Spatial and geographical variation of soil sediments collected from industrial area of East Godavari region.

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ABSTRACT: Soil is important source for agriculture and horticulture.the minute variations in the soil will affect the agriculture crop of farmers.due to industrialization and urbanization the soil ,air and water is polluted and causing rapid changes in the environment and health problems. The current study of research focus on the spatial variations in soil sediments are observed and by the analyzing the different parameters of the soil and quality of soil are assessed and extention of pollution can be measured and necessary measures are taken to decrease the pollution in the specified region.

Key words: soil parameters agriculture measures pollution

I. INTRODUCTION

the soil may be defined as the uppermost weathered layer of the earth crust in which various microorganisms and various insects lives in.the soil plays a vital role in growth of crops and also for drinking water used as source in the villages.

Soil is a base for agriculture crop ,horticulture and survival for animals.due to anthrogenic activities of human being the soil is polluted more near the industrial areas.the soil is affected more and indirectly polluting the ground water.In current study to analyse the soil sample collected near industrial region residing villages.to take necessary measures to decrease the pollution in that region.

Study area

Kakinada is significant coastal region in East Godavari district near south coast of the india. In the district mostly occupied soil are alluvial ,redsoil , sandy clay and sandy loamy soils. Mostly as the costal region is more urbanisized with industries.

The soil samples are collected from residing areas of the industries. The sample are collected from areas of Tamavaram, kommagiri, panduru, yedapalli, kondevevu and vakalapudi villagesof Kakinada in East Godavari region. The collected soil sample are stored in a sterile polythene bags for further analysis.

Study location

S.NO	STUDYAREA	SAMPLENAME
1	Tammavaram	S-1 TMS
2	Kommagiri	S-2 KMS
3	Panduru	S-3 PDS
4	Yendapalli	S-4 YDS
5	Kondevaram	S-5 KDS
6	Vakalapudi	S-6VKPS
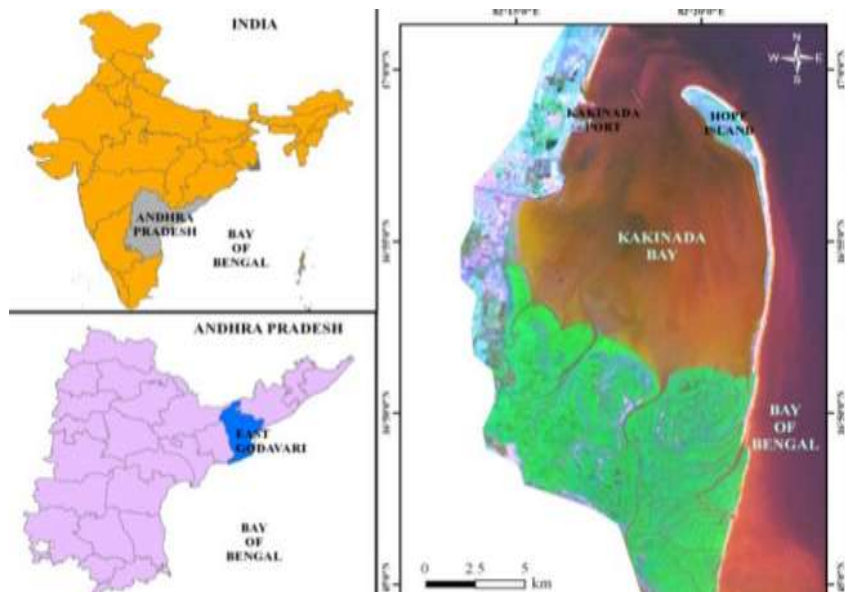
II. MATERIALS AND METHODS

The collected soil sample from sterile polythene bags is removed and 5gm of soil sample is heated in microoven for 30minutes then the dry soil is dissolved in a100ml of the double distilled water and left for 1hr and the soil extract is then filtered with the filter paper and the extract was carried out for analysis of different parameters like PH,turbidity,   Conductivity,TDS,Total hardness,Total alkanality,ca2+,mg2+ and cl- ions by titremetric analysis.

