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Fertility Status of Oil Palm Growing Soils in West Godavari districts of Andhra Pradesh

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A B S T R A C T

The fertility status of soil and their productive potential is of prime importance for appropriate management to increase production. The present investigation has been undertaken to assess the fertility status of oil palm growing soils and to evaluate their present status of productive potential for better understanding in maintaining soil nutrient status. Representative soil samples at different depths (0-15, 15-30 & 30-60) from seventeen mandals, representing the intensive oil palm growing areas were collected and studied for nutrient status using standard procedures. The results reveal the data of pH, EC, and organic matter respectively in all the samples. The data revealed that the soils were acidic to slightly alkaline in nature. Organic matter in the results indicates less organic carbon in few mandals out of the 50 samples. The results of phosphorus show the levels ranging from 4.5-88.5 kg/ha and indicate poor levels of phosphorus. Sulphur in palms ranges from 2-58 ppm, however, most of the soil samples contain high levels than the required. The results of micronutrients reveal high levels of iron and manganese compared to copper and zinc. The results of macronutrients like phosphorus show substantially lower than potassium.

Introduction:

Oil palm (Elaeis guineensis Jacq.), is a tropical perennial tree originating in West Africa (Page, B. and S. Lord. 2006). Oil palm fruit look like large reddish plums clustered in large bunches. Bunches are continuously harvested throughout the year as they ripen on each tree every 7-10 days. Palm oil is extracted from the pulp of the fruit and palm kernel oil from the kernel. Trees are productive for 20-30 years. Only a few decades ago oil palm was a minor crop, but in 2004, production surpassed that of soybean as the major world vegetable oil crop (Page, B. and S. Lord. 2006). Malaysia and Indonesia lead the world in oil palm production, accounting for 80% of the global production (Page, B. and S. Lord. 2006. The establishment of oil palm plantations (along with rubber and pulp plantations) in Sumatra, Kalimantan and East Malaysia has been cited as the major cause of the air pollution that affected many areas of Southeast Asia in 1997 (Clay, 2004; Rosenburg, 1999; Sargeant, 2001.

Methodology:

Sampling is the most crucial step in analysis. The nutrient composition of plant species is not a fixed entity. It varies from time to time in plants, from soil to soil and even from species to species (Jones, 1970). The plant part selected and the time of sampling should be such that a good correlation exits between the concentrations of the nutrient and yield (Bates, 1971). Plants under nutrient stress, moisture stress, reproductive stage, and cold stress should not be collected. Dead plant tissue and plant parts covered by soil or dust should not be collected (Reisenauer, 1956).

The pH of the soil was determined by pH meter proposed by Sorenson (1909). EC of a soil is measured by conductivity meter known as Solute Bridge proposed by Georg Simon Ohm (1787-1854). Organic matter in soils was determined by Wet Digestion Method proposed by Walkley and Black (1934). Phosphorus in Neutral and Calcareous soils is determined by Olsen's method (Olsen et al, 1954) whereas acidic soils are determined by Ascorbic acid method (Watanabe and Olsen, 1965). Potassium in the soils is determined by ammonium acetate method by Merwin and Peach, 1951. Determination of available zinc, copper, manganese, and iron was done by DTPA extracting solution by atomic absorption spectrophotometer. Calcium and magnesium is determined by titration with EDTA, by Hesse, 1971. Available sulphur in the soil is determined by turbidimetry.

Table-1: Depicts the effects of pH, EC, and OC.

