Annual Progress Report
April 2013–March 2014

Improving Rural Livelihoods through Integrated Watershed Management in Bellary District in Karnataka, India

Submitted to
JSW Foundation

ICRISAT
Science with a human face
International Crops Research Institute for the Semi-Arid Tropics

Contents

Executive Summary

The Bellary district of Karnataka is a hotspot of water scarcity, land degradation and poor socio-economic conditions. ICRISAT along with the Department of Agriculture, District watershed development, NGO and local community started implementing watershed interventions in four villages near the JSW covering 7000 ha area. These selected villages are targeted to be established as demonstration sites for best agricultural practices enhancing crop yield, productivity and income.

As an entry point, community mobilization and rapport building has been achieved through formation of watershed committee which was supported and monitored by ICRISAT regularly. The required information and knowledge sharing is being done through regular meetings (formal and informal). Regular interactions with community have built strong trust with each other resulting in effective planning and implementation of watershed activities in target villages.

Science-led interventions started with soil and water conservations practices, productivity enhancement activities, crop diversification and intensification, integrated nutrient and pest management and other livelihood based activities. Village community and watershed committee identified potential locations where different soil and water conservation practices such as farm ponds, field bunding and gully control structures could be made. A number of water harvesting structures all together developed 7000 m^3 of storage capacity. It is estimated that these structures have harvested nearly 20,000 m^3 of surface runoff or more and facilitated groundwater recharge. Improved variety of seeds of sorghum, green gram, pearl millet, pigeonpea, groundnut, castor have been introduced in *Kharif* and *Rabi* in 2013 and 2014 which improved crop yields by 10-20%. In addition, various income generating activities such as vermicomposting, nursery plantation have been promoted; and farmers' capacity has been enhanced with training programs, exposure visits and field days.

For analyzing the impact of the proposed interventions on water resources availability, crop productivity, water use efficiency and various ecosystem services, special attention is given for monitoring crop and biophysical indicators. Base line information is collected which comprises soils, topography, land use, crop yield details and socio-economic status of the households during beginning of the project. State-of-the-art instruments for monitoring various hydrological components such as rainfall and surface runoff were installed in watershed. Crop yields and various crop management details are also being monitored in selected farmers' fields for analyzing yield potential and water use efficiency.

Introduction

Description of Targeted Site

The district Bellary is located in the eastern part of the Karnataka state and lies between the latitude 14^0 30'N-15^0 47'N and longitude 75^0 40' E -$77^0$11'E. The topography of the district is hilly and undulated in the central part with plains on the east and west. The geographical area of district is 8447 km² with two revenue sub divisions, Bellary and Hospet. The Bellary subdivision has 3 taluks and Hospet subdivision has 4 taluks. There are 27 hoblies, 161 gram panchayats and 555 villages. While 72 % of marginal and small farmers (ST population is higher in this category) owns only 60% of the total cultivable land, remaining 40% of the land is owned by 14% of the big/medium farmers. Annual rainfall is 626 mm which is erratic and majority of the farming community depend on monsoon for agriculture. The important crops grown are cotton, groundnut, sunflower, paddy and cereals. The net irrigated area is 37% to the net area sown. The main source of irrigation is the Tungabhadra Dam. The Canal network accounts for 64% of irrigated area. The district is endowed with iron ore and famous for mining and related industrial activities which have provided employment opportunities for young population. As a result of available industrial employment opportunities agriculture is left to elders and women. Unavailability of labor force, falling returns due to low crop yields and price constraints are drawing youth away from agriculture. Degradation of soil and water resources in the district largely due to improper water management has resulted in current problems of neglected agriculture, non-inclusive and imbalanced development in this area resulting in food insecurity and poor nutrition of human and cattle in the region.

This project targets four villages namely Doddanthapur, Chikkanthapur, Kodalu and Joga in Sadhur taluk with 1,930 families engaged in agriculture and 293 families are landless. The climate of site shows dryness in major parts of the year and a hot summer from March to May months. But during December-February, although weather remains dry, it is comparatively a cool season. Most of soils are Vertic inceptisols**,** largely light black and less red soils with average soil depth of 35-50 cm.

Objectives of the Project

The specific objectives are:

1. *To establish* a " Model Site of Learning" in low-rainfall rainfall zone (<700 mm rainfall per annum) in Karnataka for demonstrating the potential of rainfed areas by adopting integrated water resource management approach;

2. *To enhance* water availability and its (green and blue water) use efficiency for diversifying the livelihood systems in the target villages by adopting integrated water resource management approach; and

3. *To build* capacity of the farmers in the region for improving rural livelihoods through knowledge sharing and dissemination strategy.

