

Spatial Analysis of Rainfall Pattern and Wells Irrigation Density in Nashik District Maharashtra

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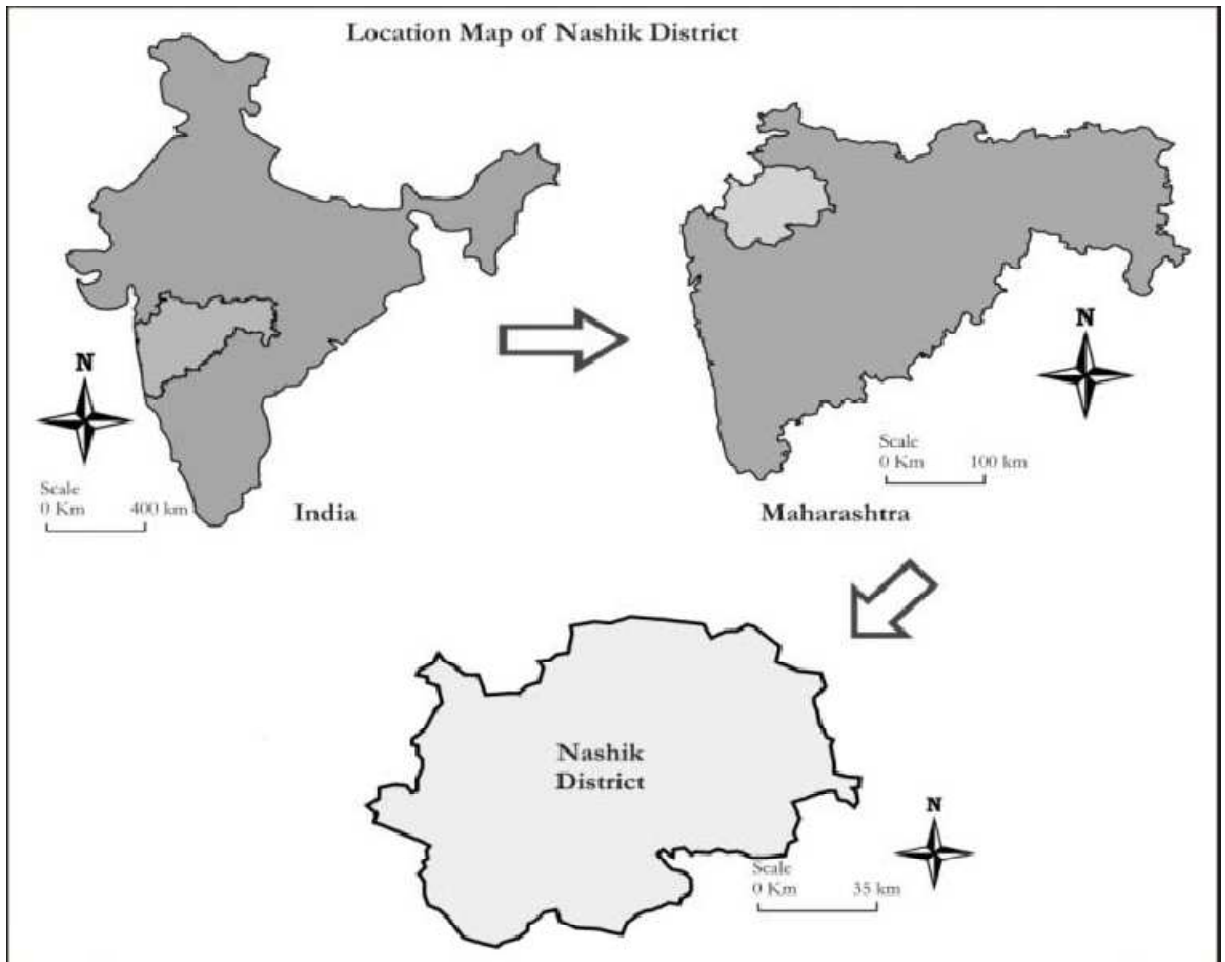
Abstract

