

Deforestation and Rainfall Characteristics of Nashik District in Maharashtra



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Introduction:

It is well known that man survives only by plundering the resources of nature. Land is nature's ubiquitous resource and from time immemorial, man has been an unabashed exploiter of land and its immense resources. Past experiences reveal that wherever and whenever the yields from land and natural resources are depleted civilizations crumbled in the face of avaricious denudation of forest and the concomitant malafide effects like erosion, sedimentation and the eventual drying up of water supplies set in. All these naked facts show how man's destiny is bound to land. Today man lives an era of programs bristled with countless problems. Owing to rapid economic advancement, much inestimable harm has already been done unwittingly by man to the natural wealth. For example, the most precious forest land has been put to otherwise. Plant and animal species has been ravaged human being put in danger to wealth and survival of generation yet to come. So, the finite resources like land and water must be used judiciously.

It is estimated that per capita availability of land declined from 0.48 hectare in 1951 to 0.26 hectare in 1981. It is a sad commentary that the coverage of forests in India has been shrinking by 1.5 million hectares per year. This is because of inexplicable pressure of human population growth in geometric ratio and occupancy of forest land for other purposes.

Study Area

Nashik is the third largest district of Maharashtra having a total geographical area of 15530 sq. km. It lies between 19° 35' 18½" north to 20° 53' 07½" North latitude and 73° 16' 07½" east to 74° 56' 22½" East latitudes. Physiographically, Nashik district comprises of a part of a Deccan Plateau, one of the oldest originated blocks of the earth surface. The district may be broadly divided into three geographical regions, viz, a) the downghat konkan tract; b) the Girna basin and c) the Godavari basin. The soils of the district are essentially derived from the Deccan Trap which is the predominant rock formation of the district. The soil formation is mainly

affected by the climatic condition and topography. In the western part of the district (i.e. downghat konkan track) soils have developed under humid conditions, with some laterite soils being observed at higher altitudes of the hills. The soils in Godavari, Kadva and the upper reaches of the Girna and Mosam valley are quite deep and fertile. The soil in the rest of the district is undulating and susceptible to erosion. Light shallow soil is found on hill slopes and very coarse soils at higher elevation. The district is mainly drained by three major rivers, viz. a) River Godavari b) River Girna and c) konkan Rivers. The climate of the district is generally dry except during the south-west monsoon season. The average annual rainfall for the district as a whole is 1035.5mm. Within the district there are considerable variations. The rainfall in general decrease as one proceeds from west to east. Temperature begins to increase rapidly from the later half of February. May is the hottest month with the mean daily maximum temperature 40.6°C at Malegaon and 37.4°C at Nasik. December is the coldest month with the mean daily minimum temperature 11.3°C at Malegaon and 10.2°C at Nasik. Agriculture is the chief support of the economy of the district and supports the population of 4987923 (2001 census).

Objectives This paper is an attempt to study the relationship between deforestation and rainfall characteristics of Nashik district in Maharashtra.

Database and Methodology The secondary data was prime source in this paper. The information regarding landuse pattern have collected from district planning officer and rainfall figures were taken from district statistical planning office, Nashik district. The suitable cartographic technique was adopted to depict map to find out relationship between deforestation and climatic characteristics for Nashik district in Maharashtra.

Forest Wealth The more predominant and more conspicuous landscape of the district is the distribution of forest on the hilly areas. During the early period the forests were very thick and dense and become the

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permanent home for wild animals. But they are gradually destroyed by human interposition. In 19th century the forest were counted as the privet property of 'Rajas' 'Kings' and several local 'Zamindar' and they used the forests according to their needs. After

independence due to reorganization of states and districts on linguistic basis, some forests were also included in Nashik district in addition to places from neighboring state of Gujarat, with a separate administration and accordingly they were categorized as 'Reserved forest', Protected forest, Ex-estate Forests etc. They mercilessly destroyed the wild animals for food and pleasure and consequently there is a gradual decrease in the forest areas too. Soon after independence different political parties which are in power allot the forest land for landless poor for housing and cultivation, and hence there is also a gradual decline in the forest land. Gross injustice has been done for forest wealth as they were mercilessly used for food, fuel and timber. As there is no separate grazing land for the cattle they become the permanent grazing land for the cattle. The percentage of forest land to the total geographical area is not so better and it accounts for 17.88 percent which is slightly higher than the state average of 17.25 percent.

Table-1 depicts the landuse pattern of Nashik district. From this table, it can be discernible that during 1980-81, the arable land accounts for high percentage (54.46) than any other land which is otherwise put to in the district. The forest land accounts for 21.56 percent, non-cultivable land accounts 5.68 percent while pasture land accounts 10.69 percent leaving 7.34 percent for fallow land. During 2004-05 there has been a substantial change in the landuse. Forest area has

Table-1: Landuse Pattern in Nashik District

Sr.No.	Landuse Type	Area in Hectares		% of each Geographical area		Landuse
		1980-81	2004-05	1980-81	2004-05	
1	Arable land	845709	850111	54.46	54.74	+0.28
2	Forest land	334859	277679	21.56	17.88	-3.68
3	Non-cultivable land	88200	179481	5.68	11.56	+5.88
4	Pasture land	170254	122888	10.96	7.91	-3.05
5	Fallow land	113972	122835	7.34	7.91	+0.57
District Total		1552994	1552994	100	100	

(Source: Nashik District Socio-Economic Abstract) percent and consequently there is an increase in the arable land (54.74 percent), non-cultivable land (11.56 percent) and fallow land (7.91 percent) in the district. The above figures of comparison reveal the fact that the landuse/landcover of the area is changing rapidly due to the human interventions. The forest and pasture lands have been cut for arable land, transportation-communication and settlements.

