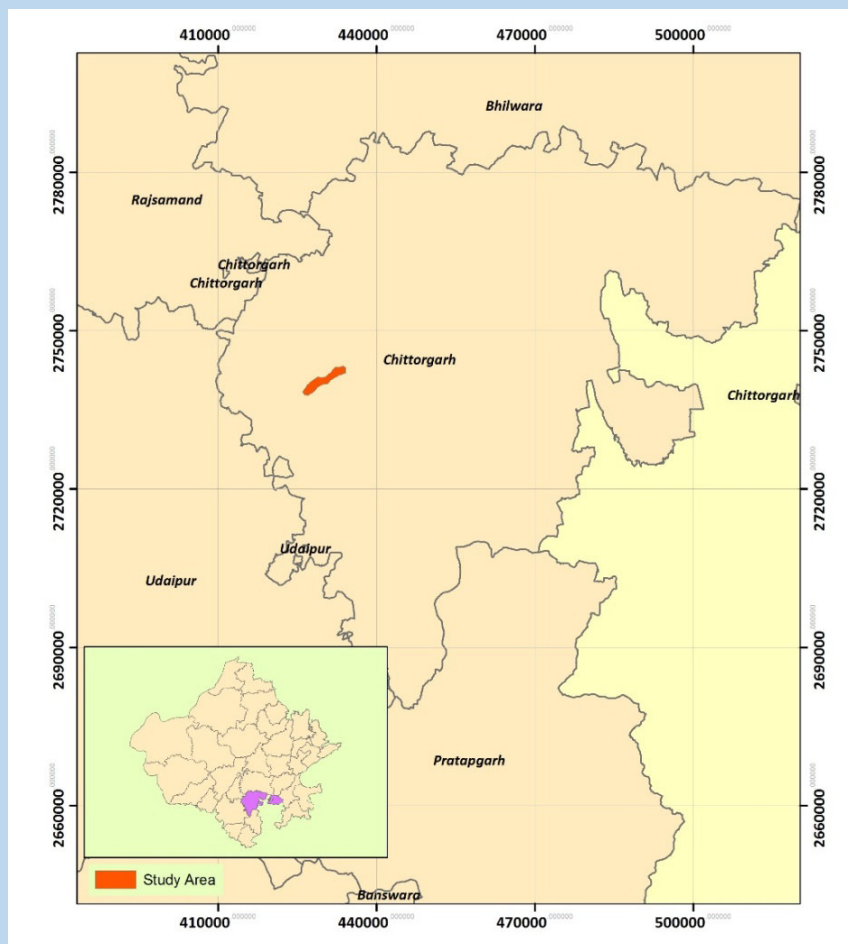


FINAL IMPACT EVALUATION REPORT (ENDLINE)

CHITTORGARH(IWMP)2/2009-10 Block-Kapasan, Distric -Chittorgarh



Submitted to:



***Watershed Development
& Soil Conservation
Department, Pant Krishi
Bhavan, GoR, JAIPUR***

Submitted by:



***Arpan Seva Sansthan,
(MEL&D Agency) Plot No.
210, Flat no. F2, Shri Shyam
Baba Apartment, Rani Sati
Nagar, Ajmer Road, Jaipur***

Executive Summary for Final Impact Evaluation

Generic Information of Project:

1	Name:	IWMP –2 (2009-10) Chittorgarh										
2	Area in Ha.:	3978										
3	Cost (Rs. in Lakhs):	477.36										
4	Total No. of Household in project area:	3224										
5	No. of Household for benchmark study (20%):	645										
6	Control Area in Ha for (Non-project):	3996										
7	Total No. of Household in Control area:	1759										
8	No. of Household for benchmark study (20%) in control area:	352										
9	Area in Ha. for satellite imagery (25%):	1328.81										
	Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Avg. Annual Rain Fall (mm)	468	457	788	903	836	962	736	449	1103	722	537

S. No.	Particulars	As per Benchmark Study (Unit/%)								As per satellite imagery		
		Project Area 3978 Ha.				Control Area 3996Ha.				Project Area 1328.96 Ha.		
		Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change
1	NRM (Natural Resource Management)											
1.1	<i>Increase in under cultivation crop area in Ha.</i>											
1.1.1	Kharif	1553	2245	692	44.56	1565	1681	116	7.41	225.126	945.343	720.22
1.1.2	Rabi	1007	1410	403	40.02	1015	1080	65	6.40	248.216	451.416	203.20
1.1.3	Ziad	95	115	20	21.05	97	102	5	5.15	13.401	71.09	

S. No.	Particulars	As per Benchmark Study (Unit/%)								As per satellite imagery		
		Project Area 3978 Ha.				Control Area 3996Ha.				Project Area 1328.96 Ha.		
		Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change
1.2	Area under Irrigation (Ha)											
1.2.1	Kharif	687	1005	318	46.29	694	750	56	8.07	NA		
1.2.2	Rabi	801	1155	354	44.19	812	872	60	7.39			
1.2.3	Ziad	95	115	20	21.05	97	102	5	5.15			
1.3	Total Cropped Area (Ha)											
1.3.1	Single Crop	546	835	289	52.93	550	601	51	9.27	225.126	945.343	720.22
1.3.2	Double Crop	912	1295	383	42.00	918	978	60	6.54	248.216	451.416	203.20
1.3.3	Multiple Crop	95	115	20	21.05	97	102	5	5.15	13.401	424.236	410.84
1.4	Productivity of Crop (Ton/Ha)											
1.4.1	Kharif	1.22	1.45	0.23	18.85	1.16	1.25	0.09	7.76	NA		
1.4.2	Rabi	1.32	1.62	0.3	22.73	1.27	1.37	0.1	7.87			
1.4.3	Ziad	0.6	0.8	0.2	33.33	0.57	0.69	0.12	21.05			
1.5	New package of practices %											
1.5.1	Certified Seed	73.52	85.00	NA	11.48	72.76	76.80	NA	4.04	NA		
1.5.2	Hybrid Seed	74.79	81.00	NA	6.21	75.12	77.00	NA	1.88			
1.5.3	Culture	21.00	38.00	NA	17.00	20.00	24.10	NA	4.10			
1.5.4	Pesticide	66.20	61.00	NA	-5.20	63.45	65.40	NA	1.95			
1.5.5	Insecticide	62.43	58.22	NA	-4.21	60.45	63.50	NA	3.05			
1.5.6	Fertilizer	86.87	82.69	NA	-4.18	85.20	88.00	NA	2.80			
1.5.7	Manure	100.00	100.00	NA	0.00	100.00	100.00	NA	0.00			
1.5.8	Vermi Compost	18.47	26.00	NA	7.53	17.69	18.77	NA	1.08			
1.5.9	Compost	88.47	94.00	NA	5.53	85.5	90.00	NA	4.48			
1.6	Change in cropping pattern											
1.6.1	Barani cropped Area (Ha)	1007	1410	403	40.02	1015	1080	65	6.40	NA		
1.6.2	Irrigated cropped Area (Ha)	896	1270	374	41.74	909	974	65	7.15			
1.6.3	Single cropped Area (Ha)	546	835	289	52.93	550	601	51	9.27	225.126	945.343	720.22

S. No.	Particulars	As per Benchmark Study (Unit/%)								As per satellite imagery		
		Project Area 3978 Ha.				Control Area 3996Ha.				Project Area 1328.96 Ha.		
		Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change
1.6.4	Double cropped Area (Ha)	912	1295	383	42.00	918	978	60	6.54	248.216	451.416	203.20
1.6.5	Multiple cropped Area (Ha)	95	115	20	21.05	97	102	5	5.15	13.401	424.236	410.84
1.6.6	Fellow cropped area (Ha.)	155	135	-20	-12.90	120	128	8	6.67	487.589	39.981	-447.61
1.7	Improvement of Bio- mass											
1.7.1	Agro Horticulture in Ha.	145	158	13	8.97	110	113	3	2.73	NA		
1.7.2	Agro Forestry in Ha.	1553	2245	692	44.56	1565	1681	116	7.41			
1.8	Change in diversification into crop Ha.											
1.8.1	Mono Cropped in Ha.	1553	2245	692	44.56	1565	1681	116	7.41	NA		
1.8.2	Inter Cropped in Ha.	1007	1410	403	40.02	1015	1080	65	6.40			
1.8.3	Mixed Cropped in Ha.	95	115	20	21.05	97	102	5	5.15			
1.9	Change in commercial crops in Ha.											
1.9.1	Pulses (Ha)	122	138	16	13.11	110	118	8	7.27	NA		
1.9.2	Till (Ha)	80	95	15	18.75	75	84	9	12.00			
1.9.3	Mustard (Ha)	340	570	230	67.65	355	385	30.00	8.45			
1.9.4	Spices (Ha)	62	75	13	20.97	54	63	9	16.67			
1.9.5	Others (Ha)	74	86	12	16.22	80	98	18	22.50			
1.10	Increase in cropping intensity in %											
1.10.1	Kharif	44.24	44.77	NA	0.53	44.35	44.62	NA	0.27	NA		
1.10.2	Rabi	79.54	81.91	NA	2.37	80.00	80.74	NA	0.74			
1.11	Land use Land Cover distribution and its changes (Ha.)											
1.11.1	Agricultural	NA								947.53	1012.50	64.97
1.11.2	Built Up									47.43	48.42	0.99
1.11.3	Forest									0.00	0.00	0.00

S. No.	Particulars	As per Benchmark Study (Unit/%)							As per satellite imagery			
		Project Area 3978 Ha.				Control Area 3996Ha.				Project Area 1328.96 Ha.		
		Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change
1.11.4	Wastelands									227.10	159.90	-67.20
1.11.5	Wetland									0.00	0.00	0.00
1.11.6	Water Bodies									106.75	107.99	1.23
1.11.7	Total									1328.82	1328.82	0.00
1.12	Change in Forest/green cover in Ha.											
1.12.1	Forest Blanks									0	0	0.00
1.12.2	Crop Land in Forest									0	0	0.00
1.12.3	Scrub Forest									0.000	0.000	0.00
1.12.4	Total									0	0	0.00
1.13	Change in Waste Lands in Ha.											
1.13.1	Barren Rocky/Stony waste/Sheet Rock									0	0	0.00
1.13.2	Gullied/Ravenous Land									0	0	0.00
1.13.3	Land with scrub									182.577	155.743	-26.83
1.13.4	Land without scrub									44.523	4.160	-40.36
1.13.5	Mining/Industrial waste									0	0	0.00
1.13.6	Salt Affected Land									0	0	0.00
1.13.7	Total									227.100	159.903	-67.20
1.14	Difference of Area Vegetation Index											
1.14.1	Nil - Low									26.479	10.273	-16.206
1.14.2	Low - Mod.									671.975	574.357	-97.618
1.14.3	Mod.- High									400.509	435.279	34.770
1.14.4	Very High									229.855	308.909	79.054

S. No.	Particulars	As per Benchmark Study (Unit/%)								As per satellite imagery		
		Project Area 3978 Ha.				Control Area 3996Ha.				Project Area 1328.96 Ha.		
		Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change
1.15	Soil Moisture Content and Availability through Wetness Index/ Moisture Index											
1.15.1	Nil - Low	NA								288.513	245.942	-42.571
1.15.2	Low - Mod.									999.789	434.460	-565.329
1.15.3	Mod.- High									34.464	632.299	597.835
1.15.4	Very High									6.052	16.118	10.065
1.16	Transformation from seasonal to perennial crops in Ha.(Land use diversification)	NA								Annual Crops (13.40)	Perennial Crops	71.59
										Waste lands (227.10)	Agricultural	65.74
										Agricultural	Built Up / Water bodies	0.77
1.17	Improvement in biodiversity (Yes/No)	N	Y	NA	100	N	N	NA	0	NA		
1.18	Reduction in soil loss (ton/ha.)	NA										
1.19	Reduction in run off in %	NA										
1.2	Reduction in silt deposition	NA										
2	Water Resources											
2.1	Improvement in groundwater level in mtrs.	55.49	54.96	0.53	0.96	54.11	55.05	-0.94	-1.74	NA		
2.2	Increase in no. of water bodies	25	128	103	412.00	NA				NA		
2.3	Increase in surface water Storage in TCM	8.85	61.75	52.9	597.74					NA		

S. No.	Particulars	As per Benchmark Study (Unit/%)								As per satellite imagery		
		Project Area 3978 Ha.				Control Area 3996Ha.				Project Area 1328.96 Ha.		
		Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change
2.4	Increase Drinking Water Facilities (% HHs)											NA
2.4.1	Government supply	34.00	48.55	NA	14.55	32.00	38.00	NA	6.00			NA
2.4.2	Private supply	41.00	43.00	NA	2.00	39.00	42.60	NA	3.60			
2.4.3	Hand pumps	24.00	15.80	NA	-8.20	27.00	27.96	NA	0.96			
2.4.4	Tanker Supply	8.00	5.00	NA	-3.00	5.00	8.50	NA	3.50			
2.5	Water availability:											NA
2.5.1	Availability of Drinking Water (Month)	11.5	12	0	NA	11	11	0	NA			NA
2.5.2	Percentage of no. of families that move to different distances to fetch water (%)	1.9	1.25	-0.65	NA	2.25	2.5	0.25	NA			
2.5.3	No. of dead hand pumps (Hand Pump Rejuvenated)	20	20	0	NA	18	20	2	NA			
3	Livestock											
3.1	Increase in no. of improved breeds											
3.1.1	Cow	584	690	106	18.15	576	630	54	9.38			NA
3.1.2	Buffalos	2591	2880	289	11.15	2607	2850	243	9.32			
3.1.3	Goat	5218	5760	542	10.39	5201	5530	329	6.33			
3.2	Increase in milk production/ DairyActivities (Kg/day)											
3.2.1	Cow	7.00	9.00	2	28.57	7.00	8.00	1	14.29			NA
3.2.2	Buffalos	8.00	10.00	2	25.00	8.00	9.00	1	12.50			
3.2.3	Goat	1.00	1.75	0.75	75.00	1.00	1.50	0.5	50.00			
3.3	Reduction in diseases out breaks and animals	NA										

S. No.	Particulars	As per Benchmark Study (Unit/%)								As per satellite imagery		
		Project Area 3978 Ha.				Control Area 3996Ha.				Project Area 1328.96 Ha.		
		Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change
3.4	Hazardous industrial activities (Y/N)	N	N	0	0	N	N	0	0	NA		
3.5	Rare/Endangered species of flora and fauna	NA										
3.6	Indigenous knowledge, artefacts, traditional values	NA										
3.7	Rejuvenation of local species of trees. (Y/N)	N	Y	NA	100	N	N	NA	0	NA		
4	Community Participation											
4.1	Community/Village level parameters											
4.1.1	Formation of SHG	18	106	88	488.89	11	20	9	81.82	NA		
4.1.2	No. of members	180	860	680	377.78	110	200	90	81.82			
4.1.3	Formation of UG	10	39	29	290.00	2	4	2	100.00			
4.1.4	No. of members	100	390	290	290.00	20	40	20	100.00			
5	Economic Aspect											
5.1	Average Annual Income (Rs)											
5.1.1	Agriculture and Livestock	49000	58966	9966	20.34	50100	56414	6314	12.60	NA		
5.1.2	Wage employment	42500	51222	8722	20.52	41400	48964	7564	18.27			
5.1.3	Migration	72600	83665	11065	15.24	69800	78666	8866	12.70			
5.1.4	Small enterprises	172500	198854	26354	15.28	155400	177524	22124	14.24			
5.1.5	Service	252200	293010	40810	16.18	251100	290634	39534	15.74			
5.2	Average Annual Expenditure (Rs):											
5.2.1	Food	28600	29800	1200	4.20	27800	29150	1350	4.86	NA		
5.2.2	Cloths	5000	5350	350	7.00	4400	4730	330	7.50			
5.2.3	Education	5500	7250	1750	31.82	5400	7000	1600	29.63			

S. No.	Particulars	As per Benchmark Study (Unit/%)								As per satellite imagery		
		Project Area 3978 Ha.				Control Area 3996Ha.				Project Area 1328.96 Ha.		
		Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change
5.2.4	Health	1700	1550	-150	-8.82	1800	1650	-150	-8.33	NA		
5.2.5	Agriculture	29500	31200	1700	5.76	30500	32520	2020	6.62			
5.2.6	Household Assets	2600	2950	350	13.46	2700	3200	500	18.52			
5.2.7	Live-stock	26500	27900	1400	5.28	26500	28000	1500	5.66			
5.2.8	Conveyance	4580	5100	520	11.35	4500	5050	550	12.22			
5.2.9	Others	2250	2530	280	12.44	2500	2750	250	10.00			
6	Migration: (% HH)											
6.1	Employment Opportunities (%):											
6.1.1	Agriculture and Livestock	77.47	81.69	NA	4.22	78.11	79.25	NA	1.14	NA		
6.1.2	Wage employment	48.95	51.25	NA	2.3	46.2	47	NA	0.8			
6.1.3	Migration	5.47	4.1	NA	-1.37	6.52	7.6	NA	1.08			
6.1.4	Small enterprises	1.28	1.6	NA	0.32	0.99	2.01	NA	1.02			
6.1.5	Service	2.45	2.8	NA	0.35	2.33	2.9	NA	0.57			
7	Outcome of important indicators											
7.1	Employment in Agriculture related activities among beneficiaries	71.25	74.4	NA	3.15	71.5	72.75	NA	1.25	NA		
7.2	Employment in Non- Agriculture Sector	44.4	46.25	NA	1.85	42.85	43.6	NA	0.75			
7.3	Fuel wood Production	1.45	1.8	0.35	24.14	1.4	1.55	0.15	10.71			
7.4	No. of Milch Cattle	584	690	106	18.15	576	630	54	9.38			
7.5	Milk Production of Milch Cattle	7.00	9.00	2	28.57	7.00	8.00	1	14.29			
7.6	Duration of flow of water in the streams	3	5	2	66.67	3	3	0	0.00			
7.7	No. of persons engaged in ancillary activities like Fisheries, Poultry and Rural craftsmanship	20	32	12	60.00	18	23	5	27.78			

S. No.	Particulars	As per Benchmark Study (Unit/%)								As per satellite imagery		
		Project Area 3978 Ha.				Control Area 3996Ha.				Project Area 1328.96 Ha.		
		Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change (Unit)	Change (%)	Pre	Post	Change
7.8	Reduction in migration from rural to urban area in the project area	5.47	4.1	NA	-1.37	6.52	7.6	NA	1.08			
7.9	Annual Mean Household Income	49000	58966	9966	20.34	50100	56414	6314	12.60			
7.10	No. of children enrolled in schools in the project area.	90	100	NA	10	92	100	NA	8			

CHAPTER –1

Introduction - Basic information about the Project Area

1.1 Location:

The study area (macro-watershed no. 0716101105, 0716101107) is located in Chittorgarh district of Udaipur region, the southeastern district of the state, falls between 409625 and 582503 Easting and 2788796 and 2678420 Northing. The district is bounded in the north by Bhilwara District, in the east by Kota District, in the South by Pratapgarh District, in the West by Rajsamand District. The total area of the district is 10,856 Sq.km.

1.2 Basic details of the Project:

Umand-II, the Chittorgarh IWMP-2 (2009-10) Project is in Kapasan Block of Chittorgarh district. The project area is located between the 74°16' to 74°25' N and 24°45' to 24°48' E. The distance of the watershed area from Panchayat Samiti, Kapasan head quarter is 22 Km while from the district headquarters, it is 58 Km. There are 7 Villages (Habitations) covering 18 Gram Panchayats in the Project area.

Basic details of the Project:

Table: 1.1

Name of Watershed	Umand-II
Project ID :	Cittorgarh IWMP 2/2009-10
Panchayat Samiti	Kapasan
District	Chittorgarh
Name of PIA	A. En., WD&SC, P.S. Kapasan, District - Chittorgarh
Number of Gram Panchayats	7
Number of Villages	18
Location	74°16' to 74°25' N and 24°45' to 24°48' E
Agro-Climatic Zone	II-A
Year of Sanction and Start	2009-10
Year of Project Completion	2016
Project Area	3978 Ha
Project Cost (Rs. In Lacs)	Rs. 477.36 Lacs
Major Stream	Bedach, Wagli
Slope range (%)	0-3%
Name of MEL&D Agency	Arpan Seva Sansthan, Udaipur
Actual expenditure (Rs. in Lacs)	Rs. 370.54 Lacs

Source: DPR & data received from PIA

Location of 25 % Selected Area

Macro Watershed No. 0716101105 & 0716101107

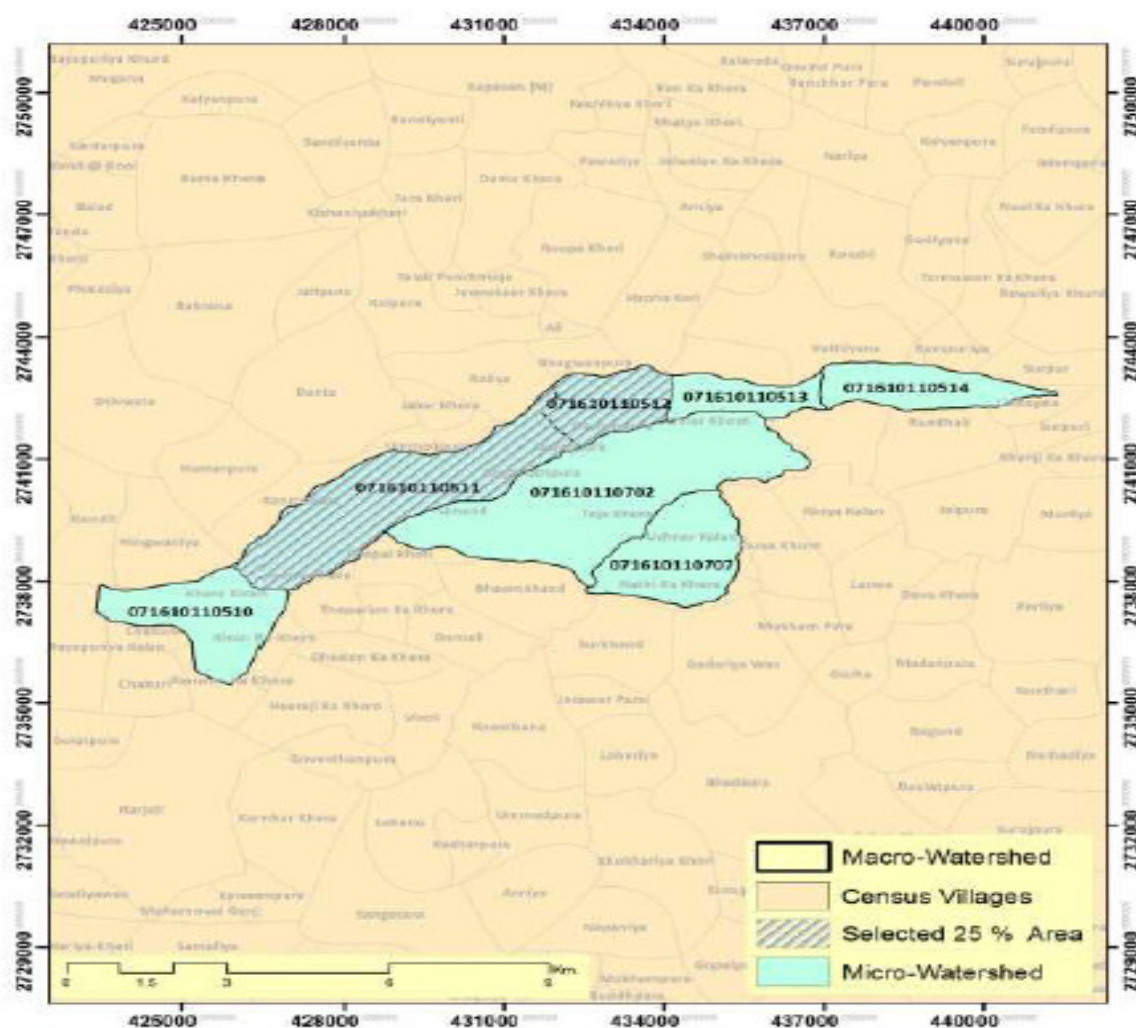


Figure 1.1 Watershed map of area

1.3 Comparison of General details of the project:

1.3.1 IWMP Watershed and Control Area details of IWMP-I/2009-10:

There is no change observed in the watershed project and control area details i.e. Gram Panchayats and villages covered, area taken up total and under sample and the number of households, which other-wise should not be.

In watershed project area as like baseline values **18 villages** were covered in **7 Gram Panchayats** with **3978 hectare** watershed project area, **3224** total number of households and **645** household in surveyed area (**20%**). In Control area as like baseline values, **12** villages were covered in **2** Gram Panchayats with **3696** hectare control area, **1759** total number of households and **352** household in surveyed area (**20%**) during end line.

Details of Selected IWMP Watershed and Control Area of IWMP-II/2009-10 watershed of Panchayat Samiti Kapasan, District Chittorgarh:

Table: 1.2

Time line	Project Area of Watershed	Name of GP watershed	Name of Village	Corresponding GP Name of Control Area	Corresponding village Name of Control Area	Total Area of Control Area	Total House-holds in IWMP watershed	No. of House-holds (Sample in watershed @20%)	Total House-holds in Control Area	No. of House hold sample in Control Area (20%)
1	2	3	4	5	6	7	8	9	10	11
Baseline	3978	Hathyan a, Roopak heri, Uchnar Khurd, Roliya, Umand, Karukra . Chakura ,	Ramthali, Hathyan a, Undayal a, HapaKheri, Uchnar Khurd, Uchnar Kalan, TejaKakhera, NathiKakhera, Jawan Pura, Guman Pura, Raghuna	Balarada, Damakhera	Govindpura, Balarada, Renkakhera, Khatyakheri, KachhiyaKheri, Arniya, Jelwalonkakhera, Damakhera, Randiyardi, Tarakheri, Sandiyarda, Talabpanchmoja	3696	3224	645	1759	352

Time line	Project Area of Watershed	Name of GP watershed	Name of Village	Corresponding GP Name of Control Area	Corresponding village Name of Control Area	Total Area of Control Area	Total House-holds in Watershed (Sample in MP watershed)	No. of House-holds in Control Area (@20%)	Total House-holds in Control Area	No. of House-holds sample in Control Area (20%)
1	2	3	4	5	6	7	8	9	10	11
			th Pura, Bhimkhand, Umand, PipalKheri, Karukra, Thapadi oKa Khera, JivaKhera, KheraKiran							
Endline	3978	Hathyan a, Roopakheri, Uchnar Khurd, Roliya, Umand, Karukra	Ramthali, Hathyan a, Undayala, HapaKheri, Uchnar	Balarada, Damakhera	Govindpura, Balarada, Renkakhera, Khatyakheri, KachhiyaKheri, Arniya, Jelwalonkakhera, Damakhera, Randiyardi, Tarakheri, Sandiyarda, Talabpanchmoja	3696	3224	645	1759	352

Time line	Project Area of Watershed	Name of GP watershed	Name of Village	Corresponding GP Name of Control Area	Corresponding village Name of Control Area	Total Area of Control Area	Total House-holds in watershed MP @20% watershed	No. of House-holds (Sample in watershed)	Total House-holds in Control Area	No. of House hold sample in Control Area (20%)
1	2	3	4	5	6	7	8	9	10	11
		Chakura	Khurd, Uchnar Kalan, TejaKha Khera, NathiKha Khera, Jawan Pura, Guman Pura, Raghunath Pura, Bhimkhand, Umand, PipalKhari, Karukra, Thapadi oKa Khera, JivaKhe							

Time line	Proj ect Area of Wat er- shed	Name of GP watershed	Name of Village	Correspondin g GP Name of Control Area	Corresponding village Name of Control Area	Total Area of Cont rol Area	Total House- holds (Samp le in waters hed @20%)	Total House- holds in Cont rol Area	No. of House- hold sample in Contro l Area (20%)	
1	2	3	4	5	6	7	8	9	10	11
			ra, KheraKi ran							

Source: DPR, Census data & data received from PIA

1.3.2 Fund Utilization in Chittorgarh, IWMP-2/2009-10 project:

Details of head/component wise Financial Targets / Provisions & corresponding Expenditure / Fund Utilization by PIA, Kapasan, Chittorgarh at Final Impact Evaluation stage is as under:

Fund Utilization in Chittorgarh, IWMP-2/2009-10 project

Table: 1.3

S. No.	Name of Head/Component	Total Financial Target As per DPR (Rs in Lacs)	Expenditure against at SLNA level (Rs in Lacs)	Expenditure against at WCDC level (Rs in Lacs)	Expenditure against at PIA level (Rs in Lacs)	Total Expenditure against (Rs in Lacs) Col. 4+5+6	Percentage Utilization (%) (Col. 7/3)
1	2	3	4	5	6	7	6
1	Administration	47.74	0	0	34.82	34.82	72.94
2	Monitoring	4.77	0.94	0.94	1.23	3.11	65.15
3	Evaluation	4.77	4.75	0	0	4.75	99.51
4	EPA	19.09	0	0	17.45	17.45	91.39
5	I.&C.B.	23.87	0.23	6.2	15.66	22.09	92.55
6	D.P.R.	4.77	0	0	2.58	2.58	54.05
7	N.R.M. Works	286.42	0	0	254.22	254.22	88.76
8	Livelihood	38.19	0	0	12.93	12.93	33.86
9	Production System & Micro Enterprise	33.42	0	0	17.65	17.65	52.82
10	Consolidation & Flaxy	14.32	0.47	0.47	0	0.94	6.56
	Grand Total	477.36	6.39	7.61	356.54	370.54	77.62

Source: Data received from PIA

The above progress reveals that **77.62%** of funds have utilized at the Final Impact evaluation stage, which is a **Good** progress level. Under Evaluation, EPA and I&CB head, the progress is **above 90%**, which is **Excellent**.

Details of PIA level Account as per data provided by PIA – Chittorgarh IWMP-2 (2009-10):

Table: 1.4

S. No.	PIA account No. and Name of Bank	Amount Received by the PIA (Lacs)	Amount spent by PIA (Lacs)	Amount Adjusted by PIA (Lacs)
1.	61109644847 SBI Kapasan	69.72	69.52	69.52

Source: Data received from PIA

CHAPTER –2

Entry Point Activity

2.1 About the Entry Point Activity:

Entry Point Activity (EPA) is one of the important activities of the project area and their implementation helped to establish **credibility and rapport** between the project functionaries and the village community. Therefore, in this watershed, different need based EPA work i.e. **Chopal, Pashu Khel Nirman, and GLR** were executed/constructed

2.2 Proposal in DPR for EPA Work:

EPA works are a part of approved DPR, which are duly approve by Gram Sabha. There is no financial deviation as proposed in DPR and actual execution as reported looking to the demand and necessity of community. **4%** of fund against the Project cost is earmarked for EPA work.

Proposed EPA works in DPR

Table: 2.1

S.N.	Proposal as per DPR	No	Financial provisions in Rs.Lacs
1	Chopal	5	4.15
2	Pashu Khel Nirman	5	2.08
3	GLR	8	12.86
	Total	18	19.09

Source: DPR & data received from PIA

2.3 Activities under taken:

During the process of collection of data of EPA works, their present status, utility and impact assessment, field visits to the watershed area were carried out by the team of Arpan Seva Sansthan and interaction with the farmers, users, PRI, Watershed Committee members and PIA etc. were conducted in detail and each EPA activity-wise data in a structured format was collected with the support of concerning PIA.

Details of executed EPA works

Table: 2.2

S. No.	Name of Activity	Location		Place		Year of execution	Sanction Cost (in Rs.)	Fund Utilized (in Rs.)	Status of utilization of activity		Benefitted Family (Nos.)
		Lat.	Long.	Village	GP				Expected	Actual	
1	2	3		4	5	6	7	8	9	10	11
1	G.L.R	24.752036	74.315132	Thapadiyakheda	Chakuda	2011-12	1.13	1.13	Drinking water use for People in village	Useful for people in village for Drinking water	40
2	G.L.R	24.766031	74.290277	Jivakheda	Chakuda	2011-12	1.25	1.25	Drinking water use for People in village	Useful for people in village for Drinking water	42
3	Chaupal Nirman	24.771353	74.307188	Pipalkhedi	Karukada	2011-12	0.69	0.69			48
4	Chaupal Nirman	24.770790	74.289840	Karukada	Karukada	2011-12	0.86	0.86			35
5	G.L.R	24.806024	74.350637	Gumanpura	Roliya	2011-12	1.20	1.20	Drinking water use for People in village	Useful for people in village for Drinking water	52
6	Pashukhel Nirman	24.784704	74.352890	Gumanpura	Roliya	2011-12	0.42	0.42	Drinking water use for Livestock in	Useful for Livestock Drinking water in	35

S. No.	Name of Activity	Location		Place		Year of execution	Sanction Cost (in Rs.)	Fund Utilized (in Rs.)	Status of utilization of activity		Benefitted Family (Nos.)
		Lat.	Long.	Village	GP				Expected	Actual	
1	2	3		4	5	6	7	8	9	10	11
									village	village	
7	Pashukhel Nirman	24.792828	74.393673	Ramthali	Hathiyana	2011-12	0.42	0.42	Drinking water use for Livestock in village	Useful for Livestock Drinking water in village	43
8	Pashukhel Nirman	24.792124	74.391747	Ramthali	Hathiyana	2011-12	0.44	0.44	Drinking water use for Livestock in village	Useful for Livestock Drinking water in village	60
9	Chaupal Nirman	24.790852	74.391358	Ramthali	Hathiyana	2011-12	0.82	0.82			62
10	G.L.R	25.175097	74.765854	Raghunathpura	Umand	2011-12	1.11	1.11	Drinking water use for People in village	Useful for people in village for Drinking water	54
11	Pashukhel Nirman	24.765908	74.348692	Naykokakheda	Umand	2011-12	0.26	0.26	Drinking water use for Livestock in village	Useful for Livestock Drinking water in village	43

S. No.	Name of Activity	Location		Place		Year of execution	Sanction Cost (in Rs.)	Fund Utilized (in Rs.)	Status of utilization of activity		Benefitted Family (Nos.)
		Lat.	Long.	Village	GP				Expected	Actual	
1	2	3		4	5	6	7	8	9	10	11
12	Chaupal Nirman	24.775562	74.319341	Umand	Umand	2011-12	0.56	0.56			46
13	Chaupal Nirman	24.777342	74.319456	Umand	Umand	2011-12	0.38	0.38			55
14	Pashukhel Nirman	24.778246	74.319720	Umand	Umand	2011-12	0.41	0.41	Drinking water use for Livestock in village	Useful for Livestock Drinking water in village	38
15	G.L.R	24.753619	74.340087	Bheemkhand	Umand	2011-12	1.25	1.25	Drinking water use for People in village	Useful for people in village for Drinking water	65
16	Pashukhel Nirman	24.775491	74.319204	Umand	Umand	2011-12	0.44	0.44	Drinking water use for Livestock in village	Useful for Livestock Drinking water in village	44
17	Pashukhel Nirman	24.778150	74.318335	Umand	Umand	2011-12	0.19	0.19	Drinking water use for Livestock in village	Useful for Livestock Drinking water in village	35

S. No.	Name of Activity	Location		Place		Year of execution	Sanction Cost (in Rs.)	Fund Utilized (in Rs.)	Status of utilization of activity		Benefitted Family (Nos.)
		Lat.	Long.	Village	GP				Expected	Actual	
1	2	3		4	5	6	7	8	9	10	11
18	Pashukhel Nirman	4.774655	74.317927	Umand	Umand	2011-12	0.25	0.25	Drinking water use for Livestock in village	Useful for Livestock Drinking water in village	30
19	G.L.R	4.804202	74.370463	Uchanarkhurd	Uchanarkhurd	2011-12	1.03	1.03	Drinking water use for People in village	Useful for people in village for Drinking water	52
20	G.L.R	24.767981	74.369213	Uchanarkala	Uchanarkhurd	2011-12	0.96	0.96	Drinking water use for People in village	Useful for people in village for Drinking water	68
21	Pashukhel Nirman			Ragaspuriya	Uchanarkhurd	2011-12	0.38	0.38	Drinking water use for Livestock in village	Useful for Livestock Drinking water in village	32
22	Pashukhel Nirman	24.767254	74.369602	Uchanarkala	Uchanarkhurd	2011-12	0.41	0.41	Drinking water use for Livestock in village	Useful for Livestock Drinking water in village	40
23	Chaupal Nirman	24.765718	74.349907	Nathikheda	Uchanarkhurd	2011-12	0.64	0.64			55

S. No.	Name of Activity	Location		Place		Year of execution	Sanction Cost (in Rs.)	Fund Utilized (in Rs.)	Status of utilization of activity		Benefitted Family (Nos.)
		Lat.	Long.	Village	GP				Expected	Actual	
1	2	3		4	5	6	7	8	9	10	11
24	G.L.R	24.792288	74.335820	Javanpura	Uchanarkhurd	2011-12	1.10	1.10	Drinking water use for People in village	Useful for people in village for Drinking water	66
25	Pashukhel Nirman	24.792517	74.334204	Javanpura	Uchanarkhurd	2011-12	0.41	0.41	Drinking water use for Livestock in village	Useful for Livestock Drinking water in village	33
26	Pashukhel Nirman	24.768706	74.369709	Uchanarkhurd	Uchanarkhurd	2011-12	0.44	0.44	Drinking water use for Livestock in village	Useful for Livestock Drinking water in village	38
	Total						19.09	17.45			1211

Source: Data received from PIA

Accordingly, a provision of **Rs. 19.09 lacs** was kept in the DPR for EPA works in this project and at the Final evaluation stage of the project **Rs. 17.45 Lacs** were utilized under EPA, which is **91.39%** financial achievement.

2.4 Utility:

In all, total **26 EPA** works at different location were executed and all are being useful for the community. Details of EPA works as a whole are as under:

Fund utilization under EPA works

Table: 2.3

S. No.	EPA Type	No. of Works	Sanction Cost (in Rs.)	Fund Utilized(in Rs.)	Benefitted Families (in Nos.)	Executed in 2009-10 (Nos.)	Executed in 2011-12 (Nos.)
1	2	3	4	5	6	7	8
1	GLR	8	12.86	9.03	439	0	8
2	Pashu Khel Nirman	12	2.08	4.47	471	0	12
3	Chaupal Nirman	6	4.15	3.95	301	0	6
	TOTAL	26	19.09	17.45	1211	0	26

Source: Survey results of MEL&D agency Arpan

As most of the EPA works being executed in the watershed area, were not executed by any other government schemes and also apart from other EPAs in other watersheds such activities are not covered and permissible under the eligible investments in regular project activities or NRM activities, therefore with an objective of rapport building with the villagers & making the easy entry in project area, the importance of EPA can't be ignored.

