

A STUDY OF THE ISSUES RELATED TO IRRIGATION IN THE RAHURI TAHSIL OF AHMED NAGAR DISTRICT OF MAHARASHTRA LOCATED IN MULA - PRAVARA BASIN.

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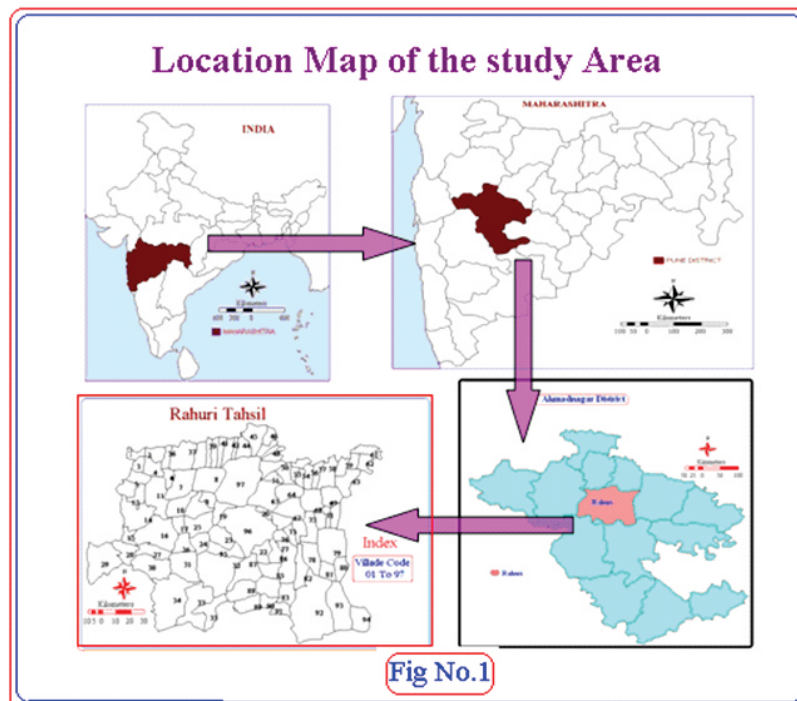
Abstract

The present study aims to understand the availability of water resources for the agriculture purpose in the Rahuri tahsil of Ahamadnagar district in Maharashtra. And to find out differential levels of irrigation development within the tahsil at a micro level by selecting the Rahuri tahsil as a study region. This kind of study has significance for future planning aiming at achieving inclusive growth. It would certainly be useful for planners, researchers and implementation agencies. Such studies can also exhibit a good example of utility of geographical studies for socio-economic development. The present paper focuses on the availability of water resources by both river Mula and Pravara. The tahsil are deprived of good irrigation facility in spite of region having located in between two river basins that is Mula and Pravara.

Key Words: Planning, Basin, Net Sown Area, Irrigation, . Drainage Pattern.

1. Importance of the Study:

The present study aims to understand the availability of water resources for the agriculture purpose in the Rahuri tahsil of Ahamadnagar district in Maharashtra. and to find out differential levels of irrigation development within the tahsil at a micro level, by selecting the Rahuri tahsil as a study region. This kind of study has significance for future planning aiming at achieving inclusive growth. It would certainly be useful for planners, researchers and implementation agencies. Such studies can also exhibit a good example of utility of geographical studies for socio-economic development.



Arjun H. Musmade.

2. Study Area:

The Rahuri Tahsil of Ahmadnagar district in Maharashtra state has been selected for the present work. The tahsil comprises of 95 villages and two urban centers spread over an area of are 100868 hectares (1,008 sq. Km). The absolute geographical location of the study area can be expressed as from 19° 15' N to 19° 34' N latitude and 74° 23' 30" E to 74° 50' E longitude. Rahuri tahsil lies in the rain shadow zone of the Western Ghats in the middle of Pravara and Mula basin. About 45 % of the net Sown Area (NSA) is under irrigation which provides the base for establishment of two sugar factories and 14 chilling plants with a good network of dairy collection centres.

The population of the tahsil according to the 2001 census is 295093 with about 51.70 % as male and 48.30 % as female population. According to the provisional figures of 2011 census the total population of the tahsil increased to 325932 with decadal growth of 10.45 %.

The Rahuri tahsil is bounded by Rahata tahsil on the north, Nagar tahsil on the south, Nevasa on the east and Sangamner and Parner tahsil on the west, of the same district.

