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GEOGRAPHICAL PERSPECTIVES ON AN ASSESSMENT OF  
VARIATION IN MAJOR SOIL PROPERTIES FOR SOIL  
MANAGEMENT IN SATARA DISTRICT, MAHARASHTRA



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**ABSTRACT**

Soil is a vital natural resource that constitutes the environment together with air and water, and plays a significant role as the basis of survival of organisms including human beings on the earth. It plays a key role in regulating the concentration of nutrient in flora (Plants). In Satara District, soil fertility is high in the valleys of the rivers Krishna, Venna, Kudali, Koyna and low soil fertility in Khandala and Phaltan tahsils and is rocky except for the area along the Nira river and its tributaries. The present paper deals with the study of spatio-temporal changes in chemical parameters of soil like Nitrate (N), Phosphate (P) and Potassium (K) during the years of 2000-01 to

2011-12. The data of chemical parameters of soil have been collected from the Soil Laboratory are showed in the form of tables and thematic maps. Investigated results showed that, the maximum change is counted in the Potassium content and minimum variation is exhibited in the Nitrogen content. The productivity of agriculture depends on the quality of soil. Some parameters were above permissible limit and some below permissible limit which affect the quality and productivity of agricultural soil in Satara District.

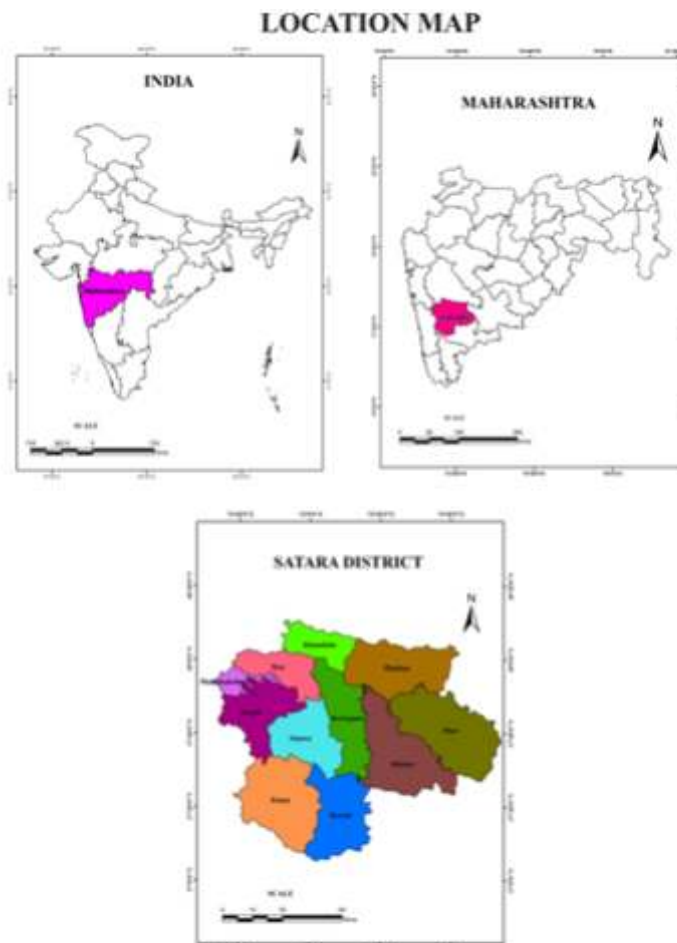
**KEYWORDS :** *Nutrients, Soil Fertility, Soil Quality, Chemical Parameters.*

**INTRODUCTION :**

Soil is a vital natural resource that constitutes the environment together with air and water, and plays a significant role as the basis of survival of organisms including human beings on the earth. It plays a key role in regulating the concentration of nutrient in flora (Plants). The soil serves as a more reliable index for productivity than water qualities. The Agricultural Productivity is largely controlled by the quality of soil that is "store house of nutrients." The farmers who want to achieve the high Agricultural Productivity expected of modern agriculture will have to provide nutrients in large quantities. All the farmers increase and change the pool of available nutrients by adding up fertilizers, incorporating cover crops, and using other organic materials, such as manures and composts. Such type of study is essential for effective soil management.

## STUDY AREA

Satara district is selected for the present study. The area under study is located on the south-western part of Maharashtra among its specific identity and typical set of characteristics. This district is situated in Sahyadri mountain and located on 1705' to 18011' North latitude and 73033' to 74054' East longitude. The total population of Satara district is 30, 03,922 persons according to 2011 Census. The total area is covered by Satara district is 10,484.0 Sq. km, its elevation is 742 m (2,434 ft) from the sea level. This area receives 473 mm to 6209 mm of normal annual rainfall. Satara district has eleven tehsils and 1739 villages.



**Fig.1**

## OBJECTIVE

The main objective is to study the variation in major soil properties and spatio-temporal changes for effective soil management in the study area.