Strategy

The proposed strategy is based on the learnings from the experiences over the last 40 years and more recently from the upscaling of the innovative farmers' participatory consortium model for integrated watershed management in India and four other Asian countries. The salient features of the strategy are:

- Identifying target villages in Bellary district and to form the consortium of critical partners to converge project activities with GoK's Department of Agriculture (DoA) and Watershed Development Department (WDD) activities.
- Collective participatory approach to implement R4D.
- Holistic and integrated approach for sustainable development of rainfed areas through conservation, enhancement, and efficient use of natural resources by using watershed management as an entry point for improving rural livelihoods.
- Developing innovative and effective mechanisms to share the knowledge with different stakeholders and build community-based institutions for sustainable development.
- Diversify the sources of livelihoods for the families to build their resilience against the impacts of climate change.
- Target convergence of activities of Department of Agriculture of the Government of Karnataka as well as other Rural Development departments.
- Establish site of learning of 5000 ha encompassing holistic community watershed management approach.
- Establish rain-gauges and hydrological monitoring stations at sites of learning watersheds which will provide strategic data on hydrological parameters for planning watershed interventions in specific agro-eco-regions with varying soil types.
- Develop NRM-based income-generating activities for improving livelihoods of vulnerable groups.
- Demonstrate improved management options for enhancing productivity on sustainable basis.
- Train lead farmers to serve as trainers in the district.
- To establish field laboratory for students to undertake strategic research in target agro-eco-region in the area of community watershed management.
- Harness public-private partnerships for backward and forward linkages, for improving the incomes of the farming community.
- Initiate waste water treatment and its reuse in agriculture to address the issues of water scarcity.

Partners

- Department of Agriculture (DoA), Government of Karnataka
- Watershed Development Department (WDD), Government of Karnataka
- University of Agricultural Sciences (UAS), Raichur

Target Area

Target area for the proposed study is Sandur taluk of Bellary district. The district is endowed with iron ore and famous for mining and related industrial activity which has provided employment opportunities for young population.

Bellary District Profile

The district Bellary is located in the eastern part of the Karnataka state and lies between the latitude 140 30'N-150 47'N and longitude 750 40' E -77011'E (Figure 1). The geographical area of the district is 8420 sq. kms. The topography of the district is hilly and undulated in the central part with plains on the east and west.