Key words: Topography, slope, Soils, drainage, irrigation, position, drinking water

3. The objectives of the study:

1. To study the physiographic profile of the Rahuri tahsil, district Ahmadnagar.
2. To study the soils profile of the Rahuri tahsil, district Ahmadnagar.
3. To understand the drainage pattern in the study area.

4. Physiography:

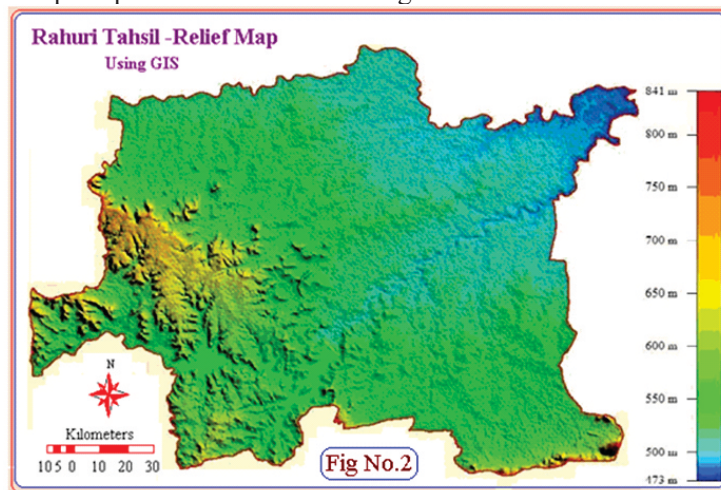
The physical factors directly or indirectly affect the distribution, density and economic activities of the population. The physical factors like topography, drainage, climate, soil, vegetation and water resources are important. These factors are discussed in the following paragraphs.

4.1. Topography:

Rahuri tahsil is in the middle part of the Ahmadnagar district. The relief Pattern of tahsil has immense variety. The tahsil is covered with the mountains, small hills, and plateau and reverie plains created by Mula, Pravara and Dev rivers. The tahsil can be divided in the three parts, the map (fig No.2.4 and 2.5) shows the elevation and contour pattern of the tahsil.

1. Baleshwar ranges from Sahyadri in the south-west part of the tahsil with the height of 580 to 740 meters from the mean sea level.
2. Middle part of the tahsil has a gentle slope with a height of 500 to 540 meters from the mean sea level.

Northeast and eastern plain part of the tahsil with a height of 500 meters from the mean sea level.



Arjun H. Musmade.

The slopes of the study region are from southwest to northeast and towards the north in northern part of the tahsil. Generally, the western part of the tahsil is hilly and the eastern part is a plain area. Relief features are shown in the map (Fig No.2). It gives the broad idea of the hilly regions and plain area in Rahuri tahsil. The western part and small area from southeast corner of the tahsil shows rugged topography having altitude above 700 m. It is mainly the foot hills of Sahyadri. Baleshwar ranges are the foot hills of Sahyadri, which is run on the entire western part of the tahsil. The altitude of this Baleshwar hilly area is 580 to 740 meters from the mean sea level. The small part of the south east corner of the tahsil covered by Dhumalya Dongar. Dhumalya Dongar is a border between Nagar and Rahuri tahsil. Ghodekar Dongar, Masale Dongar, Viralwadi Dongar. Mahadev Dongar and Vankada hill have covered the western part of the tahsil. Mula Reservoir was built in these hilly regions. Devi Dongar, Mahadev Dongar and Malle Dongar are surrounded by plain the area. (According to Indian Topographical map-sheet (47 I/6, 47 I/7, 47I/10, 47 I/14, 47 I/15, 47I/16,56 D/11).

4.2. Soils:

It has been agreed by the scholars that the soils in any area are the product of factors such as parent material, climate, vegetation, human activities etc. together with the time factor. In the study area, all these factors contribute greatly to form different types of soils. Agriculture being the major economic activity and source of living of the people in the area, the type of soil influences if not wholly but partly, the living standard and the degrees of human resource development in the area.

The soil of the area in general is derived from weathering of basalt rocks, predominant in the area and it can be further classified into the following three parts.

