soil as well as water conservation structures were created by Haryana outlying development division. The ground as well as water conservation structures of these sample micro watersheds have been additionally identified as well as demarcated on the map (Table 1 and Figure 1). The majority of the structures are actually gully management methods followed by check dam, diversion channel, Pond, percolation embankment, etc. It's been found that Krishnawati watershed has large selection of conservation structures as compared to Dohan watershed. General Khudana village in Dohan watershed has highest concentration of conservation structures. There's no check dam integrated Mandola micro watershed as well as less number of conservation system as compared to any other micro watersheds. Inside Krishnawati watershed, land leveling has been performed under watershed growth programme and then covered 597 ha area.

**Table 1: Number of Soil and Water Conservation Measures in Sample Villages**

Types of construction	Dohan watershed		Krishnawati watershed	
	Khudana I, II, III, IV, V and Khudana Bass	Mandola I and II	Nayan I and II	Panchnota I and II
Check Dam	46	-	19	62
Gully Control Measures	80	12	36	61
Pond	8	2	2	1
Structural Drainage	-	-	3	0
Percolation Embankment	6	4	3	4
Field Bunding (ha)	4	1	-	18
Diversion Channel	11	2	-	0
Marginal Bund	-	6	8	7
Land Levelling (ha)	-	-	190	407
Ramp cum Inlet	2	-	2	1
Forest Plantation	3	1	3	3
Any other	Loose dry stone structure =1 and Grass plantation (Anjan)	Retaining Wall =1 and Sludge channel pond = 2	-	Grass plantation (Anjan)

Sources: Assistant Soil Conservation Officer (ASCO), Mohindergarh and Narnaul.



**Figure 1: Soil and Water Conservation Measures in Sample Villages**

Table 2 reveals that every micro watershed have accomplished the goal of its. Khudana micro watershed covered larger area and in addition granted highest funds for implementation of watershed growth programme. While in Krishnawati watershed, proposed area was repaired below Desert Development Programme (DDP) scheme which happens to be 500 ha for each stage. As a result of this particular idea of creating a fixed location of 500 ha underneath a scheme excludes numerous critical regions within the micro watershed from therapy. Especially, the aspects situated at the greater reaches as well as forest covers are ignored.

**Table 2 Covered Areas under Watershed Programme in Sample Villages**

Micro-watersheds	Phase wise area proposed (ha)	Treated area (ha)	Total project cost in lacs. Rs
Khudana	I=353 II=244 III and IV=1500 V=758.70 Khudana bass=397	I=353 II=244 III and IV=1500 V=758.70 Khudana bass=397	I=29.877 II=22.597 III and IV=49 V=23.214 Khudana bass=35.742
Mandola	I=410.5 II=467.5	I=410.5 II=467.5	I=30.738 II=47.127
Nayan	I=500 II=500	I=500 II=500	I=18 II=24
Panchnota	I=500 II=500	I=500 II=500	I=21 II=27

Note: Roman number shows micro-watershed batch/phase.

Sources: Assistant Soil Conservation Officer (ASCO), Mohindergarh and Narnaul.

### 3. FIELD VERIFICATION OF CONSERVATION STRUCTURES

Table 3 shows the condition of dirt as well as water conservation buildings as well as the assessment has been created by field visit of every single website location. The Assessment criteria had been split into 3 classes: (i) pretty good working condition (if a system is actually fewer than twenty five % harmed), (ii) damaged (more than twenty five % to fewer than fifty % damaged) (iii) and totally damaged (more than fifty % damaged). Table reveals that more and more check dam in each watersheds are in somewhat good working condition that is near approximately ninety % as well as seventy seven % in Krishnawati and Dohan watershed, respectively. Earthen gully plugs with locally accessible sand with vegetative cover are actually used to control of gully erosion in agricultural area of the lower reaches. Gully plugs are very affected (damaged) framework in each watershed and also accounts 29.34 as well as 52.58 % in Krishnawati and Dohan watershed, respectively. Earthen gully plugs can also be relevant below needed maintenances, care, and vigilance. The majority of the impaired check dam and gully plugs have been mostly present in higher and lower reaches, respectively in both watersheds (Figure 2). At minimum 38.47 % diversion channels are harmed by runoff or even local public of Dohan watershed. Thanks to deposition of runoff as well as sand throughout monsoon 26.68 % marginal bunds are totally harmed in both the watersheds. Condition of percolation embankments, ponds, area bunding, forest plantation as well as ramp cum inlet etc. is actually discovered in condition that is good of both of watersheds.