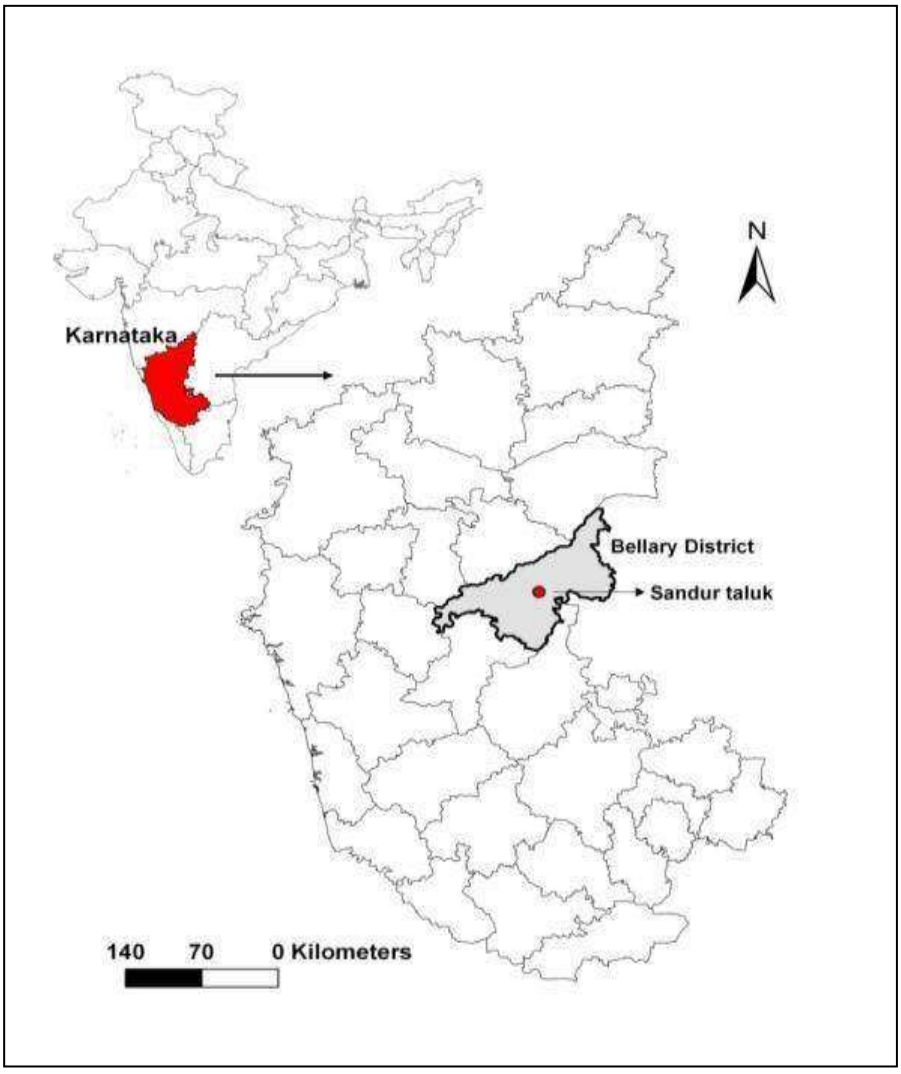

Figure 1. Sandur taluk in Bellary district, Karnataka

Activities Undertaken

- Baseline Survey
- Soil Analysis to assess soil health
- Soil and Water Conservation measures

- Productivity Enhancement
- Monitoring and Evaluation
- Avenue Planation
- Capacity Building and Dissemination

Baseline Survey

A detailed baseline survey of watershed was conducted for assessing the major socio-economic and bio-physical constraints for sustainable crop production and to study the potential as well as establishing the baseline for impact assessment (Figure 2). For this purpose, a set of questionnaires was prepared by scientists at ICRISAT. The team visited the watersheds and interacted with individual farmers of each village to collect their land resource details and gender participation. Team had conducted a meeting with farmers (men & women separately) to discuss their problems regarding their agricultural practices, constraints for community participation, support required for resource management and major source of livelihood. The primary data was collected through investigation of farmers with pre-tested questionnaires and the farmers were selected by stratified random sampling methods in order to collect data. Basic information regarding the farms such as arable and non-arable land, cropping system and crop yields, land holdings, resources available with farmers i.e. implements, tractors etc and family budget, income from different sources, and employment generation was collected.

Figure 2. Resource use Survey in Chikkanthapur village conducted by scientific officer of ICRISAT (Mr. A. S. Nadaf) and intern (Sushwat kumar)

The majority of agricultural land in the proposed watershed area is rainfed. The groundwater conditions in the area even though less moderate, farmers are unable to construct wells and exploit groundwater due to financial limitations. They use traditional agriculture implements like country plough and are hardly aware of new improvements in

equipment, hybrid seeds, fertilizer application etc. Farmers are generally small, medium and marginal and lack resources for investment. Due to undulating topography, very limited area comes under irrigation. As people depend on rainfed agriculture in highly degraded lands, poor farmers are unable to meet their requirements. Farmers migrate to work in Jindal Steels Works.

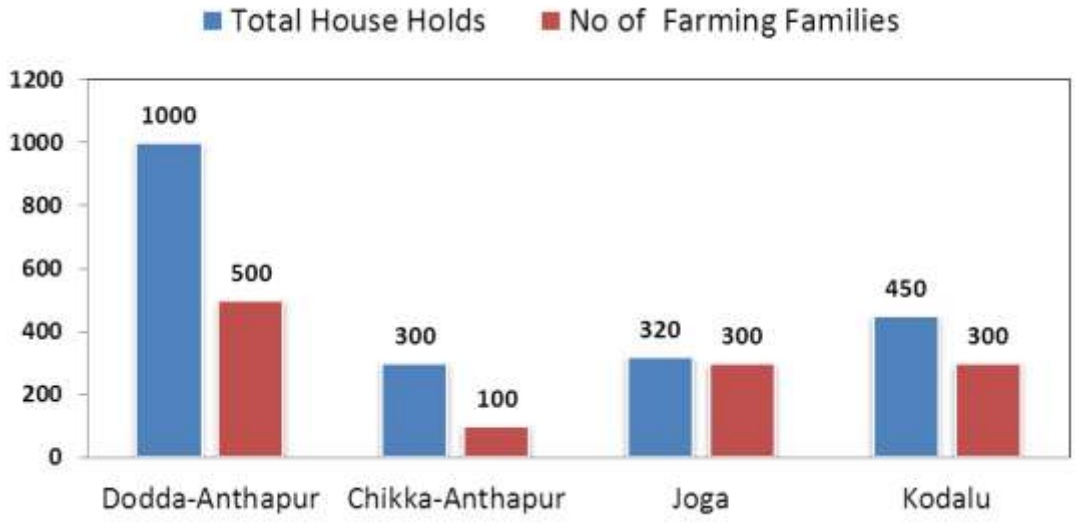

Figure 3. Chart showing the total households and farming families in 4 villages.