Awareness about IWMP project activities and EPA works among the community was observed during discussion of impact assessment. It is reported that the activities are being vastly utilized for the purpose for which it was planned and the human and livestock are being benefitted.

The important area to look into is the regular operation and maintenance of asset created like GLR, Pashukheli Nirman and Chaupal Nirman supply / feeding of water to the resource created by the villagers themselves. Repair and maintenance of executed work will be needed in due course of time to keep them useful sustainably.

2.5 Impact of Intervention:

As far as purpose or objective of these EPA is concern, it already described above that both the EPA activities were targeted for providing drinking water access to the human and for livestock. Drinking water for human beings and cattle was very crucial before the IWMP Project but after Construction of Pashukhel Nirman, Chaupal Nirman and GLR at the selected places, availability of drinking water for human, cattle and other house hold necessity has ensured. Earlier, women were fetching water from the long distance in the project area to fulfill the requirement but now the resources has the availability of water nearby their houses, so that the time is being saved and they are able to utilize the saved time in other productive works.

It is reported that by and large the quality of all **26 EPA works constructed under the project is satisfactory to very good** and are serving the purpose.

It is also reported by the villagers/users that the purpose of EPA is very well met out, but at some places due to reluctance / negligence of the villagers or person responsible for the feeding the water into the asset, the asset was lying empty.

Impact of Intervention

Table: 2.4

S. No.	EPA Type	No. of Works	Benefitted Families (in Nos.)	Status of utilization of activity (Nos.)	
				Useful	Not Useful
1	2	3	4	5	6
1	GLR	8	439	8	0
2	PashuKhel Nirman	12	471	12	0
3	Chaupal Nirman	6	301	6	0
	TOTAL	26	1211	26	0

Source: Survey results of MEL&D agency Arpan

Further, with an investment of **Rs. 17.45 lacs** incurred in **8 Nos. GLR, 12 Nos.Pashukhel Nirman, &6 Chaupalnirman** creation EPA work, **1211** families are being benefitted.

2.6 Photo Gallery:

Some of the photographs of EPA collected along with location details are asunder:

	
Pashukheli-Uchanar	Chabutara Nirman

CHAPTER –3

IEC, Participation and Community Mobilization

IEC and Training programmes conducted under IWMP:

To ensure the community participation in the project, annual Training plan was prepared by the PIA. As per the need of the project area and budgetary availability, suitable training are opted from the list of planned trainings by the concerning PIA.

3.1 IEC Activities:

The PIA has organized following activities under Information Education and Communication (IEC) to spread the awareness about the program. The key activities are:

- i. Door to Door Campaigning:** During the preparatory phase, door to door campaign was carried out by the WDT and other project functionaries to convey the message that IWM Programme is launched in their village, it's objectives, important activities, likely benefits. They were also informed that why their involvement is necessary and they should take part in every activity i.e. orientation meeting, PRA, village meetings etc.
- ii. Hamlet meeting/ meeting with disadvantages groups:** Social mapping cum screening of the beneficiary type wise, class-wise, hamlet wise demographic data of project area was done and in the initial stage, hamlet wise meeting of various class and disadvantaged groups were conducted. The objective was to orient them about the likely benefits i.e. opportunity of employments, to become SHG member and start thrift and income generating activities.
- iii. Organization of village meetings:** Village-wise meetings were conducted in all project villages with the progressive farmers, PRI members, sarpanch, ward panch etc. again to inform about project mandate, activities etc. These meeting were quite useful in which problem identification, possible remedial measures, choice of activities were discussed.
- iv. Wall Painting and Slogans writing at the common/public places:** To bring the awareness about the project in the local community wall paintings in 7 Gram Panchayat were painted; depicting the important information about the project in the form of events/ activities, important dates, costs, provisions, phone numbers of contact person, map of the area, villages covered etc. as it is a common place where many of the farmers visits daily. It was helpful to bring awareness among the community.

In total, **Nara Lekhan Wall Painting activities** were carried out in all 18 villages of the project area. The slogans were able to transfer the spirit generating messages about soil and water conservation, importance of watershed treatment and outcomes etc.

On this activity total Fund of **Rs. 0.45 Lacs** was utilized benefitting all the families of the project area directly or in-directly.

Details of IEC activities at all 18 villages of 7 GP by PIA:

Table: 3.1

S. No.	Name of Activity	Physical Achievement (Nos.)	Fund Utilised (lacs)	Benefitted Families (Nos.)	Impact Status	
					Expected	Actual Impact
1	2	3	6	7	8	9
1	Nara Lekhan	Nara Lekhan (90)	0.45	All families of entire watershed area	To bring awareness in the community	It has been helpful to bring awareness among the community

Source: Data received from PIA

V. Organization of Workshop/Trainings: Orientation workshop and various theme based workshops for specific target groups were organized at panchayat samiti, district & state level. The details of training activity are covered in the subsequent paras below.

VI. Exposure visits: The purpose of seven day exposure visit is very clear. In our state, country and abroad, many new interventions, best practices in the field of watershed development and management showing the impact of activity are carried out. On the principle of ‘**seeing is believing**’, the farmer were able to dream for themselves, adopt the sense of achievement, cross learning through discussions with the benefitted farmers of visiting places, and able to generate commitment for their own area or interventions. The people’s participation is also being taught & witnessed as without people’s participation and community mobilization, the success of watershed programme cannot be ensured.

In this watershed, one Interstate, one out state and SHG Exposure tour was conducted by the PIA. In this activity, total **247 beneficiaries** belonging to **247 families** were participated/benefitted. Out of **247** participants, **197 were male and 50 were female**. A sum of **Rs. 9.16 Lacs** was utilized in this activity

3.2 Meeting with WCDC, PIA, Chairman and members of watershed

Committee and community:

A number of meetings were conducted at District level with the Project Manager cum Superintending Engineer, Watershed Cell Cum Data Center (WCDC) Chittorgarh, PIA, Kapasan, Chairman and members of Watershed Committee (WC), Gram Panchayat and community for review the progress of watershed work done in the project area and to share their views about the implementation of IWMP Project.

For Social Audit purpose, monthly meetings of WC and community were organized and apart from reviewing the progress under various activities, other issues related with project implementation were discussed in the meetings.

3.3 Training Programmes:

Training Programs has-been organized by the PIA & PM WCDC to build up the capacity and development of skills to Office staff and WC members for planning, implementation and management of the Project.

Details of Training Conducted by PIA are given below:

Table:3.2

S. No.	Type of Training	No. of Trainings conducted (Nos.)	No. of Trainees participated (Nos.)		Expenditure Incurred (in Lacs)	Benefitted Families (Nos.)
			Male	Female		
1	2	3	4	5	6	7
1	Orientation Training	14	850	179	1.99	1029
2	Training of SHGs	1	42	4	0.09	46
3	WC/ Gram Panchayat personnel training	1	38	1	0.08	39
4	Skill Development Training	1	10	28	0.08	39
5	Training of UGs	6	212	28	1.03	240
6	Training of Farm Production measures	13	485	35	2.24	520
7	Training of Animal Husbandry	3	120	0	0.52	120
8	Crop training	1	29	0	0.03	29
9	Total for Training	40	1786	275	6.05	2062
10	Interstate Exposure tour conducted & Places	1	90	12	2.75	102
11	Outstate Exposure tour conducted & Places	1	99	0	5.59	99
12	SHG tour	1	8	38	0.82	46
	Grand Total	43	1983	325	15.21	2309

Source: Data received from PIA

In this watershed, total **43** different trainings and exposure visit activities were organized; out of which **40** were different types of trainings and **1** Interstate Exposure tour, **1** Outstate Exposure tour and **1** SHG tour. Total **2308 persons** were benefitted in the training and exposure visit activity; of which **2061** were under training activity and **247** under exposure visit activity.

Further, total **1983 male** person were benefitted; of which **1786** were under training and **197** were under exposure visit and total **325** female members were benefitted; of which **275** were under training and **50** under exposure visit activity.

3.4 Financial Achievements:

As per DPR, a provision of **Rs. 23.87 Lacs** was kept under **Institution and Capacity Building Activity head** of the project against the total provision of **Rs. 477.36**. Out of which a sum of **Rs.15.66Lacs** was utilized during the project period, which is **65.61%** of approved provisions.

The expenditure of **Rs. 15.66 Lacs** comprises of **Rs. 6.05 Lacs** on Training activities, **Rs. 9.16 Lacs** on exposure visit and **Rs. 0.45 Lacs** on the IEC during the project period.

3.5 Impact of interventions:

The impact of these interventions can be seen in terms of the **active & increased participation** of community in the regular meeting of the project interventions. The formation of **User Groups and SHG** for the repair and maintenance of project interventions, collective way for thrift and income generation activities is initiated in the area. The active participation of community was seen in the formation and selection of **Watershed Development Committee and Secretary**. No. of farmers involved with agriculture and horticulture development activities increased. Farmers are **contributing their share** in the project activities. Their **decision making** on common issues has been increased. There is thorough discussion with in the groups for selecting the individual beneficiaries.

	
<p>Training Programme</p>	<p>Training Programme</p>
	
<p>Tour Programme</p>	<p>Training Programme</p>

CHAPTER – 4

Process, People's Participation and Institutional Arrangements

4.1 Process:

The process for the institutional development was initiated with the entry point activities as a rapport building for the project staff. Continuous meetings were organized with the different stake holders for formation and selection of members in user groups and self-help groups. IWMP watershed projects focuses on systematic and sequential process which is adopted by the WD&SC Department in Rajasthan considering the Common Guidelines of GOI and other directions issued from time to time and same has been followed by the concerning PIA in Chittorgarh2/2009-10.

4.2 People's Participation:

People's participation in watershed management programmes is an important strategy of Government of India for making watershed programmes successful. People's participation is, however, not a new idea in India. In fact, it emerged long ago in the vision and actions of Tagore and Gandhi. Rural masses as development actors were the central feature of their rural reconstruction programmes.

It was found that in programme **planning stage**, the majority of farmers participated in planning meetings and they also motivated their fellow farmers to participate in planning meetings of watershed development. They also shared information & experience with their fellow farmers after participating in planning meetings. They actively participated in the PRA and DPR formation process. The entry point activities were also defined by them through the meetings.

In the **implementation stage**, majority of farmers contributed labor only towards construction of soil and water conservation structures in their fields and also asked their fellow farmers for contribution in the form of labor or cash towards construction of conservation structures in their watershed area. Their contribution was deposited in their watershed development fund.

In the **maintenance stage**, the majority of farmers of project area motivated to their fellow farmers for labor contribution towards repair and maintenance of soil and water conservation structures in their watershed and also protected the SWC structures from natural calamities as well as forest plantation from the animals. Further, it was also found that the farmers of project area have participated moderately in the watershed development programme planning and implementation stages, whereas, **high level of participation was exhibited by farmers in maintenance stage of watershed development programme**. Therefore, it could be concluded that the stakeholder farmers of project area participated more by contributing labor in maintenance of soil and water conservation structures implemented in their fields through government sponsored watershed development programmes to enhance their sustainable agricultural production due to more availability of irrigation water.

The programme should meet the daily requirements of the majority of the stakeholders like supply of drinking water, fodder for cattle and fuel for the kitchen. The watershed development programmes are made for local people; hence the local people should take interest and

participate also in implementation of programme by contributing labour and money in construction of soil and water conservation structures on their field and community land. Participation in **maintenance stage** is required because without protection and care by the local people the programme will not be successful. The involvement of local people in **programme evaluation** is also necessary, so that it may provide points to be considered for improvement in future programme planning.

4.3 Institutional Arrangements under IWMP:

The institutional arrangements for the project execution at community level followed in the District Chittorgarh, Panchayat Samiti Kapasanand watershed level are as under:

- State Level Nodal Agency and the Nodal Department
- Watershed Cell cum Data Center at District level
- Project Implementation Agency (PIA) at Panchayat Samiti Level
- 4 member Watershed Development Team (WDT) at the project level
- Watershed Development Committee (WDC)
- User Groups (UGs)
- Self Help Groups (SHGs)

4.3.1 WCDC and PIA in Chittorgarh IWMP -2/2009-10:

In case of **Chittorgarh IWMP -2/2009-10 Kapasan**watershed project, the details are as under:

WCDC and PIA in Chittorgarh 2 /2009-10

Table: 4.1

Name of Project Manager, Watershed Cell cum Data Centre (PM WCDC)	Shri Atul Kumar (SE)
Name of Project Implementing Agency (PIA) and supporting technical staff	Shri Rajesh Kumar Pungliya (XEN) Shri Sury Prakash Jarwal (AEN) Shri Suresh Chandra Jat(JEN)

Source: PIA & Survey results of MEL&D agency Arpan

4.3.2 Watershed Development Team in Chittorgarh IWMP-2/2009-10:

Watershed Development Team in Chittorgarh IWMP- 2/2009-10

Table: 4.2

Name of Watershed Development Team (last Position)	Name of WDT
Engineering expert	Dinesh Purbiya
Agriculture expert	MukeshJat
Veterinary expert	Dr. V.K.Goyal
Social science expert	LalitaTripathi

Source: PIA & Survey results of MEL&D agency Arpan

4.3.3 Self Help Groups (SHG):

As per the Common Guidelines, the Watershed Committee shall constitute SHGs in the watershed area with the help of WDT from amongst poor, small and marginal farmer households, landless/asset less poor agricultural laborers, women, shepherds and SC/ST persons. These Groups shall be **homogenous groups** having common identity and interest who are dependent on the watershed area for their livelihood. Each Self Help Group will be provided with a revolving fund of an amount to be decided by the Nodal Ministry. Total **88 SHGs** were formed in this cluster with **680 members**.

Details of Self Help Groups in Chittorgarh IWMP -2-2009-10:

Table: 4.3

Name of GP	Total No. of SHG formed	Total No. of SHG members	No. of SC/ST members	No of women members
Chakuda	5	35	0	30
Roliya	7	49	20	25
Karukada	6	53	31	28
Umand	30	294	48	199
Hathiyana	10	60	10	30
Uchnarkhurd	30	189	60	109
Total	88	680	169	421

Source: PIA & Survey results of MEL&D agency Arpan

4.3.5 User Groups (UG):

As per the Common Guidelines, the Watershed Committee (WC) shall also constitute User Groups in the watershed area with the help of WDT. These shall be **homogenous groups** of persons most affected by each work/ activity and shall include those **having land holdings** within the watershed areas. Each User Group shall consist of those who are likely to derive direct benefits from a particular watershed work or activity. The WC with the help of the WDT shall facilitate resource-use agreements among the User Groups based on the principles of **equity and sustainability**. These agreements must be worked out before the concerned work is undertaken. It must be regarded as a pre-condition for that activity. The User Groups will be responsible for the operation and maintenance of all the assets created under the project in close collaboration with the Gram Panchayat and the Gram Sabha. Total **29UGs** were formed in this cluster with **290 members**.

4.3.5.1 Details of User Groups in Chittorgarh IWMP-2/2009-10:

Table: 4.4

Name of GP	Total No. of UG formed	Total No. of UG members	No. of SC/ST members
Chakuda	5	50	12
Roliya	5	50	15
Karukada	5	50	14
Umand	5	50	13
Hathiyana	5	50	16
Uchnarkhurd	4	40	10
TOTAL	29	290	80

Source: PIA & Survey results of MEL&D agency Arpan

4.3.6 Watershed Committee (WC):

Total 6 WCs were formed in this cluster with 72 members.

4.3.6.1 Details of Watershed Committee in Chittorgarh IWMP-2/2009-10:

Table: 4.5

S. No	Name of Watershed Committee	Chairman Name & Mobile No.	Name of Secretary	Total Member	No. of SC/ST member	No. of women member	Date of formation	WC Account No. and Bank Name
1	2	3	4	5	6	7	8	9
1	Umand	Prakash Choudhry	UdaiLalMeghval	12	11	4	05.08.10	42740100001887 BRKGB Kapasana
2	UchnarKhard	BhagvanLalJat	KailashJat	12	11	3	04.08.10	42740100001883 BRKGB Kapasana
3	Hatiyana	Rattan Lal	Lobhchand Jain	11	11	2	03.08.10	42740100002109 BRKGB Kapasana
4	Karukda	Shanty Lal	RameshwarLalJat	12	11	3	06.08.10	42740100001881 BRKGB Kapasana
5	Chakuda	BabruGadri	BhwarLalKhir	12	10	3	10.08.10	42740100001880 BRKGB Kapasana
6	Roliya	Rattan LalJat	Jagdish Singh Rajput	13	10	3	11.08.10	42740100001885 BRKGB Kapasana
	Total			72	64	18		

Source: PIA & Survey results of MEL&D agency Arpan

4.4 Impact of Interventions:

With the institutionalization of system as mentioned above, following impacts in Chittorgarh IWMP -2/2009-10 watersheds were observed:

- Regular meeting of WDC
- Decision making in day to day execution of work by the WDC
- Updating of committee level records by the committee itself
- Repair and maintenance of the project interventions by the user groups
- Actively women participation through SHG in all project activities

4.5 Photo Gallery:



CHAPTER – 5

Natural Resource Management

5.1 Soil and Water Conservation measures under taken:

Under Natural Resource Management (NRM) works component of the IWMP, following Soil and Water Conservation measures were taken as under:

Soil and Water Conservation measures under taken through IWMP:

Table: 5.1

S. No.	Name of Activity	Unit	Target for the project period		Total achievement up to end of project period		Percentage achievement	
			Phy	Fin	Phy	fin	Phy	Fin
1	2	3	4	5	6	7	8	9
(i)	Land Development (Productive use)							
	(a) Afforestation	Ha.	0	0.00	0	0.00	0	0.00
	(b) Horticulture	Ha.	0	0.00	0	0.00	0	0.00
	(c) Pasture Development*	Ha.	35	34.00	0	0.00	0	0.00
(ii)	Soil and Moisture Conservation							
	(a) Field Bunds	Mtr.	124800	85.00	195362	69.96	156.54	82.31
	(a) PRT	Ha.	0	0.00	524	0.18	0	0.00
	(b) VCB	Ha.	0	0.00	48805	32.86	0	0.00
(iii)	Vegetative & Engineering Structure							
	(a) Gully Plugs	Nos.	0	0.00	0	0.00	0	0.00
	(b) Anicut	Nos.	0	0.00	0	0.00	0	0.00
	(c) Earthen Bund	Nos.	0	0.00	0	0.00	0	0.00
	(d) CCT & DCCT	Nos.	0	0.00	0	0.00	0	0.00
	(e) MPT	Nos.	0	0.00	0	0.00	0	0.00
	(f) Waste Weir	Nos.	0	0.00	0	0.00	0	0.00
	(g) LSCD	Nos.	0	0.00	26	4.98	0	0.00
(iv)	Water Harvesting Structure (New created)							
	(a) Earthen Check Dam	Nos.	342	167.42	17	9.95	4.97	5.94
	(b) Nallah Bunds	Nos.	0	0.00	0	0.00	0	0.00
	(c) Others (Farm Pond, Talai & WHS)	Nos.	0	0.00	8	5.87	0	0.00
	(e) Sunken Pond	Nos.	0	0.00	15	8.81	0	0.00
	(f) Percolation tanks/Ground water recharge structure	Nos.	0	0.00	37	121.61	0	0.00
	Total			286.42		254.22	0	88.76

Source: DPR, PIA & Survey results of MEL&D agency Arpan

Soil and Water Conservation measures under taken through convergence:

Table: 5.2

STATUS OF COMPLETED SOIL AND WATER CONSERVATION MEASURES THROUGH CONVERGENCE IN CHITTORGARH IWMP_2			
S.No.	Particulars	Sanction Amount	Financial Expenditure (in lacs)
A	PHED	14	10.36
	Drinking Water		
	Roof Top Water Harvesting Structure	14	10.36
B	Panchayati Raj	22	45.87
	Arable		
	Field Bunding	13	13.168
	Non Arable		
	Talab Renovation	3	8.542
	D.L.T.		
	Renovation/Restoration of WHS	6	24.158
B	Water Resource Department	4	64.63
	D.L.T.		
	Renovation/Restoration of WHS	4	64.63
	Grand Total	40	120.86

Source: PIA & Survey results of MEL&D agency Arpan

Above tables 5.1 & 5.2 reveals that expenditure being incurred through IWMP i.e. Rs. **254.22** lac (**88.76%**) is less than planned as per DPR. Apart from such expenditure incurred in soil and water conservation measures through IWMP, about Rs. **120.86** lacs more incurred through convergence of different government department in CHITTORGARH IWMP-2. As result of it, the financial achievement of **88.76%** against the targeted amount is in actually achieved more than **100% through convergence**.

5.2 Impact of interventions:

It is observed that major expenditure in Chittorgarh IWMP_2/2009-10 watersheds is done on Earthen Bund on farmers' fields, Earthen Bund. Farm Pond Talai WHS **reduces water runoff and controls soil erosion**. Based on the data provided by the PIA during final impact assessment, it was observed that with the implementation of various NRM activities in the farmers' fields, the water harvesting/**recharging is done and the harvested water is used by the nearby farmers to irrigate the crops** directly by pumping at few places, but largely it had contributed in ground water recharge, rising of water table of the wells and making the use of additional water in crop production.

Impact of Soil and Water Conservation measures under taken:

Table: 5.3

S. No.	Activity	Unit	Physical progress	Total Storage capacity (in Thousands CUM)	Total benefitted families (Nos.)
1	2	3			
1.	Field Bunds, Trench	Mtr.	244691	0	197
2.	LSCD	Nos.	26	2.18	42

3.	Earthen Check Dams	Nos.	17	13.50	67
4.	Others (Talai & WHS)	Nos.	23	18.22	86
5.	Percolation tanks/Ground water recharge structure	Nos	37	19	79
	Total		244794	52.9	471

Source: PIA & Survey results of MEL&D agency Arpan

It is evident from the above table that total capacity of rain water harvesting of all NRM activities in the IWMP watershed is **52.90 Thousands CUM**. With the implementation of watershed activities, total **471** families have been benefitted through various activities.

Major impact of this intervention is as under:

- In-situ moisture and water conservation
- Safe disposal of excess rain water
- Reduction in soil erosion
- Reduction in flooding as zigzag construction increase the travelling length of rain water
- Increases time of percolation of water in the soil in upper land
- Safety of bund to breaches due to heavy rain
- Change in cropping pattern.
- Impact on agricultural productivity as the time of moisture retentions is increased
- Impact on soil deposition/conservation of topsoil.
- Impact on net economic benefit.
- Impact on migration.

5.3 Summary:

This watershed area is characterized by Flat to gently undulating topography, resulted by alluvial geomorphology. The plains are covered mostly by loamy to black cotton soil. The area has tremendous potential of Agriculture and Horticulture production with nearby market facilities to Chittorgarh region. As water availability in the farmers' fields is very important to enable him to take up emergency irrigation during dry spells in Kharif season and also second crop during Rabi season. The soil and water conservation measure along with small water harvesting structures (earthen) are quite useful in this area. This has resulted in additional area under irrigation as well as increase in productivity. This is linked with the farmer's income.

Under the project, some deviations within the financial ceilings have been made in the activities implemented as against the DPR provisions, which were initially kept. Perhaps, that would be due to actual requirement of project area and farmers views and needs.

5.4 Photo Gallery:



CHAPTER –6

Agriculture and Horticulture Development

6.1 Activities undertaken:

Following activities were taken up under Agriculture & Horticulture Development in Chittorgarh IWMP 2 (2009-10) Project:

Agriculture & Horticulture Development Activities undertaken:

Table: 6.1

S. No.	Name of Activity	Unit	Target for the project period		Total achievement up to project end		Percentage achievement	
			Phy	Fin	Phy	Fin	Phy	Fin
1	2	3	4	5	6	7	8	9
1	Rabi Crop distribute	Nos.			25	0.62		
2	Kharif Crop distribute	Nos.	-	-	600	6.41	-	-
3	Jayad Crop distribute	Nos.	-	-	163	3.26	-	-
4	Animal Camp		-	-	0	0.05	-	-
5	Varmi compost		-	-	15	3.60	-	-
6	Menjar		-	-	382	3.34	-	-
7	Elovera plant		-	-	0	0.37	-	-
	Total			33.42	1185	17.65		52.82%

Source: PIA & Survey results of MEL&D agency Arpan

STATUS OF COMPLETED AGRICULTURE & HORTICULTURE DEVELOPMENT ACTIVITIES THROUGH CONVERGENCE IN CHITTORGARH IWMP-2			
S.No.	Particulars	No. of activity	Financial Expenditure (in lacs)
A	Agriculture Department	23	5.95
	Arable		
	Micro Irrigation System		
	Pipeline	15	1.76
	Water Harvesting		
	Farm Pond / Khet Talai	8	4.19
B	Horticulture	11	0.83
	Arable		
	Micro Irrigation System		
	Sprinkler	11	0.83
	Grand Total	34	6.78

Source: PIA & Survey results of MEL&D agency Arpan

As against the total project cost of Chittorgarh IWMP-2/2009-10 watershed, of **Rs. 477.36 Lacs**, provision for Production System and Micro-enterprises component (Agriculture & Horticulture Development) was kept as **Rs. 33.42Lacs**. During the project period total expenditure on Production System and Micro-enterprises component activities was reported **Rs17.65 Lacs**, which is **52.82%** against the targeted amount. While considering the funds being utilized through

convergence is Rs.6.78 lacs in IWMP-2 and as a result of it total Rs. 24.43 lacs has been incurred in IWMP-2.

The details of project beneficiaries types and beneficiaries contribution in WDF collected in the activities completed under this head are as under:

Beneficiaries’ types and beneficiaries contribution in WDF:

Table: 6.2

S. No.	Name of Activity	Nos. of Beneficiaries					WDF Amount (Rs. in Lacs)					Total Expenditure (Rs. in Lacs)
		SC	ST	OBC	Gen.	Total	SC	ST	OBC	Gen.	Total	
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Rabi Crop distribute	8	8	3	6	25	0.03	0	0.05	0	0.08	0.62
2	Kharif Crop distribute	90	79	181	250	600	0.21	0	0.24	0.30	0.75	6.41
3	Jayad Crop distribute	20	39	34	70	163	0.18	0	0.11	0.15	0.46	3.26
4	Animal Camp	0	0	0	0	0	0	0	0	0	0.00	0.05
5	Varmi compost	3	0	12	0	15	0.07	0	0.58	0	0.65	3.60
6	Menjar	74	38	120	150	382	0.10	0	0.18	0.30	0.58	3.34
7	Elovera plant	0	0	0	0	0	0	0	0	0	0.00	0.37
	Total	195	164	350	476	1185	0.59	0	1.16	0.75	2.52	17.65

Source: PIA & Survey results of MEL&D agency Arpan

Total benefitted beneficiaries under **Production System and Micro-enterprises component** were **1185** Nos. Out of which **25** were benefitted under Rabi Crop distributes, **600** Kharif Crop distributes activity, **163** under Jayad Crop distribute, **15** under Varmi compost and **382** under Menjar.

The beneficiaries have contributed a sum of **Rs. 2.52 Lacs** as their contribution and the entire amount has been deposited in WDF account.

6.2 Impact of interventions:

After activities taken up under Agriculture & Horticulture Development in Chittorgarh IWMP- 2 (2009-10) Project, following impacts were identified in the project area

6.2.1 Change in Cropping Pattern - Total Cultivation Land, Irrigated Area & Cropped area in IWMP Watershed & Control Area (ha/%):

Cropping Pattern - Total Cultivation Land, Irrigated Area & Cropped area in IWMP Watershed & Control Area (ha/%):

Table:6.3

IWMP/ Control Area	Timeline	Total Cultivation Land			Total Irrigated Area			Total Cropped Area		
		Kharif	Rabi	Jayad	Kharif	Rabi	Jayad	Single Crop	Double Crop	Multiple Crop
1	2	3	4	5	6	7	8	9	10	11
IWMP 2/2009-10	Base line	1553	1007	95	687	801	95	546	912	95
	EndLine	2245	1410	115	1005	1155	115	835	1295	115
	Impact change	692	403	20	318	354	20	289	383	20

IWMP/ Control Area	Timeline	Total Cultivation Land			Total Irrigated Area			Total Cropped Area		
		Kharif	Rabi	Jayad	Kharif	Rabi	Jayad	Single Crop	Double Crop	Multiple Crop
1	2	3	4	5	6	7	8	9	10	11
	Impact % change	44.56	40.02	21.05	46.29	44.19	21.05	52.93	42.00	21.05
Control area	Base line	1565	1015	97	694	812	97	550	918	97
	EndLine	1681	1080	102	750	872	102	601	978	102
	Impact change	116	65	5	56	60	5	51	60	5
	Impact % change	7.41	6.40	5.15	8.07	7.39	5.15	9.27	6.54	5.15

Source: Survey results of MEL&D agency Arpan

It is observed during the end line survey that 44.56% Kharif, 40.02% Rabi and 21.05% Jayad cultivation area is increased in watershed area as compared to 7.41% Kharif, 6.40% Rabi and 5.15% Jayad in Control area. The Single crop area is increased in watershed and control area respectively 52.93% and 9.27%, increase in Double and Multiple crop area is 42.00% and 21.05% respectively in watershed area as compared to 6.54% and 5.15% in control area. It shows a positive impact.

6.2.2 Season/Crop-wise area in IWMP Watershed & Control Area (ha/%):

Season-wise & Crop-wise area in IWMP Watershed % Control Area (ha/%):

Table:6.4

IWMP / Control Area	Timeline	Kharif			Rabi				Jayad	% irrigated area to total cultivation area		
		Maize	Others	Total	Mustard	Wheat	Others	Total	Total	Kharif	Rabi	Jayad
IWMP -2 /2009-10	Base line	690	863	1553	340	310	357	1007	95	44.24	79.5	100.00
	EndLine	910	1335	2245	570	430	410	1410	115	44.77	81.9	100.00
	Impact change	220	472	692	230	120	53	403	20	0.53	2.37	0.00
	Impact % change	31.8	54.69	44.56	67.6	38.7	14.85	40.02	21.05	0.53	2.37	0.00
Control area	Base line	860	705	1565	355	330	330	1015	97	44.35	80.0	100.00
	EndLine	930	751	1681	385	350	345	1080	102	44.62	80.7	100.00
	Impact change	70	46	116	30	20	15	65	5	0.27	0.74	0.00
	Impact % change	8.14	6.52	7.41	8.45	6.06	4.55	6.40	5.15	0.27	0.74	0.00

Source: Survey results of MEL&D agency Arpan

It is observed that cropped area in Maize is increased by 31.88%, Mustard by 67.65%, Wheat by 38.71% in watershed area as compared to 8.14% in Maize, 8.45% in Mustard, 6.06% in Wheat, in control area. Likewise % irrigated area to total cultivation area is also increased by 0.53% in Kharif and 2.37% in Rabi in watershed area as compare to control area where Kharif increased by 0.27% and Rabi increased by 0.74%.

6.2.3 Average Crop Yield/Productivity and Use of Organic Manure in IWMP Watershed & Control Area (Ton/ha & %):

Average Crop Yield / Productivity and Use of Organic Manure in IWMP Watershed & Control Area (Ton/ha & %):

Table:6.5

IWMP/ Control Area	Timeline	Season	Crop Type	Average Crop productivity Per Ha. (Ton)	Use of Organic manures (%)	
					Compost	Vermi Compost
IWMP-2 /2009-10	Base line	Kharif	Maize	1.50	91.00	9.00
			Jawar	0.30	86.00	8.00
			Urad	0.60	84.00	8.50
			Groundnut	1.20	83.00	9.00
			Sugarcane	2.50	90.00	8.50
		Rabi	Wheat	2.50	91.00	13.00
			Barley	2.00	93.00	14.00
			Mustard	0.90	96.00	10.00
			Cotton	0.30	95.00	9.00
			Gram	0.90	92.00	9.50
	Jayed	Moong	0.60	95.00	15.25	
	EndLine	Kharif	Maize	1.75	92.00	9.75
			Jawar	0.50	88.00	9.00
			Urad	0.81	86.00	9.50
			Groundnut	1.39	87.00	9.75
			Sugarcane	2.78	92.00	9.50
		Rabi	Wheat	2.80	95.00	15.00
			Barley	2.24	94.00	14.50
			Mustard	1.19	97.00	10.50
			Cotton	0.59	96.00	10.00
			Gram	1.29	93.00	10.00
	Jayed	Moong	0.80	97.00	16.50	
	Impact change	Kharif	Maize	0.25	1.00	0.75
			Jawar	0.20	2.00	1.00
			Urad	0.21	2.00	1.00
			Groundnut	0.19	4.00	0.75
			Sugarcane	0.28	2.00	1.00
		Rabi	Wheat	0.30	4.00	2.00
			Barley	0.24	1.00	0.50
			Mustard	0.29	1.00	0.50
		Cotton	0.29	1.00	1.00	
		Gram	0.39	1.00	0.50	
Jayed	Moong	0.20	2.00	1.25		
Control Area	Base line	Kharif	Maize	1.47	90.00	8.00
			Jawar	0.20	85.00	7.00
			Urad	0.55	83.00	8.00
			Groundnut	1.16	80.50	8.50
			Sugarcane	2.43	89.00	8.00
		Rabi	Wheat	2.45	90.00	11.00
			Barley	1.94	91.00	12.00

IWMP/ Control Area	Timeline	Season	Crop Type	Average Crop productivity Per Ha. (Ton)	Use of Organic manures (%)		
					Compost	Vermi Compost	
			Mustard	0.85	95.00	9.50	
			Cotton	0.24	94.50	8.50	
			Gram	0.88	91.00	9.00	
	Jayed		Moong	0.57	94.00	12.50	
	EndLine	Kharif	Maize	1.53	91.00	8.50	
			Jawar	0.35	86.00	8.00	
			Urad	0.61	84.00	8.50	
			Groundnut	1.23	81.00	9.00	
			Sugarcane	2.51	90.00	8.50	
		Rabi	Wheat	2.57	91.00	12.00	
			Barley	1.98	92.00	12.50	
			Mustard	1.00	95.50	10.00	
			Cotton	0.35	95.00	9.00	
			Gram	0.97	92.50	9.50	
		Jayed	Moong	0.69	95.00	13.00	
		Impact (A)% change	Kharif	Maize	0.06	1.00	0.50
				Jawar	0.15	1.00	1.00
			Urad	0.06	1.00	0.50	
			Groundnut	0.07	0.50	0.50	
			Sugarcane	0.08	1.00	0.50	
	Rabi		Wheat	0.12	1.00	1.00	
			Barley	0.04	1.00	0.50	
			Mustard	0.15	0.50	0.50	
			Cotton	0.11	0.50	0.50	
			Gram	0.09	1.50	0.50	
	Jayed	Moong	0.12	1.00	0.50		

Source: Survey results of MEL&D agency Arpan

6.3 Summary of important impacts:

- Productivity of major crops has been increased almost in all the crops i.e. wheat, Bajra, Mustard, Gwar etc due to adoption of improved package of practices.
- Use of compost and vermin compost is increased in watershed area as compared to the control area.
- Area under horticulture crop has been increased and the income of farmers have also been increased.
- Net profit from the agriculture and horticulture has been increased.

6.4 Photo Gallery:



CHAPTER –7

Livelihood Interventions

7.1 SHG formulated and Revolving Fund generated:

As per project guidelines, a sum Rs. 25,000/- to each eligible SHG can be given and thus, total **52 (38 SHGs and 14 Individual beneficiary)** were benefitted with total amount of **Rs. 12.93 Lac**.

7.2 Adopted Livelihood activities:

Livelihood Support System: The total cost of Project is **Rs. 477.36 Lacs**. The financial provision for the Livelihood Support System was kept as **Rs 38.19 Lacs**. Out of that, at the Final evaluation stage, a sum of **Rs. 12.93 Lacs** has been utilized as reported by the PIA, which is **33.86 %** of **Rs 38.19 Lacs** total sanctioned amount. Out of **Rs. 12.93 Lacs**, **Rs. 9.43 Lacs** is utilized by providing revolving fund to **38 SHGs** and **Rs. 3.50 Lacs** has been utilized to benefit **14 individual beneficiaries** by giving revolving fund up to **Rs. 0.25 Lacs / individual beneficiary**. Details of SHG & Individual beneficiary-wise progress are as under:

7.2.1 Progress of SHG and revolving fund

Details of SHG and revolving fund

Table: 7.1

S. No.	Name of SHG	Village	Total Member	Seed Money given (Rs.)	Present Status (Working Y/N)
1	2	3	4	5	6
1.	Shreenath SHG	Javanpura	10	25000	Yes
2.	Mahalakshmi SHG	Javanpura	8	25000	Yes
3.	Mateswarei SHG	Nthikheda	5	25000	Yes
4.	Jaibhairunath SHG	Nthikheda	5	25000	Yes
5.	Veerteja SHG Javanpura	Javanpura	5	25000	Yes
6.	Mateswarei SHG	Javanpura	5	25000	Yes
7.	Shree Bajrang SHG	Javanpura	10	25000	Yes
8.	Bholenath SHG	Uchnarkhurd	10	25000	Yes
9.	Mateswarei SHG	Uchnarkhurd	10	25000	Yes
10.	Bajrangbali SHG	Uchnarkhurd	10	25000	Yes
11	Ramdev SHG	Uchnarkhurd	5	25000	Yes
12	Bherunath SHG	Uchnarkhurd	5	25000	Yes
13	Shanidev SHG	Uchnarkhurd	10	25000	Yes
14	Krashna SHG	Uchnarkhurd	10	25000	Yes
15	Ramdev SHG	Umand	7	25000	Yes
16	Mateswarei SHG	Umand	5	25000	Yes
17	Mevad SHG	Umand	5	25000	Yes
18	Joganiyamahliabachat SHG	Umand	7	25000	Yes

S. No.	Name of SHG	Village	Total Member	Seed Money given (Rs.)	Present Status (Working Y/N)
19	Devnarayan SHG	Umand	7	25000	Yes
20	Asharfi SHG	Raghunathpura	6	17500	Yes
21	Husaini SHG	Raghunathpura	10	25000	Yes
22	Durgamahila SHG	Umand	10	25000	Yes
23	Eakta SHG	Raghunathpura	10	25000	Yes
24	Kalika SHG	Pipalkhedi	10	25000	Yes
25	Chamunda SHG	Pipalkhedi	10	25000	Yes
26	Mahalakshmikrasakruchikar SHG	Karukada	10	25000	Yes
27	Lakshmi SHG	Pipalkhedi	10	25000	Yes
28	Saraswati SHG	Pipalkhedi	10	25000	Yes
29	Annpurnaa SHG	Gumanpura	10	25000	Yes
30	Jaibhavani SHG	Gumanpura	10	25000	Yes
31	Keerti SHG	Gumanpura	10	25000	Yes
32	Jai rana SHG	Thapadiyokakheda	5	25000	Yes
33	Jaibhavani SHG	Thapadiyokakheda	5	25000	Yes
34	Bajrangbali SHG	Ramthali	6	25000	Yes
35	Jai shanidev SHG	Ramthali	10	25000	Yes
36	Saraswti SHG	Ramthali	5	25000	Yes
37	Sanvariya SHG	Ramthali	5	25000	Yes
38	Ramdev SHG	Ramthali	5	25000	Yes
TOTAL:-				942500	

Source: From concerning PIA

7.2.2 Progress of Individual Beneficiary Activities:

Details of Individual Beneficiary Activities

Table: 7.2

S. No.	Name of Entrepreneur	Business / Purpose	Village	Assistance Provided as seed money (Rs.)	Present Status (Working Y/N)
1	2	3	4	5	6
1	Dalchand / BheraJat		Uchnarkalan	25000	Yes
2	Kamla Devi / Madanlal Sharma		Uchnarkhurd	25000	Yes
3	Gopal Saini / BhagvanNaiz		Uchnarkalan	25000	Yes
4	Balu Kumar / Banshi Kumar		Uchnarkalan	25000	Yes
5	Bhera / PyaraRegar		Uchnarkalan	25000	Yes
6	DevilalSain / ChampalalSain	Hair Shop	Umand	25000	Yes
7	LakshmanMeghwa / UdayMeghwal	General Store	Umand	25000	Yes
8	Mehrun / Ishak Mohammad		Raghunathpu	25000	Yes

S. No.	Name of Entrepreneur	Business / Purpose	Village	Assistance Provided as seed money (Rs.)	Present Status (Working Y/N)
1	2	3	4	5	6
			ra		
9	Tamanna / Rajjak Mohammad		Raghunathpura	25000	Yes
10	Meena Devi BhagvatiJaysavaal		Pipalkhedi	25000	Yes
11	Stynarayan / KashiramDholi		Pipalkhedi	25000	Yes
12	Bhairu Singh / Arjun Singh		Gumanpura	25000	Yes
13	Omkar / Shankar Nayak		Ramthali	25000	Yes
14	Ratan / BhairaGadree		Ramthali	25000	Yes
Total				350000	

Source: From concerning PIA

7.3 Impact of Intervention:

The revolving fund @ Rs. 25,000/- was provided to the **52 SHGs (38 SHGs and 14 Individual beneficiaries)** for carrying out their own selected income generating activities to support their livelihoods. These activities are grocery shop, stitching, goat rearing, diary etc.