III. RESULTS AND DISCUSSION

The results obtained for collected samples are shown in tabulated below in the table 1

Determination of soil

PH: PH of the soil is important parameter to determine the soil is acidic ,basic or neutral which determines the growth of crop.PH of the soil s-2 and s-6 are too acidic shown the values as 5.5 and 5.2 where as the PH of the soil s-1 and s-4 is slightly acidic nature as 6.2 and 6.3.The PH of the soil sample s-3 is observed as 7.1 as neutral nature.The pH of the soil observed in the àrea s-5 as 7.5 which is slightly alkaline condition.from the above data pH of S-2and S-6 is highly acidic due to polluted from industries and pesticides.

EC : Electric conductivity:

The total soluble salts are estimated from electric conductivity EC of aqueous soil extract.The conductivity of ions is high in the sample s-1 is 3.26.The s-2 and s-5 sample exhibits the conductivity slightly less with sample s-1 as 2.69 and 2.29 respectively.The variation in the conductivity in the sample s-3,s-4 and s-6 are very less. Showing the values as 0.804,0.323 and 0.26.

TDS: Total dissolved solids are important for estimating the impurities in the form of salts in soil.The TDS in the sample s-2 is observed as value is 623ppm and the next the sample s-6 also had showed the value as 525ppm.The least TDS was exhibited in the sample s-5 as 123ppm.The s-4 and s-1 sample showed the TDS as 152 and 168ppm.The TDS is average in the sample-3 225 ppm.

Turbidity: The turbidity of the soil is very low in s-1 0.09NTu. The sample of the soil in s-2 is showed less as 0.25NTU showing that the impurities are less in the above samples.The turbidity of the soil sample in the s-3 and s-4 is highest as 2.93 and 3.25ppm where as the turbidity exhibited by s-5 and s-6 are having same value as 2.3NTu.

Total hardness:

The total hardness of water is highest in s-6 samples 650ppm and least total hardness of water was observed in the sample s-3 and sample s-2 as 230 ppm and 253ppm however the TH of the sample s-2 and s-5 are higher than this limit of the soil 325 ppm and 432.5ppm.The sample s-4 exhibited TH as 291.5ppm.

Total alkalinity:

The total alkalinity is observed as high in the sample s-1 as 305ppm and the T.A   of the sample s-1 and sample s-4 are showing slight variations which are observed as 230ppm and

282ppm. The sample s-2 alkalinity was lesser reported and the value is 103.5 ppm.The T.A of the sample s-3 ,sample s-4 and sample s-5 was observed as 103.5,185 and 160.5 respectively.

Calicum:

The calicum content in the soil was observed as more in the sample s-3 80.16ppm and s-6 as 79.8ppm.The sample s-1 and sample s-4 reported the calicum content as same as 42.08ppm.The calicum ions was observed as same as in the soil was 62.12ppm in s-5 sample.

Magnesium:

The magnesium in the soil sample s-5 was exhibited higher values 112.3ppm .The magnesium

content in s-3 sample was identified as least in 36.41 ppm. The s-2 sample and s-4 sample showed nearly magnesium ions value as 60.47ppm and 60.60ppmHowever the magnesium in the soil content was reported as sample s-1 as 51.07 ppm.

Chloride:

The chloride ions in the soil was observed as highest in the sample s-4 104.99 ppm.the chloride ions in the soil was exhibited as s-6 and s-1 are sample as 74.97 and 54.84ppm.the s-5 and s-3 samples showed chloride ions in the soil as 25.99 and 24.99 ppm respectively.