MANDAL	VILLAGE	DEPTH	PH1:25W/V	EC	OC%
T. Narasapuram	Borammupalem	0-15	6.69	25.3us	0.78
		15-30	6.15	33.6	0.71
		30-45	6.46	53.8	0.96
	Tedlam	0-15	5.8	17.8	0.48
		15-30	6.29	34.1	0.84
		30-45	6.33	37.1	0.72
	Bandivarigudem	0-15cm	6.9	0.089	1.05
		15-30cm	7.02	805us	0.78
		30-60cm	6.87	0.090ms	0.31
Narasapur	Gondi	0-15cm	5.34	54.4	0.32
		15-30cm	4.58	27	0.39
Buttaigudem	Kommugudem	0-15cm	6.03	83.1	0.7
		15-30cm	5.78	61.6	0.66
		30-60cm	5.37	0.127	0.59
	Buttaigudem	0-15cm	5.42	41.8us	0.62
		15-30cm	4.58	38.2	0.28
		30-45cm	4.17	76.5	0.42
Pedavegi	Vegiwada	0-15cm	7.47	0.087ms	0.31
		15-30cm	7.08	0.096	0.47
		30-60cm	7.86	0.091	0.5
	Vijayarai	0-15cm	7.24	0.103	0.53
		15-30cm	7.76	62.8us	0.74
		30-60cm	7.24	0.097ms	0.66
	Peddakadimi	2fdown	8.18	0.130ms	0.63
		1f up	8.3	0.205ms	0.47
		1f down	7.88	0.134	0.36
	Garlamadugu	1f down	8.18	0.216	0.32
		1f up	7.93	0.09	0.51
Nallajarla	Chepurigudem	0-15cm	5.14	52	0.3
		15-30cm	4.18	77	0.6
		30-60cm	4.63	75.2	0.39
	Ananthapalli	0-15cm	6.87	44.1	0.28
		15-30cm	6.7	57.6	0.55
		30-60cm	6.33	60.8	0.36
	Ayyavaram	0-15cm	6.77	69.8	0.51
		15-30cm	7	48.2	0.32
		30-60cm	6.84	49.7	0.36
	Gannavaram	0-15cm	7	0.11ms	0.71
		15-30cm	7.3	77.5us	0.67
		30-60cm	7.06	0.169ms	0.63
	Gudepalli	0-30cm	5.63	18.7us	0.28
		30-60cm	5.85	15.8	0.24
	Ananthapalli	0-30cm	5.74	20.9	0.36
		30-60cm	5.55	15.4	0.32
	Nallajarla	0-15cm	6.74	0.133ms	1.21
		15-30cm	6.53	61.4us	0.51
		30-60cm	6.4	67.9	0.82
	Bapulapadu	0-15cm	7.77	0.164ms	0.78
		15-30cm	7.86	0.167	0.67
		30-60cm	7.87	0.124ms	0.94

