

# Improving Rural Livelihoods through Farmer-centric Integrated Watershed Management in Vijayapura district in Karnataka



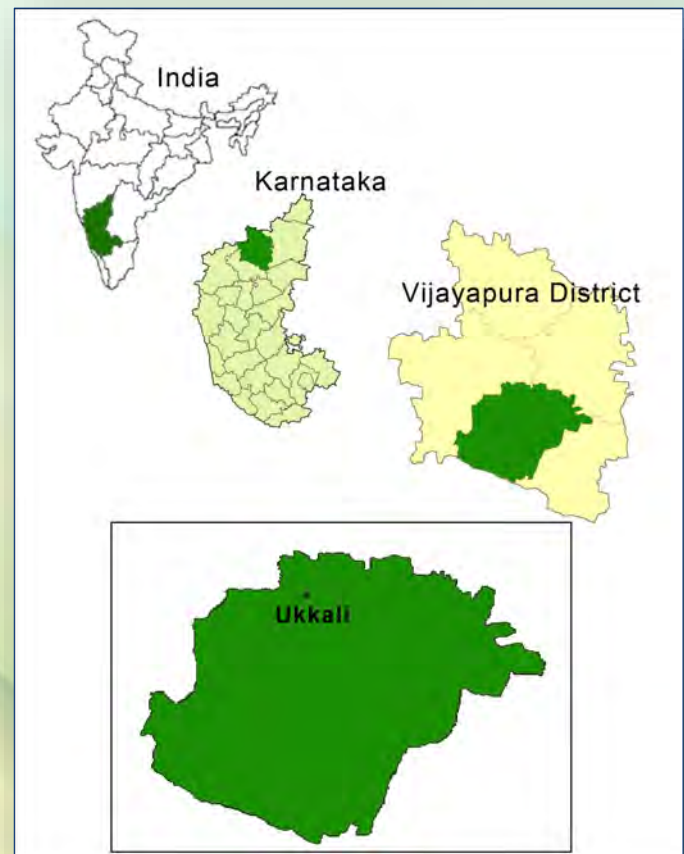


## Background

Vijayapura is one of the most drought prone districts in the northern part of Karnataka. Vijayapura is predominately an agricultural district and receives an average annual rainfall of 578 mm and is prone to droughts and erratic distribution of rainfall. The farmers are struggling with inconsistent income levels and they often receive jolts when they market their produce due to fluctuating prices.

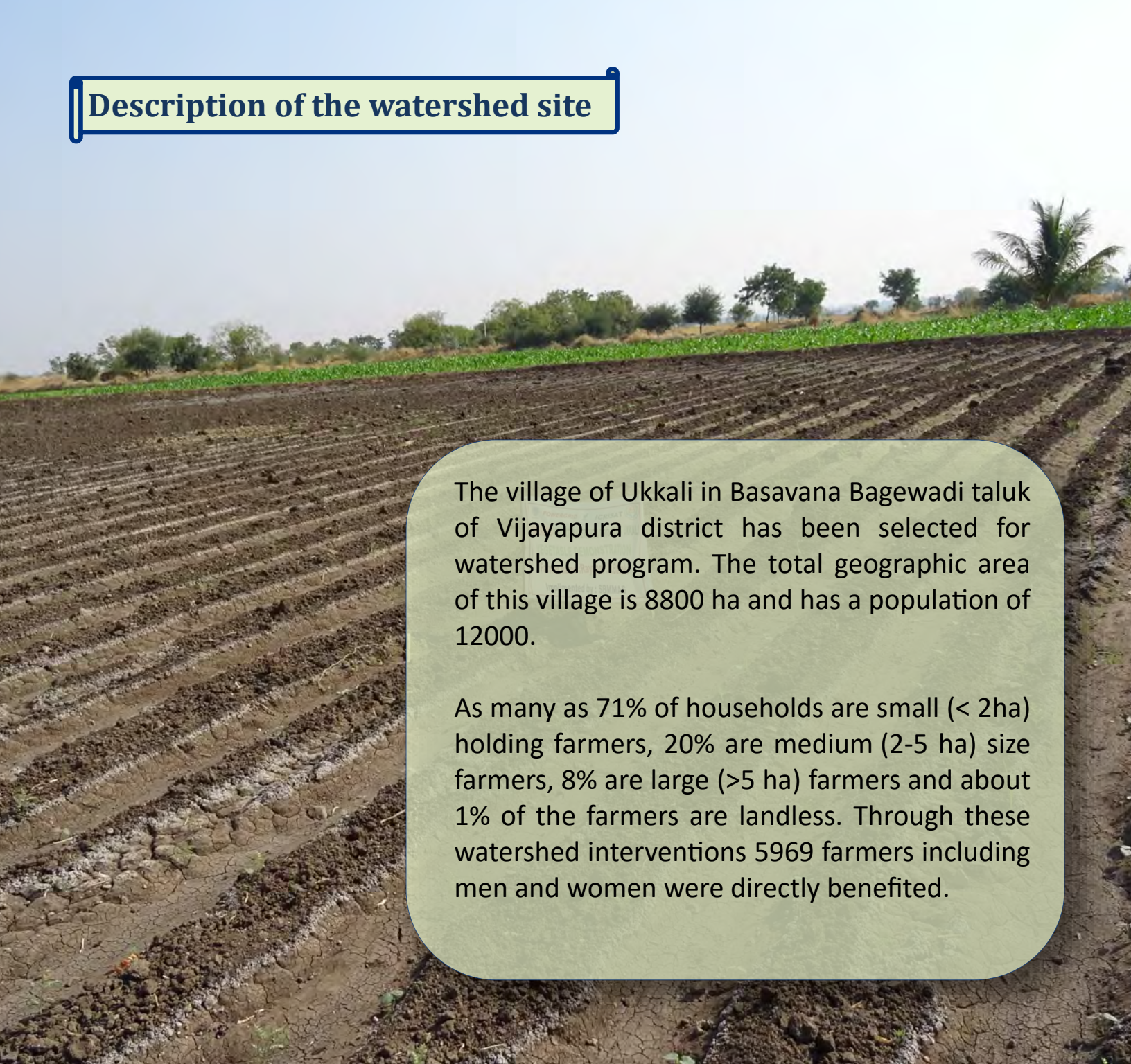
Considering these factors, the POWERGRID Corporation of India, Gurgaon, India supported the ICRISAT-led consortium to improve rural livelihoods through farmer-centric integrated watershed management in Vijayapura district of Karnataka.

