

Supplementary tables

Foundation and validation of diagnosis and recommendation integrated system norms for evaluating nutrient status of pineapple plants (*Ananas comosus* L.)

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Supplementary Table 1. Mean, coefficient of variation (CV), variance (S^2) and variance ratios between the low and high yield groups (S^2_l/S^2_h) of mean yield and foliar nutrient contents in the E leaf of pineapple.

Item	Yield group	Mean	CV (%)	Variance	S^2_l/S^2_h
Yield (t ha ⁻¹)	High (n=29)	17.1 ^{***}	11.4	3.79	0.42 ^{ns}
	Low (n=57)	12.7	9.95	1.59	
N (%)	High (n=29)	1.97 ^{***}	15.7	0.10	0.43 ^{***}
	Low (n=57)	1.44	14.1	0.04	
P (%)	High (n=29)	1.01 ^{***}	21.8	0.05	0.50 ^{**}
	Low (n=57)	0.50	30.6	0.02	
K (%)	High (n=29)	2.69 ^{***}	27.8	0.56	1.03 ^{ns}
	Low (n=57)	1.73	30.6	0.28	
Ca (%)	High (n=29)	0.20 ^{***}	16.9	0.001	2.21 ^{ns}
	Low (n=57)	0.15	33.8	0.002	
Mg (%)	High (n=29)	0.27 ^{***}	26.2	0.01	0.48 ^{**}
	Low (n=57)	0.21	23.4	0.002	
Na (%)	High (n=29)	0.14	73.1	0.01	0.17 ^{ns}
	Low (n=57)	0.12	34.1	0.002	
Cu (ppm)	High (n=29)	14.3	31.7	20.4	0.52 ^{ns}
	Low (n=57)	13.5	41.3	30.9	
Zn (ppm)	High (n=29)	111.4	41.0	2,085	1.48 ^{ns}
	Low (n=57)	112.5	49.4	3,092	
Mn (ppm)	High (n=29)	77.5	46.1	1,278	1.33 ^{ns}
	Low (n=57)	98.7 ^{**}	41.8	1,700	

High yield ≥ 14.9 Mg ha⁻¹; low yield < 14.9 Mg ha⁻¹; mean yield and foliar nutrient contents of low and high yield groups are significantly different at 1% (***) level of probability by T test; variances of low and high yield groups are significantly different at 1% (***) , 5% (**) and 10% (*) level of probability by F test.

Supplementary Table 2. Mean, coefficient of variation (CV) and variance (S^2) of nutrient ratios of the low and high yield groups, the variance ratio (S^2_i/S^2_h) and the selected ratios for pineapple E leaf DRIS norms.

