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ASSESSMENT OF SOIL PROPERTIES OF DIFFERENT FARM OF YEOTI AND DHANORA GURAV TEHSIL NANDGAON KHANDESHWAR, DISTRICT AMRAVATI (M.S) INDIA

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ABSTRACT:
Soil health and soil quality are define as the capacity of soil to function as a fighter living system within land use boundaries. Soil quality is related to soil function .In present study our attempt haa been made to conduct assessment of soil properties of different farm of Yeoti and Dhanora gurav tehsil Nandgaon Kh. region of Amravati district. Samples collected from different farms are analyze to study the different parameters such as soil pH, Salinity ,organic carbon (OC), available nitrogen (N), phosphorus (P), potassium (K), and micronutrients (Fe, Mn, Cu ,B S, Cu, Fe and Zn).
This information will help the farmers to know amount of fertilizers to be added in soil to make production and to reduce the negative impact on agricultural productivity and long term sustainability.

Keywords: - Soil health, physical and chemical properties etc.

INTRODUCTION :

Soil, like air and water, is a fundamental natural resource supporting a variety of ecosystem goods and services to the benefit of the mankind. Soil quality can be defined as the fitness of a specific kind of soil, to function within its capacity and within natural or managed ecosystem boundaries, to sustain plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation (Karlen et al. 1997, Arshad and Martin 2002). While production function of soil was recognized long back, importance of conservation and enhancement of ecosystem services rendered by soil (e.g., carbon sequestration, water purification, recharge of ground water, control of populations of pathogens, biological nitrogen fixation and biodiversity conservation) has been realized only in the recent past. Williams 1990 [1] has studied effect of pH on nutrient balance and observed that high pH of soil can affect the micronutrient content present in soil. Manganese and Iron level decline with increase in soil pH. However, pH is of plant and other living organisms, available nutrients, cation exchange capacity and organic matter content [2]. The mobility of nutrients in the soil is largely depended on soil pH. Different studies have shown that the most of the plant nutrients are optimally available to plants at pH range between 6.5 to 7.5 ranges [3-5]. There are 17 essential nutrients which are required for plant growth. However, micronutrients like Fe, Mn, Zn, Cu are only easily accessible in acidic situation. Sometimes these nutrients also cross the toxic limit and high concentrations leads to toxic effects on plants [6]. Sometimes the micronutrient status also changes due to cropping pattern and fertilizer practices [7]. S. C. Dandwate done study of physicochemical parameters from Sangamner city [8]. A. D. Pawar(2021)Analysis of

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physicochemical parameters, heavy metals and micronutrients in soil samples were collected from various farm land of Kundal area, Palus taluka Dist. Single, Maharashtra[9] .Agricultural sustainability depends to a large extent upon maintenance or enhancement of soil health / quality.

In recent years agriculture development has been changed from conventional and traditional farming method too more intensive practices using chemical fertilizers and pesticides with irrigation facilities. Continuous use of chemical fertilizers slowly changed soil properties; ultimately the production in long run is reduced. It has resulted in leaching of chemical into the surface and ground water [10-14]. Due to increasing demand for cash crops the practice of monoculture cropping pattern have further helped to deteriorate water as well as soil quality [15].

It is the need of time that we have to study the physico-chemical parameters of soil to know its quality. The objectives of soil analysis is to provide an index of nutrient availability or supply in a given soil also to provide a basis for fertilizer recommendations for a given crop; to evaluate the fertility status of the soil and plan a nutrient management program.

SAMPLE COLLECTION :

The present study was carried out for two villages located in Nandgaon Khandeshwar Tehsil,district Amravati. The 4 Soil samples were collected from two villages, Yeoti and Dhanora Gurav, two farm soil samples were collected from each village. While collecting soil samples the upper layer of vegetation, surface litter, stones stubble if any were cleared away and then layer of soil immediately below (0-20 cm) was collected in polythene bag.

Fig 1and 2- Sample collection site.

Preparation of soil sample for analysis:

Each sample meant for physic chemical analysis was air dried for five days and then sieved to ensure homogeneity using a 2mm size sieve. For sampling of soil following process was used.

MATERIAL AND METHODS :

The soil samples were collected from two different places in the summer season.To collect soil samples in cleaned polythene bags. The collection of soil at the depth of 5 to 8 inch. Soil depth is a root space and the volume of soil from where the plants fulfill their water and nutrient demands. (The top six inches of soil has the most root activity and fertilizer application is generally restricted to this depth). The soil samples were immediately brought into laboratory for the estimation of various physicochemical parameters like pH was recorded by using Digital pH meter. Specific conductivities were measured by using digital conductivity meter. While other parameters such as sodium and potassium by flame Photometry. Magnesium, calcium bicarbonate, organic carbon, manganese, zinc, copper was estimated in the laboratory by using standard laboratory methods. The chemical characteristics viz. soil pH.electrical conductivity, total soil organic carbon, organic matter, total nitrogen, phosphorus, potassium, zinc, sulphur, and Iron has been determined by routine standard procedure[16].(Black, 1965)

RESULT ANALYSIS :

The result obtained during the investigations carried out in the field and laboratory, are reported as below.