The overall goal of this initiative is to increase agricultural productivity and improve the livelihoods of rural poor in such fragile dryland areas on a sustainable basis by enhancing the impact of integrated watershed management programs through capacity-building initiatives using the 'site of learning' model in low-rainfall agro-ecoregions.



*Ukkali in Vijayapura district of Karnataka*

## Description of the watershed site



The village of Ukkali in Basavana Bagewadi taluk of Vijayapura district has been selected for watershed program. The total geographic area of this village is 8800 ha and has a population of 12000.

As many as 71% of households are small (< 2ha) holding farmers, 20% are medium (2-5 ha) size farmers, 8% are large (>5 ha) farmers and about 1% of the farmers are landless. Through these watershed interventions 5969 farmers including men and women were directly benefited.



Science with a human face



ಪಾವರ್ ಗ್ರಿಡ್ ಕಾರ್ಯೋದ್ದೇಶನ  
ಆಫ್ ಇಂಡಿಯಾ - ಸುರಗಾಂವ್.

ಇಕ್ರಿಸ್ಯಾಟ್ - ಹೈದ್ರಾಬಾದ್.

ಎಸ್.ಪಿ.ಎಮ್.ಎಮ್.ಎ.ಎಸ್. ವಿಜಯಪುರ.

ಲಕ್ಷ್ಮಿ ಜಿಲಾನಿಯನ್ ಆಭಿವೃದ್ಧಿ ಕಾರ್ಯಕ್ರಮ

ಉಕ್ಕಲಿ. ತಾ|| ಬ.ಬಾಣೇವಾಡಿ.

## Objectives

The specific objectives of the project are:

1. To establish “Model Sites of Learning” in Karnataka for harnessing the potential of rainfed areas by adopting the 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.
3. To build capacity of the farmers in the region for improving rural livelihoods through knowledge sharing and dissemination strategy.



## Partners

We adopted a consortium approach for this initiative. The interventions and activities in the pilot site were converged with the Department of Agriculture (DoA), Govt. of Karnataka's schemes to benefit farmers.

- ◆ Community based Organization (Watershed Committee and Farmers)
- ◆ SHGs-NGO, Vijayapura
- ◆ Department of Agriculture , Government of Karnataka
- ◆ Shri Banashankari Mahila Mattu Makkala Abhivruddhi Samsthe (SBMMMMAS)
- ◆ Digital Green
- ◆ ICRISAT Patancheru, Telangana
- ◆ Power Grid Corporation of India



## Soil and water conservation

Various rainwater harvesting and groundwater recharge structures constructed have led to an increase in groundwater levels by 1.5 to 2 m. As many as 11 check dams, 36 farm ponds, 3 bore well recharge pits, 5 sunken pits and 4 mini-percolation tanks have been constructed and has created a storage capacity of about 75000 m<sup>3</sup> of surface runoff water in 2-3 fillings. The increased water availability due to harvesting structures with the support from the project also has encouraged farmers to diversify to high value crops like floriculture and vegetable crops.