- 1) Coarse Black.
- 2) Medium Black.
- 3) Yellowish Brown (Barad)

1) Course Black soil:

This type of soil predominantly is seen in the entire northern strip of the tahsil and to the east and the centre of the tahsil. Viz. Satral, Northern part of Deolali and entire Taklimiya and Vambori Circle. The appearance of the soil is blackish dark brown to grayish black. The depth of this soil varies from five to fifteen feet. This type of soil has good fertility and has very high moisture retaining capacity. The coarse black soil has high humus and hence is ideal for cultivation of various crops such as wheat, soyabean, sugarcane etc. The soil along the bank of rivers Mula and Pravara are extremely fertile. It is reddish sandy loam and is admirably suited for horticultural and garden crops. The soil is also suitable for cultivation of crops like groundnut and cotton.

2) Medium Black soil:

It is medium black in colour. The soil soaks easily but has less moisture retaining capacity as compared to coarse black soil. This type of soil is found in the western and southern part of the tahsil. Viz. the villages such as Baragaon Nandur, Waghacha Akhada Takalimiya etc. in the central part of Rahuri circle. The soil is considered suitable for cultivation of cereals and pulses such as jawar, bajra, gram, tur, moong and math etc.

3) Yellowish Brown (Barad) soil:

This type of soil is found in the western part of the tahsil and in the hilly area. Viz. the villages like Tahrabad, Mhaisgaon etc. in the western part of Rahuri circle. Locally, such type of soil is known as Barad soil. This soil is devoid of or deficient in nitrogen, phosphorus and organic matter. The productivity in such soils ranges between low to very low levels. Only crops that can sustain large breaks in monsoon like bajara, hulga, math etc. can be grown. The productivity is low and varies from year to year depending upon the rainfall and its distribution.

4.3. Drainage:

Drainage is one of the important factors in the physiographic study. A detailed idea of the

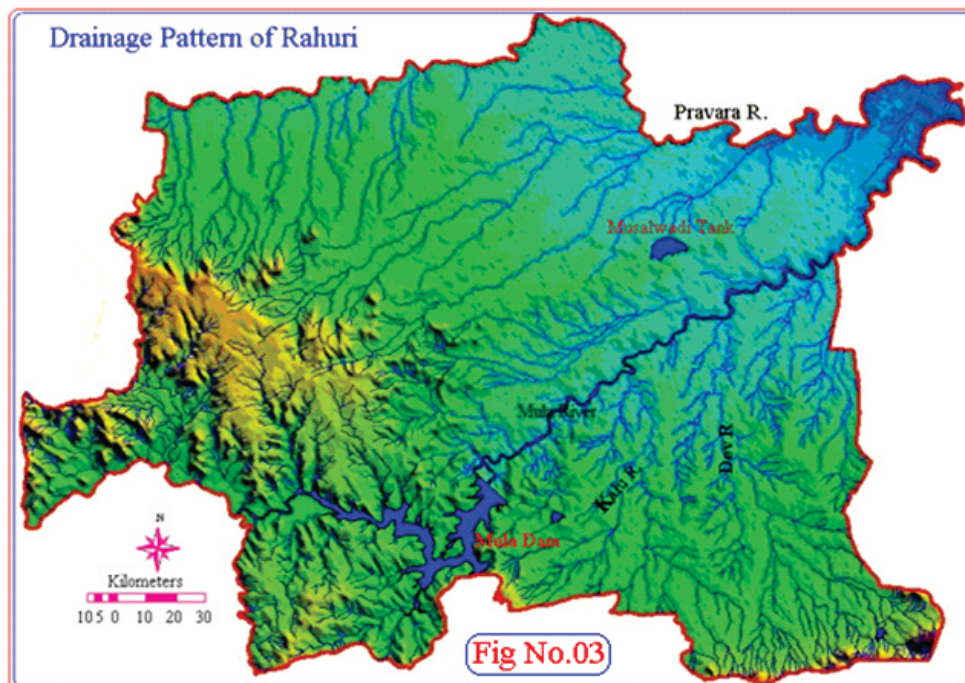
Arjun H. Musmade.

drainage pattern is essential in the study of population, because drainage pattern affects on the origin of the settlement. Drinking water proximity is one of the basic needs of settlement. Irrigation and distribution of water resources are totally dependent on the drainage pattern, considering the above facts, it is essential to study the drainage pattern of the study area. The origin of most of the rivers in Rahuri tahsil is outside the study area. Mula, Pravara, Kalu, Dev and Karpara are the main rivers in the Rahuri tahsil.

a) Mula River:

Mula River originates in Harischandragad range and flows towards the east. Mula River is the border between Parner and Rahuri tahsil. Kalu and Kapri are the main tributaries of Mula River. Kalu Nadi originates in Parner tahsil and flows towards north and joins Mula River on the west side of Tarawadi village from right side. Kalu River in the tahsil is only 11 Km. Kalu forms the west side border of Rahuri and Parner tahsil. Kapri Nadi originates in Parner tahsil and flows towards the north and joins Mula river right in the Mula reservoir. Mula dam (with 2600 TMC capacity) constructed on Mula river near village Baragaon Nandur. Almost 60 percent of the irrigation in Rahuri tahsil is through Mula dam and its canals. The length of River is 74 Km and the length beyond Mula reservoir is 38 Km. the river flows towards northeast and forms border between Rahuri and Newasa tahsil.

