

**KARNATAKA**

## E.1. Harvest water for better yields

### PROBLEM STATEMENT

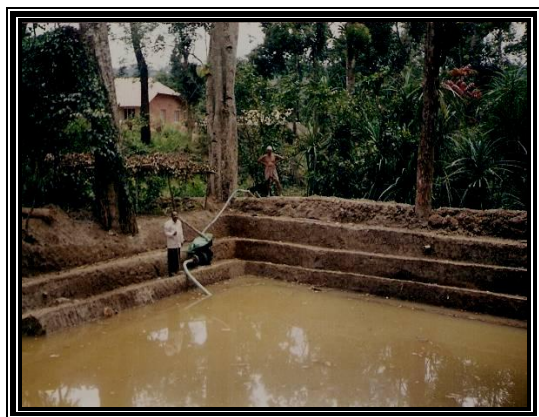
Chikmagalore district of Karnataka is distributed in hilly, semi hilly and maidhan area. To add to the woos rainfall is very heavy but erratic in nature. The entire cropping system depends on uncertain monsoons. The Koppa *taluk* comes under VI<sup>th</sup> agro-eco-sub region, the total area of *taluk* distributed in hilly area. In general cultivation in the entire taluk area depends on monsoon only. However no major irrigation facilities are available in the taluk. The topography of the area was too much undulated, gullied, and deforested; ground water table fluctuated from 13.0 to 1.5 meters depth in different seasons. Highly eroded, red clay loamy, lateritic soil having poor moisture holding capacity created immense difficulty in cultivation. Uncertain and uneven distribution of rainfall leads to uncertainty in farm production, unemployment for agricultural labourers during non-agricultural season. Deforestation and faulty agricultural practices affected the biodiversity. There was an acute drinking water problem during summer season. Public participation in community development works was minimal.

### OBJECTIVES AND METHODOLOGY

Considering the grievous situation the Bilagadde watershed project was sanctioned under DPAP XI<sup>th</sup> batch which aimed at impounding run off water to recharge the ground water table and facilitate in supplementing the micro irrigation and conserve natural resources. With the vision of achieving the above objectives several integrated watershed development measures were taken up

First and foremost farm ponds were excavated to harvest the run off water and reduce the soil erosion. Water from the pond is used for protective irrigation. Impounded water recharges the ground water level and helps in the flow of water in the nala up to end of summer season. Water flow in the nala solved the drinking water problem of human and animals.

Thereafter vented check dam was constructed across the nala, where there was straight flat bed and well-defined embankment available. Vented check dam was kept open during rainy season, due to over flow by rain water. Immediately after rainy season, vented check dam was plugged by wooden flanks to harvest the runoff water in the nala. Moreover Nala revetment works were taken up where nala was curved so that nala embankment does not collapse or slide due to run off force. By this process valuable land was protected and the land size which was reducing due to land slide was checked. Nala revetment work undertaken in project area.



*(Photo1 & 2: Views of the farm pond & vented check dam constructed under the project)*



(Photo 3: Nala revetment work undertaken in the project area)

Contour trenches are the trenches opened across the slope or on contour in coffee plantation, to control the run off losses and to provide continuous moisture for coffee plantation. In this watershed around 25.00 ha contour trenches were opened which assisted in cultivation of around 25 farmers, in Bilagudde.

Forest sector programme was initiated whereby fuel, fibre and fruit yielding plants were planted in arable and non arable land. Silveroak, Sagwan, *Ficus*, *Glyricidia* and Agave seedlings were planted in farmer's field as part of farm forestry and block plantation in community land. Further dry land horticulture development programme was taken up whereby quality mango graft, jackfruit, jambulina, custard apple and coconut seedlings were planted in farmer's field.