*Farm pond*



*Check dam*



*Farm pond*

## Stratified soil sampling and soil test-based fertilizer recommendation



A total of 220 soil samples were collected using the stratified randomized method that considers topo-sequence, farmer category, soil type, cropped area and horticulture etc. by adopting farmer participatory approach. The soil analysis results revealed that they are deficient in organic carbon, available phosphorous, sulfur and zinc. Based on the soil analysis results, fertilizer recommendations are developed and soil test-based fertilizer recommendation has been provided to farmers as shown in table.

Based on soil analysis results balanced fertilizer application is followed to target optimum yields by adopting the principle to recommend full dose of a nutrient in case of >50% farmers fields are found deficient and half dose if < 50% farmers fields are found deficient.

**Table 1. Percent of farmers fields deficient in nutrients, Ukkali watershed, Vijayapura, Karnataka.**

| Villages | OC                 | Av P | Av K | Av S | Av Zn | Av B | Avail-Fe | Avail-Cu | Avail-Mn | Ca | Mg |
|----------|--------------------|------|------|------|-------|------|----------|----------|----------|----|----|
|          | % deficient fields |      |      |      |       |      |          |          |          |    |    |
| Ukkali   | 49                 | 89   | 0    | 71   | 94    | 16   | 8        | 0        | 0        | 0  | 0  |

**Table 2. Soil test-based crop wise fertilizer recommendations**

| Sl No. | Crop                          | Urea | DAP | MOP | Gypsum | ZnSo4 | Agribor | Borax |
|--------|-------------------------------|------|-----|-----|--------|-------|---------|-------|
| 01     | Maize (Irrigated)             | 99   | 163 | 31  | 200    | 25    | 1.25    | 2.5   |
| 02     | Maize (Rainfed)               | 66   | 109 | 21  | 200    | 25    | 1.25    | 2.5   |
| 03     | Sorghum (Rainfed)             | 31   | 87  | 33  | 200    | 25    | 1.25    | 2.5   |
| 04     | Sorghum (Rainfed) <i>Rabi</i> | 33   | 54  | 0   | 200    | 25    | 1.25    | 2.5   |
| 05     | Pearl Millet (Rainfed)        | 33   | 54  | 0   | 200    | 25    | 1.25    | 2.5   |
| 06     | Wheat (Irrigated)             | 45   | 163 | 42  | 200    | 25    | 1.25    | 2.5   |
| 07     | Wheat (Rainfed)               | 33   | 54  | 0   | 200    | 25    | 1.25    | 2.5   |
| 08     | Foxtail millet (Rainfed)      | 20   | 33  | 13  | 200    | 25    | 1.25    | 2.5   |
| 09     | Pigeonpea                     | 0    | 109 | 10  | 200    | 25    | 1.25    | 2.5   |
| 10     | Greengram                     | 0    | 109 | 0   | 200    | 25    | 1.25    | 2.5   |
| 11     | Blackgram & Cowpea            | 0    | 109 | 0   | 200    | 25    | 1.25    | 2.5   |
| 12     | Chickpea (Irrigated)          | 0    | 109 | 0   | 200    | 25    | 1.25    | 2.5   |
| 13     | Chickpea (Rainfed)            | 0    | 54  | 0   | 200    | 25    | 1.25    | 2.5   |
| 14     | Groundnut (Rainfed)           | 0    | 109 | 21  | 200    | 25    | 1.25    | 2.5   |
| 15     | Safflower (Rainfed)           | 9    | 87  | 10  | 200    | 25    | 1.25    | 2.5   |
| 16     | Sunflower (Irrigated)         | 1    | 163 | 50  | 200    | 25    | 1.25    | 2.5   |
| 17     | Sunflower (Rainfed)           | 0    | 109 | 29  | 200    | 25    | 1.25    | 2.5   |
| 18     | Sesame & Til (Rainfed)        | 28   | 54  | 21  | 200    | 25    | 1.25    | 2.5   |
| 19     | Castor (Rainfed)              | 9    | 87  | 17  | 200    | 25    | 1.25    | 2.5   |

## Wastewater treatment and silt removal



One wastewater treatment plant which is having a capacity  $1600 \text{ m}^3$  is treating 40,000 liters on an average per day and is benefitting more than 20 farmers to grow vegetables and food crops in 16 ha of land. Also, silt removed from the old check dam has benefitted 6 farmers and has enabled their fields to become more fertile.

## Crop demonstrations and diversification

As a thrust towards crop diversity, farmers were encouraged to go for high value crops like vegetable, flower and fruit crops in the watershed, as there is good scope for these activities.