In the south-east part of the tahsil, Karpara and Dev are the main streams. These originate in Dhumalya Dongar and flow towards the north. Dev Nadi joins river Mula near the village Deshwandi. River Karpara joins Mula River near the village Shilegaon. The length of Karpara River in the tahsil is 22 K.ms and the length of Dev Nadi in the tahsil is only 18 K.M. Dev nallah and Lendi nallah are also important in south-east part of the tahsil. They originate in Dhumalya Dongar and join Karpara River. All these streams are seasonal and flow only in the rainy season. The (Fig No 03) shows the drainage pattern of Rahuri tahsil.



Arjun H. Musmade.

b) Pravara River:

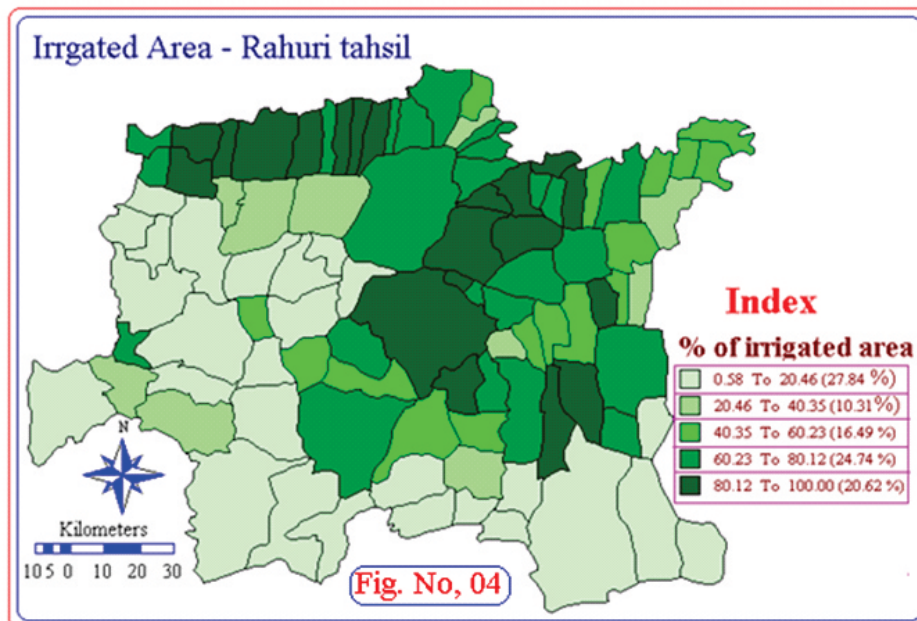
Pravara is the second major river in the drainage pattern. River Pravara originates at Harischandragad near Kalsubai peak (1646 meters) in Akole tahsil. The river forms the entire northern border of the tahsil. The total length of the river in Rahuri tahsil is 62 Km. Bhandardara dam is constructed on this river in Akole tahsil. Irrigation of the northern part of the tahsil is mostly dependent on this dam. There is one reservoir near Musalwadi village. It is filled by water from right bank canal of Bhandardara dam. In the northern part of the tahsil, small streams originate in Devi dongar, Mahadev Dongar and Malle Dongar these streams flow towards the north east and merge with Pravara.

4.4 Irrigation:

Irrigation is a basic determinant of agricultural production because its inadequacies are the most powerful constraints on the agricultural production in the dry land farming regions, (Dillon, 1973). Ranking the level of development of agriculture in a village in terms of the extent of irrigation, (Reddy, 2010). Also, it can be added that irrigation is the major input in the agricultural practices. It improves the cropping intensity and agricultural production, Aher (2006), Magare (2010).

