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Investigation on soil fertility and promote the sustainable agricultural practices in Jalgaon district, Maharashtra

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Abstract
Jalgaon district is located in the north of Maharashtra. About 75% to 85% of the population of the district is dependent on agriculture and agro-based industries. In addition to traditional farming, chemical farming is also practiced mainly in the district, but in the last few years, it has been noticed that soil texture is deteriorating due to overuse of chemical fertilizers. There is a huge difference in the amount of nitrogen, phosphorus and potash in the soil in most of the areas. Soil testing is often neglected by farmers, and overuse of chemical fertilizers has led to a decrease in the number of bacteria in the soil, leading to the disappearance of naturally occurring fertilizers from the soil. As a result, the soil texture has deteriorated drastically and if it is not repaired in time, the possibility of major damage in the future cannot be ruled out. This research has been constructed to solve this problem.

Keywords: Agriculture, soil health, micro nutrients, natural farming, biofertilizers

Introduction

Jalgaon district is located in the north of Maharashtra. Jalgaon district consists of 14 talukas and Marathi and Ahirani are the main languages of Jalgaon district. Jalgaon district is commonly known as Khandesh. Agriculture is the main industry of the district, besides the ancillary occupations related to agriculture are mainly done in the district. Jalgaon also has a distinct identity as the number one district in Maharashtra in banana production. Along with banana, cotton is the main crop in Jalgaon district. A study of the land in the district reveals that in the district it is generally found in the black cotton soil and in some parts also in the sandy soil.

Along with banana and cotton, sorghum, millet, soybean and maize are the major crops grown in Jalgaon district. Since major rivers like Girna and Tapi flow through the district, irrigation system is quite good. About 75% to 85% of the population of the district is dependent on agriculture and agro-based industries. In addition to traditional farming, chemical farming is also practiced mainly in the district, but in the last few years, it has been noticed that soil texture is deteriorating due to overuse of chemical fertilizers. There is a huge difference in the amount of nitrogen, phosphorus and potash in the soil in most of the areas.

Therefore, it is time to find a solution to this problem as soon as possible. Various colleges and university in the area are constantly raising awareness about the use of new experiments. Soil Health, Soil testing is often neglected by farmers, and overuse of chemical fertilizers has led to a decrease in the number of bacteria in the soil, leading to the disappearance of naturally occurring fertilizers from the soil. As a result, the soil texture has deteriorated drastically and if it is not repaired in time, the possibility of major damage in the future cannot be ruled out. If we take a little information about soil testing laboratories, we can see that apart from 2-3 government laboratories in Jalgaon district which have very low response, there is no soil testing laboratories anywhere. This research project has been constructed to solve this problem.

Methodology

In this research we analyze more than 100 samples from Chalisgaon, Bhadgaon and Parola tehsils of Jalgaon districts. To gate the clear idea of present farming situation. For that, I have established soil testing lab at my Arts Commerce Science College Dharangaon. After soil testing, proper guidance was given to the concerned farmers as to which element they are deficient in. At the same time, the farmers of the village where the soil samples will be brought for inspection were guided through the Gram Panchayat regarding organic farming and natural farming. The guidance provided in-depth training on how to practice organic manure and natural farming and how to make natural fertilizers, pesticides, cover production costs of major crops including inter-cropping. At the same time farmers were trained on how to do soil testing at home in a very simple way.

Result and Discussion

To fulfill the objective of the said research, 107 soil samples were collected from a total of 13 villages in the three talukas ie. Chalisgaon, Bhadgaon and Parola in the last 6 months. The collected samples were tested in the soil testing laboratory of the college. The factors identified after the research are presented in Table No.1.