Out of total **14** individual beneficiaries benefitted under the project, **1** with Hair Shop, **and1** with General Store, They are getting their livelihoods now with the support of project.

7.4 Summary:

To provide livelihood support to an un-employed youth or revolving fund to the SHGs is a big mile stone for bringing the community up front and making them **self-reliant and self-confident**. The uniqueness of watershed development project is that it takes care and ensures integrated development of a hydrological area in the form of creation of assets both at the farmer's field, common lands and also support for the land less, women and marginalized people of the society. The results are very good as these benefitted families now able to meet the requirement of the family members, thus up-lifting the living status.

7.5 Photo Gallery:



CHAPTER –8

Impact of Watershed Intervention

8.1 Water:

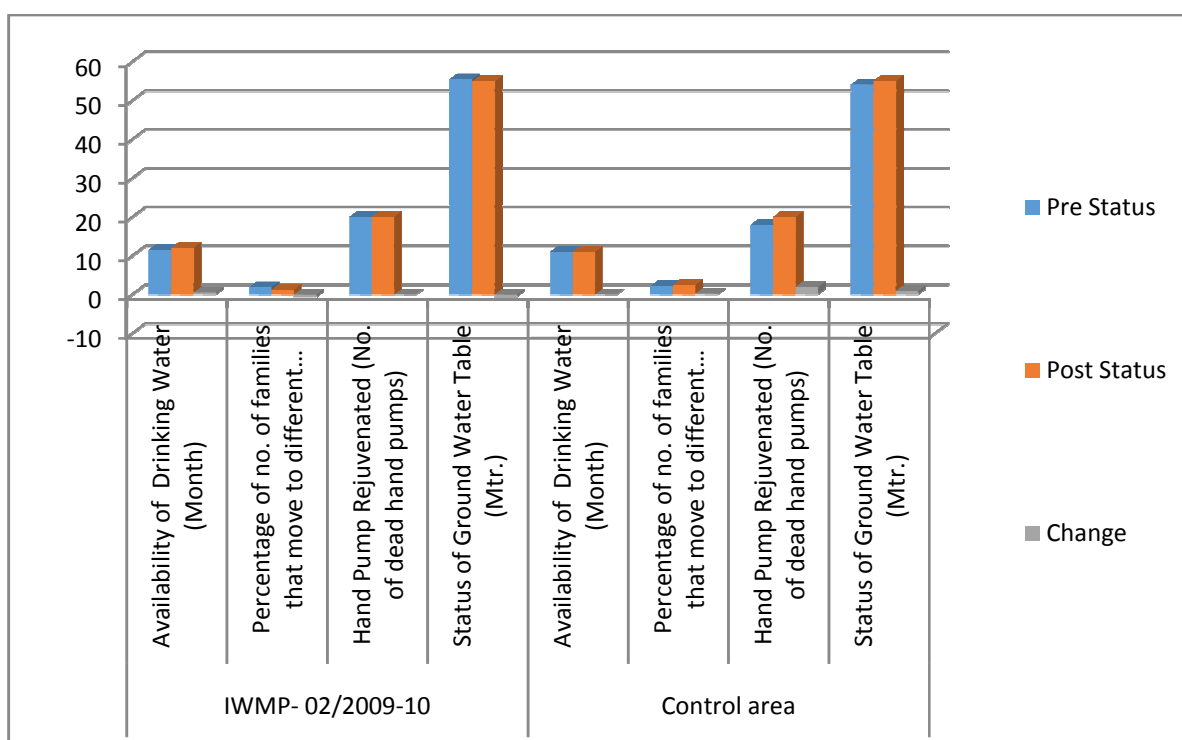
8.1.1 Availability of drinking water for human being and cattle:

Status of Drinking Water:

Table:8.1

S. No.	Area	Indicator	Pre Status	Post Status	Change	Reason
1	2	3	4	5	6	7
1	IWMP 2/2009-10	Availability of Drinking Water (Month)	11.5	12	0.5	Water conservation, recharge works and new improved technology interventions in Agriculture
2		Percentage of no. of families that move to different distances to fetch water (%)	1.9	1.25	-0.65	
3		Hand Pump Rejuvenated (No. of dead hand pumps)	20	20	0	
4		Status of Ground Water Table (Mtr.)	55.49	54.96	-0.53	
1	Control area	Availability of Drinking Water (Month)	11	11	0	No such intervention like watershed area
2		Percentage of no. of families that move to different distances to fetch water (%)	2.25	2.5	0.25	
3		Hand Pump Rejuvenated (No. of dead hand pumps)	18	20	2	
4		Status of Ground Water Table (Mtr.)	54.11	55.05	0.94	

Source: Survey results of MEL&D agency Arpan



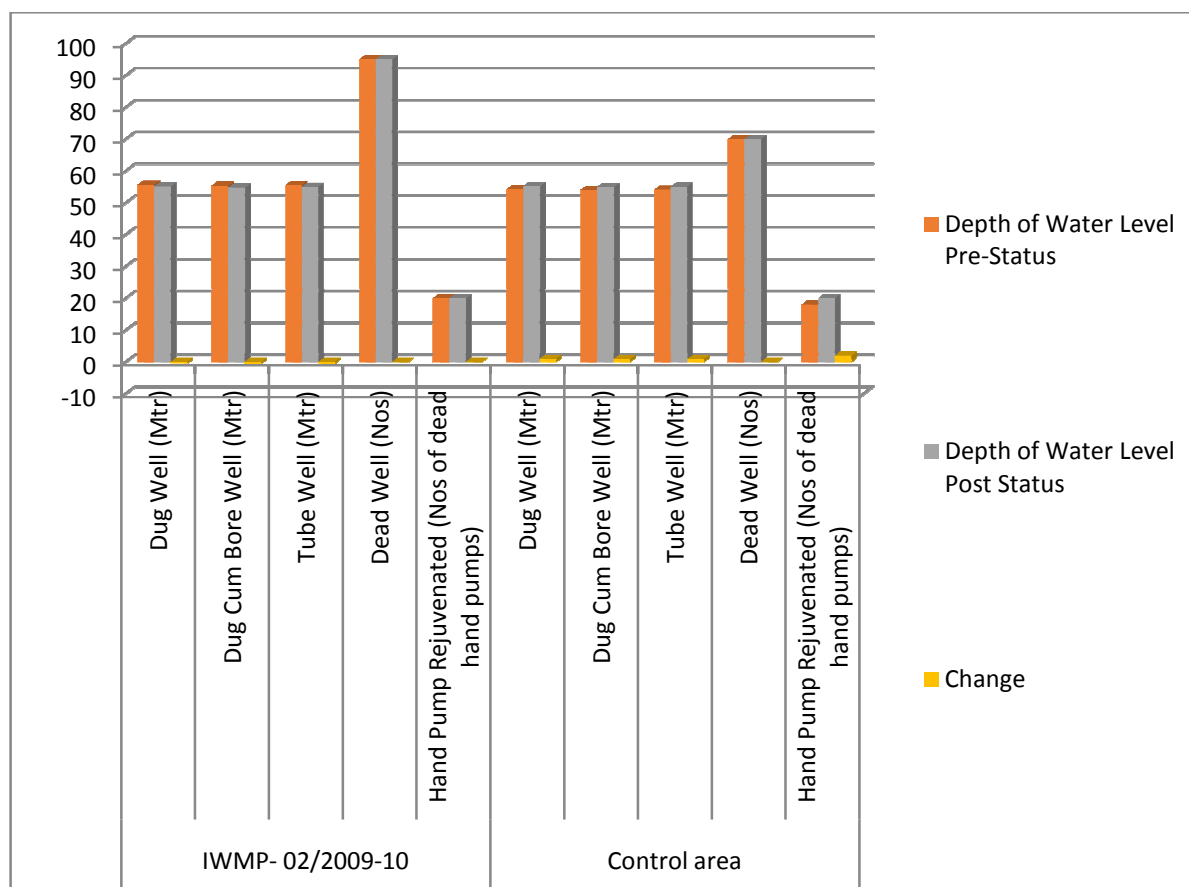
8.1.2 Status of Ground Water Table:

Status of Ground Water Table (Watershed Level)

Table:8.2

S. No.	IWMP/ Control Area	Type (Wells)	Depth of Water Level		Change	Reason
			Pre-Status	Post Status		
1	2	3	4	5	6	7
1	IWMP 2/2009-10	Dug Cum Bore Well (Mtr)	55.62	55.12	-0.50	Water conservation, recharge works and new improved technology interventions in Agriculture
2		Tube Well (Mtr)	55.34	54.8	-0.54	
3		Dead Well (Nos)	55.51	54.98	-0.53	
4		Hand Pump Rejuvenated (Nos of dead hand pumps)	95	95	0.00	
5		Dug Well (Mtr)	20	20	0.00	
1	Control area	Dug Cum Bore Well (Mtr)	54.25	55.2	0.95	No such intervention like watershed area
2		Tube Well (Mtr)	53.97	54.91	0.94	
3		Dead Well (Nos)	54.12	55.05	0.93	
4		Hand Pump Rejuvenated (Nos of dead hand pumps)	70	70	0.00	
5		Dug Cum Bore Well (Mtr)	18	20	2.00	

Source: Survey results of MEL&D agency Arpan



8.1.3 Number of Water Resources Rejuvenated:

Number of Surface Storage Structures created:

Table: 8.3

S. No.	Name of Activity	Unit	Target for the project period		achievement through IWMP		Achievement through Convergence		Total achievement	
			Phy	Fin	Phy	Fin	Phy.	Fin.	Phy.	Fin.
1	2	3								
1	Earthen Bund	Nos.	0	0.00	0	0.00	0	0.00	0	0.00
2	LSCD	Nos.	0	0.00	26	4.98	0	0.00	26	4.98
3	Earthen Check Dam	Nos.	342	167.42	17	9.95	0	0.00	17	9.95
4	Others (Farm Pond, Talai & WHS)	Nos.	0	0	8	5.87	0	0.00	8	5.87
5	Sunken Pond		0	0.00	15	8.81	0	0.00	15	8.81
6	Percolation tanks/Ground water recharge structure		0	0.00	37	121.61	0	0.00	37	121.61
7	Roof Top Water Harvesting Structure	Nos.	0	0.00	0	0.00	14	10.36	14	10.36
8	Talab Renovation	Nos.	0	0	0	0.00	3	8.542	3	8.542
9	Renovation/Restoration of WHS	Nos.	0	0	0	0.00	10	88.788	10	88.788
	Total			167.42		151.22		107.69	130	258.91

Source: PIA and Survey results of MEL&D agency Arpan

In this watershed, **130** different types of water storage/harvesting structures were created with an investment of **Rs. 258.91 Lacs**.

8.2 Land Use/ Land Cover (Agriculture):

8.2.1 Area under Cultivation (Kharif, Rabi and Jaid)

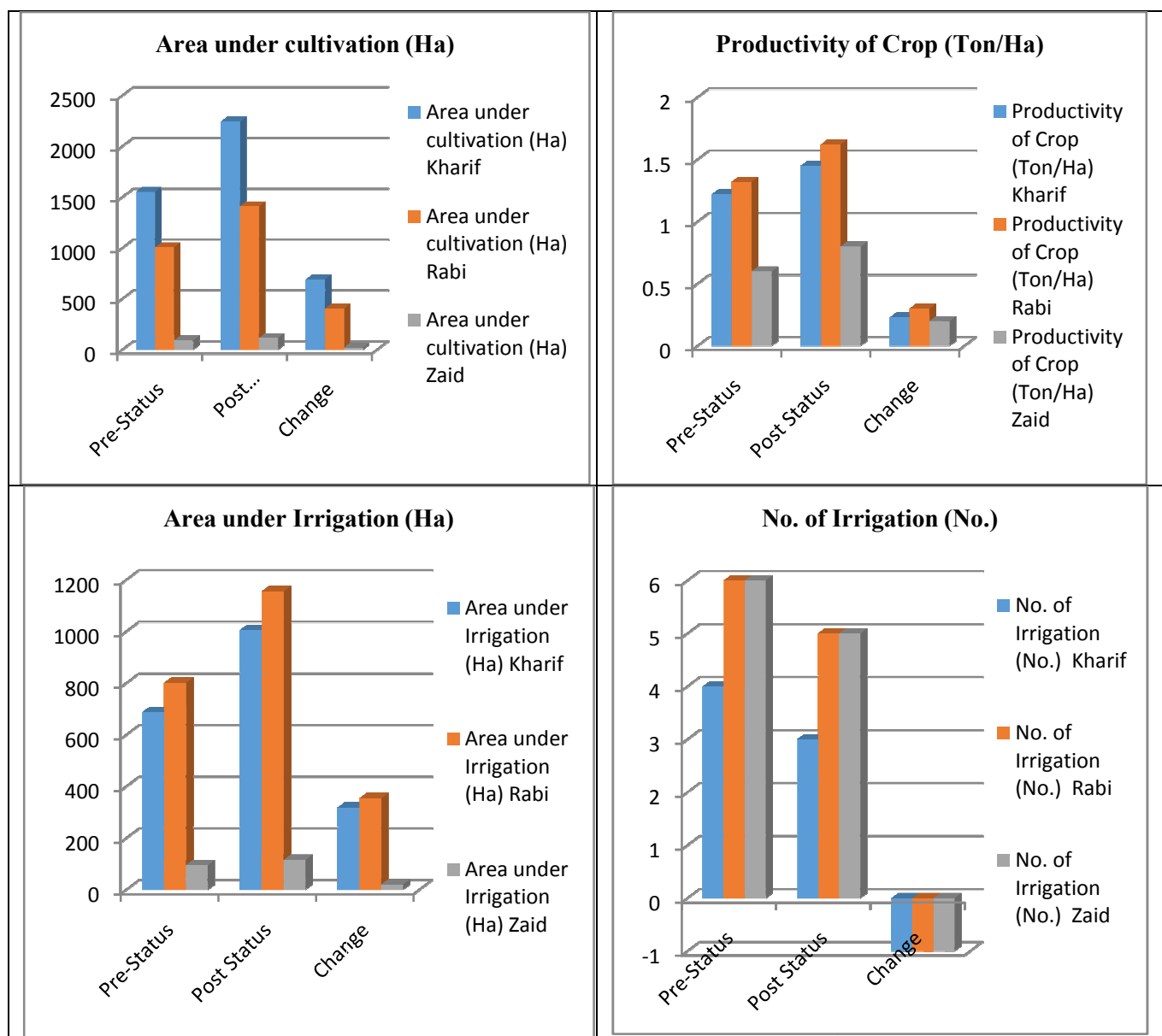
Changes in Agriculture observed during ground-based base line/ end line survey:

Table:8.5

S. No.	Indicators	Pre-Status	Post Status	Change	
1	2	3	4	5	
IWMP-2/2009-10	Area under cultivation (Ha)	Kharif	1553	2245	692
		Rabi	1007	1410	403
		Zaid	95	115	20
	Productivity of Crop (Ton/Ha)	Kharif	1.22	1.45	0.23
		Rabi	1.32	1.62	0.3
		Zaid	0.6	0.8	0.2
	Area under Irrigation (Ha)	Kharif	687	1005	318
		Rabi	801	1155	354
		Zaid	95	115	20
	No. of Irrigation (No.)	Kharif	4	3	-1
		Rabi	6	5	-1
		Zaid	6	5	-1

S. No.	Indicators	Pre-Status	Post Status	Change	
1	2	3	4	5	
Control Area	Area under cultivation (Ha)	Kharif	1565	1681	116
		Rabi	1015	1080	65
		Zaid	97	102	5
	Productivity of Crop (Ton/Ha)	Kharif	1.16	1.25	0.09
		Rabi	1.27	1.37	0.1
		Zaid	0.57	0.69	0.12
	Area under Irrigation (Ha)	Kharif	694	750	56
		Rabi	812	872	60
		Zaid	97	102	5
	No. of Irrigation (No.)	Kharif	4	4	0
		Rabi	6	6	0
		Zaid	6	6	0

Source: Survey results of MEL&D agency Arpan



Changes in Agriculture observed as per remote sensing & GIS based findings:

Table:8.6

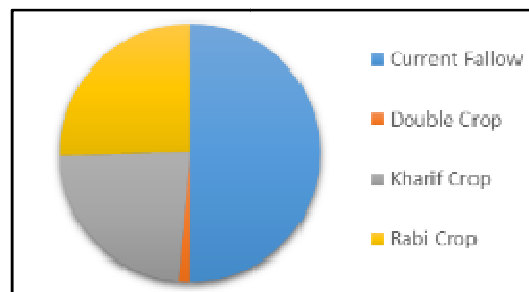
Land use Class	Area Pre (Ha)	Area Post (Ha)	Difference (Ha)
Agriculture	947.530	1012.504	64.97

Source: GIS Report by MEL&D agency

(A) Pre Classification of Crop Land

Table:8.7

Land use Class	Area (Ha)	Area (%)
1	2	3
Current Fallow	487.589	51.459
Double Crop	13.401	1.414
Kharif Crop	225.126	23.759
Rabi Crop	248.216	26.196

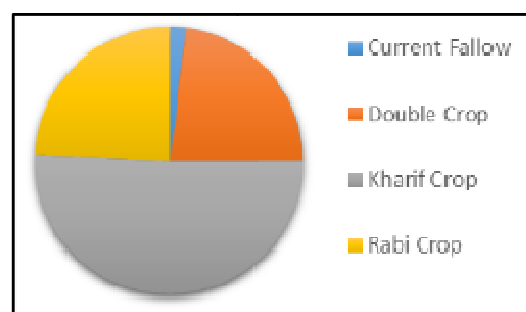


Source: GIS Report by MEL&D agency

(B) Post Classification of Crop Land

Table:8.8

Land use Class	Area (Ha)	Area (%)
1	2	3
Current Fallow	39.981	3.949
Double Crop	424.236	41.900
Kharif Crop	945.343	93.367
Rabi Crop	451.416	44.584



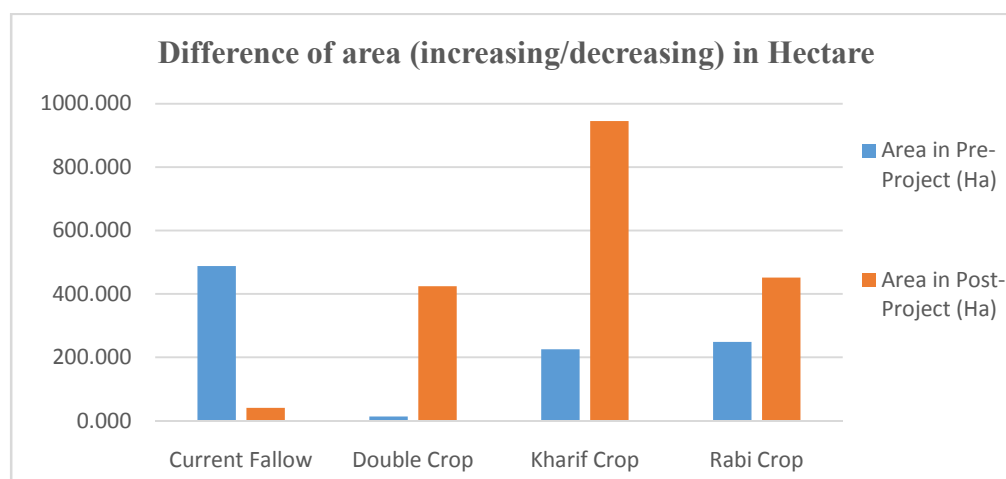
Source: GIS Report by MEL&D agency

Difference of area (increasing /decreasing) in Hectare & Percentage

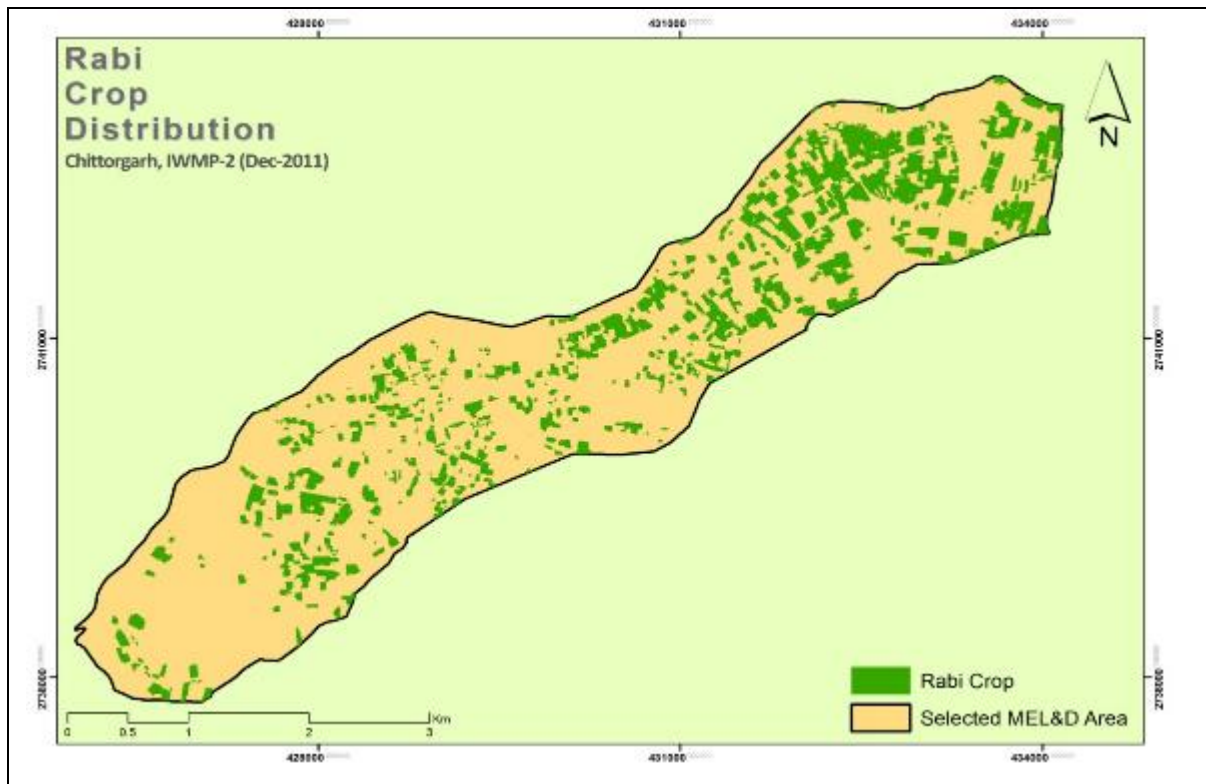
Table:8.9

Landuse Class	Area in Pre-Project (Ha)	Area in Post-Project (Ha)	Difference
Current Fallow	487.589	39.981	-447.61
Double Crop	13.401	424.236	410.84
Kharif Crop	225.126	945.343	720.22
Rabi Crop	248.216	451.416	203.20

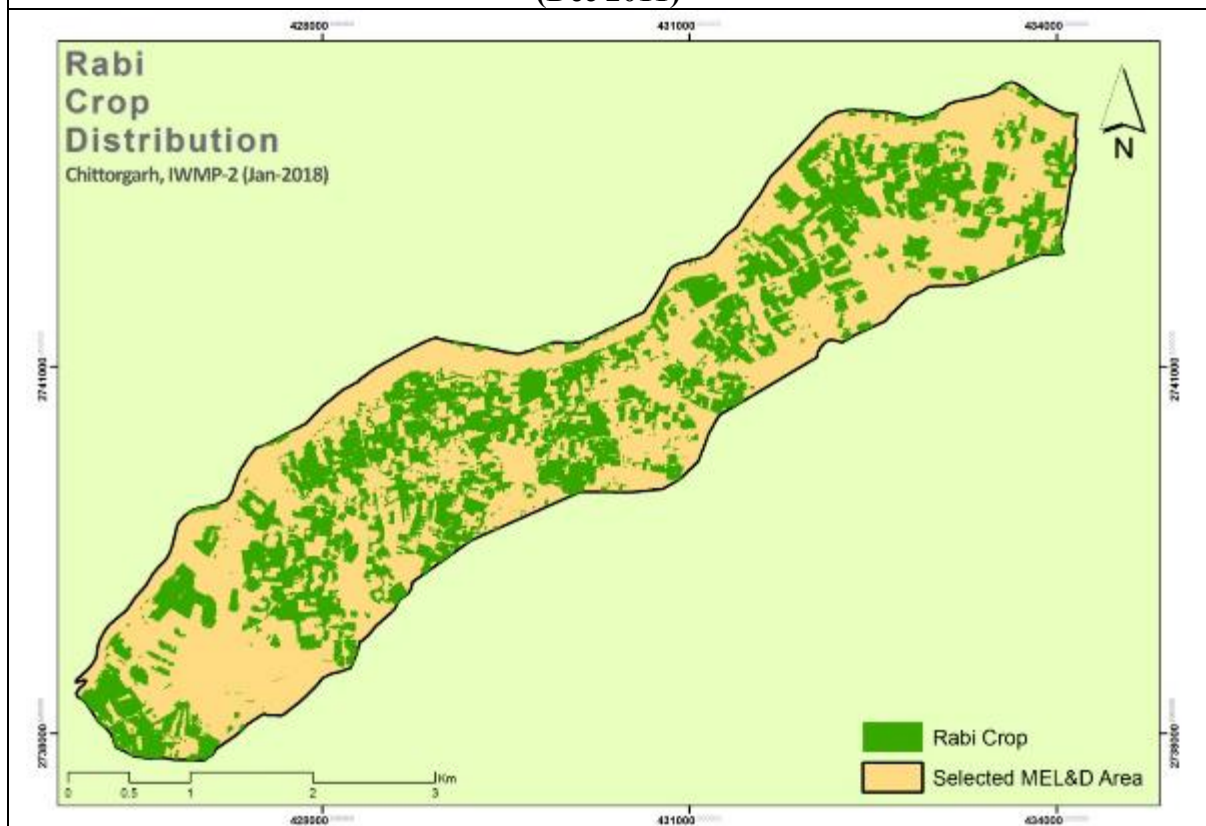
Source: Difference of Area Computed by Satellite Imagery LISSIV (Pre-Post Project, Rabi and Kharif Season)



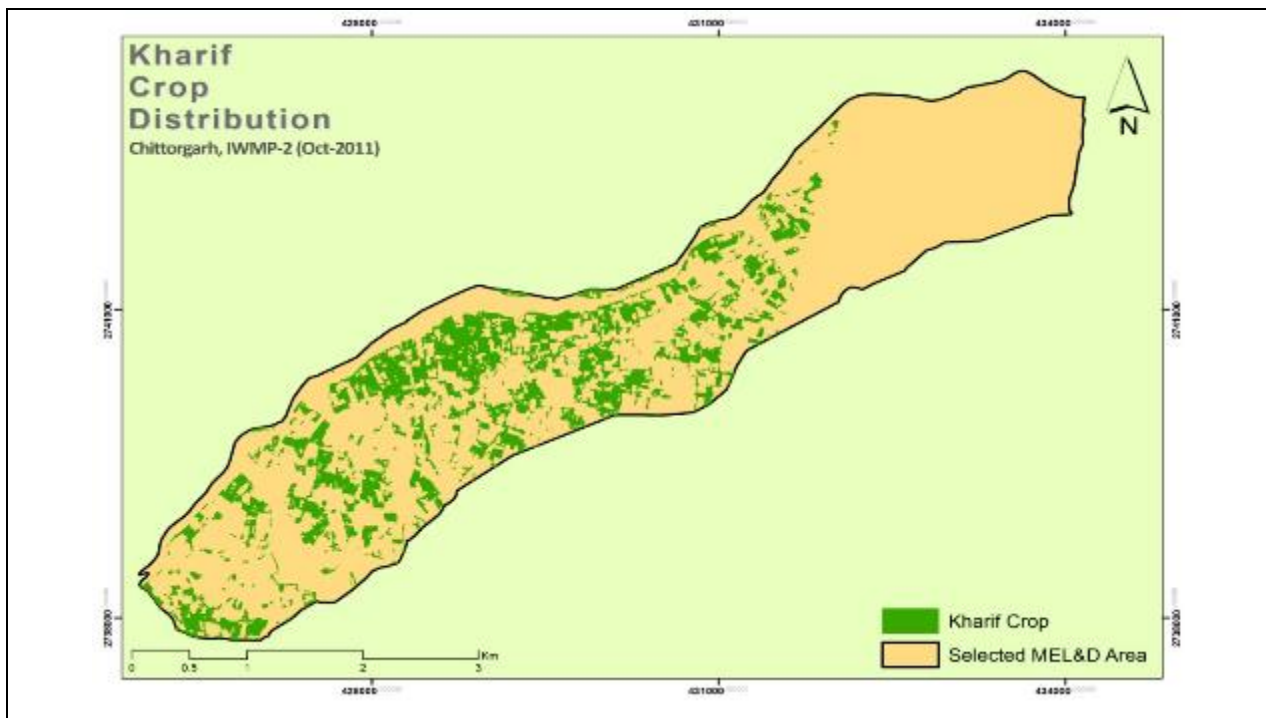
Satellite imagery for the study area through GIS based methodology are asunder:



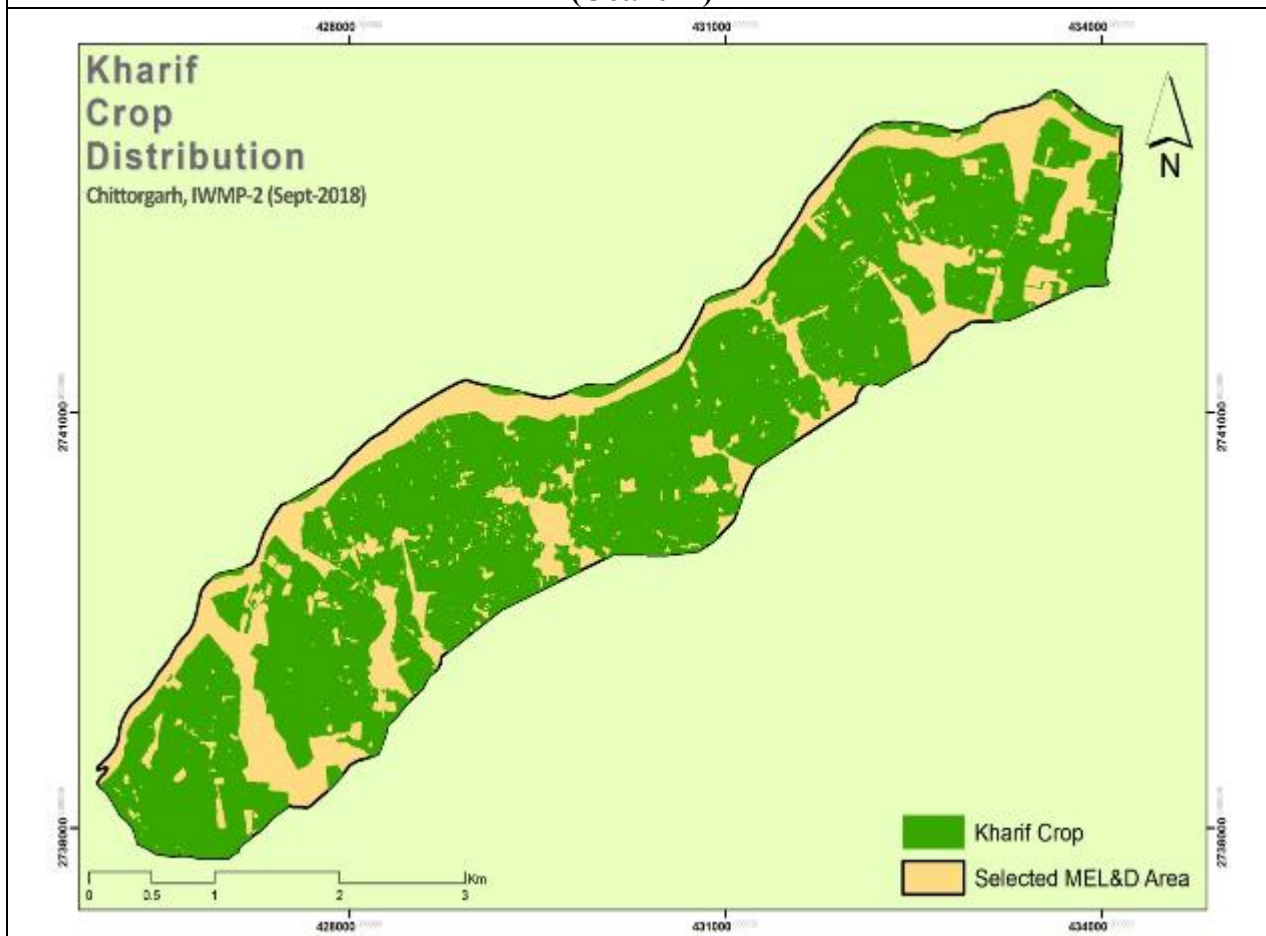
Rabi Crop Distribution in study area (Pre Project Status) computed LISS IV Imagery (Dec 2011)



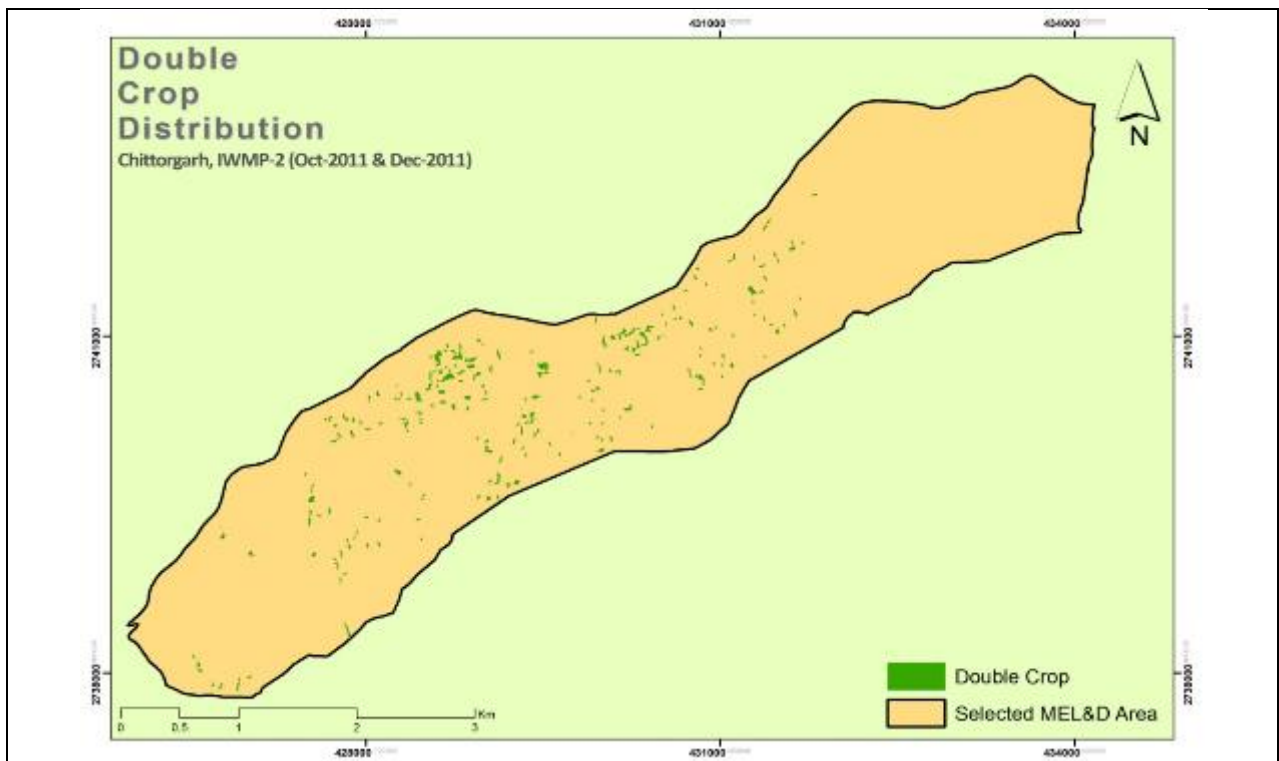
Rabi Crop Distribution in study area (Post Project Status) computed LISS IV Imagery (Jan 2018)