Denduluru	Gangannagudem	0-15cm	7.41	0.237ms	0.60
		15-30cm	7.29	0.241	0.59
		30-60cm	6.98	0.191	0.32
	Galayagudem	0-15cm	7.36	0.277	1.1
		15-30cm	7.38	0.236	0.4
		30-60cm	7.33	0.234	0.32
Lingapalem	Kottapalli	0-15cm	7.48	0.293	0.94
		15-30cm	7.35	0.209	0.47
		30-60cm	7.31	0.184	0.36
Eluru	Chodimella	0-15cm	7.05	0.323	0.32
		15-30cm	6.82	0.352	0.28
		30-60cm	6.76	0.35	0.28
	Gudivakalank	0-15cm	6.65	0.28	0.63
		15-30cm	6.42	0.257	0.55
		30-60cm	6.56	0.239	0.51
Bhimadolu	Polasannapalli	0-15cm	6.55	0.104	0.78
		15-30cm	7.47	66.0us	0.32
		30-60cm	7.52	84	0.36
	Amberpet	0-15cm	6.65	63.2	0.78
		15-30cm	6.73	37.8	0.47
		30-60cm	6.74	43.4	0.55
Tadepalligudem	Pedatadepalligudem	0-15cm	6.17	82.1us	0.75
		15-30cm	6.16	84.9	0.36
		30-60cm	5.94	84.5	0.24
	Madhavram	0-15cm	7.06	0.147ms	0.63
		15-30cm	7.03	0.141ms	0.43
		30-60cm	6.73	0.175ms	0.32
	Kadiyadda	0-15cm	7.49	55.7	0.59
		15-30cm	7.52	0.122ms	0.55
		30-60cm	7.35	0.093	0.24
	Kommugudem	0-15cm	7.49	81.6us	0.94
		15-30cm	7.16	49.6	0.36
		30-60cm	7.21	59.1	0.36
	Bangurugudem	0-15cm	7.1	56.8	0.42
		15-30cm	6.72	88	0.31
		30-60cm	5.89	0.109ms	0.43
Nidadavolu	Kommamidi	0-15cm	7.16	77.7us	0.43
		15-30cm	7.56	0.091ms	0.32
		30-60cm	7.63	0.108	0.67
	Tadimalla	0-15cm	7.71	44.3us	0.28
		15-30cm	7.68	49+.6	0.24
		30-60cm	7.69	50	0.24
Devarapalli	Yernagudem	0-15cm	7.24	54.3	0.23
		15-30cm	7.3	43.9	0.28
		30-60cm	7.25	29.7	0.24
	Gandhinagar	0-15cm	7.1	38.3	0.32
		15-30cm	6.8	40.7	0.28
		30-60cm	6.67	32.5	0.47
	Kalavalapalli	0-15cm	7.59	54.9	0.67
		15-30cm	7.47	47.4	0.36
		30-60cm	7.67	0.091ms	0.67
	Laxmipuram	0-15cm	5.26	43.8us	0.75
		15-30cm	4.17	38.4	0.36
Jangareddygudem	Jangareddy	0-15cm	5.3	0.132ms	0.67
	Mysannagudem	0-15cm	4.66	0.234	0.32
	Vallampatla	0-15cm	6.42	57.0us	1.49
		15-30cm	6.08	27.7	1.02
	Radhapuram	0-15cm	5.79	25.6	0.8
		15-30cm	5.9	0.474ms	1.092
Pedagantiyadi	Dentakarra	0-15cm	8.38	0.195	0.36
Peddapappur	Chagallu	0-15cm	7.2	49.9us	0.32
		15-30cm	6.78	30.3	0.24
		30-60cm	6.75	29.1	0.32
	Dharmapuram	0-15cm	7.4	0.091ms	0.98
		15-30cm	7.59	81.6us	0.47
		30-60cm	7.55	0.096ms	0.59

Dwaraka tirumala	M.Nagulapalli	0-15cm	7.42	0.091	0.47
		15-30cm	7.34	0.147	0.31
	G.Kothapalli	30-60cm	7.6	0.138	0.16
		0-30cm	7.21	0.116	0.27
		0-30cm	7.85	0.11	0.39
	Narayanapuram	0-15cm	7.6	0.075	0.23
	Jajulakunta	15-30cm	7.09	0.098	0.2
		30-60cm	6.28	0.218	0.27
		0-30cm	7.24	0.077	0.27
		0-30cm	7.13	0.081	0.23
		0-30cm	7.46	0.091	0.27
	Gunnam palli	0-15cm	7.82	0.057	0.31
		15-30cm	7.93	0.051	0.27
		30-60cm	7.78	0.078	0.5
		0-30cm	6.92	0.09	0.39
		0-30cm	7.65	0.098	0.23
	Laxminagar	0-15cm	7.03	0.071	0.12
		15-30cm	7.42	0.041	0.2
		30-60cm	7.54	0.037	0.42
		0-30cm	7.43	0.046	0.12
	Rajupalem	0-15cm	7.4	0.036	0.23
		15-30cm	7.36	0.035	0.12
		30-60cm	7.4	0.058	0.55
		0-30cm	6.72	0.038	0.27
		0-30cm	6.55	0.039	0.2
		0-30cm	6.26	0.06	0.16
	Pavulavarigudem	0-15cm	6.85	0.045	0.35
		15-30cm	6.7	0.044	0.2
		30-60cm	6.89	0.045	0.23
		0-30cm	6.9	0.058	0.27
Kamarlakota	Polasigdem	0-15cm	6.89	0.031	0.12
		15-30cm	7.28	0.305	0.39
		30-60cm	7.12	0.039	0.47

Table 2: Depicts the effects of micro and macronutrients.