Rahuri tahsil has a total of 70,393 hectares of net sown area, out of which an area of 32340.4 hectares is irrigated. This means that 45 % of the net sown area is irrigated. In addition to the surface wells, tube wells and bore wells, the major irrigation is provided by the two dams, namely the Dnyaneshwar Sagar dam on the Mula River near Baragaon Nandur, which was commissioned in the year 1974. The dam is situated at the height of 616 meters from the mean sea level. The water storage capacity of the dam is 26000 TMC (Thousand Million Cubic) feet. The dam supplies water to the Mula right bank canal and Mula left bank canal which are the main source of irrigation for farming in the area (Aher, 2006). The length of these canals in the tahsil is 22 km. and 23 km respectively. The forty two villages in the tahsil are benefited from these canals. The map (Fig No.4) is showing the villagewise irrigated area in the percentage.

In 1921, the Bhandaradra dam was built on the river Pravara. The dam is the source of water to the Pravara right bank canal. The length of this canal is 45 km, in the tahsil; the canal irrigates mainly the northern part of the tahsil.



Arjun H. Musmade.

Table No. 1
Irrigation in Rahuri Tahsil

Sr. No	Percentage of Irrigated area	Number of Villages	Percentage of Villages in Range
1	00 To 25.00	29	29.89
2	25.00 To 45.00	12	12.38
3	More than 45.00	56	57.73

The table (Table No.1) and the map (Fig No.4.), shows villagewise proportion of irrigation to the net sown area. Out of 97 settlements in the tahsil, 29 villages have irrigated area of less than 25 % of the net sown area. The range is 0.58 % to 24.54 %. Under this category, village Varshinde has the lowest irrigation proportion at 0.58 % and the highest in the range is village Khadambe BK. In the next category i.e. 25 % to 45 % i.e. up to the limit of an average irrigated area in the tahsil, there are 12 villages. The range starts with village Mhaisgaon with 26.24 % irrigation to village Tilapur having the irrigation facility at 44.04%. The rest 56 villages have irrigation facility of more than 45 % i.e. higher than the average for the tahsil. The range includes the village Valan with the irrigation facility of 45.83 % of the total net sown area to the village Takalimiya at 99.24 % and finally the village Trimbakpur which boasts of 100 % irrigated area out of the total sown area in the village

5.5. Finding

1.Position of the study area:

Rahuri tahsil has a population of 325932 according to the census of 2011 census (provisional), which ranks fourth in the district. The urban population of the tahsil is 21.36 percent and the rural population is 78.64 percent. So far as the geographical area is concerned, the tahsil stands 11th (1,008 sq. km.) in the district. The total work participation (49.96 %) is more than the district (45.96 %) and the state (42.05 %). The population growth during the decade ending 2011 has been 10.45%. The proportion of the marginal workers in the tahsil is 8.6 %. It is higher than the district (6.09 %) and the state (6.63 %). The higher proportion of the marginal workers indicates insufficient employment opportunities in the tahsil.

2 Physiographic profiles:

The geographical aspects related to the physiographic, climatic, soil, vegetation and water resources suggest that there is a great deal of spatial disparity within the tahsil. The topography of the tahsil can be divided into the three parts i.e. the south west hilly region, the middle part with gentle slope and the north east and eastern plain area of the tahsil. The relief pattern of the tahsil is diverse showing its roots in the Western Ghats. The tahsil has hilly terrain, plateaus and plain. Human development coincides with the terrain characteristics. For example, backward villages are located in hilly terrain while, towns and developing villages are in the riverine flood plains of Pravara and Mula. Even though the dam is located in the south west part of the tahsil, it is deprived of its benefits due to the hilly region and hence, the area has remained with lower level of the human resource development. The northern and the eastern part of the tahsil have rich soil and better irrigation facility. Due to immense variety of the relief pattern, the size of villages shows a wide range of variations depending upon the natural and topographical factors.

3. Irrigated Area:

The irrigation facility for agriculture in the tahsil shows a wide range of variation among different villages. The average irrigated area of the tahsil has been 45 % NSA. There are 56 villages

Arjun H. Musmade.

(57.73 %), which enjoy more than the tahsil average. On the other hand, 29 villages (29.89 %) have less than 25 % of the irrigated area. This means that the villages from the tahsil are deprived of good irrigation facility in spite of region having located in between two river basin that is Mula and Pravara.

4. Drinking water facility:

Out of the 95 villages of the tahsil, 18 villages have good facility of drinking water. About 41 villages have a fair source of drinking water and the rest 34 villages have poor drinking water facility. This means that the villages are deprived of good drinking water in spite of having two dams.

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