

Peer reviewed Journal

Impact Factor:5.13

ISSN-2230-9578

# *Journal of Research and Development*

*Multidisciplinary International Level Referred Journal*

**February-2021. Special Issue-11, Volume-3**

***Physical and Human Dimensions of Environment, Climate Change, and Sustainable Development***

## **Chief Editor**

**Dr. R. V. Bhole**

'Ravichandram' Survey No-101/1, Plot  
No-23, Mundada Nagar, Jalgaon (M.S.)  
425102

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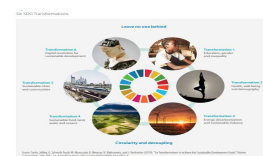
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## **Finding Locations for Continuous Contour Trenches in Indapur Tahsil, Dist. Pune (Maharashtra)**

**Dr. Phalphale A. K.**

Arts, Science and Commerce College, Indapur, Dist- Pune,

### **Introduction**

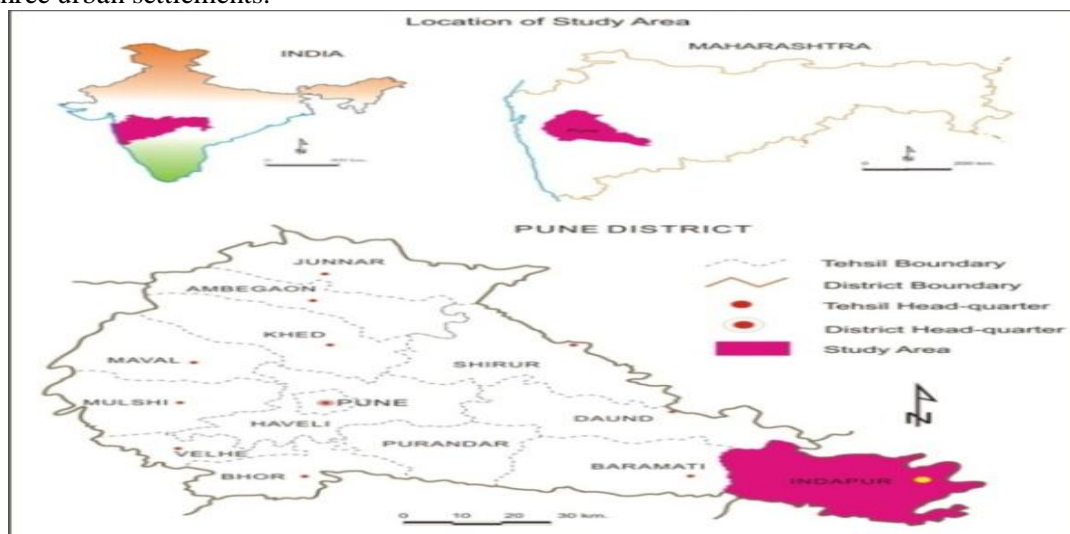
Water is vital to life, without which no living body can survive. Water is considered as prime natural resource, a basic human need and a valuable national asset. Water is core component of environment. Now days, there are many problems rises related to water quantity and quality. Water scarcity is also main problem because of over use of surface and ground water. So watershed management is the need not only for water conservation and soil conservation, but also has impact on food production and national economy. Continuous Contour Trenches (CCT) method is helpful to increase ground water level in the surrounding areas/ dug wells and tube wells which increases the yield of farms and water quality. This will also avoid loss of soil due to erosion; increase the grass coverage which will helpful for soil stabilization. This method can be adopted in low rainfall area to high rainfall area up to 3200mm and from flat area to hilly area with 65% steep slope. This method is suitable for plantation of all species and easy, simple for laborers and comparatively less record keeping. Indapur tahsil is one of the tahsils of rain shadow tahsil in Maharashtra. Average annual rainfall of Indapur tahsil is about 450 mm.