Land use pattern: The land use pattern of the village is shown in the Fig 3. The average land holding is about 2.6 ha per household. In *kharif* season, 1.18 ha of land is irrigated, 1.14 ha is *rain-fed* and rest is fallow land. During *rabi*, irrigated land consumes about 0.42 ha and rest is fallow. Similarly in summer irrigated land is only 0.52 ha and rest is fallow. This land use pattern shows the lack of irrigation facility due to which has implications on *rabi* and summer season cultivation (Figure 4).

Perception of farmers on climate change

During detailed interviews, it was clear that farmers in the four villages anticipate that the climate has changed, which resulted in occurrence of droughts, dust storms, and erratic rainfall. These extreme weather events result in late flowering, wilting of leaves, affect pollination and raise other agricultural problems. Our baseline reveals that majority of farmers (62%) perception is that climatic extreme events have some effect on crop yields but only 8% think that climate has severe effect on crops. The Figure 5 represents scoring of climate change scaling effect on crop growth based on farmers' perception. Maximum effect of climate change is due to extreme events and by change in soil moisture status.

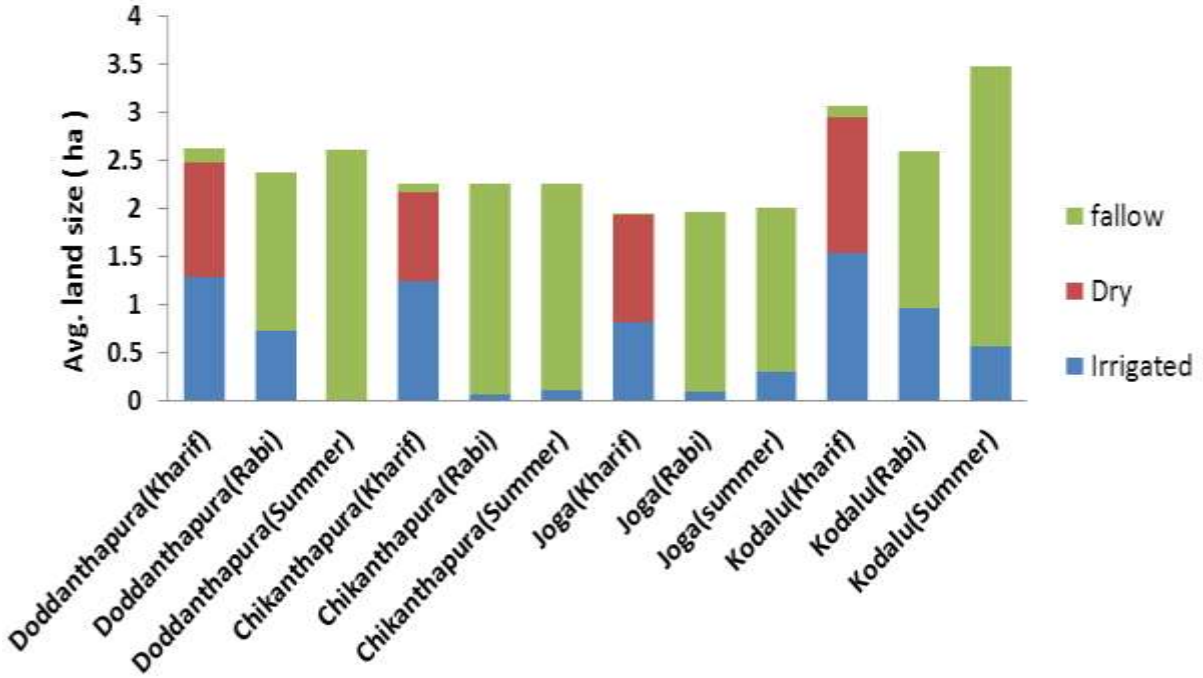

Figure 4. Average land size per household under cultivation in Kharif, Rabi & Summer in four watershed villages