CONCLUSION :

The outcome of this research is to predict which crop will grow in such type of soil and which fertilizers we provide to such a soil.

- In the soil sample YT-I ,YT –II ,DG-I and sample DG-II the pH become middle alkali and to increases the pH of this soil suggested the use of compost manure. Then recommendation of to dig drains , to make out flows , sowing green crops , cow manure to bury plant wastes, to

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supply necessary amount of water, use of gypsum.

- In the soil sample YT-I ,YT –II ,DG-I and sample-2, the manganese become approximate. Then recommendation sulphate 10kg/hectare.
- In the soil sample YT-I ,YT –II ,DG-I and sample DG-II , the potassium become is extreme high , so there is no need to use potassium for this soil. But to increase more yield of crop by using 2% potassium for this soil.
- In the soil sample YT-I ,YT –II ,DG-I and sample DG-II the phosphorous is medium. To increase the crop quality phosphorous will be given through fertilizer.
- In the soil sample YT-I ,YT –II ,DG-I and sample DG-II ,the Boron is sufficient..
- In the soil sample YT-I ,YT –II ,DG-I Sulphur become sufficient and in sample- DG-II, sulphur become less.
- In the soil sample DG-I medium organic carbon and nitrogen ,in sample DG-II medium organic carbon and sufficient nitrogen. So there is no need in organic carbon for this soil but to increase more yield of crop by using carbon and nitrogen to soil. to increase the organic carbon and nitrogen of soil suggest the use of compost manure

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Table 1. Laboratory methods used for chemical analysis of soil

Sr. No.	Particulars	Method used
1	pH	pH- metry
2	Conductance	Conductometry
3	Nitrogen	Alkaline permanganate method
4	Phosphorous	Olsen's Method
5	Potassium	Flame photometric method
6	Magnesium	Titration
7	Calcium	Titration
8	Zn, Fe, Cu, Mn	Atomic absorption Spectrophotometric method
9	Organic Carbon	Titration
10	Alkalinity	Titration

Table 2-Physico chemical characteristics of study area

Sr. No.	Parameters	YT -I	YT-II	DG -I	DG - II
1	Colour	Black	Black	Brownish	Brownish
2	Salinity	0.30	0.32	0.28	0.33
3	pH	7.68	7.54	7.55	7.41
4	Organic Carbon (%)	0.61	0.42	0.41	0.41
5	Manganese	14	10	10	10
6	Copper	9	8	9	10
7	Iron (ppm)	34	35	43	41
8	Nitrogen (kg/hect)	250	220	171	171
9	Phosphorous (kg/hect)	35	33	26	30
10	Potassium (kg/hect)	290	360	262	288
11	Sulphur(Mg)	38	40	45	40
12	Zinc (Mg)	2.8	3.9	4.0	4.2
13	Boron	1.1	1.1	1.2	1.6