Volume of Change in Forest Land It is transpired from Table-1 the overall forest land in the study area has been decreased from 21.56 percent in 1980-81 to 17.88 percent in 2004-05. Total tahsils in the study area

there is a substantial negative change (decrease) of forest area. The spatial pattern of increase/decrease is shown in Table-2. It is observed that there has been a substantial decrease in forest area in the district which underscores the need for active afforestation by established ecological balance.

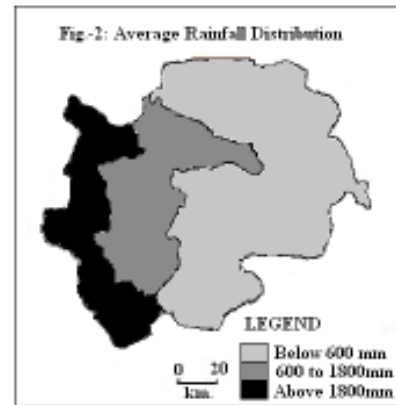
Rainfall Characteristics

To examine the relationship between deforestation and rainfall occurrence in the district the rainfall data from 2000 to 2004 have been shown in Table-3 Though average rainfall of the district is between 2600 and 3000 mm, there is wide variation in the rainfall received at various tahsils in the district (Table-3). Most of the

b e e n
decreased
to 17.88
percent as
well as
pasture land
decreased
to 7.91

Table-2: Tahsilwise Distribution of Forest Land

Sr.No.	Tahsil	% of Forest land to Total Geographical land		Change
		1980-1981	2004-2005	
1	Nashik	1.13	0.06	-1.07
2	Peth	2.94	1.7	-1.24
3	Dindori	1.46	1.4	-0.06
4	Surgana	2.88	2.78	-0.1
5	Kalwan	2.21	2.04	-0.17
6	Satana	2.88	1.12	-1.76
7	Malegaon	2.48	2.48	0.00
8	Chandwad	0.62	0.57	-0.05
9	Nandgaon	1.64	1.59	-0.05
10	Yeola	0.87	0.38	-0.49
11	Niphad	0.07	0.07	0.00
12	Sinner	0.91	0.88	-0.03
13	Igatpuri	1.46	0.13	-1.33
14	Trimbak	---	2.17	---
15	Deola	---	0.51	---
District Total		21.56	17.88	-3.68



(Source: Compiled by the Author)

rainfall received from June to September.

Table-3: Tahsilwise Rainfall in Nashik District (in mm.)

Tahsil	2000	2001	2002	2003	2004	Average
Nashik	767.5	619.7	812.2	855.4	986	613.4
Peth	1232	1660.5	1771.9	2069.2	2584.7	2278.6
Dindori	536	463	866.7	741.5	1074	697.6
Surgana	1109.5	1524.7	2043.6	1887	2451	1807.2
Kalwan	311	481	868	615	869	625.5
Satana	321	374.7	597.7	514	666	424.7
Malegaon	408.6	630	535.8	360.3	605.2	471.9
Chandwad	463	515	697.7	364	720	570.6
Nandgaon	696	340	553	323	454.4	524.5
Yeola	496.5	471	440.4	286	726	488.5
Niphad	538	463.6	671.6	498	985.7	481.7
Sinner	554.7	383	436	665.8	629.8	516.8
Igatpuri	2072.6	2972	2844.3	3508.2	3835	3442.1
Trimbak	1477	1799.3	2119.7	2253	2459	2278.6
Deola	405	436.5	367	299	434.8	625.5

(Source: Internet)

The main features of spatial distribution of rainfall are as below;

- 1) Highly concentrated area of rainfall where more than 1800 mm rainfall is found in the western part of the district.
- 2) Moderate concentration of rainfall having 600 to 1800 mm rainfall area is observed in four tahsils in the district, and,
- 3) Low concentration of rainfall where below 600 mm rainfall is observed in seven tahsils. Fig.-2 displays the spatial distribution of annual rainfall in the district. The major

concentration of rainfall is in the western part of the district where more than 1800 mm rainfall area in four tahsils. 20 percent of the total geographical area (3105.9 square km.) of the district receives more than 1800 mm rainfall. The tahsils namely, Igatpuri (3442.1mm), Trimbak (2278.6mm), Peth (2278.6mm) and Surgana (1807.2mm) in the district. Satana (424.7mm) in the district. 60.7 percent of the total geographical area (9426.8 square km.) of the district receives less than 600 mm rainfall.

Conclusion

Over several years there has been a strong belief among geographers and environmental scientists that deforestation drastically changes climate. Trees have been felled indiscriminately to meet the demand of firewood, industrial raw material and extension of arable land etc. Nashik district in Maharashtra is no more an exception where active deforestation is one of the root causes for the vagaries of rainfall. The major concentration of rainfall is in the western part of the district where more than 1800 mm rainfall area in four tahsils. 20 percent of the total geographical area (3105.9 square km.) of the district receives more than 1800 mm rainfall, while 19.3 percent of the total geographical area (2997.3 square km.) receives 600 to 1800 mm rainfall and 60.7 percent of the total geographical area (9426.8 square km.) of the district receives less than 600 mm rainfall.

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