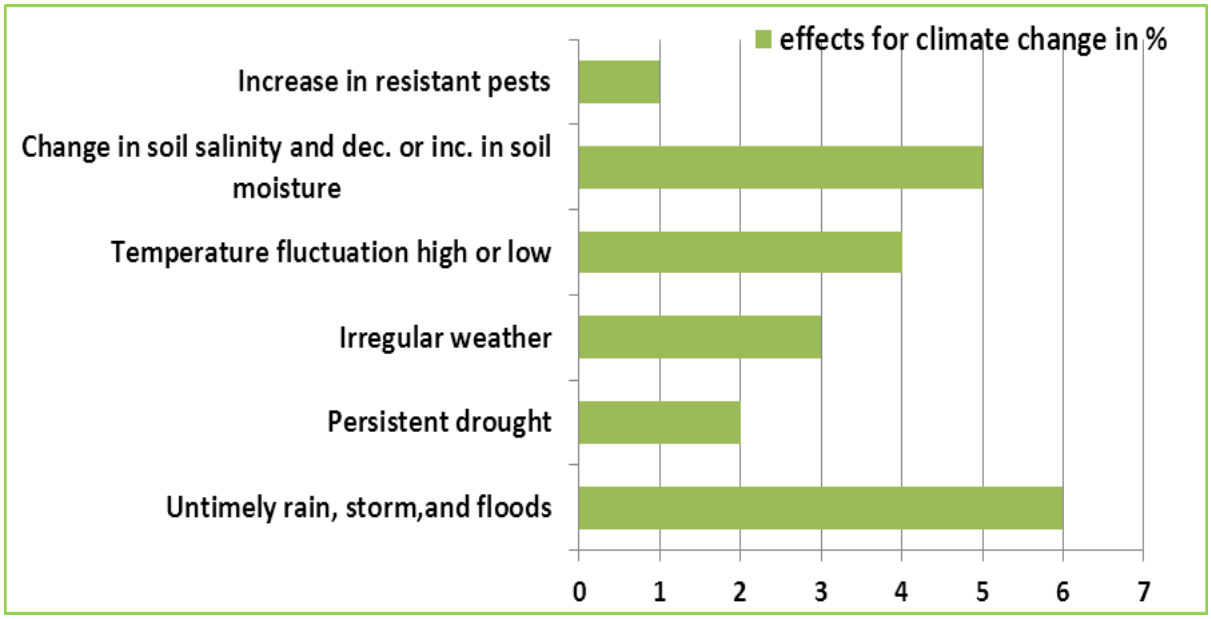

Figure 5. Graph shows the ranking of different extreme events

Soil Analysis to Assess Soil Health

Stratified soil sampling was carried out to collect soil samples across four villages along with geo-referencing using GPS. Around 100 samples were collected during 2013 and analyzed in soil testing lab at ICRISAT-India. In 2014, 900 soil samples were collected. Majority of samples reveal a significant Zinc deficiency in the villages. Based on soil results fertilizer recommendations were developed for different crops.

Table1. Soil fertility status of JSW-ICRISAT watershed

Village name	% deficiencies					
	OC	Avail-P	Av K	Avail-S	Avail-Zn	Avail-B
Chikkanthapur	0	20	0	0	90	0
Doddanthapur	27	13	0	10	77	10
Joga	5	15	0	5	80	15
Kodalu	18	4	0	21	75	7

Rainfall

Rainfall received during *Kharif* cropping season 2013.

Table 2. Rainfall (mm) during 2013 in watershed villages

Village	July	August	September	October
D. Antapur	45	25	63	56
Chikkantapur	48	37	26	52
Kodalu	51	36	23	54
Joga	144	44	77	55

Table 3. Rainfall (mm) in 2014 (January-August 2014) in watershed villages

Months	Doddanthapur	Chikkanthapur	Kodalu	Joga	Mean Rainfall
January	0.00	0.00	0.00	0.00	0.00
February	0.00	0.00	0.00	0.00	0.00
March	0.00	0.00	0.00	0.00	0.00
April	0.00	0.00	0.00	0.00	0.00
May	112.30	101.80	107.90	35.00	89.25
June	35.00	60.00	46.00	4.00	36.25
July	34.00	29.00	28.00	66.00	39.25
August	124.00	128.20	101.50	120.00	118.43
Total	**305.30**	**319.00**	**283.40**	**225.00**	**283.18**

Soil and Water Conservation Measures

During the year, various soil and water conservation structures viz. gully plugs, farm ponds, percolation tanks, check dams, nala bunds and field bunds were constructed (Table 4 & Figure 6). Ninety gully plugs were put in place in the small water channels to start the treatment of the watershed from the top of the toposequence. In addition, nine farm ponds of with a net storage capacity of 80 m^3 each were prepared which has created the effective storage capacity to harvest about 2400 m^3 of rainwater which can be used for groundwater recharging and supplementary irrigation. Three check dams, one check wall and one *nala* bund in the secondary drainage lines have been constructed to reduce the soil erosion as well as store the runoff water and have created additional capacity of 6000 m^3 for recharging the groundwater. About 17000 m length field bunding has been done in 96 farmers fields (Table 5. One domestic waste water reuse system is also being established (Figure 7).