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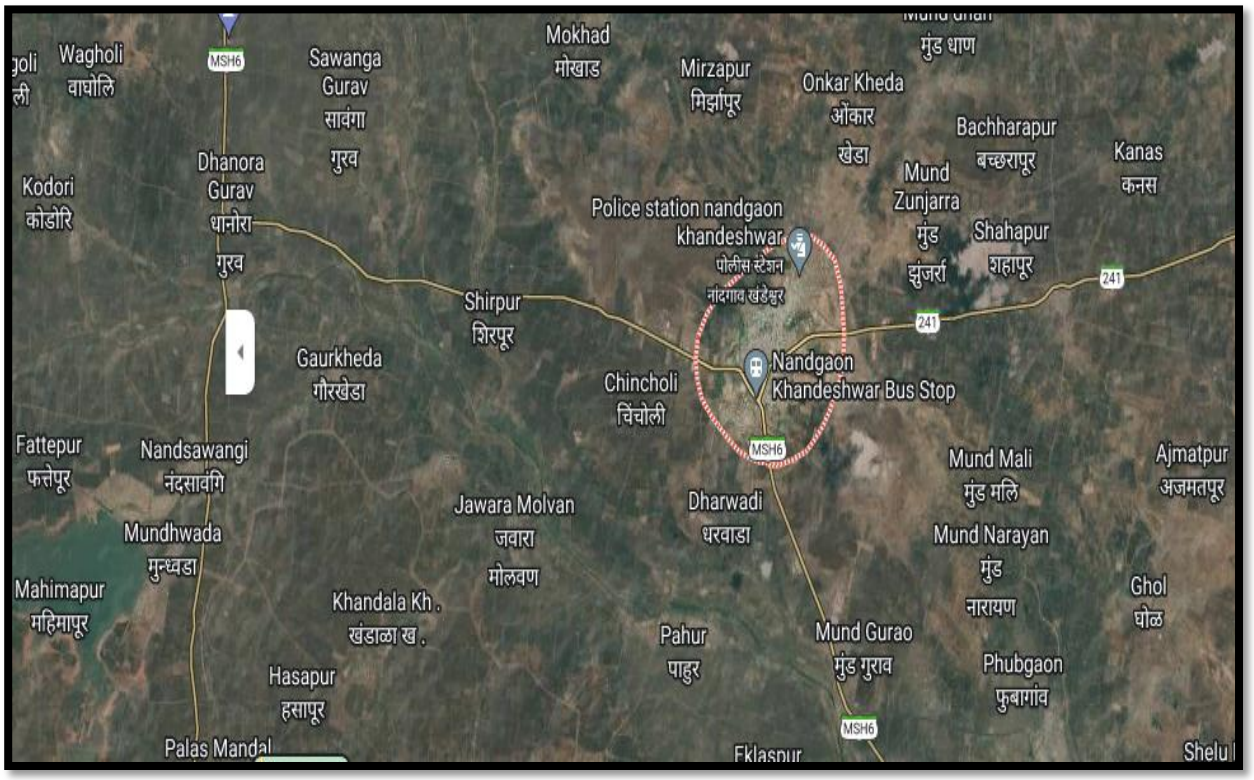

Fig. 1

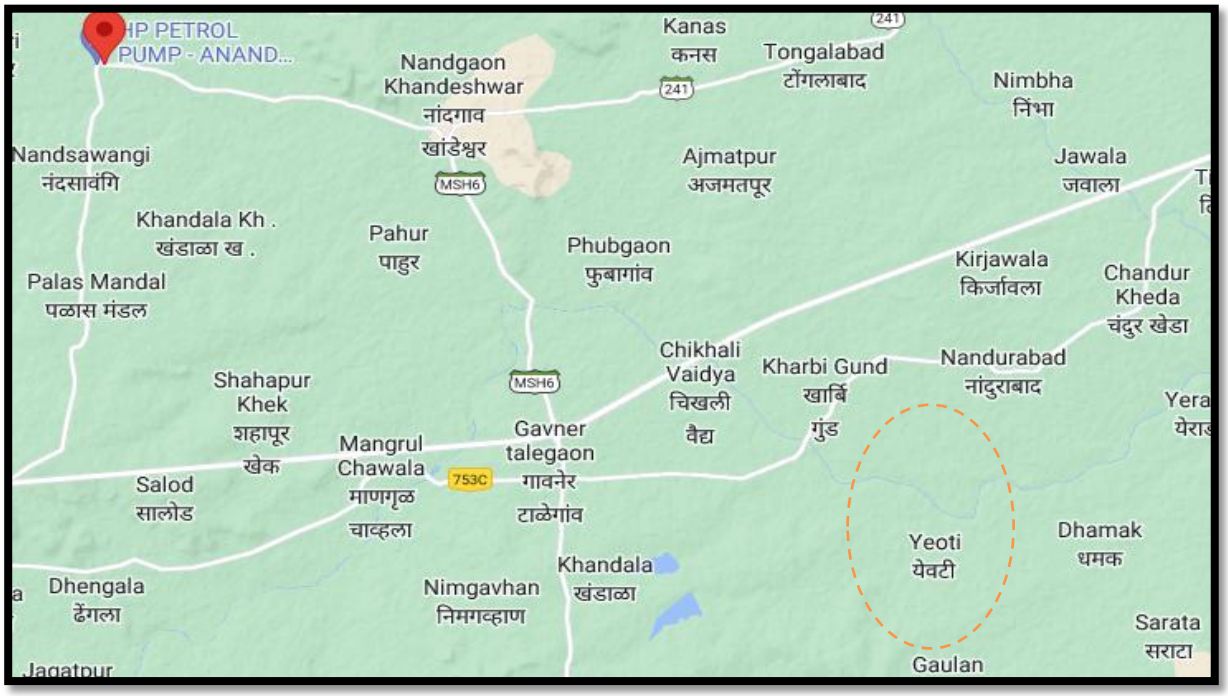

Fig. 2

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