CHAPTER-3

RESULTS

Water quality parameters

Soil quality parameters

Fish population data analysis

3. RESULTS:

The study sites, Dhobi Talav and Majam Talav were analyzed to establish the interrelation between environmental conditions and fish population. For such project the samples were collected and analyzed for various qualitative and quantitative aspects either at site or in the laboratory. This chapter contains all observations made in the form of results, tables and graphs.

Water quality parameters:

1.1 Study Site- Dhobi Talav

All the water quality parameters of Dhobi Talav has been shown by Table 3.1.1 in year 2012-2013 and Table 3.1.2 in year 2013-2014.Figure number has also given with each parameter.

Temperature:

In the first year i.e. 2012-13 the surface water temperature fluctuates from 32^0C to 20^0 C during the observations while in the second year i.e. 2013-14 the temperature ranges were from 33^0C to 21^0C. The maximum temperature was recorded in May and the minimum temperature was recorded in January in both the years (Fig- 3.1.1 A and Fig-3.1.2 A).

pH:

In the first year the pH values were 8.3 to 7.4 during the observations. The highest value was recorded in May while lowest value was in December, January. In the second year pH ranges were from 8.4 to 7.4. The maximum pH was recorded in May and the minimum pH was recorded in December (Fig-3.1.1 B and Fig-3.1.2 B).

Acidity:

In first year Acidity ranges were from 84 mg/l to 44 mg/l. The highest and lowest values were recorded in the months of July and May respectively. In second year the Acidity values were between 84 mg/l to 48 mg/l. It was highest in September and lowest in May (Fig- 3.1.1 C and Fig-3.1.2 C).

Alkalinity:

The Alkalinity values were varies from 52 mg/l to 28 mg/l in first year. Highest value was in May and lowest value was in July. In second year Alkalinity was ranged from 60 mg/l to 32 mg/l. The highest and lowest values were reported in the months of May and January, February respectively(Fig- 3.1.1 D and Fig-3.1.2 D).

Dissolved Oxygen (DO):

In first and second, both the years, the DO values were varied with the same observations i.e. 9.6 mg/l in January and 4.22 mg/l in May(Fig- 3.1.1 E and Fig-3.1.2 E).

Chloride:

The Chloride values were varied from 723.63 mg/l to 592.42 mg/l in first year which was recorded highest in May and lowest in August. In the second year the concentration of Chloride was varied with the range of 731.58 mg/l in May and 576.52 mg/l in September(Fig- 3.1.1 F and Fig-3.1.2 F).

Total Hardness (TH):

In the first year Total Hardness varied with the values from 568 mg/l to 524 mg/l. Its maximum value was in May and Minimum value was in July. The range of TH was 576 mg/l to 524 mg/l in the second year, where the highest value was obtained in May and lowest value was obtained in August (Fig- 3.1.1 G and Fig-3.1.2 G).

Ca^{++} Hardness:

In the first year the highest value of Ca^{++} hardness was recorded 304 mg/l in May while the lowest value was recorded 272 mg/l in August. In the second year its highest value was obtained 304 mg/l in May and lowest value was obtained 268 mg/l in August (Fig- 3.1.1 H and Fig-3.1.2 H).

Mg^{++} Hardness:

Mg^{++}hardness was highest recorded 264 mg/l in March, April and May while its lowest value was obtained 248 mg/l in July and December in first year. In

the second year it was highest recorded 272 mg/l in May and March and lowest recorded 248 mg/l in January (Fig- 3.1.1 I and Fig-3.1.2 I).

Total Phosphorus:

During first year Total Phosphorus was varied with highest value 0.28 mg/l in September and lowest value 0.105 mg/l in April, May. While In second year its value was varied highest to lowest from 0.28 mg/l in September and 0.14 mg/l in May respectively (Fig- 3.1.1 J and Fig-3.1.2 J).

Nitrate:

The Nitrate values ranged from 2.95 mg/l to 1.26 mg/l were reported in 1st and 2nd year. In the 1st year highest value was obtained in August and the lowest value was obtained in May, where as in the 2nd year highest and lowest values were obtained in September and May respectively (Fig- 3.1.1 K and Fig-3.1.2 K).

Total Solids (TS):

The values of Total Solids (TS) ranged from 2000 mg/l to 1000 mg/l were reported in the first and second year. The TS was highest in July and lowest in February in the first year. In the second year it was maximum in August and minimum in January(Fig-3.1.1 L and Fig- 3.1.2 L).

Months	Temp	pH	Acidity	Alkalinity	DO	Chloride	TH	Ca	Mg	Phosphate	Nitrate	TS
April	31	8	56	40	4.99	695.8	552	288	264	0.105	1.69	1100
May	32	8.3	44	52	4.22	723.63	568	304	264	0.105	1.26	1200
June	30	8	68	36	5.37	676	536	280	256	0.14	1.69	1600
July	29	7.9	84	28	5.76	616.28	524	276	248	0.17	1.69	2000
August	29	7.9	76	32	6.52	592.42	532	272	260	0.17	2.95	1800
September	27	7.7	72	32	7.29	604.35	532	276	256	0.28	2.53	1800
October	25	7.6	80	40	7.68	652.06	540	280	260	0.24	2.53	1400
November	23	7.5	76	48	8.83	640.13	548	292	256	0.21	1.69	1200
December	21	7.4	68	48	8.83	624.23	544	296	248	0.14	1.69	1200
January	20	7.4	68	44	9.6	616.28	532	276	256	0.17	2.11	1200
February	23	7.6	60	32	8.06	644.11	540	288	252	0.17	2.11	1000
March	26	7.8	64	36	6.91	675.92	548	284	264	0.14	1.69	1100
Average	26.3333	7.75833	68	39	7.005	646.768	541.333	284.333	257	0.17	1.96917	1383.33
SD	**3.98482**	**0.27455**	**11.0536**	**7.6515**	**1.68763**	**39.5605**	**11.7344**	**9.56636**	**5.6889**	**0.05201**	**0.48629**	**332.575**

Table3.1.1: Presentation of water quality parameters of Dhobi Talav year 2012-2013.

Fig: 3.1.1. Graphical presentations of water quality parameters of Dhobi Talav Year 2012-2013 (A-L)

