

## ANALYSIS OF TOP SOIL IN COASTAL AREA

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### ABSTRACT

Top layer of soil that is referred as top soil contain highest concentration of microorganisms and organic matter. Disturbance of the top soil by anthropogenic or natural activities is one of the biggest ecological problems in the world, because top soil is the essential material for food production and there is no alternative for it. From the analysis of top soil from two selected locations for a twelve months study period, it was observed that, Total Nitrogen increased and decreased with the increase and decrease of Phosphorus at both locations. There is no standard set by Bangladesh government yet for top soil quality. Total Nitrogen also decreased along with pH level. pH, controls concentration of soil Nitrogen.

**KEYWORDS:** Soil; Total Nitrogen; pH; Phosphorus

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### Article History

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### INTRODUCTION

All types of foods are produced in land for consumption of humans whereas all form of animal creatures is grown in the earth's soil. Soil is one of the most important elements for life in the planet. In other words, it is also a critical component of nearly every ecosystem. Top layer of soil referred as top soil contains highest concentration of microorganisms and organic matter. Disturbance of the top soil by anthropogenic or natural activities is one of biggest ecological problems of the world, because top soil is the essential material for food production and there has no alternative.

Britto and Kronzucker in 2002 stated that, nitrate (NO<sub>3</sub><sup>-</sup>) and Ammonium (NH<sub>4</sub><sup>+</sup>) are the most important inorganic nitrogen sources in soils that is readily available to plants. Sapek (1999) and Kyveryga et al. (2004) described that the process of ammonification promoted by low pH on the other hand, the process of nitrification occurs more easily at high pH level. They further stated that, an increase in the ammonium nitrogen content was noted with a decrease in soil pH. Skowron in (2004) stated that mineral nitrogen, the content of the nitrate was found to be several times lower in soils with a pH close to 3.5 than in soils characterized by a pH of 7.5.

### OBJECTIVE OF THE STUDY

Study location is in coastal area, Matarbari near Moheshkhali Upazila of Cox's Bazar District. The core focus of the study, more specifically, is based on the measurement of selected parameters of selected locations. In this regard, objective of this research are-

- To observe the variation of selected parameters.
- To recommend soil quality standard for some selected parameters.

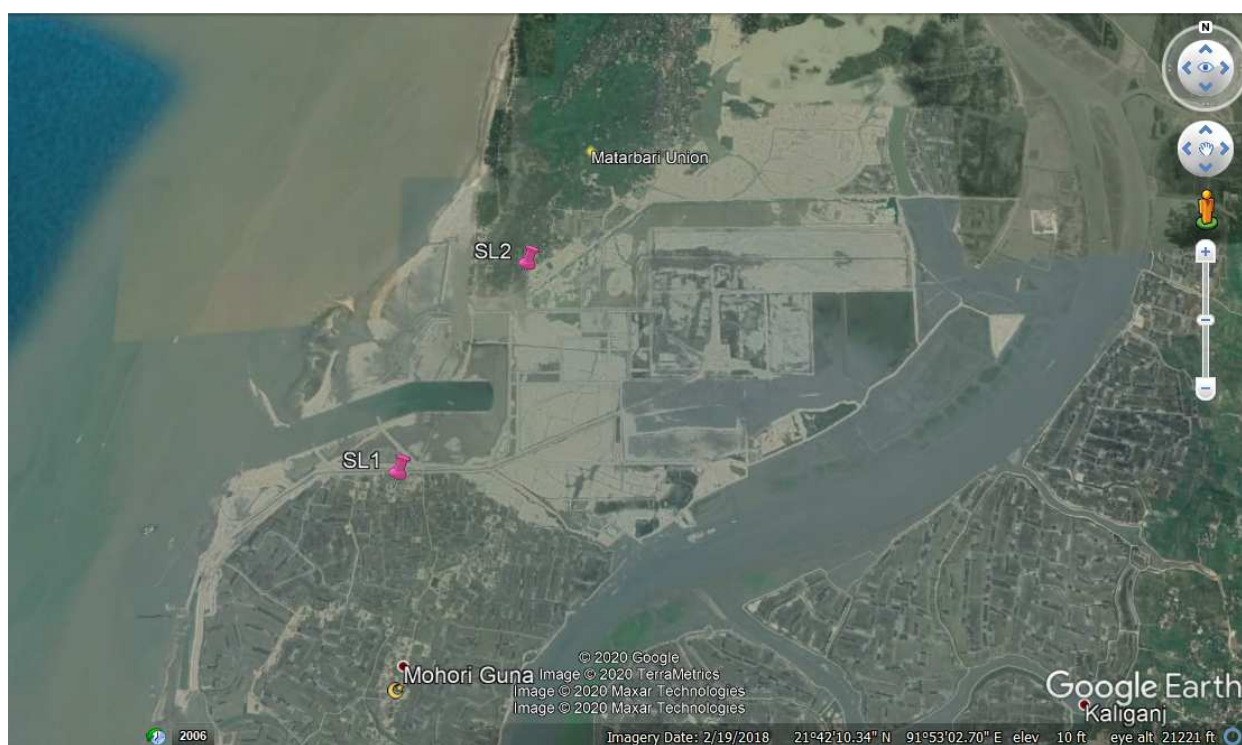
The study can lead towards a new era of soil quality of Bangladesh to set a standard for soil considering industrialization at coastal area in Bangladesh.