MANDAL	VILLAGE	DEPTH	P(kg/ha)	K(kg/ha)	S(ppm)	Fe(ppm)	Mn(ppm)	Zn(ppm)	Cu(ppm)
Tadepalligudem	Pedatadepalligudem	0-15cm	50.9	83	58	18.62	15.224	0.432	1.82
		15-30cm	46.6	78	22	9.636	13.604	0.212	1.572
		30-60cm	36.5	99	57	9.796	7.312	0.368	1.828
	Madhavram	0-15cm	39.7	108	28	0.801	16.599	0.336	1.944
		15-30cm	28.6	103	21	0.822	17.358	0.152	2.328
		30-60cm	27.5	112	58	0.328	18.843	0.104	2.432
	Kadiyadda	0-15cm	88.5	336	4	11.412	10.468	1.052	1.324
		15-30cm	70	1008	9	4.328	10	0.476	1.404
		30-60cm	65.2	515	34	4.416	3.656	0.72	1.156
	Kammugudem	0-15cm	67.7	223	42	13.048	14.004	2.06	1.56
		15-30cm	68.9	302	20	6.56	10.168	1.204	1.036
		30-60cm	85.5	280	31	9.9	14.732	1.216	1.056
	Bangurugudem	0-15cm	45.8	116	23	11.428	11.388	0.888	0.68
		15-30cm	35.5	358	16	8.232	13.064	0.228	0.852
		30-60cm	4.5	885	55	7.408	9.648	0.536	0.604
Nidadavolu	Kommamidi	0-15cm	43.7	103	14	11.344	10.896	1.144	0.628
		15-30cm	82.9	560	32	6.193	11.036	1.208	1.136
		30-60cm	51.9	638	30	6.108	9.7	0.512	1.244
	Tadimalla	0-15cm	28.5	116	45	20.616	6.988	1.572	1.452
		15-30cm	43.2	130	15	15.104	7.304	1.188	1.432
		30-60cm	30.5	181	9	9.436	7.036	0.872	1.284
Devarapalli	Yernagudem	0-15cm	38.1	83	5	11.156	8.272	1.756	0.868
		15-30cm	39.7	94	13	13.064	6.932	1.248	0.86
		30-60cm	21.8	72	52	16.156	4.632	0.24	0.288
	Gandhinagar	0-15cm	15.2	103	25	9.924	19.616	0.288	0.152
		15-30cm	20.3	96	22	8.576	29.492	0.504	0.264
		30-60cm	6.3	166	4	5.568	24.572	0.244	0.26
	Kalavalapalli	0-15cm	38.6	556	26	22.324	11.032	1.144	0.58

		15-30cm	19.3	58	5	17.268	2.84	0.416	0.22
		30-60cm	15.9	403	34	11.532	25.556	0.22	0.556
	Laxmipuram	0-15cm	52.5	215	13	26.868	31.156	0.472	0.764
		30-60cm	46.66	186	38	18.596	35.956	0.492	0.736
Peddapappur	Chagallu	0-15cm	38.3	78	18	7.488	14.972	1.216	0.184
		15-30cm	42.8	101	11	11.448	23.12	0.544	0.436
		30-60cm	50	302	12	13.968	34.104	0.448	0.5
	Dharmapuram	0-15cm	42.3	347	2	7.296	3.672	1.1	1.48
		15-30cm	41.8	336	42	6.072	34.524	0.56	0.956
		30-60cm	19.6	650	51	4.312	35.968	0.9	1.548

Table 3: Depicts the effect of micro and macro nutrients in the soil samples.