Agriculture is one of the most important activity of man it's concerned as one of oldest and most important of all economic activates. Now a day's agriculture has become the world most important industry. Water is the most important resource in agriculture development. Irrigation is the artificial application of water to promote growth of crop from different sources such as rivers, lakes, wells etc. Nashik is one of the district of Maharashtra state having very less and uncertain rainfall. The necessity of irrigation is determined by the amount of rainfall received during the period when plant required water. Demand for irrigation depend on spatial and seasonal distribution of rainfall. Well irrigation is oldest indigenious method of irrigation. Wells irrigation largely suitable for individualfarmer where in water lifted by a 'MOT' worked out by bullocks. Nowadays these 'MOT'are replaced by oil engine and electric motors. In present attempt to analysis the relationship between rainfall distribution and wells irrigation in Nashik district

KEYWORDS-Irrigation, Agriculture, Wells, Rainfall, Wells Density, Rainy Days, Intensity of Rainfall

STUDY AREA –

Nashik district is situated partly in the upper Godavari river basin and partly Tapi river basin. It lies between 19⁰ 33' to 20⁰ 53' north latitude and 73⁰ 15' to 75⁰ 16' east longitude. Nashik district has an area of 15530 sq.km and population of 6,107,187 as per the 2011 census. There are 15 Tahsil were included in the Nashik district. The main system of Sahyadries Mountain which run north-south in western portion of the district. The district surrounded by Dhule district in the north Jalgaon and Aurangabad district in the east, Ahmadnager district in the south and Thane district in the south- west and Gujarat state in the North West. The climate of the district is generally dry expect during the monsoon season the average annual rainfall of the district as a whole is 915.9 mm.



OBJECTIVES-

The main objective of the present paper are as follows-

1. To study the geographical setting of the study region
2. To analyses the rainfall pattern and intensity of rainfall of the study area.
3. To analyses the wells irrigation density of the study area.
4. To analysis relationship between rainfall pattern and wells density in study region

DATA SOURCE AND METHODOLOGY.

This study is based on secondary data and field work. The required statistical information is obtained from census handbook the record of the local bodies' statistical department Government of Maharashtra, meteorological department as well as field survey. The collected data was processed edited and analyzed by applying different statistical method and it's presented though tables maps. The rainfall intensity is calculated by using monkhouse and wikison formula (1971)

$$I = \frac{A}{N}$$

I= Intensity of rainfall

A= Total rainfall given period

N= Number of rainy day

The wells density are calculated by using following formula

$$\text{Wells Density} = \frac{\text{Number of wells}}{\text{Toatal area}}$$

RESULT AND DISCUSSION

Rainfall distribution and rainfall intensity in Nashik District

Sr.No	Name of tehsil	Rainfall(MM)	No.of rainy day	Rainfall intensity
1	Nashik	568	45	12.62
2	Peth	1832	78	23.48
3	Dindori	568	50	11.36
4	Surgana	1815	86	21.10
5	Kalwan	480	35	13.72
6	Baglan	552	30	18.40
7	Malegoan	396	28	14.14
8	Chandwad	552	38	14.52
9	Nandgaon	471	28	16.82
10	Yeola	434	38	11.42
11	Niphad	584	34	17.17
12	Sinnar	429	37	11.59
13	Igatpuri	3030	106	28.58
14	Trimbakeshwar	1642	81	20.27
15	Deola	486	30	16.2
	Nashikdistrct	915.9	49	18.69

(Source-Nashik District statistical abstracts)

The amount of rainfall clearly reflect the influence of topography its uneven areal and seasonal distribution. The south west monsoon commences by about the first week of June and the rain continue till about the beginning of October. The average rainfall for the Nashik district is 1034.5mm. The rainfall distribution of Nashik district are divided into three zone. The western zone like Surgana, Peth, Igatpuri and Trimbakeshwar Tahsil are heavy and assured rainfall. The annual rainfall of this tehsil are more than 1800mm because sahyadryi mountain area. The central part of tehsil like Dindori, Kalwan , Baglan, Nashik and Chandwad tehsil are moderate rainfall. The annual rainfall of this tehsil are 400mm to 650 mm. eastern part of district like Deola, Nandgoan, Yeola, Sinnar and Malegoan tehsil are less rainfall area. The annual rainfall of this tehsil are less than

400mm. generally the rainfall distribution of Nashik district is rainfall decrease for western part to eastern part.