**Table 3: Assessment of Soil and Water Conservation Measures in Sample Villages**

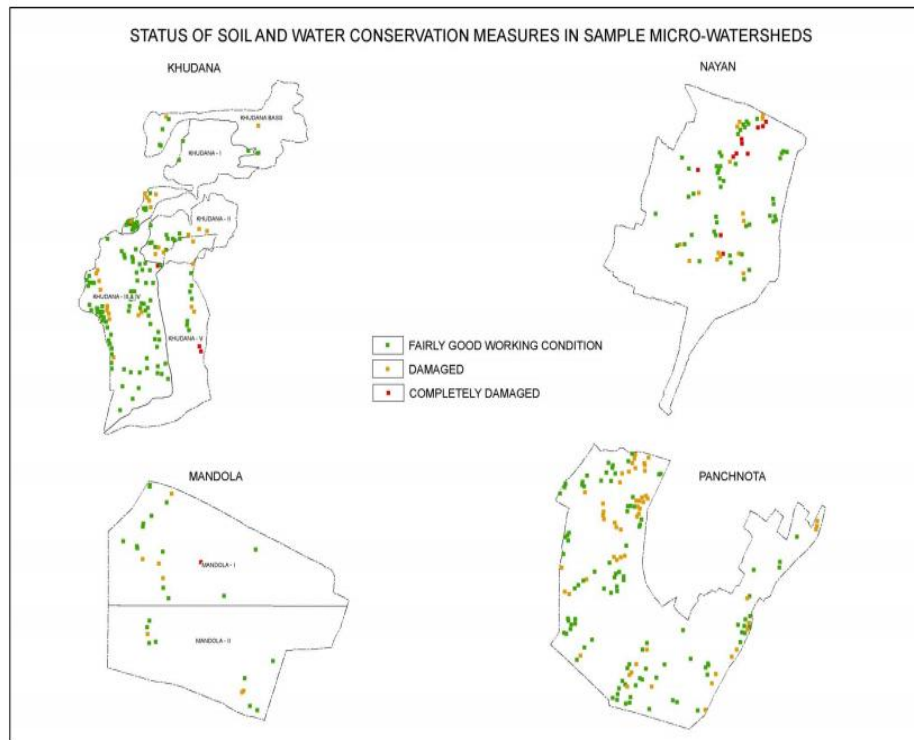
Structures	Dohan watershed				Krishnawati watershed			
	Fairly good working condition	Damaged	Completely damaged	Total	Fairly good working condition	Damaged	Completely damaged	Total
Check Dam	41 (89.13)	4 (8.70)	1 (2.17)	46 (100.00)	62 (76.54)	19 (23.46)	0 (0.00)	81 (100.00)
Gully Control Measures	63 (68.48)	27 (29.35)	2 (2.17)	92 (100.00)	40 (41.24)	47 (48.45)	10 (10.31)	97 (100.00)
Field Bunding	5 (100.00)	0 (0.00)	0 (0.00)	5 (100.00)	18 (100.00)	0 (0.00)	0 (0.00)	18 (100.00)
Diversion Channel	8 (61.54)	5 (38.47)	0 (0.00)	13 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Percolation Embankment	9 (90.00)	1 (10.00)	0 (0.00)	10 (100.00)	6 (85.71)	1 (14.29)	0 (0.00)	7 (100.00)
Pond	10 (100.00)	0 (0.00)	0 (0.00)	10 (100.00)	3 (100.00)	0 (0.00)	0 (0.00)	3 (100.00)
Marginal Bund	5 (83.33)	0 (0.00)	1 (16.67)	6 (100.00)	11 (73.33)	1 (6.67)	3 (20.00)	15 (100.00)
Forest Plantation	4 (100.00)	0 (0.00)	0 (0.00)	4 (100.00)	6 (100.00)	0 (0.00)	0 (0.00)	6 (100.00)
Others	2 (33.33)	3 (50.00)	1 (16.67)	6 (100.00)	4 (66.77)	2 (33.33)	0 (0.00)	6 (100.00)