Mandal	Village	Depth	P-Kg/ha	K-kg/ha	Ca-meq/100g	Na-ppm	S-ppm	Fe-ppm	Mn-ppm	Zn-ppm	Cu-ppm
Unguturu	Telaprolu	0-30	21.2	185	2.98	50.15	16	2.716	6.344	0.136	0.984
		30-60	12.8	173	2.34	42.88	13	4.22	5.9	0.296	0.624
	Pettipadu	0-30	23.9	164	2.77	38.94	8	3.968	7.632	0.136	0.844
		30-60	14.1	161	2.2	46.74	21	3.084	3.564	0.364	0.868
	Lankapalle Agraharam	0-30	22.3	187	6.33	61.43	16	2.456	5.336	0.176	0.956
		30-60	37.1	349	5.73	55.51	13	2.26	3.092	0.064	0.84
	Amudalapalle	0-30	19.9	777	6.47	76.47	38	3.404	8.6	0.068	0.928
T.Narasapuram	Borammupalem	0-15	31	70	0.56	2.29	11	10.28	25.45	0.36	0.216
		15-30	21	153	1.18	3.55	15	5.348	21.908	0.476	0.32
		30-45	12.3	204	1.4	5.58	12	4.332	19.084	0.684	0.176
	Tedlam	0-15	36.3	45	0.43	2.71	27	7.792	33.036	1.036	0.208
		15-30	36.7	132	0.91	3.38	41	7.232	29.312	0.24	0.092
		30-45	36.9	220	1.28	4.3	12	10.476	29.948	0.296	0.08
	Bandivarigudem	0-15	50.24	155	1.77	4.4	12	9.644	7.956	0.82	0.852
		15-30	45.6	288	2.8	4.3	21	5.032	5.876	0.26	0.912
		30-60	33.86	462	5.96	5.35	28	2.996	7.332	0.256	0.996
Buttaigudem	Kommugudem	0-15	74	328	1.46	4.54	45	24.336	9.516	0.572	0.42
		15-30	52.9	604	2.45	10.17	11	26.576	23.96	0.724	0.312
		30-45	33.6	362	2.05	7.84	73	26.304	35.808	1.148	0.364
	Buttaigudem	0-15	87.5	129	1.09	3.15	33	48.95	9.752	0.352	0.384
		15-30	90.1	158	0.88	4.39	30	49.55	15.804	0.272	0.604
		30-45	28.1	191	0.62	4.93	100	29.872	62.85	0.192	0.536
Pedavagi	Vegiwada	0-15	20.8	46	1.34	7.69	22	6.432	9.752	0.824	1.576
		15-30	25.2	85	1.82	13.09	4	7.336	9.692	0.584	1.616
	Vijayarai	0-15	20.5	43	1.3	5.59	2	5.956	7.428	2.196	0.224
		15-30	39.8	153	2.11	11.11	17	6.412	15.484	0.716	0.604
		0-15	28.3	66	1.2	8.26	14	6.016	8.564	0.6	0.26
		15-30	20.1	149	1.98	14.34	9	5.776	13.968	0.908	0.456
Nallajarla	Chepurigudem	0-15	145.3	142	1.14	5.78	11	23.368	22.341	0.38	0.924
		15-30	44.5	169	1.8	11.31	57	23.648	36.795	0.196	1.404
		30-60	21.7	174	2.44	11.9	46	15.144	40.953	0.36	1.468
	Ananthapalli	0-15	56.7	41	0.75	4.07	7	7.4	9.168	0.468	0.428
		15-30	58.3	100	1.32	8.41	4	6.46	20.412	0.248	0.692
		30-60	90.1	115	1.99	9.17	2	4.356	13.728	0.28	0.84
	Ayyavaram	0-15	65.7	102	2.41	6.46	4	7.504	4.768	0.24	0.892
		15-30	11	89	1.41	5.45	3	7.284	4.36	0.384	0.588
		30-60	18.8	87	1.46	4.61	2	7.916	5.132	0.248	0.732
	Gannavaram	0-15	27.4	67	2.49	8.35	13	7.976	6.736	1.064	0.924
		15-30	12.3	558	1.89	6.44	5	7.992	8.172	0.516	0.864
		30-60cm	12.3	222	5.82	11.45	22	2.512	2.576	0.188	1.092
	Gudepalli	0-30cm	13.9	64	0.75	2.17	3	8.652	6.576	0.356	0.512
		30-60cm	10.4	76	0.78	2.44	27	9.388	4.936	0.06	0.404
	Ananthapalli	0-30cm	15.4	118	1.12	2.59	2	10.72	8.212	0.12	0.672
		30-60cm	10.6	53	0.73	3.24	23	13.692	7.756	0.08	0.52
	Nallajarla	0-15cm	15.7	336	22.6	16.6	21	1.904	9.136	0.176	3.864
		15-30cm	11.7	125	21.3	22.32	2	0.792	7.752	0.06	3.32
		30-60cm	8.1	126	20	29.26	35	2.624	9.928	0.156	3.844
	Bapulapadu	0-15cm	108	148	22.21	37.73	15	0.476	3.48	0.296	2.816
		15-30cm	5.9	107	24.9	59.08	2	1.212	2.052	0.668	1.928
		30-60cm	7.3	124	25.09	63.14	22	0.5	1.972	0.124	1.984
Pedavegi		2fdown	78.8	563	7.97	26.16	56	5.808	4.608	0.672	1.612
	Peddakadimi	1f up	55.56	301	6.43	19.46	34	9.704	3.468	1.34	1.416