Ratio of nutrients	High yield group (n=29)			Low yield group (n=57)			S^2_i/S^2_h	Selected ratio
	Mean	CV (%)	Variance (S^2_h)	Mean	CV (%)	Variance (S^2_i)		
N/P	2.06 ^{***}	27.1	0.31	3.22	36.9	1.41	4.51 ^{***}	X
P/N	0.54	39.0	0.04	0.35	33.9	0.014	0.32	
N/K	0.78 ^{**}	28.8	0.05	0.92	37.5	0.12	2.39 ^{**}	X
K/N	1.40	29.4	0.17	1.22	32.0	0.15	0.90	
N/Ca	10.3 ^{ns}	24.8	6.56	11.4	42.6	23.3	3.55 ^{***}	X
Ca/N	0.10	33.2	0.001	0.10	35.4	0.001	1.10	
N/Mg	7.64 ^{ns}	31.0	5.13	7.40	40.0	8.77	1.71 [*]	X
Mg/N	0.14	33.0	0.002	0.15	25.9	0.001	0.66	
N/Na	16.8	41.4	42.6	12.4	36.2	22.7	0.43	
Na/N	0.07 ^{***}	67.7	0.002	0.09	37.6	0.001	0.44 ^{***}	X
N/Cu	0.16	48.7	0.006	0.13	48.7	0.004	0.67	
Cu/N	7.55 ^{***}	38.3	8.35	9.66	47.2	20.8	2.49 ^{**}	X
N/Zn	0.02	47.3	0.000099	0.02	46.3	0.000052	0.52	
Zn/N	59.7 ^{**}	56.9	1153	80.1	52.1	1,740	1.51 ^{ns}	X
N/Mn	0.03	38.1	0.000127	0.02	48.0	0.000070	0.55	
Mn/N	41.9 ^{***}	61.1	658.4	71.0	47.7	1,143	1.74 ^{ns}	X
P/K	0.41	40.0	0.027	0.31	39.4	0.015	0.56	
K/P	2.87 ^{***}	42.4	1.47	3.79	43.3	2.69	1.83 [*]	X
P/Ca	5.24	27.3	2.04	4.04	59.3	5.74	2.81	
Ca/P	0.20 ^{***}	24.0	0.002	0.33	49.2	0.026	11.1 ^{***}	X
P/Mg	3.85	28.0	1.16	2.56	49.8	1.62	1.40	
Mg/P	0.28 ^{***}	26.6	0.005	0.47	40.9	0.037	6.72 ^{***}	X
P/Na	8.87	39.7	12.4	4.54	47.8	4.71	0.38	
Na/P	0.15 ^{***}	95.2	0.020	0.27	51.8	0.02	1.01 ^{ns}	X
P/Cu	0.08	48.1	0.001	0.04	48.8	0.000432	0.29	
Cu/P	14.9 ^{***}	40.7	36.9	29.4	55.8	270.2	7.32 ^{***}	X
P/Zn	0.01	50.5	0.000030	0.005	35.6	0.000003	0.11	
Zn/P	116.5 ^{***}	46.1	2,890	239.5	54.7	1,7167	5.94 ^{***}	X
P/Mn	0.01	39.5	0.000034	0.01	48.3	0.000008	0.23	
Mn/P	79.1 ^{***}	43.9	1,203	217.4	52.0	12,795	10.6 ^{***}	X
K/Ca	14.1	32.3	20.6	13.6	54.1	54.5	2.63	
Ca/K	0.08 ^{ns}	34.1	0.001	0.09	48.1	0.002	2.74 ^{**}	X
K/Mg	10.9 ^{ns}	38.9	17.0	8.96	53.4	22.9	1.35 ^{ns}	X
Mg/K	0.11	43.6	0.002	0.13	41.6	0.003	1.35	
K/Na	24.0	47.4	129.3	15.7	44.3	48.7	0.38	
Na/K	0.05 ^{**}	62.2	0.001	0.08	55.4	0.002	1.67 ^{ns}	X
K/Cu	0.21	36.6	0.006	0.15	48.5	0.005	0.93	
Cu/K	5.51 ^{***}	34.8	3.67	8.55	58.1	24.7	6.71 ^{***}	X
K/Zn	0.03	46.1	0.000162	0.02	50.2	0.000085	0.53	
Zn/K	43.3 ^{***}	44.4	368.6	72.6	65.6	2,266	6.15 ^{***}	X
K/Mn	0.04	39.0	0.000239	0.02	51.8	0.000109	0.46	
Mn/K	31.2 ^{***}	60.5	357.7	61.3	46.8	823.3	2.30 ^{**}	X
Ca/Mg	0.76 ^{ns}	25.7	0.038	0.76	56.8	0.19	5.01 ^{***}	X
Mg/Ca	1.42	28.6	0.16	1.70	51.5	0.76	4.66	
Ca/Na	1.69 ^{***}	29.0	0.24	1.33	47.9	0.41	1.69 ^{ns}	X
Na/Ca	0.72	86.8	0.39	0.98	59.5	0.34	0.86	
Ca/Cu	0.02	44.4	0.000048	0.01	54.1	0.000048	1.01	
Cu/Ca	74.4 ^{***}	35.2	685.1	108.0	62.8	4,600	6.72 ^{***}	X
Ca/Zn	0.002	36.8	0.000001	0.002	58.4	0.000001	1.58	
Zn/Ca	565.9 ^{***}	36.8	43,489	939.3	84.6	631,487	14.5 ^{***}	X
Ca/Mn	0.003	28.2	0.000001	0.002	52.6	0.000001	1.34	
Mn/Ca	390.5 ^{***}	37.7	21,678	828.1	80.5	444,711	20.5 ^{***}	X
Mg/Na	2.40 ^{**}	39.8	0.91	1.94	42.6	0.68	0.75 ^{ns}	X
Na/Mg	0.55	89.4	0.24	0.65	60.0	0.15	0.62	
Mg/Cu	0.02	43.5	0.000086	0.02	51.3	0.000092	1.07	
Cu/Mg	54.7 ^{**}	38.1	433.3	69.7	56.9	1,573	3.63 ^{***}	X
Mg/Zn	0.003	47.6	0.000002	0.002	49.9	0.000001	0.68	
Zn/Mg	433.7 ^{**}	48.8	44,786	581.2	61.2	126,622	2.83 ^{**}	X
Mg/Mn	0.004	47.0	0.000003	0.002	39.9	0.000001	0.29	
Mn/Mg	298.7 ^{***}	47.6	20,249	482.6	40.0	37,354	1.84 [*]	X
Na/Cu	0.01	70.4	0.000057	0.01	51.7	0.000029	0.51	
Cu/Na	124.6 ^{ns}	45.6	3231	117.2	43.3	2577	0.80 ^{ns}	X
Na/Zn	0.001	73.4	0.0000011	0.001	52.5	0.0000005	0.43	
Zn/Na	970.7 ^{ns}	52.7	261,414	1035	65.1	455,059	1.74 ^{ns}	X
Na/Mn	0.002	94.5	0.000004	0.002	59.9	0.000001	0.21	
Mn/Na	661.2 ^{**}	47.4	98,305	916.1	55.5	258,516	2.63 ^{**}	X
Cu/Zn	0.14	35.1	0.002	0.14	58.9	0.007	2.69	