### **Origin of the research problem:**

Indapur tahsil is selected for the study of water resources. The choice and topic under investigation is influenced by many considerations. Firstly, researcher belongs to Indapur tahsil hence is familiar with the study region. Secondly, study region falls in drought prone region of Deccan trap of Maharashtra state receiving annual average rainfall between 400-500 mm. It is distributed unevenly in study region. Thirdly, irrigation is dominant factor in study region having considerable impact on water use in Indapur tahsil. Although main sources of water for study region is the rivers like Bhima, Nira and other tributaries, there is drought in some region of Indapur tahsil. Fourthly, this region has not been so far studied in depth for water analysis point of view by geographers. The main problem is that water source is abundant in the part of east and south of Indapur tahsil, whereas water sources is scanty in west and north side of Indapur tahsil. So we study the water resources in Indapur tahsil.

### **Location, Situation and Site**

Indapur tahsil is situated in Pune district. The northern and eastern border is demarcated by Bhima river in Pune and Solapur districts while southern boundary is confined by Nira River in Pune and Satara and Solapur districts. The west boundary is confined by Baramati and north boundary is delimited by Daund tahsil of Pune district. The region extends between 17° 53' to 18° 15' north latitudes and 74° 35' to 75° 8' east longitudes. The total geographical area of this tahsil is 1552.93 square kilometres having 3, 83,183 population (2011). This tahsil consists of 142 settlements and three urban settlements.



### **Objectives :**

1. To study the slope analysis and soil distribution of study area.

2. To find out sites CCTs for study area with the help of contour.

#### **Methodology:**

1. The data regarding relief, drainage, location of water resources and location of study area etc. is prepared with the help of Survey Of India(S.O.I.) toposheets with the scale 1:50000 and geological maps.
2. Use of GIS software to analysis water resources and find out CCTs location.

#### **Criterion used for mapping the CCTs Places**

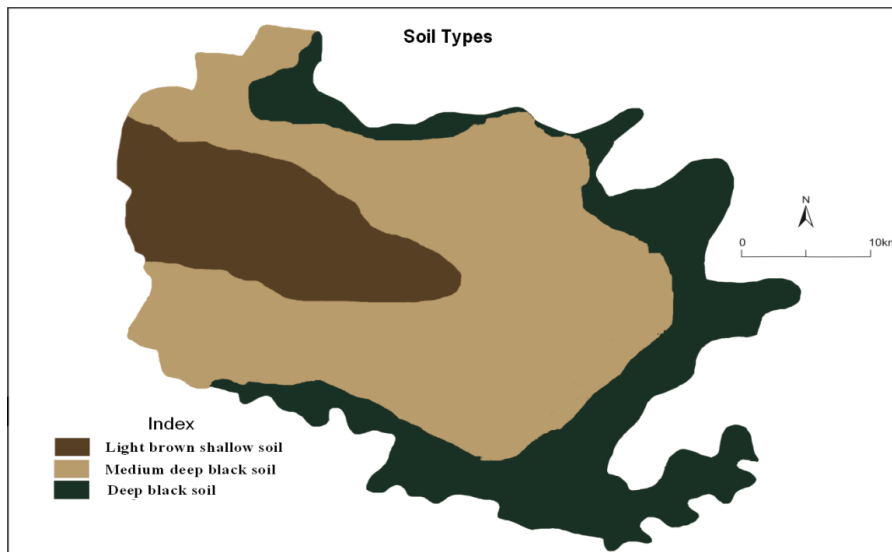
##### **Drought Prone Area**

Indapur tahsil is drought prone. But more than 50 % area is under irrigation. Eastern and southern part of tahsil is irrigated because of River Bhima and Nira. Areas having no other facilities than wells, tube wells etc. are selected for CCTs. About 22 villages are badly needed for CCTs for water conservation and irrigation. Rainfall is only source of water for irrigation. These villages are Lakdi, Nimbodi, Birngudi, Bori, Kazad, Kawathali, NikgaonKetki, Nurgude, Mhasobachiwadi, Tarangwadi, Sonmatha, Kalas, Vyahali and Pondhawadi.

##### **Types of soil**

Soil plays a key role in CCTs. The soil types exert influence on the percolation of water. Water percolation depends on soil texture, structure, thickness and colour. So we have considered the soil for preparation of CCTs. The soil of study region are derived from trap and it can be divided in three groups, namely, light brown shallow soil, medium deep black soils, and deep black soils. Deep black soil varies its depth and it appears along Nira left bank canal whereas the light brown soil is found in northern parts and has coarser in texture and shallow in depth. The black soil contains high moisture holding capacity.