Table1: The parameters and values obtained during expts

| sample	PH	EC ms	TDS ppm	turbidity NTU	T.H ppm	T.A ppm	Ca2+ ppm	Mg2+ ppm	Cl- ppm
s-1 TMS	6.2	3.26	168ppm	0.09	253	230	42.08	51.07	54.84
s-2 KMS	5.5	2.69	623ppm	0.25	325	103.5	76.15	60.47	34.9
s-3 PDS	7.1	0.804	225ppm	2.93	230	185	80.16	36.41	24.99
s-4 YDS	6.3	0.323	152ppm	3.25	291.5	282	42.08	60.60	104.99
s-5 KDS	7.5	2..29	123ppm	2.34	432.5	160.5	62.12	90.00	25.99
s-6 VKPS	5.2	0.26	525ppm	2.3	650	305	79.8	112.3	74.97
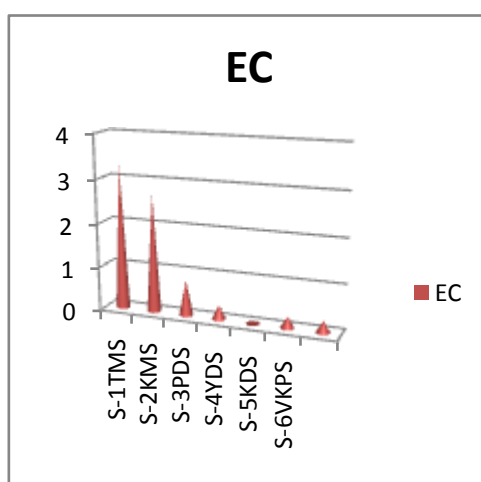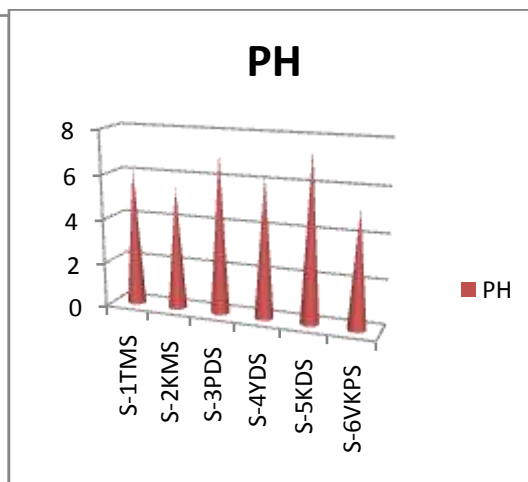
Fig 1   **Fig 2**
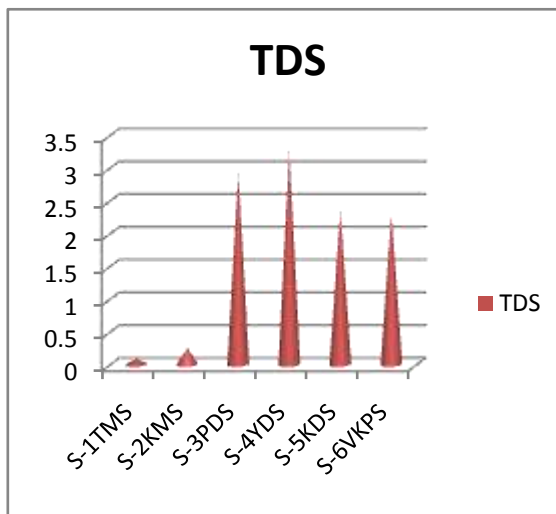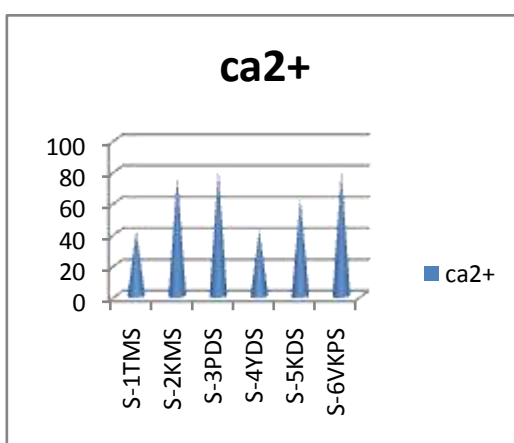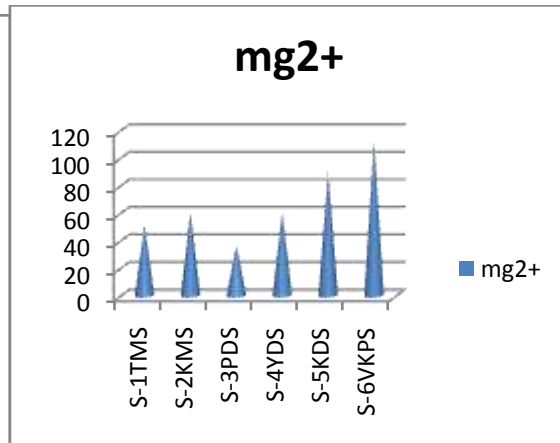
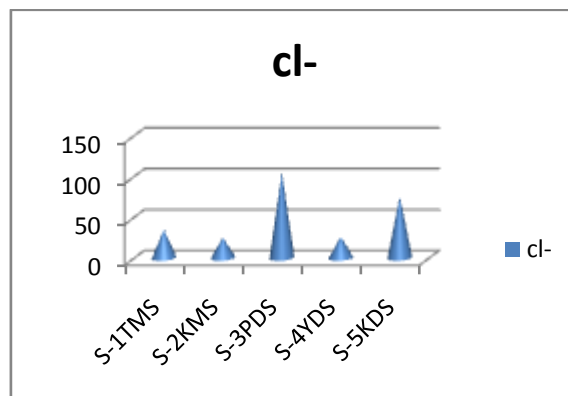**Fig 3.**
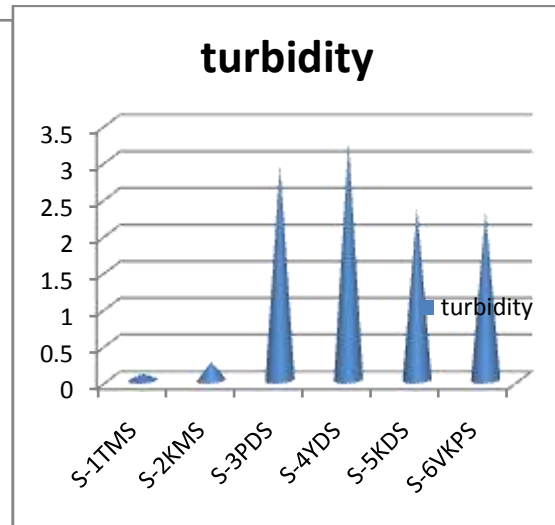
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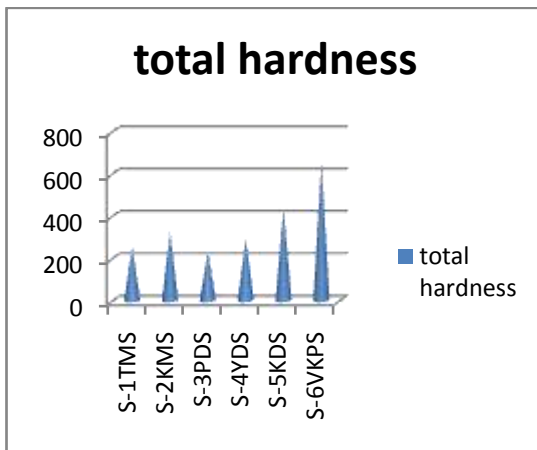
