

Geographical Analysis of Soil Fertility in Nashik District (Maharashtra)

Dhanraj Kalu Ahire

Department of Geography
K.A.A.N.M. Sonawane Arts, Commerce
And Science college Satana (Nashik)

Abstract

Agriculture is one of the most important activities of man it's concerned as one of oldest and most important of all economic activities. Now a day's agriculture has become the world most important industry. Nashik is one of the district of Maharashtra states having very less and uncertain rainfall. In Nashik district most of the agricultural activities depend on the physical social and economic factor. Physical factor like location geology natural vegetation climate and soil are the important physical factor effect on agriculture activity of nashik district out of this factor soil is most affecting factor for nashik district

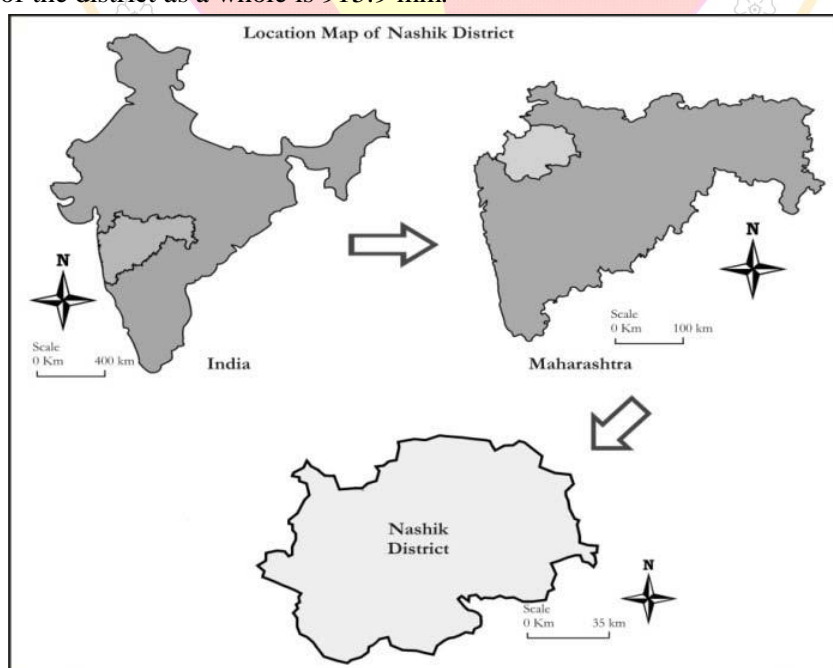
Soil is a natural body developed by natural forces acting on natural material and it's a complex body showing great many variation in depth color composition and behavior the fertility of soil is most important for agriculture fertility status here means the availability of nitrogen phosphorus potash and organic carbon the essential ingredients the growth of plant they also contribute towards the higher yield of crop present deal with the spatial analysis of soil fertility in Nashik district.

Keywords-soil, fertility, cropping pattern, nitrogen, phosphorus and potash

Study Area –

Nashik district is situated partly in the upper Godavari river basin and partly Tapi river basin. It lies between $19^{\circ} 33'$ to $20^{\circ} 53'$ north latitude and $73^{\circ} 15'$ to $75^{\circ} 16'$ 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 Sahyadri Mountains which run north-south in western portion of the district.

The district is surrounded by Dhule district in the north, Jalgaon and Aurangabad district in the east, Ahmednagar 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 except 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 is as follows-

1. To study the geographical setting of the study region
2. To study and analyses the soil of the study area.
3. To conclude soil fertility of study area.

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, soil Testing laboratory 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 and diagrams. The interpretation of soil in Nashik district using the following soil fertility index.

Soil fertility index.