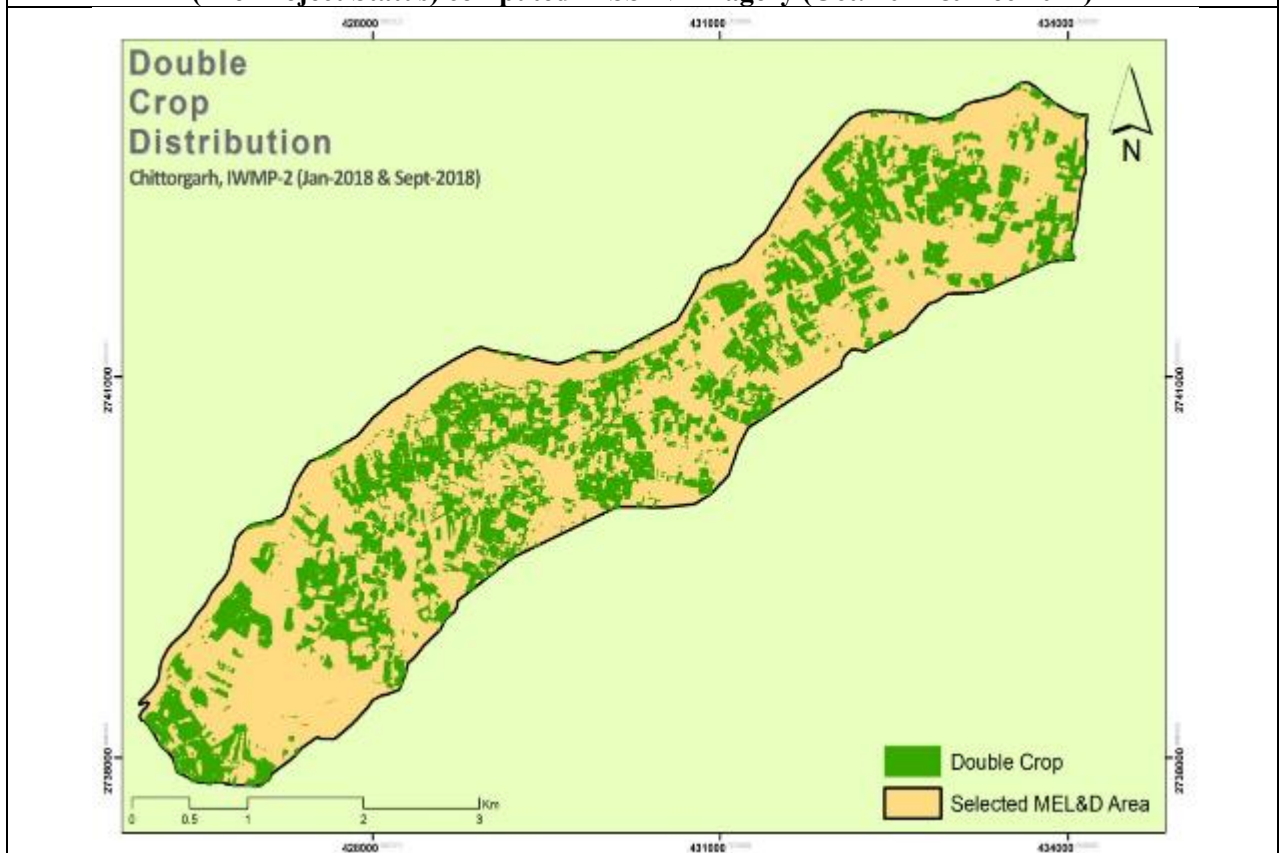
Kharif Crop Distribution in study area (Pre Project Status) computed LISS IV Imagery (Oct.2011)



Kharif Crop Distribution in study area (Post Project Status) computed LISS IV Imagery (Sept.2018)



**Double Crop Distribution in study area
(Pre Project Status) computed LISS IV Imagery (Oct. 2011 & Dec 2011)**



**Double Crop Distribution in study area (Post Project Status) computed LISS IV
Imagery (Jan 2018 & Sept 2018)**

(A) Land use Land Cover distribution and its changes

Table: 8.10

Landuse Class	Area in Pre-Project (Ha)	Area in Post-Project (Ha)	Difference (Post Project-Pre Project)
Agricultural	947.530	1012.504	64.97
Built Up	47.434	48.423	0.99
Wastelands	227.100	159.903	-67.20
Water Bodies	106.755	107.988	1.23

Source: Land use Land Cover distribution Computed as per Satellite Imagery LISSIV

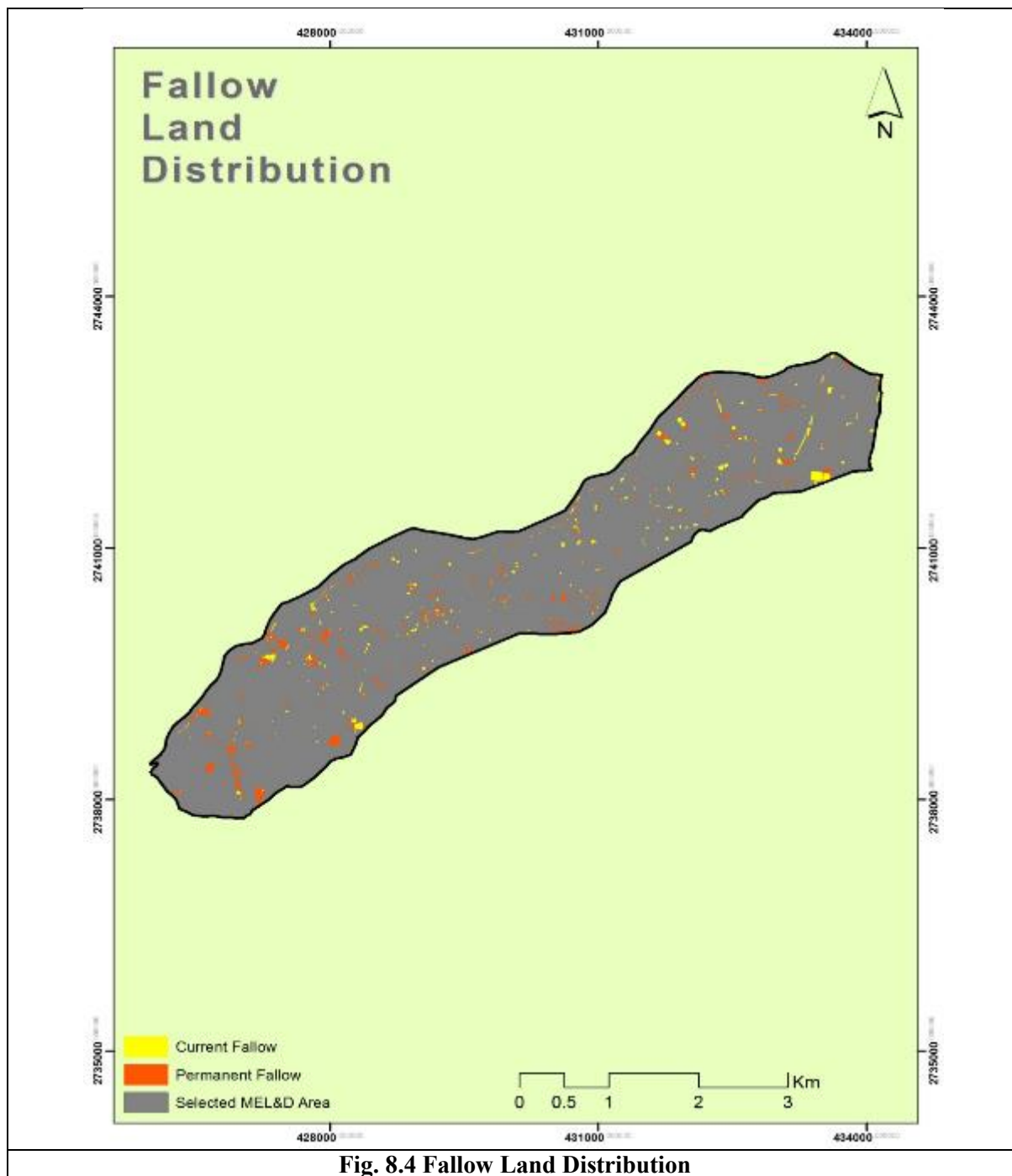


Fig. 8.4 Fallow Land Distribution

8.2.2 Productivity of Crop (Kharif, Rabi and Zaid)

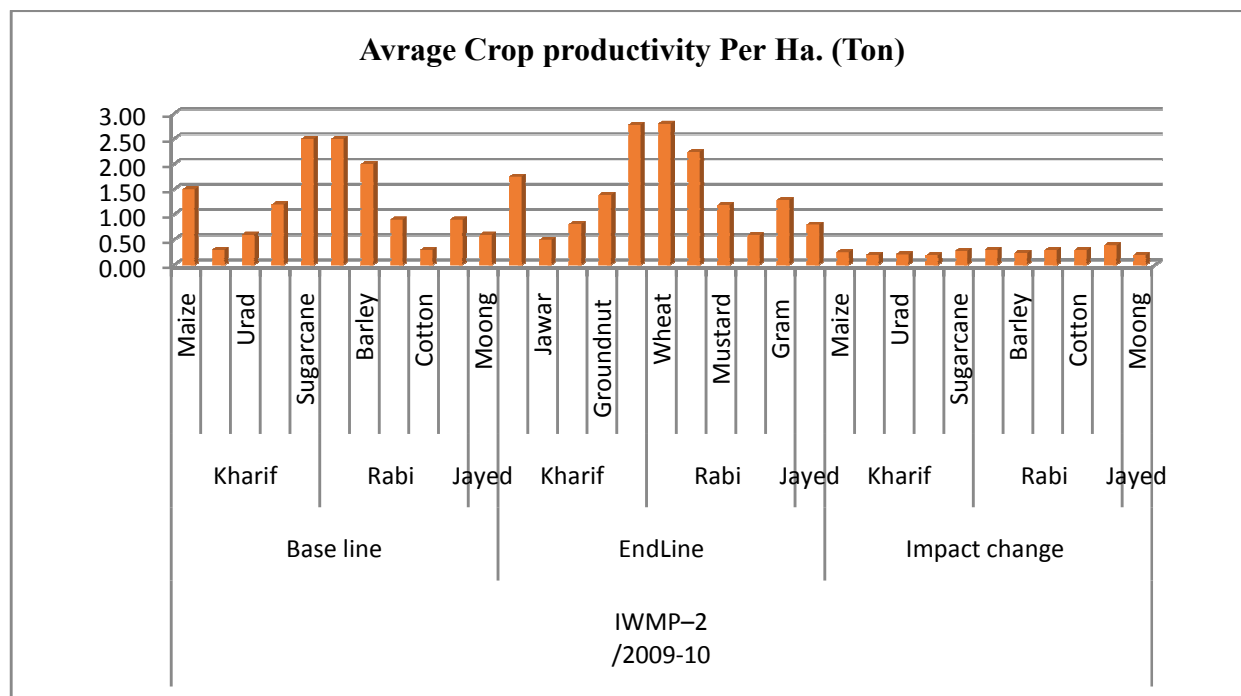
Average Crop Yield/Productivity in IWMP Watershed & Control Area (Ton/ha. & %):

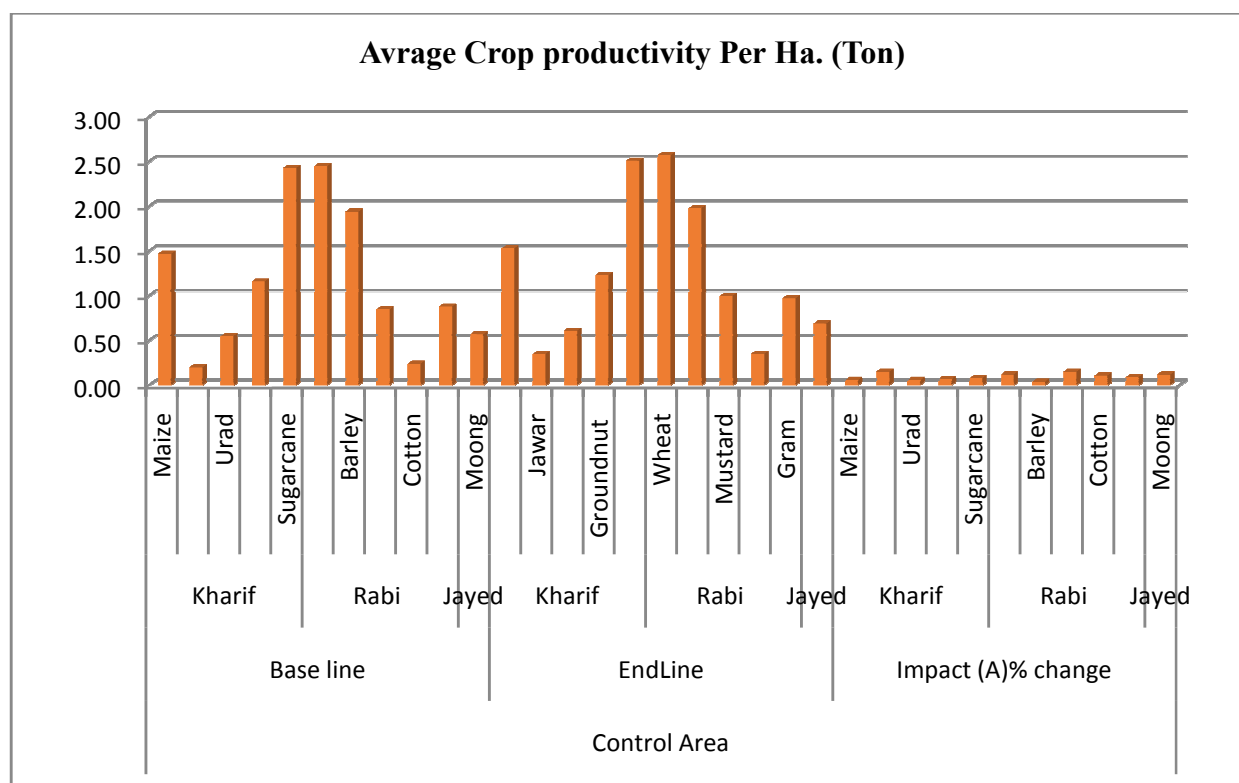
Table: 8.11

IWMP/ Control Area	Timeline	Season	Crop Type	Average Crop productivity Per Ha. (Ton)	
IWMP-2 /2009-10	Base line	Kharif	Maize	1.50	
			Jawar	0.30	
			Urad	0.60	
			Groundnut	1.20	
			Sugarcane	2.50	
		Rabi	Wheat	2.50	
			Barley	2.00	
			Mustard	0.90	
			Cotton	0.30	
			Gram	0.90	
			Jayed	Moong	0.60
			EndLine	Kharif	Maize
	Jawar	0.50			
	Urad	0.81			
	Groundnut	1.39			
	Sugarcane	2.78			
	Rabi	Wheat		2.80	
		Barley		2.24	
		Mustard		1.19	
		Cotton		0.59	
		Gram		1.29	
		Jayed		Moong	0.80
	Impact change	Kharif	Maize	0.25	
			Jawar	0.20	
			Urad	0.21	
			Groundnut	0.19	
			Sugarcane	0.28	
		Rabi	Wheat	0.30	
			Barley	0.24	
			Mustard	0.29	
Cotton			0.29		
Gram			0.39		
Jayed			Moong	0.20	
Control Area	Base line	Kharif	Maize	1.47	
			Jawar	0.20	
			Urad	0.55	
			Groundnut	1.16	
			Sugarcane	2.43	
		Rabi	Wheat	2.45	
			Barley	1.94	
			Mustard	0.85	
			Cotton	0.24	
			Gram	0.88	

IWMP/ Control Area	Timeline	Season	Crop Type	Average Crop productivity Per Ha. (Ton)
	EndLine	Jayed	Moong	0.57
		Kharif	Maize	1.53
			Jawar	0.35
		Urad	0.61	
		Groundnut	1.23	
		Sugarcane	2.51	
		Rabi	Wheat	2.57
			Barley	1.98
		Mustard	1.00	
		Cotton	0.35	
		Gram	0.97	
		Jayed	Moong	0.69
	Impact (A)% change	Kharif	Maize	0.06
			Jawar	0.15
		Urad	0.06	
		Groundnut	0.07	
		Sugarcane	0.08	
		Rabi	Wheat	0.12
			Barley	0.04
		Mustard	0.15	
		Cotton	0.11	
		Gram	0.09	
Jayed	Moong	0.12		

Source: Survey by MEL&D agency





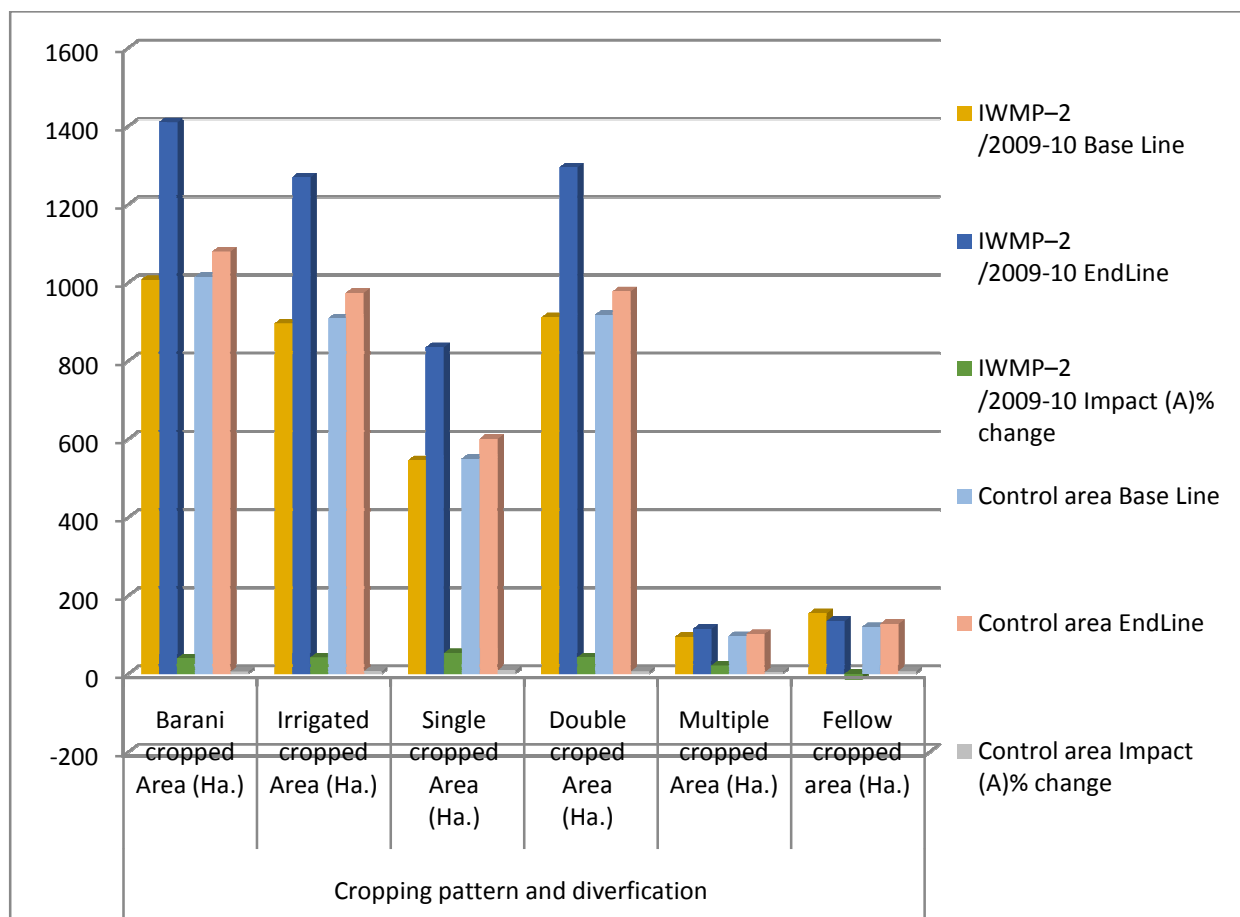
8.2.3 Cropping Pattern Change (Kharif, Rabi and Zaid)

Cropping pattern and diversification in IWMP Watersheds and Control Area

Table: 8.12

IWMP/ Control Area	Time line	Cropping pattern and diversification					
		Barani cropped Area (Ha)	Irrigated cropped Area (Ha)	Single cropped Area (Ha)	Double cropped Area (Ha)	Multiple cropped Area (Ha)	Fellow cropped area (Ha.)
1	2	3	4	5	6	7	8
IWMP 2/2009- 10	Base line	1007	896	546	912	95	155
	End line	1410	1270	835	1295	115	135
	Impact / Change (%)	40.02	41.74	52.93	42.00	21.05	-12.90
Control area	Base line	1015	909	550	918	97	120
	End line	1080	974	601	978	102	128
	Impact / Change (%)	6.40	7.15	9.27	6.54	5.15	6.67

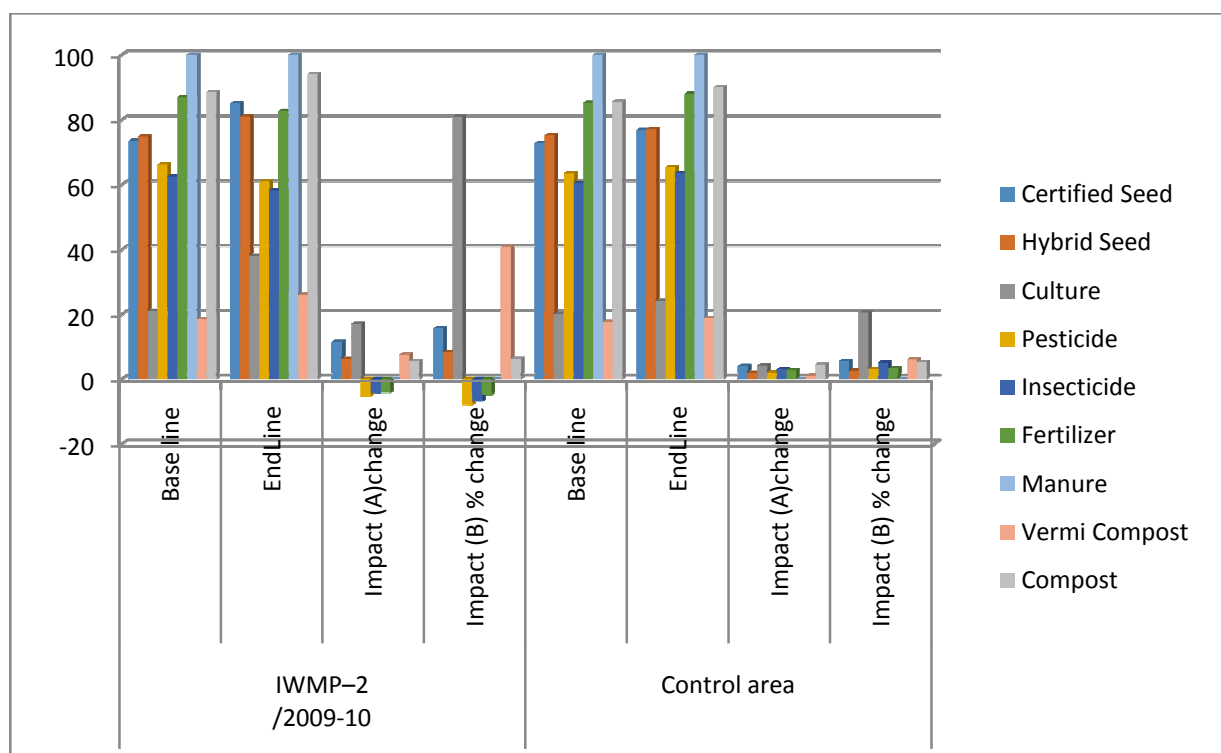
Source: Survey by MEL&D agency



8.2.4 Adoption of new package of practices in IWMP Watershed and Control Area (%):

Table: 8.13

IWMP/ Control Area	Timeline	Certified Seed	Hybrid Seed	Culture	Pesticide	Insecticide	Fertilizer	Manure	Vermi Compost	Compost
1	2	3	4	5	6	7	8	9	10	11
IWMP 2/2009-10	Base line	73.52	74.79	21.00	66.20	62.43	86.87	100.00	18.47	88.47
	EndLine	85.00	81.00	38.00	61.00	58.22	82.69	100.00	26.00	94.00
	Impact change	11.48	6.21	17.00	-5.20	-4.21	-4.18	0.00	7.53	5.53
	Impact % change	15.61	8.30	80.95	-7.86	-6.74	-4.81	0.00	40.77	6.25
Control area	Base line	72.76	75.12	20.00	63.45	60.45	85.20	100.00	17.69	85.5
	EndLine	76.80	77.00	24.10	65.40	63.50	88.00	100.00	18.77	90.00
	Impact change	4.04	1.88	4.10	1.95	3.05	2.80	0.00	1.08	4.48
	Impact % change	5.55	2.50	20.50	3.07	5.05	3.29	0.00	6.11	5.24



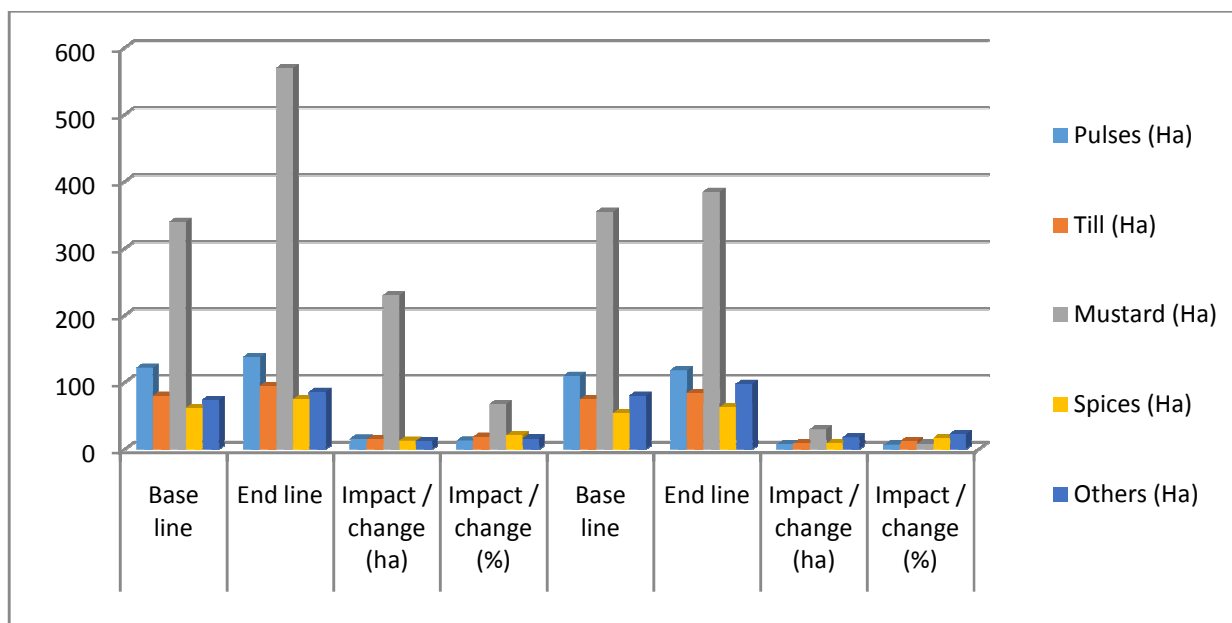
8.2.5 Change in Commercial food, fodder and horticulture crops:

Changes in Commercial Crops in IWMP and Control Area:

Table: 8.14

IWMP/ Control Area	Time line	Pulses (Ha)	Till (Ha)	Mustard (Ha)	Spices (Ha)	Others (Ha)
1	2	3	4	5	6	7
IWMP 2/2009-10	Base line	122	80	340	62	74
	End line	138	95	570	75	86
	Impact/change (ha)	16	15	230	13	12
	Impact / change (%)	13.11	18.75	67.65	20.97	16.22
Control area	Base line	110	75	355	54	80
	End line	118	84	385	63	98
	Impact / change (ha)	8	9	30	9	18
	Impact / change (%)	7.27	12.00	8.45	16.67	22.50

Source: Survey by MEL&D agency

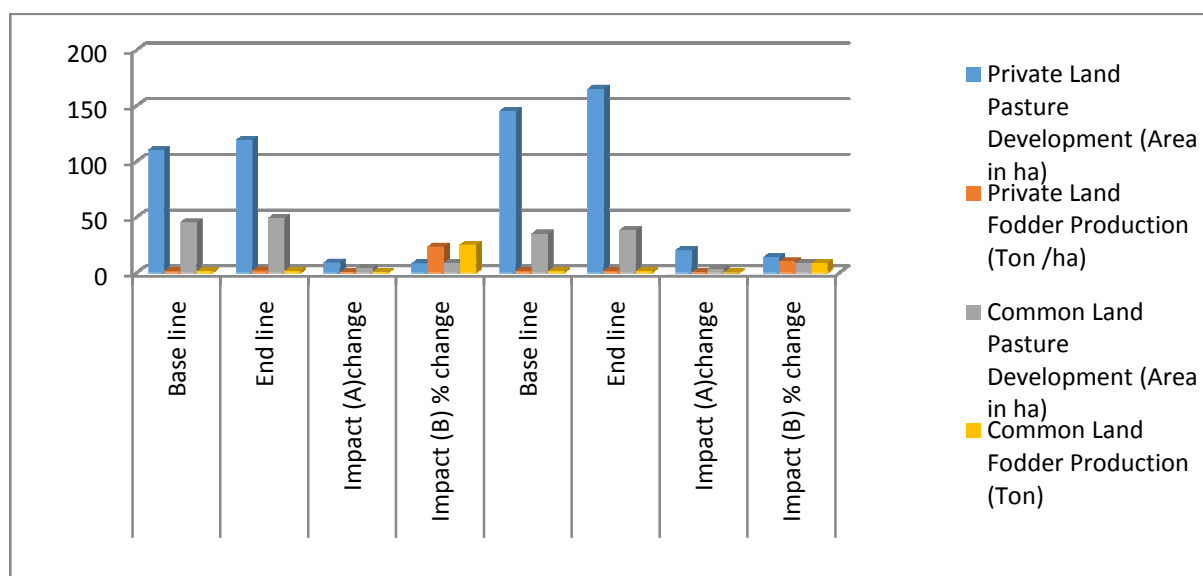


Changes in Fodder Production (Non-brow sable tree species and local grass) in IWMP and Control Area:

Table: 8.15

IWMP/ Control Area	Timeline	Private Land		Common Land	
		Pasture Development (Area in ha)	Fodder Production (Qtls /ha)	Pasture Development (Area in ha)	Fodder Production (Qtls)
1	2	3	4	5	6
IWMP 2/2009-10	Base line	110	1.5	45	1.2
	End line	119	1.85	49	1.5
	Impact / change (ha)	9	0.35	4	0.3
	Impact / change (%)	8.18	23.33	8.89	25.00
Control area	Base line	145	1.5	35	1.2
	End line	165	1.65	38	1.3
	Impact / change (ha)	20	0.15	3	0.1
	Impact / change (%)	13.79	10.00	8.57	8.33

Source: Survey by MEL&D agency

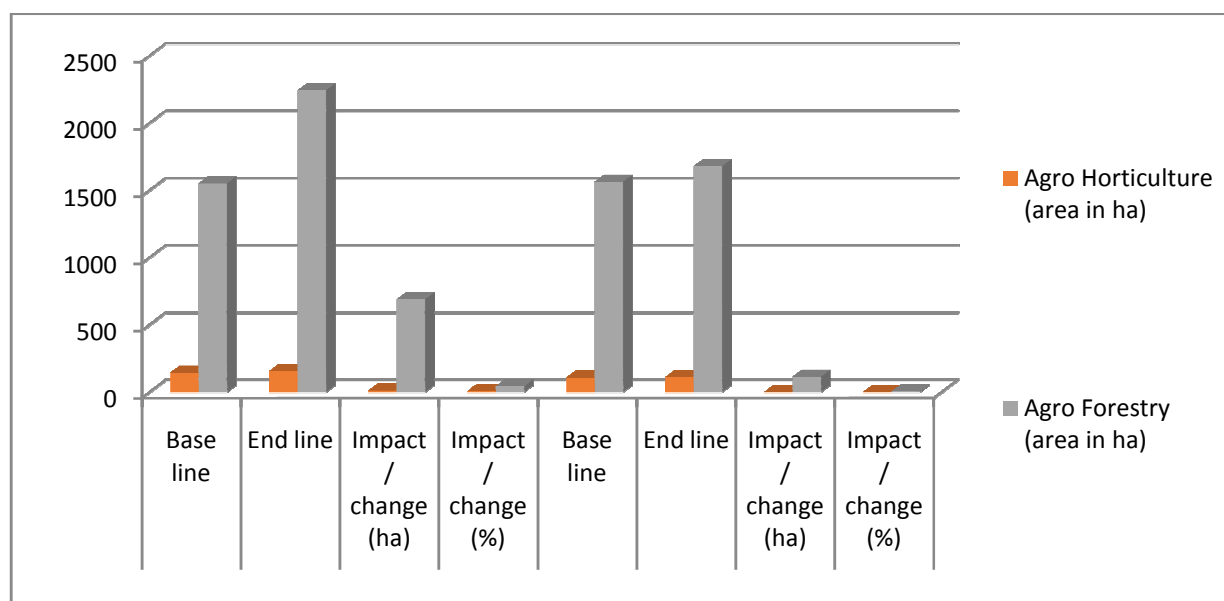


Changes in Agro-horticulture, Agro forestry in IWMP and Control Area:

Table: 8.16

IWMP/ Control Area	Time line	Agro Horticulture (area in ha)	Agro Forestry (area in ha)
1	2	3	4
IWMP 2/2009-10	Base line	145	1553
	End line	158	2245
	Impact / change (ha)	13	692
	Impact / change (%)	8.97	44.56
Control area	Base line	110	1565
	End line	113	1681
	Impact / change (ha)	3	116
	Impact / change (%)	2.73	7.41

Source: Survey by MEL&D agency



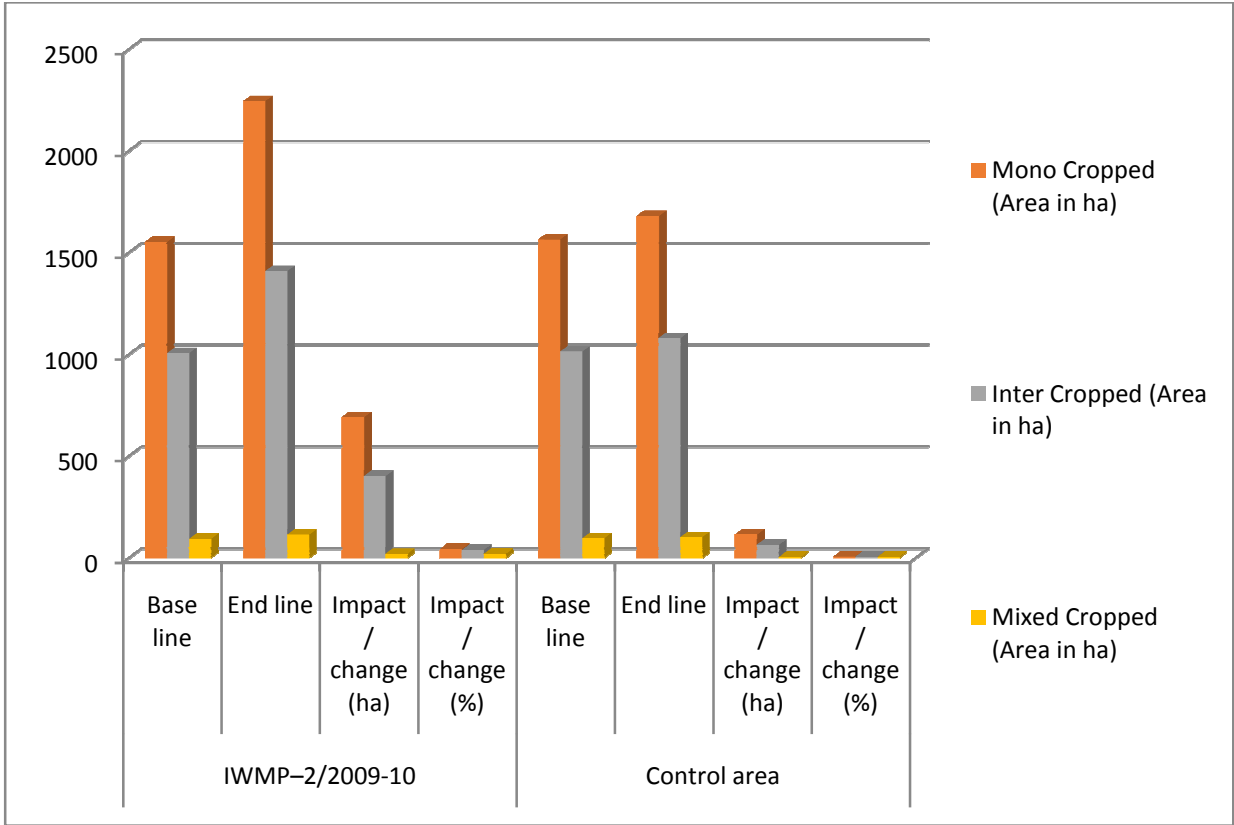
8.2.6 Shift from Mono cropping to Inter Cropping / Mixed Cropping:

Changes in Mono / Inter / Mixed cropping in IWMP Watersheds and Control Area:

Table: 8.17

IWMP/ Control Area	Time line	Mono Cropped (Area in ha)	Inter Cropped (Area in ha)	Mixed Cropped (Area in ha)
1	2	3	4	5
IWMP 2/2009-10	Base line	1553	1007	95
	End line	2245	1410	115
	Impact / change (ha)	692	403	20
	Impact / change (%)	44.56	40.02	21.05
Control area	Base line	1565	1015	97
	End line	1681	1080	102
	Impact / change (ha)	116	65	5
	Impact / change (%)	7.41	6.40	5.15