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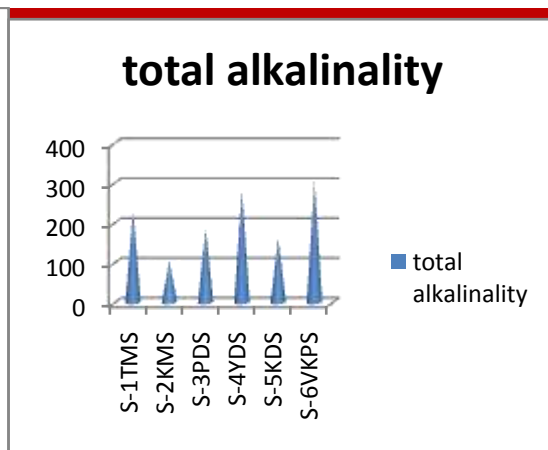
Fig 6

Fig 7.

Fig 8

Fig 9

IV. CONCLUSION.

From the above results and discussion it is concluded that the soil from the sample-6 .all the parameter are observed as higher indicates this soil is highly polluted and unfit for agriculture where the sample s-2 sample is less polluted when compared with other sample.this soil can be used for agriculture purpose.the study of ph,EC,calicum, magnesium, chloride,total hardness T.A,T.DS, helps to determine the soil capacity enriched nutrients and salinity in the soil.it helps to find out suitability of crops for this type of soil.this research study will help the farmers and the people residing facing the problems related to soil nutrients,amount of soil is polluted by the industries.

V. ACKNOWLEDGMENTS

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