**Table 3. Crop diversification demonstrations, Ukkali watershed, 2015**


| Crop diversification                                 | Area (ha) | No of Farmers |
|--|-----------|---------------|
| Floriculture<br>(Rose, Tube rose, Mogra)             | 8         | 8             |
| Vegetable<br>(Chilli, Brinjal, Tomato, Cluster bean) | 10        | 10            |
| Fruit crop<br>(Custard apple and lemon)              | 5         | 5             |

Farmer participatory trials (295 farmers with one ha each) were conducted to evaluate improved crop management practices including soil test-based fertilizer recommendations, improved cultivars and *in-situ* moisture conservation practices. The results showed productivity improvement by 27 % in groundnut, 25% in pigeon pea and 25% in paddy . Micronutrients available in Government of Karnataka’s Bhoochetana scheme were also implemented on 7950 ha area.

**Table 4. Additional income gain in ₹ per ha due to improved practices**

| Crop                | Improved practice (IP) | Farmers Practice (FP) | % Increase in IP over FP | Additional economic gain ₹/ha |
|---------------------|------------------------|-----------------------|--------------------------|-------------------------------|
| Maize (100 ha)      | 5.88                   | 5.03                  | 17                       | 8500                          |
| Groundnut (40 ha)   | 1.08                   | 0.91                  | 19                       | 8500                          |
| Pigeon pea (200 ha) | 1.55                   | 1.35                  | 15                       | 10000                         |
| Chickpea (70 ha)    | 1.34                   | 1.10                  | 22                       | 7200                          |



A woman wearing a brown shawl and a striped shirt is crouching in a kitchen garden. She is surrounded by various vegetables, including large-leafed plants and a tall plant with yellow flowers. The garden is set against a stone wall. The scene is brightly lit, suggesting a sunny day.

## Improving nutrition

Under this activity, micronutrients, vegetable seeds, bio-fertilizer were provided to farmers. In addition to this to help encourage and create awareness among school children for cultivation of vegetables and improve the nutrition, vegetable seed kits (350 units of 10 m<sup>2</sup> each) have been provided.

*Kitchen garden grown by the farmers*



## ***In-situ* moisture conservation**

A small area of *Broad Bed and Furrow (BBF)* landform for moisture conservation was demonstrated and the results have proved successful. More than 100 farmers have benefited from learning this technique.

The improved BBF maker cum seed drill with precision sowing has helped farmers save ₹ 1000 -1200 per ha on labor costs.



***In-situ* moisture conservation in farmer's field**

## Income-generating and plantation activities

### Vermicomposting

Vermicomposting has been done with 36 farmers with the vermibed size of 3m x 1m x 1m, which can prepare 10-12 tons of manure in 8-10 weeks.



## Nursery Raising

N-rich *gliricidia* nursery of 18000 saplings are raised and are planted on bunds.

## Avenue plantation and afforestation



Avenue plantation and afforestation in common land of around 3300 saplings was undertaken.

## Livestock improvement

One Sirohi buck has been brought in the watershed (male goat) to improve the local goat breed.



## Women empowerment

- Women Self Help Groups (SHG) have benefitted from income-generation activities.
- Through the revolving fund, 120 members earned ₹ 2400-2800 per month from ram lambs rearing and 173 members earned ₹ 2000-3000 per month from petty shops.
- Tailoring classes for 50 women were provided through revolving fund.
- Also, 1000 kitchen garden kits were provided to help grow vegetables in their backyard to improve the nutrition and help generate some income.





## Capacity building and training programs

A large number of awareness and capacity building activities are taken up in the watershed for effective dissemination and wider implementation of watershed interventions. Various activities in this direction include need-based training on different topics, field day, farmers day, information through the display of wall writings and video screenings using pico projectors.



## Digital Technology



An innovative digital extension system was introduced to reach a large number of farmers by using hand-held pico projector to show the videos of improved practices to farmers as an effective tool.

## International Womens Day

Other important events like International women's day was celebrated where in a large number of women farmers and SHG members (350) from the watershed and other talukas participated.





## ಗ್ರಾಮೀಣ ಜನರ ಜೀವನಮಟ್ಟ ಸುಧಾರಣೆಗಾಗಿ ಸಮಗ್ರ ಜಲಾನಯನ ಕಾರ್ಯಕ್ರಮ - ಉಕ್ಕಟ್ಟ ಜಲಾನಯನ


ಜಲವನ ಬಾಗೇವಾಡಿ ತಾಲೂಕು, ಬಿಜಾಪುರ ಜಿಲ್ಲೆ, ಕರ್ನಾಟಕ ಆಯ್ಕೆಯಾದ ಗ್ರಾಮ - ಉಕ್ಕಟ್ಟ ಪ್ರದೇಶ : ೨೬೧೬ ಹೆಕ್ಟೇರ್ (ಮೇಲೆ ಆಧಾರಿತ) ಒಟ್ಟು ಸುತ್ತುಂಬಗೆಳೆ : 10000 ಮಳೆನೀರಿನ ಸಮೃದ್ಧಿ : ಹೆಚ್ಚು ಮತ್ತು ಮರಳು ಪ್ರತಿಷ್ಠೆ : ಮಳೆಯು ಪ್ರಮಾಣ : (ಅಡಿಮೆ) ಯೋಜನಾ ಅವಧಿ : ಅಕ್ಟೋಬರ್ 2015 ರಿಂದ ಸೆಪ್ಟೆಂಬರ್ 2018



