

Impact Factor - 6.261

ISSN - 2348-7143

INTERNATIONAL RESEARCH FELLOWS ASSOCIATION'S  
**RESEARCH JOURNEY**

Multidisciplinary International E-research Journal

PEER REFREED & INDEXED JOURNAL

February-2019 Special Issue - CXXXIV

Environment and Sustainable Development  
(ESD 2018)

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DISTRIBUTION OF UNDERGROUND WATER LEVEL IN BELTS DURING SUMMER  
SEASON IN BHADGAON TALUKA DIST. JALGAON (M.S.)

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Abstract:-

Ground water is often called underground water which occurs below the surface of the earth. Agriculture is a major occupation of the Bhadgaon Taluka. Bhadgaon Taluka receives canal irrigation by the Girna dam reservoir. But in last few years, this area is facing the decreasing average rainfall. So the Girna dam reservoir is not able to supply continuous water for irrigation purpose. That's why irrigation problems is big challenge to farmers. Due to such circumstances farmers are moving towards to dig well and tube well in their farm for the irrigation and trying to increase crop production. The farmers of this Taluka had lifted underground water continuously throughout the year. So the decreasing of underground water level form uneven water level belts in this area.

Introduction:-

The irrigation problems are arising in the world. The limitations of irrigation are in the various countries in the world due to uneven distribution of rainfall and mismanagement. Bhadgaon Taluka is belonging in monsoon climate region as well as the southern part of our country received rainfall in limited period throughout the year. So irrigation is very needful for the agricultural activity. Since the independence government provide the facilities in irrigation, but farmers suffers from the decreasing of rainfall and underground water level. So the irrigation problem is very important as far as agriculture is concerned.

Agriculture is a major occupation of the Bhadgaon Taluka. Many factors affects to agricultural activity throughout the year. We can't imagine the agriculture without irrigation. With the help of irrigation, farmer can take various crops and cropping pattern which increases agricultural income. Now a day, atmospheric condition is going to variable situation day by day. Seasonal rainfall continuity is also inconsistent in this area. That's why farmer are facing lot of difficulties in this occupation. Bhadgaon Taluka lies in southern part of Jalgaon district. The Girna River is most important river in this Taluka. It is the life line of Bhadgaon Taluka. The upper course of the river Girna dam has been constructed by Maharashtra government. Bhadgaon Taluka receives canal irrigation by the dam reservoir. This was the rich belt of agriculture activity on the bank or Girna river in Bhadgaon Taluka. But in last few years, this area is facing the decreasing average rainfall. Because of Girna dam reservoir is not able to supply continuous water for irrigation purpose. So the irrigation problems are big challenges to farmers. Due to such circumstances farmers are moving towards to dig well and tube well in their farm for the irrigation and trying to increase crop production. The farmers of this Taluka had lifted underground water continuously throughout the year. So the problems are arising in irrigation due to decreasing of underground water level in this area. Due to continuous



uplift of underground water surround area of Girna river, the deep water belts are develop near Girna river.

Key words:- Water belt, Irrigation, Underground water.

Objectives:-

- i. To find out distribution of the underground water belts.
- ii. To find out the factors affected to underground water belts.
- iii. To study the impact of underground water belt on cropping pattern.