The tern rainfall intensity means the rate of at which rainfall in a twenty four hours period. The average rainfall intensity of Nashik district is observed 18.69mm. The highest rainfall intensity is observed for 28.58 mm in Igatpuri tahsil and lowest rainfall intensity observed for 11.36 in Dindori tehsil. Generally more than 20 mm rainfall intensity recorded to Igatpuri, Peth, Surgana and Trimbakeshwar tahsil in Nashik district. The average rainfall intensity recorded to Nashik (12.62mm) ,Kalwan (13.72), Baglan (18.40), Malegoan (14.14), Yeola (17.17) and Deola (16.2).

Wells Density in Nashik District

Sr.No	Name of tehsil	No of wells	Area km.	density
1	Nashik	12098	588.79	20.54
2	Peth	425	572.98	0.74
3	Dindori	16684	1400.25	11.91
4	Surgana	299	847.28	0.35
5	Kalwan	9212	874.81	10.53
6	Baglan	22691	1479.28	15.33
7	Malegoan	13948	1832.29	7.60
8	Chandwad	8932	962.23	9.28
9	Nandgaon	7795	1082.04	7.20
10	Yeola	3560	980.60	3.63
11	Niphad	30370	1140.40	26.63
12	Sinnar	24494	1360.89	17.98
13	Igatpuri	1052	825.29	1.27
14	Trimbakeshwar	1291	886.67	1.45
15	Deola	9021	559.50	16.10

(Source-Nashik District statistical abstracts)

The physical setting of the well in general is governed by the topography and also by the behavior of ground water as a result tehsil level distribution of wells per 1 sq.km of cultivated area varies much. The high density of wells observed for 26.62 per 1 sq.km Niphad tehsil and low density observed for 0.35 per 1 sq.km in Surgana tahsil. The zone of high density of wells is observed in the Niphad, Nashik, Sinnar tahsil in Nashik district. Otherwise moderate density of wells are found in Dindori. Baglan, Kalwan, Deola, Chandwad, and Malegaon tehsil and low density of wells are observed in Surgana, Peth, Igatpuri and Trimbakeshwar Tahsil in Nashik district. Generally the density of wells is increase to western part to eastern part of Nashik district.

CONCLUSION

The rainfall distribution, number of rainy days and intensity of rainfall are directly influenced by wells density in Nashik district. The western part of Nashik district like Sargana, Peth, Jagatpuri and Trimbakeshwar tahsil have high rainfall, more rainy days and high intensity of rainfall are affected to low density of wells. Because availability of surface water like nala, river and tank are provided sufficient supply of agriculture purpose. Farmer of this region does not need for used underground water. Surface water provided there agriculture need. Central and eastern part of Nashik district have decrease rainfall pattern, less number of rainy days and low intensity of rainfall are influence more amount of wells density because less availability surface water. Farmer of this region try to used underground water and increase density of wells irrigation. Wells irrigation play importance role for agriculture development in Nashik district. Generally rainfall distribution, number of rainy days and intensity of rainfall decrease for western part to eastern part and otherwise wells density increase for western part to eastern part of Nashik district. Thus rainfall play importance role for density of wells irrigation.

REFERENCES.

1. Government of Maharashtra- Gazetteer of Nashik district.
2. Kulkarni, D.G.(1970)- People and irrigation. pp 20-23
3. Misra, R.P (1968)- Diffusion of agriculture Innovation pp 1-3
4. Hussain, M (1979) – Agricultural Geography, Rawat Publication, New Delhi. Pp44-67
5. Socio-economic abstract of the Nashik District. pp 62 & pp 74
6. www.nasik.nic.in