Zn/Cu	8.18 ^{ns}	40.6	11.4	9.66	67.5	42.4	3.71 ^{***}	X
Cu/Mn	0.21	39.4	0.007	0.16	59.4	0.009	1.35	
Mn/Cu	5.98 ^{**}	56.1	11.6	8.76	63.3	30.7	2.64 ^{**}	X
Zn/Mn	1.54	36.2	0.319	1.29	53.0	0.47	1.46	
Mn/Zn	0.75 ^{**}	41.7	0.102	1.02	53.1	0.29	2.88 ^{**}	X

Mean of nutrient ratios of low and high yield groups are significantly different at 1% (***) , 5% (**) and 10% (*) level of probability by T test; variances of nutrient ratios of low and high yield groups are significantly different at 1% (***) , 5% (**) and 10% (*) level of probability by F test; ns: no significant difference.

Supplementary Table 3. Mean, coefficient of variation (CV), variance (S^2) and variance ratios between the low and high yield groups (S_l^2/S_h^2) of mean yield and foliar nutrient contents in the D leaf of pineapple.

Item	Yield group	Mean	CV (%)	Variance	S_l^2/S_h^2
Yield (t ha ⁻¹)	High (n=29)	17.1 ^{***}	11.4	3.79	0.42 ^{ns}
	Low (n=57)	12.7	9.95	1.59	
N (%)	High (n=29)	2.17 ^{***}	11.6	0.06	0.96 ^{ns}
	Low (n=57)	1.52	16.2	0.06	
P (%)	High (n=29)	0.92 ^{***}	25.4	0.05	0.21 ^{ns}
	Low (n=57)	0.50	21.5	0.01	
K (%)	High (n=29)	3.29 ^{***}	30.5	1.01	0.34 ^{ns}
	Low (n=57)	1.77	33.0	0.34	
Ca (%)	High (n=29)	0.22 ^{***}	26.9	0.004	0.98 ^{ns}
	Low (n=57)	0.13	44.5	0.004	
Mg (%)	High (n=29)	0.31 ^{***}	31.0	0.01	0.55 ^{ns}
	Low (n=57)	0.22	31.9	0.01	
Na (%)	High (n=29)	0.09	37.6	0.001	13.3 ^{***}
	Low (n=57)	0.21 ^{***}	58.9	0.02	
Cu (ppm)	High (n=29)	14.9	41.8	38.9	1.03 ^{ns}
	Low (n=57)	16.9	37.5	40.3	
Zn (ppm)	High (n=29)	127.5	45.6	3,553	2.41 ^{ns}
	Low (n=57)	128.7	56.4	2,983	
Mn (ppm)	High (n=29)	82.0	45.6	1,395	2.14 [*]
	Low (n=57)	96.8	56.4	2,983	