## MATERIAL AND METHODS

The paper is based on secondary data collected from random sampling method. These data was collected from annual reports of soil laboratory of Satara district. For better analysis and results, there used the "before and after method" having comparison during 2000-01 and 2011-12 soil data. The data are represented with the help of different GIS thematic maps and diagrams.

**LIMITATIONS**

The Present paper has considered only three parameters for the analysis because of the limitations of availability of data set.

**PARAMETERS OF SOIL CHEMISTRY**

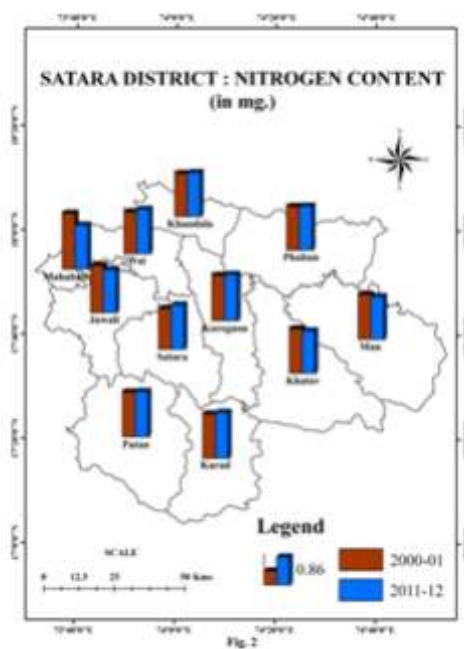
**Nitrogen**

Nitrogen take place in different dissolved forms as dissolved molecular nitrate and organic Nitrogen as amino acid proteins etc. The chief source of Nitrogen in soil due to is bacteria and cyanobacteria which secure atmospheric Nitrogen, rainfall, surface water drainage and ground water. Normally, the Nitrogen of soil ranged from 0.90 mg to 1.92 mg. The maximum Nitrogen values record in summer season and minimum Nitrogen values record in rainy season in the soil. The average Nitrogen about 1.39 mg. (in 2000-01) and 1.38 mg (in 2011-12) observed in the Satara District.

**Table 1**  
**SATARA DISTRICT: NITROGEN CONTENT (in mg.)**

Sr. No.	Name of Tahsil	2000-01	2011-12	Growth (in %)
1	Satara	1.26	1.37	8.73
2	Koregaon	1.40	1.43	2.14
3	Khataav	1.38	1.31	-5.07
4	Karad	1.37	1.42	3.65
5	Patan	1.38	1.40	1.45
6	Wai	1.29	1.37	6.2
7	Jaoli	1.46	1.33	-8.9
8	Khandala	1.33	1.36	2.26
9	Mahabaleshwar	1.72	1.36	-20.93
10	Phaltan	1.35	1.36	0.74
11	Man	1.38	1.32	-4.35
	Average	1.39	1.36	-2.16

Source: Report of Soil Department



Above table and diagram shows the tahsilwise Nitrogen content during the 2000-01 and 2011-12. The maximum growth of Nitrogen content is recorded in Satara tahsil (8.73 percent). Since, the maximum rainfall and Krishna river basin, there is observed the high growth of Nitrogen. While, the minimum or declined growth of Nitrogen content is noticed in the Mahabaleshwar tahsil (-20.93 percent). There is found hilly mountain region and dense vegetation therefore; high utilization of Nitrogen generates the minimum growth of Nitrogen content.

### Phosphate

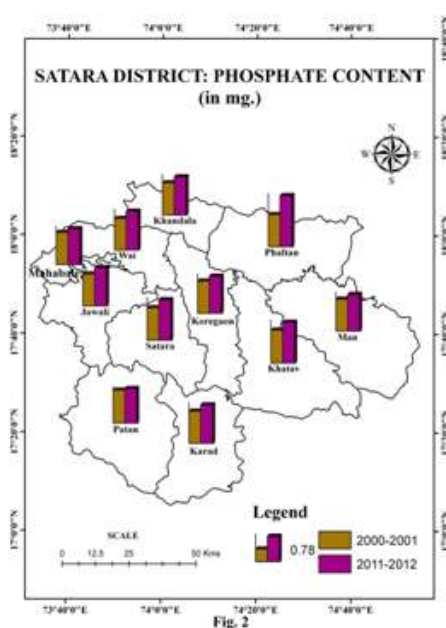
The Phosphate is an element essential for all aspects of cellular metabolism, respiration, cell division, growth, synthesis of protein and incorporation in all living tissues. Both organic and inorganic phosphorus reach in soil, inorganic form considered significant for production.

Phosphorus take place in moderate amount into the soil, due to its reactive nature through the year of investigation, table showed that the quantity of phosphorus has been observed averagely 0.98 mg in 2000-01 and 1.18 mg in 2011-12.

Table 2  
SATARA DISTRICT: PHOSPHATE CONTENT (in mg.)