Gully plug, Joga

Farm pond, Kodalu

Check dam, Chikkanthapur

Bore well recharge pit, Doddanthapur

Percolation tank, Kodalu

Field Bunding in Doddanthapur

Figure 6. Various water harvesting structures constructed in JSW villages

Table 4. Soil and water conservation structures constructed in JSW watershed villages, 2013-14

Sl. No.	Water harvesting structures	D Anthapur	Chikkanthapur	Kodalu	Joga	Total
1.	Gully plugs	25	35	13	17	90
2.	Farm Pond (FP)	3	-	3	3	9
3.	Mini Percolation Tank (MPT)	-	-	2	-	2
4.	Bore well Recharge Pit	1	1	9	4	15
5.	Nala bund (NB)	-	-	-	-	1
6.	Check Wall	-	-	1	-	1
7.	Check Dam (CD)	1	2	-	-	3
8.	Waste water treatment tank	1				1

Table 5. Field Bunding in watershed villages (up to June 2014).

Sl. No.	Village Name	Total Length of Bund (m)	Total farmers covered
1.	Doddanthapur	7283	41
2.	Chikkanthapur	510	5
3.	Kodalu	2897	16
4.	Joga	6447	34
	Total	17,137	96

Figure 7. Domestic waste water reuse system in Doddanthapur

Monitoring and Evaluation

Automatic weather station

An automatic weather station has been established to collect climatic data on rainfall, air and soil temperature, solar radiation and wind velocity and direction (Figure 8). Additional rainfall data will also be collected from different parts of watershed through four rain gauges installed across the watershed.

Most of the rainfall in Bellary district is received in the three-month period Aug-Oct; with September being the rainiest month with about 135 mm of rainfall. Year-to-year variability in rainfall is very high and the coefficient of variation of rainfall in these three months varies from 53% to 66%. Seasonally, the southwest monsoon period (Jun-Sep) receives about a rainfall of 352 mm with a CV of 28% and the post-monsoon period (Oct-Dec) receives a rainfall of 144 mm with a CV of 56%. There is also considerable spatial variability in rainfall in the Bellary district. The above clearly shows the importance of rainfall measurements at watersheds to help quantify the amount of moisture availability in different phenophases of crop growth and to relate with the crop water requirements. Therefore, rainfall monitoring is also necessary to assess runoff, soil loss and groundwater recharge. Most importantly it helps the community understand crop water usage and for irrigation scheduling

Figure 8. Automatic weather station installed in Chikkanthapur and one of the raingauge installed in Doddanthapur

Hydrological gauging station

A hydrologic monitoring station has been established to record continuously the runoff and soil loss by using Automatic Runoff Recorder and Automatic micro-processor based Sediment Samplers, which monitor the temporal changes in the suspended sediment concentration during the runoff event.

Hydrological gauging station consisting of automatic runoff recorder and microprocessor-based sediment sampler along with an appropriate masonry hydraulic measuring structure (viz. broad-crested rectangular weir or notch) was installed (Figure 9) to monitor runoff, peak runoff rate and soil loss from watershed.

Figure 9. Installation of Hydrological gauging station at JSW villages

Groundwater level monitoring

Groundwater levels are monitored by using a groundwater level meter in the watershed at selected wells on toposequence at fortnightly intervals through farmers' participatory mode to assess the impact of various watershed interventions in improving groundwater levels. Necessary training has been given to the local community members for collecting the groundwater levels using this equipment. The groundwater level during first year serves as baseline values to assess the impact of various watershed interventions in improving groundwater levels (Table 6).

Table 6. Ground water level depths (monthly mean of wells) in JSW-ICRISAT Watershed, Bellary district.

Month	Doddanthapur	Chikkanthapur	Kodalu	Joga	Mean of all villages
Aug 13	16.81	15.79	12.99	16.00	15.40
Sep 13	18.81	19.46	14.33	20.78	18.35
Oct 13	19.81	17.42	18.29	21.18	19.18
Nov 13	20.35	20.27	16.76	21.88	19.81
Dec 13	20.81	22.15	20.43	23.08	21.62
Jan 14	21.96	22.46	21.50	23.91	22.46
Feb 14	21.00	20.77	19.32	21.45	20.64
Mar 14	20.96	21.00	20.36	22.60	21.23
Apr 14	24.98	27.25	23.09	26.10	25.36
May 14	21.01	25.40	22.43	24.17	23.25
Jun 14	19.73	23.12	17.14	24.02	21.00
Mean of each Village	20.6	21.4	18.8	22.3	20.8

Productivity Enhancement

Farmer's participatory demonstration trials were conducted during 2013 in each village on: Improved practices (Figure 10 and 11):

- Varietal Trial (40 farmers)
- Intercropping (22 farmers)
- Fertilizer Trials (20 farmers)
- Soil and Moisture conservation practices with using improved instrument like Tropicultor (one farmer)
- Vermicomposting bed (2) provided to Kodalu village farmer.