Source: Survey by MEL&D agency



8.2.7 Area under Degraded and Waste Lands:

Changes in Waste Lands observed as per remote sensing & GIS based findings:

Table: 8.23

Land use Class	AreaPre (Ha)	AreaPost(Ha)	Difference (Ha)
Wastelands	227.100	159.903	-67.20

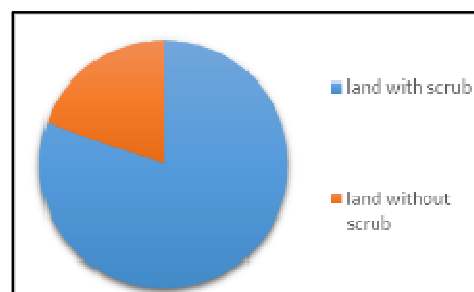
Source: Wasteland Area Distribution Computed as per Satellite Imagery LISSIV (Pre -Post Project, Rabi and Kharif Season)

(A) Pre - project Classification of Wastelands

Table: 8.24

	1	2	3
Land use Class		Area (Ha)	Area (%)
Land with scrub		182.577	80.395
Land without scrub		44.523	19.605

Source: GIS Report by MEL&D agency

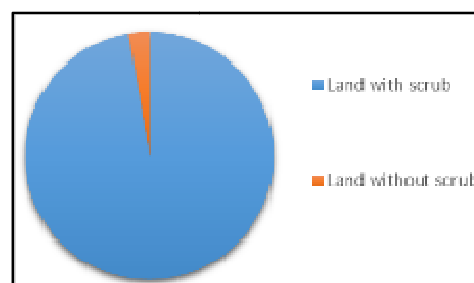


(B) Post – project Classification of Wastelands

Table: 8.25

Landuse Class	Area (Ha)	Area (%)
Land with scrub	155.743	97.398
Land without scrub	4.160	2.602

Source: GIS Report by MEL&D agency

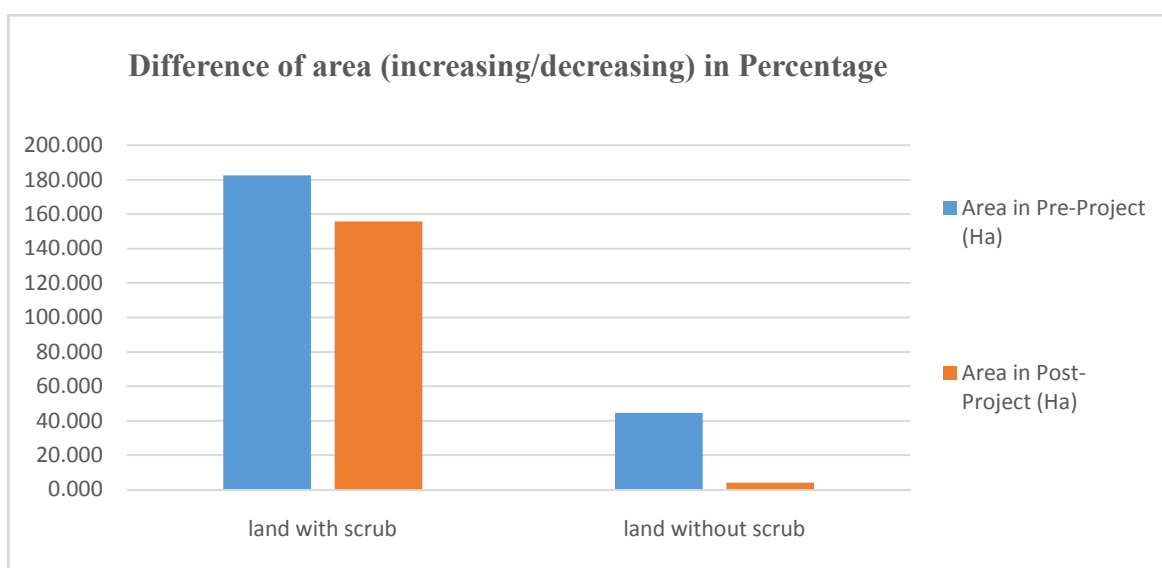


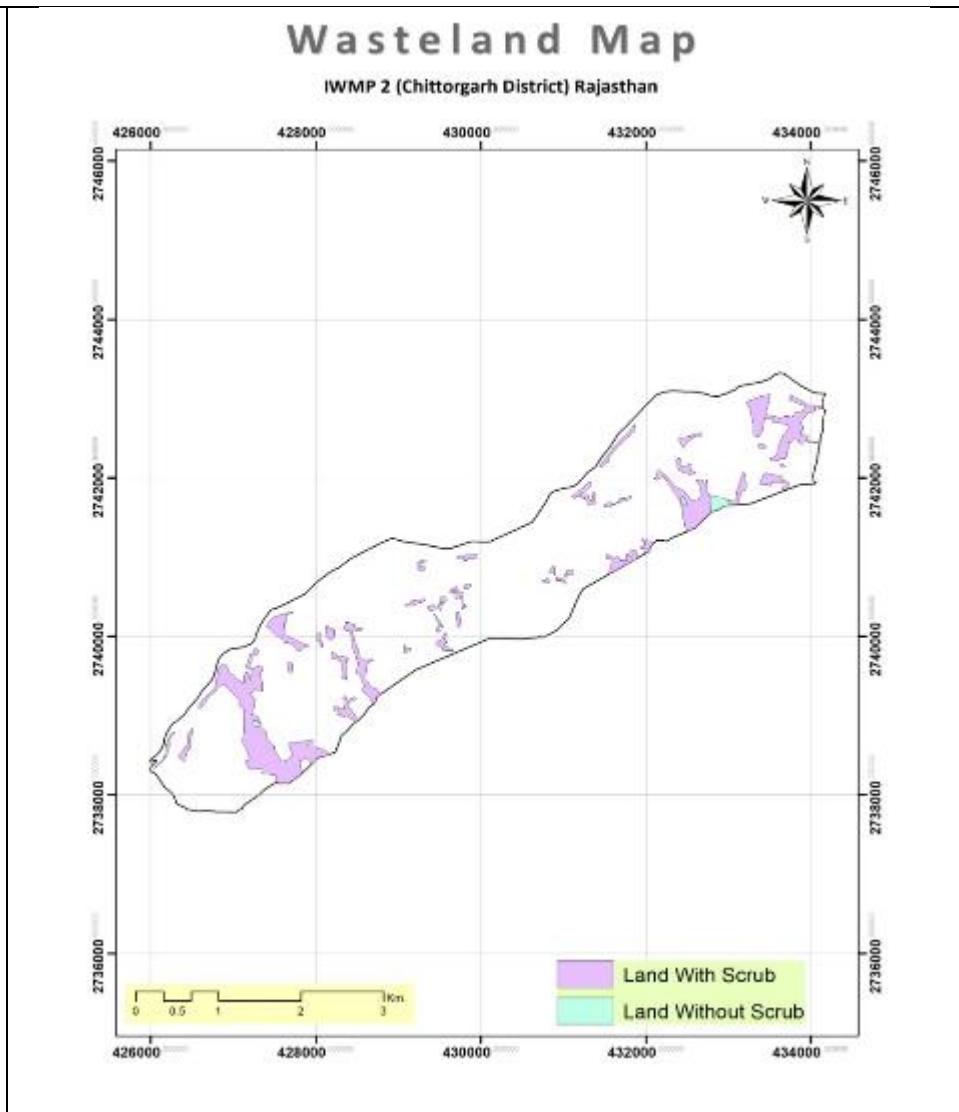
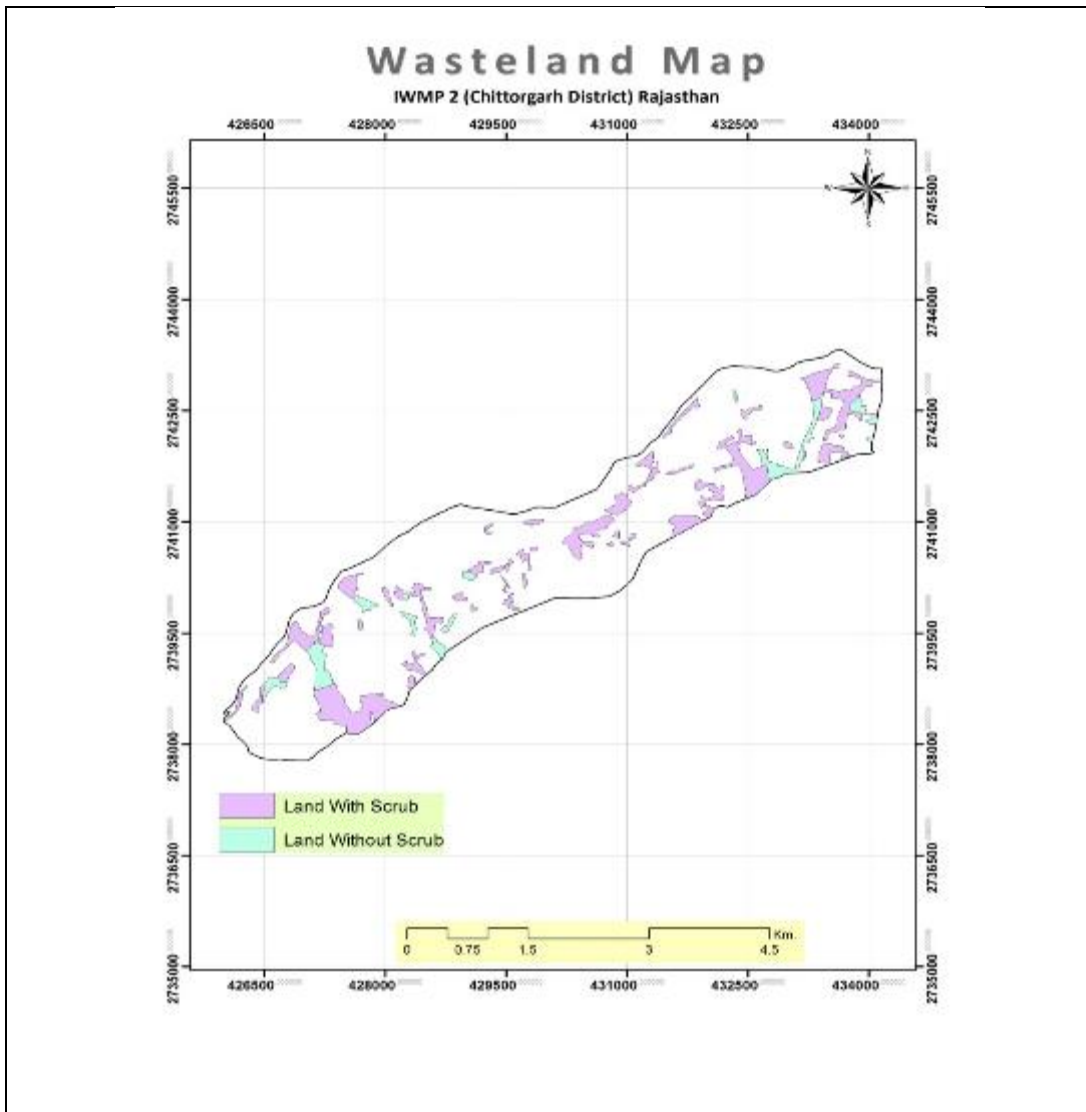
Difference of area (increasing /decreasing) in Hectare

Table: 8.26

Land use Class	Area Pre (Ha)	Area Post (Ha)	Difference (Ha)
1	2	3	4
Land with scrub	182.577	155.743	-26.834
Land without scrub	44.523	4.160	-40.363

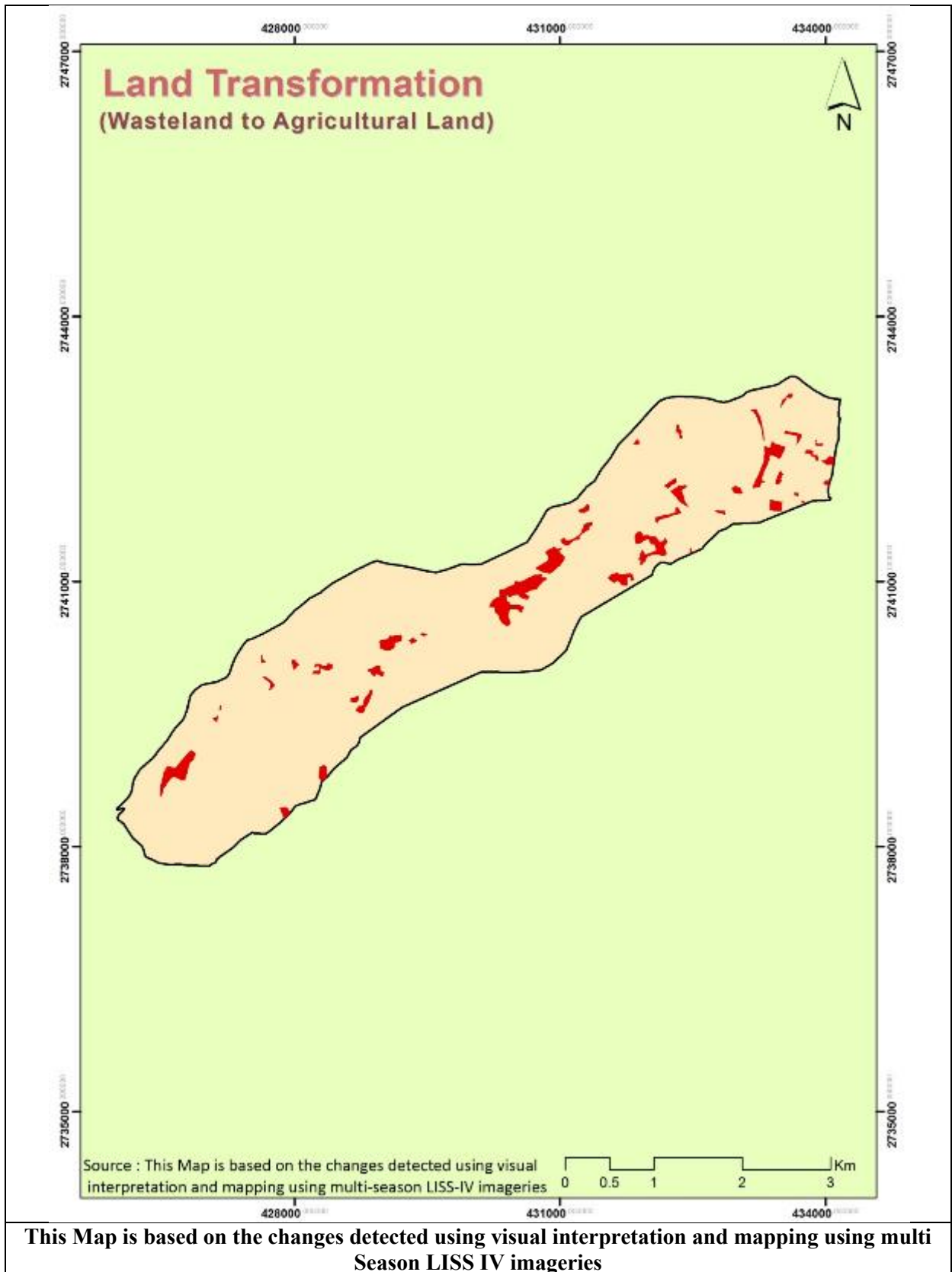
Source: Difference of Wasteland Area Distribution Computed as per Satellite Imagery LISSIV (Pre -Post Project)





Wasteland Distribution using Visual Interpretation (Pre Project Status) computed LISS IV Imagery

Wasteland Distribution using Visual Interpretation (Post Project Status) computed LISS IV Imagery

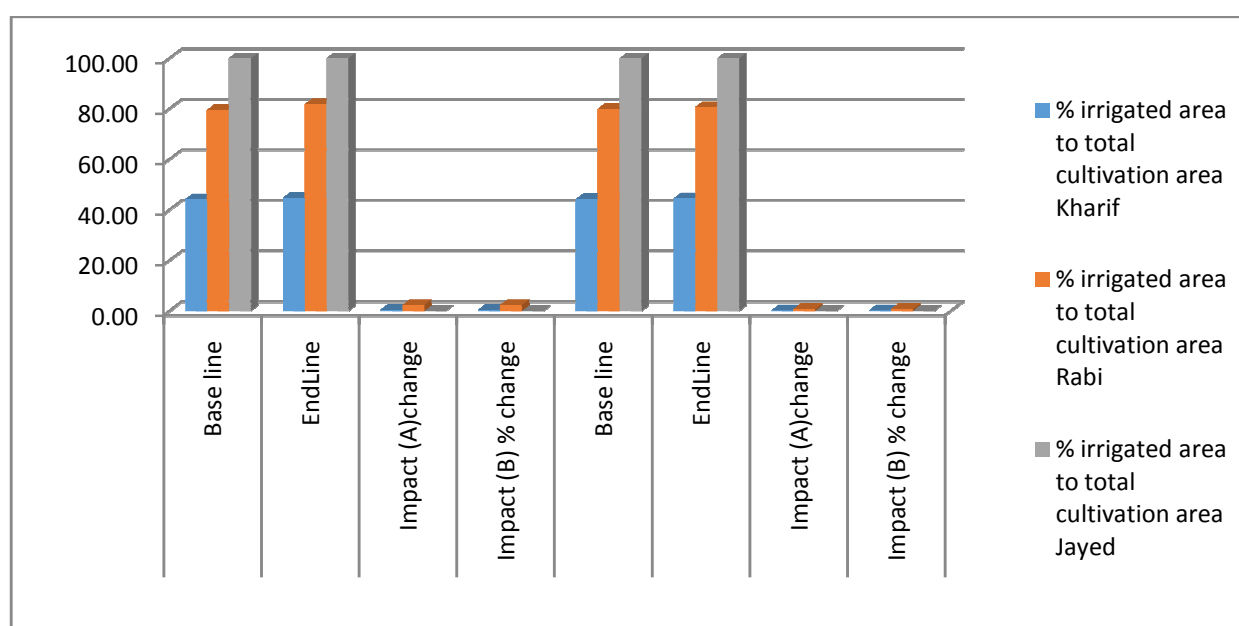


8.2.9 Area under Irrigation:

Table:8.28

IWMP/ Control Area	Timeline	Khraif			Rabi				Jayad	% irrigated area to total cultivation area		
		Maize	Others	Total	Mustard	Wheat	Others	Total	Total	Kharif	Rabi	Jayed
IWMP-2 /2009-10	Base line	690	863	1553	340	310	357	1007	95	44.24	79.54	100.00
	EndLine	910	1335	2245	570	430	410	1410	115	44.77	81.91	100.00
	Impact change	220	472	692	230	120	53	403	20	0.53	2.37	0.00
	Impact % change	31.88	54.69	44.56	67.65	38.71	14.85	40.02	21.05	0.53	2.37	0.00
Control area	Base line	860	705	1565	355	330	330	1015	97	44.35	80.00	100.00
	EndLine	930	751	1681	385	350	345	1080	102	44.62	80.74	100.00
	Impact change	70	46	116	30	20	15	65	5	0.27	0.74	0.00
	Impact % change	8.14	6.52	7.41	8.45	6.06	4.55	6.40	5.15	0.27	0.74	0.00

Source: Survey results of MEL&D agency Arpan



8.2.10 Vegetation Density:

LISS-IV imagery belonging to Rabi season of pre and post project times are used for computing NDVI and further classified using natural breaks in histogram. NDVI model is computed using two bands i.e. Near Infra-red and Red. The NIR band records good reflection of vegetated areas and is built mainly for vegetation studies. Fig. 8.5 shows a conceptual model of how NDVI is computed. ArcGIS gives the facility to plot NDVI values against pixel population and further to identify the natural breaks (Jerks) in the histogram. Therefore, the NDVI output was further classified into four categories viz. High – Very High, High – Moderate, Moderate – low, Low – very low. The very high - high vegetation class occupies very less area as the study area bellows to arid region. Therefore, very small patches exhibiting bunch of trees, young crop etc falls under this category. High to moderate class mainly represents mainly dense scrubland, mature crops whereas the moderate to low belongs to scattered and degraded scrublands. The low to very low class represents fallow lands, rocky and mining areas, land without scrub and salt affected areas.

(A): Pre Classification of Vegetation Index

Table: 8.29

Vegetation Index	Area (Ha)	Area (%)
1	2	3
Low - Nil	26.479	1.993
Mod. - Low	671.975	50.569
High - Mod.	400.509	30.140
Very High	229.855	17.298

Source: Vegetation Density of Rabi season Computed as per satellite Imagery LISSIV(Pre-project Status)

(B): Post Classification of Vegetation Index

Table: 8.30

Vegetation Index	Area (Ha)	Area (%)
1	2	3
Low - Nil	10.27	0.77
Mod. - Low	574.36	43.22
High - Mod.	435.28	32.76
Very High	308.91	23.25

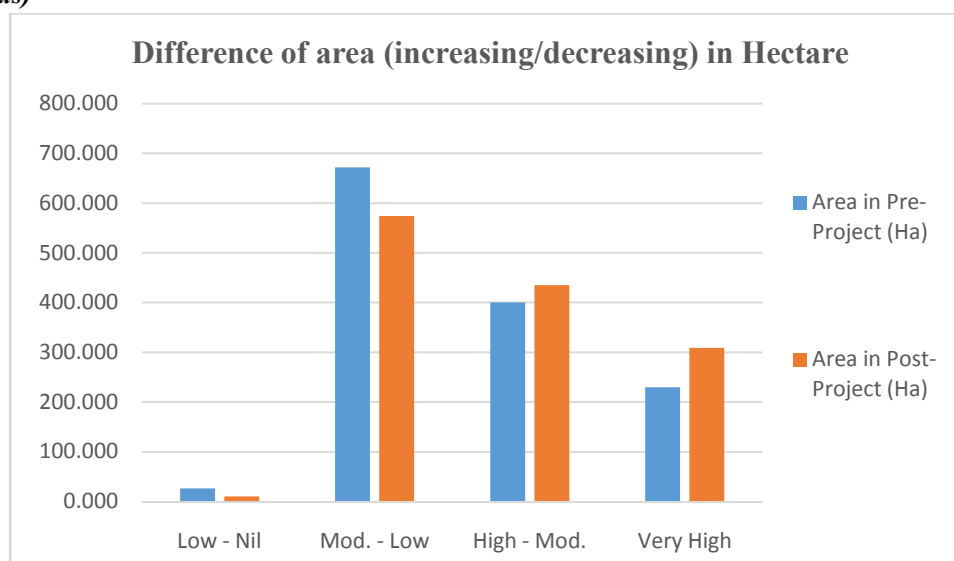
Source: Vegetation Density of Rabi season Computed as per satellite Imagery LISSIV(Post-project Status)

Difference of area (increasing /decreasing) in Hectare

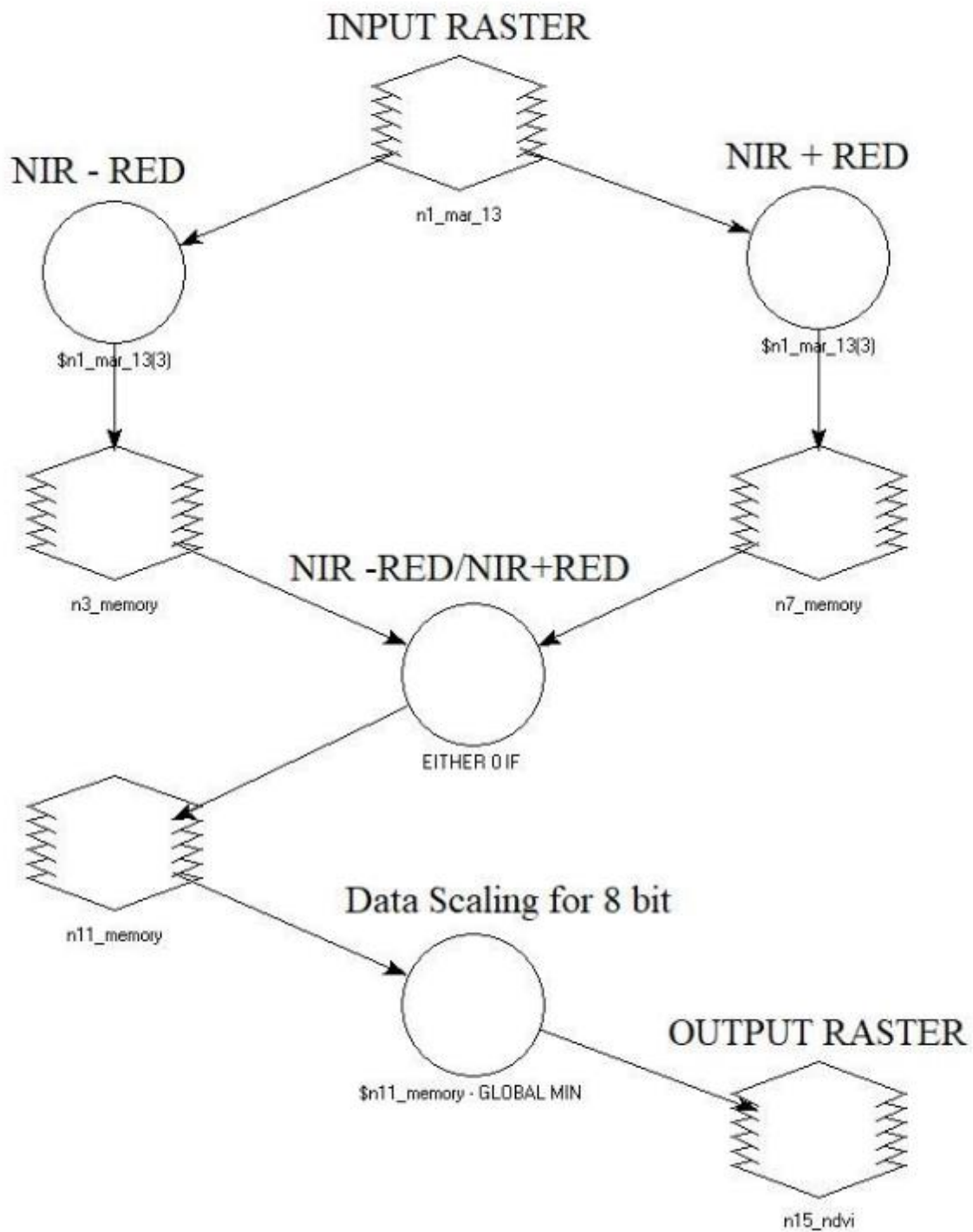
Table: 8.32

Vegetation Index	Area Pre (Ha)	Area Post Ha)	Difference
1	2	3	4
Low - Nil	26.479	10.27	-16.21
Mod. - Low	671.975	574.36	-97.62
High - Mod.	400.509	435.28	34.77
Very High	229.855	308.91	79.05

Source: Difference of Area Vegetation Density Rabi season Computed as per satellite Imagery LISSIV(Pre-Post Project Status)

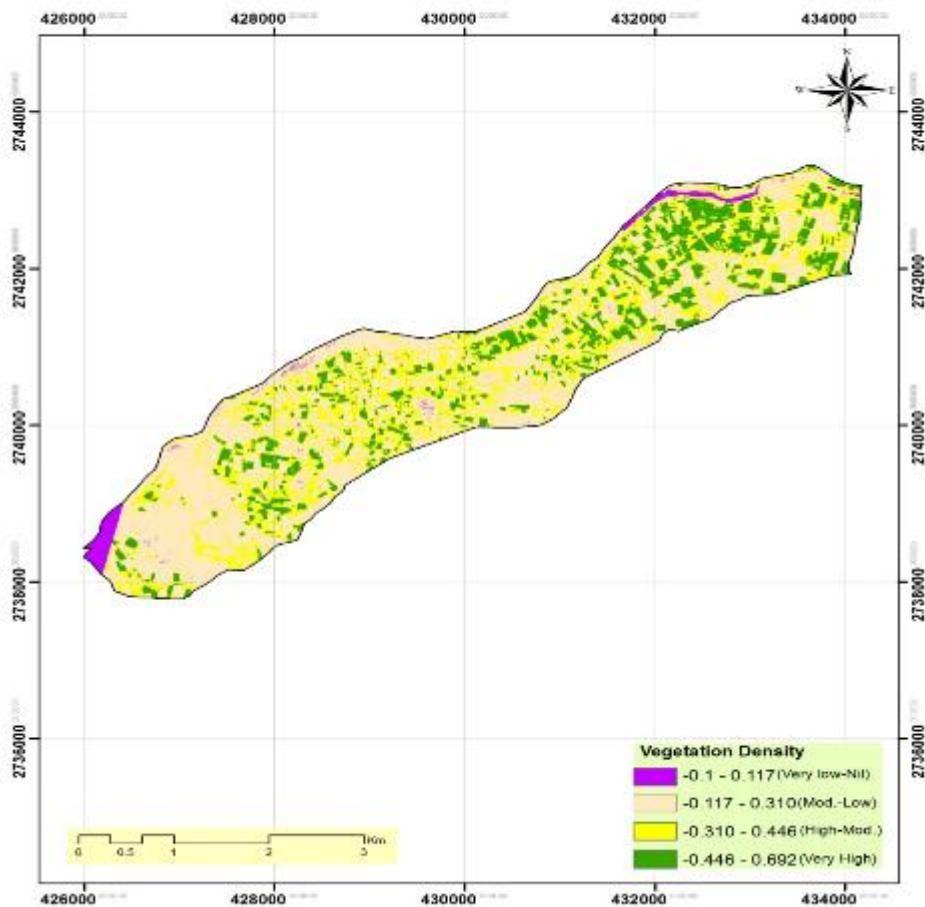


Normalized Difference Vegetation Index



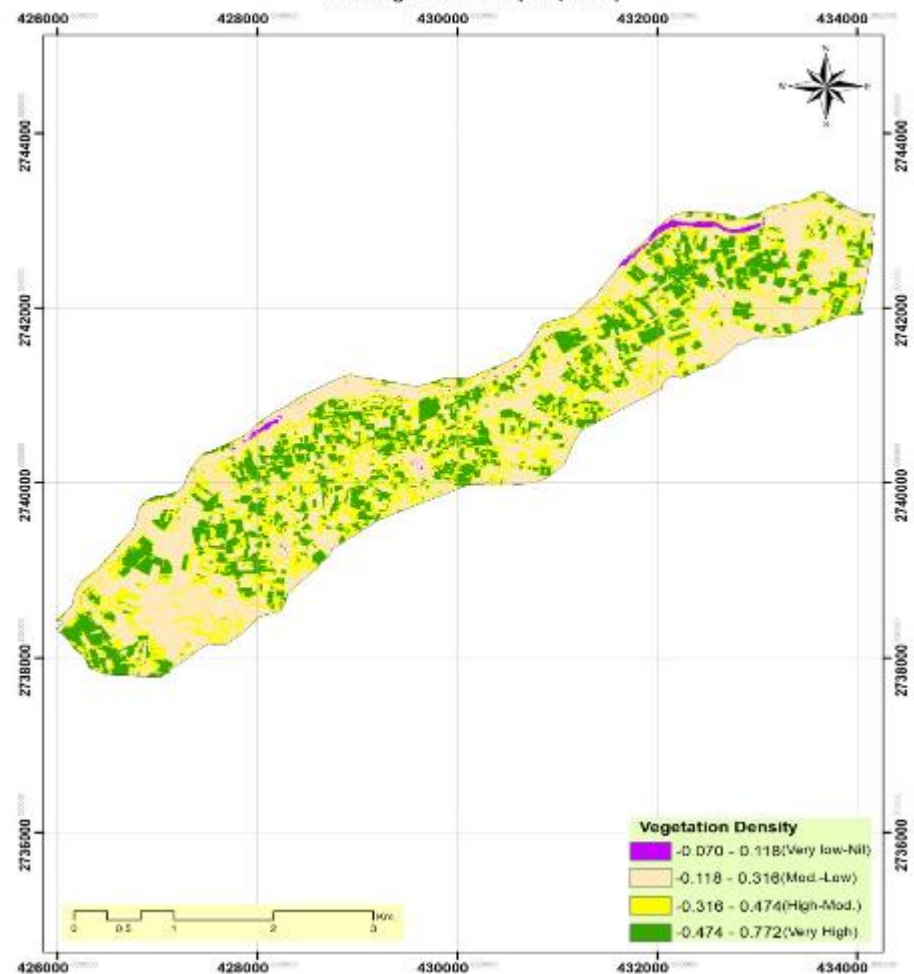
Vegetation Index

Chhittorgarh IWMP-2 (Dec, 2011)



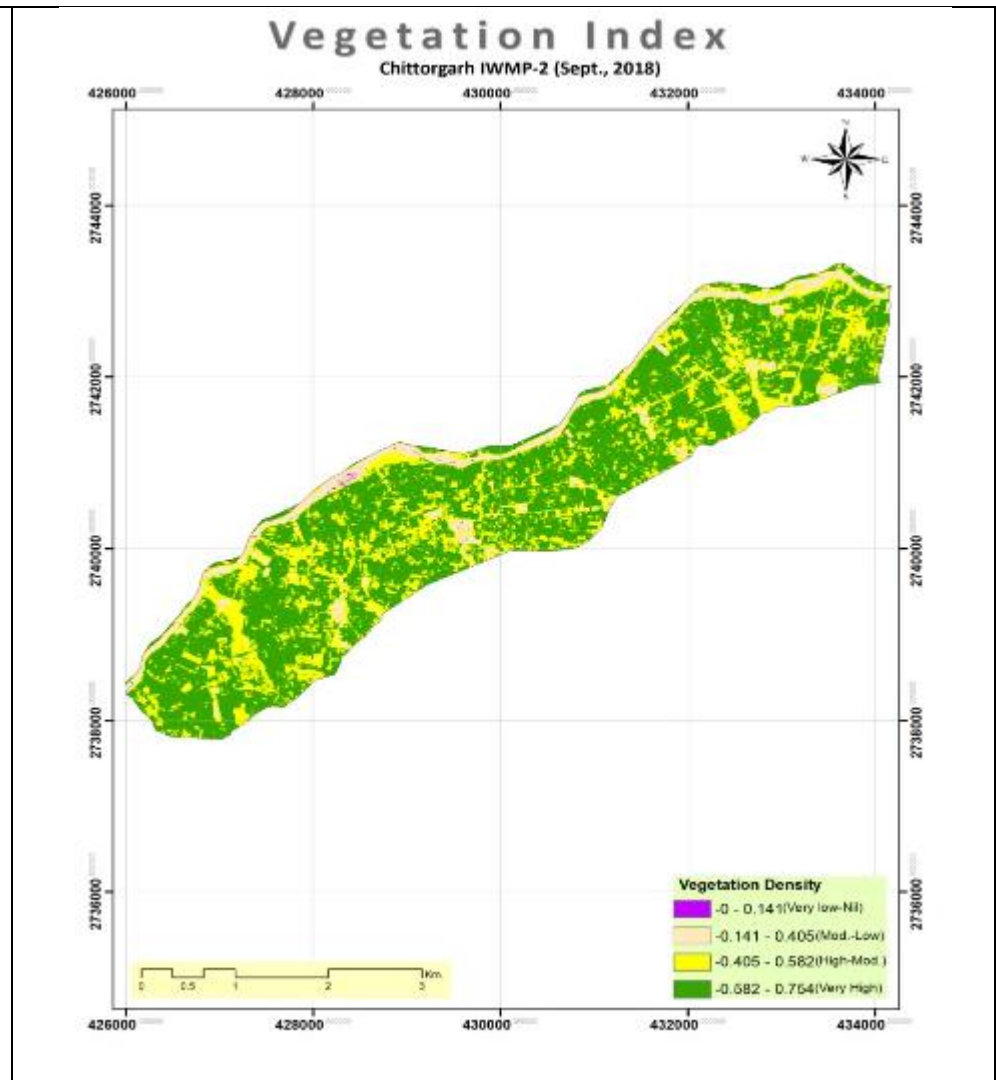
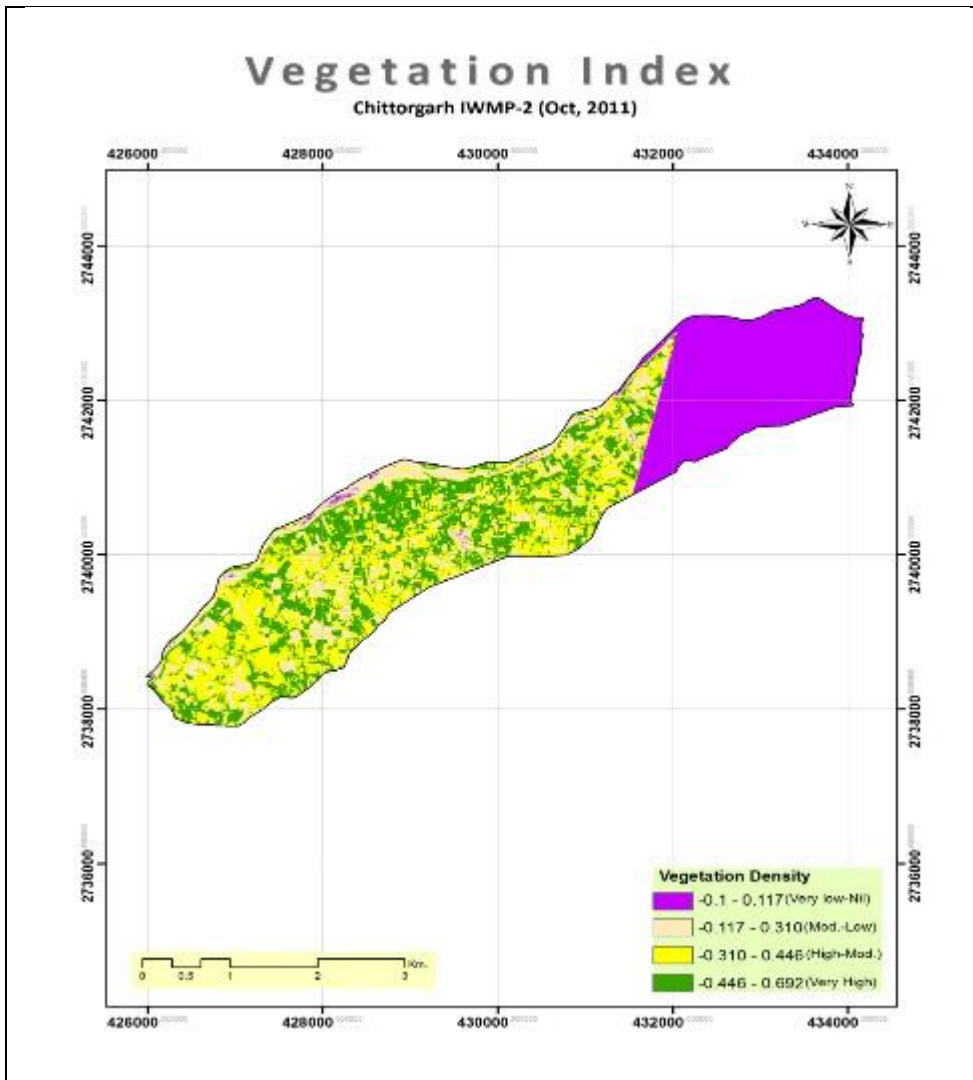
Vegetation Index

Chhittorgarh IWMP-2 (Jan., 2018)



Vegetation Density using NDVI in study area Rabi Season (Pre Project Status – Dec 2011) computed LISS IV Imagery

Vegetation Density using NDVI in study area Rabi Season (Post Project Status Jan 2018) computed LISS IV Imagery



Vegetation Density using NDVI in study area Kharif Season (Pre Project Status Oct. 2011) computed LISS IV Imagery

Vegetation Density using NDVI in study area Kharif Season (Post Project Status Sept 2018) computed LISS IV Imagery

8.2.11 Shift from Annual Crops to Perennial Crops:

Nowadays, most of the agricultural land is used for intensive food production. Depending on agricultural practices the intensification often comes at the cost of land degradation. Nowadays, most of the agricultural land is used for intensive food production. Depending on agricultural practices the intensification often comes at the cost of land degradation.