		1f down	71.72	764	7.13	30.05	42	2.644	3.64	0.172	2.196
		1f down	60.87	481	6.71	30.63	51	5.044	3.924	0.512	1.296
	Garlamadugu	1f up	44.27	300	3.12	12.65	35	3.372	4.952	0.66	1.24
Denduluru		0-15cm	28.6	449	15.21	32.99	49	2.856	3.5	0.224	2.288
		15-30cm	22.8	243	14.19	25.58	55	3.252	2.964	0.092	1.692
	Gangannagudem	30-60cm	11.1	187	9	20.49	21	2.624	0.92	0.028	0.78
		0-15cm	36.5	290	13.61	23.62	206	2.964	3.876	0.38	1.504
		15-30cm	34.4	175	12.2	19.35	148	3.044	2.476	0.084	1.028
	Galayagduem	30-60cm	16.9	216	12.79	31.46	61	2.496	0.912	0.012	0.872

Discussion:

Oil palm grows in almost all types of soils. For optimal conditions well-drained, deep fertile loamy to loam-clay soil and soils pH ranging from 4 to 7 are the most suitable for cultivation. Table 1, shows the data of pH, EC and organic matter respectively in all the samples collected from 50 villages of 17 mandals. The pH values are constantly maintained in all the depths. However, some samples collected are slightly alkaline; for example, the samples from Pedavegi, Denduluru and Lingapalem mandals, except Lakshmipuram of Devarapalli mandal, Bapulapadu village of Nalljarla mandal, Kadiyadda & Kommugudem of Tadepalligudem mandal, and Tadimalla village of Nidadavolu. These soils require time to time processing, for the normal growth of the palm trees. The Electrical conductivity (EC) in Table 1 depicts that, Bandivarigudem of T Narasapuram mandal, Pedavegi Mandal, Gannavaram, Nallajarala and Bapulapadu villages of Nallajarla mandal, Denduluru mandal, Lingapalem mandal, Eluru mandal, Polasanaplli village of Bhimadolu mandal, Madhavaram of Thadepalligudem and Jangareddygudem mandals are having very low EC values and the yield are also reported to be low in these areas.Organic matter in soils and sediments is widely distributed over the earth's surface occurring in almost all terrestrial and aquatic environments (Schnitzer, 1978). Organic matter in Table 1 indicates that out of the 50 samples tested for OC, 11 samples are found to contain less OC than the normal requirement.