**ಆಭಿವೃದ್ಧಿ ಸಹಾಯಕರು :-**

- ಜಾವೇದ್ ಲಿಡ್ ಕಾರ್ಪೊರೇಷನ್ ಆಫ್ ಇಂಡಿಯಾ ಕೂಡಲಿ.
- ಇಕ್ವಿಟಿ, ಕೈದರಾಲೂರು.
- ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ವಿವಿಧ ಇಲಾಖೆಗಳು, ಬಿಜಾಪುರ
- ಶ್ರೀ ಬ್ರಹ್ಮರಂಜನ ಮಹಿಳಾ ಮತ್ತು ಮಕ್ಕಳ ಅಭಿವೃದ್ಧಿ ಸಂಸ್ಥೆ, ಬಿಜಾಪುರ
- ಸಮಗ್ರ ಜಲಾನಯನ ಸಮಿತಿ, ಉಕ್ಕಟ್ಟ

**ಮೂಲ ಉದ್ದೇಶಗಳು :-**

- ಜಿಲ್ಲೆಯ ಜಲನೀರಿನ ನಿರ್ವಹಣೆ ಮಾರ್ಕೆಟಿಂಗ್ ಉತ್ಪನ್ನಗಳನ್ನು ಹೆಚ್ಚು ಗ್ರಾಮೀಣ ಮೂಲದ ಜಲಾನಯನ ಕೇಂದ್ರಗಳಾಗಿ ಪರಿವರ್ತಿಸುವುದು.
- ಸಮಗ್ರ ಜಲಾನಯನ ನಿರ್ವಹಣೆ ಮೂಲಕ ನೀರಿನ ಸುರಕ್ಷಿತತೆಯನ್ನು ಹೆಚ್ಚಿಸುವುದು ಮತ್ತು ಅಂತಿಮವಾಗಿ ಜಲಾನಯನ ಪ್ರಮಾಣವನ್ನು ಹೆಚ್ಚಿಸುವುದು ಮತ್ತು ಅದರ ಉಪಯುಕ್ತತೆಯಿಂದ ಬೆಳೆಗಳ ಉತ್ಪಾದನೆಯನ್ನು ಹೆಚ್ಚಿಸಿ ಜನರ ಜೀವನಮಟ್ಟವನ್ನು ಸುಧಾರಿಸಲು ಅವಕಾಶ ಹೆಚ್ಚಿಸುವುದು.
- ಗ್ರಾಮೀಣ ಜನರ ಜೀವನಮಟ್ಟವನ್ನು ಸುಧಾರಿಸಲು ಅವರಿಗೆ ಅನುಕೂಲತೆ ಹಾಗೂ ಚಿತ್ರನಿರೀಕ್ಷೆ ಅರಿವು ಮೂಡಿಸುವುದು ಮತ್ತು ಅವರ ಉಪುಚರಣೆ, ಪ್ರಗತಿಪರ ರೈತರಿಂದ ಮಾಹಿತಿ ಹಾಗೂ ಅಭಿಪ್ರಾಯ ಬೆಳೆಸುವುದು. ಅಳವಡಿಸಿಕೊಂಡಂತಹ ಅಂತಹ ಮಾಹಿತಿಗಳನ್ನು ಪ್ರಸಾರಪಡಿಸುವುದು.





## Success Stories

### Farm Pond helps farmer save crops and provide supplemental irrigation

Goudappagouda Satyappagouda Biradar from Ukkali village in Vijayapura district has benefited immensely from the watershed project. The farmer holds 2.5 ha of land and before the initiation of the project would spend ₹ 3000 per season for providing water for his crops.

It was after the initiation of the watershed project by Power grid Corporation of India Gurgaon with the support of ICRISAT and the local NGO, the farmer decided to dig a farm pond of 15 X 15 X 15 m<sup>3</sup>.



The farm pond in his field now helps in providing supplemental irrigation during critical stages of crop growth and helps the farmer save his pigeonpea crop. Now he does not need to spend any money on water and manages to cultivate his land by using the water stored in the pond.