The major crops used globally to feed people and livestock – wheat, rice, maize and soy – are based on an annual system, in which crop plants live one year, are harvested, and are replanted the following year. These systems are notorious, however, for stripping organic nutrients from soils over time.

Perennial systems, on the other hand, contain plants that live longer than one-year despite being harvested annually. Perennial Crops allocate more resources belowground, thus sustaining important ecosystem services. Hence, shifting from annual to perennial crops has been advocated towards a more sustainable agriculture. Many agricultural scientists, say that perennial crops are the key to creating more sustainable agricultural systems.

Agricultural areas are often fragmented and have a mosaic-like structure. They frequently comprise major and minor land cover types. The latter are often difficult to classify. Indeed, it is commonly recognized that unevenly distributed classes could deteriorate the performance of most standard classification methods. To derive more detailed LULC maps, time series data from the LISS IV images also be used because they allow to track seasonal variation of vegetation development. Several studies have shown that time series could better discriminate between different types of vegetation than single snapshot.

Here LISS-IV imagery belonging to entire pre and post project times series data are used for computing perennial crop area, annual crop area and plantation on the basis of visual interpretation shown in Fig no.8.8 and table no. 8.33.

Land use diversification

Table : 8.33

S. No	Changes		Area (In Ha)
	From (Pre)	To (Post)	
1	2	3	4
1	Annual Crops (13.40)	Perennial Crops	71.59
2	Waste lands (227.10)	Agricultural	65.745
3	Agriculture	Built Up/Waterbodies	0.77

Source: GIS Report by MEL&D agency

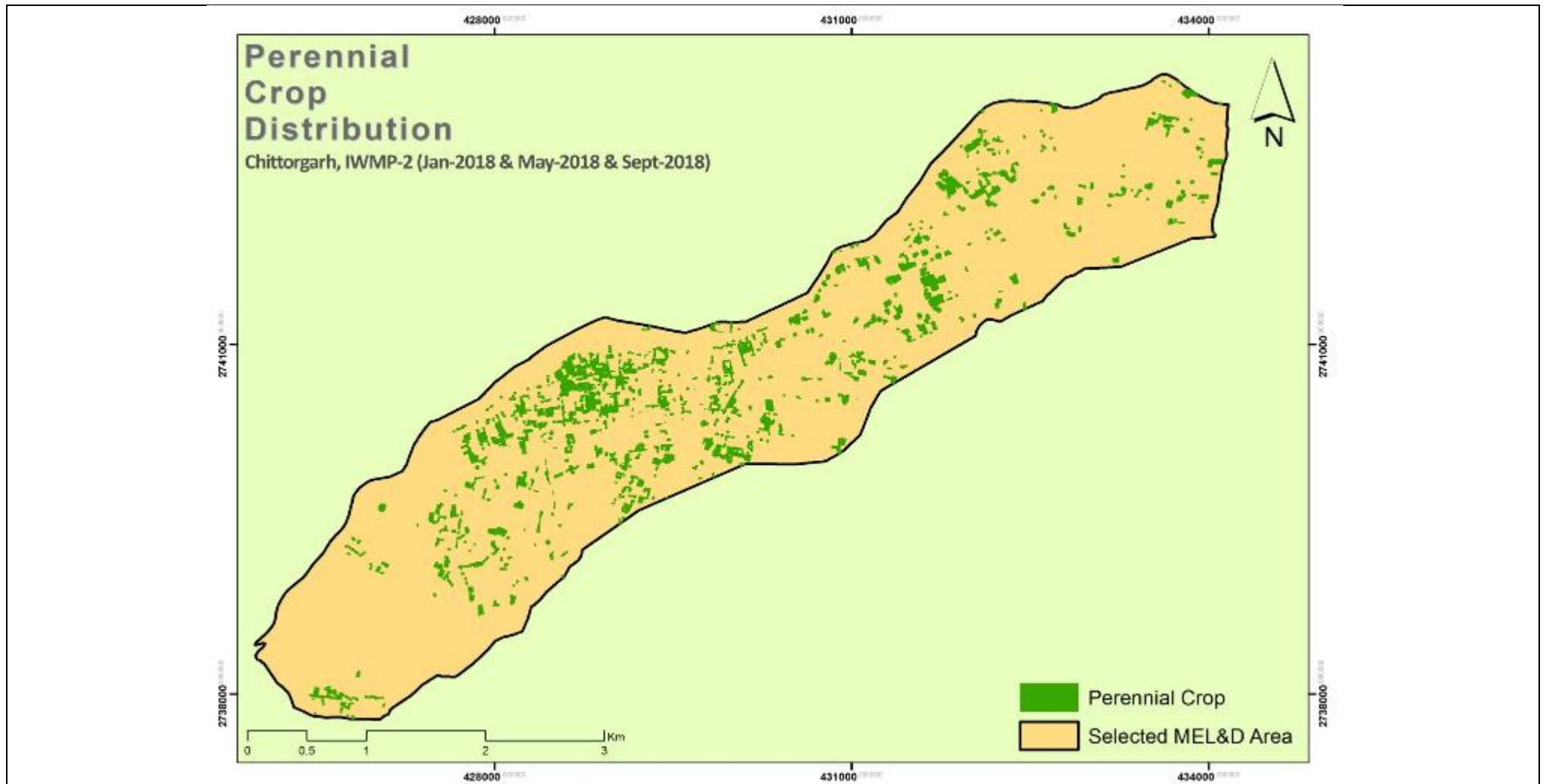


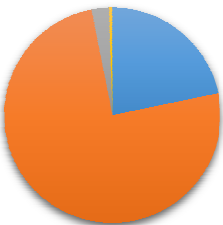
Fig. 8.8 Perennial crop distribution in the study area Computed LISS IV Imagery (Sept 2018 – Kharif&Jan 2018 – Rabi & May 2018 – Jayad)

8.2.14 Moisture Density:

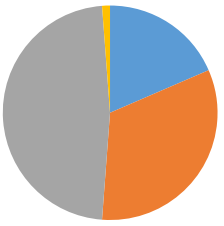
LISS-IV imagery belonging to Rabi season of pre and post project times are used for computing NDWI and further classified using natural breaks in histogram. The Normalized Difference Moisture Water Index (NDWI) is a satellite-derived index from the Near-Infrared (NIR) and Green channels. The NDWI output was further classified into four categories viz. High – Very High, High – Moderate, Moderate – low, Low – very low. The output image reflects changes in both the vegetation water content and soil moisture. This specialized band rationing algorithm improves the accuracy in analysing the water content and moisture distribution over a given area.

$$\text{NDWI} = (\text{Green} - \text{IR}) / (\text{Green} + \text{IR})$$

Soil Moisture Content and Availability through Wetness Index

(A): Pre Classification of Soil Moisture			Table: 8.35	
Soil Moisture(Mar-2012)	Area (Ha)	Area (%)	 <ul style="list-style-type: none"> ■ Low - Nil ■ Mod. - Low ■ High - Mod. ■ Very High 	
1	2	3		
Low - Nil	288.51	21.71		
Mod. - Low	999.79	75.24		
High - Mod.	34.46	2.59		
Very High	6.05	0.46		

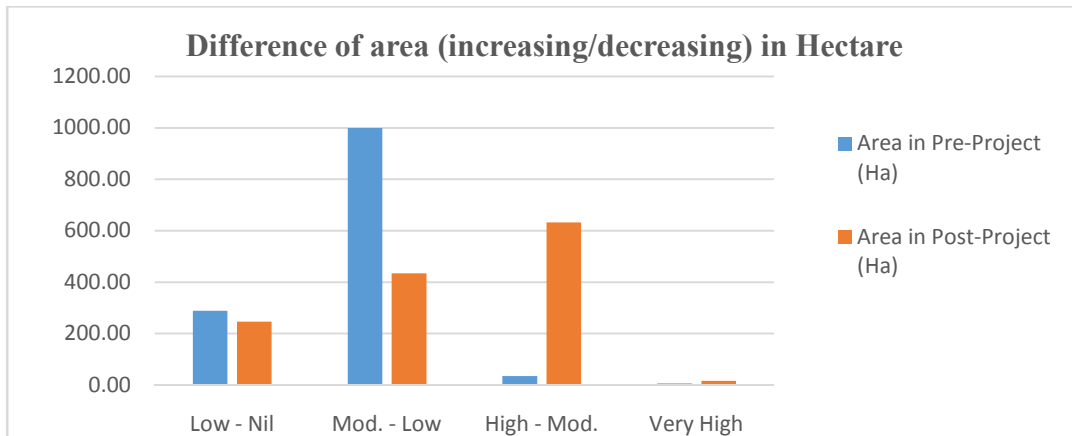
Source: Moisture Density Kharif season Computed as per satellite Imagery LISSIV (Pre project Status)

(B): Post Classification of Soil Moisture			Table: 8.36	
Soil Moisture (Jan-2018)	Area (Ha)	Area (%)	 <ul style="list-style-type: none"> ■ Low - Nil ■ Mod. - Low ■ High - Mod. ■ Very High 	
1	2	3		
Low - Nil	245.94	18.51		
Mod. - Low	434.46	32.70		
High - Mod.	632.30	47.58		
Very High	16.12	1.21		

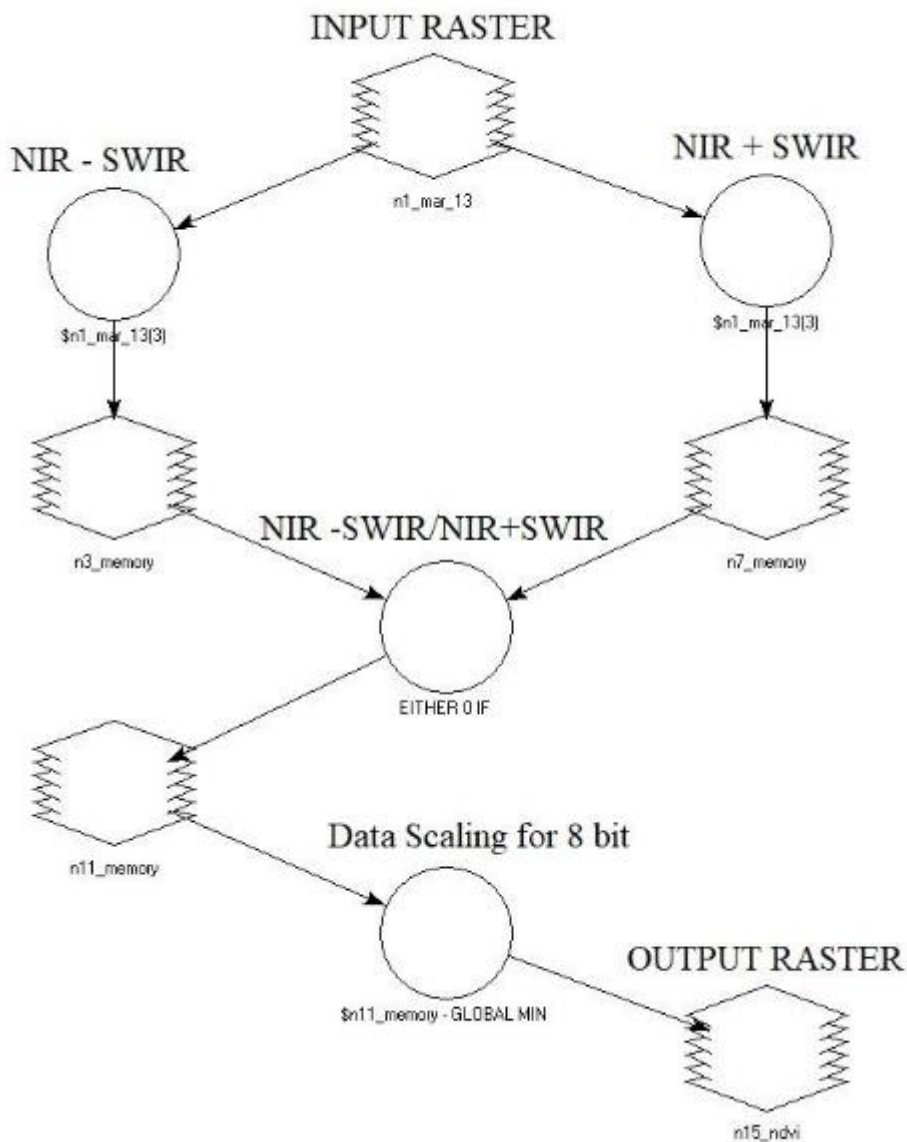
Source: Moisture Density Kharif season Computed as per satellite Imagery LISSIV(Post project Status)

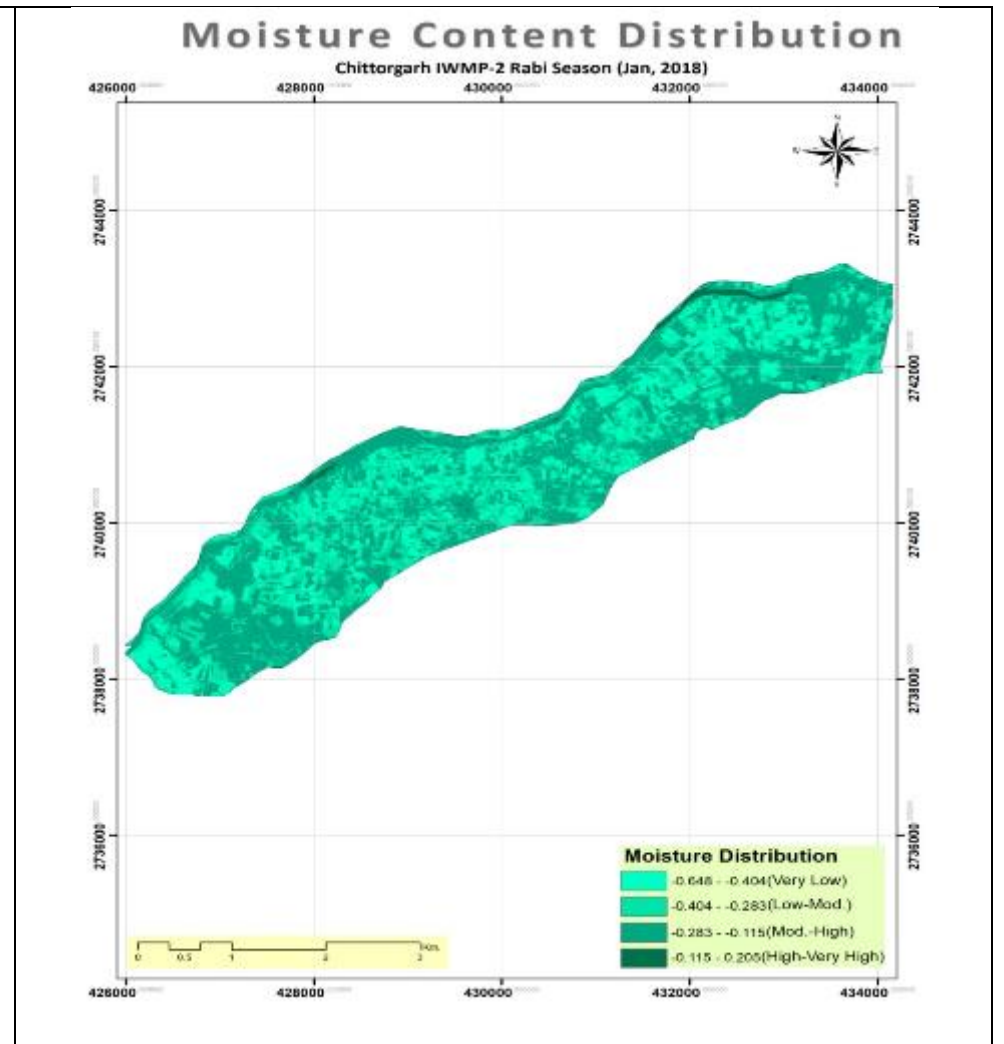
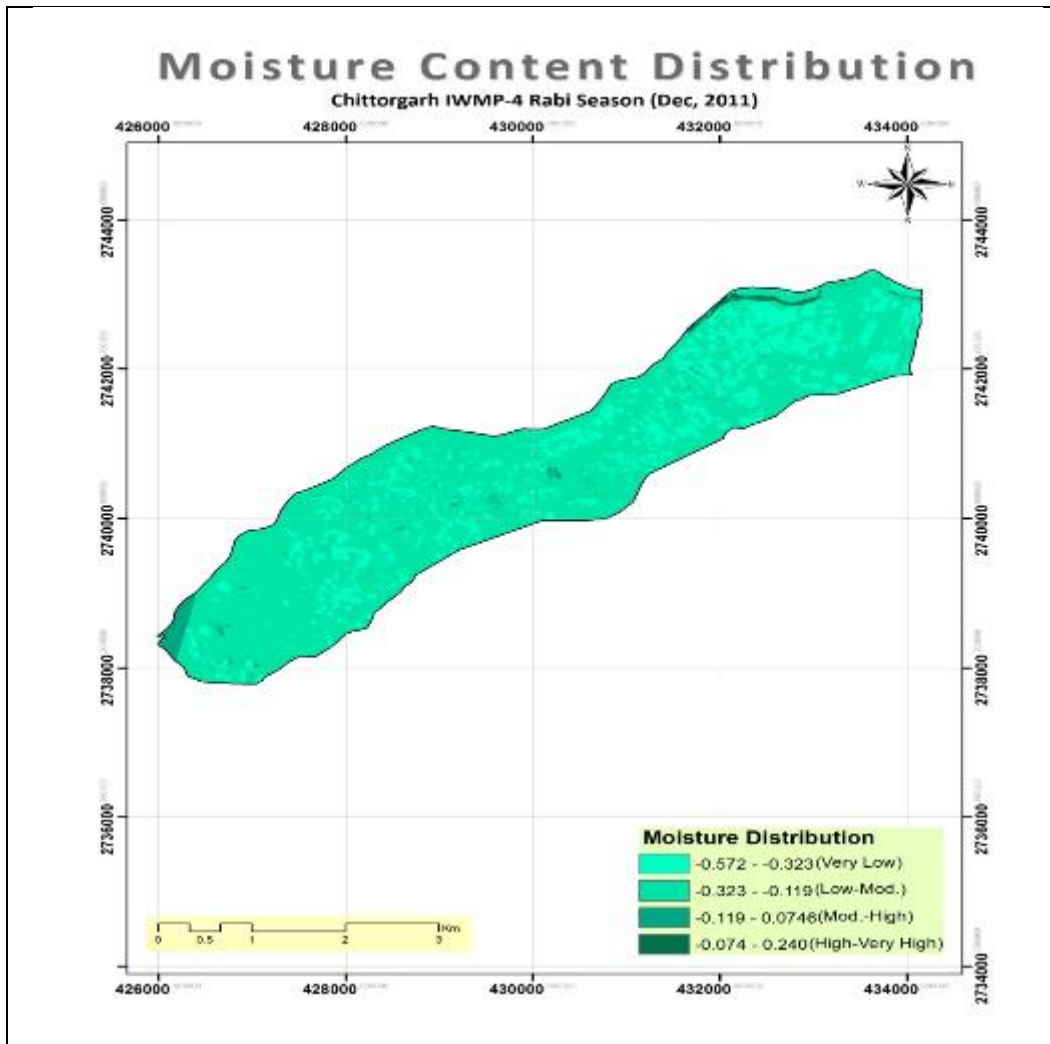
Difference of area (increasing /decreasing) in Hectare				Table: 8.38
Soil Moisture	Area Pre (%)	Area Post (%)		
1	2	3		
Low - Nil	288.51	245.94	-42.571	
Mod. - Low	999.79	434.46	-565.329	
High - Mod.	34.46	632.30	597.835	
Very High	6.05	16.12	10.065	

Source: Difference of Area Moisture Density Kharif season Computed as per satellite Imagery LISSIV(Pre, Post-project Status)



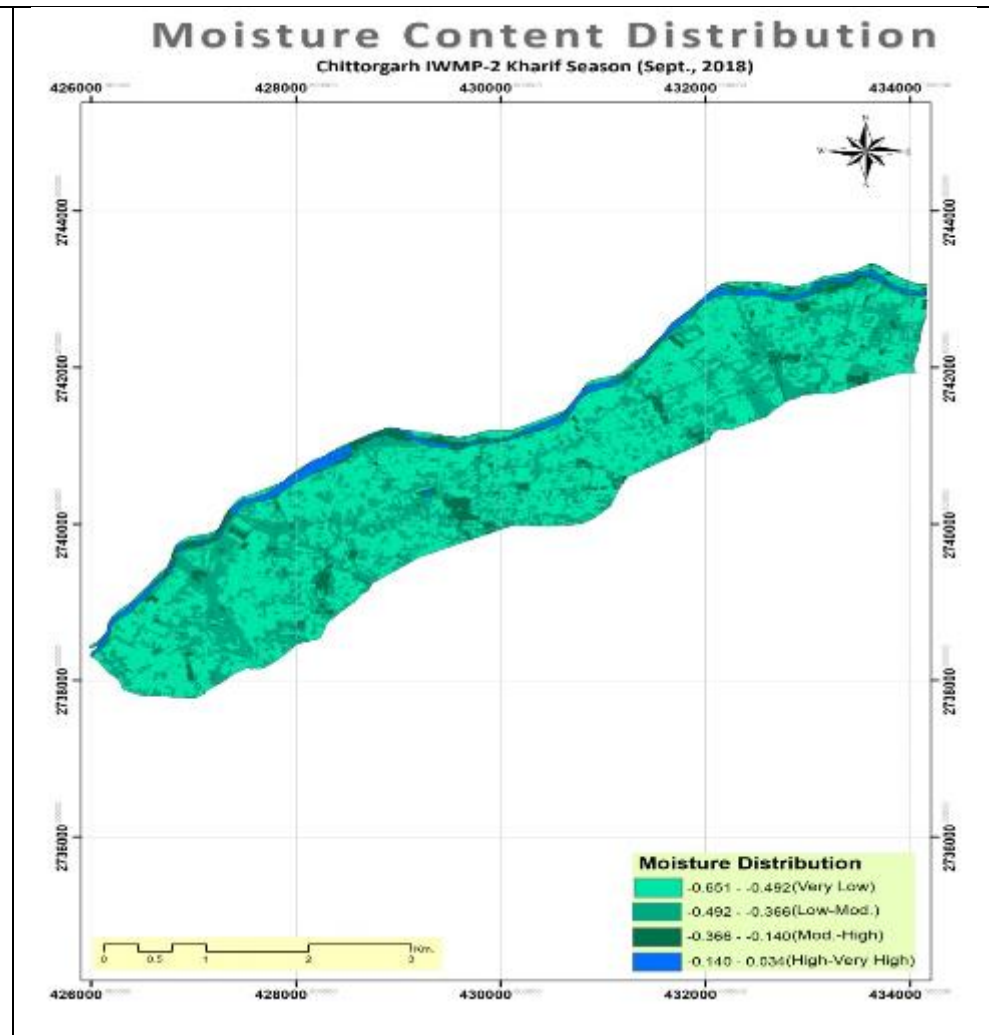
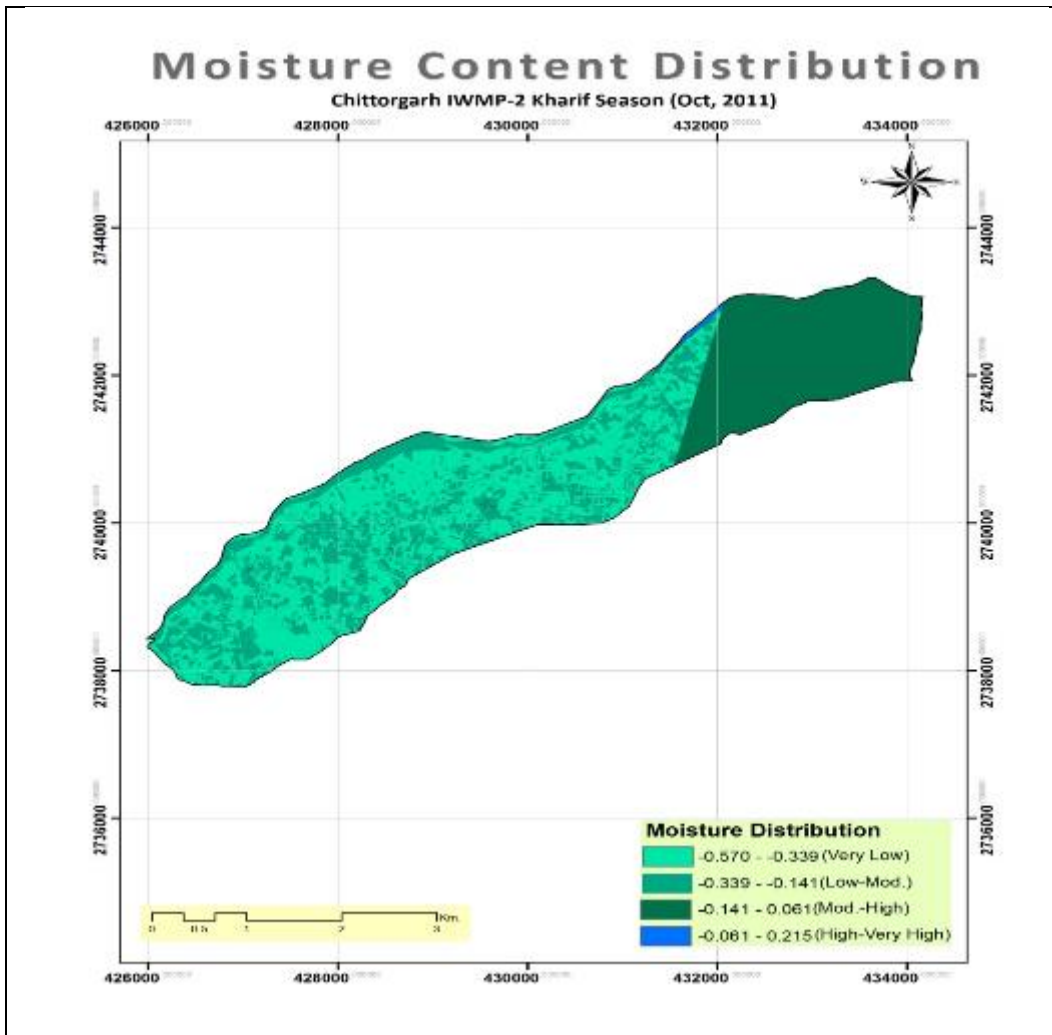
Normalized Difference Water Index





Moisture Density using NDWI in study area Rabi Season (Pre Project Status- Dec 2011) computed LISS IV Imagery

Moisture Density using NDWI in study area Rabi Season (Post Project Status – Jan. 2018) computed LISS IV Imagery



Moisture Density using NDWI in study area Kharif Season (Pre Project Status – Oct. 2011) computed LISS IV Imagery

Moisture Density using NDWI in study area Kharif Season (Post Project Status – Sept 2018) computed LISS IV Imagery

CHAPTER –9

Watershed Development Fund (WDF)

9.1 WDF at a Glance in IWMP-2/2009-10 project, Chittorgarh:

Watershed Development Fund in IWMP 2/2009-10:

Table: 9.1

S. No.	Particular	Status
1	2	3
1.	Assets transferred to	Gram Panchayat
2.	Condition/ Quality of assists	Very Good
3.	Amount of WDF (Total) amount available (Rs.) and with whom / what level.	Rs. 9.86 Lacs concerning Gram Panchayat Sarpanch
4.	Monitoring of Revolving fund by and total amount under circulation / available (Rs.)	12.93 Lacs

Source: PIA and survey by MEL&D agency

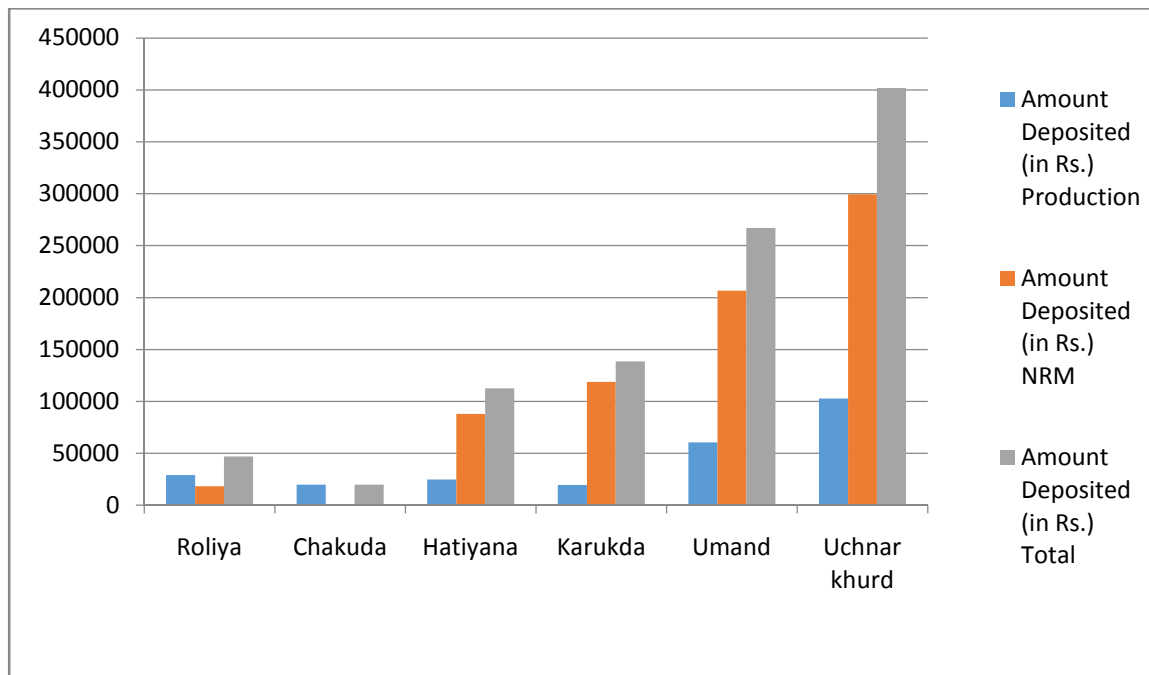
9.2 Details of Amount Deposited in WDF in IWMP-2/2009-10 project:

Details of Amount Deposited in WDF in IWMP-2/2009-10 project

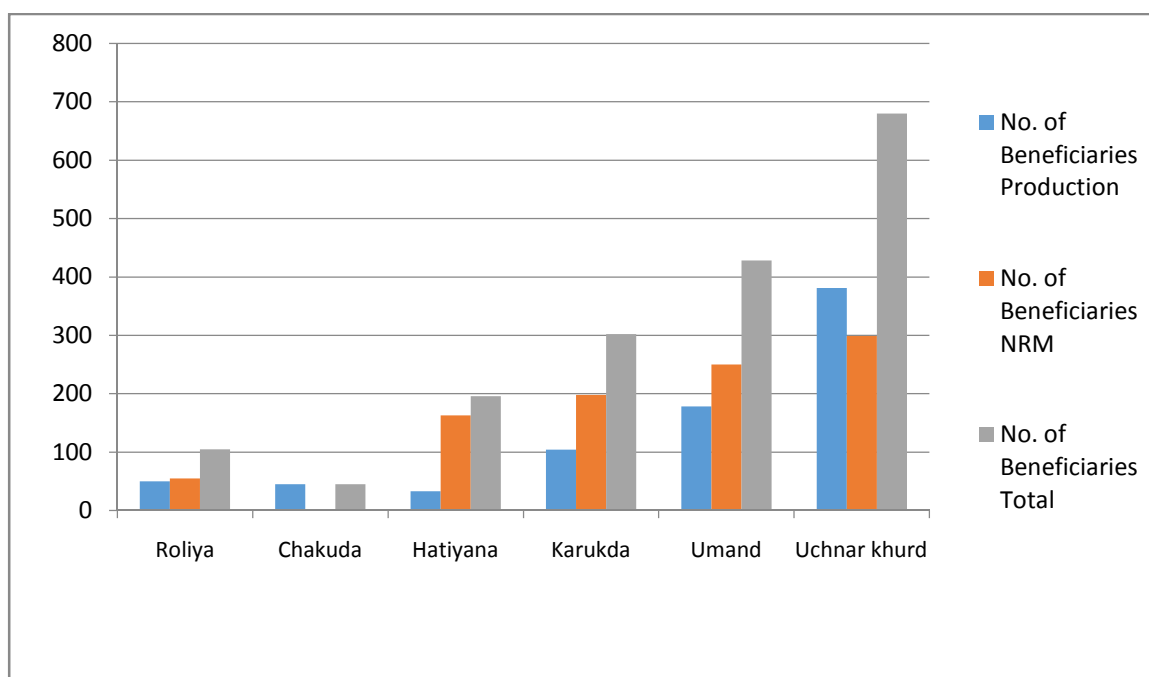
Table:9.2

Sno.	Name of Watershed Committee	Name of Bank	Account No.	Amount Deposited (in Rs.)			No. of Beneficiaries		
				Producti on	NRM	Total	Produ ction	NRM	Total
1	2	3	4	5	6	7	8	9	10
1	Roliya	Brkgbkap asan	42740100001886	28864	18070	46934	50	55	105
2	Chakuda	Brkgbkap asan	42740100001888	19651	0	19651	45	0	45
3	Hatiyana	Brkgbkap asan	42740100004491	24530	87939	112469	33	163	196
4	Karukda	Brkgbkap asan	42740100001882	19540	118868	138408	104	198	302
5	Umand	Brkgbkap asan	42740100001879	60378	206589	266967	178	250	428
6	Uchnarkhurd	Brkgbkap asan	42740100001884	102570	299382	401952	381	299	680
Total				255533	730848	986381	791	965	1756

Source: PIA and survey by MEL&D agency



Details of Watershed Committee-wise Amount Deposited in WDF in Chittorgarh, IWMP-2/2009-10



Details of Watershed Committee-wise no. of beneficiaries in Chittorgarh, IWMP-2/2009-10

It is observed that a sum of **Rs. 2.56** is collected as Farmer's contribution out of Production activities and **Rs. 7.31 Lacs** out of NRM activities, thus total **Rs. 9.86 Lacs** is available in the WDF. Further, it is also reported that **791 Nos.** of beneficiaries have contributed in Production System and **965 Nos.** in NRM works, thus total beneficiaries contributed in WDF is **1756 Nos.**

CHAPTER –10

Outcomes of IWMP

During Final Stage Impact Evaluation, primary and secondary data is collected from the different sources both for watershed area and for the control area. These data is compared for witnessing the change with the base line values. For data collection, structured formats were prepared and standard procedures of MELD assignment were followed. In the subsequent paras of this chapter, the Outcomes observed in Chittorgarh IWMP-2/2009-10 watershed project are enumerated in detail:

10.1 Human Resource Development - Capacity Building and Institutional

Development:

Development & Formation of village level institutions in IWMP Watershed and Control Area (Nos./%):

In watershed project area, at the final impact evaluation stage, the status of formation of village level institution is monitored. It is observed that formation of SHGs (18 to 106 No.) is increased by **488%** with an increase of **377%** number of members (180 to 860 No.) and no. of UGs (10 to 39 No.) is increased by **290%** with an increase of **290%** number of members (100 to 390 No.).

In control area, at the final impact evaluation stage, the status of formation of village level institution is monitored. It is observed that formation of SHGs (11 to 20 No.) is increased by **81.82%** with an increase of **81.82%** number of members (110 to 200 No.) and no. of UGs (2 to 4 No.) is increased by **100%** with an increase of **100%** no. of members (20 to 40 No.).

Formation of village level institutions in IWMP Watershed and Control Area (Nos./%):

Table: 10.1

IWMP/ Control Area	Timeline	SHGs (Nos.)		UGs (Nos.)	
		Total No. of SHGs	Total Members	Total No. of UGs	TOTAL Members
1	2	3	4	5	6
IWMP-2 /2009-10	Base line	18	180	10	100
	End line	106	860	39	390
	Impact /change (No.)	88	680	29	290
	Impact/change (%)	488.89	377.78	290.00	290.00
Control area	Base line	11	110	2	20
	End line	20	200	4	40
	Impact /change (No.)	9	90	2	20
	Impact/change (%)	81.82	81.82	100.00	100.00

Source: PIA and survey by MEL&D agency

10.2 Social Aspects:

10.2.1 Family Profile in IWMP watershed and Control Area (%):

In watershed project area, at the final impact evaluation stage, Above Poverty Line (APL) population is increased by **0.08%** and Below Poverty Line (BPL) population is decreased by **0.08%**. As regards to farmer types-wise description, **less than 1.19%** change is noticed from Large category to Marginal and Medium category that might be due to fragmentation of land holdings over the years.