High yield ≥ 14.9 Mg ha⁻¹; low yield < 14.9 Mg ha⁻¹; mean yield and foliar nutrient contents of low and high yield groups are significantly different at 1% (***) level of probability by T test; variances of low and high yield groups are significantly different at 1% (***), 5% (**) and 10% (*) level of probability by F test.

Supplementary Table 4. Mean, coefficient of variation (CV) and variance (S^2) of nutrient ratios of the low and high yield groups, the variance ratio (S^2_l/S^2_h) and the selected ratios for pineapple D leaf DRIS norms.

Nutrient	High yield group (n=29)			Low yield group (n=57)			S^2_l/S^2_h	Selected ratios
	Mean	CV (%)	Variance (S^2_h)	Mean	CV (%)	Variance (S^2_l)		
N/P	2.49**	24.1	0.36	3.18	29.3	0.87	2.41**	X
P/N	0.43	30.2	0.02	0.34	28.9	0.01	0.57	
N/K	0.71**	27.8	0.04	1.02	58.3	0.35	9.09***	X
K/N	1.53	30.9	0.22	1.15	42.3	0.24	1.06	
N/Ca	10.3**	24.8	6.46	14.8	58.3	74.7	11.7***	X
Ca/N	0.10	25.3	0.001	0.09	45.7	0.002	2.43	
N/Mg	7.61	30.4	5.35	7.20	28.2	4.12	0.77	
Mg/N	0.14 ^{ns}	31.8	0.002	0.15	30.9	0.002	1.03 ^{ns}	X
N/Na	26.4	30.6	65.1	9.97	63.7	40.3	0.62	
Na/N	0.04**	37.0	0.000245	0.14	60.4	0.007	30.4***	X
N/Cu	0.18	49.6	0.008	0.10	44.2	0.002	0.26	
Cu/N	6.95**	44.3	9.49	11.4	37.4	18.0	1.90*	X
N/Zn	0.02	39.4	0.000064	0.01	44.3	0.000041	0.63	
Zn/N	58.7**	45.8	721.8	89.1	57.4	2,615	3.62***	X
N/Mn	0.03	37.0	0.000128	0.02	52.8	0.000115	0.90	
Mn/N	38.2**	46.1	309.2	65.7	56.4	1,371	4.44***	X
P/K	0.30*	36.9	0.012	0.43	99.5	0.18	14.9***	X
K/P	3.75	36.2	1.84	3.64	50.2	3.35	1.82	
P/Ca	4.36 ^{ns}	35.9	2.45	5.22	73.3	14.6	5.97***	X
Ca/P	0.25	32.2	0.007	0.29	52.8	0.023	3.38	
P/Mg	3.19	34.5	1.21	2.41	34.7	0.70	0.58	
Mg/P	0.35**	32.4	0.013	0.47	37.6	0.031	2.42**	X
P/Na	11.1	36.2	16.2	3.28	64.7	4.49	0.28	
Na/P	0.10**	39.1	0.002	0.44	61.3	0.072	44.1***	X
P/Cu	0.08	65.9	0.003	0.03	40.9	0.000186	0.07	
Cu/P	16.9**	42.3	50.9	34.7	38.0	173.8	3.42***	X
P/Zn	0.01	45.2	0.000015	0.005	40.6	0.000004	0.24	
Zn/P	143.2**	48.3	4790	265.7	52.4	19,382	4.05***	X
P/Mn	0.01	41.8	0.000029	0.01	47.7	0.000010	0.34	