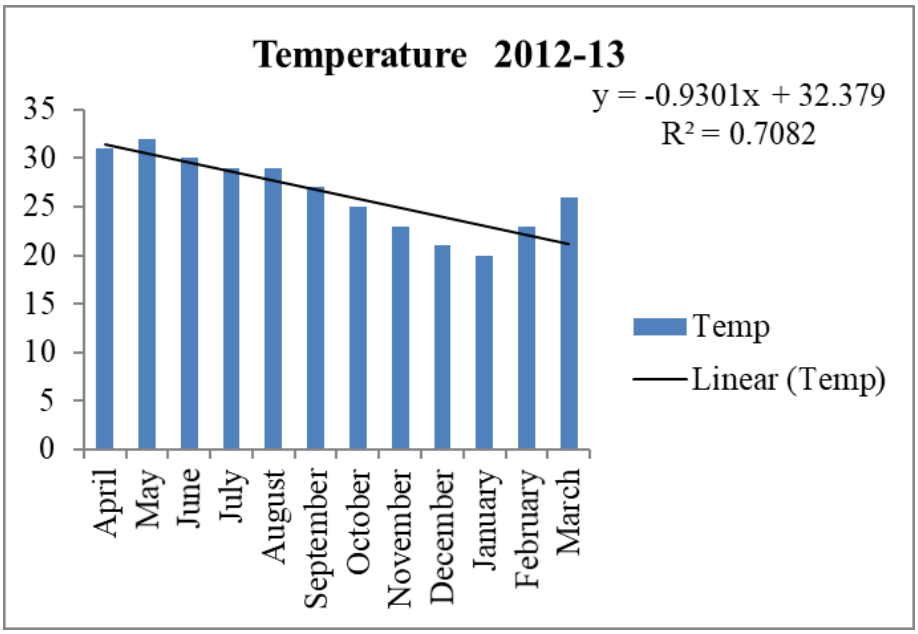

Fig: 3.1.1 A

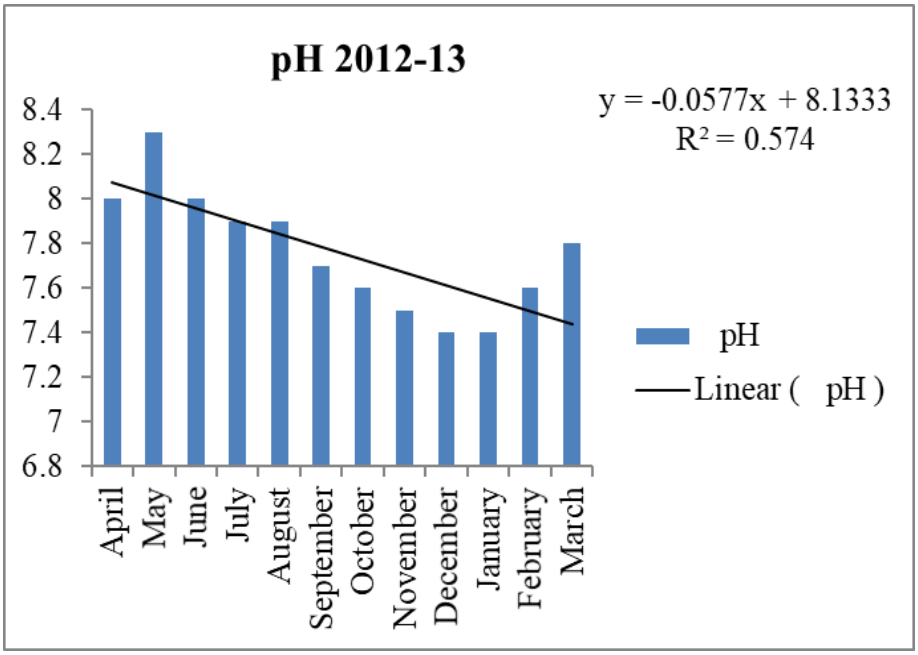

Fig: 3.1.1 B

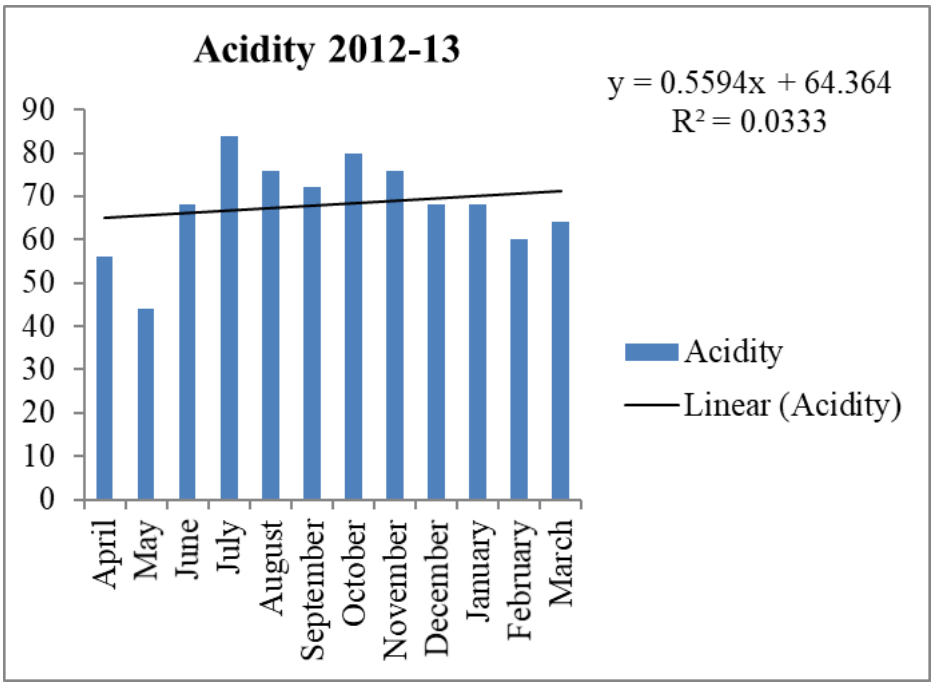

Fig: 3.1.1 C

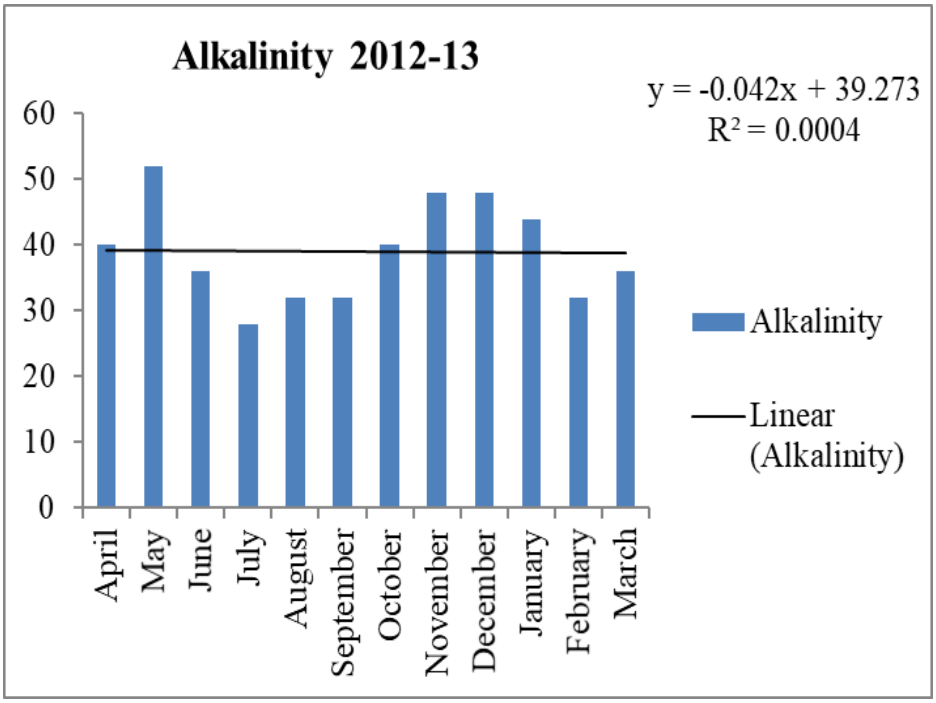

Fig: 3.1.1 D

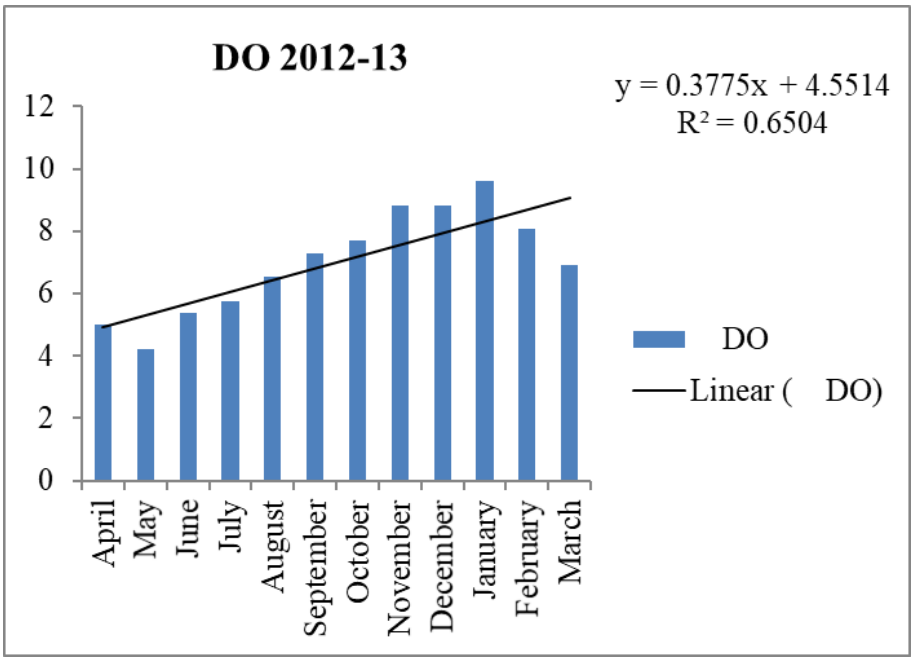

Fig: 3.1.1 E

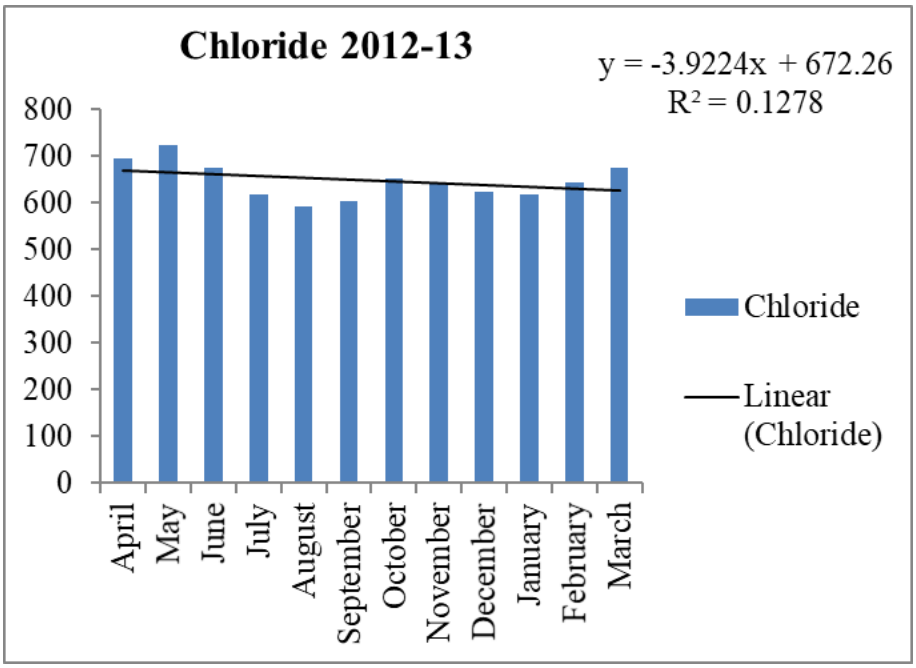

Fig: 3.1.1 F

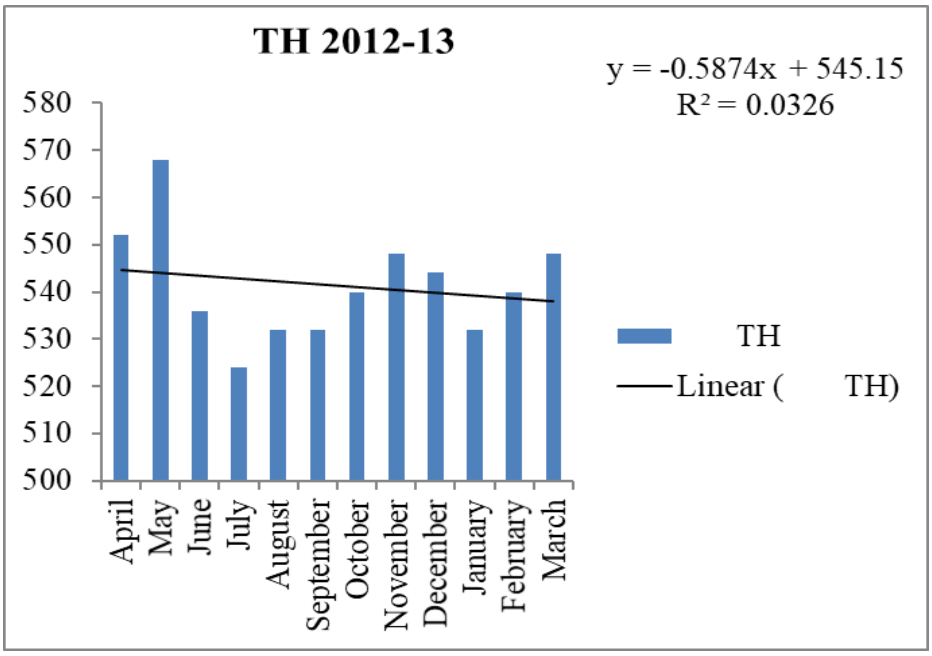

Fig: 3.1.1 G

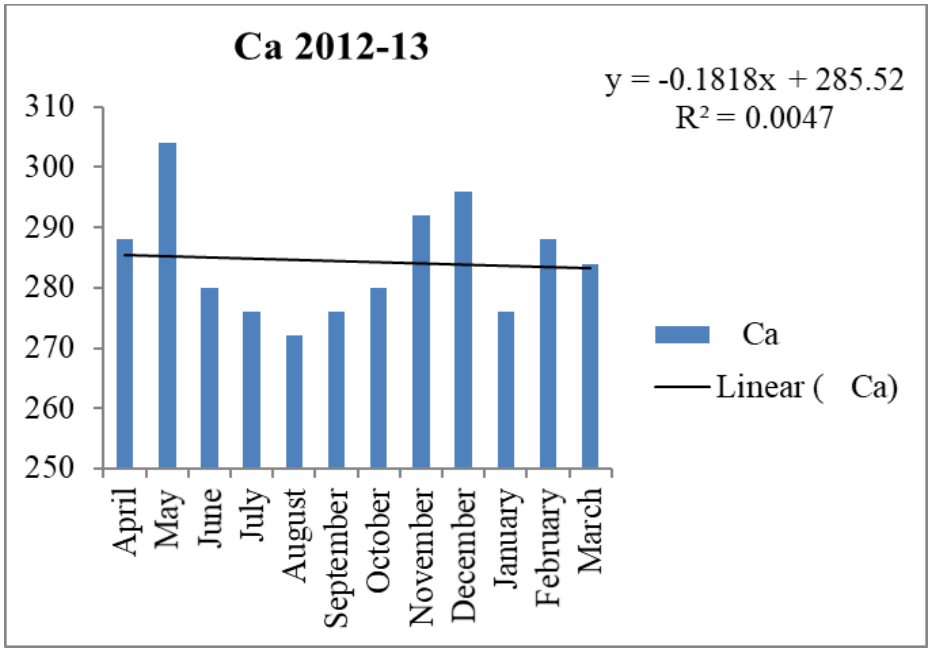

Fig: 3.1.1 H

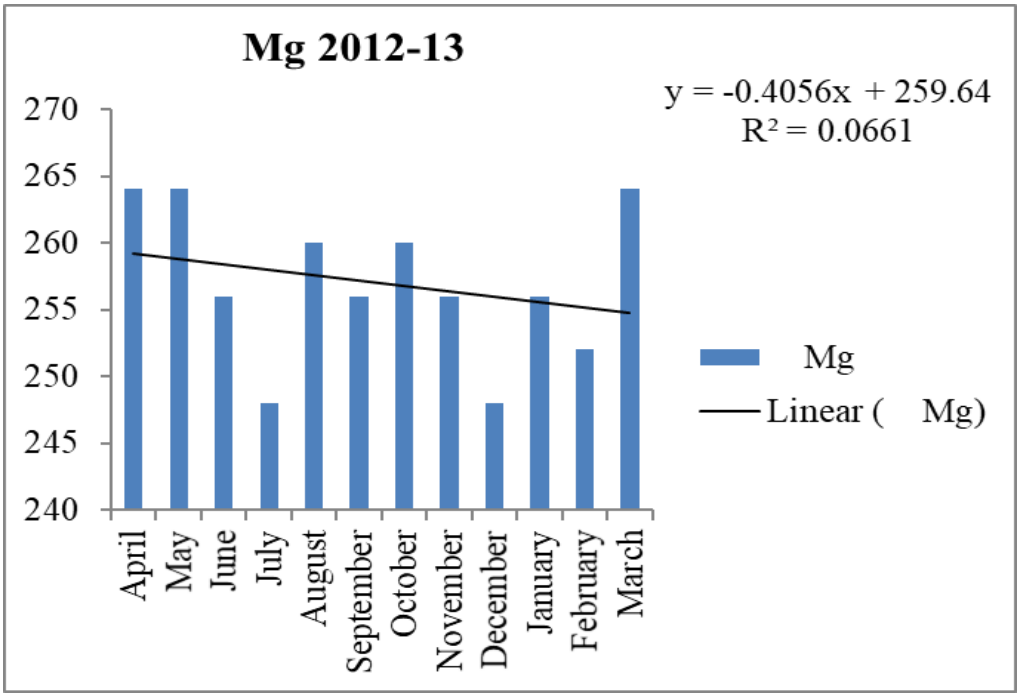

Fig: 3.1.1 I

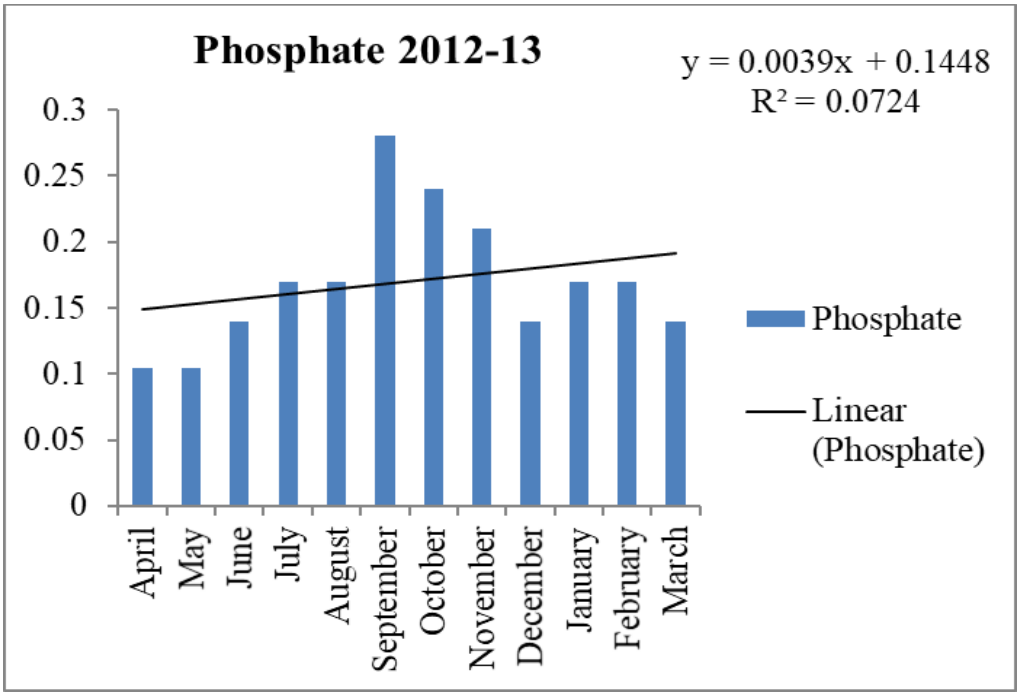

Fig: 3.1.1 J

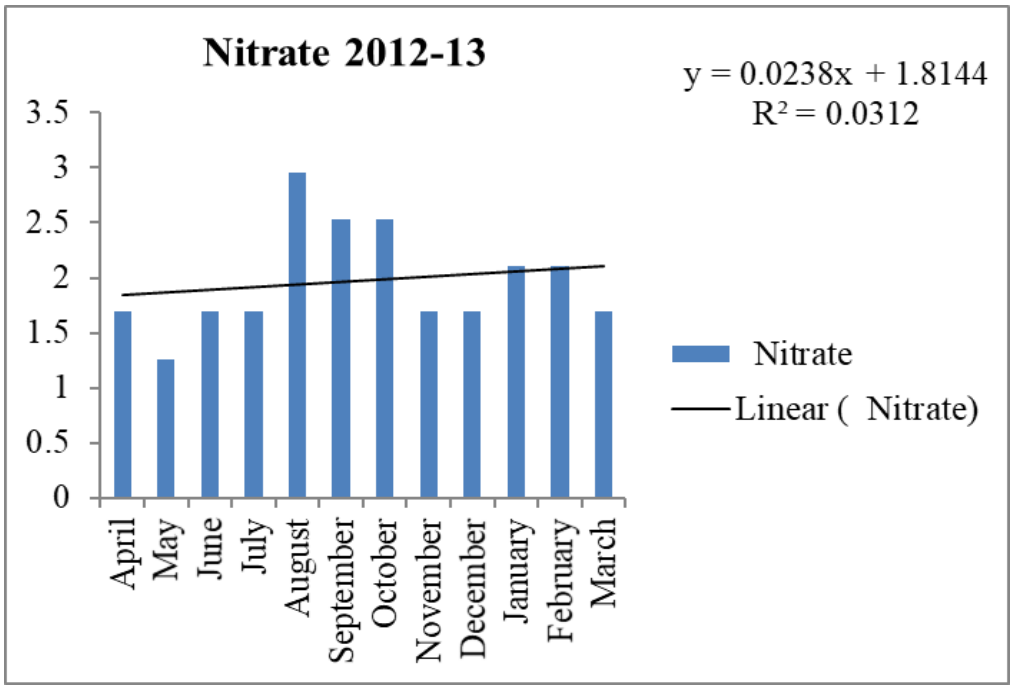

Fig: 3.1.1 K

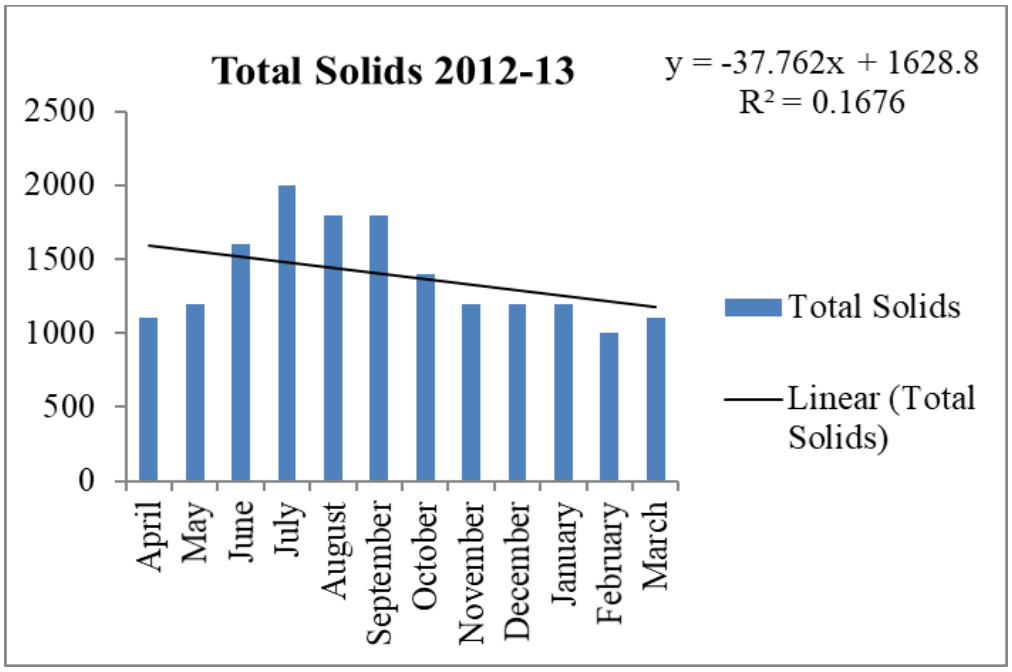

Fig: 3.1.1 L

Months	Temp	pH	Acidity	Alkalinity	DO	Chloride	TH	Ca	Mg	Phosphate	Nitrate	TS
April	31	8.1	56	44	5.37	703.75	564	296	268	0.17	1.69	1200
May	33	8.4	48	60	4.22	731.58	576	304	272	0.14	1.26	1400
June	32	8.2	60	56	5.37	711.7	560	296	264	0.21	2.11	1800
July	30	8	68	48	6.14	652.06	544	288	256	0.24	2.53	1800
August	27	7.9	76	36	6.91	600.37	524	268	256	0.24	2.53	2000
September	26	7.7	84	40	7.29	576.52	540	280	260	0.28	2.95	1600
October	24	7.5	76	48	8.06	604.35	544	288	256	0.21	1.69	1600
November	24	7.5	80	36	8.06	620.25	552	292	260	0.17	1.69	1400
December	22	7.4	72	40	8.44	620.25	548	296	252	0.17	2.11	1400
January	21	7.6	68	32	9.6	608.32	532	284	248	0.21	2.11	1000
February	23	7.8	60	32	8.83	636.16	552	288	264	0.17	1.69	1200
March	26	8	64	36	7.29	663.99	556	284	272	0.17	1.69	1400
Average	26.58	7.84	67.66	42.33	7.13	644.10	549.33	288.66	260.66	0.19	2.00	1483.33
Stdev	4.05	0.31	10.57	9.09	1.60	49.34	14.10	9.316	7.59	0.04	0.47	288.67

Table 3.1.2: Presentation of water quality parameters of Dhobi Talav year 2013-2014

Fig: 3.1.2. Graphical presentations of water quality parameters of Dhobi Talav Year 2013-2014 (A – L).

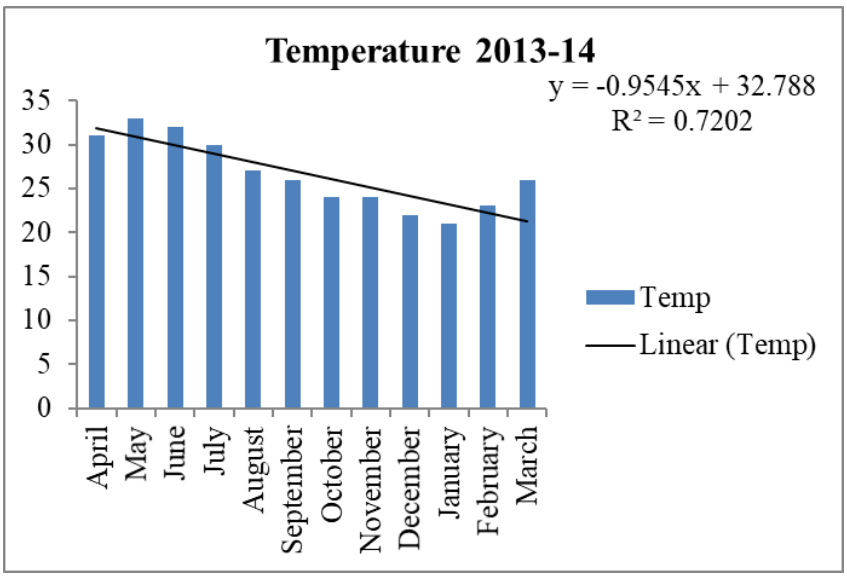

Fig: 3.1.2 A

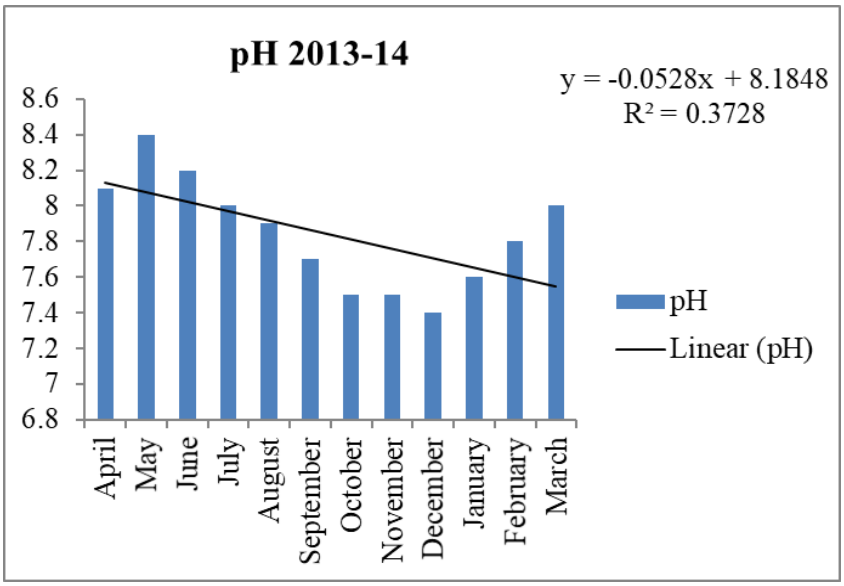

Fig: 3.1.2 B

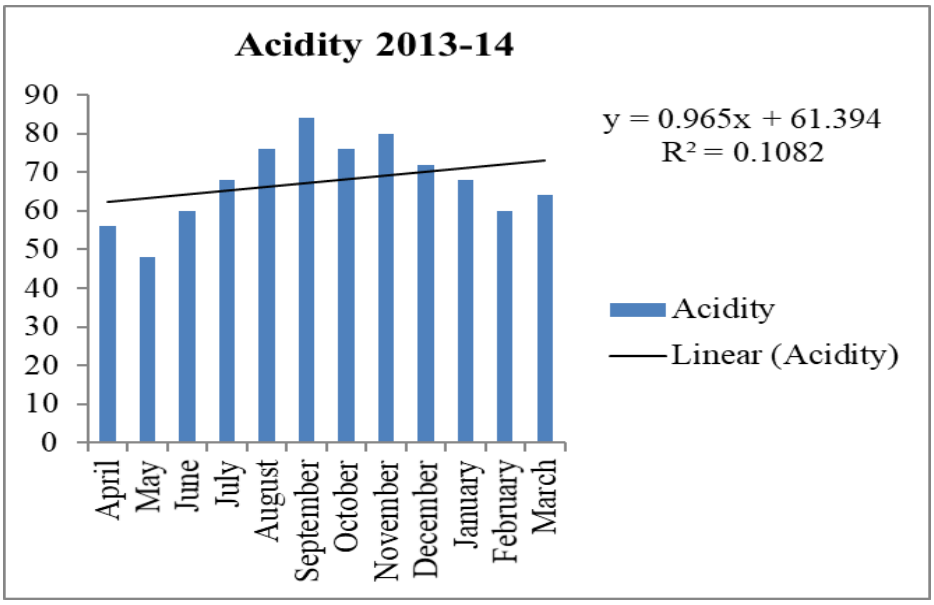

Fig: 3.1.2 C

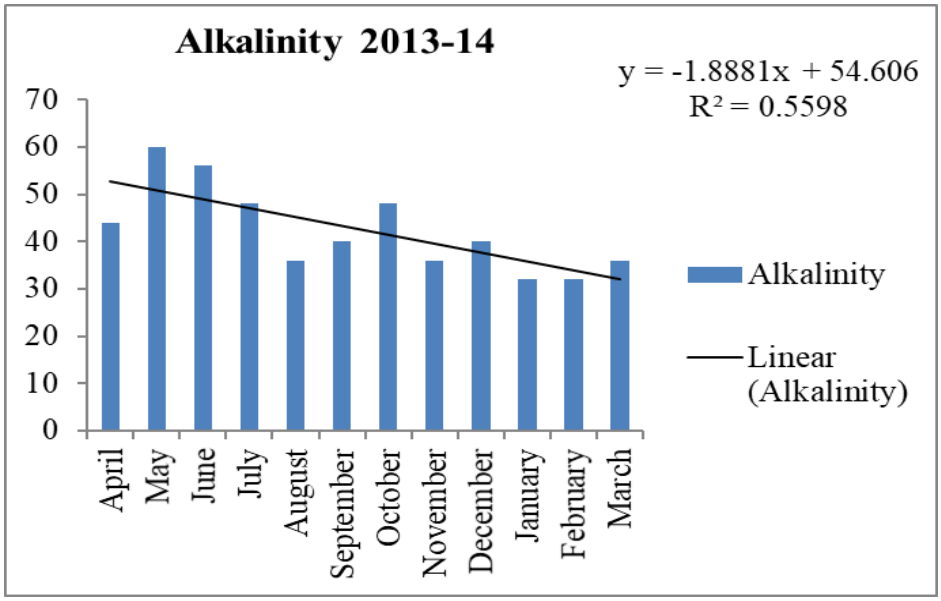

Fig: 3.1.2 D

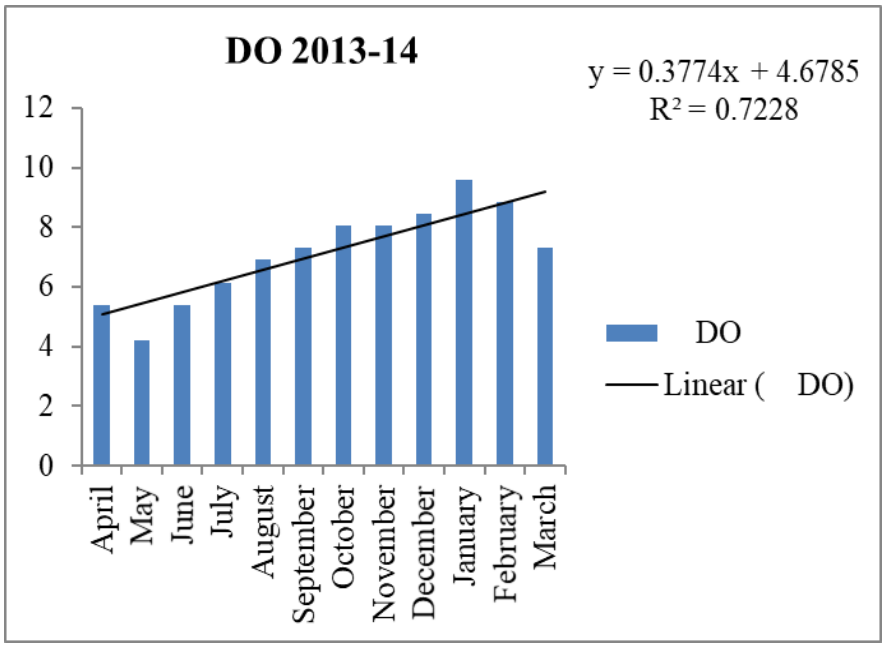

Fig: 3.1.2 E

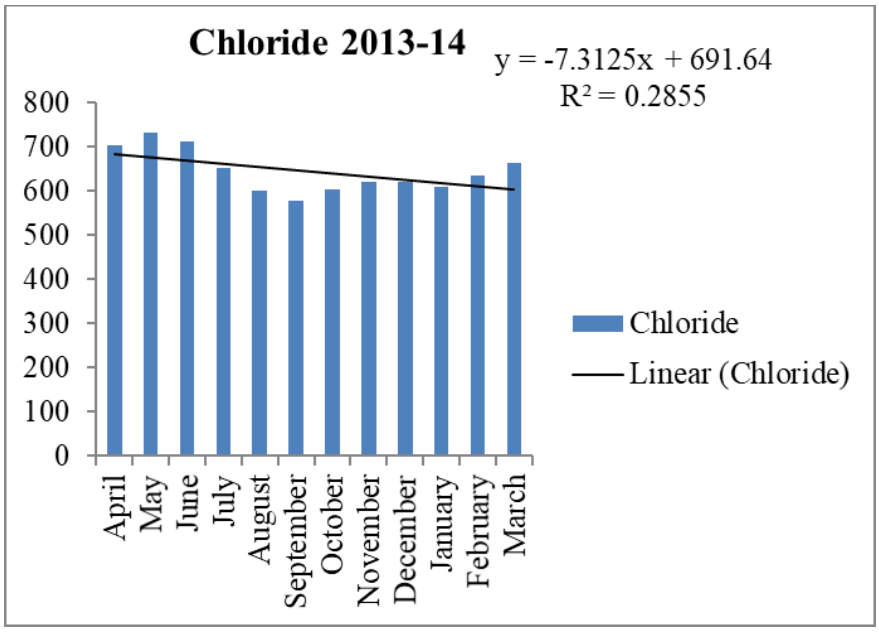

Fig: 3.1.2 F

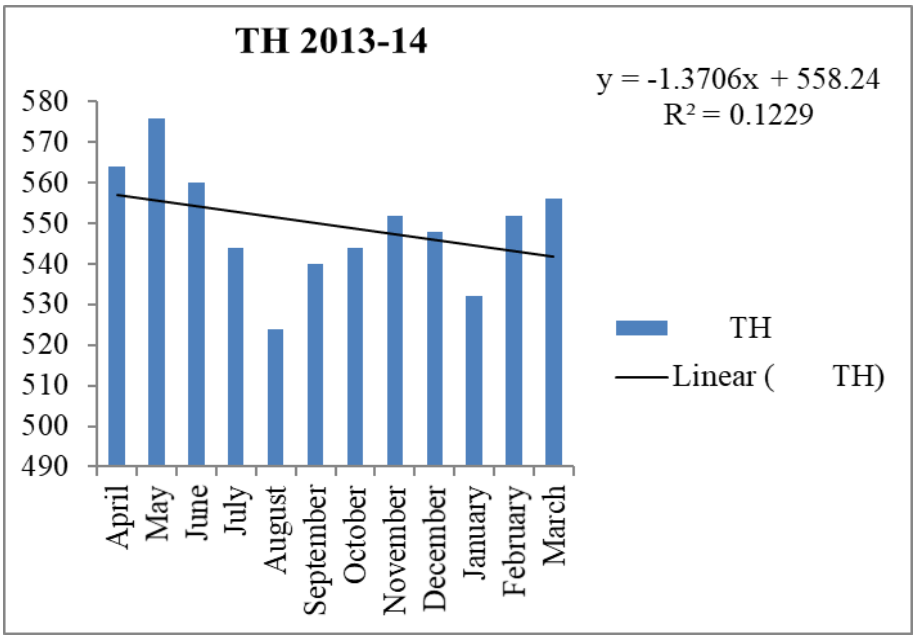

Fig: 3.1.2 G

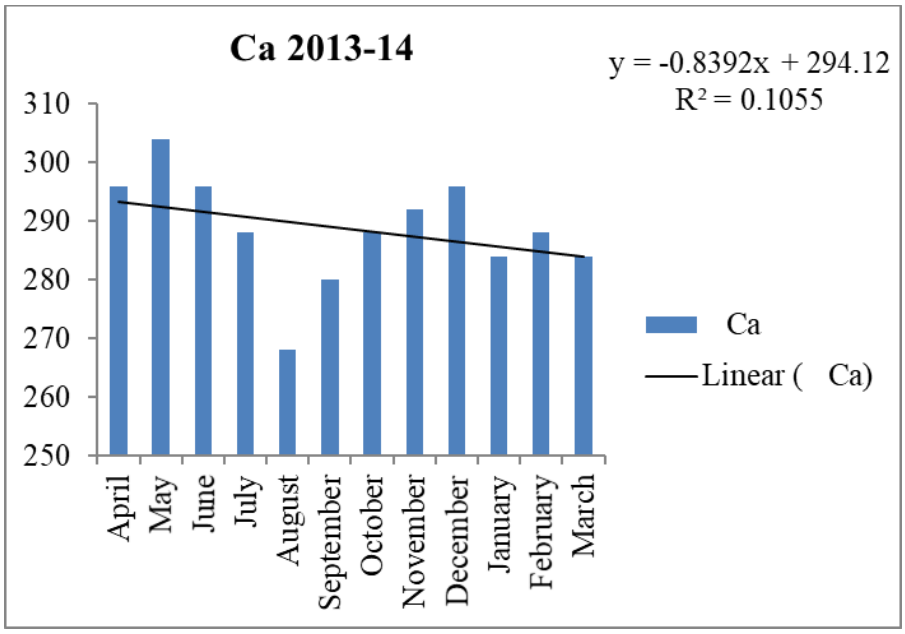

Fig: 3.1.2 H

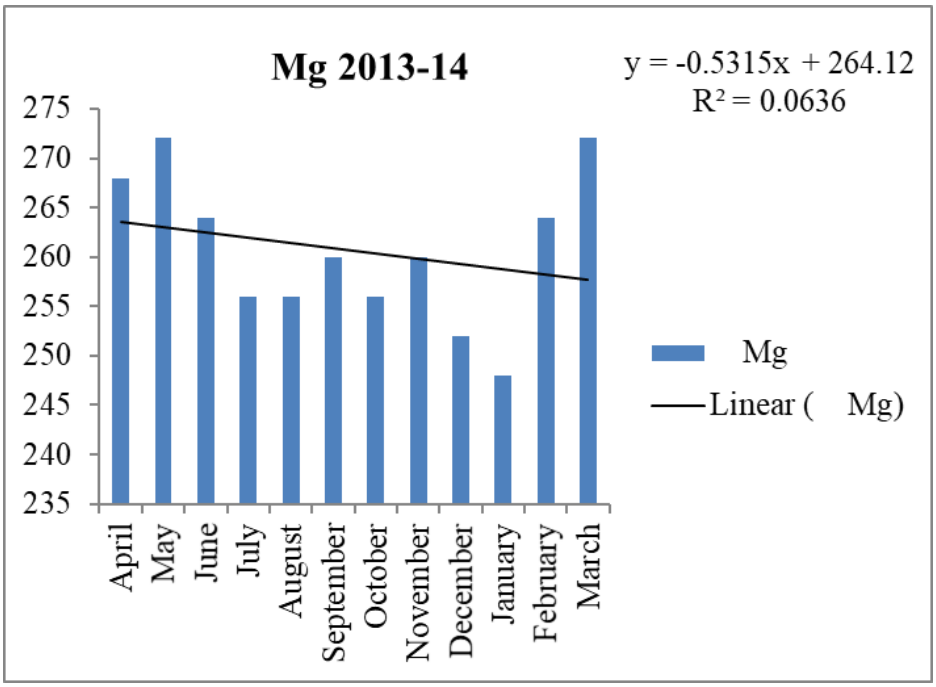

Fig: 3.1.2 I

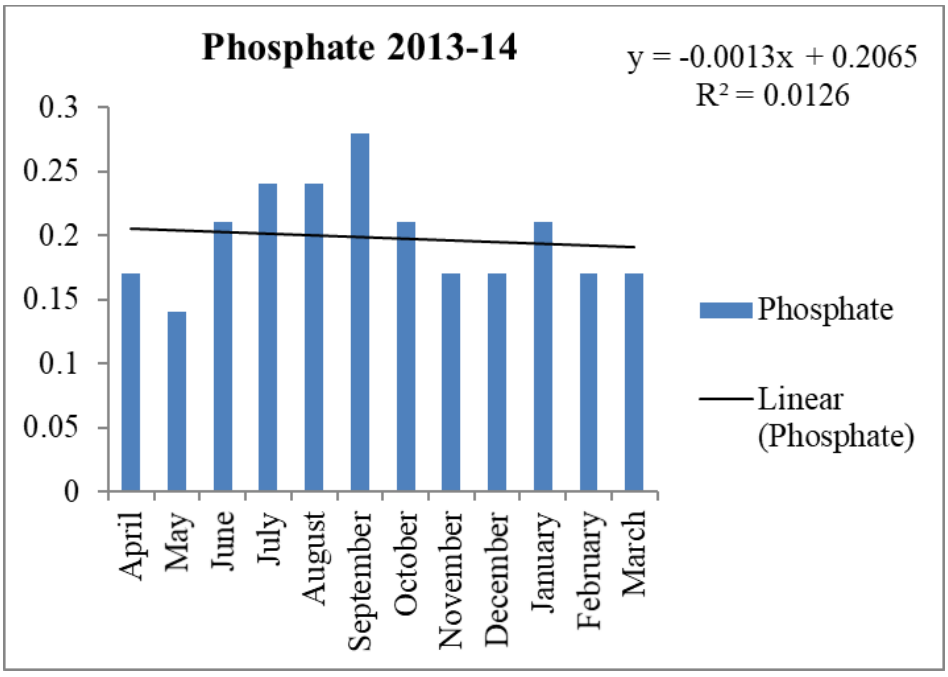

Fig: 3.1.2 J

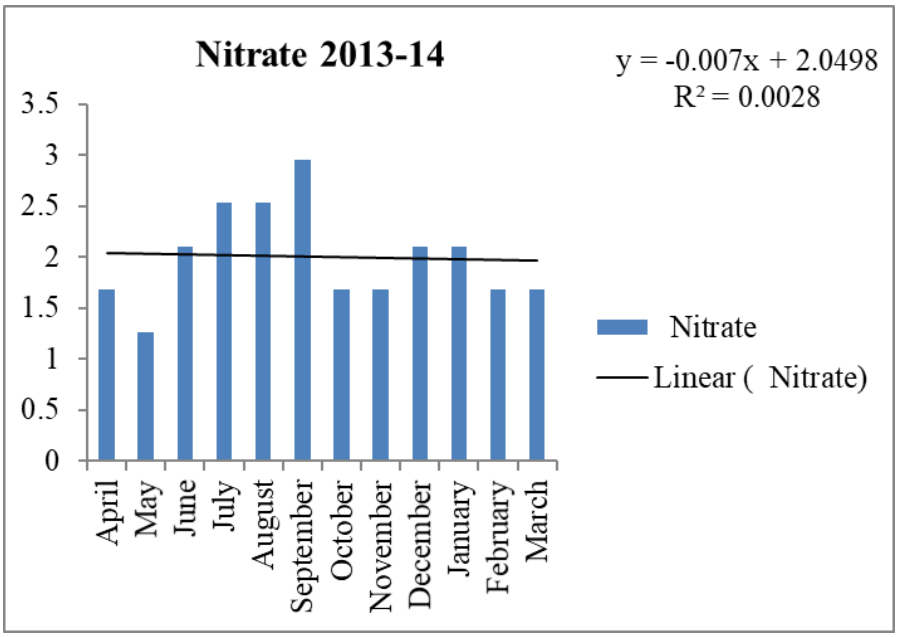

Fig: 3.1.2 K

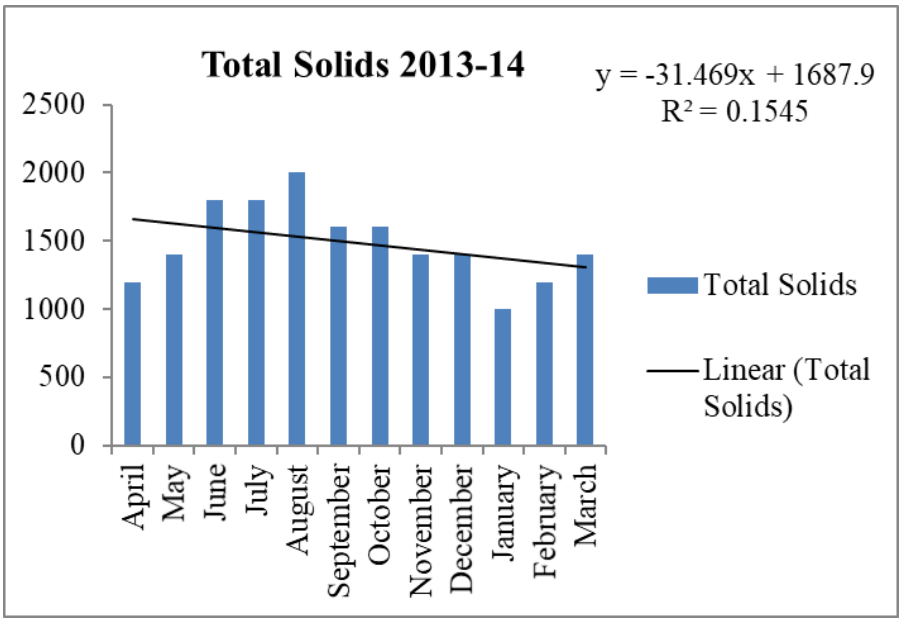

Fig: 3.1.2 L

1.1 Study Site-Majam Talav

All the water quality parameters of Majam Talav has been shown by Table 3.2.1 in year 2012-2013 and Table 3.2.2 in year 2013-2014. Figure number has also given with each parameter.

Temperature:

In the first year i.e. 2012-13 the temperature varied from 32^0C to 22^0 C. The highest value of temperature was recorded in May,june while lowest value was in December. In the second year i.e. 2013-14 the temperature ranges were from 33^0C to 21^0C. The maximum temperature was recorded in May and the minimum temperature was recorded in January (Fig- 3.2.1 A and 3.2.2 A).

pH:

In the first year the pH values were 8.7 to 7.5 during the observations. The highest value was recorded in May while lowest value was in September. In the second year pH ranges were from 8.9 to 7.8. The maximum pH was recorded in May and the minimum pH was recorded in August(Fig- 3.2.1 B and 3.2.2 B).

Acidity:

In first year Acidity ranges were from 40 mg/l to 0 mg/l. The highest and lowest values were recorded in the months of September and May respectively. In second year the Acidity values were between 36 mg/l to 4 mg/l. It was highest in August and lowest in May (Fig- 3.2.1 C and 3.2.2 C).

Alkalinity:

The Alkalinity values were varies from 52 mg/l to 16 mg/l in first year. Highest value was in May and lowest value was in September. In second year Alkalinity was ranged from 56 mg/l to 20 mg/l .The highest and lowest values were reported in the months of May and July respectively (Fig- 3.2.1 D and 3.2.2 D).

Dissolved Oxygen (DO):

The DO values were varied from 11.9 mg/l in December to 6.14mg/l in May in the first year while in the second year it was 11.9 mg/l in January and 5.37 mg/l in May(Fig- 3.2.1 E and 3.2.2 E).

Chloride:

The Chloride values were varied from 393.62 mg/l to 326.03 mg/l in first year which was recorded highest in May and lowest in August. In the second year the concentration of Chloride was varied with the range of 397.6 mg/l in May and 330.008 mg/l in September(Fig- 3.2.1 F and 3.2.2 F).

Total Hardness (TH):

In the first year Total Hardness varied with the values from 268 mg/l to 220 mg/l. Its maximum value was in May and Minimum value was in September. The range of TH was 288 mg/l to 220 mg/l in the second year, where the highest value was obtained in May and lowest value was obtained in August (Fig- 3.2.1 G and 3.2.2 G).

Ca^{++}Hardness:

In the first year the highest value of Ca^{++}hardness was recorded 144 mg/l in May while the lowest value was recorded 124 mg/l in August.In the second year its highest value was obtained 160 mg/l in May and lowest value was obtained 120 mg/l in August (Fig- 3.2.1 H and 3.2.2 H).

Mg^{++} Hardness:

Mg^{++}hardness was highest recorded 124 mg/l in May and December while its lowest value was obtained 104 mg/l in September in first year. In the second year it was highest recorded 128 mg/l in May and lowest recorded 100 mg/l in August and September (Fig- 3.2.1 I and 3.2.2 I).

Total Phosphorus:

During first year Total Phosphorus was varied with highest value 0.42 mg/l in August and lowest value 0.21 mg/l in November. While In second year its value was varied highest to lowest from 0.45 mg/l in July and 0.21 mg/l in November respectively (Fig- 3.2.1 J and 3.2.2 J).

Nitrate:

The Nitrate values ranged from 3.38 mg/l to 1.26 mg/l were reported in I^{st} year. In the I^{st} year highest value was obtained in July and the lowest value was obtained in May, where as in the II^{nd} year highest and lowest values were obtained 4.22 mg/l to 1.69 mg/l in August and May respectively(Fig- 3.2.1 K and 3.2.2 K).

Total Solids (TS):

The values of Total Solids (TS) ranged from 1600 mg/l to 600 mg/l were reported in the first and 1600mg/1 to 800mg/1 in second year. The TS was highest in July and lowest in January in the first year. In the second year it was maximum in September and minimum in December(Fig- 3.2.1 L and 3.2.2 L).

Months	Temp	pH	Acidity	Alkalinity	DO	Chloride	TH	Ca	Mg	Phosphate	Nitrate	TS
April	31	8	12	40	9.21	361.81	240	128	112	0.24	1.69	800
May	32	8.7	0	52	6.14	393.62	268	144	124	0.24	1.26	1000
June	32	8.4	8	44	6.91	385.67	252	132	120	0.28	2.53	1400
July	30	8.1	20	32	9.6	365.79	244	128	116	0.35	3.38	1600
August	28	7.6	32	24	10.36	326.03	232	124	108	0.42	2.95	1400
September	28	7.5	40	16	10.36	345.91	220	116	104	0.38	2.95	1400
October	25	7.7	36	28	11.13	353.86	236	128	108	0.24	1.69	1200
November	24	8.3	16	44	11.52	341.93	248	136	112	0.21	2.53	1000
December	22	8.1	28	24	11.9	333.98	260	136	124	0.28	2.53	1000
January	23	8.1	24	20	11.13	357.84	260	140	120	0.38	2.53	600
February	24	7.8	24	28	10.75	333.98	252	136	116	0.38	2.11	800
March	27	7.9	20	32	9.98	341.93	248	132	116	0.31	2.11	800
Average	27.1667	8.016667	21.6667	32	9.91583	353.529	246.667	131.667	115	0.309167	2.355	1083.33
Stdev	3.56328	0.345972	11.6255	10.92121	1.76952	20.7267	13.3576	7.5237	6.41022	0.070641	0.60937	312.856

Table 3.2.1: Presentation of water quality parameters of Majam Talav year2012-2013

Fig: 3.2.1. Graphical presentations of water quality parameters of Majam Talav Year 2012-2013 (A – L).

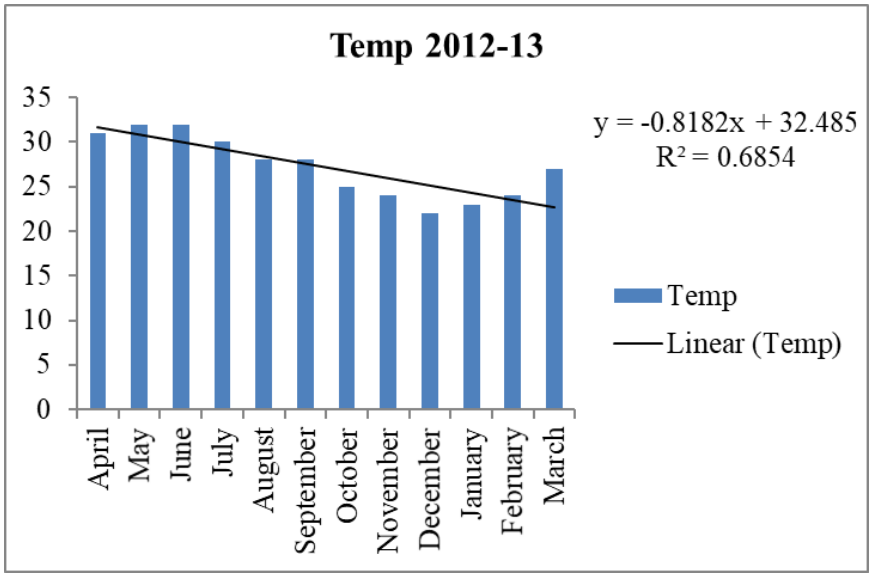

Fig: 3.2.1 A

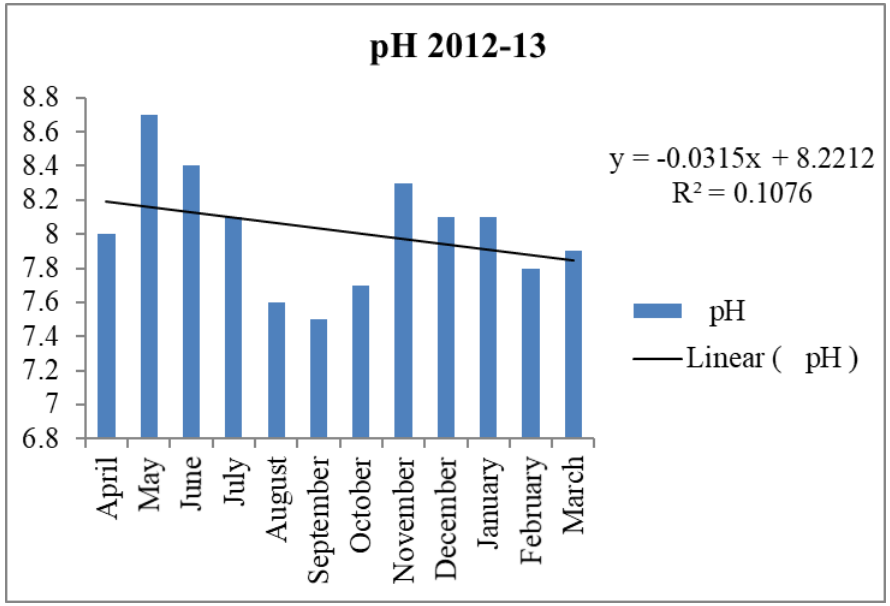
pH 2012-13
8.8
8.6
8.4
8.2
8
7.8
7.6
7.4
7.2
7
6.8
April
May
June
July
August
September
October
November
December
January
February
March
y = -0.0315x + 8.2212
R² = 0.1076
pH
Linear (pH)

Fig: 3.2.1 B

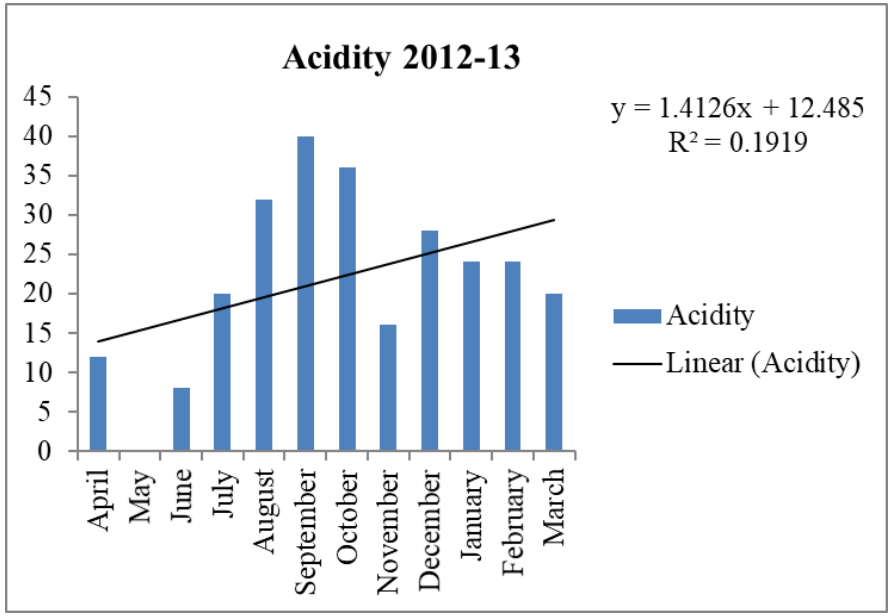
Acidity 2012-13
y = 1.4126x + 12.485
R² = 0.1919
45
40
35
30
25
20
15
10
5
0
April
May
June
July
August
September
October
November
December
January
February
March
Acidity
Linear (Acidity)

Fig: 3.2.1 C

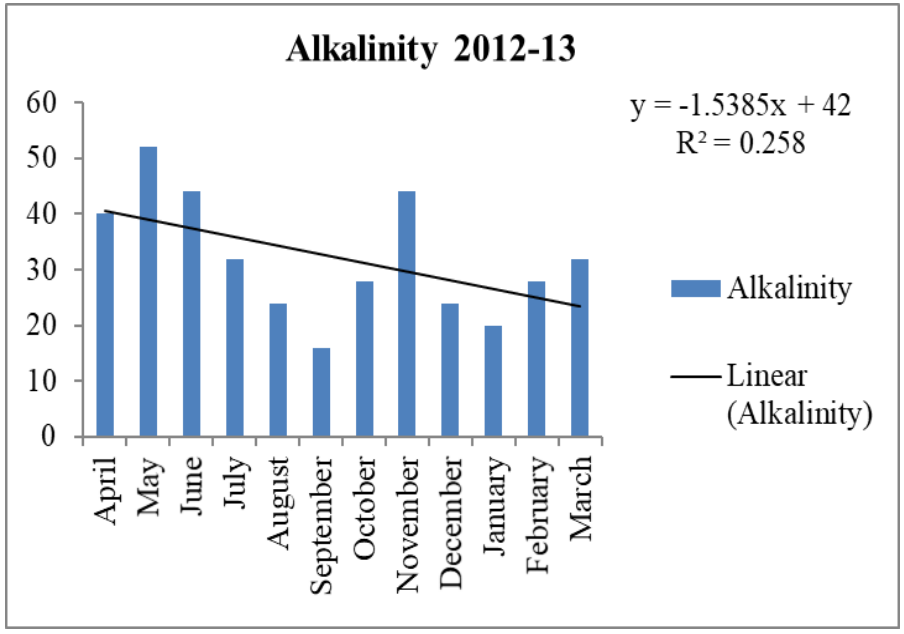
Alkalinity 2012-13
y = -1.5385x + 42
R² = 0.258
60
50
40
30
20
10
0
April
May
June
July
August
September
October
November
December
January
February
March
Alkalinity
Linear (Alkalinity)

Fig: 3.2.1 D

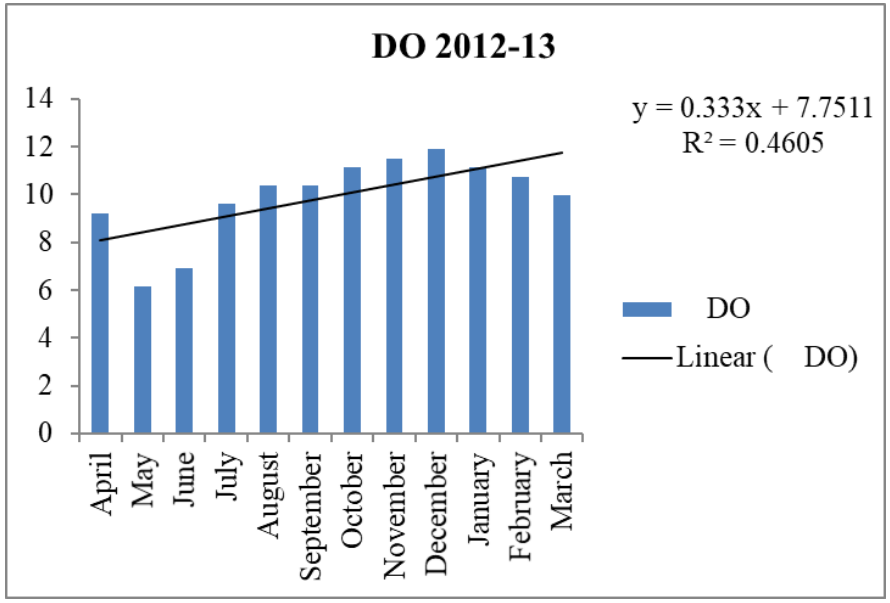
DO 2012-13
y = 0.333x + 7.7511
R² = 0.4605
14
12
10
8
6
4
2
0
April
May
June
July
August
September
October
November
December
January
February
March
DO
Linear (DO)

Fig: 3.2.1 E

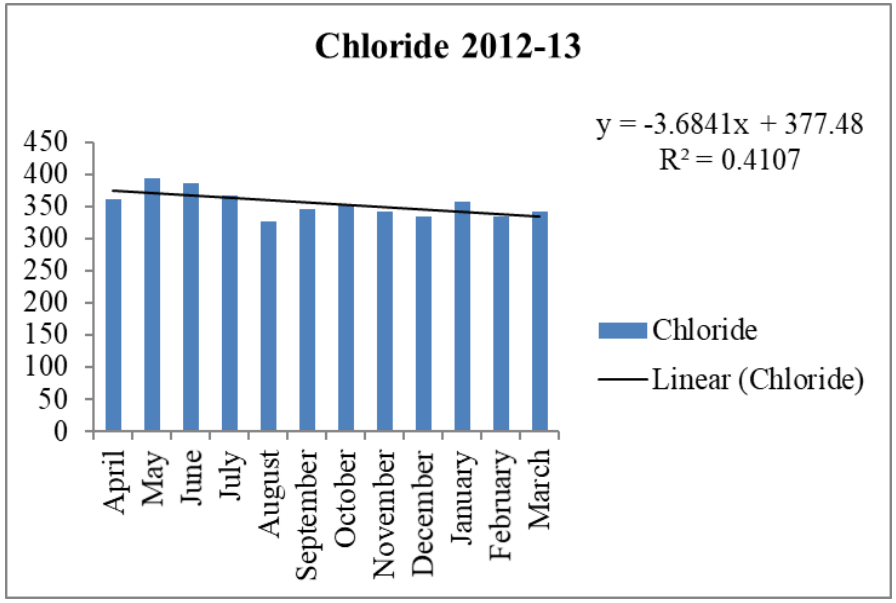
Chloride 2012-13
y = -3.6841x + 377.48
R² = 0.4107
450
400
350
300
250
200
150
100
50
0
April
May
June
July
August
September
October
November
December
January
February
March
Chloride
Linear (Chloride)

Fig: 3.2.1 F

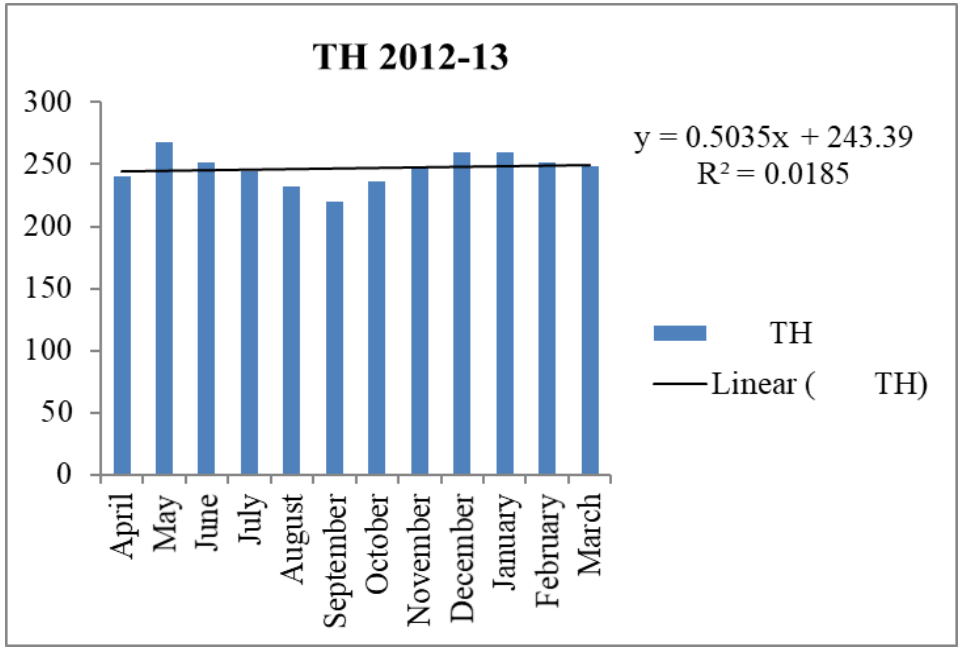
TH 2012-13
300
250
200
150
100
50
0
April
May
June
July
August
September
October
November
December
January
February
March
y = 0.5035x + 243.39
R² = 0.0185
TH
Linear (TH)

Fig: 3.2.1 G

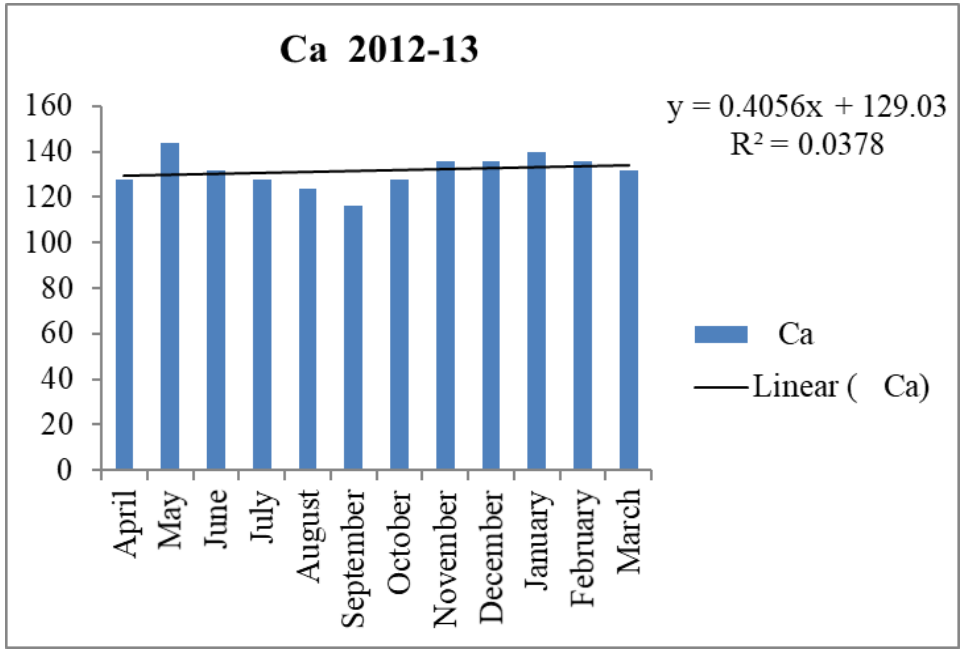
Ca 2012-13
160
140
120
100
80
60
40
20
0
April
May
June
July
August
September
October
November
December
January
February
March
y = 0.4056x + 129.03
R² = 0.0378
Ca
Linear (Ca)

Fig: 3.2.1 H

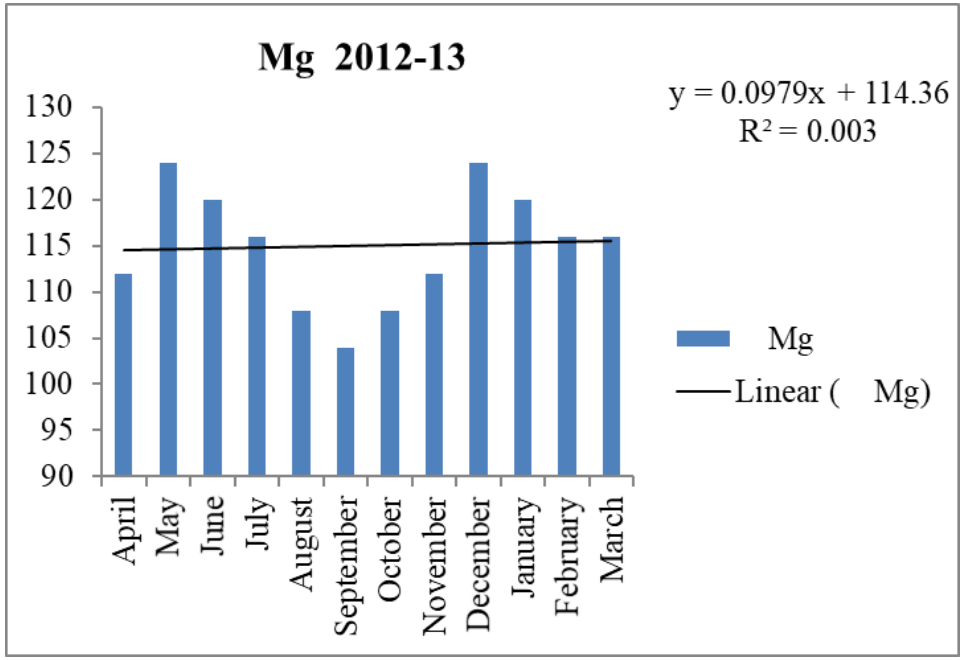
Mg 2012-13
y = 0.0979x + 114.36
R² = 0.003
130
125
120
115
110
105
100
95
90
April
May
June
July
August
September
October
November
December
January
February
March
Mg
Linear (Mg)

Fig: 3.2.1 I

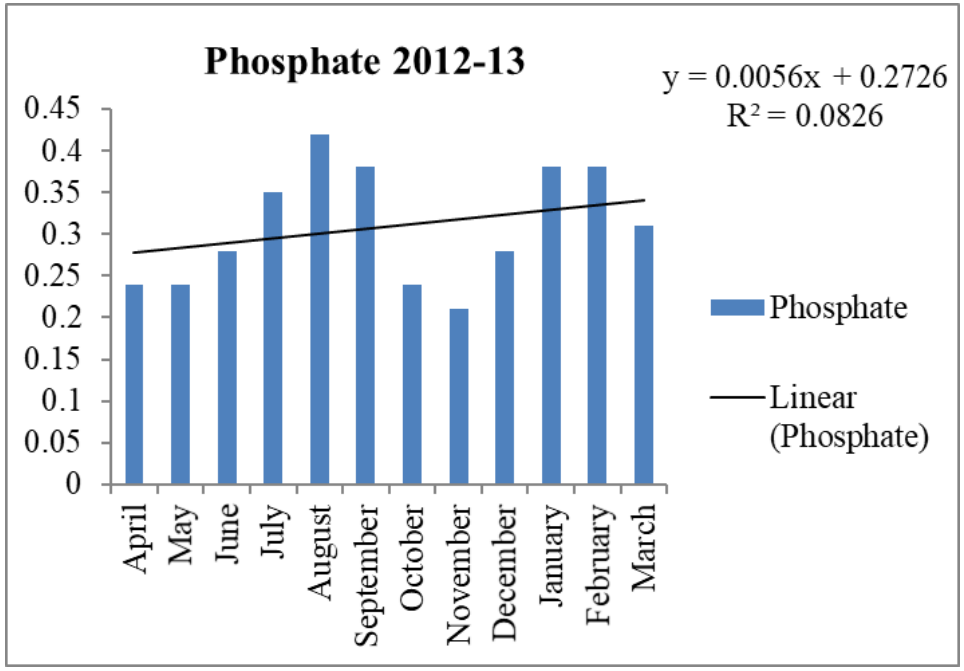
Phosphate 2012-13
y = 0.0056x + 0.2726
R² = 0.0826
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
April
May
June
July
August
September
October
November
December
January
February
March
Phosphate
Linear (Phosphate)

Fig: 3.2.1 J

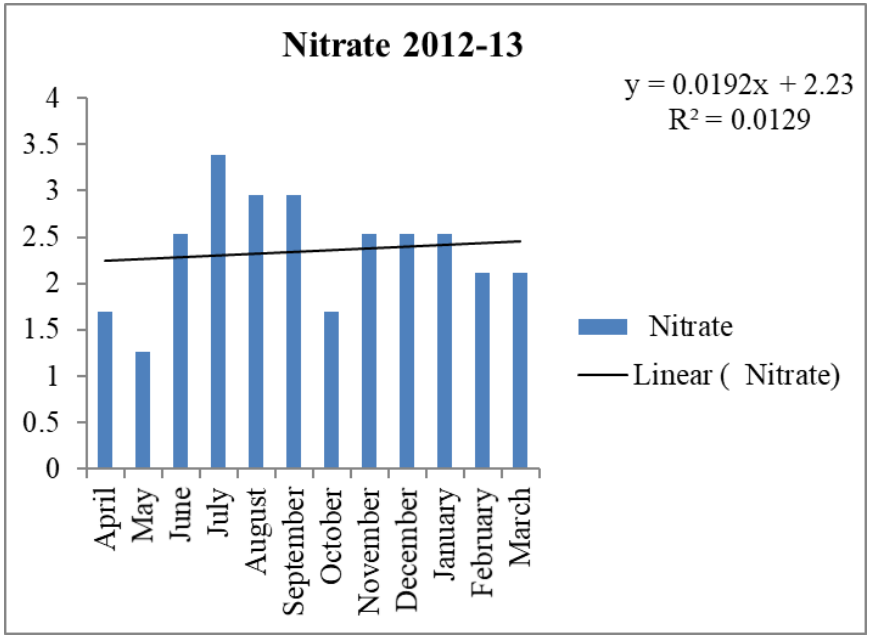
Nitrate 2012-13
y = 0.0192x + 2.23
R² = 0.0129
4
3.5
3
2.5
2
1.5
1
0.5
0
April
May
June
July
August
September
October
November
December
January
February
March
Nitrate
Linear (Nitrate)

Fig: 3.2.1 K

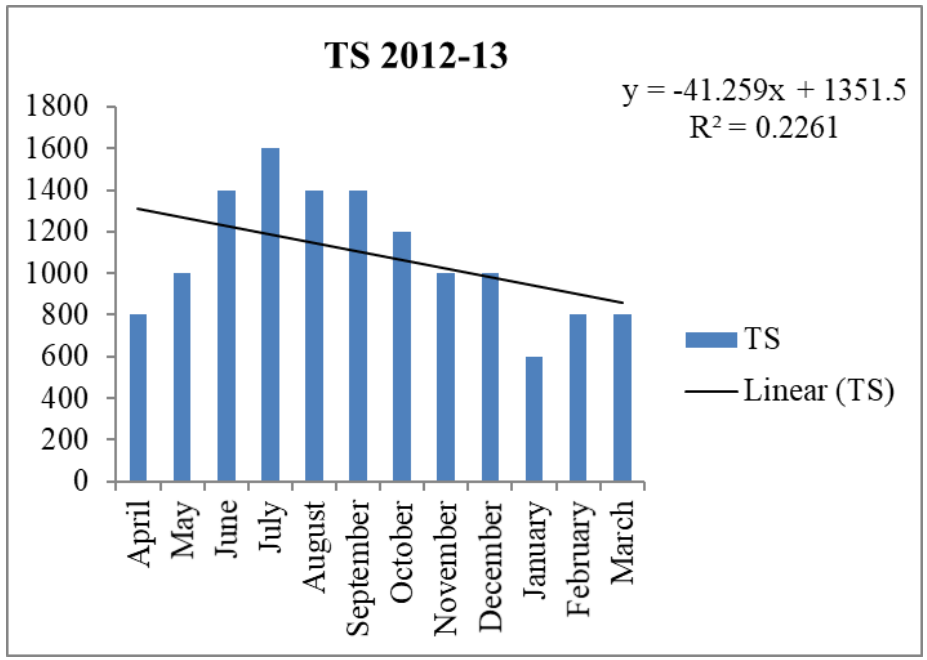
TS 2012-13
y = -41.259x + 1351.5
R² = 0.2261
1800
1600
1400
1200
1000
800
600
400
200
0
April
May
June
July
August
September
October
November
December
January
February
March
TS
Linear (TS)

Fig: 3.2.1 L

	Temp	pH	Acidity	Alkalinity	DO	Chloride	TH	Ca	Mg	Phosphate	Nitrate	Total Solids
Temp	1	0.31463	-0.5516	0.5606579	-0.8839866	0.70067	-0.1171	-0.2012	-0.008	-0.13663911	-0.1269	0.44307713
pH		1	-0.8935	0.8084151	-0.5959341	0.72163	0.80785	0.77067	0.77884	-0.57593482	-0.3316	0.44307713
Acidity			1	-0.9050516	0.7447357	-0.7175	-0.6682	-0.6416	-0.6392	0.51548394	0.43554	0.21828938
Alkalinity				1	-0.6928286	0.65784	0.46863	0.49566	0.39476	-0.72115945	-0.5076	-0.04257086
DO					1	-0.848	-0.2809	-0.2003	-0.3502	0.22520524	0.3453	-0.21640575
Chloride						1	0.39514	0.33299	0.43256	-0.41981979	-0.3555	0.12730856
TH							1	0.96489	0.9513	-0.31343831	-0.3905	-0.5104903
Ca								1	0.83692	-0.36319274	-0.4834	-0.60507354
Mg									1	-0.226859	-0.2462	-0.35357761
Phosphate										1	0.60178	0.17619275
Nitrate											1	0.56697138
Total Solids												1

Table: 3.2A: Correlation of water quality parameters of Majam Talav year 2012-2013.

Months	Temp	pH	Acidity	Alkalinity	DO	Chloride	TH	Ca	Mg	Phosphate	Nitrate	TS
April	32	8.6	12	48	6.14	365.79	276	152	124	0.28	2.11	1000
May	33	8.9	4	56	5.37	397.6	288	160	128	0.24	1.69	1200
June	30	8.5	16	44	7.29	389.64	268	148	120	0.38	2.95	1200
July	29	8.3	28	20	7.68	373.74	248	132	116	0.45	3.8	1400
August	28	7.8	36	28	8.44	357.84	220	120	100	0.35	4.22	1400
September	26	7.9	32	28	9.21	330.008	232	132	100	0.35	3.8	1600
October	26	8.2	28	36	9.21	345.91	248	140	108	0.28	2.53	1200
November	24	8.2	24	32	10.36	341.93	256	136	120	0.21	3.38	1200
December	23	8.4	20	24	10.75	341.93	256	144	112	0.31	3.38	800
January	21	8.5	24	24	11.9	345.91	260	136	124	0.38	2.95	1200
February	25	8.3	32	32	10.36	345.91	252	132	120	0.42	2.53	1000
March	29	8.5	20	36	8.06	357.89	244	136	108	0.35	2.53	1000
Average	27.16	8.34	23	34	8.73	357.84	254	139	115	0.33	2.98	1183.33
SD	3.63	0.29	9.20	10.71	1.94	20.48	18.33	10.66	9.36	0.07	0.75	216.72

Table 3.2.2: Presentation of water quality parameters of Majam Talav year 2013-2014.

Fig: 3.2.2. Graphical presentations of water quality parameters of Majam Talav Year 2013-2014 (A – L).

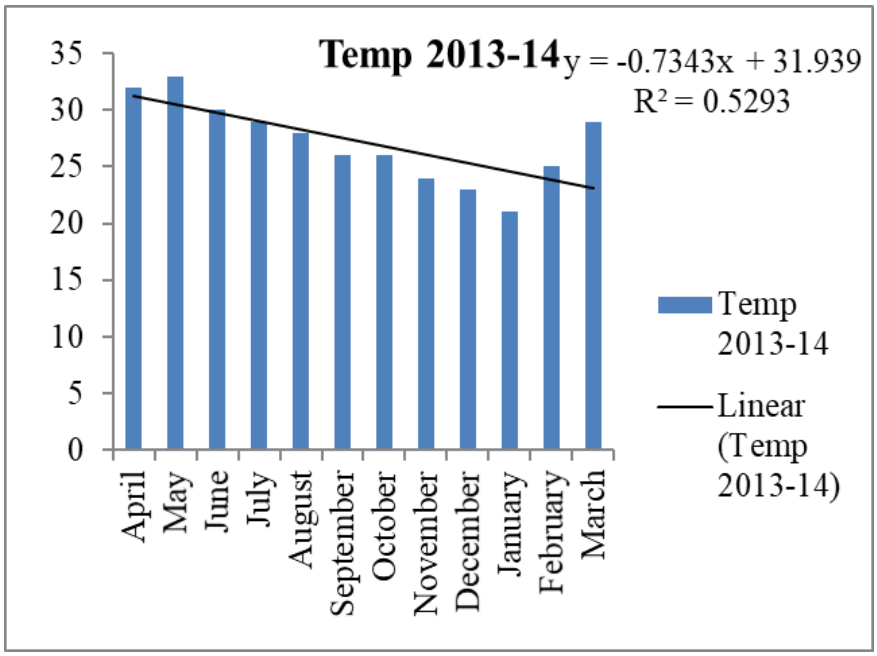

Fig: 3.2.2 A

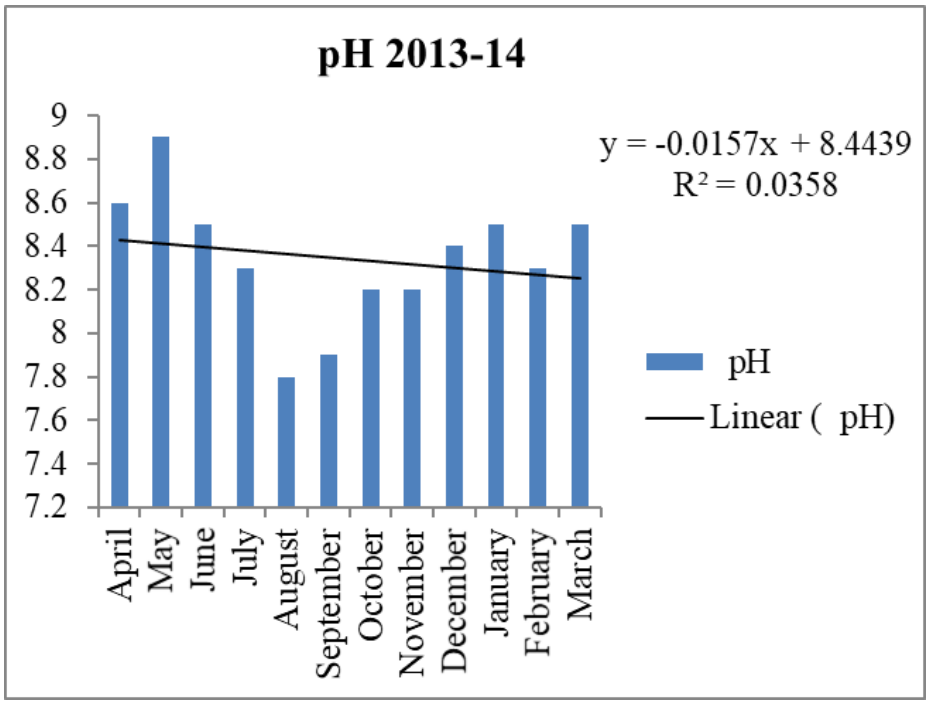

Fig: 3.2.2B

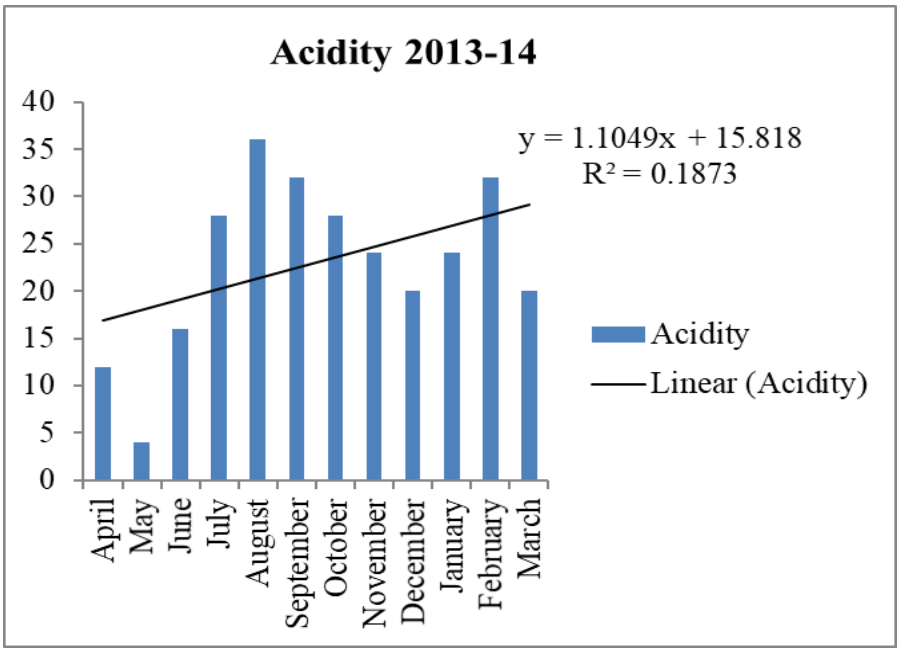

Fig: 3.2.2 C

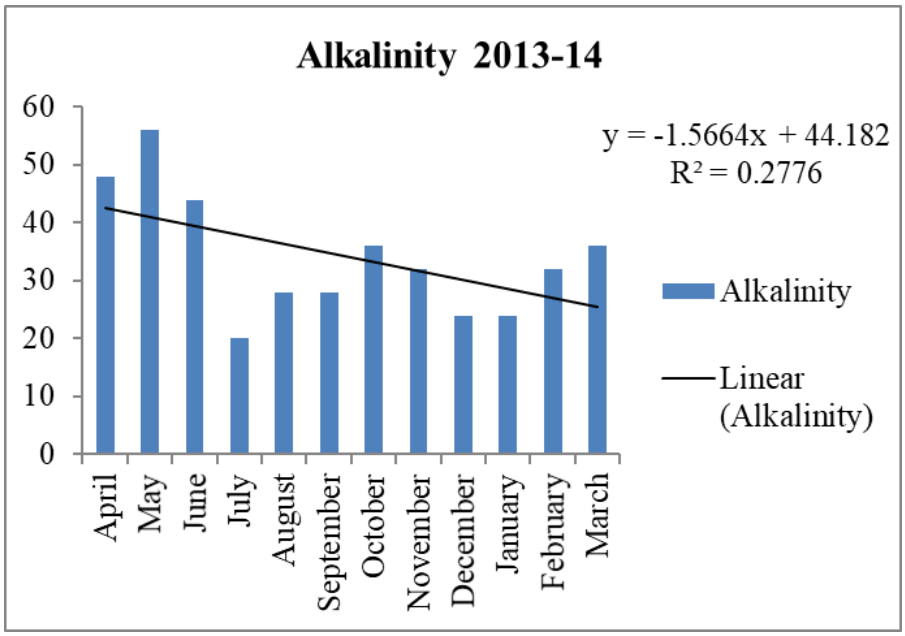

Fig: 3.2.2 D

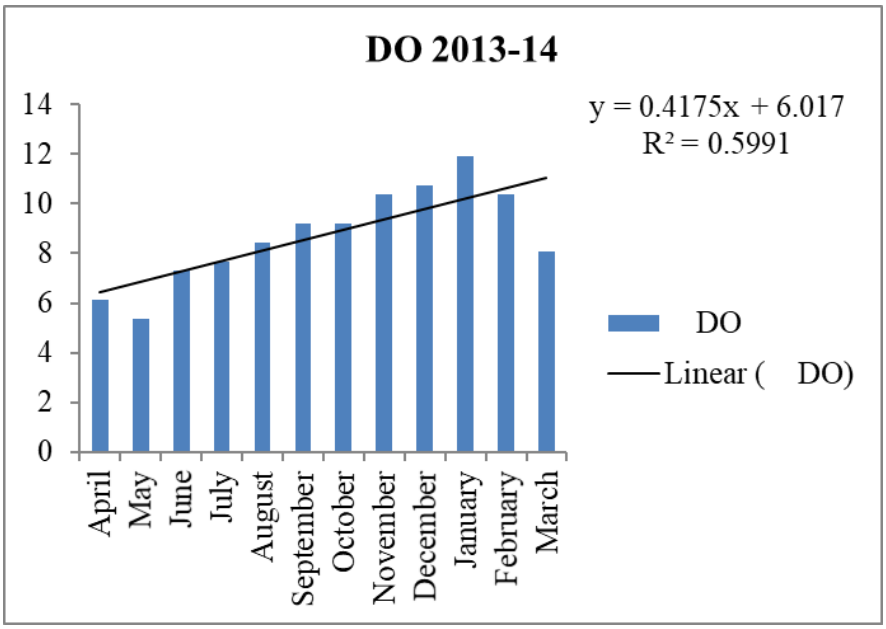

Fig: 3.2.2 E

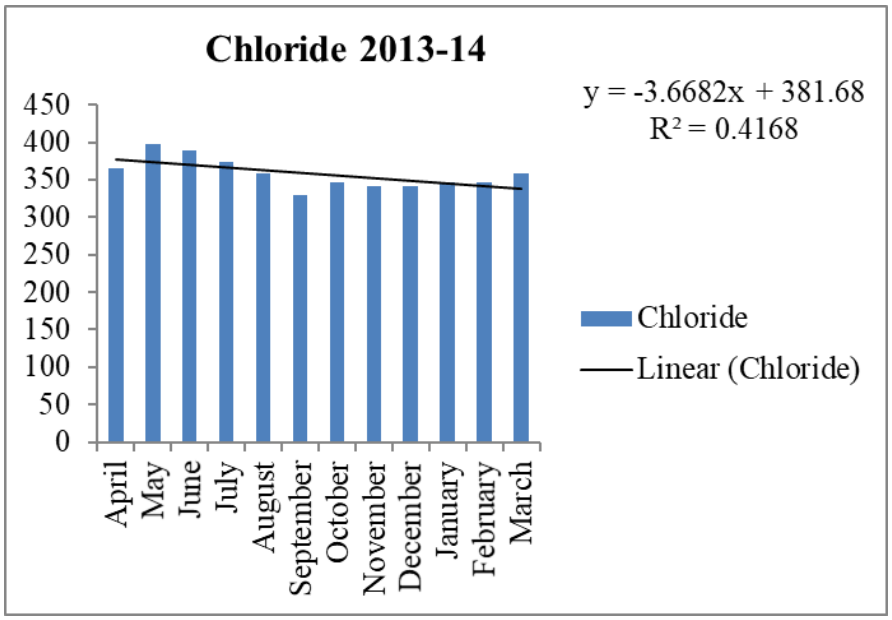

Fig: 3.2.2F

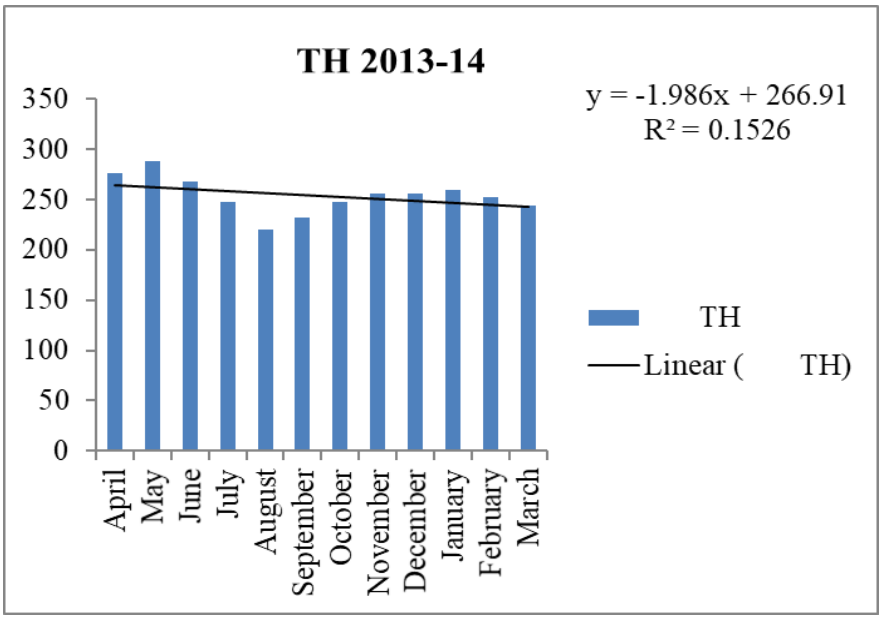

Fig: 3.2.2 G

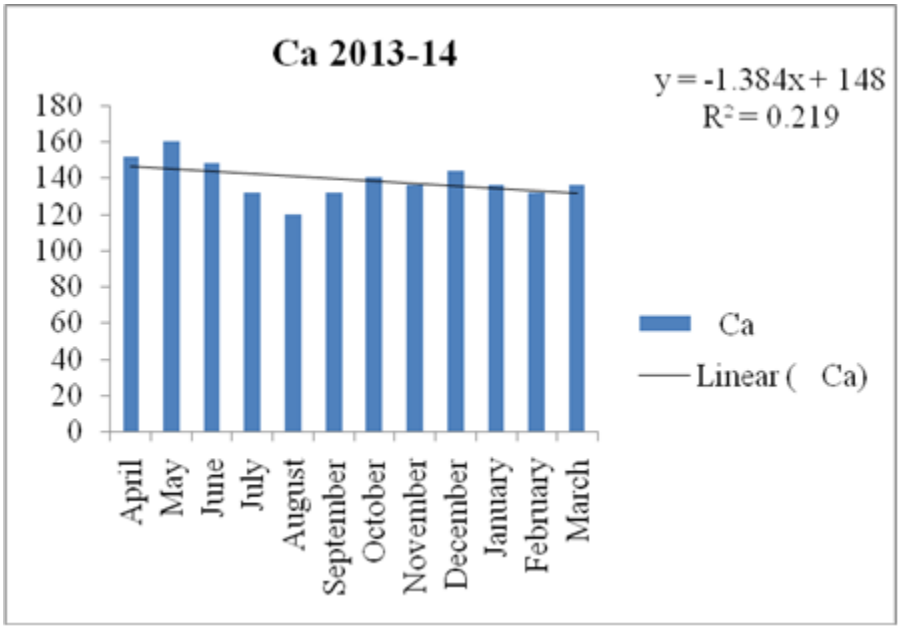

Fig: 3.2.2 H

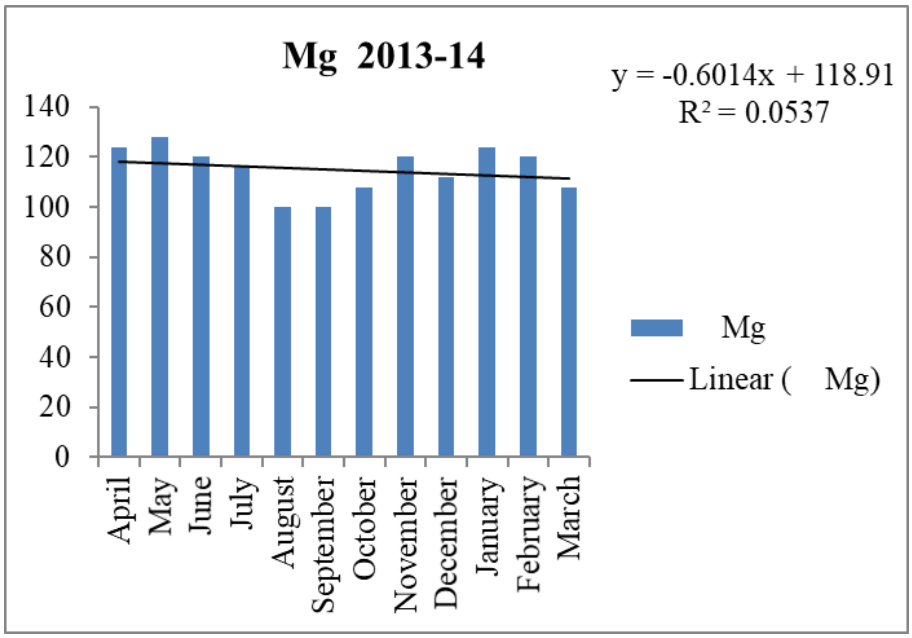

Fig: 3.2.2 I

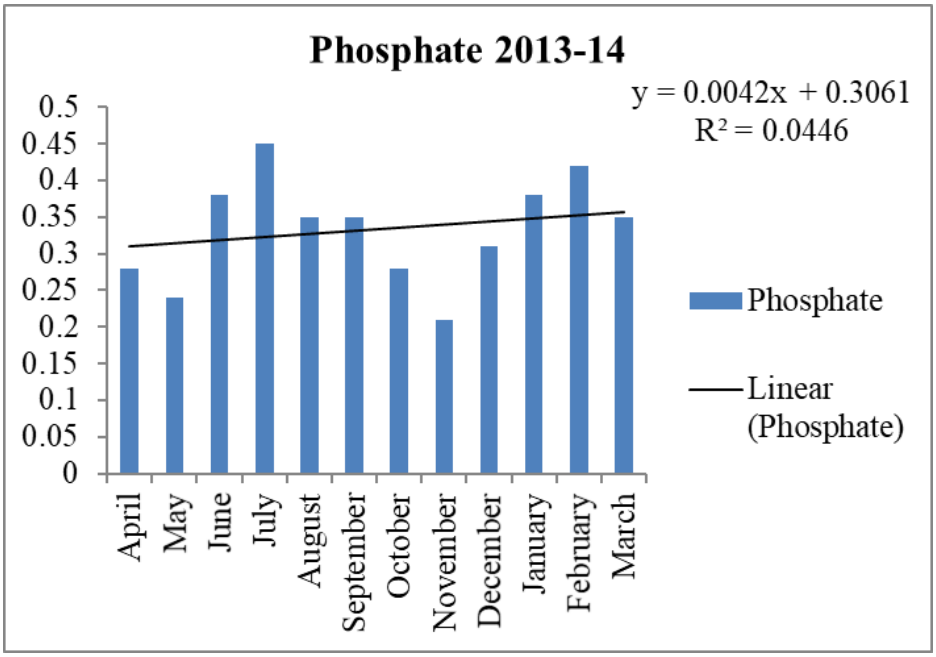

Fig: 3.2.2 J

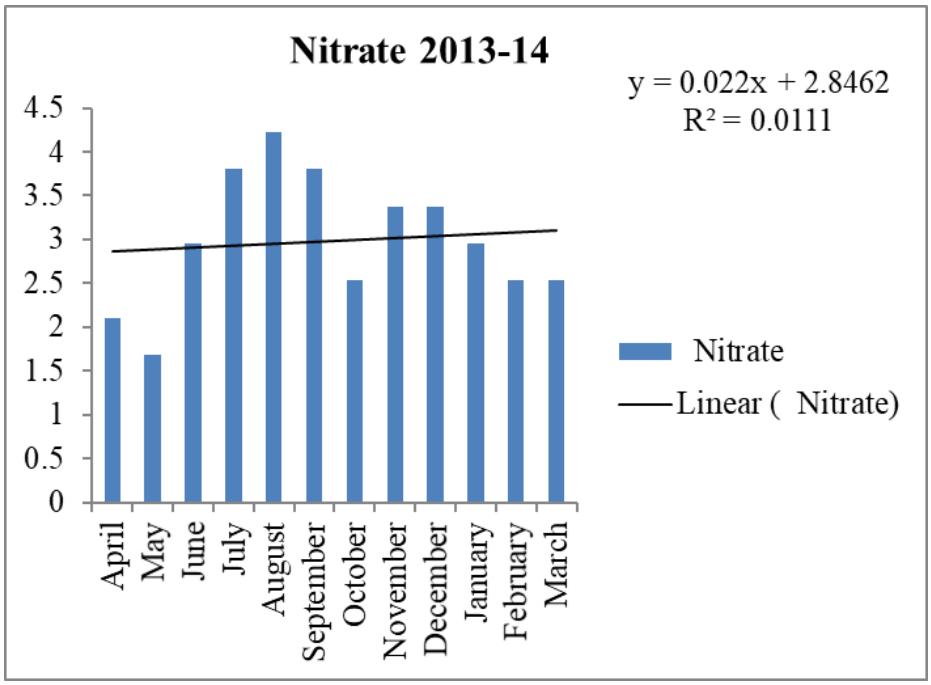

Fig: 3.2.2 K

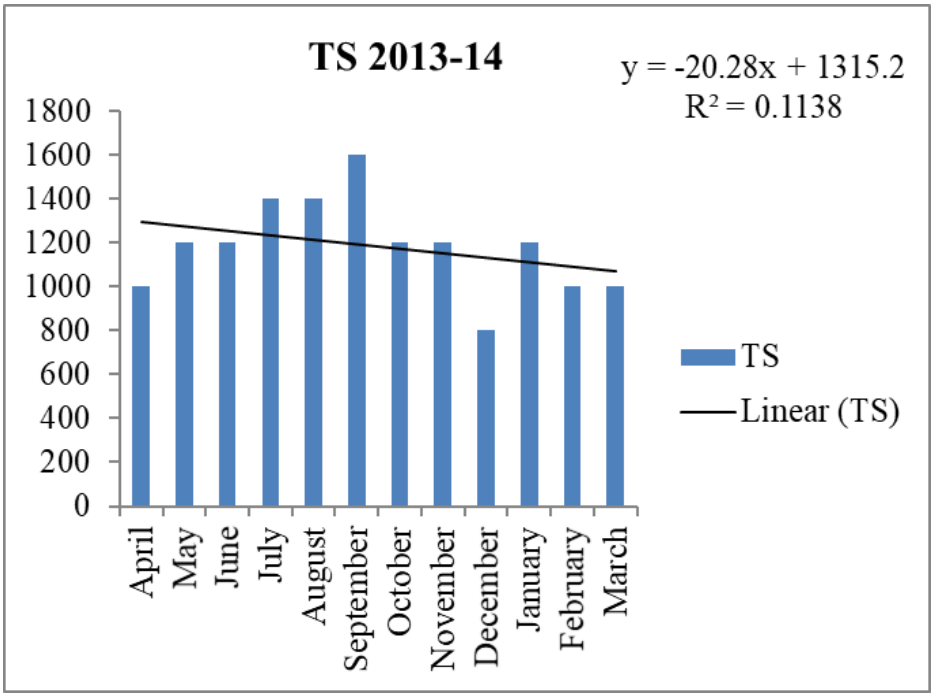

Fig: 3.2.2 L

	Temp	pH	Acidity	Alkalinity	DO	Chloride	TH	Ca	Mg	Phosphate	Nitrate	Total Solids
Temp	1	0.39293	-0.5482	0.7364334	-0.9938009	0.79534	0.3707	0.48238	0.17613	-0.12436162	-0.4085	0.09605798
pH		1	-0.9057	0.6278338	-0.4110944	0.6297	0.91624	0.85532	0.81931	-0.21015233	-0.8235	-0.54786891
Acidity			1	-0.7739231	0.58665713	-0.6671	-0.9009	-0.9443	-0.6879	0.47419221	0.73626	0.42836569
Alkalinity				1	-0.7404791	0.64531	0.69584	0.7822	0.47108	-0.5208145	-0.7898	-0.20348134
DO					1	-0.8012	-0.4052	-0.5297	-0.1897	0.175795	0.40494	-0.12030863
Chloride						1	0.59281	0.57547	0.50493	0.00743902	-0.4163	-0.01643269
TH							1	0.92602	0.90275	-0.37102462	-0.7842	-0.44852315
Ca								1	0.67358	-0.48524595	-0.7786	-0.41677195
Mg									1	-0.17349037	-0.6483	-0.40327265
Phosphate										1	0.35879	0.19125092
Nitrate											1	0.52154323
Total Solids												1

Table: 3.2B: Correlation of water quality parameters of Majam Talav year 2013-2014

3.3 Water parameter of Danteshwar Talav:

During the study period water parameter observations were like that water temperature was gradually decreasing from October to January and increasing from February to May. It was ranged from 22^0C (January) to 32^0C (May).The pH was above 7 during all months. The maximum pH was in May (8.9) and minimum was in September (7.3).The acidity ranged from 0 mg/l (May and September) to 48 mg/l (March).The alkalinity was ranged from 16 mg/l (August) to 36 mg/l (May, June). Dissolved oxygen values ranged from 3.45 mg/l (May) to 9.21 mg/l (January).Chloride values were found ranging from 83.49 mg/l (September) to 155.06 mg/l (May).Total hardness was ranged from 88 mg/l (September) to 220 mg/l (October). Calcium hardness was found ranging from 56 mg/l (July) to 136 mg/l (November). Magnesium hardness was ranged from 8 mg\l (September) to 136 mg/l (March). Phosphate ranged from 0.21 mg/l (May, November) to 0.42 mg/l (February, July). Nitrate concentration was found ranged between 1.26 mg/l (April, May) to 4.22mg/l (July). Total solids ranged from 400 mg/l (November) to 1000 mg/l (April). {Table 3.3, Fig: 3.3(1) to Fig: 3.3 (13)}.

Months	Temp	pH	Acidity	Alkalinity	DO	Chloride	Salinity	TH	Ca	Mg	Phosphate	Nitrate	TS
OCT	27	7.7	18	24	6.52	129.21	233.25	220	92	128	0.24	1.47	600
NOV	25	8.3	12	20	6.91	119.28	215.33	188	136	52	0.21	1.69	400
DEC	24	8.3	16	20	8.06	115.3	208.14	200	104	96	0.35	1.69	600
JAN	22	8	24	20	9.21	115.3	208.14	196	124	72	0.35	1.69	800
FEB	24	7.9	32	24	8.06	119.28	215.33	184	68	116	0.42	2.11	800
MAR	28	8	48	24	6.52	135.18	244.02	212	76	136	0.31	2.11	600
APRIL	30	8.4	32	28	4.99	143.13	258.37	184	88	96	0.24	1.26	1000
MAY	32	8.9	0	36	3.45	155.06	279.91	160	88	72	0.21	1.26	600
JUNE	31	8.8	8	36	4.6	131.2	236.84	124	68	56	0.28	2.95	600
JULY	30	8.8	16	20	5.37	111.32	200.96	104	56	48	0.42	4.22	600
AUG	29	7.5	12	16	6.1	95.42	172.26	96	72	24	0.35	3.8	600
SEP	30	7.3	0	20	4.9	83.49	150.72	88	80	8	0.35	2.95	800
Average	27.66667	8.158333	18.16667	24	6.224167	121.0975	218.6058	163	87.66667	75.33333	0.310833	2.266667	666.6667
SD	3.22866	0.519542	13.99892	6.381792	1.669423	19.65188	35.47154	47.42458	23.66176	40.24772	0.074646	0.991265	155.6998

Table 3.3: Presentation of water quality parameters of Danteshwar Talav.

Fig: 3.3 Graphical presentations of water quality parameters of Danteshwar Talav

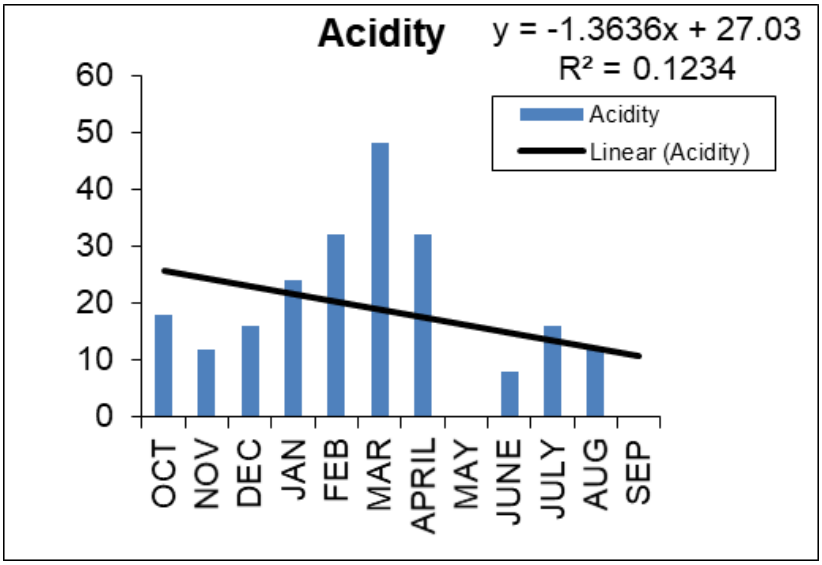

Fig:3.3 (1)

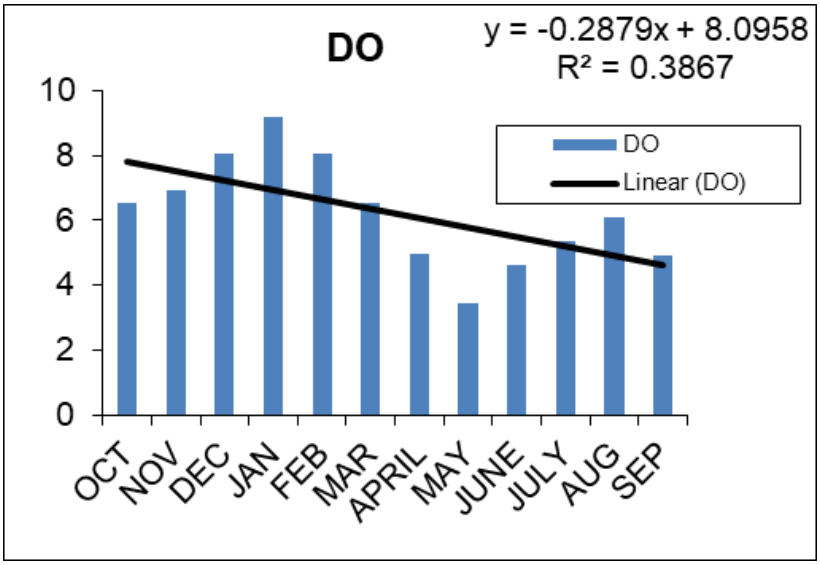

Fig:3.3 (2)

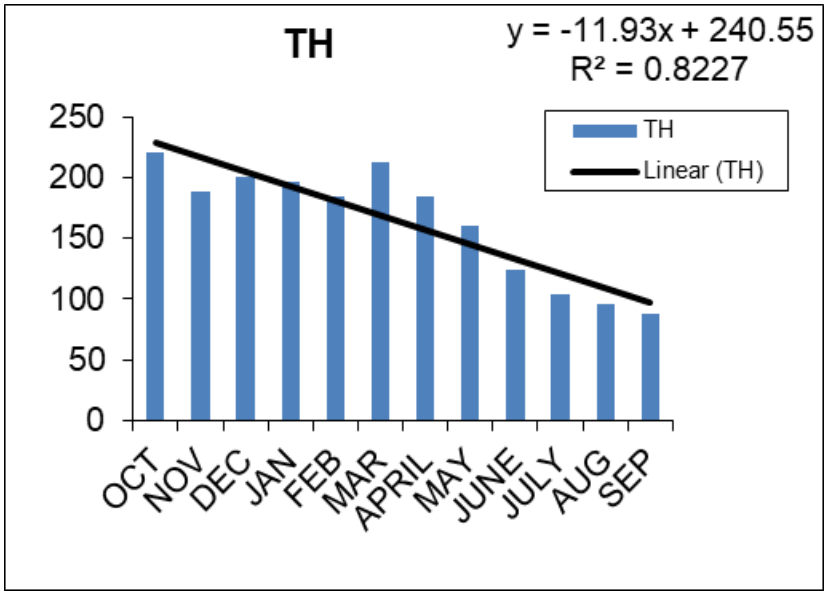

Fig:3.3 (3)

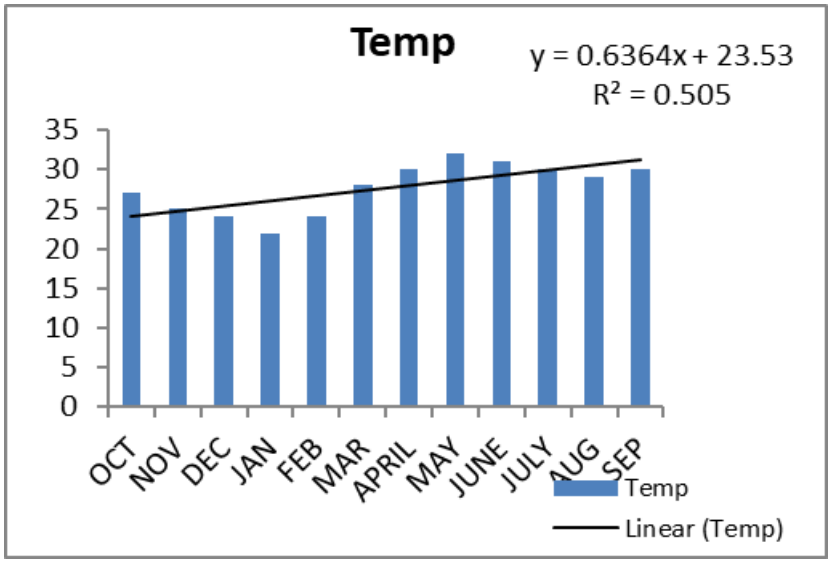

Fig:3.3 (4)

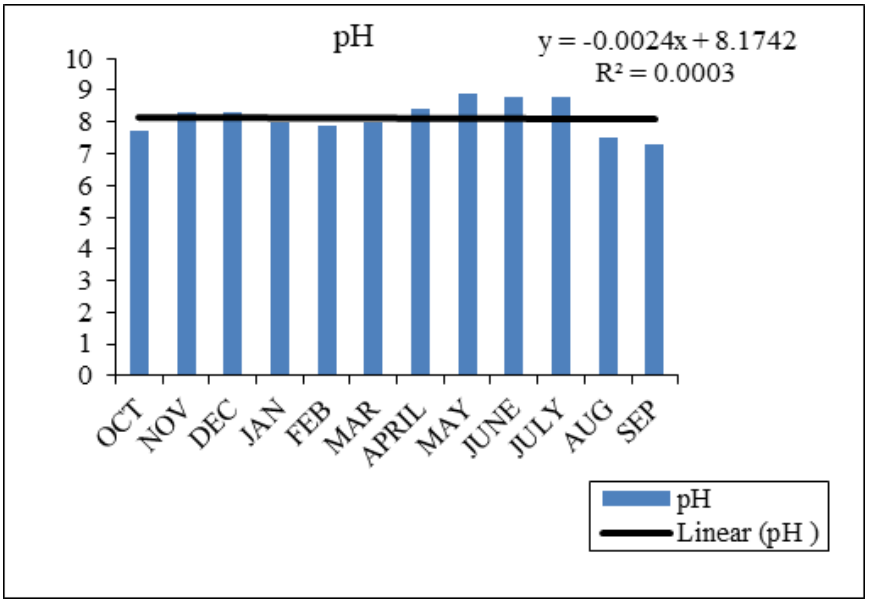

Fig:3.3 (5)

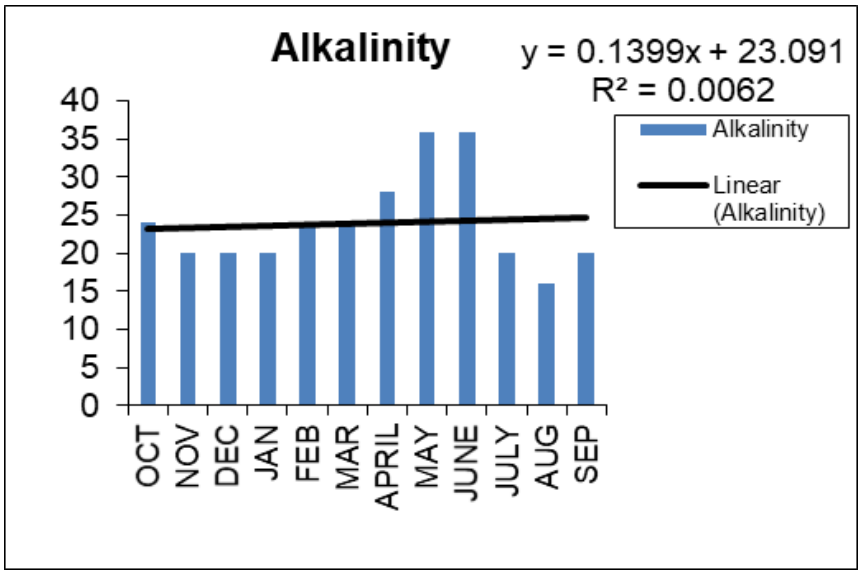

Fig:3.3 (6)

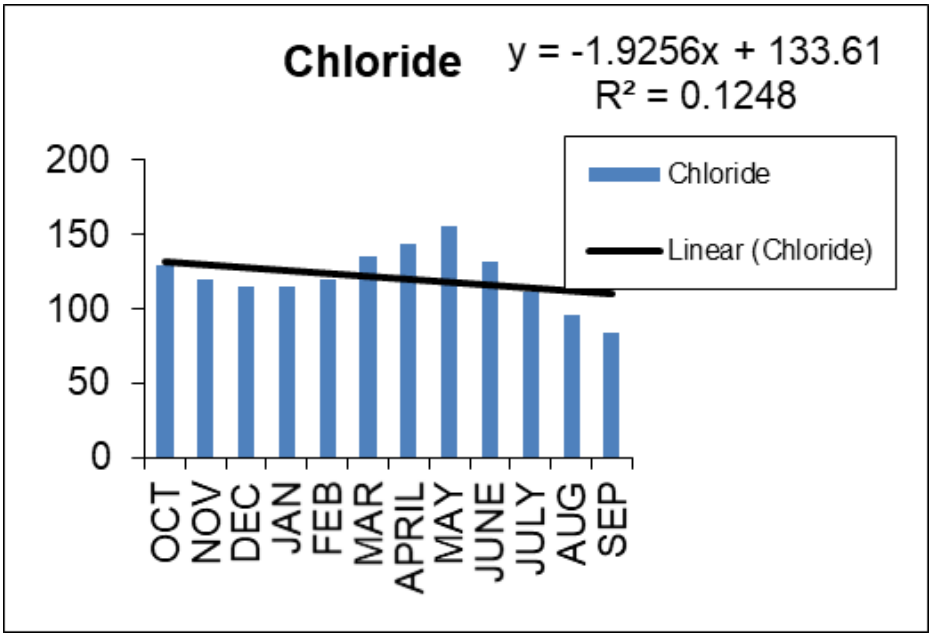

Fig:3.3 (7)

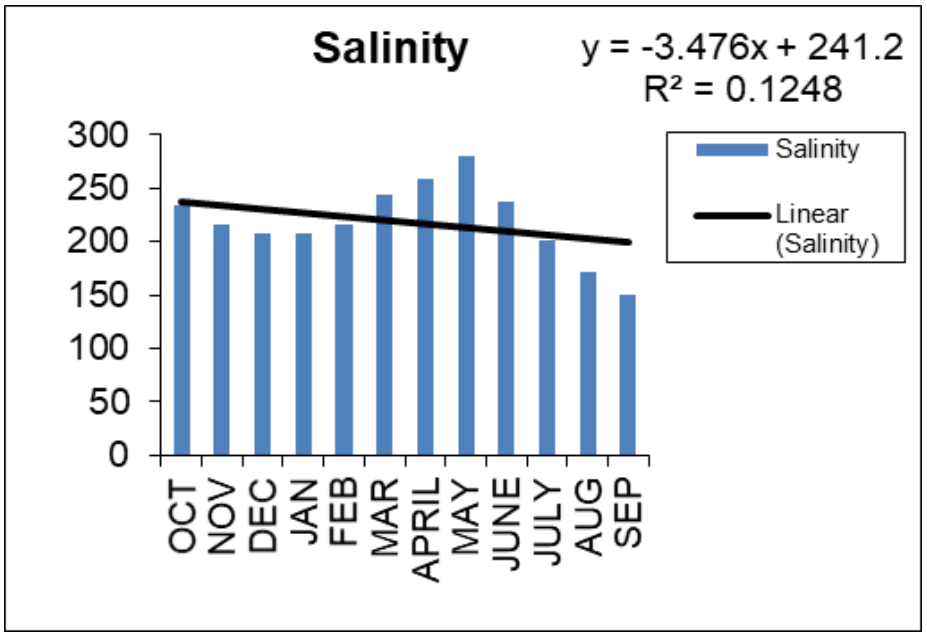

Fig:3.3 (8)

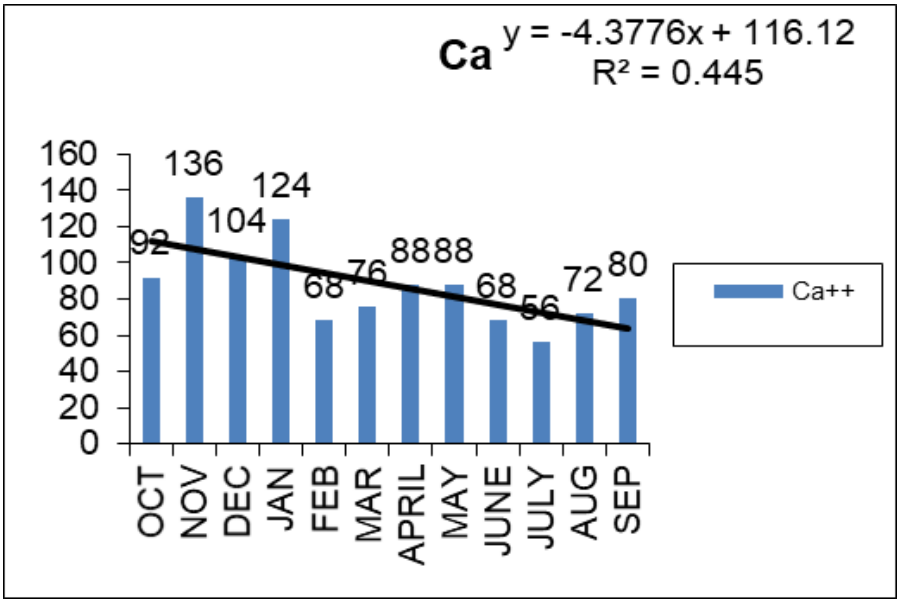

Fig:3.3 (9)

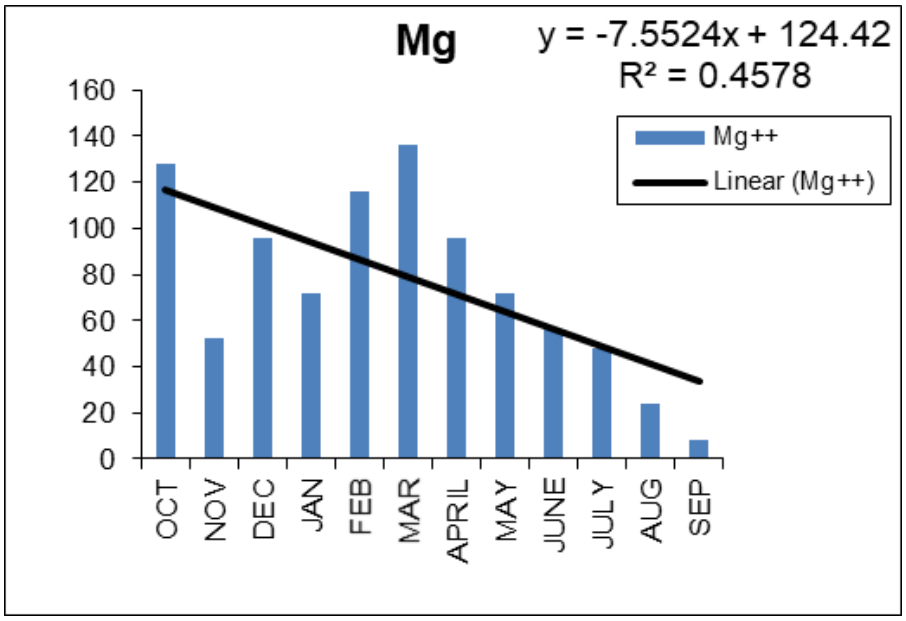

Fig:3.3 (10)

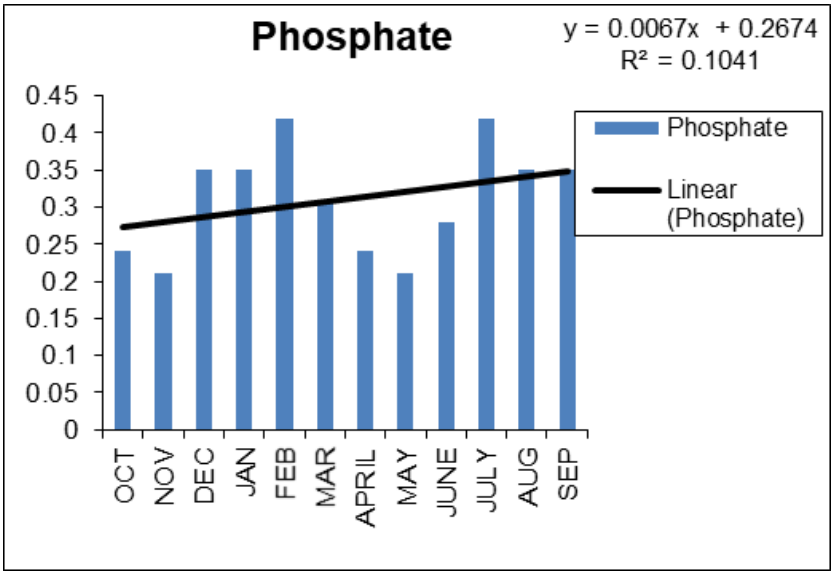

Fig:3.3 (11)

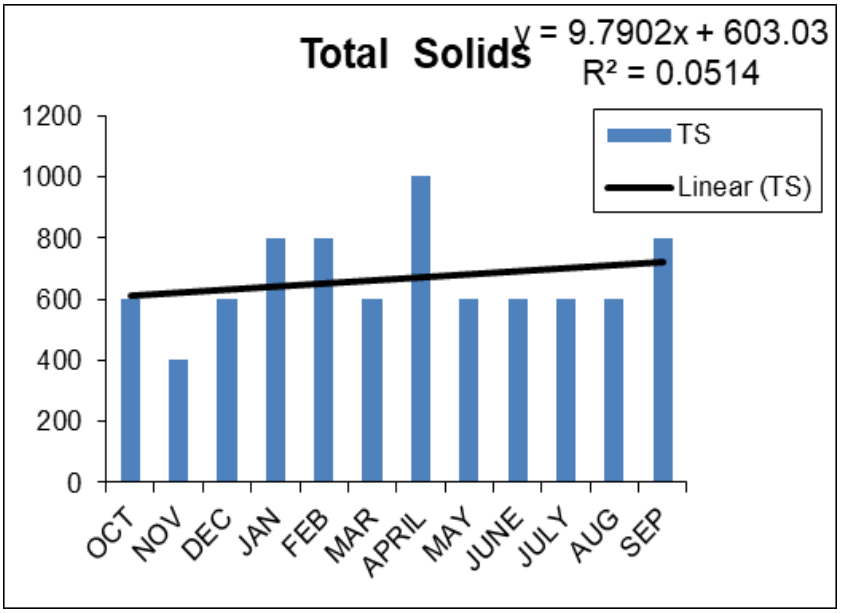

Fig:3.3 (12)

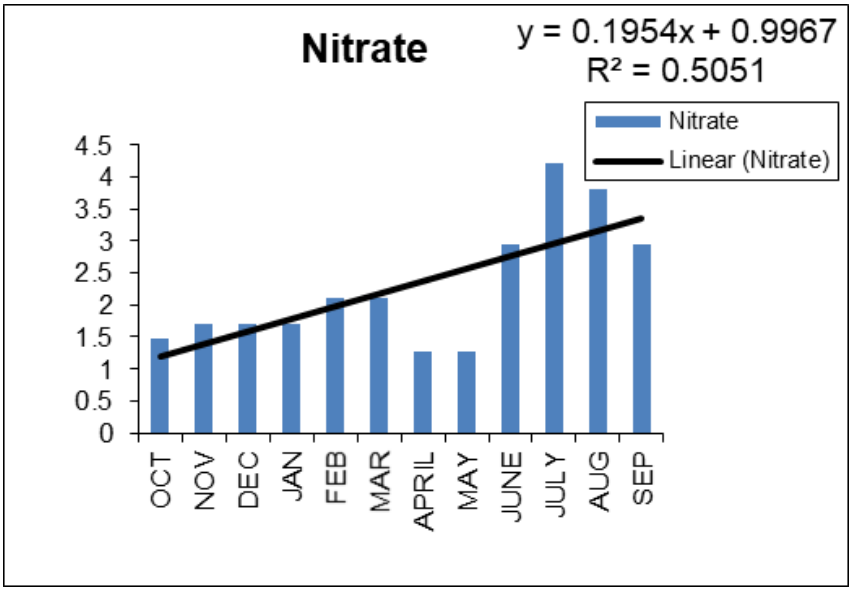

Fig:3.3 (13)

Soil quality parameters:

3.4 Study Site- Dhobi Talav

All the soil quality parameters have been shown by Table-3.4.1 and 3.4.2. Figure number has given with the parameters.

pH:

In the first year i.e. 2012- 2013, the soil pH varied with the range from 9.2 to 7.9. The highest and lowest values were obtained in April, May and July, August respectively. In the second year i.e. 2013-2014 the pH ranged from 8.5 to 7.5, which was reported maximum in May, June and Minimum in July respectively (Fig-3.4.1 A and Fig-3.4.2 A).

Phosphate-P:

The soil Phosphate-P values were varied from 0.15 mg/g to 0.04 mg/g in first year, where the maximum value was reported in May and minimum value was reported in September. In the second year Phosphate ranged from 0.17 mg/g to 0.04 mg/g. The maximum value was obtained in May and minimum was obtained in January (Fig-3.4.1 B and Fig-3.4.2 B).

Nitrate-N:

The soil Nitrate-N ranged from 0.1 mg/g to 0.04 mg/g was obtained with its highest value in May and lowest value in August in first year respectively. In the second year Nitrate varied

with range of 0.11 mg/g to 0.05 mg/g. where the maximum value was reported in May and minimum value was reported in August (Fig-3.4.1 C and 3.4.2 C).

Months	pH	Phosphate - P	Nitrate -N
April	9.2	0.11	0.09
May	9.2	0.15	0.1
June	8.5	0.1	0.09
July	7.9	0.1	0.07
August	7.9	0.07	0.04
September	8.1	0.04	0.06
October	8.4	0.07	0.06
November	8.4	0.09	0.08
December	8.4	0.09	0.08
January	8	0.12	0.08
February	8.5	0.08	0.07
March	8.9	0.08	0.09
Average	8.45	0.091666667	0.0758333
SD	0.45427	0.027906771	0.0167649

Table 3.4.1: Presentation of soil quality parameters of Dhobi Talav 2012-2013.

Fig : 3.4.1 Graphical presentations of soil quality parameters of Dhobi Talav 2012-2013.

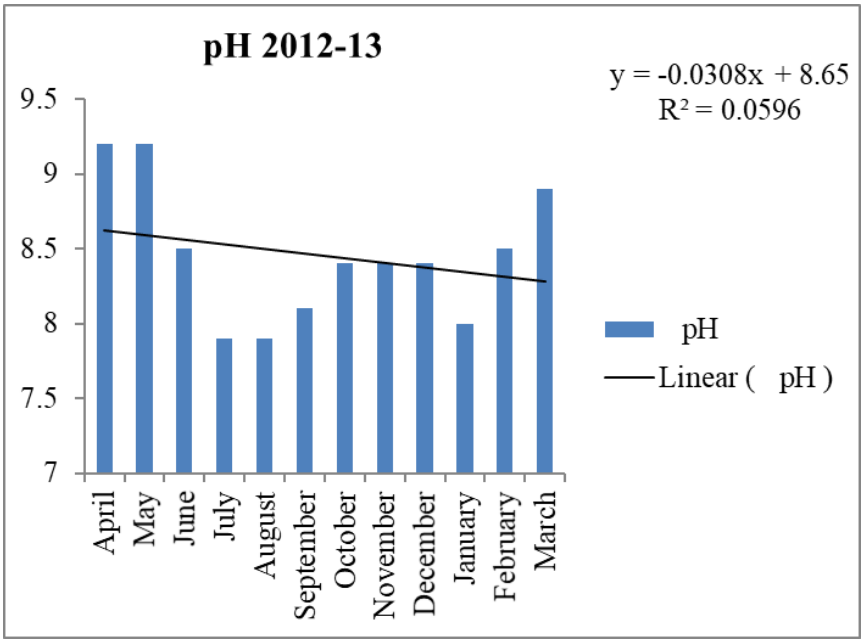

Fig: 3.4.1A

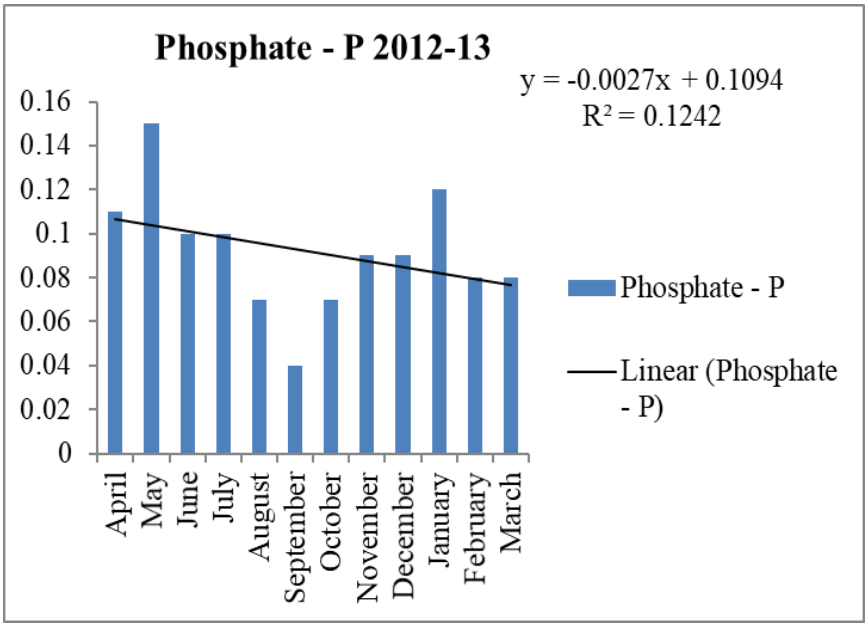

Fig: 3.4.1B

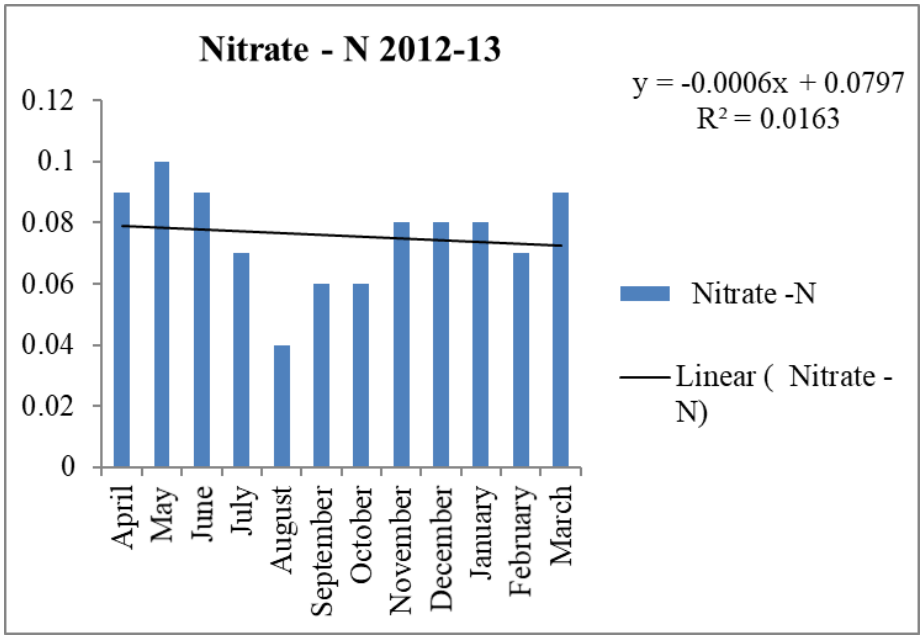

Fig: 3.4.1C

	pH	Phosphate - P	Nitrate - N
pH	1	0.47	0.74
Phosphate - P		1	0.71
Nitrate - N			1

Table 3.4A: Correlation Coefficient of soil quality parameters of Dhobi Talav 2012-13.

Months	pH	Phosphate - P	Nitrate -N
April	8.3	0.13	0.07
May	8.5	0.17	0.11
June	8.5	0.12	0.09
July	7.5	0.04	0.09
August	7.7	0.09	0.05
September	7.9	0.09	0.07
October	8.2	0.13	0.07
November	8.2	0.08	0.09
December	7.9	0.1	0.08
January	7.9	0.09	0.06
February	8	0.06	0.06
March	8.3	0.09	0.1
Average	8.075	0.099166667	0.0783333
SD	0.31079	0.034498573	0.0180067

Table: 3.4.2: Presentation of soil quality parameters of Dhobi Talav 2013-2014.

Fig : 3.4.2: Graphical presentations of soil quality parameters of Dhobi Talav 2013-2014.

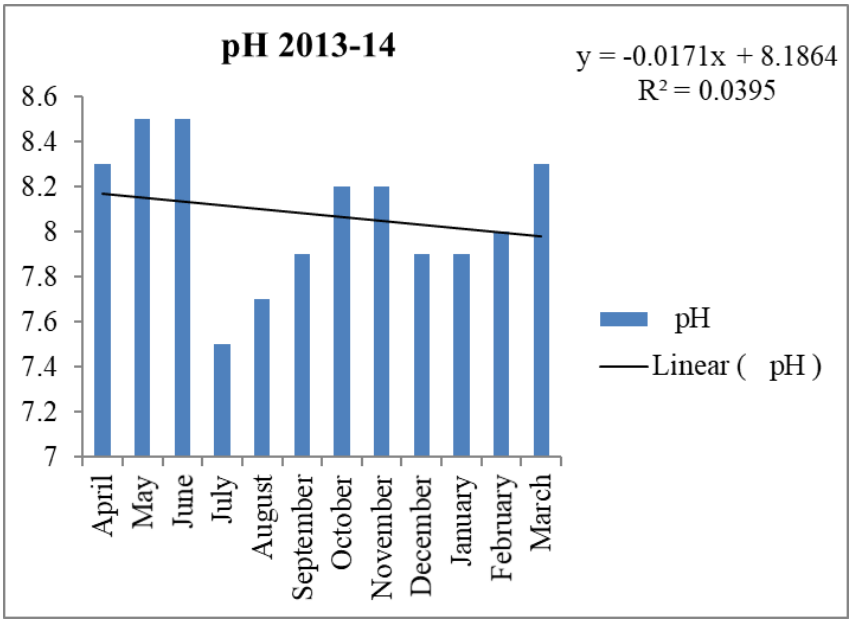

Fig: 3.4.2 A

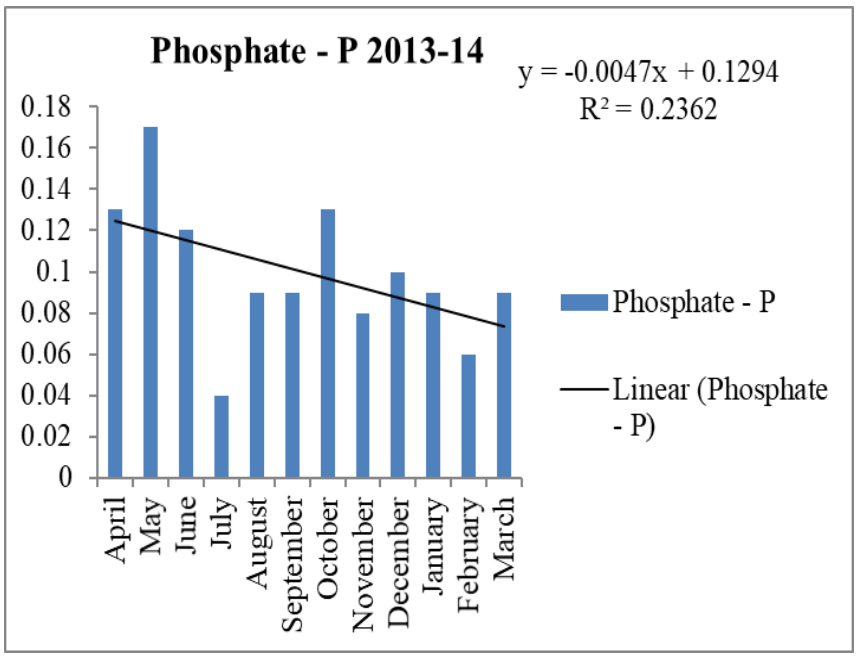

Fig: 3.4.2 B

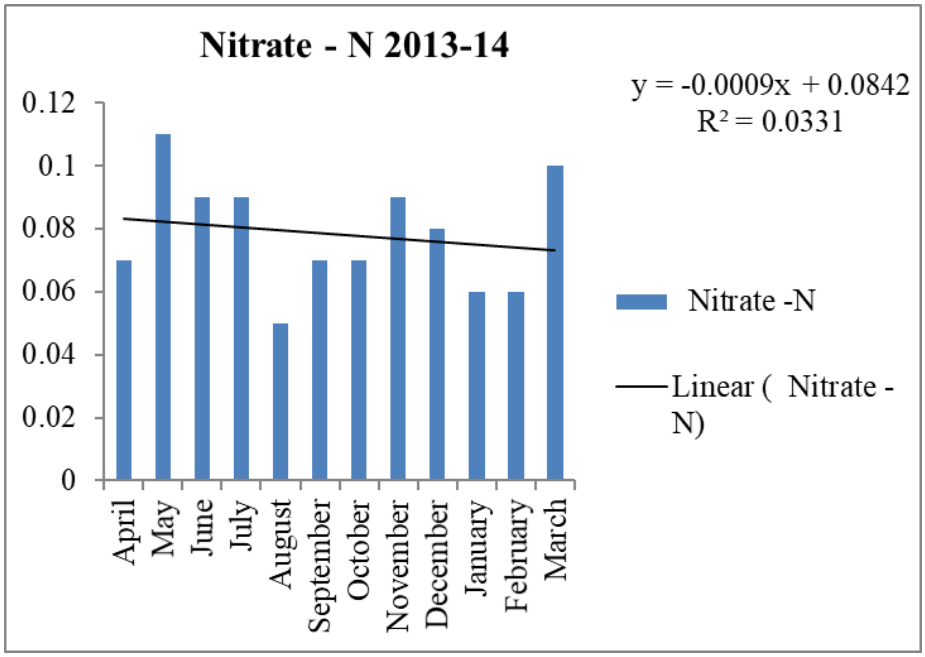

Fig: 3.4.2 C

	pH	Phosphate - P	Nitrate - N
pH	1	0.75	0.51
Phosphate - P		1	0.30
Nitrate - N			1

Table 3.4B: Correlation Coefficient of soil quality parameters of Dhobi Talav2013-2014

3.5 Study Site-Majam Talav

All the soil quality parameters have been shown by Table 3.5.1 and 3.5.2. Figure Numbers have given with parameters.

pH:

In the first year i.e. 2012- 2013, the soil pH varied with the range from 8.5 to 7.3. The highest and lowest values were obtained in April and June, July respectively. In the second year i.e. 2013-2014 the pH ranged from 9 to 7.6, which was reported maximum in May and Minimum in August respectively (Fig-3.5.1A and Fig-3.5.2 A).

Phosphate-P:

The soil Phosphate-P values were varied from 0.24 mg/g to 0.05 mg/g in first year. In the second year Phosphate ranged from 0.21 mg/g to 0.04 mg/g. where the maximum value was

reported in May and minimum value was reported in August in both the years (Fig-3.5.1B and Fig 3.5.2 B).

Nitrate-N:

The soil Nitrate-N ranged from 0.12 mg/g to 0.05 mg/g was obtained with its highest value in May and lowest value in August in first year respectively. In the second year Nitrate varied with range of 0.13 mg/g to 0.05 mg/g. where the maximum value was reported in April, May and minimum value was reported in September (Fig-3.5.1C, Fig-3.5.2C).

Months	pH	Phosphate - P	Nitrate -N
April	8.5	0.21	0.1
May	7.5	0.24	0.12
June	7.3	0.14	0.08
July	7.3	0.08	0.08
August	7.7	0.05	0.05
September	8	0.07	0.07
October	7.9	0.09	0.07
November	8.2	0.09	0.07
December	8.3	0.11	0.09
January	8.3	0.07	0.09
February	8.1	0.09	0.06
March	8.4	0.16	0.09
Average	7.95833	0.116666667	0.0808333
Stdev	0.42095	0.059288713	0.0188092

Table 3.5.1: Presentation of soil quality parameters of Majam Talav 2012-2013

	pH	Phosphate - P	Nitrate - N
pH	1	0.03	0.07
Phosphate - P		1	0.83
Nitrate - N			1

Table 3.5A: Correlation Coefficient of soil quality parameters of Majam Talav 2012-2013

Fig : 3.5.1: Graphical presentations of soil quality parameters of Majam Talav 2012-2013.

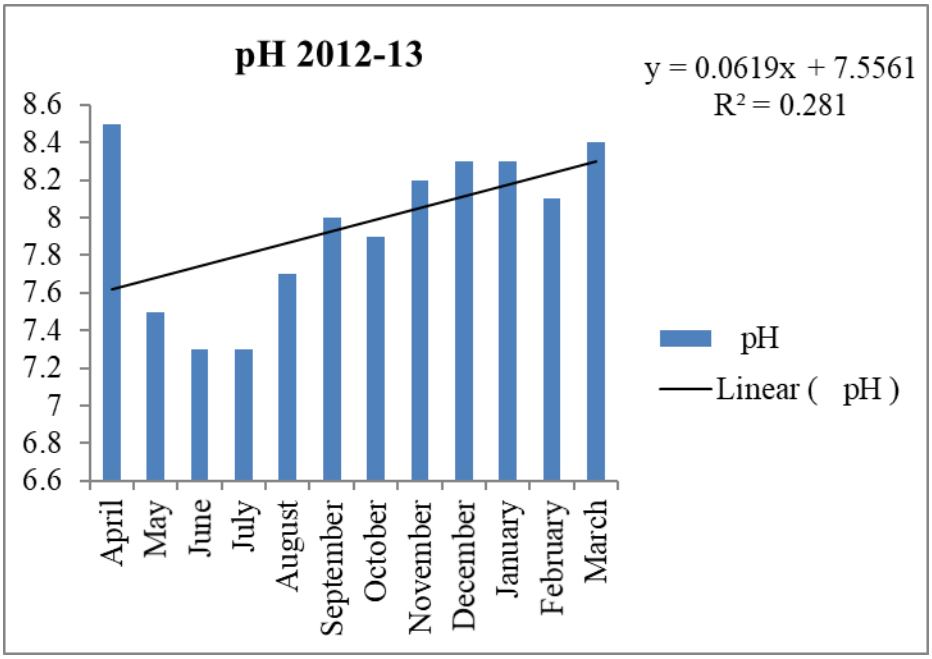

Fig-3.5.1A

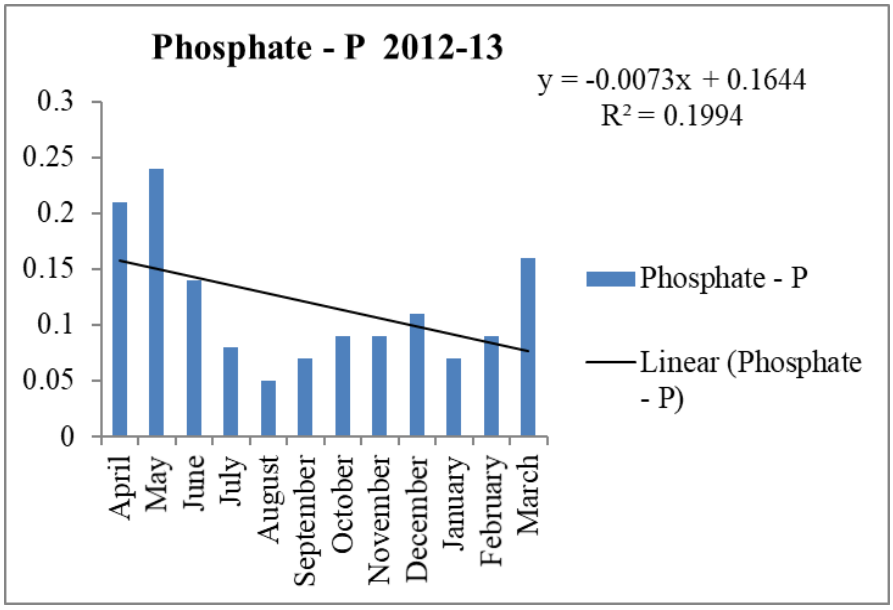

Fig-3.5.1B

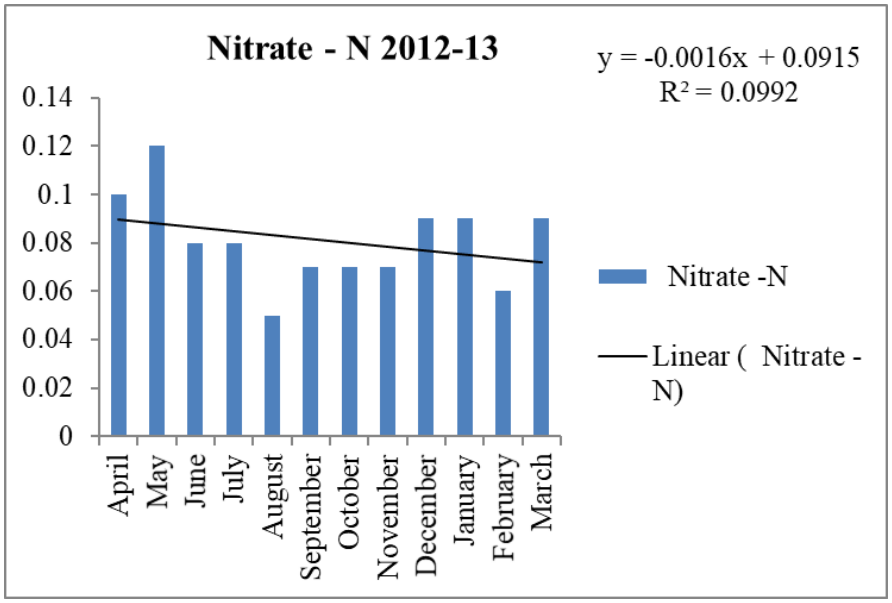

Fig-3.5.1C

Months	pH	Phosphate - P	Nitrate -N
April	8.4	0.18	0.13
May	9	0.21	0.13
June	8.5	0.11	0.09
July	8	0.07	0.07
August	7.6	0.04	0.07
September	7.9	0.06	0.05
October	7.9	0.09	0.06
November	8.2	0.11	0.07
December	8.2	0.11	0.07
January	8.2	0.11	0.1
February	7.9	0.07	0.11
March	8.4	0.13	0.11
Average	8.18333	0.1075	0.0883333
Stdev	0.36639	0.048827153	0.0272475

Table 3.5.2: Presentation of soilquality parameters of Majam Talav 2013-2014

Fig : 3.5.2: Graphical presentations of soil quality parameters of Majam Talav 2013-2014.

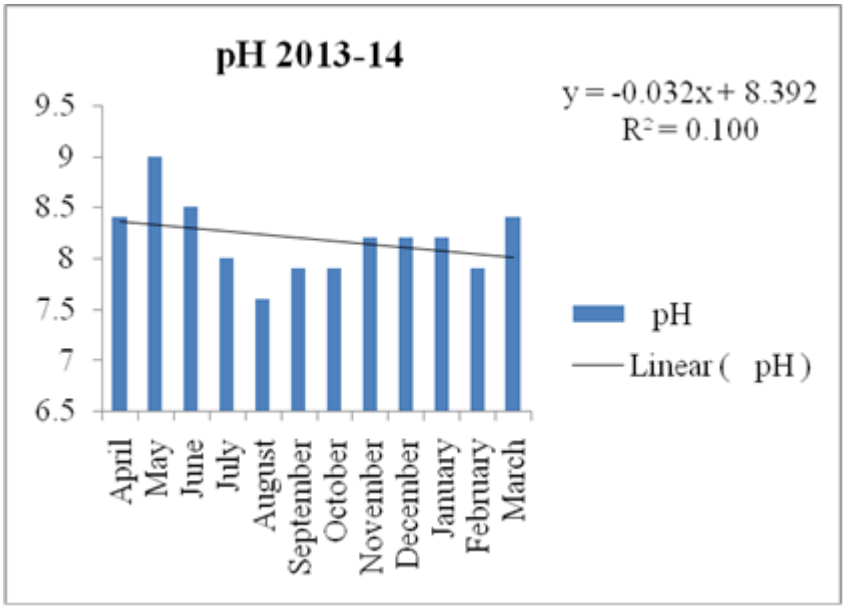

Fig-3.5.2 A

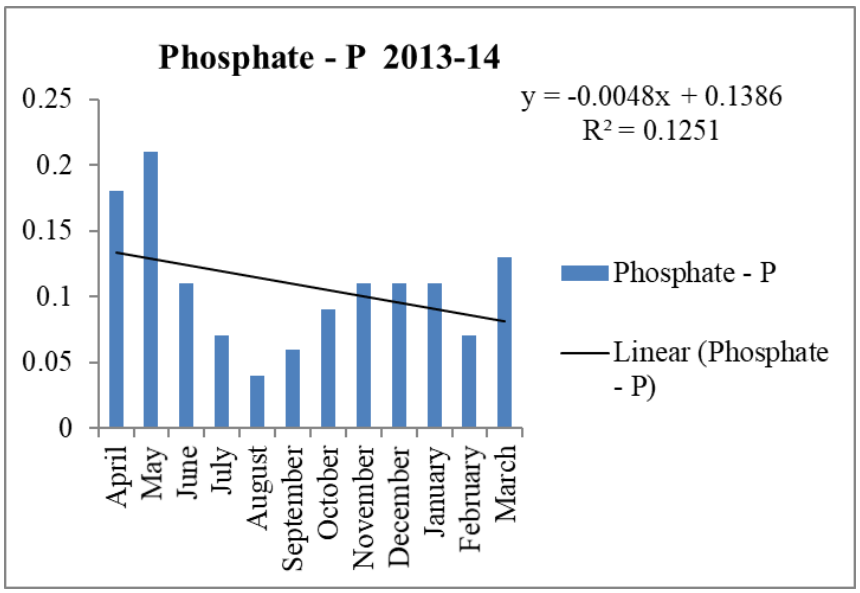

Fig-3.5.2 B

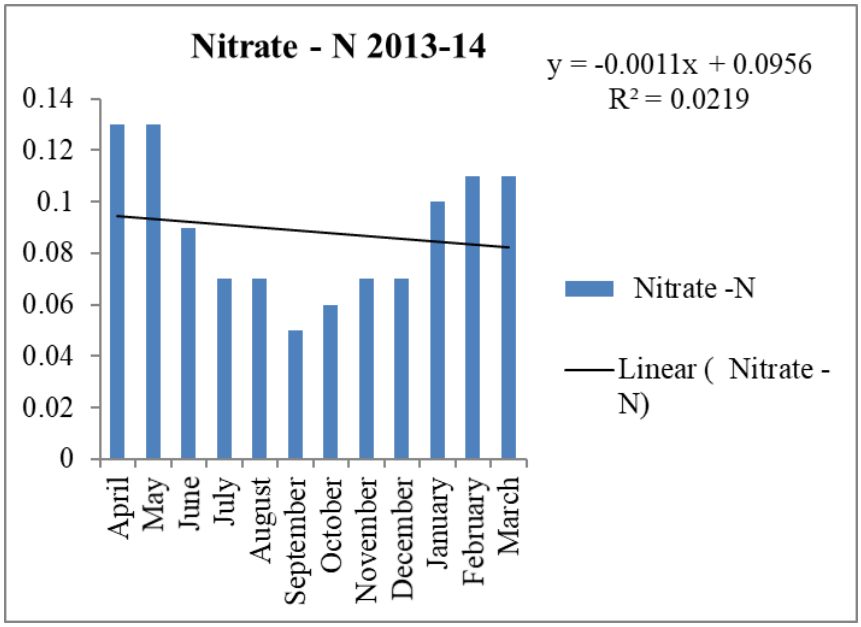

Fig-3.5.2 C

	pH	Phosphate - P	Nitrate - N
pH	1	0.91	0.67
Phosphate - P		1	0.76
Nitrate - N			1

Table 3.5B: Correlation Coefficient of soil quality parameters of Majam Talav 2013-2014

Fish population Analysis:

A total of 480 fishes were observed during the study period 2012-2013 (1st year) and 2013-2014 (2nd year). This means that 240 fishes were examined in each year for the investigation for Dhobi Talav and MazamTalav. However, for Danteshwer and Sama pond also the fish population work was done for some period. Due to developmental activities started at those ponds the fish population study could not be continued.

3.6 Study Site: Dhobi Talav

In the first year the Total Length (TL) of fishes were reported ranged from 9.0 cm (minimum) to 19.5 cm (maximum). The Standard Length (SL) of fishes was observed ranged from 7.3 cm (minimum) to 15.5 cm (maximum). The weight (W) of the fishes was ranged from 13.8 gm (minimum) to 120 gm (maximum). The Averages of TL was 13.52 cm, SL was 10.85 cm, and weight was 39.77 gm. The Averages of condition factor and coefficient of condition factor were 1.52 and 2.92 respectively. The correlations between TL and W were 0.93, and SL and W were 0.95 reported during the investigation (Fig- 3.6.1 A, 3.6.1 B, 3.6.1 C)

In the second year the Total Length (TL) of fishes ranged were varied from 9.0 cm (minimum) to 19.5 cm (maximum). The Standard Length (SL) of fishes ranged was varied from 8.0 cm (minimum) to 16.2 cm (maximum). The weight (W) of the fishes was ranged from 13.09 gm (minimum) to 115.05 gm (maximum). The Averages of TL was 13.62 cm, SL was 11. 08 cm and weight was 41.56 gm. The Averages of condition factor and coefficient of condition factor were 1.56 and 2.90 respectively. The correlations between TL and W were 0.93, and SL and W were 0.95 reported during the investigation (Fig- 3.6.2 A, 3.6.2 B, 3.6.2 C).

Fig 3.6.1 Graphical representations of Length-Weight Relationship of the fishesof Dhobi Talav 2012-2013.

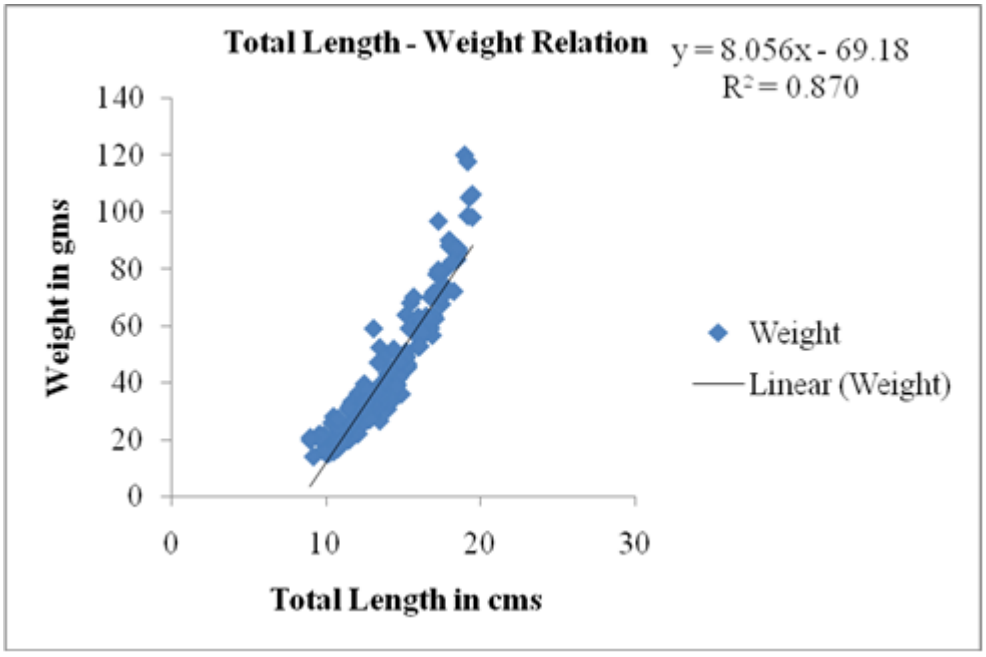

Fig-3.6.1 A

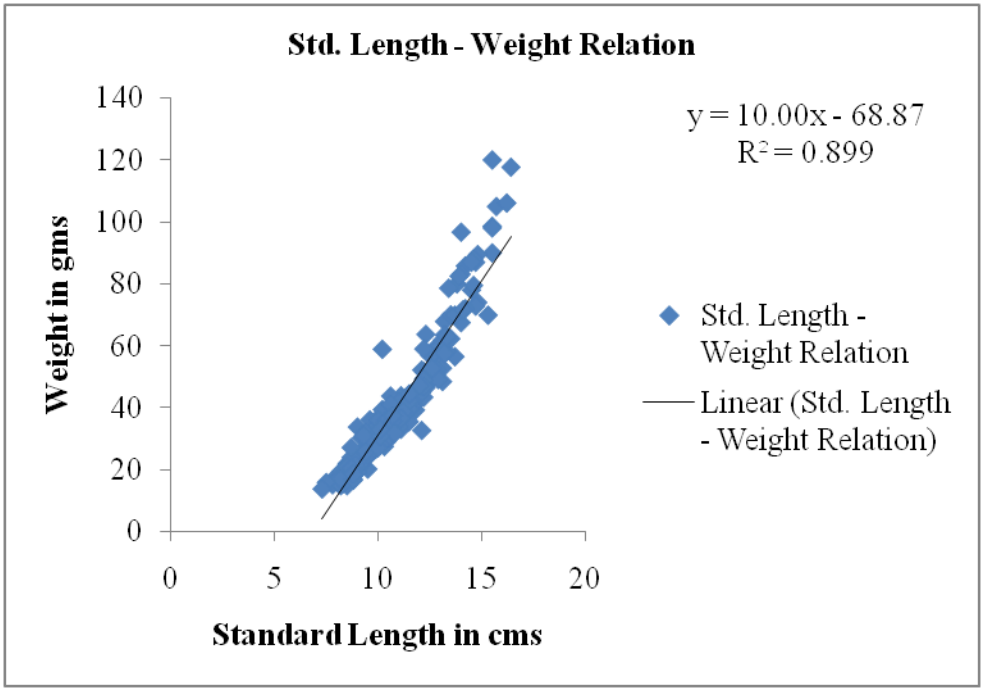

Fig- 3.6.1 B

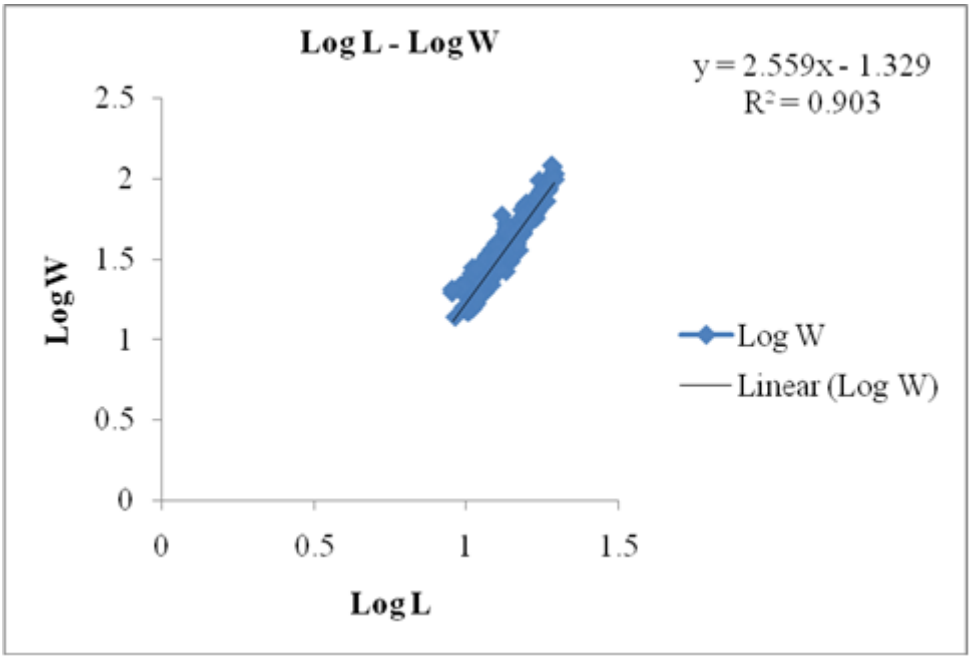

Fig- 3.6.1 C

Fig 3.6.2 Graphical representations of Length-Weight Relationship of the fishes of Dhobi Talav 2013-2014.

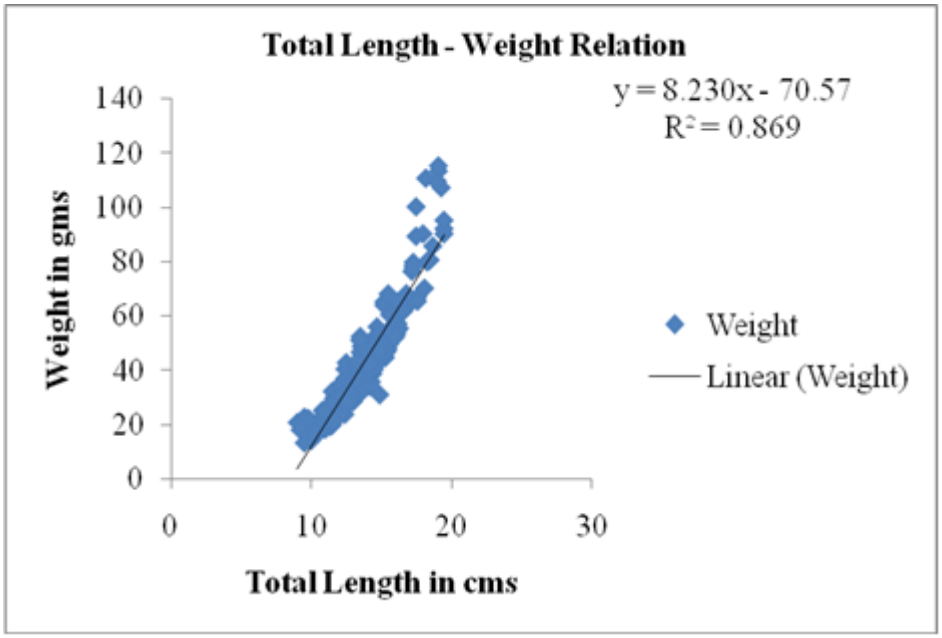

Fig-3.6.2 A

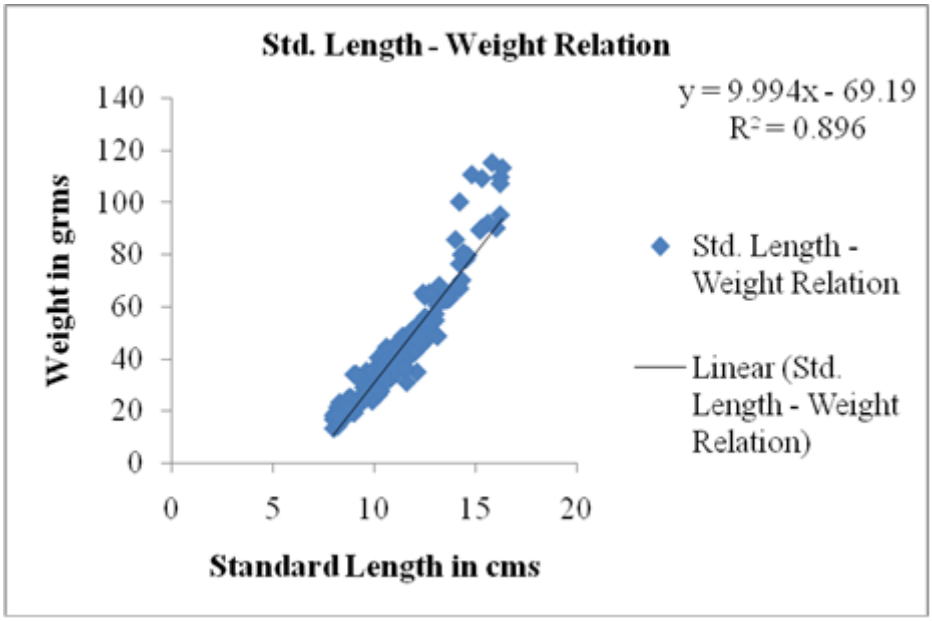

Fig-3.6.2 B

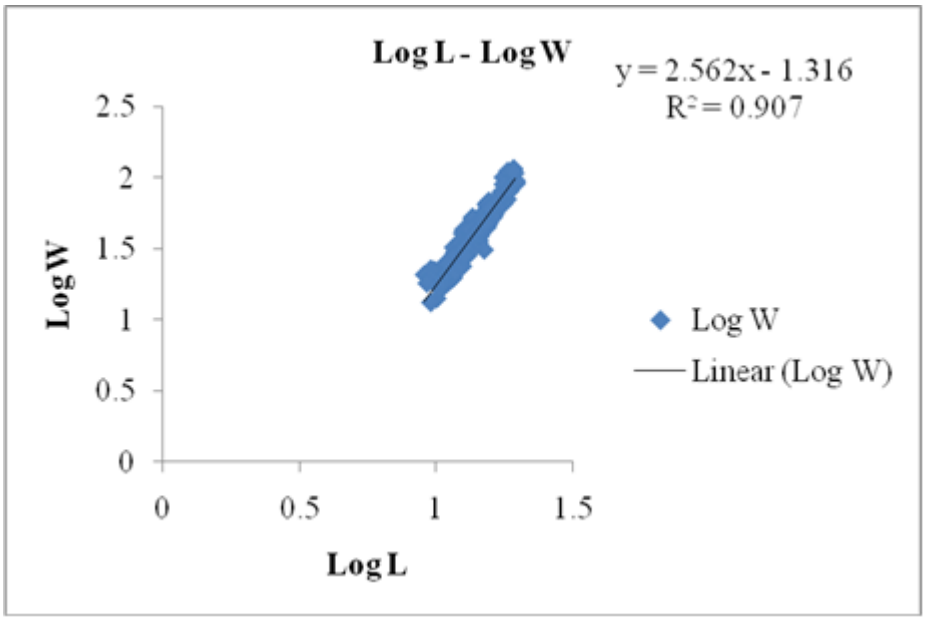

Fig – 3.6.2 C

3.7 Study Site: Majam Talav

In the first year the Total Length (TL) of fishes were reported ranged from 10.5 cm (minimum) to 21.7 cm (maximum). The Standard Length (SL) of fishes was observed ranged from 8 cm (minimum) to 18.1 cm (maximum). The weight (W) of the fishes was ranged from 15.5 gm (minimum) to 151 gm (maximum). The Averages of TL was 15.05 cm, SL was 12.18 cm, and weight was 54.22 gm. The Averages of condition factor and coefficient of condition factor were 1.50 and 2.84 respectively. The correlations between TL and W were 0.945, and SL and W were 0.949 reported during the investigation (Table-3.21, fig-21).

In the second year the Total Length (TL) of fishes ranged were varied from 10.5 cm (minimum) to 21.3 cm (maximum). The Standard Length (SL) of fishes ranged was varied from 8.4 cm (minimum) to 18.3 cm (maximum). The weight (W) of the fishes was ranged from 18.12 gm (minimum) to 150 gm (maximum). The Averages of TL was 15.05 cm, SL was 12.28 cm, and weight was 55.54 gm. The Averages of condition factor and coefficient of condition factor were 1.51 and 2.78 respectively. The correlations between TL and W were 0.96, and SL and W were 0.95 reported during the investigation (Table-3.21, Fig 3.21)

Fig 3.7.1 Graphical representations of Length-Weight Relationship of the fishes of Majam Talav 2012-2013.

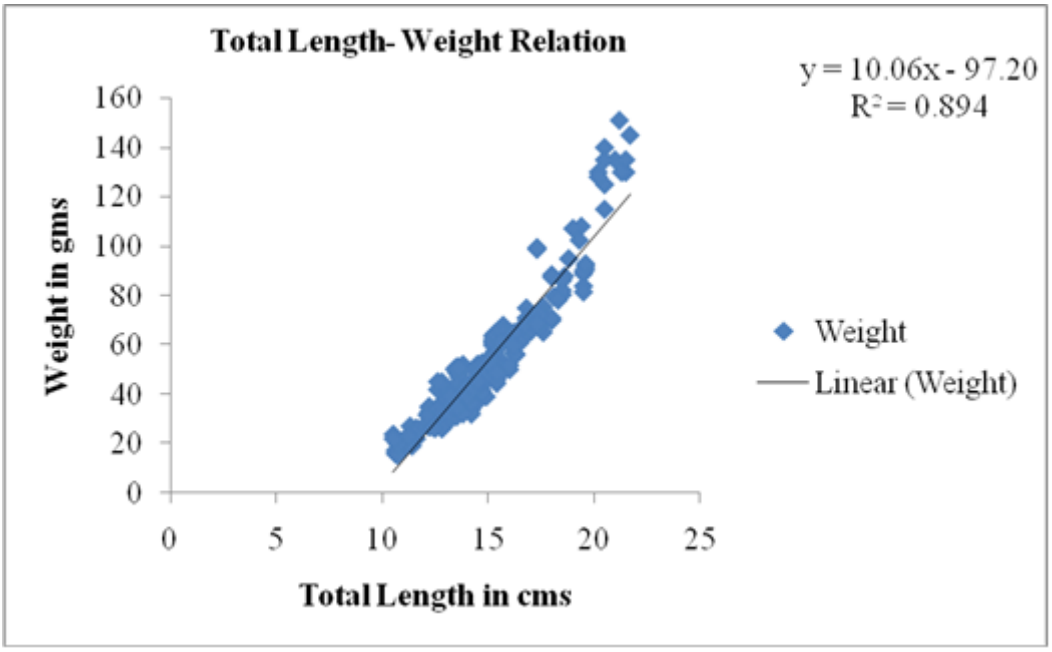

Fig -3.7.1 A

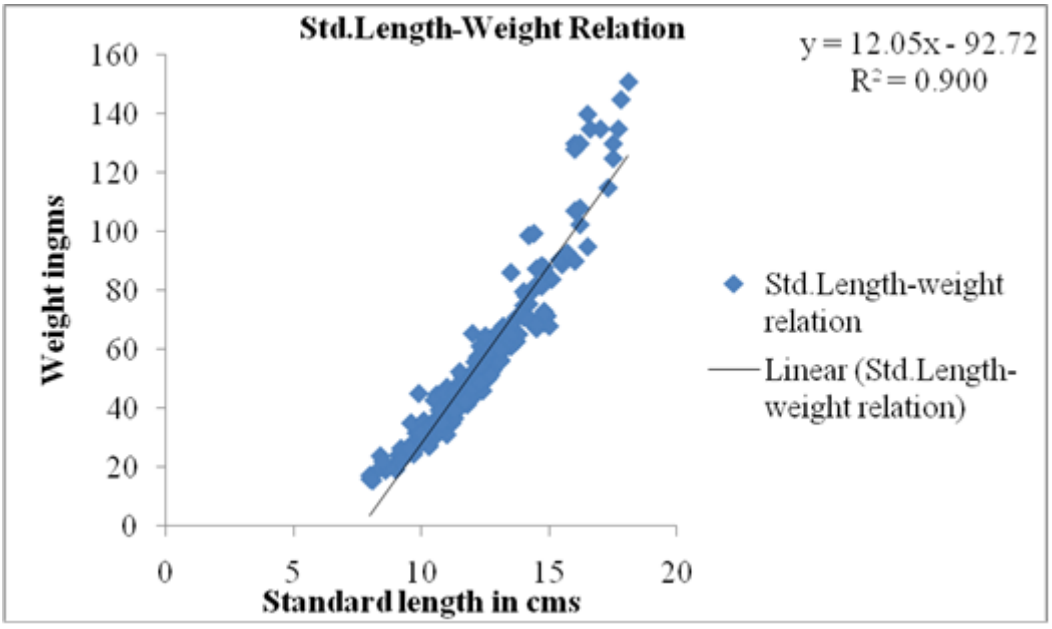

Fig-3.7.1 B

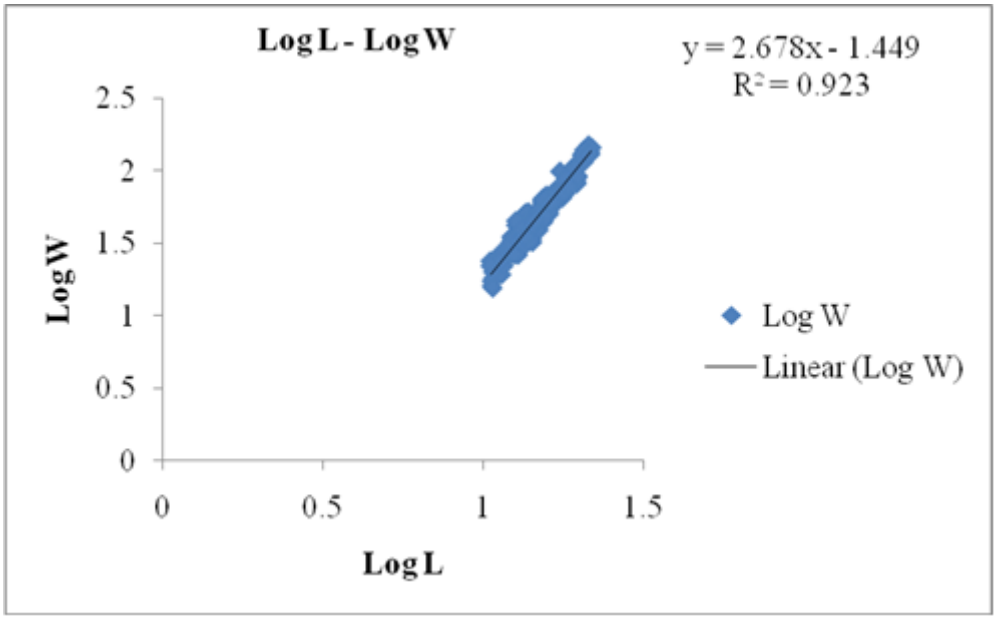

Fig-3.7.1 C

Fig 3.7.2 Graphical representations of Length-Weight Relationship of the fishesof Majam Talav 2013-2014.

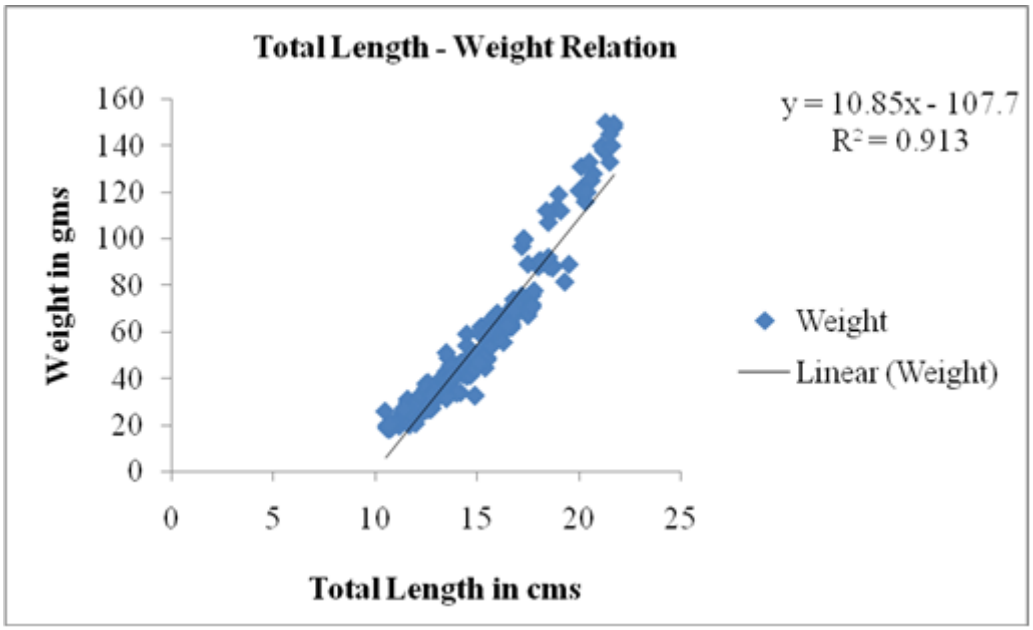

Fig – 3.7.2 A

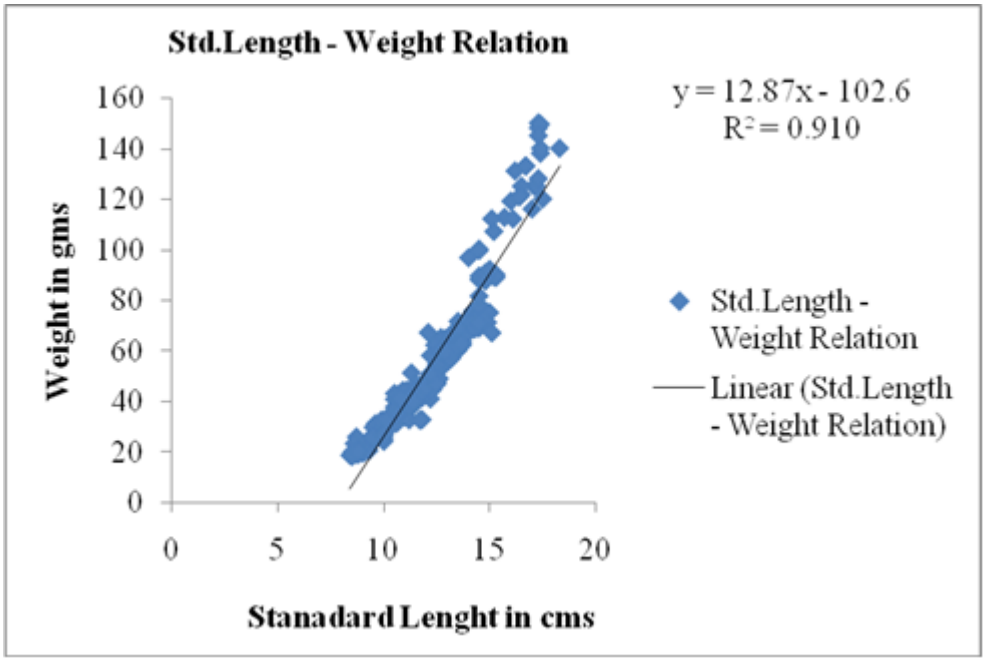

Fig – 3.7.2 B

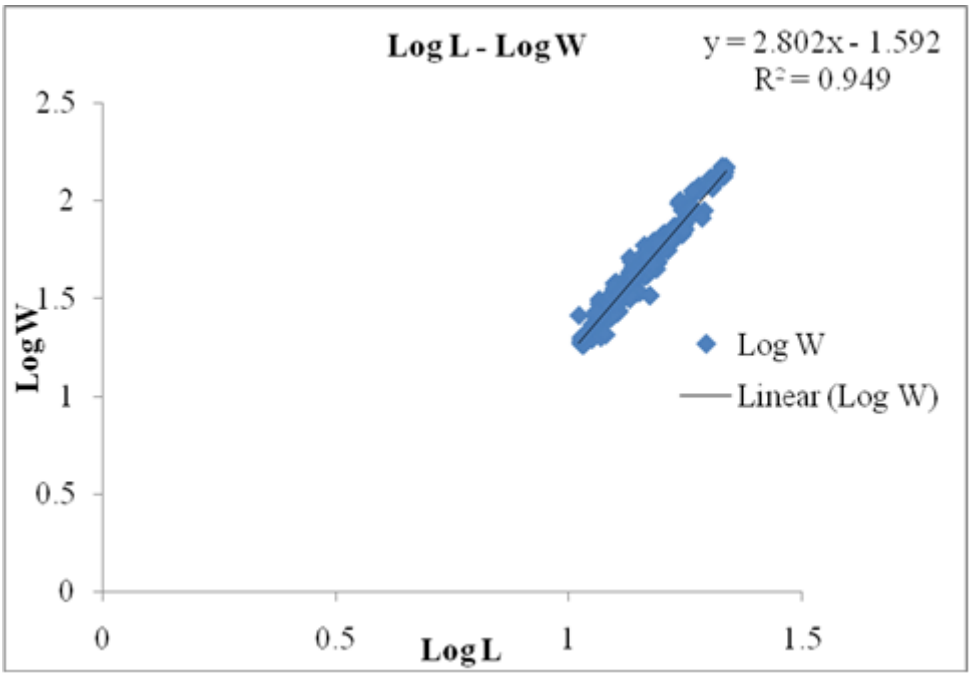

Fig - 3.7.2 C

3.8 Danteshwar and Sama pond:

The morphometric observations of the fishes of Danteshwar pond was that Total Length (TL) of fishes ranged were varied from 9.0 cm (minimum) to 16.4 cm (maximum). The Standard Length (SL) of fishes ranged was varied from 7.2 cm (minimum) to 12.5 cm (maximum). The weight (W) of the fishes was ranged from 16.01 gm (minimum) to 63.74 gm (maximum). The Averages of TL was 12.78 cm, SL was 10.35 cm and weight was 34.26 gm. The Averages of condition factor and coefficient of condition factor were 1.68 and 3.03 respectively. The correlations between TL and W were 0.91, and SL and W were 0.94 reported during the investigation (Fig- 3.23).The morphometric observations of the fishes of Sama pond was that Total Length (TL) of fishes ranged were varied from 11.5 cm (minimum) to 20.2 cm (maximum). The Standard Length (SL) of fishes ranged was varied from 9.4 cm (minimum) to 16.7 cm (maximum). The weight (W) of the fishes was ranged from 26.95 gm (minimum) to 123.06 gm (maximum). The Averages of TL was 15.03 cm, SL was 12.39 cm and weight was 54.33 gm. The Averages of condition factor and coefficient of condition factor were 1.58 and 2.82 respectively. The correlations between TL and W were 0.88, and SL and W were 0.89 reported during the investigation (Fig- 3.8.1 A to 3.8.1 F).

Fig 3.8.1 Graphical representations of Length-Weight Relationship of the fishes of Danteshwar Talav.

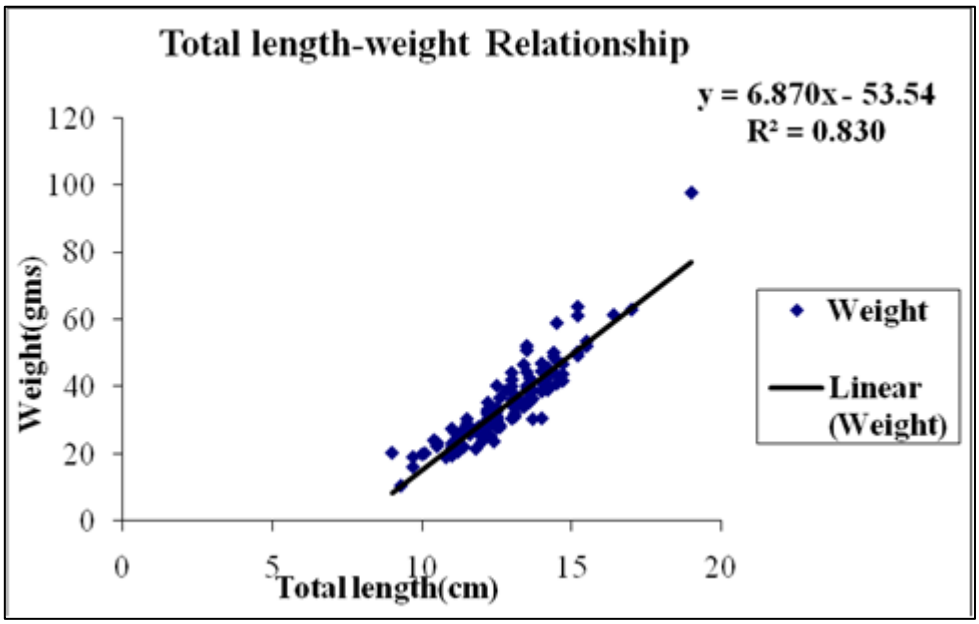

Fig -3.8.1 A

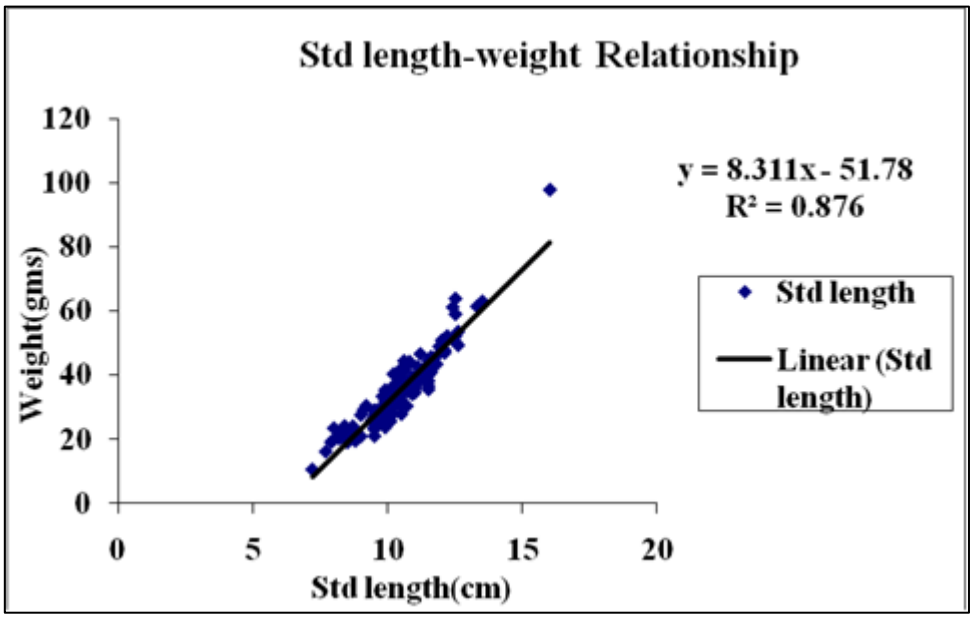

Fig – 3.8.1 B

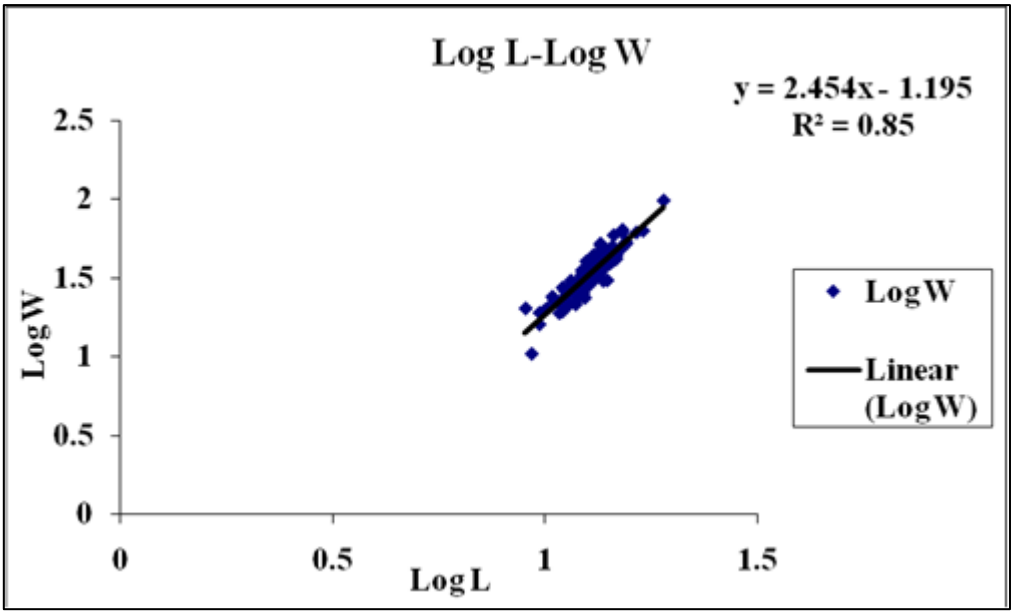

Fig – 3.8.1 C

Fig 3.8.1 Graphical representations of Length-Weight Relationship of the fishes of Sama Talav.

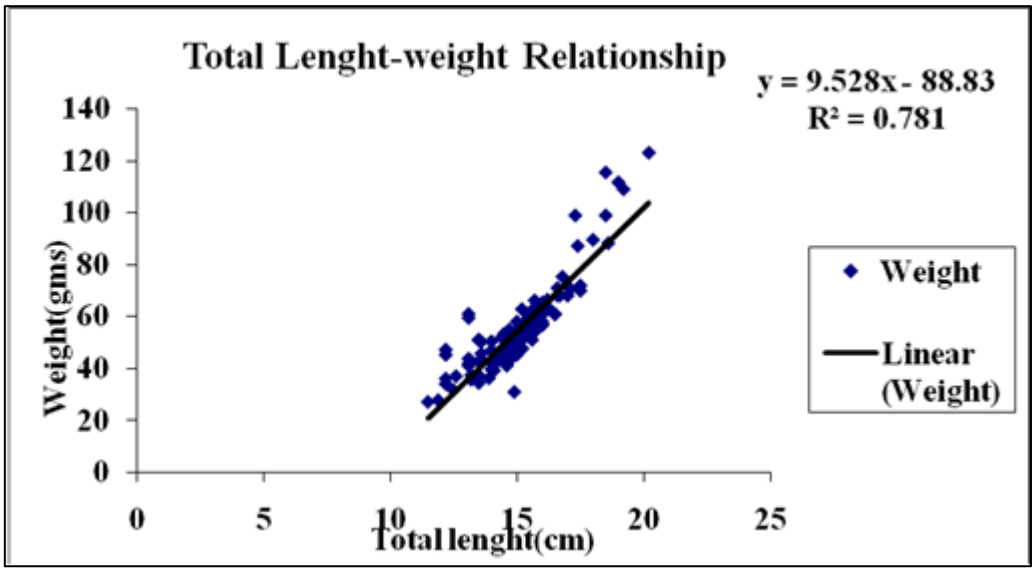

Fig – 3.8.1 D

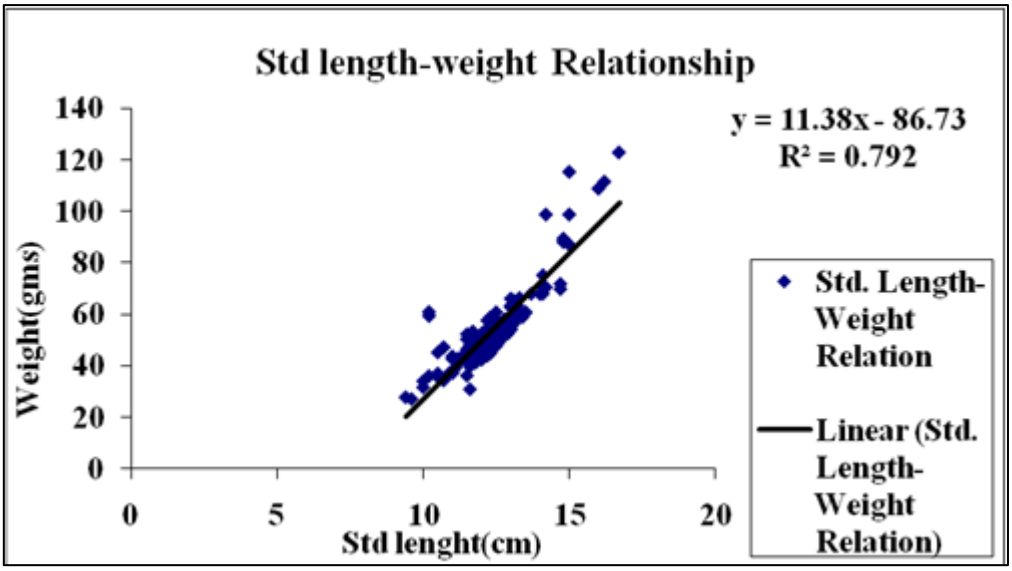

Fig – 3.8.1 E

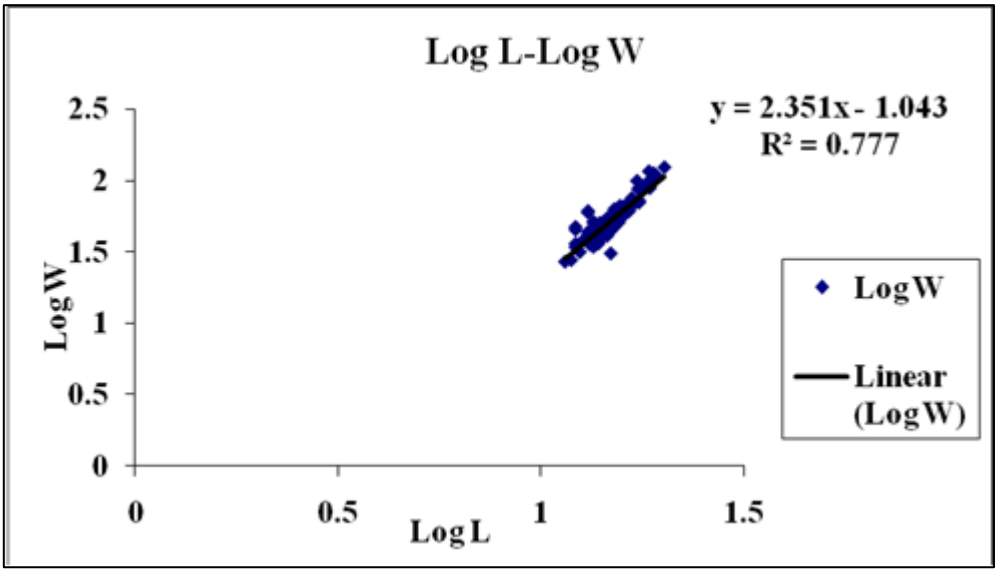

Fig – 3.8.1 F