Table 1

Sr. No	Tehasil	Village	Ph As anAverage	N (Nitrogen) As an Average Kg./hectares	P (Phosphorus) As an Average Kg./hectares P_2O_5	K (Potassium) As an Average Kg./hectares K_2O_2
1.	Chalisgaon (42 Sample Studied)	Vaghali	7.0-7.5	15 kg/ha Very low	22 Low	Below 112 Low
2.		Patonda	6.5-8.0	15 kg/haVery low	22 Low	Below 112 Low
3.		Ranjangaon	6.5-8.0	15 kg/ha Very low	22-56 Medium	112-280 Kg/ha Medium
4.		Patana	7.0-8.0	73 Kg./ha Medium	22-56 Medium	112-280 Kg/ha Medium
5.	Bhadgaon (35 Sample Studied)	Kajgaon	6.5-8.0	15 kg/ha Very low	22 Low	Below 112 Low
6.		Kolgaon	6.5-8.0	15 kg/ha Very low	22 Low	Below 112 Low
7.		Kanashi	7.0-8.0	15 kg/ha Very low	22-56 Medium	Below 112 Low
8.		Lone	7.0-8.0	73 Kg./ha Medium	22 Low	112-280 Kg/ha Medium
9.		Ghusardi	6.5-8.0	15 kg/ha Very low	22 Low	Below 112 Low
10.	Parola (30 Sample Studied)	Bhilali	6.5-8.0	15 kg/ha Very low	22-56 Medium	112-280 Kg/ha Medium
11.		Kolpimpri	7.0-8.0	73 Kg./ha Medium	22-56 Medium	Below 112 Low
12.		Tarwade	6.5-8.5	15 kg/ha Very low	22-56 Medium	Below 112 Low
13.		Mundane	6.5-8.5	15 kg/ha Very low	22-56 Medium	112-280 Kg/ha Medium

From the table no.1, it can be seen that out of the total 4 villages in Chalisgaon taluka, the amount of nitrogen in agricultural land is low in 3 villages and the amount of phosphorous and potassium is low in 2 places as an average. Out of the 5 agricultural lands in Bhadgaon taluka, the amount of nitrogen and phosphorus was low in 4 places and the amount of potassium was low in 3 places as an average. In total 4 villages of Parola taluka, low amount of nitrogen was reported in 3 places and low amount of potassium in 2 places as an average.

Table no. 1 also shows that there is a significant decrease in the amount of major elements in the soil of neighboring lands in Bhadgaon taluk compared to Chalisgaon and Parola taluks. Overall, due to excessive use of chemical fertilizers, agricultural land in all the three talukas has been adversely affected.

Forgetting effective revenue from agricultural, we are developing several drought resistance varieties, stress resistance varieties, disease resistance varieties, different chemical fertilizers, pesticides… but the basic thing that we are totally forgot, so what is the basic thing? we know that the soil is the basic unit of Agriculture, if your soil is healthy directly your crop is healthy… but due to the overuse of these chemical inputs, it is directly hazardous to our soil health, it's directly affect on a micro flora of our soil. Which leads to our soil is going to dormant condition at present.

Because of this for getting a good production, farmers add lots of chemical fertilizers or chemical inputs in farm, which are also a costly think and due to these the production cost of the crop is increasing day by day and it leads directly to agriculture became most costly and low benefited practice now a date.

References

1. Bertola, Marta, Andrea Ferrarini, Giovanna Visioli. "Improvement of Soil Microbial Diversity through Sustainable Agricultural Practices and Its Evaluation by -Omics Approaches: A Perspective for the Environment, Food Quality and Human Safety" Microorganisms,2021:9(7):1400.
2. Prajna Priyadarshini Das, Kshitij RB Singh, Gunjan Nagpure, Aadil Mansoori, Ravindra Pratap Singh, Irfan Ahmad Ghazi, *et al*. Plant-soil-microbes: A tripartite interaction for nutrient acquisition and better plant growth for sustainable agricultural practices, Environmental Research,2022:214(1):113821. ISSN 0013-9351.
3. Prajna Priyadarshini Das, Kshitij RB Singh, Gunjan Nagpure, Aadil Mansoori, Ravindra Pratap Singh, Irfan Ahmad Ghazi, *et al*. Plant-soil-microbes: A tripartite interaction for nutrient acquisition and better plant growth for sustainable agricultural practices, Environmental Research,2022:214(1):113821. ISSN 0013-9351.
4. Nord A, Snapp S, Traore B. Current knowledge on practices targeting soil fertility and agricultural land rehabilitation in the Sahel. A review. Agron. Sustain. Dev,2022:42:79.