



# Study of Soil Available Nutrient Status of Gopalpur Village of Newasa Tahasil of Ahmednagar District, Maharashtra India

<sup>1</sup>M.B. Ghadge, <sup>2</sup>B.D. Takate, <sup>3</sup>B.M. Gaykar,

<sup>1</sup>Assistant Teacher, SDH Ghadge Patil School Trimurtinagar Newasa Ahmednagar (MH) India.

<sup>2</sup>Soil lab Incharge, Loknete Marutrao Ghule Patil D.S.S.K. Ltd Bhende Newasa Ahmednagar (MH) India.

<sup>3</sup>Professor, P.G. Department of Botany Ahmednagar College Ahmednagar (MH) India.

Corresponding Address

## Abstract

Present study was carried out at Soil testing laboratory of Loknete Marutrao Ghule Patil DSSK Ltd Bhende. 48 soil samples were collected from different agriculture lands of Gopalpur village, Newasa Tahasil, Dist. Ahmednagar (Maharashtra) for the present study. Agriculture area of the village is 480 hectares. One soil sample per ten hectare area was taken randomly. The parameters such as available nitrogen, available phosphate, available potassium, and available micronutrients like zinc, ferrous, copper, manganese were analyzed. 48 samples were analyzed for soil nutrient status. On the basis of results obtained, it was recorded that, available nitrogen and phosphates were lower; while available potassium was very high. Soils were deficient in Ferrous (97.91%) followed by zinc (95.83%) and manganese (56.25 %), while there was no deficiency of copper.

Key words- Soil, Micronutrients, Gopalpur.

## Introduction:

The soil is natural medium to supply essential nutrients for terrestrial crop plants.. In India the 70% of rural and 8% urban households are still depending on agriculture. (Abhishek and Shanmugasundaram, 2020). Productivity of the soil goes on decreasing due to imbalance application of chemical fertilizers, heavy irrigation, lack of use of organic fertilizer, less green manuring and crop rotation (Daji, 1996). In recent years, for obtaining more yield farmers have been using heavy doses of synthetic fertilizers and herbicides which resulted in the changes in the chemical and biological properties of the soil (Narwal 2004). The availability of plant nutrients from soil is an important issue for crop management and sustainable agriculture (Nayak *et.al.* 2006). Newasa tahasil includes 120 villages comprising 134343 hectare area, out of which 122391 hectors area is under agriculture, 1475 hectors area is under forest. Average rainfall is 531.3 mm (<https://www.Newasa.ga>). For studying fertility status of the soil, Gopalpur village was selected. This village is located in the basin of Jayakwadi dam (Nathsagar). The village is irrigated through pipelines from backwater of dam. The availability of irrigation water to this village is good hence soil is

continuously under cultivation of mono cropping pattern that's why productivity has been decreasing day by day.

### Materials and methods:

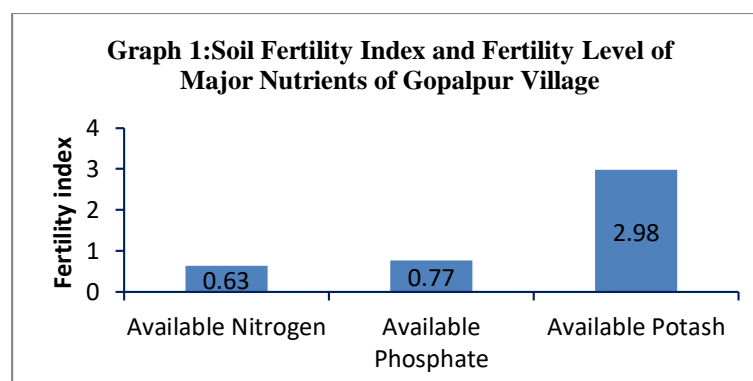
One soil sample per hecter area was collected. Total 48 soil samples were collected for investigation. The soil samples were collected from depth of 0-20 cm (Guicharnaud 2010). The parameters analyzed to evaluate the nutrient status were available Nitrogen (Alkaline permanganate method, Subbiah and Asija 1956) , Available Phosphorous( Ascorbic acid method 1954, Olsen.*et al* 1954). Available Potassium (Ascorbic acid method 1954, Thomas.1982). Extraction with 1N ammonium acetate and estimation using flame photometer (Systronics 128) The Analysis was done for ferrous, zinc, copper, manganese, by available micronutrient cations in soil sample (Lindsay and Narvell 1978) . The method consists of use of DTPA as an attractants which has been widely accepted for the simultaneous extraction of metal micronutrient cations viz., zinc (Zn), copper (Cu), iron (Fe), and manganese (Mn) in neutral and alkaline soils. The content of these cations in the extract is determined on an Atomic Absorption Spectrophotometer. (A.A.S).Fertility index were calculated (Mukeshama 2007 and Ramamoorthy and Bajaj 1969). Classification of nutrient index values was done (Abhishek and Shanmugasundaram 2020).