The farmer also applied, recommended doses of micronutrients of 25 kg zinc sulphate per ha, 2.5 kg borax per ha and 200 kg of gypsum per ha and the income and yield obtained after these interventions are as shown in the table.


| Crop      | Area in ha | Yield before farm pond in tons | Income in ₹. | Yield after farm pond in tons | Income in ₹. | Micronutrient applied        |
|-----------|------------|--------------------------------|--------------|-------------------------------|--------------|------------------------------|
| Pigeonpea | 2.42       | 2.75                           | 1,38,000     | 3.3                           | 1,65,000     | Zinc Sulphate, Gypsum, Borax |

## Percolation tank helps farmer recharge bore wells

Basavaraj Golappa Sindagi from Ukkali village in Vijayapura has 11 ha of land with 1 open well and 2 bore wells. Before the watershed program, he was bearing heavy losses due to lack of water availability.

After the initiation of the watershed program, he was advised to dig out a percolation tank. The percolation tanks helps in increasing the groundwater table in bore wells and open wells and wear and tear of field soil. After digging out the percolation tank, the soil erosion completely stopped. The increased water availability has helped recharge the bore wells and open wells and the farmer has now started cultivating in 11 ha.



A group of men are gathered around a concrete percolation tank under construction. The tank is built into a rocky, eroded hillside. One man in a white shirt is walking towards the tank, while others are standing and observing. A banner with the word 'SAT' is visible on the wall of the tank. The background shows a rocky hillside with some sparse vegetation under an overcast sky.

Before the construction of the percolation tank, 0.40 ha of land was left waste due to soil erosion. But after construction of the percolation tank, he used the wasteland to cultivate vegetables and wheat. The farmer also applied, recommended doses of micronutrients of 25 kg zinc sulphate per ha, 2.5 kg borax per ha and 200 kg of gypsum per ha.

Due to these interventions, the farmer has received an increased income of ₹ 1,95,000.

| Crop       | Area in ha | Yield before intervention in tons | Income in ₹. | Yield after intervention in tons | Income in ₹. | Micronutrient Application    |
|------------|------------|-----------------------------------|--------------|----------------------------------|--------------|------------------------------|
| Pigeonpea  | 4          | 3.8                               | 1,95,000     | 5.5                              | 2,75,000     | Zinc Sulphate, Gypsum, Borax |
| Chickpea   | 3.2        | 3.5                               | 1,75,000     | 3.85                             | 2,10,000     | Zinc Sulphate, Gypsum, Borax |
| Maize      | 1.61       | 4.4                               | 60000        | 5.3                              | 75,000       | Zinc Sulphate                |
| Wheat      | 0.40       | 0.5                               | 15000        | 0.71                             | 20,000       |                              |
| Vegetables | 0.80       | Waste land                        |              | -                                | -            | Now Planted                  |
| Wheat      | 1.21       | Waste land                        |              | 2.1                              | 60,000       | Zinc Sulphate, Gypsum, Borax |



## Micronutrient application and borewell recharge pit helps farmer rejuvenate land and gain increased income

Kallanagouda A. Patil, from Ukkali village is having 2.40 ha of land with 6 bore wells. He usually cultivates lemon, custard apples and other food crops. During summer, due to shortage of water supply he was having insufficient water to cultivate the land. Due to these factors, he was forced to remove the lemon trees from his land before the watershed project.



In the year 2014-15 Power Grid – ICRISAT initiated a watershed project in Ukkali village. They visited his field and analyzed the water problem due to drying of bore well and open well water and suggested the farmer to construct a bore well recharge pit beside one of the bore wells. After the guidance from project staff, he constructed a bore well recharge pit having a size of 2m X 2m X 2m filled with 40 mm of rock fill particles and 20 mm of sand respectively.

The pit consists of an inlet drain connected to the rainwater gully or channel from which rainwater flows to the pit and excess water goes out through the outlet drain. From the bottom of the recharge pit, a PVC pipe is connected to the bore well so that the filtered and drained rainwater from pit directly flows to the bore well and thus efficiently recharging it.

Now the farmer has planted grapes in 0.80 ha of land and has gained an income of ₹ 500000 from grapes only.

The farmer also applied, recommended doses of micronutrients of 25 kg zinc sulphate per ha, 2.5 kg borax per ha and 200 kg of gypsum per ha and obtained 2.2 tons of pigeonpea from 1.21 ha of land. He made a net income of ₹ 1,20,000 from pigeonpea alone. Before the use of micronutrients, he was getting a yield of only 1.5 tons from 1.21 ha of land. He is also gaining an extra income of ₹ 60000 by growing custard apple in 0.40 ha of land.



Now due to increased water availability, the farmer is getting a total net income of ₹ 2,30,000 and an increased income of ₹ 1,48,000 from these interventions.