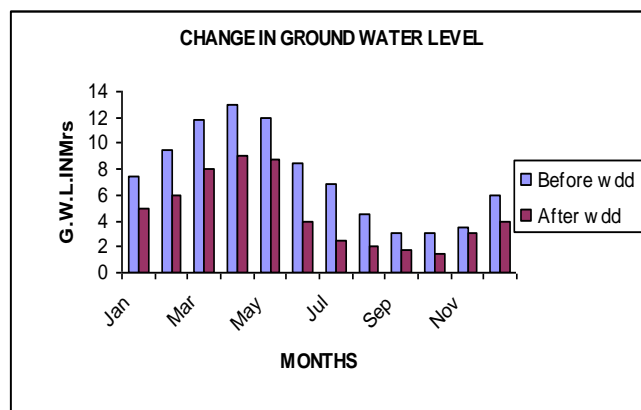
(Photo 4 & 5: Views of afforestation and horticulture activities taken up)

## RESULTS AND IMPACT

### Status of ground water level:

Table 1 : Change in Ground water table (in meters)

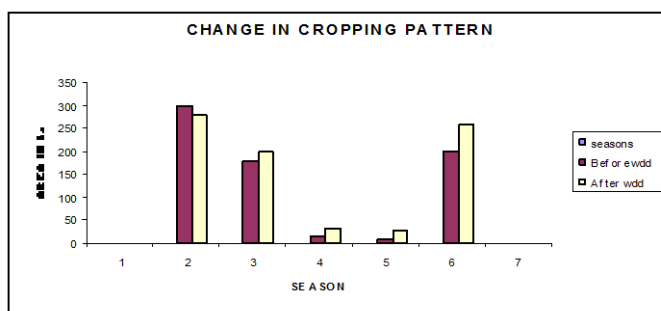
| Months | Pre-treatment | Post-treatment |
|--------|---------------|----------------|
| Jan    | 7.5           | 5.0            |
| Feb    | 9.5           | 6.0            |
| Mar    | 11.8          | 8.0            |
| Apr    | 13.0          | 9.0            |
| May    | 12.0          | 8.8            |
| Jun    | 8.5           | 4.0            |
| Jul    | 6.8           | 2.5            |
| Aug    | 4.5           | 2.0            |
| Sep    | 3.0           | 1.8            |
| Oct    | 3.0           | 1.5            |
| Nov    | 3.5           | 3.0            |
| Dec    | 6.0           | 4.0            |



As a result of watershed development programme water level has come up as depicted in table 1, the waste land has decreased from 300 ha to 280 ha, and water harvesting structures are used for protective irrigation.

Table 2: Change in area under cultivation (in ha)

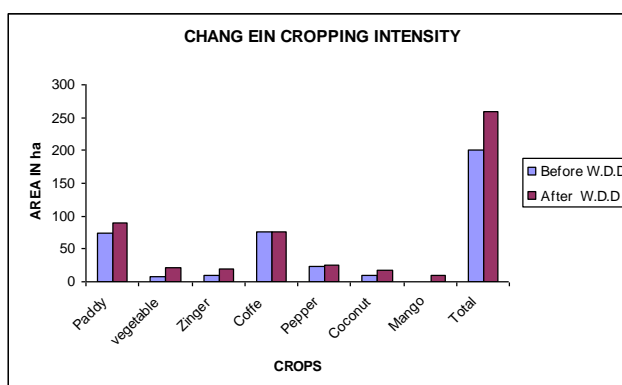
| Seasons      | Pre-treatment | Post-treatment |
|--------------|---------------|----------------|
| Waste land   | 300           | 280.0          |
| Kharif       | 178.0         | 200.0          |
| Rabi         | 14.0          | 30.0           |
| Summer       | 8.0           | 29.0           |
| <b>Total</b> | <b>200.0</b>  | <b>259.0</b>   |



After the intervention of integrated watershed development programme cropping area and pattern was transformed. By using water from water harvesting structures, new crops like banana, mango, vegetable and zinger, turmeric are growing during rabi and summer season (refer table 3). Cultivated area increased from 200.00 to 259.00 ha (Refer table 2). That is from 100 % to 129 %.