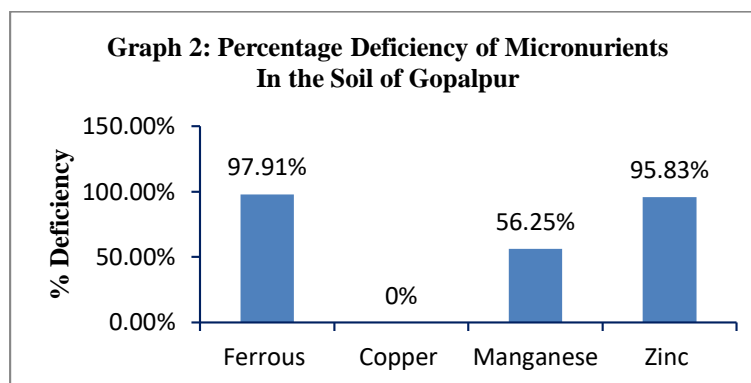
Table 1- Soil Fertility index and fertility level of Major nutrients of Gopalpur village.

Sr/no	Major Nutrient	Fertility Index	Fertility level
1	Available Nitrogen	0.63	Very low
2	Available Phosphate	0.77	Very Low
3	Available Potash	2.98	Very high

Table 2- Micronutrients percent deficiency in the soil of Gopalpur village.

Sr/no	Testing parameters	Deficient samples	Percentage
1	Ferrous	47	97.91%
2	Copper	00	00%
3	Manganese	27	56.25%
4	Zinc	46	95.83 %





### Discussion:

In above analyzed samples the available nitrogen phosphate was recorded very low and potassium was recorded very high. Out of these, 47 soil samples were deficient in Ferrous (97.91%), 95.83% soil samples were deficient in zinc while 56.25% samples were deficient in manganese. There was no deficiency in copper. This comparison was done with standards of Mahatma Phule Krishi Vidhyapeeth, Rahuri.

### Conclusion:

It is concluded that, the agriculture soil of Gopalpur village of Newasa tahasil of Ahmednagar district is sufficient in potassium, and deficit in nitrogen and phosphates.

Overall the decreasing productivity of soils of Gopalpur village is due to deficits in nitrogen, phosphates, manganese and zinc, ferrous. Copper was in sufficient quantity. To overcome the problem of deficiency, farmers should adopt soil test based fertilizer recommendations and their application. They should go for green manuring, organic fertilizers and sugarcane trash management practices along with proper drainage. It will help to improve the productivity of soil and crop yield of Gopalpur village of Newasa tahasil of Ahmednagar district of Maharashtra India.