## Kitchen Garden help SHG beneficiary gain increased income

Reshma Abdul Makanadar from Ukkali village has 1.61 ha of land and was not making sufficient income from agriculture due to severe drought and low water availability.

After the initiation of the watershed project by Power Grid Corporation of India Gurgaon with the support of ICRISAT and the local NGO, Shri Banashankari Mahila mattu Makkala Abhivruddhi Samsthe, she was given information on SHGs and their formation. The staff explained the concept and benefits of formation of SHGs.

The staff noticed that she had barren area next to her residence and suggested a kitchen garden in the space. After clearing the land, the staff provided vegetable seeds to her group and trained them on land preparation, methods of sowing and using household water.







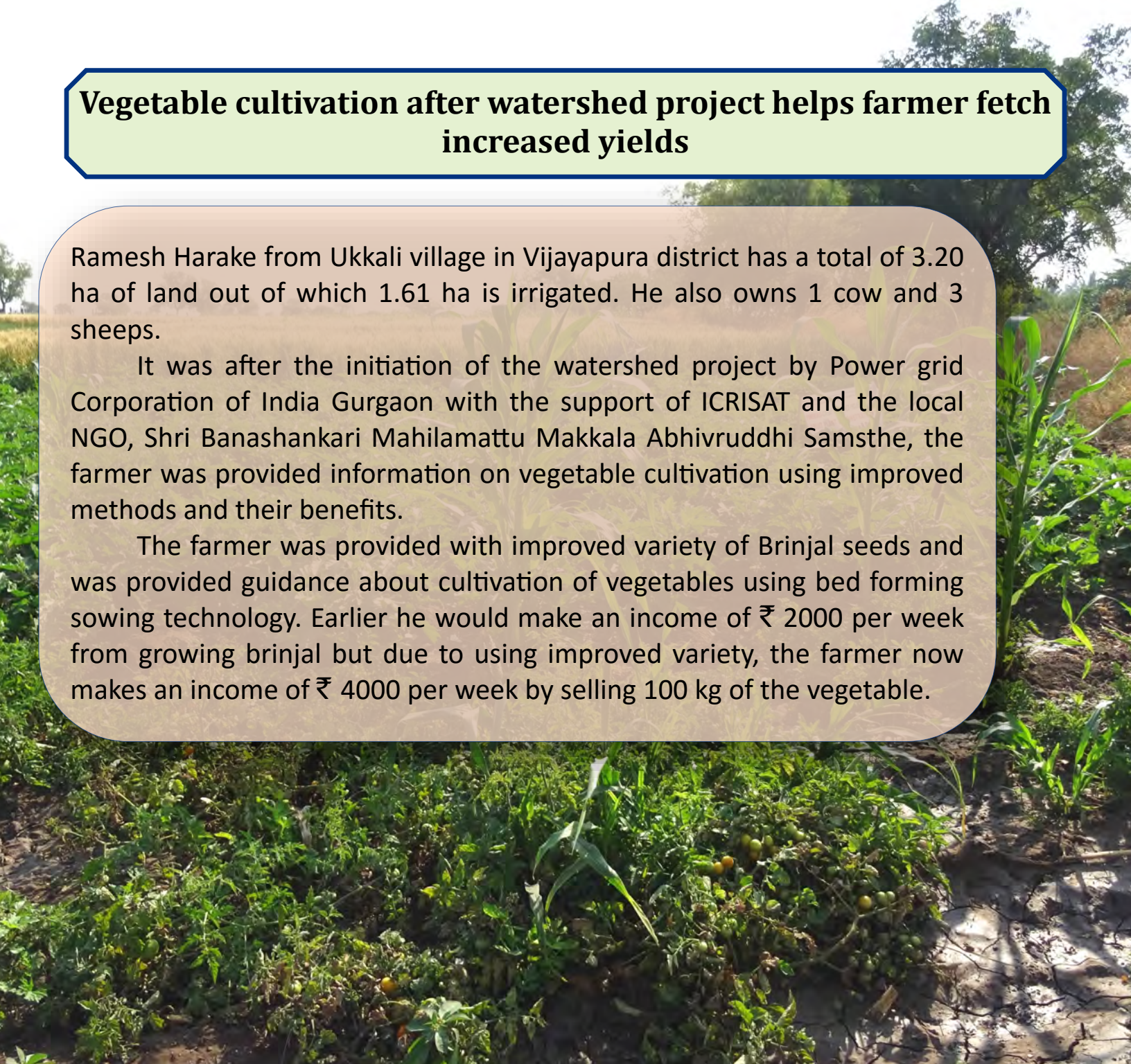
After one month, she sold the vegetables in the weekly market and gained an income of ₹ 500 per week. At present she manages to sell more and makes an income of ₹ 800 - ₹ 1000 per week.

