Study of Soil contamination on the soil profile of Aligarh District

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ABSTRACT
The present study demonstrates the behavior of the soil contamination in Aligarh District of uttar Pradesh. The samples of soils were study for the properties of soil. The results shows that near of dumping and industrial area has the parameters of soil (pH, electrical conductivity, organic matter and physicochemical parameters) were assessed and it was found that the pH was higher and organic matter was lower in collected soil sample

Key words:- contamination, pesticide, toxicity, organic compound (OC), CEC (cation exchange capacity).

INTRODUCTION

Soil is the basis of agriculture. All plants depend on it for human food and animal feed. We are depleting this essential natural useful resource to some extent by rapid degradation. In addition, new wastewater treatment flowers are propelling large amounts of waste products, sludge and various by-products to "even polluted water". In an effort to maintain soil fertility and productivity, management that allows you to increase the fitness of all organisms must be done brilliantly.
Estimating the ecological hazard of contaminated soils, exposure of terrestrial environments to substances unsafe with pesticide use, sewage sludge amendments, and various human play is a complex challenge with many associated problems. Automobile smoke contains lead that is absorbed through soil debris and is toxic to plants. Toxicity can be reduced by natural reliance on soils, including lime in the soil, and by alkalizing the soil.
In the present research study the physicochemical parameters of the soil of Aligarh area were determined.

MATERIALS AND METHODS

Aligarh is a city located in U.P. state of northern India. The city is about 90 miles east to New Delhi. The site for soil sampling was at a distance of 100 m, 200 m and 400 m away from effluent sludge site. The geo reference of this area under study is latitude 27.8861o N and longitude 78.0409o E. Soil samples were collected from five different sites in the duration September 2018 – January 2019. Two sites were sewage irrigated, two partially sewage irrigated and two ground water irrigated. From each site two samples were collected, one at a depth of 5 cm and other at a depth of 20 cm. Soil of this area.
The primary soil samples were collected according to standard procedures by means of a plastic rod at two depths (0-5 cm) and (20-25 cm). Prior to extraction of soil the places were first cleared and carefully demarcated and marked with the help of knife. The surface was pricked with a knife to show structures, colours and compactness of the soil particles. The samples

were collected by making the pit at the marked area. First the soil sample of size 20 g at Site I was collected at a depth 5 cm and then second sample was collected at a depth of 20 cm. Soils from different depths were collected separately and put in separate airtight polythene bags and kept for further laboratory analysis. Samples are marked as five sites (Site I, II, III, IV, V) and their samples in the polythene bags were named as S1,S2, S3, S4, S5, S6, S7, S8, S9 and S10. Total number of samples was 10.

RESULT AND DISCUSSION

Physical properties of collected soil samples from the study Aligarh area:-

Table (1) depicts the summaries of the physical properties of ten soil tests (S1, S2, S3, S4, S5, S6, S7, S8, S9, S10) from the study area. The soil properties separated were pH, organic (matter) carbon, electrical conductivity, exchangeable cations (K+, Na+), nitrogen substance and phosphorus content. These characteristics were settled utilizing by various very much educated specialists.

The pH of the evaluation complaints range from 8.00 at S8 to 9.50 at S3 sample with a mean of 8.75. The outcomes showed that there was no noticeable combination in soil pH respects. The degree of pH is less. Soil pH is on a very basic level same for stream watered and groundwater overpowered soils (Table 1). The genuinely low pH at site S3 might be a brief consequence of some acidic waste as this site is close to the dumping region.

The organic compound (OC) of the soil loose from 1.75% at S9 to 2.90% at S1 with a mean evaluation of 2.32%. The table 1 showed that the soil of organic matter was higher in stream brought down soils than groundwater overpowered soils.

The Complete nitrogen content moved from 0.050% at S3 to 0.081% at S8. The data in Table 2 showed that in stream overwhelmed soils the unbending nitrogen content was higher (S5, S7, S8, than ground water out over soils (S2, S3, S4, S9,).

Full scale phosphorus content locale in Table 2 showed that there the separation in the P substance in ground water of soils. It changed from 0.030% in S9 to 0.045% in S2 which shows that phosphorus content is higher in stream overpowered soil than ground water of soils.

The conceded after effects of electrical conductivity (Table 1) separated structure 0.65 (S9) to 1.22 at S1 which depicted that electrical conductivity of stream soaked soil is

higher than ground water of soil.

TABLE-1: Physical properties of collected soil sample IN different site of Aligarh resion:-

S.No.	Sample No.	Electrical conductivity (dS m^{-1})	pH	Organic matter (%)
1.	S_1 (RI)	1.22 (1.20 – 1.30)	9.50	**2.90**
2.	S_2 (RI)	1.18 (1.15 – 1.25)	8.52	**2.93**
3.	S_3 (G)	0.95 (0.85 – 1.10)	8.75	**2.80**
4.	S_4 (G)	0.95 (1.05 – 1.20)	9.55	**2.83**
5.	S_5 (G)	0.90 (1.00 – 1.10)	8.70	**2.60**
6.	S_6 (G)	0.85 (1.05 – 1.10)	9.75	**2.56**
7.	S_7 (RI)	0.75 (0.70 – 0.80)	8.80	**2.70**
8.	S_8 (RI)	0.75 (0.70 – 0.85)	9.12	**2.65**
9.	S_9 (G)	0.65 (0.60 – 0.70)	8.50	**1.75**
10.	**S_{10} (G)**	**0.62 (0.60 – 0.65)**	**8.0**	**1.80**

Physico-chemical properties of collected soil samples (Sept. 2018 to Jan 2019).

S.No.	Sample No.	CEC [Cmol(p^+)] Kg	Total nitrogen (%)	Total phosphorus (%)
1.	S_1 (RI)	10.9	0.065	**0.046**
2.	S_2 (RI)	11.5	0.060	**0.045**
3.	S_3 (G)	11.2	0.055	**0.038**
4.	S_4 (G)	11.3	0.050	**0.036**
5.	S_5 (G)	10.5	0.070	**0.045**
6.	S_6 (G)	10.8	0.065	**0.040**

7.	S_7 (RI)	11.5	0.070	**0.035**
8.	S_8 (RI)	11.0	0.081	**0.036**
9.	S_9 (G)	10.2	0.056	**0.030**
10.	**S_{10} (G)**	**9.5**	**0.065**	**0.035**

CONCLUSION

Table 1 showed that pH was for the most part around higher in the soils which were not affected by contamination . There was pH level of water along different horizons of different profile of soil. In upper layer of soil get most of acids which disposes of metal cations and remove them with H^+. Lower soils are make the soil acidic. There was no ability between the characteristics got at the top soil than the lower soil.

Table 2 showed that nitrogen content of the basic soil is higher than that of top soil. This nitrogen content use is shown by the yellowing of the leaves. The phosphorus depends upon the soil pH. Phosphorus availability is more at pH between 6.0 to 8.0 (Landon JR) while it is less open at lower pH for instance under 6.0. The open phosphorus increases with the significance. The unyielding number of cations, a dirt can hold or its negative charge is CEC, there was no tremendous capacity in CEC of top soil and lower soil which showed that the junk present in the stream could turn out to be plant improvement supporting material and contain essential degree of supplement

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