## MATERIALS AND METHODS

Soil samples were collected from selected location in Matarbari near Moheshkhali Upazila of Cox's Bazar District. Literature was reviewed in order to compile reliable information on soil quality. Soil samples from top soil were collected from two locations. Samples were collected four times during twelve months study period. Soil sampling locations are mentioned in below table 1. Sampling location is shown in below figure 1.

**Table 1: Water Sampling Locations**

S N	Sampling Locations ID	GPS Coordinates of Sampling Locations	
1	SL 1	91°52'13.60"E	21°41'49.20"N
2	SL 2	91°52'39.60"E	21°42'31.50"N



**Figure 1: Soil Sampling Locations.**

Total Nitrogen (%), Potassium (K+/100g soil), Phosphorus (ppm) and pH was tested at sampling point. Samples were collected four times between November 2018 and October 2019.

## RESULTS AND DISCUSSIONS

It was observed from figure 2 that, Total Nitrogen at location SL1 is found between 0.04% and 0.08%, Potassium (K+/100g soil) is found in a range of 0.42 – 0.63, Phosphorus is found between 17.64 ppm and 48.78ppm and pH is found from 6 to 6.5 during twelve months monitoring period.



Figure 2: Soil at SL1.

It was found from figure 3 that, Total Nitrogen at location SL2 is found between 0.04% and 0.12%, Potassium (K+/100g soil) is found in a range of 0.42 – 0.69, Phosphorus is found between 1.63 ppm and 2.68ppm and pH is found from 4.2 to 5.3 during twelve months monitoring period.



Figure 3: Soil at SL2.

Considering parameter pH and Phosphorus in soil quality are found to be higher at SL2, that is, north side of the project and is found low at SL1, that is, south side of the project. On the other hand, Potassium and Total Nitrogen is found quite similar in both locations. Variation of test result was insignificant for twelve months study period from November 2018 to October 2019. From analysis of both result of location SL1 and SL2, it was also observed that, Total Nitrogen increased and decreased with the increase and decrease of Phosphorus at both locations. There is no standard set by Bangladesh government yet for top soil quality. But, it can be mentioned that, top soil of both monitoring locations are suffering with poor nutrients and low pH level indicate, soil is strongly acidic. Also most of the cases, Total Nitrogen decreased along with pH level. pH, controls concentration of soil Nitrogen.

**CONCLUSIONS**

Soil samples from top soil were collected on November 2018, March 2019, May 2019 and October 2019 during twelve months study period from two selected locations in Matarbari area. From analysis of both result of location SL1 and SL2, it was observed that, Total Nitrogen increased and decreased with the increase and decrease of Phosphorus at both locations. There is no standard set by Bangladesh government yet for top soil quality. Total Nitrogen also decreased along with pH level. pH, controls concentration of soil Nitrogen.

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