## Vegetable cultivation after watershed project helps farmer fetch increased yields

Ramesh Harake from Ukkali village in Vijayapura district has a total of 3.20 ha of land out of which 1.61 ha is irrigated. He also owns 1 cow and 3 sheep.

It was after the initiation of the watershed project by Power grid Corporation of India Gurgaon with the support of ICRISAT and the local NGO, Shri Banashankari Mahilamattu Makkala Abhivruddhi Samsthe, the farmer was provided information on vegetable cultivation using improved methods and their benefits.

The farmer was provided with improved variety of Brinjal seeds and was provided guidance about cultivation of vegetables using bed forming sowing technology. Earlier he would make an income of ₹ 2000 per week from growing brinjal but due to using improved variety, the farmer now makes an income of ₹ 4000 per week by selling 100 kg of the vegetable.





## Revolving fund helps SHG beneficiary gain extra income

Hameeda Kunabi from Ukkali village is physically challenged and owns a stationery shop. She is also the guardian to her brother and sister's children and maintains the expenses of the house. Before the watershed project, she would earn only ₹ 200 to 300 per day and it was hardly enough to make ends meet.

It was after the initiation of the watershed project by Power Grid Corporation of India Gurgaon with the support of ICRISAT and the local NGO, she was given information on SHGs and their formation.

After the training, a group of 10 members formed the Shri Akkamahadevi Mahila Swa Sahaya Sangha, Ukkali and the group was provided ₹ 30000 as a revolving fund from Power grid-ICRISAT watershed project.



From revolving fund, she took a loan of ₹ 10000 from the SHG. She extended the stationery shop and also started a small tea stall. Now she gains an income of ₹ 600 per day and uses the income to help send her brother and sister's children to an English medium convent school and is also able to contribute more money for household expenses.



## For Kaveri, business kicks off after formation of SHG group

Kaveri Prakash Bashetti has been running a photo studio in Ukkali village and was earning an income of ₹ 200 to ₹ 300 per day. It was not sufficient to maintain her household expenses and was finding it difficult to make ends meet.

After the initiation of the watershed project by Power Grid Corporation of India Gurgaon with the support of ICRISAT and the local NGO, she was given information on Self Help Groups (SHG) and their formation. The staff explained the concept and benefits of formation of SHGs.

After the training, 10 members got together and formed a group named as Shri Annapoorneshwari Mahila Swa Sahaya Sangha, Ukkali and were given an amount of ₹ 30,000/- as a revolving fund from Powergrid-ICRISAT watershed project. From the revolving fund, Kaveri requested to other SHG members and borrowed an amount of ₹ 10,000 from the SHG. With the money, she purchased a color printer and scanning machine.



From this money, she has started developing the photos, scanning, designing and printing and is making an income of ₹ 800 per day. She also manages to save ₹ 200 per day and is sending her children to an English medium school.



# Summary

The POWERGRID Corporation of India, Gurgaon, India supported the ICRISAT-led consortium to improve rural livelihoods through farmer-centric integrated watershed management in Vijayapura district of Karnataka. The village of Ukkali in Basavana Bagewadi taluk of Vijayapura district has been selected for watershed program. The total geographic area of this village is 8800 ha and has a population of 12000.

Various rainwater harvesting and groundwater recharge structures constructed have led to an increase in groundwater levels by 1.5 to 2 m. As many as 11 check dams, 36 farm ponds, 3 bore well recharge pits, 5 sunken pits and 4 mini-percolation tanks have been constructed and has created a storage capacity of about 75000 m<sup>3</sup> of surface runoff water in 2-3 fillings.

Also, soil health analysis results revealed that the soils in the village are deficient in organic carbon, available phosphorous, sulfur and zinc. Based on the soil analysis results, fertilizer recommendations are developed and soil test-based fertilizer recommendation has been provided to farmers.

Farmer participatory trials (295 farmers with one ha each) were conducted to evaluate improved crop management practices including soil test-based fertilizer recommendations, improved cultivars and *in-situ* moisture conservation practices. The results showed productivity improvement by 27 % in groundnut, 25% in pigeon pea and 25% in paddy .

Also, income-generating activities such as vermicomposting, distribution of kitchen garden kits to women SHGs, afforestation and capacity building activities are a part of the watershed project. Through these watershed interventions around 6000 farmers including men and women are being directly benefited.

## For further details :

Dr Suhas P Wani  
Research Program Director, Asia and  
Director, ICRISAT Development Center (IDC)  
ICRISAT, Patancheru  
Tel: +91 40 30713466; Email: s.wani@cgiar.org

Mr BS Rao  
Dy. General Manager (HR)  
POWERGRID SRTSII HQ, Bengaluru  
Tel: 9449599028;  
Email: bsrao@powergridindia.com