Sr. No.	Name of Tahsil	2000-2001	2011-2012	Growth (in %)
1	Satara	0.99	1.23	24.24
2	Koregaon	0.98	1.13	15.31
3	Khatav	1.00	1.24	24.00
4	Karad	0.98	1.17	19.39
5	Patan	1.00	1.05	5.00
6	Wai	0.96	1.18	22.92
7	Jaoli	0.97	1.16	19.59
8	Khandala	0.98	1.16	18.37
9	Mahabaleshwar	0.98	1.09	11.22
10	Phaltan	0.98	1.55	58.16
11	Man	0.97	1.11	14.43
	Average	0.98	1.18	21.13

Source: Report of Soil Department



Above table and diagram shows the tahsilwise phosphate content during the 2000-01 and 2011-12. The maximum growth of phosphate content is recorded in Phaltan tahsil (58.16 percent ). Since, canal irrigation is increased to recently years, there is reached the high growth of phosphate. Whereas, the minimum growth of phosphate content is found in Patan tahsil (5.00 percent). There is mostly placed hilly mountain region and dense vegetation, hence maximum utilization of phosphate generates the minimum growth of phosphate content.

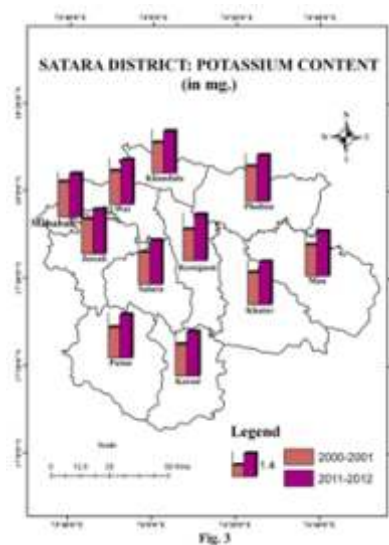
**Potassium**

The concentration and growth of Potassium have the effect of water availability in agriculture. The Maximum potassium values recorded in high water areas while, minimum potassium values reached in drought prone area. Also, the maximum concentration and growth of potassium values recorded in rainy season while, minimum potassium values recorded in summer season. . In Satara District, potassium is observed averagely about 2.02 mg. in the 2000-01 and 2.75 mg. in the 2011-12.

**Table 3**  
**SATARA DISTRICT: POTASSIUM CONTENT (in mg.)**

Sr. No.	Name of Tahsil	2000-2001	2011-2012	Growth (in %)
1	Satara	2.00	2.75	37.50
2	Koregaon	1.93	2.86	48.19
3	Khatav	2.00	2.67	33.50
4	Karad	1.97	2.76	40.10
5	Patan	1.91	2.70	41.36
6	Wai	2.08	2.77	33.17
7	Jaoli	2.16	2.76	27.78
8	Khandala	1.90	2.62	37.89
9	Mahabaleshwar	2.21	2.71	22.62
10	Phaltan	2.18	2.87	31.65
11	Man	1.94	2.80	44.33
	Average	2.02	2.75	35.86

Source: Report of Soil Department



Above table and diagram shows the tahsilwise potassium content during the 2000-01 and 2011-12. The maximum growth of potassium content is recorded in Koregaon tahsil (48.19 percent). While, the minimum growth of potassium content is seen in Mahabaleshwar tahsil (22.62 percent). There is found hilly mountain region and dense vegetation, therefore high utilization of potassium generates the minimum growth of potassium content.

## CONCLUSION

It is concluded that three major soil chemical parameters were analyzed that, the Nitrogen and Phosphate concentration in soil affected due to runoff and anthropogenic activity in and around farm land and potassium are under considerable value. But, the maximum change is counted in the Potassium content and minimum variation is exhibited in the Nitrogen content. For the effective soil management and conservation of soil micro level or field level soil analysis is needed for that purpose creating awareness among the farmers is the need of time.

## REFERENCES

1. Agricultural Department, Satara District (2011).
2. Census handbook – Satara district (2011)
3. Socio – economic review and district abstract of Satara district.
4. Carter, M.R. (1993) Soil Sampling and method of analysis.( Ed.0 Canadian Soc. Soil Sci. Lewis Publishers, USA. 823.
5. Chavan, S.M. and Pawar, C. T. (2014) Soil Degradation in Krishna Canal Command Area (Maharashtra): A micro level analysis, Journal of Shivaji University (Science and Technology), pp. 12-23.
6. Divya J and Belagali, S.I.(2012) Effect of extensive use of chemical fertilizers on Nitrate and Phosphate enrichment in water resources of selected agricultural area of T. Narasipura Taluk, Mysore District, Karnataka, India, Proceeding of International Conference, SWRDM 2012, pp.43-47.
7. Kumar ,Nikhil (2007), Soil quality standard (SQS) for bio-reclamation of coal overburden dumps: ISO14000 Requirements Jr. of Industrial pollution control, 23(1), 19-23



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