Note: Figures in the parentheses represent the percentage of total number of structure under each type

Table 4 shows the amount of visited by area official to check out the conservation structures. The majority of the watershed committee members shared that area officials visited the framework couple of times in a month. While a bit of respondent recognized that area official have visited less regularly i.e. times that are couple of in a year.

**Table 4: Visit Frequency of Field Officials**

Frequency of visits	Khudana	Mandola	Nayan	Panchnota
Rare	0	0	0	0
Few times in a year	4	2	3	2
Few times in a month	8	6	11	10
Once in a fortnight	0	0	0	0
Total watershed committee members	12	8	14	12



**Figure 2: status of soil and water conservation measures in sample micro- watershed**

#### 4. PATTERN OF BENEFICIARIES IN SAMPLE VILLAGES

In table 5 the assessment is actually based on 2 kinds of benefit, you are gotten from watershed pursuits and another is actually from entry point pursuits. Both are evaluated at 2 level i.e. public team smart or even economic team good. Table 4.42 discovered that Krishnawati watershed has large selection of beneficiaries compared to Dohan watershed and also accounts 161 as well as ninety five respectively. The

primary advantage tasks are actually land leveling and immediate advantage from recharge site (tube well) followed by employment during building of web sites as well as farm bunding in both watersheds. Dominant and upper Mostly caste team as well as big farmers had been receiving tangible economic advantages as efficiency enhancement initiatives as land leveling, immediate advantage from recharge website, and farm bunding in both the watersheds. In order to create a rapport between the project applying agency (The villagers and pia) prior to initiating the watershed applications, an entry point activity (EPA) is actually envisaged. An entry point activity, like distribution of seeds/fertilizer as well as carpet making machine, disbursement of harvesting pipes, one time loan as well as animal wellness camp are actually a few other rapport developing procedures which were practiced in both watersheds. Among the crucial gaps that came to notice is actually that the majority of the dominant and upper caste team as well as significant farmer had been had good results from watershed tasks whereas large selection of lower caste as well as landless individuals had been benefited from entry point pursuits.