### Acknowledgement-

Authors are thankful to Honorable Chairman, MLA Dr. Narendra Ghule Patil, Hon. MLA Chandrashekhar Ghule Patil, Dr. Kshitij Ghule Patil, Vice chairman Abhang Saheb and board of directors, Managing Director Anil P. Shewale, Secretary R.N. Mote, Loknete Marutrao Ghule Patil DSSK Ltd Bhende, Principal R.J. Barnbas Ahmednagar college Ahmednagar, Honorable. Sahebrao H. Ghadgepatil Founder Trimurti Pawan Pratishthan Telkudgaon Tal. Newasa and Dr. R.G. Khose Former Head Dept. of Botany New Arts commerce and Science College Ahmednagar for their kind support during research work.

## Reference:

1. Abhishek, A. and Shanmugasundaram (2020) Nutrient index values and soil fertility Ratings for Available sulphur and micronutrients of Tiruchirappali district of Tamilnadu, India *International journal of current microbiology and Applied Science*, Issn 2319-7706 vol 9 no 3 pp337-347.
2. Alpha, awwa, wpce (1998) standard method for examination of water and wastewater. 20<sup>th</sup> Edition New York: American public health association.
3. Guichrnaud, R (2002) .Biochemistry of are landic soil unpublished Ph.D. thesis school of environmental and biological sciences Aberdeen University, school of environmental and biological sciences,
4. <https://www.Newasa.ga>
5. Lindsay, W.L. and Norvell(1978) Development of a DTPA soil test for Zn, Fe, Cu, and Mn Soil Sci. Soc. Am. J., 42:421- 428.
6. Mukeshama, A. ( 2007) Mapping and modeling of landscape based soil fertility change in relation to human induction unpublished M.Sc thesis *School of natural resources and management ITC*.
7. Nayak A.K. ,Chyinchamatpure, A,R, Gururaja rao, Khandelwal M.K. amd Tayagi N.K.( 2006) Spatial Variability of DTPA extractable micronutrients in soil of baratract of Sardar sarovar canal command in Gujarat state India *J.Indian Soc, Soil Sci.* 42: 137-145. **In** Abhishek A.and Shanmugasundaram(2020) Nutrient index values and soil fertility Ratings for Available sulphur and micronutrients of Tiruchirappali district of Tamilnadu, India *International journal of current microbiology and Applied Science* issn2319-7706 vol 9 no 3 pp337-347.
8. Olsen S.R., Cole C.V., Watanable F.S. and Dean L.R. (1954) Estimation of available phosphate in soil by extraction with sodium bi carbonate VSDA circular 939 VSDA Washington D.C. **In:** Somawanshi R., Kadlag A., Deshpande A., Tamboli B., (2012) Soil and water testing methods soil science and Agricultural chemistry Mahatma Phule Krushi Vidhyapeeth Rahuri Ahmednagar, MS India.
9. Ramamoorthy B, and J.C. Bajaj Available N.P. And K status of Indian soil fertilizer news 14 24 26 1969.
10. Somawanshi R., Kadlag A., Deshpande A., Tamboli B., (2012) Soil and water testing methods soil science and Agricultural chemistry Mahatma phule Krushi vidhyapeeth Rahuri Ahmednagar MS India.
11. Narwal S.S., Dahiya S.S. and Singh, J.P. (2004) Research methodology of in plant science Allelopathy, *Soil science* vol 1 ppix-xiii Publisher
12. Subbiah B.V. and Asija G.I. (1956) A rapid procedure for the estimation of available nitrogen in soil *current science* 25; 259- 260. **In:** Somawanshi R., Kadlag A., Deshpande A., Tamboli B., (2012) Soil and water testing methods soil science and Agricultural chemistry Mahatma phule Krushi vidhyapeeth Rahuri Ahmednagar MS India.

13. Thomas G.W.(1982 ) Exchangeable cations p159-165 In: Page A.L. et al. (ed) Methods of soil Analysis part 2 second (ed) Agron monger and ASA and SSSA Madison W.I. **In:** Somawanshi R., Kadlag A., Deshpande A., Tamboli B., (2012) Soil and water testing methods soil science and Agricultural chemistry Mahatma phule Krushi vidhyapeeth Rahuri Ahmednagar MS India.