Improved implements/instruments provided to villages

- Tropicultor (4)
- Ground water measurement (3)
- Rain gauge installation in all villages
- Runoff recorder installed in Doddanthapur village

Results from Farmers Field Trials

Micronutrient Trials

Results from farmer's field trials indicate that crop yield can be increased with improved agronomic practices. Table 7 indicates grain yield increase from 8-33% and biomass yield increase from 14-30% for all the crops with the application of micronutrients (NPK+Zn+S+B).

Table 7. Grain yield and total biomass yield of major crops under farmers practice (NPK only) and improved practice (NPK+Zn+S+B), 2013-14

Crop	Grain Yield (kg/ha)		Total Biomass Yield (kg/ha)		% increase Grain Yield	% increase Total Biomass Yield
	FP	IP	FP	IP		
Pearl Millet	1120	1220	2490	2920	8	14
Sorghum	2920	3580	1980	2820	18	30
Maize	4230	4730	3810	4520	10	16
Groundnut	1980	2260	1660	2010	13	18
Sunflower	1150	1460	1120	1350	22	17

Phosphorous (P) Trials

During the meetings with farmers, ICRISAT scientists realized that there is injudicious use of P fertilizer (DAP). Further soil tests revealed that sufficient amount of phosphorous in the soils. Based on this P fertilizer trials were designed (with P and without P application) for different crops to investigate the effect on crop performance. Table 8 reveals that similar grain yield and biomass yield were reported under both treatments.

Table 8. Grain and Biomass yield of different crops with and without P application, 2013-14

Crop	Grain Yield (kg/ha)		Biomass Yield (kg/ha)	
	With P	Without P	With P	Without P
Pearl millet	3120	3240	3000	3240
Sunflower	2880	3120	3360	3360
Sorghum	3120	3120	3360	2880
Maize	3120	3312	3216	2976

During 2014-15, 104 farmers participatory field trials have been taken up that include evaluation of improved cultivars with improved management viz. balanced fertilization and moisture conservation practice (Table 9).

Table 9. Farmers participatory field trials, 2014-15

Sl. No	Varieties	Participatory field trails (nos.)				Total farmers covered
		Doddanthapur	Chikkanthapur	Kodalu	Joga	
1.	Sorghum (CSV-15, CSV23 & PVK801)	05	04	10	-	19
2.	Green gram (SML668 & LGG460)	04	04	07	12	27
3.	Pearl millet (HHB67, Kaveri Superboss, ICTP 8203)	10	4	5	4	23
4.	Pigeonpea (ICPH 2740, ICPL 87119 & ICPL 2671)	5	4	8	4	21
5.	Castor (Jwala, Jyothi DCS-9 & DCH177)	3	3	-	2	8
6.	Groundnut (ICGV91114 & ICGV044)	1	1	-	-	2
7.	Maize fodder var. (PC 3)	2	-	2	-	4
	Total	**30**	**20**	**32**	**22**	**104**

Figure 10. Farmer participatory field trial of sorghum (CSV-23) in Chikkanthapur village

Figure 11. Horticulture plants provided to women farmers to improve their home nutrition and additional income, Doddanthapur village

Avenue and Bund Plantation

In order to increase the greenery as well as to prevent dust, avenue planation has been taken up (Figure 12). Four hundred plants have been planted and a nursery with large number of plants of *Glyricidia* for generating the organic matter *in-situ* has been established to take up plantation during this rainy season. About 7000 plants were planted till July 2014 (Table 10).

Figure 12. Avenue plantations and rubble checks activities at JSW watershed villages

Table 10. Bund planting with different forest tree species in JSW-ICRISAT watershed, 2014.

Doddanthapur	Chikkanthapur	Kodalu	Joga	Total no. of plants planted
1500	1500	1500	2500	**7000**

Income generating Activities

Vermicomposting: 32 vermicompost pits were constructed in 2013 and 8 in 2014 under the JSW-ICRISAT watershed initiative (Figure 13)

Figure 13. Vermicompost pits constructed at Kodalu village

Vegetable Seed Distribution to SHG's Women's for Kitchen Gardening

The vegetable seed distribution: Vegetable seeds were distributed to SHG's for kitchen gardening covering 200 beneficiaries to improve their home nutrition and additional income (Table 11).

Table 11. Income generating activities, 2014.