Table 3: Changes in cropping pattern

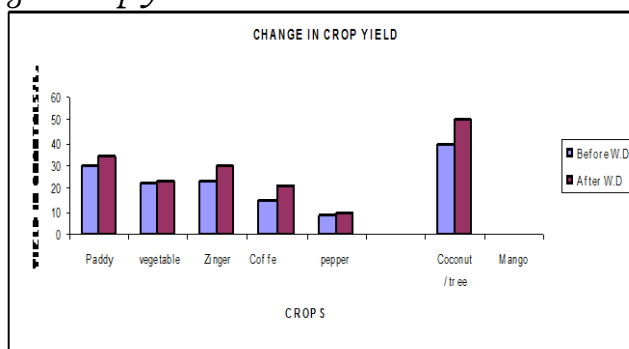
| Crops        | Pre-treatment | Post-treatment |
|--------------|---------------|----------------|
| Paddy        | 74            | 90             |
| vegetable    | 7             | 22             |
| Zinger       | 9             | 19             |
| Coffee       | 76            | 76             |
| Pepper       | 24            | 25             |
| Coconut      | 10            | 17             |
| Mango        |               | 10             |
| <b>Total</b> | <b>200</b>    | <b>259</b>     |



Integrated watershed development activity conserved the soil and moisture, provided required optimum moisture and nutrients to crops through out the cropping period, and enhanced the crop yield as reflected in table 4.

Table 4: Change in crop yield

| Crops         | Pre-treatment | Post-treatment |
|---------------|---------------|----------------|
| Paddy         | 30            | 34             |
| vegetable     | 22            | 24             |
| Zinger        | 24            | 30             |
| Coffee        | 15            | 21             |
| Pepper        | 9             | 10             |
| Coconut /tree | 40            | 50             |
| Mango         | 0             | 0              |



### Replicability and Dissemination

Bilagadde villagers, and Village Watershed Committee members are elated with the transformations in their village due to the watershed development project. They shared the above statistical information based on their experience. As a result of the project intervention the cultivable area has increased from 200.00 ha to 259.0 ha by converting the dry land to irrigated land. This has provided the equality and equity of the benefits to weaker section of the project area. Water harvesting structures increased the ground water level from 13.00 to 9.00 meters in summer and from 3.00 to 1.5 meters during rainy season and solved the acute water problem during summer thereby ensuring the survival of the mankind and animals in the jungle. Reflecting upon the benefits the farmers have derived from the project, they expressed their thanks to watershed development department and Government of India for their kind support.



*Photo 6: Water conservation activity in coconut garden*



## E.2. Conserve, collect and utilise water for fish culture

### **Problem Statement:**

Implementation of DPAP H-3 in Midigesi Hobli of Madhugiri Talluk, Tumkur district where, dry land farming was predominantly a practice. Nelehalla watershed was treated with soil and moisture conservation measure like field bund, rubble check, holder check, check dam and nala bund besides alternate cropping system of afforestation and dry land horticulture. In this programme Shri. Kariyanna, S/o. Rangappa of Gaddethimmanahalli village is beneficiary of nala bund of 65 meters length and 1.8 meters height and water spread area is about 1.2 acres. Fish rearing was practiced with release of 6000 finger lings of Rahu, Mirgal, Katla and Common carp were released and reared for about 5 to 6 months. Fishes of 750 grams to 1000 grams were found after 5 months and fetched Rs.1.2 lakh.

### **Objectives and Methodology:**

Water impounding structures like Nala bund, Check dam, or Percolation bank were constructed to impound excess run off which could be recycled as critical irrigation during long dry spells besides encouraging small farmers to take up fish rearing.

### **Result and Impact:**

Five months of fish rearing contributed to fishes of 750 to 1000 grams weight. 5 tones of fishes were harvested fetching Rs.1.2 lakh against finger lings cost of Rs. 8000. On an average he earns Rs. 75000 to 1 lakh from fish rearing only per year.

### **Evaluation and Evidence:**

The activity evinced keen interest by the community in the vicinity of the intervention and is monitored by the Watershed Development Department at the project level and documented.



*(Photo 1 & 2: Views of the water harvesting structures created under the project)*

### **Replicability and Dissemination :**

Small and marginal farmers of the watershed areas can gainfully employed in fishing activity in the drainage line structures which have facility to impound water for 5 to 6 months and reap better income. Exposure visit was organized and has a result nearby farmers have come forward to implement, for which department is facilitating.