Hypothesis:-

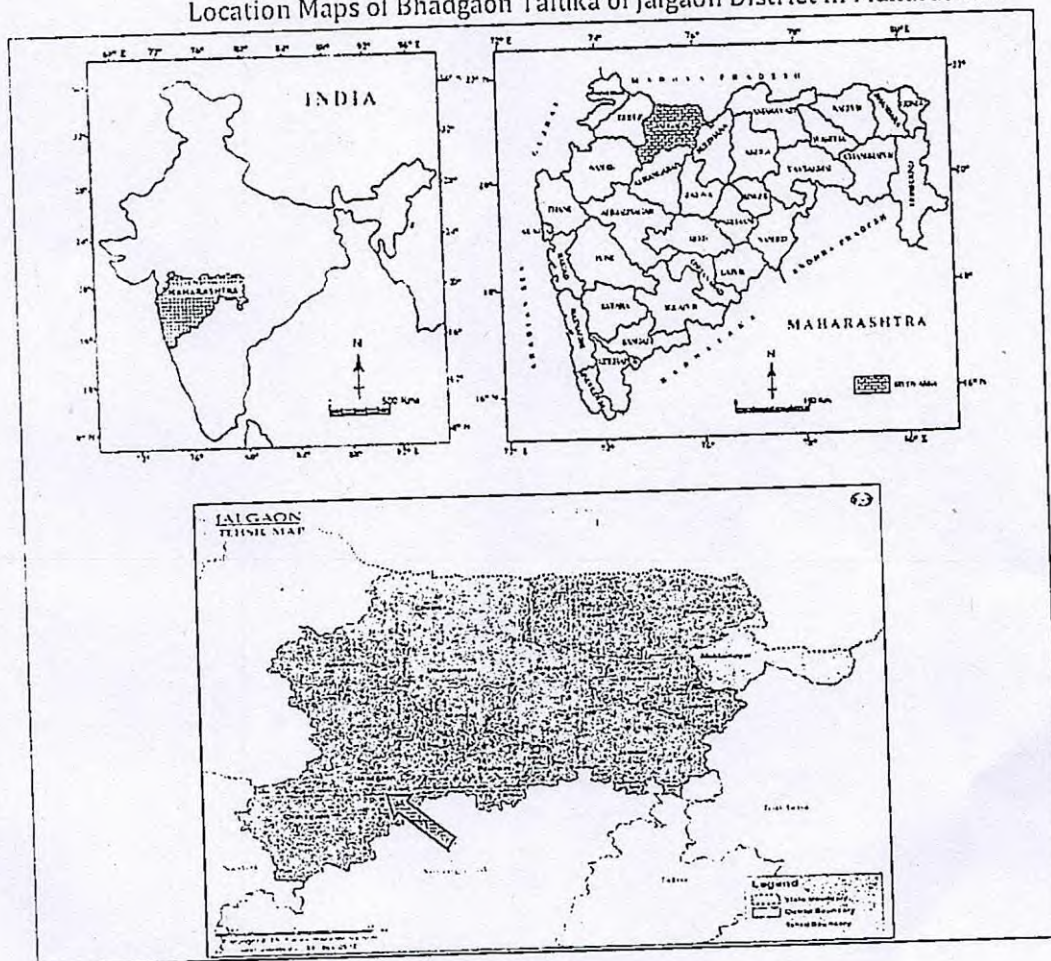
For this study the hypothesis can be set as "High level uplifting of underground water is affects the water level and underground water level belts."

Study area:-

Bhadgaon Taluka lies between 75°13'N to 75°22' N latitude and 20°40'E to 20°66'E longitude. The total area is 43,841.41hectors covered by this Taluka. At the Northern side of Bhadgaon is Parola and Jalgaon Taluka, at the eastern and southern side is Pachora Taluka and at the western side is Chalisgaon Taluka to Bhadgaon Taluka.

Map No. 01

Location Maps of Bhadgaon Taluka of Jalgaon District in Maharashtra



*(Handwritten signature)*

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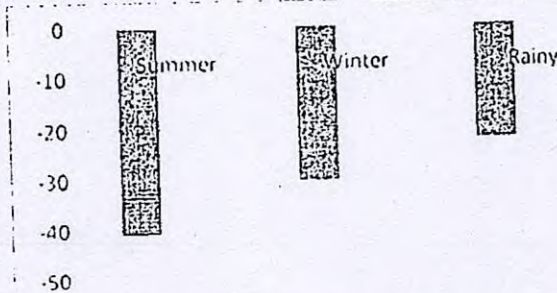
Data base:-

There are 59 villages including in this Taluka and some villages come under irrigation of Girna dam. Before 2009, there were 63 villages in this Taluka but after commencement of Municipal Corporation of Bhadgaon, 04 villages are included in Municipal Corporation of Bhadgaon. But underground water level problems are same in near about whole Taluka except to close up area of bank of the Girna river. So Bhadgaon Taluka is selected for study by me for minor research project.

Geographical background of Bhadgaon Taluka

- Relief:-** This Taluka is lie on Deccan upland of Maharashtra state. The basalt rock is found all over in this Taluka. Northern part is covered by small hills and barren land and Girna river surround area is plane shape. The slope of this region is south east to North east direction. The elevation of this Taluka is 269 meters.
- Climate and Rainfall:-** The climate of Bhadgaon Taluka is local steppe. The average temperature is 27.2°C. Except to rainy season this area belongs in general dry climate. The temperature range is 10°C to 45°C. Average rainfall is 605.5mm in Bhadgaon Taluka.
- Soil:-** The soil in Bhadgaon Taluka is derived from basalt rock and it is classified as medium black soil, Loamy and sandy soils and forest soils.

Seasonal water level:-



The water level is varying from season in this Taluka. Due to rain in rainy season the water level is up side but summer season is goes down because of non supply of water recharge and uplifting of underground water for irrigation and domestic use.