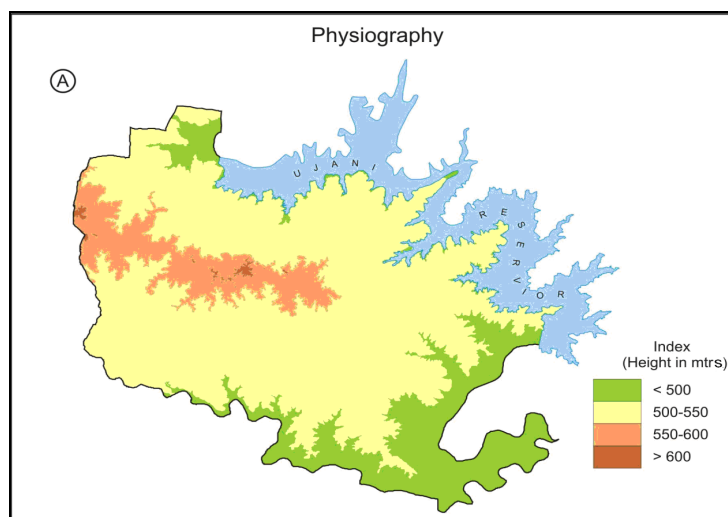
The areas where shallow light brown soilis present such areas are selected for CCTs due to more percolation capacity of soil. Such areas are Birngudi, Bori, Kazad, Kawathali, NikgaonKetki, Nurgude, Mhasobachiwadi, Tarangwadi, Sonmatha, Kalas, Vyahali and Pondhawadi.



**Fig 3.2 : Soil Map of Indapur Tahsil**

##### **Slope analysis**

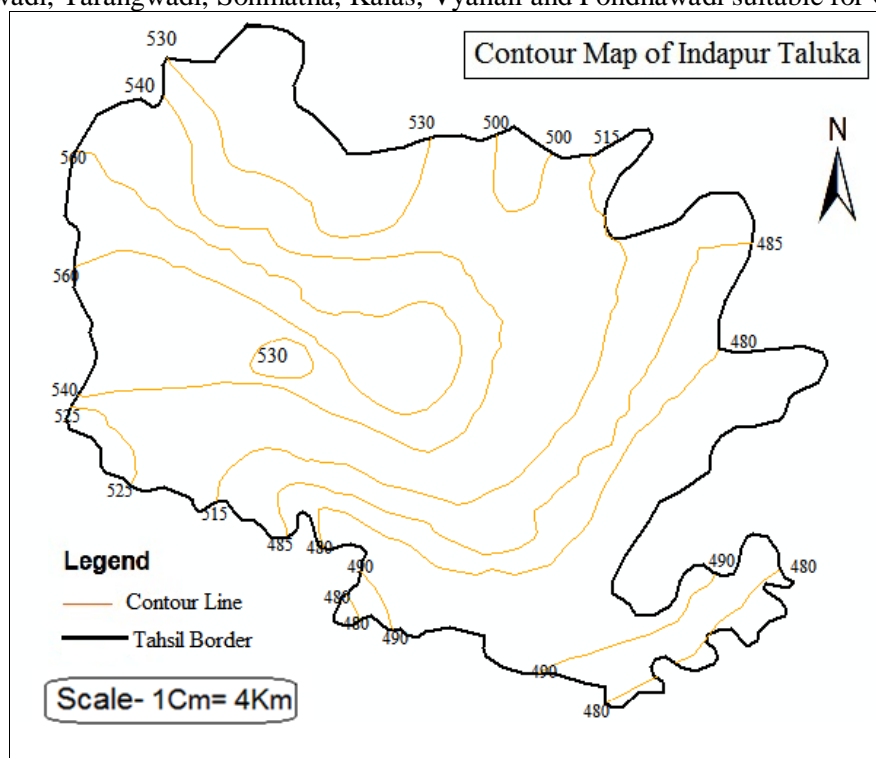
We have selected the areas for CCTs having slope of  $20^{\circ}$  to  $30^{\circ}$ . In Indapur tahsil, there are places like Sonmatha, Kalas, Vyahali and Pondhawadi where slope is more than  $25^{\circ}$ . Birngudi, Bori, Kazad, Kawathali, NikgaonKetki, Nurgude, Mhasobachiwadi, Tarangwadi etc. where the slope is less than  $25^{\circ}$ . According to slopes these area are considered for preparing CCTs.