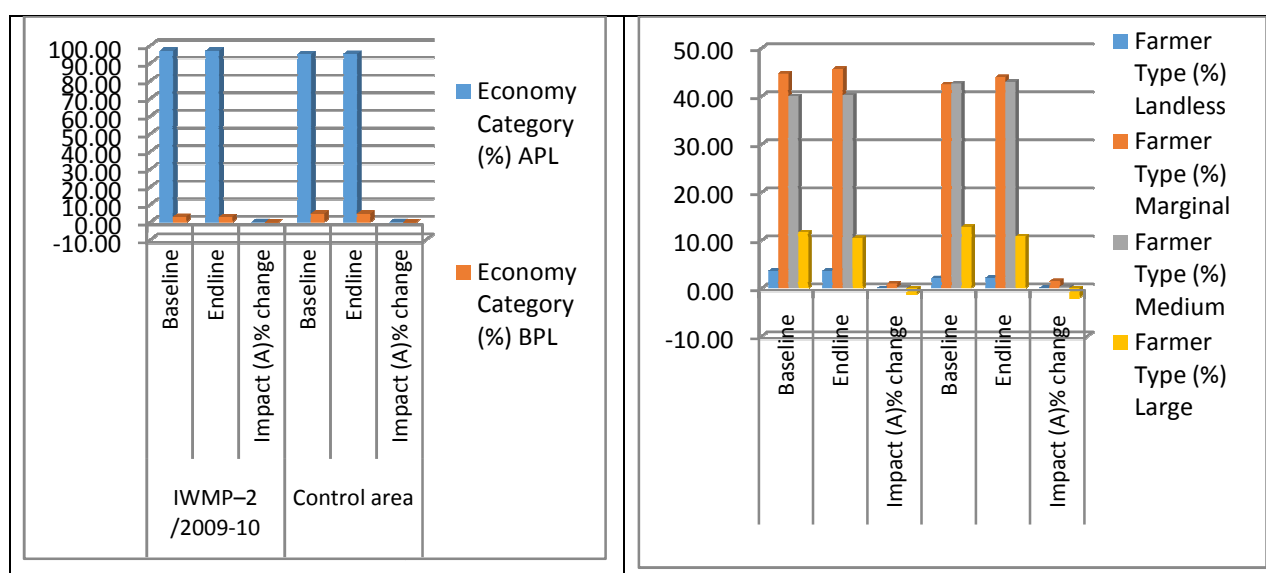
In Control area, at the final impact evaluation stage, Above Poverty Line (APL) population increased by **0.07%** and Below Poverty Line (BPL) population is decreased by **0.07%**. As regards to farmer types-wise description, again **less than 1.98%** change is noticed from Large category to Marginal and medium category that might be due to fragmentation of land holdings over the years.

Family Profile:-Category of Households - Caste, Economy class and Type in IWMP watershed and Control Area (%):

Table: 10.2

Name of Area	Time line	Economy Category (%)		Farmer Type (%)			
		APL	BPL	Landless	Marginal	Medium	Large
1	2	3	4	5	6	7	8
IWMP 2/2009-10	Baseline	96.99	3.01	3.67	44.70	39.97	11.66
	End line	97.07	2.93	3.69	45.69	40.15	10.47
	Impact change	0.08	-0.08	0.02	0.99	0.18	-1.19
Control area	Baseline	95.17	4.83	2.10	42.47	42.64	12.79
	Endline	95.24	4.76	2.19	44.00	43.00	10.81
	Impact change	0.07	-0.07	0.09	1.53	0.36	-1.98

Source: Census data & survey by MEL&D agency



10.2.2 Livestock details in IWMP Watershed and Control Area (unit/%):

In watershed project area, at the final impact evaluation stage, the livestock detail including milk productivity and self-sufficiency was monitored. It was observed that **improved breeds**; an increase of **18.15%** (from 584 to 690Nos) in Cows, an increase of **11.15%** (from 2591 to 2880 Nos.) in Buffaloes, an increase of **10.39%** (from 5218to 5760 Nos.) in Goats. The **average milk production** in Kg. per day was observed as an increase of **2.00%** (from 7.0 to 9.0 Kg./Day) in Cows, an increase of **2.00%** (from 8.00 to 10.00Kg./Day) in Buffaloes, an increase of **0.75%** (from 1.25 to 2.00 Kg/Day) in Goats.

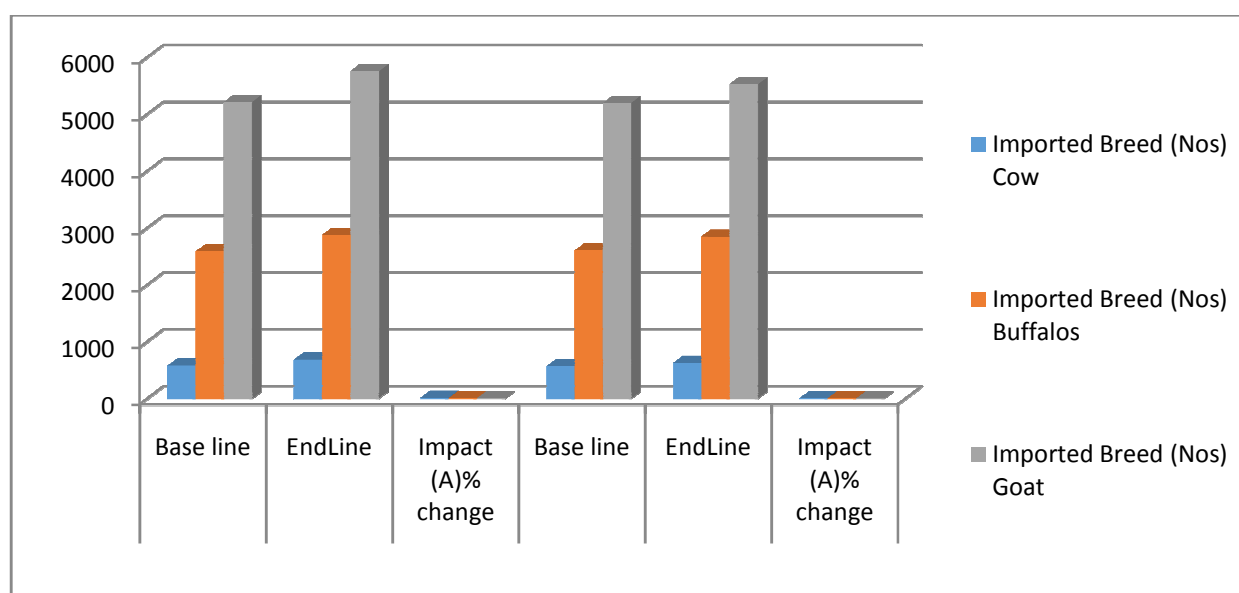
In control area, at the final impact evaluation stage, the livestock detail including milk productivity and self-sufficiency was monitored. It was observed that **improved breeds**; an increase of **9.38%** (from 576 to 630 Nos) in Cows, an increase of **9.32%** (from 2607 to 2850 Nos.) in Buffaloes, an increase of **6.33 %** (from 5201 to 5530 Nos.) in Goats. The **average milk production** in Kg. per day was observed as an increase of **1.00%** (from 7.0 to 8.00 Kg./Day) in Cows, an increase of **1.00%** (from 8.00 to 9.00Kg./Day) in Buffaloes, an increase of **0.50%** (from 1.00 to 1.50Kg/Day) in Goats.

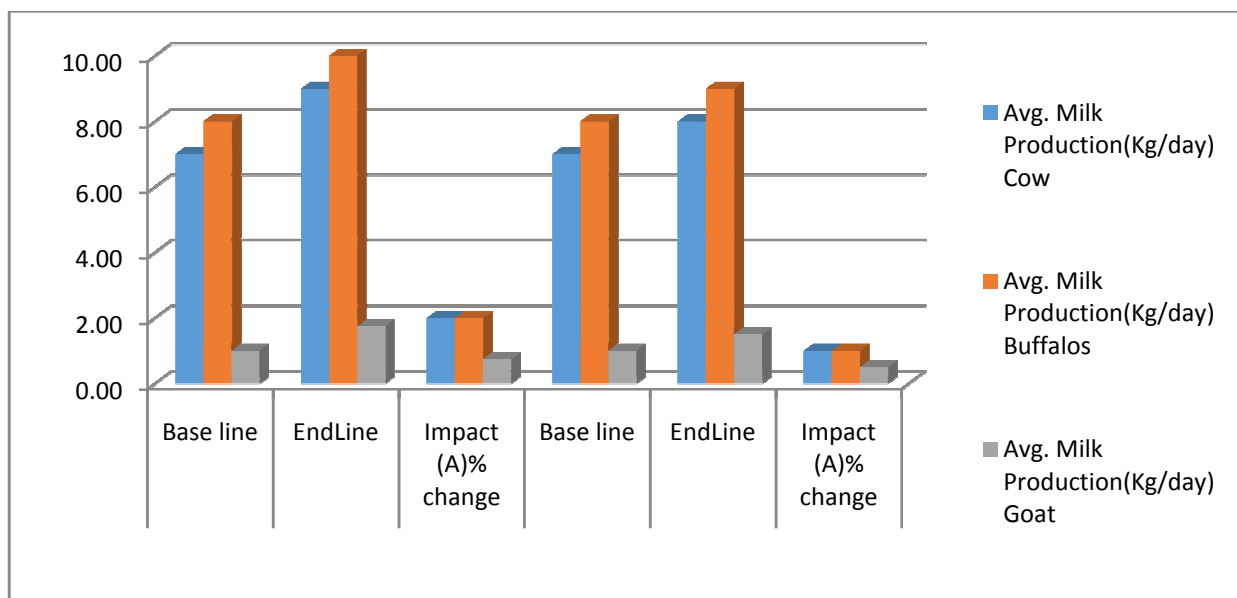
Livestock details in IWMP Watershed and Control Area (unit/%):

Table: 10.3

IWMP/ Control Area	Time line	Imported Breed (Nos)			Avg. Milk Production(Kg/day)		
		Cow	Buffalos	Goat	Cow	Buffalos	Goat
1	2	3	4	5	6	7	8
IWMP 2/2009-10	Base line	584	2591	5218	7.00	8.00	1.00
	End line	690	2880	5760	9.00	10.00	1.75
	Impact / Change (%)	18.15	11.15	10.39	2.00	2.00	0.75
Control area	Base line	576	2607	5201	7.00	8.00	1.00
	End line	630	2850	5530	8.00	9.00	1.50
	Impact / Change (%)	9.38	9.32	6.33	1.00	1.00	0.50

Source: survey by MEL&D agency





10.2.3 Drinking Water Facilities in IWMP Watershed & Control Area (%):

In watershed project area, at the final impact evaluation stage, the changes in drinking water facilities were monitored. It was observed that there is an increase of **14.55%** in Government Supply, increase of **2.00%** in private supply, decrease of **8.20%** in hand pumps, decrease of **3.00%** in tanker supply.

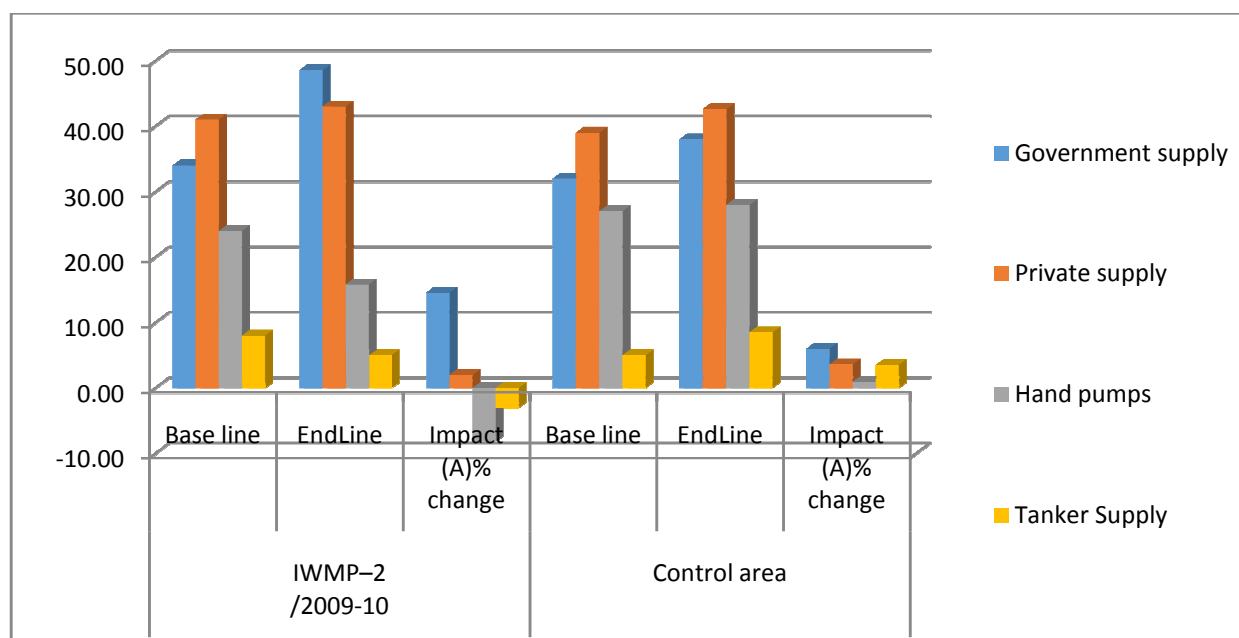
In control area, at the final impact evaluation stage, the changes in drinking water facilities were monitored. It was observed that there is an increase of **6.00%** in Government Supply, increase of **3.60%** in private supply, increase of **0.96%** in hand pumps, increase of **3.50%** in tanker supply.

Drinking water Facilities in IWMP Watershed and Control Area (%):

Table: 10.4

IWMP/ Control Area	Timeline	Government supply	Private supply	Hand pumps	Tanker Supply
1	2	4	5	5	6
IWMP 2/2009-10	Base line	34.00	41.00	24.00	8.00
	End line	48.55	43.00	15.80	5.00
	Impact / change	14.55	2.00	-8.20	-3.00
Control area	Base line	32.00	39.00	27.00	5.00
	End line	38.00	42.60	27.96	8.50
	Impact / change	6.00	3.60	0.96	3.50

Source: survey by MEL&D agency



10.3 Soil and Water Conservation and Environmental aspects:

10.3.1 Soil and Water Conservation

It is observed that major expenditure in Chittorgarh IWMP-2/2009-10 watersheds is done on Earthen Bund on farmers' fields, Earthen Bund. Farm Pond Talai WHS **reduces water runoff and controls soil erosion**. Total capacity of rain water harvesting of all NRM activities (soil & Water Conservation measures) in the IWMP watershed is **52.90 Thousands CUM**. With the implementation of such watershed activities, total **471** families have been benefitted through various activities.

10.3.2 Environmental aspects in IWMP Watershed and Control Area:

In watershed project area, at the final impact evaluation stage, **Hazardous Industry** was not found during Base as well as in End line survey, **Flora & Fauna** *were found during Baseline as well as End line survey & no **Wild Life sanctuary, Cultural Heritage & Archaeological Site** were found at both stage.

In control area, at the final impact evaluation stage, **Hazardous Industry** was not found during Base line as well as End line survey, **Flora & Fauna** were found during Baseline as well as End line survey and no **Wild Life sanctuary, Cultural Heritage and Archaeological Site** were found at both the stages.

Environmental aspects in IWMP Watershed and Control Area:

Table: 10.5

IWMP/ Control Area	Timeline	Environmental aspects				
		Hazardous Industry	Flora & Fauna	Wild Life sanctuary	Cultural Heritage	Archaeo- logical Site
		3	4	5	6	7
IWMP 2/2009-10	Base line	N	Y	N	N	N
	End line	N	Y	N	N	N
	Impact / change	0	0	0	0	0
Control area	Base line	N	Y	N	N	N

IWMP/ Control Area	Timeline	Environmental aspects				
		Hazardous Industry	Flora & Fauna	Wild Life sanctuary	Cultural Heritage	Archaeo- logical Site
1	2	3	4	5	6	7
	End line	N	Y	N	N	N
	Impact / change	0	0	0	0	0

Source: survey by MEL&D agency

10.3.3 Bio-diversity in IWMP Watershed and Control Area:

In watershed project area, at the final impact evaluation stage, **Non-brows able tree species, Minor Plants** were found available during Base line and End Line stages. **Fruit Plants, Medicinal Plants, Rejuvenation of local spices of trees** were not found available during Base line but found available during End Line stages.

In control area, at the final impact evaluation stage, **Non-brows able tree species, Minor Plants** were found available during Base line and End Line stages. **Fruit Plants, Medicinal Plants, Rejuvenation of local spices of trees** were not found available during Base line but found available during End Line stages.

Bio-diversity in IWMP Watershed and Control Area:

Table: 10.6

IWMP/ Control Area	Timeline	Bio-diversity				
		Non-brow sable tree species	Minor Plants	Fruit Plants	Medicinal Plants	Rejuvenation of local spices of trees
1	2	3	4	5	6	7
IWMP 2/2009-10	Base line	Y	Y	N	N	N
	End line	Y	Y	Y	Y	Y
	Impact / change	0	0	100	100	100
Control area	Base line	Y	Y	N	N	N
	End line	Y	Y	Y	N	N
	Impact / change	0	0	100	0	0

Source: survey by MEL&D agency

10.3.4 Ground water source, yield and level in IWMP Watershed and Control Area:

In watershed project area, at the final impact evaluation stage, the sources of ground water and level were monitored. There was **no change** in number of **dry wells**, **functional wells** were increased by **15.10%**. The **average water level** in meters was reported to be decreased by **0.90%** in June, **0.98%** in October and **0.95%** in January.

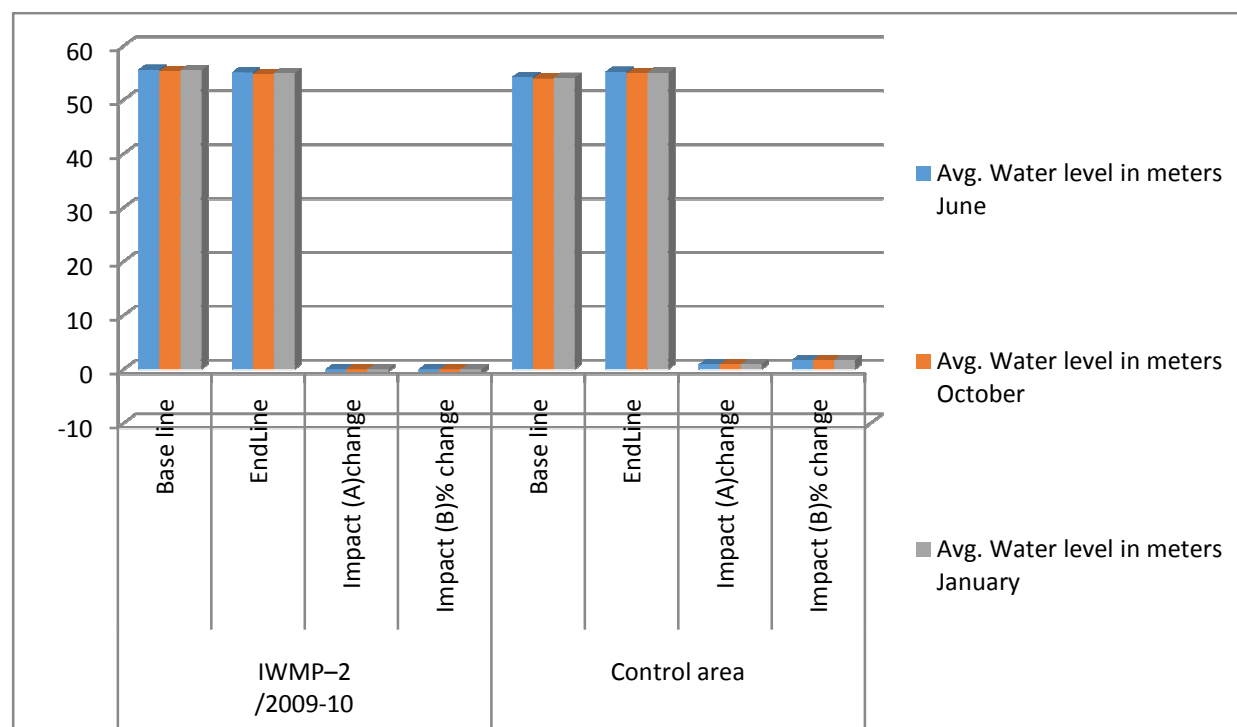
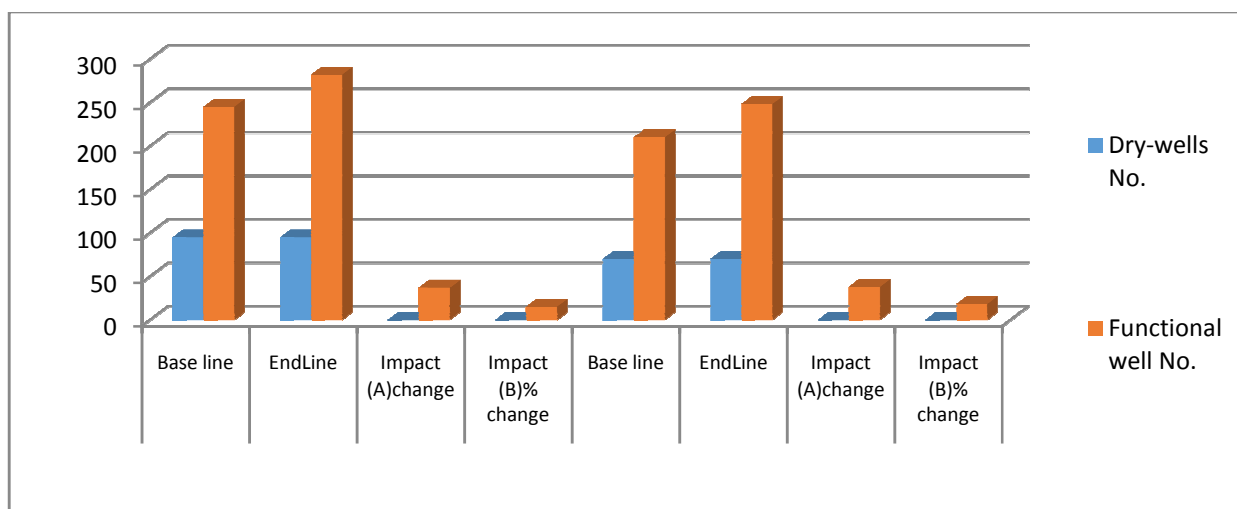
In control area, at the final impact evaluation stage, the sources of ground water and level were monitored. The **dry wells** numbers were not change, **functional wells** were increased by **18.10%**. The **average water level** in meters was reported to be increased by **1.75%** in June, **1.74%** in October and **1.72%** in January. The impact of intervention is visible as the water levels are decreased in IWMP area.

Ground water source and Avg. Water level (bgl) in watershed and Control Area (%):

Table: 10.7

IWMP/ Control Area	Timeline	Dry wells	Functional well	Avg. Water level (bgl) in meters		
		No.	No.	June	October	January
1	2	3	4	8	9	10
IWMP 2/2009-10	Base line	95	245	55.62	55.34	55.51
	End line	95	282	55.12	54.8	54.98
	Impact change	0	37	-0.5	-0.54	-0.53
	Impact % change	0.00	15.10	-0.90	-0.98	-0.95
Control area	Base line	70	210	54.25	53.97	54.12
	End line	70	248	55.2	54.91	55.05
	Impact change	0	38	0.95	0.94	0.93
	Impact % change	0.00	18.10	1.75	1.74	1.72

Source: survey by MEL&D agency



10.4 Agriculture Aspects:

10.4.1 Cropping Pattern - Total Cultivation Land, Irrigated Area & Cropped area in IWMP Watershed and Control Area (ha/%):

In watershed project area, at the final impact evaluation stage, the **Total Cultivated Land** is increased by **44.56%** (from 1553 ha to 2245 ha) in Kharif, increased by **40.02%** (from 1007 ha to 1410 ha) in Rabi, increased by **21.05%** (from 95 ha to 115 ha) in Jayad, the **Total Irrigated Area** is increased by **46.29%** (from 687 ha to 1005 ha) in Kharif, increased by **44.19%** (from 801 ha to 1155 ha) in Rabi, increased by **21.05%** (from 95 ha to 115 ha) in Jayad. The **Total Cropped Area** for single crop is increased by **52.93%** (from 546 ha to 835 ha) while for double crop it is increased by **42.00%** (from 912 ha to 1295 ha), and for multiple crop, it is increased by **21.05%** (from 95 ha to 115 ha).

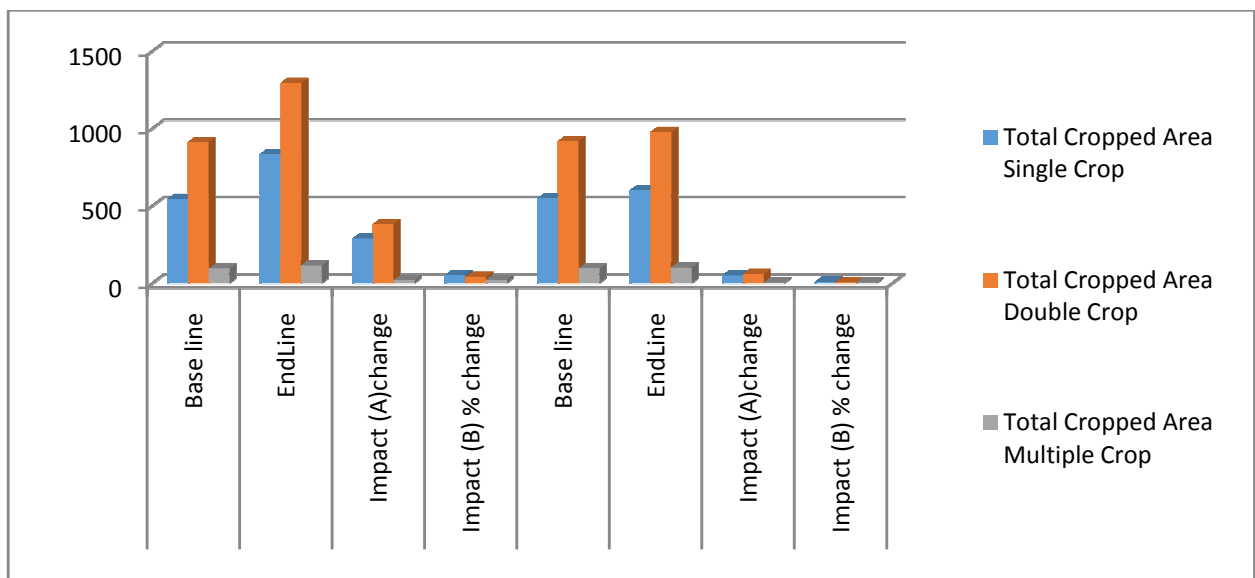
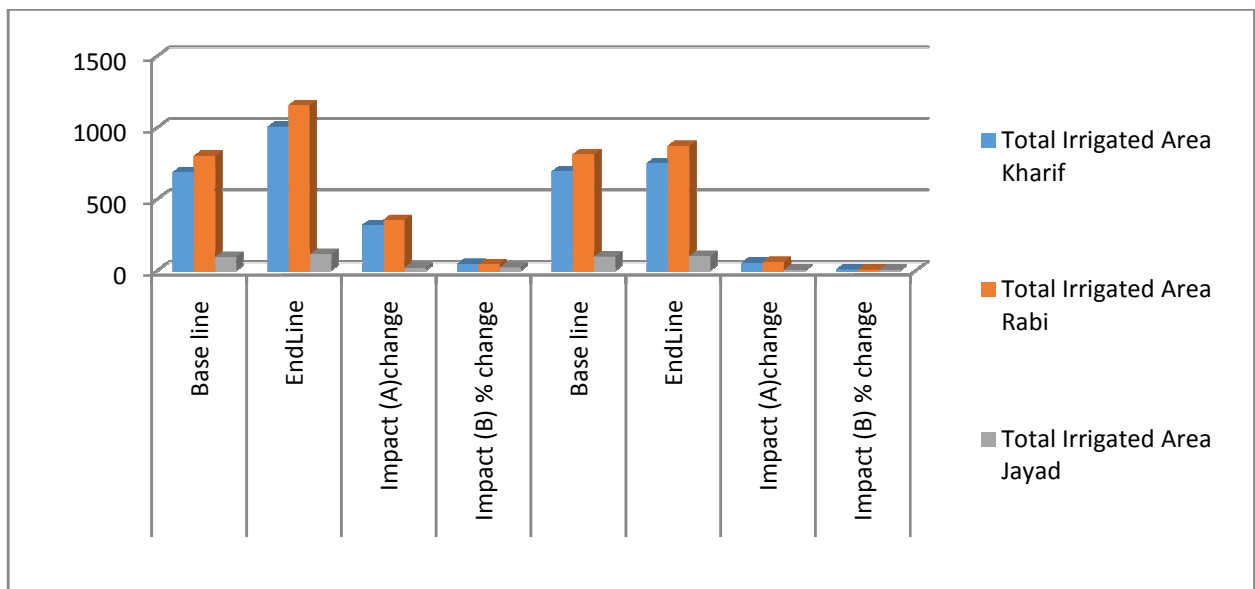
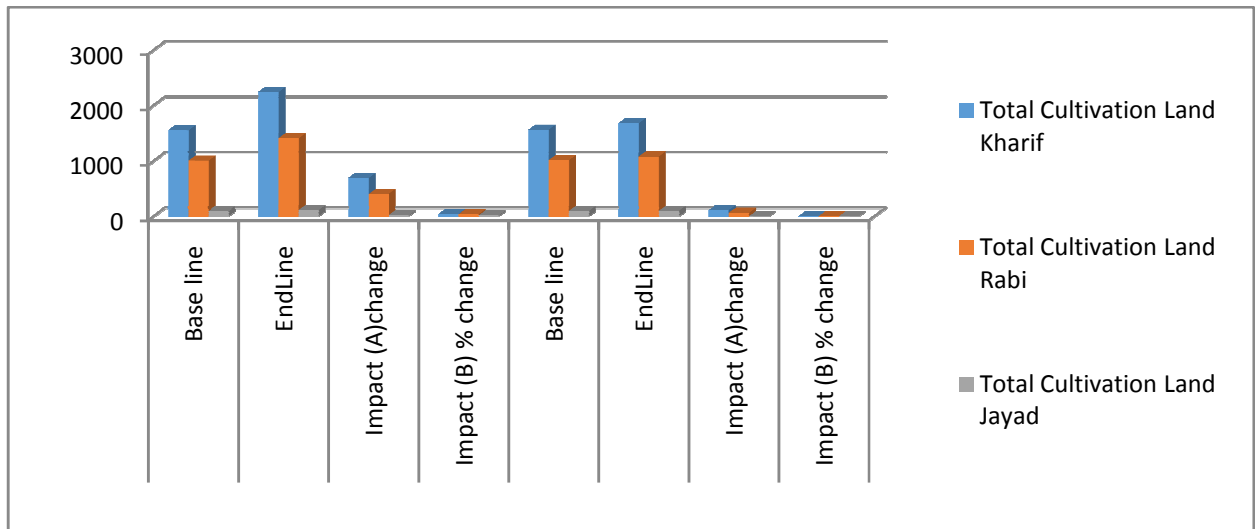
In control area, at the final impact evaluation stage, the **Total Cultivated Land** is increased by **7.41%** (from 1565 ha to 1681 ha) in Kharif, increased by **6.40%** (from 1015 ha to 1080 ha) in Rabi, increased by **5.15%** (from 97 ha to 102 ha) in Jayad, the **Total Irrigated Area** is increased by **8.07%** (from 694 ha to 750 ha) in Kharif, increased by **7.39%** (from 812 ha to 872 ha) in Rabi, increased by **5.15%** (from 97 ha to 102 ha) in Jayad, the **Total Cropped Area** for single crop is increased by **9.27%** (from 550 ha to 601 ha) while for double crop it is increased by **6.54%** (from 918 ha to 978 ha), and for multiple crop, it is increased by **5.15%** (from 97 ha to 102 ha) in Jayad.

Cropping Pattern - Total Cultivation Land, Irrigated Area & Cropped area in IWMP Watershed and Control Area (ha/%):

Table: 10.8

IWMP/ Control Area	Timeline	Total Cultivation Land			Total Irrigated Area			Total Cropped Area		
		Kharif	Rabi	Jayad	Kharif	Rabi	Jayad	Single Crop	Double Crop	Multiple Crop
1	2	3	4	5	6	7	8	9	10	11
IWMP 2/2009-10	Base line	1553	1007	95	687	801	95	546	912	95
	EndLine	2245	1410	115	1005	1155	115	835	1295	115
	Impact (A)change	692	403	20	318	354	20	289	383	20
	Impact (B) % change	44.56	40.02	21.05	46.29	44.19	21.05	52.93	42.00	21.05
Control area	Base line	1565	1015	97	694	812	97	550	918	97
	EndLine	1681	1080	102	750	872	102	601	978	102
	Impact (A)change	116	65	5	56	60	5	51	60	5
	Impact (B) % change	7.41	6.40	5.15	8.07	7.39	5.15	9.27	6.54	5.15

Source: Survey results of MEL&D agency Arpan



10.4.2 Season-wise & Crop-wise area in IWMP Watershed & Control Area (ha/%):

Area (ha/%):

In watershed project area, at the final impact evaluation stage, the **Season-wise & Crop-wise area in Kharif**, is increased by **31.88%** (from 690 ha to 910 ha) for Maize, increased by **54.69%** (from 863 ha to 1335 ha) for others, increased by **44.56%** (from 1553 ha to 2245 ha) as total, **in Rabi**, increased by **67.65%** (from 340 ha to 570 ha) for Mustard, **38.71%** (from 310 ha to 430 ha) for Wheat, increased by **14.85%** (from 357 ha to 410 ha) for others & increased by **40.02%** (from 1007 ha to 1410 ha) as total, in Jayad, area increased by **21.05%** (from 95 ha- 115 ha) .

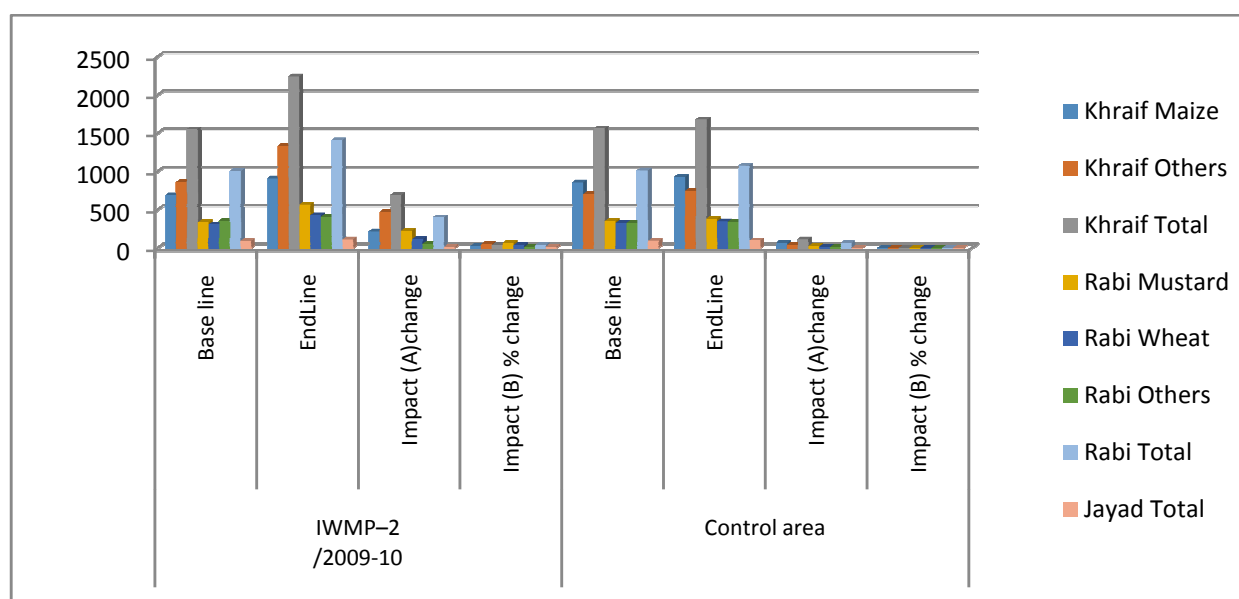
In control area, at the final impact evaluation stage, the **Season-wise and Crop-wise area in Kharif**, is **8.14%** increased (from 860 ha to 930 ha) for Maize, increased by **6.52%** (from 705 ha to 751 ha) for others, increased by **7.41%** (from 1565 ha to 1681 ha) as total, **in Rabi**, is increased by **8.45%** (from 355 ha to 385 ha) for Mustard, increased by **6.06%** (from 330 ha to 350 ha) Wheat, increased by **4.55%** (from 330 ha to 345 ha) for others and increased by **6.40%** (from 1015 ha to 1080 ha) as total, in Jayad, area increased by **5.15%** (from 97 ha to 102 ha)

Season-wise & Crop-wise area in IWMP Watershed and Control Area (ha/%):

Table: 10.9

IWMP/ Control Area	Timeline	Kharif			Rabi				Jayad
		Maize	Others	Total	Mustard	Wheat	Others	Total	Total
IWMP-2 /2009-10	Base line	690	863	1553	340	310	357	1007	95
	EndLine	910	1335	2245	570	430	410	1410	115
	Impact change	220	472	692	230	120	53	403	20
	Impact % change	31.88	54.69	44.56	67.65	38.71	14.85	40.02	21.05
Control area	Base line	860	705	1565	355	330	330	1015	97
	EndLine	930	751	1681	385	350	345	1080	102
	Impact change	70	46	116	30	20	15	65	5
	Impact % change	8.14	6.52	7.41	8.45	6.06	4.55	6.40	5.15

Source: Survey results of MEL&D agency Arpan



10.4.3 Adoption of new package of practices in IWMP Watershed & Control Area (%)

Area (%):

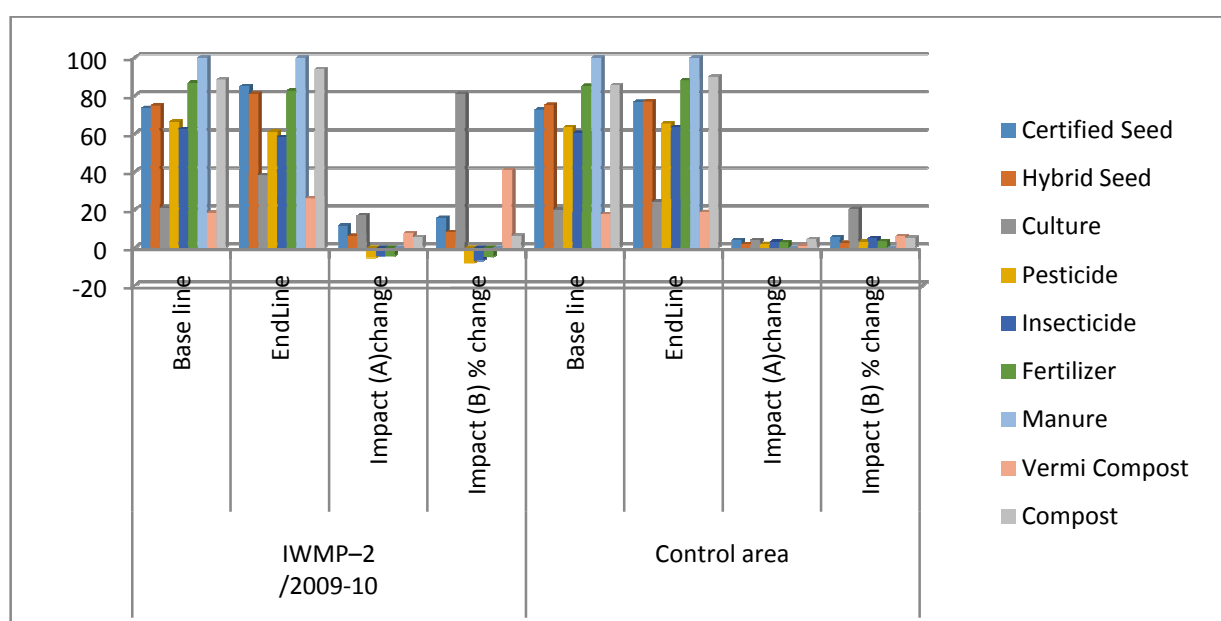
In watershed project area, at the final impact evaluation stage, the impact on percentage households on adoption of new packages of practices is found as increase of **15.61%** on use of certified seeds, increase of **8.30%** on use of hybrid seeds, increase of **80.95%** on use of culture, decrease of **7.86%** on use of pesticides, decrease of **6.74%** on use of insecticides, decrease of **4.81%** on use of fertilizers, **no change** on use of manures, increase of **40.77%** on use of vermi compost, increase of **6.25%** on use of compost.