**Table 5: Number of Beneficiaries in Sample Villages**

Types of benefit	Social group wise				Economic groups wise					
	Upper and dominant caste	Intermediary and artisan caste	Lower caste	Total	Small farmers	Medium farmers	Large farmers	Landless	Total	
<b>Dohan watershed</b>										
Direct benefit from recharge site (tube-well)	17(85.00)	3(15.00)	0(0.00)	20(100.00)	7(35.00)	4(20.00)	9(45.00)	0(0.00)	20(100.00)	
Farm bunding	7(100.00)	0(0.00)	0(0.00)	7(100.00)	1(14.28)	1(14.28)	5(71.45)	0(0.00)	7(100.00)	
Employment	11(30.55)	9(25.00)	16(44.45)	36(100.00)	9(25.00)	3(8.32)	1(2.79)	23(63.89)	36(100.00)	
Distribution of seeds and fertilizer (EPA)	5(62.49)	3(37.51)	0(0.00)	8(100.00)	1(12.50)	4(50.00)	3(37.50)	0(0.00)	8(100.00)	
Disbursement of harvesting pipes (EPA)	5(62.49)	3(37.51)	0(0.00)	8(100.00)	1(12.50)	4(50.00)	3(37.50)	0(0.00)	8(100.00)	
Distribution of Carpet making machine (EPA)	5(55.55)	3(33.34)	1(11.11)	9(100.00)	2(22.22)	0(0.00)	0(0.00)	7(77.78)	9(100.00)	
Tree plantation	7(100.00)	0(0.00)	0(0.00)	7(100.00)	1(14.29)	2(28.54)	3(42.87)	1(14.29)	7(100.00)	
<b>Total</b>	<b>57(100.00)</b>	<b>21(100.00)</b>	<b>17(100.00)</b>	<b>95(100.00)</b>	<b>22(100.00)</b>	<b>18(100.00)</b>	<b>24(100.00)</b>	<b>31(100.00)</b>	<b>95(100.00)</b>	
<b>Krishnawati watershed</b>										
Land leveling		36(87.81)	5(12.19)	0(0.00)	41(100.00)	14(34.15)	12(29.26)	15(36.60)	0(0.00)	41(100.00)
Farm bunding		7(100.00)	0(0.00)	0(0.00)	7(100.00)	1(14.29)	4(57.13)	2(28.58)	0(0.00)	7(100.00)
Employment		14(35.00)	7(17.50)	19(47.50)	40(100.00)	7(17.50)	4(10.00)	2(5.00)	27(67.50)	40(100.00)

Distribution of seeds and fertilizer (EPA)	16 (72.14)	4 (18.19)	2 (9.11)	22 (100.00)	15 (68.18)	4 (18.19)	3 (13.65)	0 (0.00)	22 (100.00)
Tree plantation	3 (100.00)	0 (0.00)	0 (0.00)	3 (100.00)	0 (0.00)	1 (33.32)	2 (66.68)	0 (0.00)	3 (100.00)
One time loan (EPA)	22 (50.00)	8 (20.00)	10 (25.00)	40 (100.00)	13 (32.50)	7 (17.50)	8 (20.00)	12 (30.00)	40 (100.00)
Animal health camp	3 (37.50)	3 (37.50)	2 (25.00)	8 (100.00)	2 (25.00)	2 (25.00)	1 (12.50)	3 (37.50)	8 (100.00)
Total	101 (100.00)	27 (100.00)	33 (100.00)	161 (100.00)	52 (100.00)	34 (100.00)	33 (100.00)	42 (100.00)	161 (100.00)

Note: EPA connotes entry point activities

Source: Researchers' 2012 survey data and finding based on household survey

## 5. CONCLUSION

Analysis as well as characterization of watershed is actually prerequisite for management of natural resource of any place. The existing chapter provides the qualities of Krishnawati and Dohan watershed falling in one administrative device of Haryana i.e. Mohindergarh district. It offered a comprehensive analysis of depth, soil texture, and hydro geomorphology, slope, drainage density, land use, groundwater prospects as well as rainfall distribution of both watersheds. To be able to spotlight the weak location for planned implementation and motion, it delineated the 2 watersheds taking 8 parameters of above stated themes. The physical exercise thus attempted has recommended a location of approximately ninety nine km<sup>2</sup> as very weak. Watershed smart, Dohan watershed has fifty eight km<sup>2</sup> and in Krishnawati watershed the weak place is actually forty one km<sup>2</sup>. Additionally in both watersheds, forty micro watersheds of different sizes are delineated. The spatial division of the shows that eighteen are actually laying around Dohan watershed along with other twenty two have been delineated in Krishnawati watershed It might be mentioned that seven micro watersheds within Dohan as well as eight micro watersheds within Krishnawati are actually probably the most susceptible as well as necessary immediate intervention. The settlement level which is actually overlaid over these micro watersheds further reveals that these cover 32 villages in Dohan and 73 villages of various sizes in Krishnawati watershed, for targeted government interventions.

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