The results of phosphorus in table 2 shows that the levels of phosphorus range from 4.5-88.5 kg/ha in the soil samples tested. The data clearly indicates that the soil samples are very poor in Phosphorus levels. The lower value of sulphur is found in bungurugudem of tadepalligudem and the higher value is obtained in kadiyyada of Tadepalligudem. The overall concentration of Sulphur in whole palms ranges, from 10-20 ppm. Results of Sulphur in Table 2 range from 2-58 ppm. Most of the soil samples collected was found to contain high levels than the required. The lowest value of sulphur is found in Dharmapuram of Peddapappur mandal. The data provided in Table 2 depicts that 2.84-35.956 ppm. The high values of Mn in these soils are due to the fertilizer application or other palm waste addition in the soils. Lower levels of manganese are obtained in the Kalavallapalli of Devarapalli mandal and higher values are obtained from Laxmipuram of Devarapalli mandal. The data of Cu in table 2 indicates that the levels are ranging from 0.22-2.432 ppm. This data reveals that most of the soils are deficient in Cu and it should be managed to observe the normal growth. In table 2 lower values are observed in Kalavallapalli of Devarapalli mandal and the higher values are obtained in the Madhavam of Tadepalligudem. The zinc values in table 2 ranges from 0.22-1.572, lower values are obtained from Kalavallapalli of Devarapalli mandal and the higher values are obtained from Tadimalla of Nidadavolu mandal. The iron values in the table 2 ranges from 0.32-26.96. Lower values exist in Kalavallapalli of Devarapalli mandal and higher values exist in Laxmipuram of Devarapalli mandal.

In Table 3, the phosphorus values range from 5.9-145.3, lower values are found in nallajarla of Bapulapadu mandal and the higher values are found in Nallajarla of Chepurigudem. The potassium levels in table 3 reveals 45-777, lower values are found in Tedlam of T.Narsapuram mandal and the higher values are found in Unguturu of Amudalapalli mandal. The calcium levels in table depict 0.43-25.09, lower values are found in Tedlam of T.Narsapuram mandal. The micronutrient in table 3 reveals higher values of iron and cupper and lower values of zinc and manganese.

Conclusion:

This paper provides an over view of the major challenges confronting the measurements of soil pH, EC, and micro and macro nutrients in the soil. The purpose of the paper is to facilitate discussion on the existence of nutrients in the soil to enhance the fertility status of soil in various oil palm growing areas and to relate to its productive potential which would be of prime importance for developing appropriate management practices for increased production.

References:

1. Page, B. and S. Lord. 2006. The Oil Palm Industry's Approach to the Use of Pesticides in Papua New Guinea. The Planter 82 (958):13-21. Kuala Lumpur, Malaysia.
2. Clay, J, (2004). Palm Oil. World Agriculture and Environment: A Commodity by Commodity Guide to Impacts and Practices. Washington, DC: Island Press, 203-235.
3. Rosenburg, D. (1999). Environmental Pollution around the South China Sea: Developing a Regional Response

to a Regional Problem. In A. Casson (Ed.), Resource Management in Asia-Pacific. Working Paper (2) Canberra, Australia: The Australian National University.

4. Sargeant, H.J. (2001). Vegetation Fires in Sumatra, Indonesia. Oil Palm Agriculture in the Wetlands of Sumatra: De-struction or Development? Summary of Report 1998-2001. Forest Fire Prevention and Control Project (FF-PCP). European Union and Ministry of Forestry, Jakarta, Indonesia.
5. AGAP - Genetic Improvement and Adaptation of Mediterranean and Tropical Plants ... Estimating aboveground biomass of oil palm: Allometric equations for..... expansion for the shea tree (Vitellaria paradoxa C.F. Gaertn) in West Africa. .... QTL detection by multi-parent linkage mapping in oil palm (Elaeis guineensis Jacq.).
6. Page, B. and S. Lord. 2006. The oil palm industry's approach to the use of pesticides in Papua New Guinea. The Planter, Kuala Lampur. 82(958): 13-21.
7. The American oil palm Elaeis oleifera (from English oliferous, meaning ... European Journal of Lipid Science and Technology 109 (3): 237. Retrieved 30 August 2012. "A Review: Aspects of the African Oil Palm (Elaeis guineesis Jacq.)". ... Journal of Biochemistry and Molecular Biology: 1–14. doi:10.3923/ajbmb.2012.
8. An article on horticulture: plantation crops: oil palm by TNAU AGRITECH portal, TamilNadu agricultural university.