Depth of Tube and Well:-

Depth of well is near about 80 feet and boar well about 250 to 300 feet. Due to continuous up lifting of underground water for irrigation, the underground water level is decreasing day by day and some tube wells and wells are getting dry in summer season. So an irrigation problem arises in this Taluka that's why agricultural area is reducing in summer season.

Summer season underground water belts

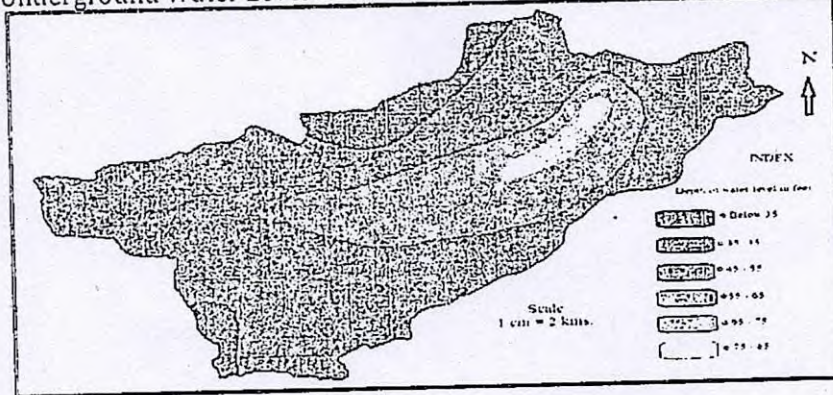
Summer season is very dry and hot in Bhadgaon taluka. Due to high temperature available water evaporates fast and crops want frequent irrigation during this season.

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Maps No. 02  
 Underground Water Level Belts in Summer Season of Bhadgaon Taluka



The above picture of Bhadgaon taluka is showing the underground water level in summer season. Northern parts of Bhadgaon taluka have below 35 feet underground water level belt. This belt is spread among the Achalgaon, Vasantwadi, Mahindale, Balad (Khurd), Palaskhede and western part of Bhadgaon taluka few region came under this belt. In this area's farmers are taking only rainy season crops because of lack of water availability. If the water level is seeing upper layer but it is not saturated layer. It is not sufficient for irrigation purpose. So the farmers are not lifting to underground water in summer season that's why the underground water layer is found upper side.

Underground water layer of 35 to 45 feet is covered near about 25% area of Bhadgaon taluka. Anturli, Anjanvihare, Dhotre, Talband tanda, Walwadi (BK), Walwadi (Khurd), Rupnagar, Pendgaon, Adalse, Gudhe, Neware, Tandulwadi, Bhorteek, Kajgaon and Ghusardi villages are came under this belt. In this belt some farmers taking irrigational crops but this area is very less because of lack of water. It means less lifting of underground water; so the water level is looking upper side in this belt but there is not saturated storage of underground water.

Another major belt is 45 to 55 feet which is surrounded to central part of taluka. In this belt Bhatt gram, Bambrud Utran, Pimparkhed, Amadade, Nalbandi, Shivani, Bambrud, Juwardi, Kolagaon, Bahal, Lon Pirache, Sawade, Ghusardi, Bodarde, Nimbhore, Kothali, Wadgaon (BK) and Balad (Khurd) are included. This is highly agriculture area and mostly farmers are depending upon irrigation. They try to uplift underground water continuously. Cotton, Banana, Orchard, Vegetable and sugarcane are the major crops in this belt. So the water level is decreasing. Although this area is near of Girna and Titur River but due to high frequency of water lifting affects to underground water level and it goes deeper.

55 to 65 feet deeper underground water level belt of Bhadgaon taluka is the main cash crop area and it is highly populated. This area spreads surround the Girna river and cover by Sugarcane and Banana crops. These crops have need of irrigation in whole year except to rainy season. The farmers of this zone uplift water in whole year for purpose of irrigation and daily use. This zone is supplying drinking water to population of taluka. So the ground water level is decreasing highly. In this zone Tongaon, Karab, Wadhade, Pandharad, Bodarde, Picharde, Batsar, Lon Pirache and Bhadgaon head quarter are included.

Another 65 to 75 and 75 to 85 feet ground water deeper area is the core area of Bhadgaon taluka. This area is highly dense populated and agriculture area. Sugarcane and Banana are major the crops of this area. These crops are highly water demanded crops, so

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the farmers sucking continuous underground water for irrigation purpose and drinking purpose. Due to continuous water absorption the underground water level has decreased up to 85 feet from the surface area. Now days this area is facing the major problems of scarcity of underground water table. Every year this area are getting recharge by nearest Girna river but due to high absorption rate of underground water, the water table is gone on deepest level and it is very dangerous for future of Bhadgaon taluka.

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