**Fig 3.1: Physiography of Indapur Tahsil**

### Contour Pattern

Contour is a line which joins places of equal height. If the contour lines are much closed then slope is steep and if the distance between two contours is more than the slope is gentle. Therefore, contour map is considered for finding of CCTs sites in Indapur tahsil. With the help of contour map we found the places like Lakdi, Nimbodi, Birngudi, Bori, Kazad, Kawathali, NikgaonKetki, Nirgude, Mhasobachiwadi, Tarangwadi, Sonmatha, Kalas, Vyahali and Pondhawadi suitable for CCTs.



**Fig 3.3 : Contour Map**

### Conclusion

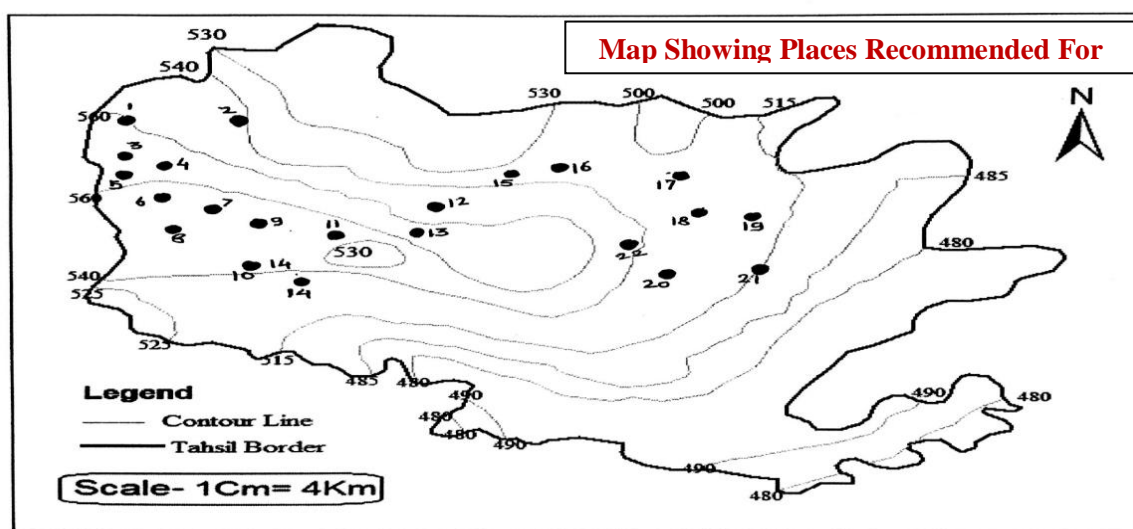
It is need of time to find out other sources of water and conserve every drop of water. CCTs are one of the techniques of conserving water.

For the purpose of finding locations of CCTs we have observed various factors affecting the contour location. These factors are slope of the land, soil type, soil texture, soil structures, contour pattern and area of water scarcity. After deep study of these factors we found different location for CCTs. These locations are as follow.



Site No.	Name of Villages	Site No.	Name of Villages
1	Shephalgadhe	12	Gosaviwadi
2	Pimple	13	Kalas
3	Lamjewadi	14	Lasurne
4	Nirgude	15	Rui
5	Mhasobachiwadi	16	Navhi
6	Lakadi	17	Karewadi
7	Shindewadi	18	Kauthali
8	Nimbodi	19	Pondkulwadi
9	Kazad	20	Nimgaonketaki
10	Bori	21	Tarangwadi
11	Birngudi	22	Vyahali

Table No. 1: Villages recommended for CCTs sites



**Fig 4.1 : Places recommended for CCTs**

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