Fertility index of the soil can be calculated with help of following table

Fertility Index

Sr No	Classification	Nutrient Index(Ni)	Rating	Organic Carbon%	Phosphorus (k.g/hq)	Potassium (k.g/hq)
1	Very Low	VL	0.50-0.75	>0.20	>15	>120
2	Low	L	0.76-1.25	0.21-0.40	16.30	121-180
3	Medium	M	1.26-1.75	0.41-0.60	31.50	181-240
4	Medium high	MH	1.76-2.25	0.61-0.80	51.64	241-300
5	High	H	2.26-2.5	0.81-1.00	65.80	301-360
6	Very High	VH	>2.76	>1.00	>80	>360

Calculating the fertility index of the study region with the help of following formula (parkar formula)

$$NI = \frac{(VL*0.5) + (L*1.0) + (M*1.5) + (MH*2.0) + (H*2.5) + (VH*3.0)}{\text{No. of samples}}$$

No. of samples

Result And Discussion

Fertility status here means the availability of nitrogen, phosphorus and potash, the essential ingredients for the growth of plants. They also contribute towards the higher yield of crops. Such analysis would, therefore help in framing proper strategy for the application of chemical fertilizers according to deficiency of particular element. Fertility of soil quality and quantity of cultivation depend upon depth texture and composition of soil. As khillary (1979) has suggested that study loam and loam soil with 35 to 45 % fine sand 25 to 40% silt 10 to 25% and clay are supposed to best texture of soil. The field observation showed that Peth, Igatpuri, Surgana, Yeola, Chandwad, and MalegoanTahsil have shallow soils, Niphad, Baglan, Kalwan, Nashik and DindoriTahsil having a deep black alluvial soil.

Sr.No	Name of tehsil	Total No. of tested sample	Soil Fertility index					
			Organic Carbon	NI	Phosphorus	NI	Potassium	NI
1	Nashik	640	1.98	Mh	1.36	M	2.39	H
2	Peth	109	1.44	M	1.32	M	2.54	H
3	Dindori	590	1.69	M	1.26	M	2.58	H
4	Surgana	144	1.55	M	1.02	L	2.69	H

5	Kalwan	270	1.72	M	1.55	M	1.23	M
6	Baglan	575	1.42	M	1.40	M	2.64	H
7	Malegoan	664	1.33	M	1.51	M	2.71	H
8	Chandwad	310	1.76	Mh	1.27	M	2.60	M
9	Nandgaon	188	1.56	M	0.95	L	2.63	H
10	Yeolea	403	1.42	M	1.46	M	2.61	H
11	Niphad	456	2.02	Mh	1.50	M	2.59	H
12	Sinnar	477	1.71	M	1.58	M	2.27	H
13	Igatpuri	390	1.54	M	1.36	M	2.74	M
14	Trimbak	109	1.51	M	1.41	M	2.74	H
15	Deola	110	0.97	L	2.04	Mh	1.85	MH

(Source- District soil Testing laboratory, Department of Agriculture, Nashik.)

Above table show that tahsil wise soil fertility of Nashik districts it indicate that organic carbon is high in Niphadtahsil and its low high for Deola and Phosphorus fertility is high for Deola Tahsil. And it's low for NandgaonTahsil.On the other hand the Potassium fertility is high to IgatpuriTahsil and low for Kalwan tehsil.

Conclusion

The spatial pattern of organic carbon phosphorus and potassium reveals the fact that an extensive zone of moderate proportion of organic carbon phosphorus and potassium is present in the Peth,Dindori, Kalwan, Malegaon, Yeola, Sinnar, Trimbakeshwar and IgatpuriTahsil. The organic Carbon Moderately high observed in the soil of Niphad, Nashik and Chandwad Tahsil. Whereas it's low Concentration for DeolaTahsil Phosphorus content is highly noted in the soil of DeolaTahsil and its low for Surgana and NandgaonTahsil. On the other hand the potassium is highly Concentration in the soil of Nashik, Path, Dindori, Baglan, Malegoan, Chandwad, Nandgaon, Yeola, Niphad and Igatpuri Tahsil and it's Moderate for Kalwan Tahsil. Thus soil is generally content medium amount of organic carbon and Phosphorus. But high potassium content in the soil of the study region. The agriculture development of Nashik district are required to former are used to carbon and phosphorus in there agriculture land.

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