Sl. No.	Particulars	Dodda nthapur	Chikkanthapur	Kodalu	Joga	Total HH covered
1	Horticulture plants provided	60	70	70	-	**200**
2	Vermi-composting	2	6	-	-	**8**

Table 12. Livestock development activities taken up in watershed, 2013

Sl. no.	Particulars	Village Name	No of Cattle's Treated			Total animals treatment
			Buffalo	Cattles	Sheep	
1	Animal Health Camp	Kodalu	19	147	600	766

Capacity Building Programs to Improve Livelihoods

1. A three-day Institutional Training program for SHG's women's (20 women's participated) at DATC, Kampli.
2. The training program to JSW village women (35) at Kurekoppa farm was organized on Maize productivity enhancement through improved agronomic practices; Bio diesel plantation on waste lend; integrated livestock management.
3. Exposure visits to Shivamugga as Agriculture study tour was organized for four progressive farmers.
4. A visit to Krishimela at ARS Hagari, Bellary Dist. farmers for 27 under Atma Project convergence was organized.
5. International women's day celebration conducted in Doddanthapur village (55 women's from four villages participated).
6. Training on Organic farming conducted at Kodalu village with the convergence of DoA program for 25 farmers.
7. SHG's Capacity Building Trainings conducted in all villages (173 women have participated).
8. World environment day celebrated in the Doddanthapur
9. Animal health camp was conducted benefiting more than 85 farmers.
10. "Improved technology and dry land field demonstration at ICRISAT" was organized.
11. The DATC conducted a training program for JSW village women for three days (22 women) at Kampli. During training programme information was provided on agriculture,

dairy, poultry and Sheep raring. Vermicomposting pits were demonstrated and materials and methods for vermicomposting were explained

12. The “Animal Husbandry Training Programme” was conducted in JSW village women (38 women) in Torangallu, kurekoppa farm.
13. Training programme on “Balance inorganic fertilizer application to crops” in Torangallu, kurekoppa farm. (40 farmers attended)
14. Exposure visit to Dharwad (10 farmers) and Raichur (4 farmers) Krishimela.

Various capacity building programs were conducted during the year (Figure 14-18).

Table 13. Capacity Building/Training/Awareness programs conducted in watershed villages

Sl. No.	Particulars	Members participated in village wise				Total Members participated
		Doddanthapur	Chikkanthapur	Kodalu	Joga	
1.	Three days institutional training at DATC, Kampli	-	5	15	-	**20**
2.	SHG’s Capacity Building Trainings	38	33	52	50	**173**
3.	International women’s Day Celebration	15	10	15	15	**55**
4.	Exposure visit to Shivamugga for Agriculture study purpose	-	-	-	4	**4**
5.	Visiting to ARS Hagari Krishimela under Atma Project	5	8	14	-	**27**
6.	Organic Farming training				25	**25**
7.	World Environmental Day	5	5	45	-	**55**
8.	1. Maize yield enhancement through improved Agronomic practices, 2. Bio diesel production and suitable trees information. 3. Integrated livestock management, at Kurekoppa farm, Torangallu	10	-	10	15	**35**
	Total					**394**

Figure 14. Watershed farmers visit krishi mela at ARS, Hagari and SHG's training program

Figure 15. SHG's Capacity Building training Programme and Cluster level Bhoochetana awareness training program at Joga village

Figure 16. Silver oak(Grevillea robusta) and Badam (Terminalia catappa) Trees planting on bund

Figure 17. World environmental day celebrated to create awareness in the watershed, 2013

Figure 18. JSW farmers visit to ICRISAT

Farmers' Day at Watershed Villages

Farmers' Day was conducted in four villages where 1,100 farmers gathered to share their experiences as part of a pilot watershed program (Figure 18-19). The event highlighted the public-private partnership between Jindal Steel's JSW Foundation, ICRISAT and the Government of Karnataka, aimed at improving the sustainability and livelihoods of smallholder farmers. Mr Sajjan Jindal and Mrs Sangita Jindal, Chair of JSW Foundation, visited the fields where farmers have grown cotton and pigeonpea using improved soil test-based nutrient management. Mr Jindal expressed commitment to help farmers in the district increase their incomes through science-led development with the help of ICRISAT. During the interactions, farmers explained how various interventions such as planting of Glyricidia on bunds to generate N-rich organic matter for improving soil health, vermicomposting for safe recycling of farm residues, farm ponds for harvesting rainwater for supplemental irrigation as well as conservation of soil moisture for better crop growth, had benefited them. Mr Mallikarjuna, a farmer, said he harvested 1.6 tonnes of cotton last year, and is expecting additional yields from adoption of improved management practices. The farmers also visited the exhibition stalls of ICRISAT, DoA and private seed companies, where they gathered information on improved management practices and new high-yielding cultivars of crops.

Figure 19. Dr SP Wani explaining the benefits of ICRISAT's hybrid pigeonpea

Figure 20. 1100 farmers participated in the Farmers' Day

Figure 21. Drs William Dar and SP Wani with Mrs and Mr Jindal at the ICRISAT stall