In control area, at the final impact evaluation stage, the impact on percentage households on adoption of new packages of practices is found as increase of **5.55%** on use of certified seeds, increase of **2.50%** on use of hybrid seeds, increase of **20.50%** on use of culture, increase of **3.07%** on use of pesticides, increase of **5.05%** on use of insecticides, increase of **3.29%** on use of fertilizers, **no change** on use of manures, increase of **6.11%** on use of vermi compost, increase of **5.24%** on use of compost.

Adoption of new package of practices in IWMP Watershed and Control Area (%):

Table: 10.10

IWMP/ Control Area	Timeline	Certified Seed	Hybrid Seed	Culture	Pesticide	Insecticide	Fertilizer	Manure	Vermi Compost	Compost
1	2	3	4	5	6	7	8	9	10	11
IWMP 2/2009-10	Base line	73.52	74.79	21.00	66.20	62.43	86.87	100.00	18.47	88.47
	EndLine	85.00	81.00	38.00	61.00	58.22	82.69	100.00	26.00	94.00
	Impact change	11.48	6.21	17.00	-5.20	-4.21	-4.18	0.00	7.53	5.53
	Impact % change	15.61	8.30	80.95	-7.86	-6.74	-4.81	0.00	40.77	6.25
Control area	Base line	72.76	75.12	20.00	63.45	60.45	85.20	100.00	17.69	85.5
	EndLine	76.80	77.00	24.10	65.40	63.50	88.00	100.00	18.77	90.00
	Impact change	4.04	1.88	4.10	1.95	3.05	2.80	0.00	1.08	4.48
	Impact % change	5.55	2.50	20.50	3.07	5.05	3.29	0.00	6.11	5.24



10.4.4 Average Crop Yield / Productivity in IWMP Watershed & Control

Area (unit/%):

In watershed project area, at the final impact evaluation stage, the impact on a) **Crop-wise Average Crop Yield / Productivity and b)** is described in table given below.

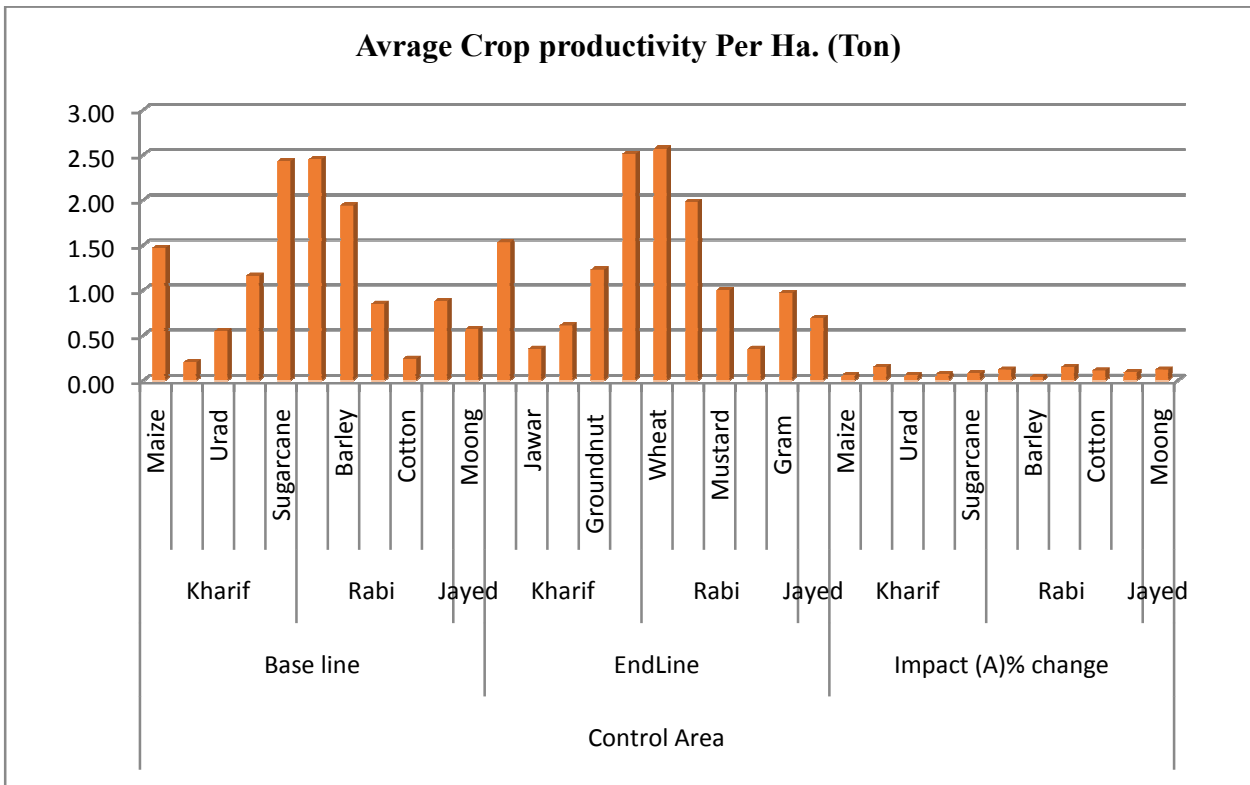
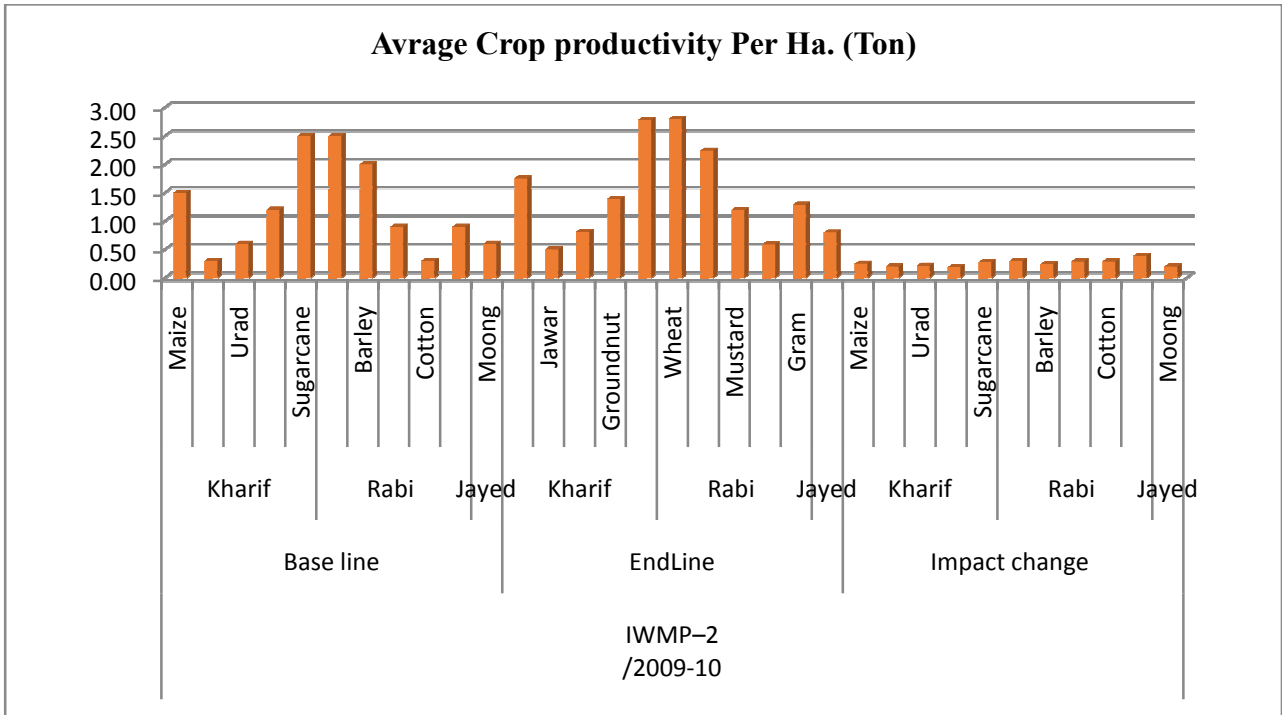
Average Crop Yield / Productivity in IWMP Watershed & Control Area (unit/%):

Table: 10.11

IWMP/ Control Area	Timeline	Season	Crop Type	Average Crop productivity Per Ha. (Ton)	Use of Organic manures (%)	
					Compost	Vermi Compost
IWMP-2 /2009-10	Base line	Kharif	Maize	1.50	91.00	9.00
			Jawar	0.30	86.00	8.00
			Urad	0.60	84.00	8.50
			Groundnut	1.20	83.00	9.00
			Sugarcane	2.50	90.00	8.50
		Rabi	Wheat	2.50	91.00	13.00
			Barley	2.00	93.00	14.00
			Mustard	0.90	96.00	10.00
			Cotton	0.30	95.00	9.00
			Gram	0.90	92.00	9.50
	Jayed	Moong	0.60	95.00	15.25	
	EndLine	Kharif	Maize	1.75	92.00	9.75
			Jawar	0.50	88.00	9.00
			Urad	0.81	86.00	9.50
			Groundnut	1.39	87.00	9.75
			Sugarcane	2.78	92.00	9.50
		Rabi	Wheat	2.80	95.00	15.00
			Barley	2.24	94.00	14.50
			Mustard	1.19	97.00	10.50
			Cotton	0.59	96.00	10.00
			Gram	1.29	93.00	10.00
	Jayed	Moong	0.80	97.00	16.50	
	Impact change	Kharif	Maize	0.25	1.00	0.75
			Jawar	0.20	2.00	1.00
			Urad	0.21	2.00	1.00
			Groundnut	0.19	4.00	0.75
			Sugarcane	0.28	2.00	1.00
		Rabi	Wheat	0.30	4.00	2.00
			Barley	0.24	1.00	0.50
			Mustard	0.29	1.00	0.50
		Cotton	0.29	1.00	1.00	
		Gram	0.39	1.00	0.50	
Jayed	Moong	0.20	2.00	1.25		
Control Area	Base line	Kharif	Maize	1.47	90.00	8.00
			Jawar	0.20	85.00	7.00
			Urad	0.55	83.00	8.00
			Groundnut	1.16	80.50	8.50
			Sugarcane	2.43	89.00	8.00
		Rabi	Wheat	2.45	90.00	11.00

IWMP/ Control Area	Timeline	Season	Crop Type	Average Crop productivity Per Ha. (Ton)	Use of Organic manures (%)		
					Compost	Vermi Compost	
			Barley	1.94	91.00	12.00	
			Mustard	0.85	95.00	9.50	
			Cotton	0.24	94.50	8.50	
			Gram	0.88	91.00	9.00	
	Jayed		Moong	0.57	94.00	12.50	
	EndLine	Kharif	Maize	1.53	91.00	8.50	
			Jawar	0.35	86.00	8.00	
			Urad	0.61	84.00	8.50	
			Groundnut	1.23	81.00	9.00	
			Sugarcane	2.51	90.00	8.50	
		Rabi	Wheat	2.57	91.00	12.00	
			Barley	1.98	92.00	12.50	
			Mustard	1.00	95.50	10.00	
			Cotton	0.35	95.00	9.00	
			Gram	0.97	92.50	9.50	
		Jayed		Moong	0.69	95.00	13.00
		Impact (A)% change	Kharif	Maize	0.06	1.00	0.50
			Jawar	0.15	1.00	1.00	
			Urad	0.06	1.00	0.50	
			Groundnut	0.07	0.50	0.50	
			Sugarcane	0.08	1.00	0.50	
	Rabi		Wheat	0.12	1.00	1.00	
			Barley	0.04	1.00	0.50	
			Mustard	0.15	0.50	0.50	
			Cotton	0.11	0.50	0.50	
			Gram	0.09	1.50	0.50	
	Jayed		Moong	0.12	1.00	0.50	

Source: Survey by MEL&D agency



10.5 Economic Aspects:

10.5.1 Average Annual Income by source in IWMP Watershed and Control Area (Rs./%)

In watershed project area, at the final impact evaluation stage, the average annual income in Agriculture and Livestock sector was increased by **20.34%** (from Rs. 49000/- to 58966/-) per household, as wage employment, it is increased by **20.52%** (from 42500/- to 51222/-), as

migration it is increased by **15.24%** (72600/- to 83665/-), in small enterprises, increased by **15.28%** (172500/- to 198854/-) and from services increased by **16.18%**(252200/- to 293010/-).

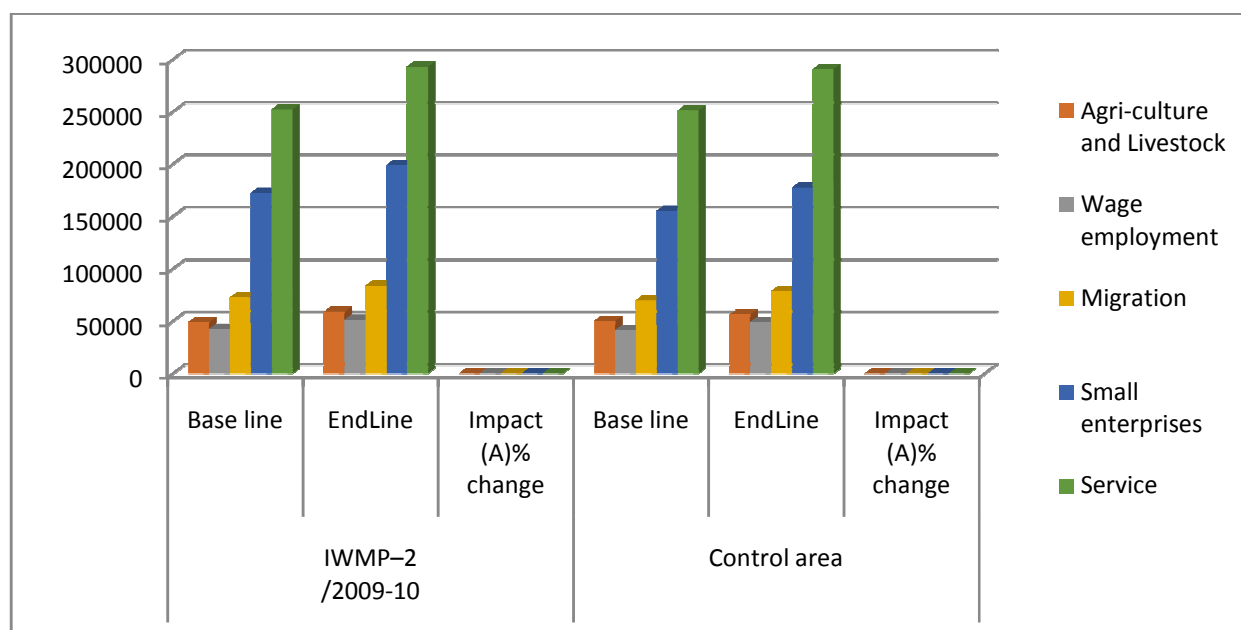
In control area, at the final impact evaluation stage, the average annual income in Agriculture and Livestock sector was increased by **12.60%** (from Rs. 50100/- to 56414/-) per household, as wage employment, it is increased by **18.27%** (from 41400/- to 48964/-), as migration it is increased by **12.70%** (69800/- to 78666/-), in small enterprises, increased by **14.24%** (155400/- to 177524/-) and from services increased by **15.74%** (251100/- to 290634/-).

Average Annual Income by source in IWMP Watershed and Control Area (Rs./%):

Table: 10.12

IWMP/ Control Area	Timeline	Agriculture and Livestock	Wage employment	Migration	Small enterprises	Service
1	2	3	4	5	6	7
IWMP 2/2009-10	Base line	49000	42500	72600	172500	252200
	End line	58966	51222	83665	198854	293010
	Impact / % change	20.34	20.52	15.24	15.28	16.18
Control area	Base line	50100	41400	69800	155400	251100
	End line	56414	48964	78666	177524	290634
	Impact / % change	12.60	18.27	12.70	14.24	15.74

Source: survey by MEL&D agency



10.5.2 Average Annual Expenditure on items in IWMP Watershed and Control Area (%):

In watershed project area, at the final impact evaluation stage, the average annual expenditure on different items was reported on Food; an increase of **4.20%** (28600/- to 29800/-), on Cloths; an increase of **7.00%** (5000/- to 5350/-), on Education; an increase of **31.82%** (5500/- to 5350/-), on Health, decreased by **8.82%** (1700/- to 1550/-), on Agriculture, an increase of **5.76%** (29500/- to 31200/-), on Household asserts, an increase of **13.46%** (2600/- to 2950/-), on Livestock; an increase of **5.28%** (26500/- to 27900/-), on Conveyance; an increase of **11.35%** (4580/- to 5100/-)

and on others; an increase of **12.44%** (2250/- to 2530/-).

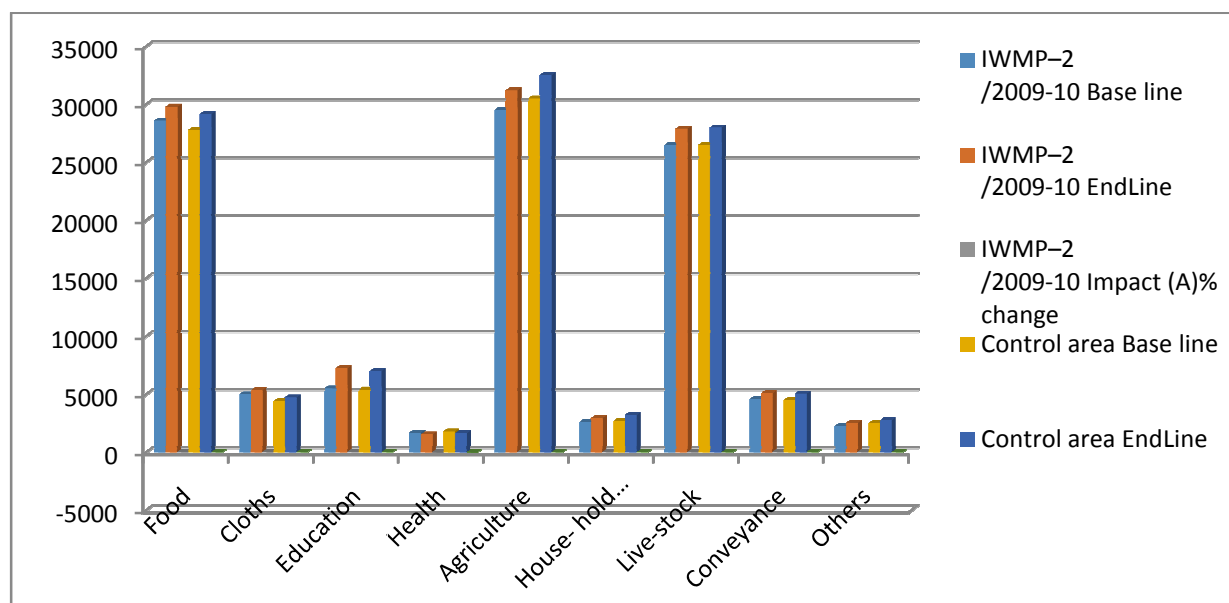
In control area, at the final impact evaluation stage, the average annual expenditure on different items was reported on Food; an increase of **4.86%** (27800/- to 29150/-), on Cloths; an increase of **7.50%** (4400/- to 4730/-), on Education; an increase of **29.63%** (5400/- to 7000/-), on Health, decrease of **8.33%** (1800/- to 1650/-), on Agriculture, an increase of **6.62%** (30500/- to 32520/-), on Household asserts, an increase of **18.52%**(2700/- to 3200/-), on Livestock; an increase of **5.66%** (26500/- to 28000/-), on Conveyance; an increase of **12.22%** (4500/- to 5050/-) and on others; an increase of **10.00%** (2500/- to 2750/-).

Average Annual Expenditure on items in IWMP Watershed and Control Area (%):

Table: 10.13

IWMP/ Control Area	Timeline	Food	Cloths	Educa-tion	Health	Agriculture	House-hold Assets	Live-stock	Convey-ance	Others
1	2	3	4	5	6	7	8	9	10	11
IWMP 2/2009-10	Base line	28600	5000	5500	1700	29500	2600	26500	4580	2250
	End line	29800	5350	7250	1550	31200	2950	27900	5100	2530
	Impact / % change	4.20	7.00	31.82	-8.82	5.76	13.46	5.28	11.35	12.44
Control area	Base line	27800	4400	5400	1800	30500	2700	26500	4500	2500
	End line	29150	4730	7000	1650	32520	3200	28000	5050	2750
	Impact / % change	4.86	7.50	29.63	-8.33	6.62	18.52	5.66	12.22	10.00

Source: survey by MEL&D agency



10.5.3 Input and Source in IWMP Watershed and Control Area (%):

In watershed project area, at the final impact evaluation stage, the percentage households taking Fertilizer as input are decreased by **7.71%**(77.71% to 70.00%), Market as input is increased by **10.11%** households (72.89% to 83.00%), Pesticides as input decreased by **4.78%** (66.78% to 62.00%), Insecticides as input decreased by **3.26%**(50.46% to 47.20%). Market as source is

decreased by **7.25%** households (40.05% to 32.80%), Cooperatives as source for the input increased by **4.72%** households (30.50% to 35.22%), Self-Produced as source for the input increased by **5.40%** households (15.10% to 20.50%) and Neighbourer as source for the input decreased by **2.87%** households (14.35% to 11.48%).

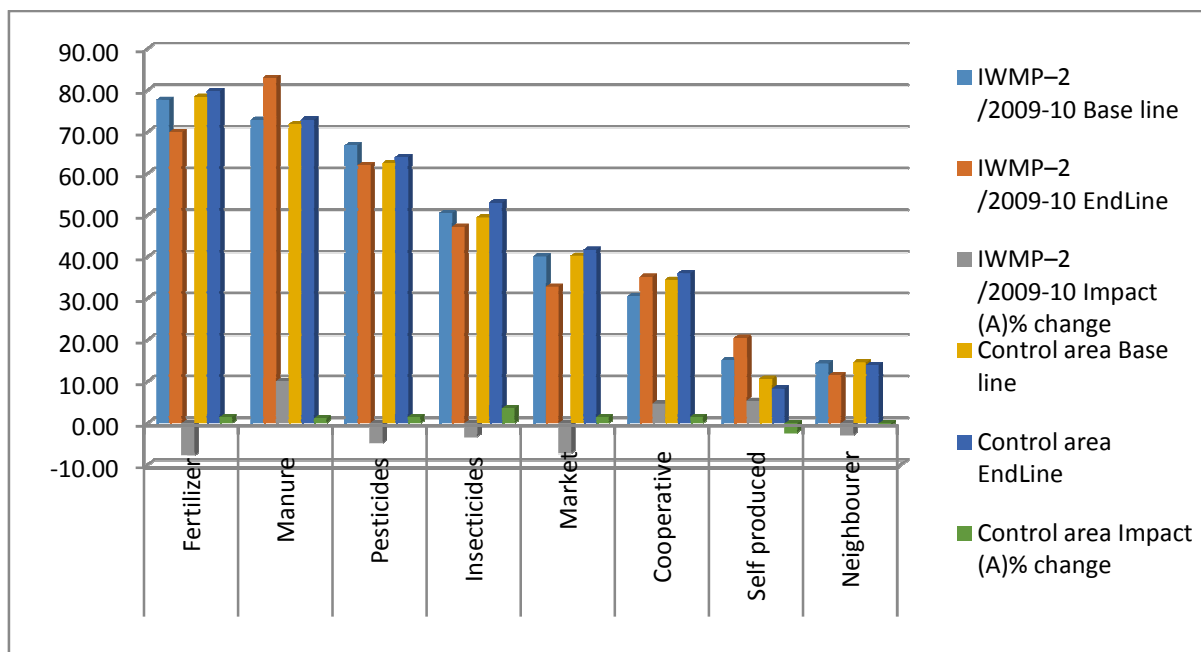
In control area, at the final impact evaluation stage, the percentage households taking Fertilizer as input are increased by **1.43%**(78.42% to 79.85%), Market as input is increased by **1.16%** households (71.78% to 72.94%), Pesticides as input increased by **1.50%** (62.48% to 63.98%), Insecticides as input increased by **3.56%**(49.44% to 53.00%). Market as source is increased by **1.41%** households (40.26% to 41.67%), Cooperatives as source for the input increased by **1.52%** households (34.48% to 36.00%), Self-Produced as source for the input decreased by **2.33%** households (10.66% to 8.33%) and Neighbourer as source for the input decreased by **0.60%** households (14.60% to 14.00%).

Input and Source in IWMP Watershed and Control Area (%):

Table: 10.14

IWMP/ Control Area	Time line	Input				Source			
		Fertilizer	Market	Pesticides	Insecticides	Market	Cooperative	Self Produced	Neighbourer
1	2	3	4	5	6	7	8	9	10
IWMP-2/2009-10	Base line	77.71	72.89	66.78	50.46	40.05	30.50	15.1	14.35
	End line	70.00	83.00	62.00	47.20	32.80	35.22	20.50	11.48
	Impact / change	-7.71	10.11	-4.78	-3.26	-7.25	4.72	5.40	-2.87
Control area	Base line	78.42	71.78	62.48	49.44	40.26	34.48	10.66	14.6
	End line	79.85	72.94	63.98	53.00	41.67	36.00	8.33	14.00
	Impact / change	1.43	1.16	1.50	3.56	1.41	1.52	-2.33	-0.60

Source: survey by MEL&D agency



10.5.5 Employment Opportunities in IWMP Watershed & Control Area(%):

In watershed project area, at the final impact evaluation stage, the employment opportunities for the percentage households under different sectors were monitored. It was observed that as Agriculture and Livestock, there is an increase of **4.22%**, as Wage employment, an increase of **2.3%**, as migration, a decrease of **1.37%**, as small enterprises, an increase of **0.32%**, as services, an increase of **0.35%**.

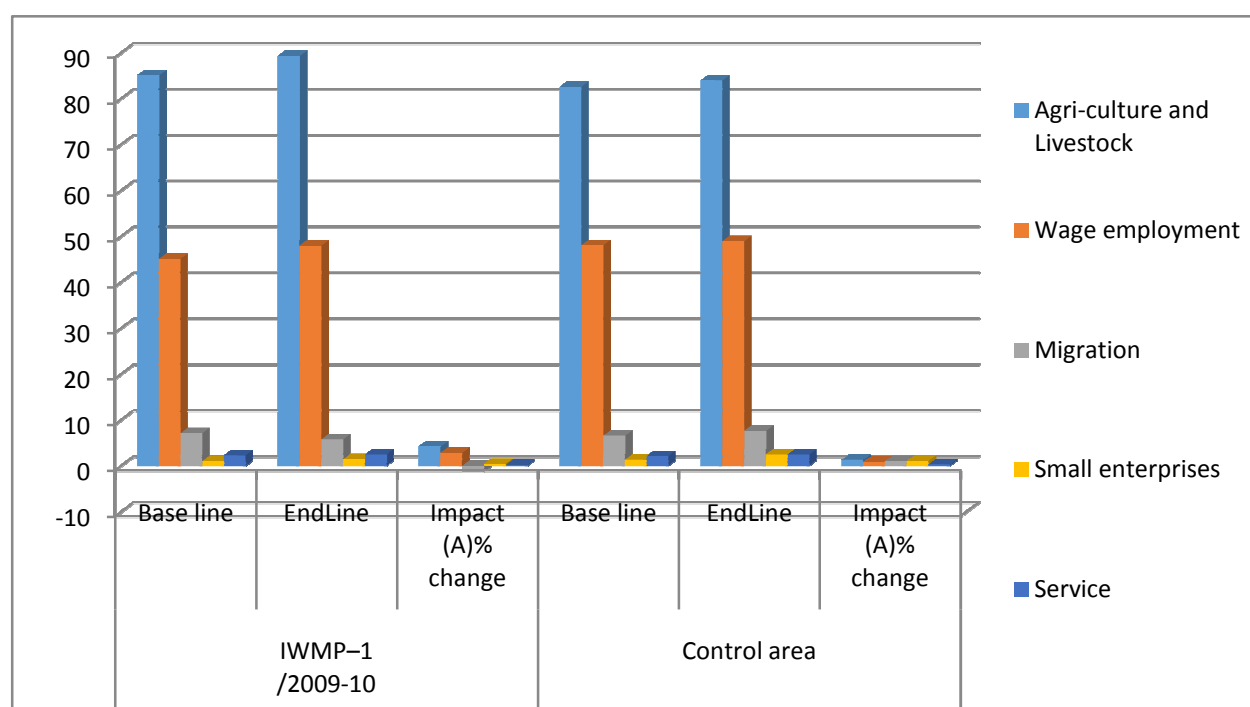
In control area, at the final impact evaluation stage, the employment opportunities for the percentage households under different sectors were monitored. It was observed that as Agriculture and Livestock, there is an increase of **1.14**, as Wage employment, an increase of **0.8%**, as migration, a increase of **1.08%**, as small enterprises, an increase of **1.02%**, as services, an increase of **0.57%**.

Employment Opportunities in IWMP Watershed and Control Area (%):

Table: 10.15

IWMP/ Control Area	Timeline	Agriculture & Livestock	Wage employment	Migration	Small enterprises	Service
1	2	3	4	5	6	7
IWMP 2/2009-10	Base line	77.47	48.95	5.47	1.28	2.45
	End line	81.69	51.25	4.1	1.6	2.8
	Impact / change	4.22	2.3	-1.37	0.32	0.35
Control area	Base line	78.11	46.2	6.52	0.99	2.33
	End line	79.25	47	7.6	2.01	2.9
	Impact / change	1.14	0.8	1.08	1.02	0.57

Source: survey by MEL&D agency



10.5.6 Migration details in IWMP Watershed & Control Area (%):

In watershed project area, at the final impact evaluation stage, the migration of the communities for different purposes was monitored. It was found that for private sector employment, there is an increase of **3.43%** households, as daily casual labour, decrease of **3.00%**, as Agriculture Labour decrease of **0.5%** and for business purposes, increase of **0.07%**.

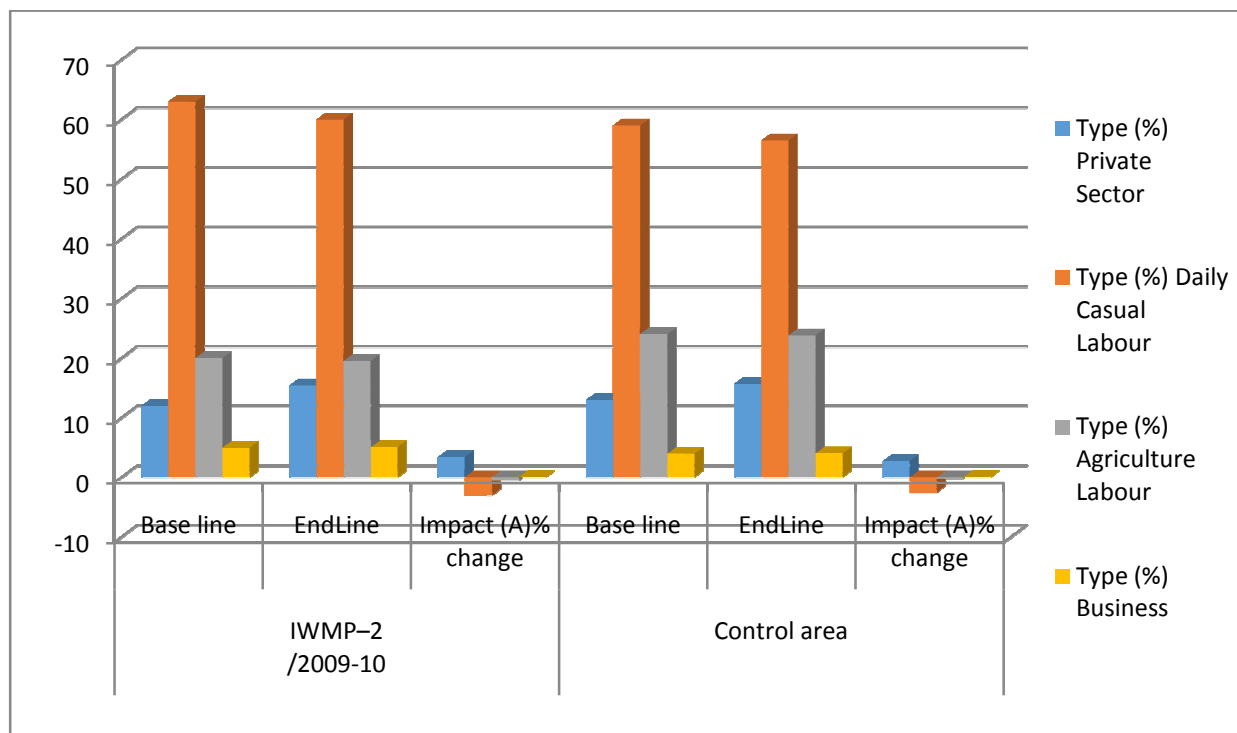
In control area, at the final impact evaluation stage, the migration of the communities for different purposes was monitored. It was found that for private sector employment, there is an increase of **2.7%** households, as daily casual labour, decrease of **2.53%**, as Agriculture Labour, and decrease of **0.2%** and for business purposes, increase of **0.03%**.

Migration details in IWMP Watershed and Control Area (%):

Table: 10.16

IWMP/ Control Area	Timeline	Type (%)			
		Private Sector	Daily Casual Labor	Agriculture Labor	Business
1	2	3	4	5	6
IWMP 2/2009-10	Base line	12	63	20	5
	End line	15.43	60.00	19.50	5.07
	Impact / change	3.43	-3.00	-0.5	0.07
Control area	Base line	13	59	24	4
	End line	15.70	56.47	23.80	4.03
	Impact / change	2.7	-2.53	-0.2	0.03

Source: survey by MEL&D agency



10.6 Other Outcomes:

In addition to above, as per the requirement of the department of WD&SC, the outcome of some of the important indicators were also monitored during the Final Impact Evaluation stage in IWMP watershed area and compared with the base line data. The changes noticed are described as under.

In watershed project area, at the final impact evaluation stage, i) the Employment in Agriculture related activities among beneficiaries was increased by **3.15%** (from 71.25% to 74.40%) of total population, ii) Employment in Non- Agriculture Sector was increased by **1.85%** (from 44.4% to 46.25%) of total population, iii) Fuel wood Production was increased by **0.35 tons / hectare per year** (from 1.45 to 1.8), iv) No. of Milch Cattle was increased by **106 Nos.** (from 584 to 690) numbers, v) Increase in milk production by **2 liter per animal per day (LPD)** (from 7.00 LPD to 9.00 LPD), vi) Duration of flow of water in the streams is increased **2 nos.** (from 3 nos. to 5 nos) vii) No..of persons engaged in ancillary activities like Fisheries, Poultry and Rural craftsmanship were increased by **12 nos.** (from 30 to 32 Nos), viii) Reduction in migration from rural to urban area in the project area is reduced by **1.37%** (from 5.47% to 4.1%) of total population, ix) Annual Mean Household Income increased by **Rs. 9996/-** (from Rs.49000/- to Rs.58966/-) and x) No. of children enrolled in schools in the project area **10%** (from 90% to 100%) of total child population.

Outcome of important indicators:

Table: 10.17

S.No	Items	IWMP- 01			Control area		
		Pre-Status	Post Status.	Change	Pre-Status	Post Status.	Change
1	2	3	4	5	6	7	8
1	Employment in Agriculture related activities among beneficiaries (% Of Total POP.)	71.25	74.4	3.15	71.5	72.75	1.25
2	Employment in Non-Agriculture Sector (% Of Total POP.)	44.4	46.25	1.85	42.85	43.6	0.75
3	Fuel wood Production(Ton/ha/Year)	1.45	1.8	0.35	1.4	1.55	0.15
4	No. of Milch Cattle	584	690	106	576	630	54
5	Milk Production Of Milch Cattle (Lit.Per.Animal)	7.00	9.00	2	7.00	8.00	1
6	Duration of flow of water in the streams(Month)	3	5	2	3	3	0
7	No. of persons engaged in ancillary activities like Fisheries, Poultry and Rural craftsmanship (Nos.)	20	32	12	18	23	5
8	Reduction in migration from rural to urban area in the project area (% Of Total POP.)	5.47	4.1	-1.37	6.52	7.6	1.08
9	Annual Mean Household Income (RS.)	49000	58966	9966	50100	56414	6314
10	No. of children enrolled in schools in the project area. (%)	90	100	10	92	100	8

S.No	Items	IWMP- 01			Control area		
		Pre-Status	Post Status.	Change	Pre-Status	Post Status.	Change
1	2	3	4	5	6	7	8
	Of Total Child. POP.)						

Source: survey by MEL&D agency

Graphical comparison of these outcomes is as under:

