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NUTRIENT STATUS AND NUTRIENT INDEX VALUES IN SOILS OF GIRAWALI VILLAGE OF AMBEGAON TEHSIL, PUNE DISTRICT (M.S)

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ABSTRACT

Soil nutrient status is the key of soil fertility. Available N (nitrogen), P (phosphorus) and K (potassium) were analyzed to study and identification of macronutrient status of soil the Girawali Village and to addressing fertility index of soil. In all total 161 soil samples were collected at 0-22.5 cm depth based on GPS from the cultivable area of Girawali Village. The result showed that the available N, P and K ranged from 75.26 to 238.33 kg ha-1 (mean 147.18kg ha-1), 7.46 to 40.78 kg ha-1 (mean 24.84 kg ha-1) and 242.14 to 369.53 kg ha-1(mean 333.51 kg ha-1) , respectively. The pH and EC value is 7.48 to 8.22 (mean 7.90) and 0.15 to 0.61 (mean 0.32) dSm-1, respectively and OC ranges from 0.10 to 1.12 per cent (mean 0.60 per cent).The soils are low in available N, low to medium in available P, medium to high in available K. Among the soil 69 (42.85 per cent) soils are mildly alkaline (MA), 92 (57.15 per cent) soils moderately alkaline (MoA) and low in salt content. The soils of Girawali Village samples are low in available N content (100 per cent), low (61.5 per cent) to medium (38.5 per cent) in available P content and medium (48.4 per cent) to high (51.6 per cent) in available K content. OC is low (23 per cent), medium (61.4 per cent) and high (15.6 per cent). The Parkar Nutrient Index of Girawali Village for OC, N, P and K is Medium (1.93), Low 1.0, 1.39 and high 2.53 respectively.

Keywords:
GPS, Mildly alkaline, Parkar Nutrient Index, Soil fertility status

INTRODUCTION

Different kinds of soils exist in the world, and India known as the museum of soil because of diverse climatic condition of the country. Soil properties differ from place to place as a result of parent materials (bedrock), interaction of various soil forming factors and processes. The significance of the mineral is that their chemical composition, crystal structure and susceptibility to alteration and decomposition are all important factors from both Pedological and agricultural standpoints (Mohr et al., 1972). The weathering of different types of parent material has obviously resulted in soils showing appreciable variations in morphological, physical, chemical and biological characteristics. Thus the soil representing a continuum of diversified genetic processes and being one of the biggest natural heritages of mankind deserves greater consideration than merely as an inert medium for plant growth.

Soil fertility plays an important role in sustaining crop productivity of an area under favorable edaphic factors and as information on the nutritional status of soils can go a long way in developing economically viable alternatives for management of deficient nutrients in the soil (Karthikeyan et al., 2014). Continuous cropping for enhanced yield removes substantial amounts of nutrients from soil. Imbalanced and inadequate use of chemical fertilizers, improper irrigation and various cultural practices also

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deplete the soil quality rapidly (Medhe et al., 2012). Soil fertility fluctuates throughout the growing season each year due to alteration in the quantity and availability of mineral nutrients by the addition of fertilizers, manure, compost, mulch, and lime in addition to leaching (Kavitha and Sujatha, 2015). At Present, major nutrient status of the Girawali Village is lacking in literature. Hence this study focused on the major nutrient status of the Girawali Village of Ambegaon Tehsil, Pune District. Evaluation of major nutrients is an important aspect in the context of judicious use of organic and inorganic source of nutrients such as F.Y.M., Vermicompost, compost, organic manure, bio-fertilizer and chemical fertilizers to achieve sustainable production.

MATERIALS AND METHODS

The Girawali Village located at 19°02 to 19°08 North latitude (degree) and 73°50 to 73°55 East longitudes (degree) in Ambegaon Tehsil of Pune District (M.S). GPS (Global Positioning System) based 161 surface soil samples (0-22.5 cm) were collected and processed in laboratory and follow standard procedure outlined by Page et al. (1982). The soil chemical properties i:e pH, EC, OC and major soil available nutrients viz. N, P and K were analyzed. The available N was determined by Subbiah and Asija, (1956), the available P was extracted by employing Olsen extractant (0.5 M NaHCO3, pH 8.5) as described by Olsen et al. (1954) and the available K was extracted by using neutral normal ammonium acetate (Jackson, 1973). Potentiometric method used for determination of soil pH (1:2.5,Soil:water) and Conductometry method used for determination of soil EC (Jackson, 1973).The total OC was determined by wet oxidation method (Nelson & Sommers,1982).The Nutrient Index Values of available nutrients were calculated as per Parkar (1951) formula.

$$\text{Nutrient Index Value (NIV)} = \frac{\text{No.of samples(Low)} \times 1 + \text{No.of samples(Medium)} \times 2 + \text{No.of samples(High)} \times 3}{\text{Total number of samples}}$$

RESULTS AND DISCUSSIONS

Soil reaction and electrical conductivity

Girawali Village soils were mildly alkaline (42.85 %) to moderately alkaline (57.15 %) in nature with a mean pH of 7.0 (Table 3). This wide variation was attributed to the nature of parent material, leaching and presence of calcium carbonate (Reddy and Naidu, 2016). Similar results were reported by Kadlag et al., (2016).The EC for soils of Girawali Village were normal with no salinity hazard. Cultivated areas of Girawali Village had natural sloppy and natural drains and short duration crops may regularly remove the salts which do not permit to accumulate the salts in soil cause for normal in salt content.

Organic carbon and Calcium carbonate

The mean of OC in soil 0.60 per cent and ranged from 0.11 to 1.12 per cent. High temperature dominant during the summer increased rate of decomposition of organic matter (Rashmi et al., 2009) may be reason for most of the soil category under low(23 %) to medium(61.4 %).The higher value of OC in soils was probably because of addition of litter and slower oxidation of the fresh organic material.

Available macronutrients

The available N in soils was low with a mean of 147.18 kg ha-1 and ranged from 75.26 to 238.33 kg ha-1. It may be due low organic matter content of soil (Vineetha and Malewar, 2009) and also due to rapid loss of applied N in soil or might be low rainfall and low vegetation cover, facilitating faster degradation and removal of organic matter

leading to N deficiency (Tur et al., 2008, Prabhavati et al., 2015).For available phosphorus in soils ranged from 7.46 to 40.78 kg ha-1 with a mean of 24.84 kg ha-1 and 61.5 percent under low and 38.5 percent under medium category. The low amount of available P may be due to application of lower doses of P fertilizer, fixation of P on clay minerals or CaCO3 surfaces with the time elapsed between fertilizer application and crop uptake (Tur et al., 2008). The available potassium in soils ranged from 242.14 to 369.53 kg ha-1 with a mean of 333.51 kg ha-1. Soils were high (51.6 %) and medium (48.4%) category for available potassium. The high potassium content may be attributed to presence to potassium supplying minerals in parent rock of the area (Hadole et al., 2015). Raskar and Pharande (1997) also find similar results.

Nutrient Index Value

The Parkar Nutrient Index Value (NIV) of Girawali Village is categorized as low for N (1.00),P (1.38), Medium for OC (1.93) and High for K (2.52).

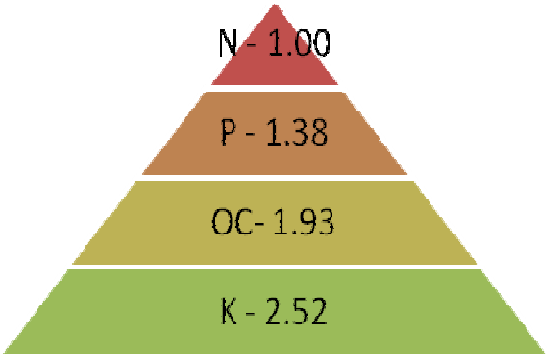

Fig.: 1 Nutrient fertility pyramid for Girawali village based on nutrient index value.

The bottom of pyramid is representing maximum nutrient index value with respective of most available nutrient in the soils of Girawali Village. The nutrient index value below 1.5 show low category, 1.5 to 2.5 medium and more than 2.5 consider under high category. In the pyramid moving towards top, it is becoming narrow and nutrient index value also reduce, which indicating the less availability of respective nutrient in the soil with respect to previous bottom nutrients. The top portion of the pyramid is tapered and nutrient index value is also lowermost, which indicate minimum availability on behalf of others nutrients and requirement is maximum in the soil.

Sl.No	Nutrient	NIV	Category
1	OC	1.93	Medium
2	N	1.00	Low
3	P	1.38	Low
4	K	2.52	High

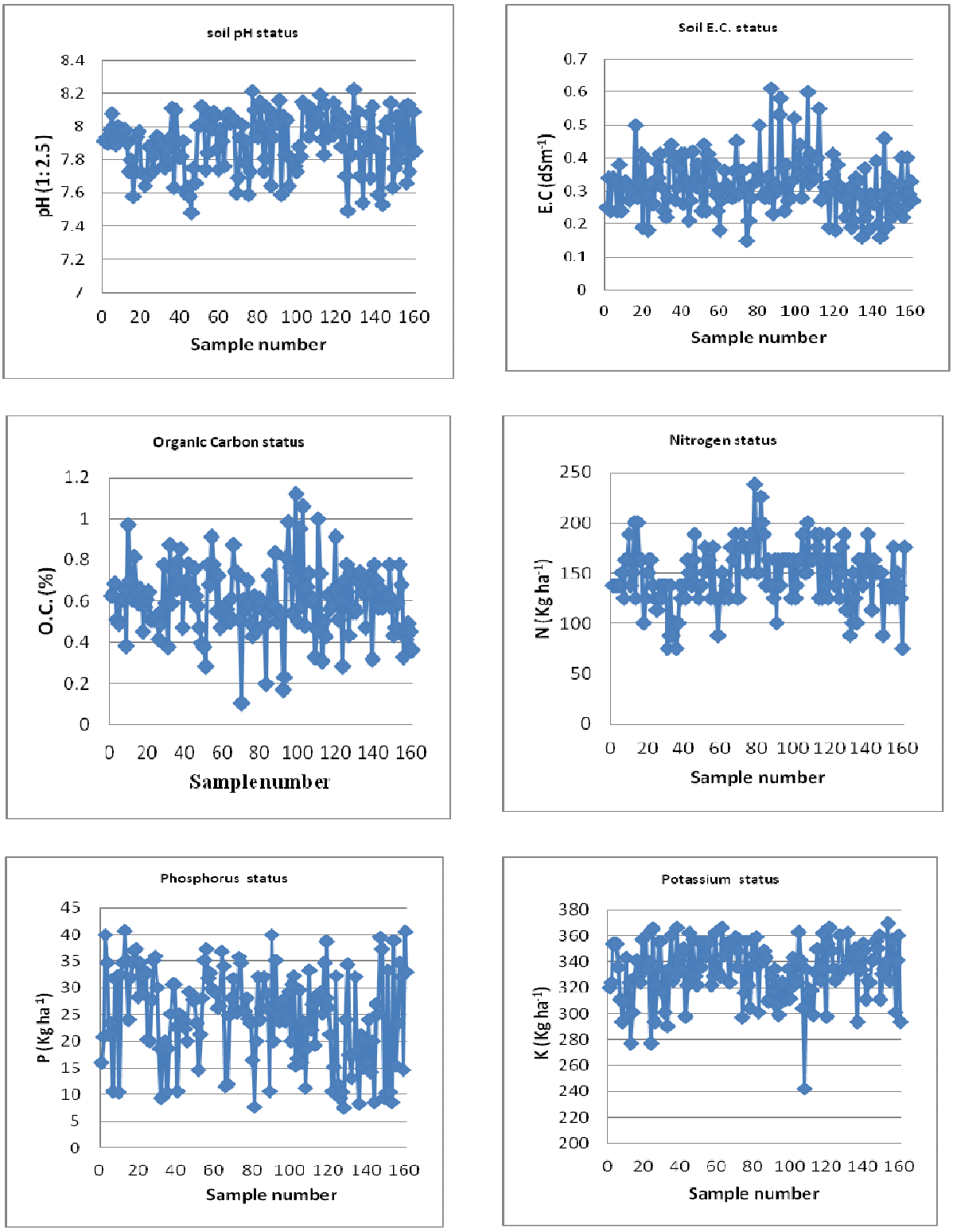

Fig. 2 : Graph representing the soil pH, EC, OC, available N, P, K with respectivie sample number.

Table. 1 Criteria for assessment of soil nutrient status.

Parameter	Categories			
pH (1 :2.5)	Neutral	Mildly alkaline	Moderately alkaline	Strongly alkaline
	6.6 -7.39	7.4 – 7.89	7.90 -8.49	8.50 – 9.0
EC (1 :2.5) dS m^{-1}	Normal	Poor seed emergemce		Harmfull
	0 - 1	1 - 2		> 2
	Low	Medium		High
Organic carbon (%)	< 0.5	0.50 – 0.75		> 0.75
Nitrogen (Kg ha^{-1})	< 280	280 – 560		> 560
Phosphorus (Kg ha^{-1})	< 20	20-50		> 50
Potassium (Kg ha^{-1})	< 125	125-300		> 300

Table 2. Soil samples test results of Girawali village with GPS locations.

Soil Sample No.	Latitude (N) in degree	Longitude (E) in degree	pH (1: 2.5)	EC dsm^{-1} (1:2.5)	O.C (%)	Available (Kg ha^{-1})		
						N	**P**	**K**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1.	19.083980	73.855420	7.91	0.25	0.63	137.98	15.99	320.05
2.	19.084000	73.855210	7.93	0.34	0.63	137.98	20.79	324.26
3.	19.085810	73.854990	7.90	0.24	0.69	137.98	39.98	353.74
4.	19.084350	73.851220	7.98	0.33	0.51	137.98	34.65	353.74
5.	19.084361	73.865880	8.08	0.34	0.49	137.98	21.32	353.74
6.	19.089960	73.834450	7.91	0.33	0.61	150.58	23.45	335.84
7.	19.087690	73.855080	7.89	0.24	0.61	125.44	10.66	310.57
8.	19.089400	73.857263	8.00	0.38	0.66	163.07	31.72	293.73
9.	19.089960	73.857791	7.97	0.24	0.38	163.07	32.25	309.52
10.	19.095430	73.855069	7.93	0.32	0.97	188.16	10.39	343.21
11.	19.096122	73.854888	7.96	0.33	0.70	137.98	32.52	297.94
12.	19.097430	73.856583	7.98	0.31	0.61	150.52	34.65	324.26
13.	19.096820	73.856660	7.90	0.27	0.82	200.70	40.78	276.88
14.	19.097700	73.860372	7.73	0.28	0.65	125.44	35.18	301.10
15.	19.094820	73.866050	7.80	0.29	0.59	200.70	23.99	327.42
16.	19.095690	73.872427	7.58	0.50	0.66	163.07	31.98	341.10
17.	19.073138	73.854330	7.73	0.28	0.59	163.04	34.65	328.47
18.	19.069730	73.854617	7.94	0.33	0.46	100.35	37.05	324.26
19.	19.071700	73.854513	7.97	0.41	0.57	125.44	37.31	356.89
20.	19.073350	73.855291	7.72	0.19	0.61	150.58	28.25	334.79
21.	19.073800	73.855872	7.71	0.40	0.65	163.07	34.65	360.05
22.	19.073925	73.855630	7.64	0.29	0.51	163.07	29.05	334.79
23.	19.072600	73.857130	7.69	0.18	0.51	137.98	32.25	340.05
24.	19.072880	73.857675	7.88	0.32	0.51	125.44	33.05	276.88
25.	19.072780	73.858458	7.88	0.26	0.51	112.89	20.25	365.32
26.	19.072860	73.858458	7.73	0.26	0.42	125.44	19.99	293.73
27.	19.072730	73.858500	7.83	0.39	0.49	137.98	27.72	322.15
28.	19.069850	73.859255	7.94	0.34	0.55	125.44	35.18	354.79

29.	19.069520	73.859938	7.93	0.41	0.78	137.98	35.98	355.84
30.	19.069583	73.859922	7.89	0.31	0.59	137.98	30.12	315.84
31.	19.083220	73.860830	7.76	0.24	0.38	75.26	18.65	301.10
32.	19.078722	73.861755	7.75	0.22	0.87	87.80	9.32	332.68
33.	19.082972	73.860036	7.80	0.28	0.59	137.98	19.19	290.57
34.	19.080190	73.860258	7.86	0.42	0.74	87.80	19.99	334.79
35.	19.082277	73.859960	7.93	0.44	0.66	100.35	10.39	360.05
36.	19.082416	73.858369	8.11	0.39	0.80	75.26	18.66	325.31
37.	19.079080	73.859027	7.63	0.27	0.70	100.35	25.05	328.47
38.	19.070210	73.859966	8.10	0.31	0.86	137.98	30.65	366.37
39.	19.071460	73.859450	7.91	0.37	0.47	125.44	30.65	341.10
40.	19.074530	73.859533	7.81	0.41	0.65	137.98	22.65	345.31
41.	19.074640	73.860772	7.82	0.26	0.70	125.44	10.66	333.73
42.	19.073870	73.860997	7.91	0.41	0.78	163.07	25.06	350.58
43.	19.071880	73.864852	7.60	0.33	0.63	150.58	22.92	297.94
44.	19.072030	73.864530	7.63	0.21	0.66	137.98	23.99	322.15
45.	19.072100	73.864555	7.58	0.27	0.76	163.07	22.39	362.16
46.	19.076210	73.858297	7.48	0.42	0.63	188.16	19.99	328.47
47.	19.074880	73.859250	7.75	0.33	0.58	137.98	29.32	356.89
48.	19.078770	73.861533	7.66	0.31	0.47	125.44	29.05	328.47
49.	19.070513	73.855952	8.00	0.38	0.40	137.98	27.72	322.15
50.	19.075340	73.857070	8.00	0.31	0.38	137.98	27.72	355.84
51.	19.105310	73.859055	8.12	0.24	0.29	150.52	23.45	335.84
52.	19.076440	73.853086	8.03	0.44	0.78	175.61	14.66	353.74
53.	19.077280	73.876361	7.74	0.24	0.68	163.07	21.32	354.79
54.	19.077290	73.874138	7.84	0.41	0.91	163.07	27.98	344.26
55.	19.076840	73.854227	8.07	0.38	0.78	125.44	35.18	353.74
56.	19.076330	73.854180	7.98	0.32	0.74	175.61	37.31	355.84
57.	19.077400	73.855090	8.09	0.38	0.55	125.44	31.72	322.15
58.	19.078252	73.854550	8.06	0.29	0.73	125.44	32.78	328.47
59.	19.078375	73.872611	7.86	0.24	0.47	87.80	29.85	362.16
60.	19.078960	73.856306	7.74	0.18	0.54	125.44	29.32	332.68
61.	19.079488	73.854614	7.98	0.27	0.57	150.58	29.05	330.57
62.	19.079088	73.855402	7.91	0.31	0.56	125.44	26.12	328.47
63.	19.079955	73.857088	7.76	0.36	0.53	137.98	26.65	366.37
64.	19.079261	73.858155	8.06	0.32	0.50	125.44	36.78	345.31
65.	19.078733	73.858644	8.08	0.30	0.61	125.44	34.12	353.74
66.	19.076261	73.860063	8.02	0.30	0.88	175.61	11.46	353.74
67.	19.075380	73.862050	8.04	0.28	0.74	163.07	11.99	324.26
68.	19.077197	73.862897	8.04	0.36	0.73	188.16	24.79	350.58
69.	19.078930	73.862110	7.60	0.45	0.51	125.44	27.99	356.89
70.	19.080016	73.861366	7.69	0.29	0.11	125.44	31.72	359.00
71.	19.081641	73.861922	7.93	0.36	0.61	175.61	26.12	335.84
72.	19.081827	73.861425	8.01	0.36	0.56	188.16	25.32	348.47
73.	19.080172	73.864480	7.78	0.31	0.70	175.61	35.71	356.89
74.	19.079180	73.864336	7.91	0.15	0.58	175.61	34.65	296.88
75.	19.086080	73.861647	7.59	0.21	0.49	150.52	25.85	315.84
76.	19.081380	73.863894	7.73	0.28	0.43	175.61	25.58	355.84
77.	19.088166	73.863391	8.21	0.32	0.63	188.16	27.98	322.15
78.	19.083320	73.861266	8.10	0.37	0.46	175.61	24.25	304.25

79.	19.089583	73.862339	7.96	0.33	0.58	238.33	23.45	356.89
80.	19.092611	73.862983	7.93	0.33	0.61	150.58	16.52	345.31
81.	19.085211	73.864475	8.15	0.50	0.60	150.52	7.730	337.94
82.	19.085733	73.863858	8.00	0.34	0.48	225.79	19.99	359.00
83.	19.086355	73.862116	7.73	0.29	0.20	200.70	31.99	301.10
84.	19.086363	73.862075	7.81	0.28	0.54	188.16	23.99	341.10
85.	19.085455	73.859302	8.11	0.34	0.73	137.98	26.13	340.052
86.	19.076477	73.854519	8.01	0.28	0.58	163.07	31.99	348.47
87.	19.080930	73.849591	7.64	0.61	0.58	137.98	29.05	343.21
88.	19.081061	73.854500	7.93	0.23	0.84	137.98	26.13	309.52
89.	19.081375	73.855131	8.06	0.32	0.50	125.40	10.66	311.62
90.	19.081775	73.856539	8.02	0.30	0.54	163.07	39.98	328.47
91.	19.082994	73.857839	8.16	0.53	0.54	100.35	19.99	316.89
92.	19.092694	73.858033	7.59	0.58	0.17	163.07	35.18	334.79
93.	19.085816	73.858869	8.06	0.37	0.23	137.98	25.05	306.36
94.	19.087883	73.858870	7.83	0.24	0.81	163.07	23.72	298.99
95.	19.089336	73.859658	8.04	0.38	0.99	163.07	26.92	322.15
96.	19.090010	73.859717	7.64	0.27	0.76	163.07	27.72	324.26
97.	19.090916	73.859522	7.81	0.28	0.54	163.07	23.72	310.57
98.	19.098105	73.860606	7.76	0.52	0.71	125.44	29.32	334.79
99.	19.092077	73.859811	7.73	0.38	1.12	163.07	19.99	311.62
100.	19.093906	73.860217	7.88	0.35	0.50	125.44	30.65	320.05
101.	19.094100	73.862014	7.82	0.44	0.95	137.98	32.25	343.21
102.	19.094050	73.864697	8.15	0.28	0.58	163.07	15.46	327.42
103.	19.094252	73.864169	8.13	0.34	1.06	163.07	16.79	324.26
104.	19.095911	73.864603	8.11	0.39	0.48	188.16	29.58	363.21
105.	19.094413	73.872889	7.94	0.60	0.67	150.58	15.99	341.10
106.	19.091911	73.866047	8.11	0.32	0.73	150.58	23.72	304.25
107.	19.091813	73.866258	8.00	0.41	0.60	200.70	11.19	242.14
108.	19.090994	73.865203	8.07	0.34	0.61	163.07	18.66	333.73
109.	19.088386	73.865208	8.03	0.34	0.33	163.07	33.32	302.15
110.	19.081736	73.853683	8.07	0.40	0.46	163.07	22.12	318.99
111.	19.088800	73.865672	8.19	0.55	1.00	188.16	26.92	317.94
112.	19.083917	73.872389	7.92	0.27	0.73	175.61	19.19	298.99
113.	19.082490	73.870222	7.83	0.28	0.31	125.44	27.98	331.63
114.	19.076252	73.864078	8.13	0.31	0.50	188.16	28.78	349.52
115.	19.071577	73.860589	7.93	0.31	0.43	125.44	29.32	333.73
116.	19.086990	73.853400	7.95	0.19	0.63	163.07	25.05	325.31
117.	19.071077	73.853658	7.98	0.30	0.56	137.98	34.65	362.16
118.	19.076253	73.864078	8.14	0.41	0.58	188.16	27.99	360.05
119.	19.080050	73.877611	7.95	0.35	0.66	125.44	38.65	333.73
120.	19.090661	73.861703	8.01	0.33	0.91	163.07	26.38	297.94
121.	19.080744	73.867106	8.09	0.18	0.66	163.07	21.32	353.74
122.	19.075600	73.861717	8.00	0.38	0.51	163.07	10.66	366.37
123.	19.070352	73.855250	7.88	0.31	0.61	137.98	15.19	348.47
124.	19.088390	73.861713	8.05	0.31	0.28	163.07	32.25	334.79
125.	19.080900	73.861933	7.70	0.28	0.70	125.44	11.99	325.31
126.	19.086700	73.878383	7.49	0.22	0.78	175.61	9.32	327.42
127.	19.088422	73.861702	7.98	0.28	0.44	150.52	10.39	360.05
128.	19.097822	73.855133	7.83	0.31	0.74	188.16	7.46	360.05

129.	19.097810	73.858128	8.22	0.19	0.55	112.89	23.99	333.73
130.	19.070466	73.861713	7.97	0.21	0.57	137.98	34.38	333.73
131.	19.085033	73.858125	8.09	0.34	0.55	87.80	17.32	335.84
132.	19.086977	73.863072	7.70	0.33	0.70	100.35	13.06	362.16
133.	19.084419	73.878380	7.83	0.29	0.74	150.58	17.33	334.79
134.	19.068863	73.879647	7.54	0.16	0.65	125.44	31.99	344.26
135.	19.095288	73.861869	7.93	0.24	0.65	100.35	18.39	343.21
136.	19.074091	73.861738	7.87	0.37	0.47	163.07	8.26	350.58
137.	19.073941	73.874022	8.07	0.22	0.68	163.07	21.32	293.73
138.	19.072830	73.878550	7.69	0.18	0.72	137.98	14.93	344.26
139.	19.098938	73.864575	8.12	0.29	0.65	163.07	20.26	333.73
140.	19.078408	73.855106	7.88	0.28	0.32	150.58	15.99	353.74
141.	19.088300	73.871156	7.91	0.26	0.78	188.16	23.99	348.47
142.	19.095075	73.871772	7.59	0.39	0.70	163.07	14.13	310.57
143.	19.073925	73.871739	7.87	0.20	0.57	112.89	19.99	325.31
144.	19.090313	73.880190	7.53	0.16	0.66	163.07	8.53	324.26
145.	19.086822	73.853822	7.99	0.29	0.57	150.58	26.92	341.10
146.	19.089236	73.873000	8.03	0.46	0.63	150.58	25.06	341.10
147.	19.093530	73.851750	7.99	0.19	0.63	150.58	39.45	355.84
148.	19.093297	73.853828	8.14	0.34	0.63	150.58	37.32	350.58
149.	19.097940	73.854525	7.63	0.31	0.78	87.80	9.33	360.05
150.	19.097977	73.853928	7.75	0.22	0.57	137.98	10.34	310.57
151.	19.089938	73.861828	8.06	0.26	0.44	137.8	33.32	330.57
152.	19.104130	73.859217	7.79	0.28	0.48	137.98	10.39	334.79
153.	19.112388	73.860140	8.06	0.25	0.59	125.44	8.53	340.05
154.	19.103550	73.860161	7.86	0.32	0.78	137.98	38.92	369.53
155.	19.095566	73.864394	8.12	0.40	0.68	175.61	15.46	325.31
156.	19.094853	73.866019	7.66	0.22	0.33	125.44	23.46	356.89
157.	19.071811	73.855228	8.13	0.25	0.46	150.58	34.65	355.84
158.	19.074880	73.859252	7.73	0.40	0.42	137.98	31.99	301.10
159.	19.078963	73.856305	7.83	0.29	0.49	125.44	14.66	341.10
160.	19.079088	73.855403	8.09	0.33	0.46	75.26	40.52	360.05
161.	19.087088	73.861716	7.8	0.27	0.36	175.61	33.05	293.73

Table 3 - Nutrient status of soil of Girawali Village.

Parameters	**Range (Min-Max)**	**Mean Value**	**Category**			**Standard Deviation**
pH (1: 2.5)	7.48 - 8.22	7.90	MA 69 (42.85)	MoA 92 (57.15)		0.04
EC(dsm^{-1})	0.15 - 0.61	0.32	NL 161(100)			0.01
			Low	**Medium**	**High**	
O.C (%)	0.11 – 1.12	0.60	37(23)	99(61.4)	25(15.6)	1.87
N ($kg\ ha^{-1}$)	75.26 - 238.33	147.18	161(100)	0(0.0)	0(0.0)	26.61
P ($kg\ ha^{-1}$)	7.46 - 40.78	24.84	99(61.5)	62(38.5)	0(0.0)	12.06
K ($kg\ ha^{-1}$)	242.14 - 369.53	333.51	0(0.0)	78(48.4)	83(51.6)	18.61

MA – Mildly Alkaline, MoA – Moderately Alkaline, NL – NORMAL
Figures in parenthesis indicate percentage of total sample

Conclusion

The 161 surface soil samples (0-22.5 cm) were collected to assess the macro nutrient status including chemical properties and Nutrient Index Values of Girawali Village based on GPS. Soils were found moderately alkaline (57.15 %) to mildly alkaline (42.85 %) in reaction with pH ranged from 7.48 to 8.22 (mean 7.90). The electrical conductivity of soils ranged from 0.15 to 0.61dS m-1 (mean 0.32 dS m-1) were normal in salt content. The organic carbon content of soils ranged from 0.11 to 1.12 per cent (mean 0.60 %).The soil samples were low (23 %), medium (61.4 %) and high (15.6 %) in organic carbon. The available nitrogen was low in 100 per cent soils, phosphorus low in 61.5 per cent soils while medium in 38.5 per cent soils and potassium was medium (48.4 %) to high (51.6 %) in soils. Nutrient Index Value (NIV) of Girawali Village is categorized as low for N (1.00) , P (1.38), Medium for OC (1.93) and High for K (2.52) which indicate requirement of nitrogen is maximum followed by P and OC and minimum for K to maintain productivity of soil. FYM, vermicompost, compost, green manure, crop residues use as organic source and neem coated urea, single superphosphate and DAP use as inorganic source to maintain productivity of soil.

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