

BRAIN STORMING SESSION
ON
HYDROLOGICAL PROBLEMS AND PERSPECTIVES
IN
WESTERN HIMALAYAN REGION

MARCH 14, 1997

*A Project to Reverse Ecological
Degradation and for Sustainability*

BY

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A PROJECT TO REVERSE ECOLOGICAL DEGRADATION AND FOR SUSTAINABILITY

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INTRODUCTION

The most serious economic and ecological consequences of natural resources degradation manifested through deforestation, rampant soil erosion torrent menace, floods and droughts, hydrological instability poverty and backwardness in fragile and backwardness in Kandi belt of Shiwalik and Karewa eco-system, promoted the Center and State Government to initiate several environmental rehabilitation programme in priority watersheds. The IWDP (Hills) in contiguous with other three States i.e. Punjab, Haryana, and Himachal Pradesh initiated in the State for seven years from 1990 funded by World Bank it supported cost effective vegetative technology for conserving soil and rain water to promote output of production system established in driven watershed based approach.

PROJECT AREA

Realization the fact that 60% of rural population is dependent on rainfall in Jammu and Kashmir State of Rainfed Kandi areas which is spread over 5.60 lac ha. where environmental degradation had set in at an alarming scale. To start with under World Bank aided programme, a pilot project on a representative highly problematic area to the tune of 48.276 ha. was started in the year 1990, so that these serve an important demonstration foundation for subsequent expanded adoption in the entire problematic area.

The Pilot Project is located in 2 different ecological zones designated as Sub-Project-I which is in sub-tropical region of Jammu and Sub-Project-I which is in sub-tropical region of Jammu and Sub-Project-II located in temperate Kandi areas of Kashmir. The sub-watersheds of the Project and their location is given below :

Sub-Project	Agro-climatic	Watershed	District	Area(Ha.)	No. of M.W.S
I.	Sub-tropical				
i)	Lower Kandi	Devak	Jammu	9,370	15
ii)	Upper Kandi	Ramkote	Udh.&Kathua	13,518	14
II.	Sub-temperate				
	Karewa	Dudhganga	Budgam	26,388	27
Total			48,276	56	

PROJECT OBJECTIVES

The salient objectives of the Project are enumerated here under :

- i. To reverse and slow down the process of degradation of the natural environment.
- ii. To conserve soil and moisture by vegetative technology.
- iii. To improve the Genetic of livestock.
- iv. To increase the bio-mass by raising the fodder, trees and grasses.
- v. To elevate the people from poverty line.
- vi. To increase the production of crop by insitu moisture conservation through vegetative technology.
- vii. To generate employment.
- viii. To encourage household industry sustainable on regenerative resources.
- ix. To encourage people's participation and strengthen the optimum management of arable and non-arable lands.

PROJECT IMPLEMENTATION AND IMPACT

Watershed Treatment

To meet the main objective of slowing down, and if possible to reverse the degradation of natural environment and thereby improving the production/income from crops like; Agriculture, Horticulture, fuelwood and livestock by cheap and replicable vegetation technology through an integrated approach to various land based problems, the micro-watershed was choosen as a basic unit of Planning and Management. In these micro-watersheds, each component of work selected as the site conditions demand. The various menu of treatments given different sectors is as follows :-

Agriculture

The main objective being insitu moisture conservation and arrest of surface runoff/sediment load, vetiver grasses, Iris and local grasses are being raised on the outer periphery of the agricultural fields and also in a few cases in the contour lines within the field. New variety of seeds and applicable of improve package of practices are being provided on demonstration plots to innovate the people to replicate this menu of treatment. The grasses and Pasture Development programmes are also being carried are also being carried out.

Horticulture

The marginal lands where cultivation is not available. such lands are brought under Rainfed horticulture and horticulture rejuvenation programme is carried out on degraded orchards.

Non-arable lands

The degraded areas of forest, village common lands and grazing lands, are brought under silvipasture landuse and afforestation with shrub barriers. The sowing and planting are also being carried out to

improve the forest cover.

Drainage Lines

Drainage Lines both under arable and non-arable lands are treated to reduce the runoff and arrest the sediment load by raising vegetative and D.R.S.M./Earthen bag check dams along with 2nd and 3rd order drainage lines. Main streams are being trained by crate wire structures and vegetative spurs. Numerous water harvesting structures and ponds have been constructed to arrest rain water and improve sub-surface moisture regime to enhance productivity.

Genetic Improvement

The livestock population is being given general health treatment, besides immunization against dreaded diseases and main tasks of Genetic improvement by natural service and artificial insemination is being carried out.

MONITORING, EVALUATION AND IMPACT ANALYSIS

The Project has an in built standardized and perfected system of periodic monitoring and evaluation, according to the World Bank guidance and formats. Besides, a detailed monitoring survey has been conducted also by Directorate of Economics and Statistics Organization of Planning and Development of J&K.

The survey findings by monitoring and evaluation wing of I.W.D.P. are summarized as follows :

Impact on soil and moisture conservation

S.No.	Watershed	1992-93		1993-94		1994-95		1995-96	
		R.F.	S.L.	R.F.	S.L.	R.F.	S.L.	R.F.	S.L.
1.	Dudhganga	-	96.93	969	47.44	1109	46.19	1904	112.68
2.	Ramkote	-	-	760	46.30	1420	66.79	1610	54.85
3.	Devak	-	-	679	31.90	1376	34.93	1513	20.51

Note : R.F. denotes Rainfall in mm,
S.L. denotes Soil loss in ton/ha

Impact on crop productivity

Impact on insitu moisture conservation on productivity of Rainfed crops by raising vegetative barriers

is indicated below :

		Plantation year	1994-95	
		Assessment year	1994-95	
S.No.	Category of farmers where cropout experiments conducted	Average yield recorded as per crop cut experiments (Qtls/Ha) yield within MWS treated		
1.	Beneficiaries - Category-I (on whose farm lands vegetative contour barriers were raised along with application qualitative inputs like seed and chemical fertilizers)	Devak	Ramkote	Dudhganga
		31.47	29.90	27.12
2.	Beneficiaries - Category-II (on whose farm lands vegetative contour barriers were not raised but qualitative inputs in the shape of seeds and chemical fertilizers were applied as in the case of Category-I)	26.50	26.65	22.25
3	Non-Beneficiaries - Category-II (whose farm lands were only kept under observation as a control and were not provided with improved inputs and neither vegetative contour barriers raised.	25.91	26.05	14.08

From the above comparison of the yield results, it is clear that impact of in situ moisture conservation on productivity by adopting vegetative technologies in Category-I shows an increase in the field by 4.97 Qtls. and 3.25 Qtls/ha i.e. about 19% and 13% as compared to Category-II in respect of Devak and Ramkote sub-Watersheds respectively and an increase 4.87 Qtls i.e. 22% in Dudhganga Sub-Watershed.

Impact on farm fodder production (Oats)

S.No.	Watershed	Unit	Productivity (Average yield)			Weighted Average
			Bene	Non-Bene	Ex-Bene	
1.	Ramkote	Ha/Ton	34.30	20.36	28.17	29.34
2.	Devak	Ha/Ton	46.30	13.91	19.00	32.27
3.	Dudhganga	Ha/Ton	50.00	*	*	50.00

*Oats not grown earlier.

Impact on milk yield

S.No.	Watershed	Baseline	Local cow	Cross Breed
1.	Dudhaganga	2.75 ltrs	3.18 ltrs	8.60 ltrs
2.	Devak	1.67 ltrs	6.89 ltrs	6.08 ltrs
3.	Ramkote	-	2.72 ltrs	5.45 ltrs

Impact on wool yield

S.No.	Watershed	Baseline	Local breed	Cross Breed
1.	Dudhaganga	1.00 kg	1.50 kg	3,100 kg
2.	Ramkote	-	1.25 kg	2,475 kg
3.	Devak	1.02 kg	-	2,100 kg