Mn/P	93.0**	48.3	2,018	199.4	59.5	14,064	6.97***	X
K/Ca	15.3	31.7	23.4	16.2	65.2	111.8	4.79	
Ca/K	0.07*	28.4	0.000409	0.11	129.1	0.021	51.1***	X
K/Mg	11.4	37.7	18.5	8.13	47.3	14.8	0.80	
Mg/K	0.10**	40.5	0.002	0.18	93.2	0.029	17.6***	X
K/Na	39.7	45.1	319.0	11.4	77.0	76.8	0.24	
Na/K	0.03**	34.8	0.000102	0.14	79.8	0.01	128.6***	X
K/Cu	0.27	53.3	0.02	0.12	60.6	0.005	0.26	
Cu/K	4.88**	52.3	6.52	15.7	122.6	370.5	56.9***	X
K/Zn	0.03	48.9	0.000227	0.02	57.7	0.000084	0.37	
Zn/K	41.0**	50.3	425.5	100.3	82.1	6,778	15.9***	X
K/Mn	0.04	35.6	0.000254	0.02	67.6	0.000257	1.01	
Mn/K	26.2**	50.8	176.9	85.9	115.9	9,896	55.9***	X
Ca/Mg	0.77	34.4	0.071	0.65	51.5	0.11	1.56	
Mg/Ca	1.46**	41.9	0.38	2.32	86.1	4.01	10.7***	X
Ca/Na	2.73	43.6	1.42	0.92	83.9	0.595	0.42	
Na/Ca	0.43**	39.3	0.028	2.18	86.6	3.55	124.7***	X
Ca/Cu	0.02	48.2	0.000074	0.01	62.7	0.000034	0.46	
Cu/Ca	69.2**	45.1	974.6	176.1	79.5	19,606	20.1***	X
Ca/Zn	0.002	43.5	0.000001	0.001	65.5	0.000001	1.00	
Zn/Ca	581.5**	43.4	63,642	1465	99.1	2,107,023	33.1***	X
Ca/Mn	0.003	35.7	0.000001	0.002	67.6	0.000002	1.35	
Mn/Ca	379.7**	47.3	32,259	1075	98.9	1,129,934	35.0***	X
Mg/Na	3.78	44.5	2.83	1.49	69.9	1.10	0.38	
Na/Mg	0.32**	46.8	0.022	1.03	66.9	0.47	21.2***	X
Mg/Cu	0.03	69.2	0.000324	0.02	46.6	0.000049	0.15	
Cu/Mg	52.1**	47.8	621.7	80.4	43.3	1,210	1.95*	X
Mg/Zn	0.003	54.3	0.000003	0.002	49.1	0.000001	0.40	
Zn/Mg	460.4*	59.3	74,651	621.3	58.2	130,686	1.75 ^{ns}	X
Mg/Mn	14.0	60.8	72.5	0.001	71.2	0.000005	0.001	
Mn/Mg	291.1**	57.2	27,723	460.6	57.2	69,305	2.50**	X
Na/Cu	0.01**	53.1	0.000015	0.01	71.4	0.000099	6.47***	X
Cu/Na	182	55.5	10225	106.5	63.5	4581	0.45	
Na/Zn	0.002**	38.4	0.0000001	0.001	83.5	0.00003	29.3***	X
Zn/Na	1,463	47.4	481,107	816.4	66.3	292,839	0.61	
Na/Mn	0.002**	47.4	0.0000004	0.001	65.6	0.000029	8.02***	X
Mn/Na	998.6	60.8	368,230	605.6	87.4	279,842	0.76	

Cu/Zn	0.13 ^{ns}	55.3	0.006	0.15	52.0	0.006	1.17 ^{ns}	X
Zn/Cu	9.83	57.9	32.3	8.43	60.7	26.2	0.81	
Cu/Mn	0.20 ^{ns}	43.6	0.007	0.21	52.4	0.012	1.65 ^{ns}	X
Mn/Cu	6.21	47.1	8.54	6.02	51.7	9.68	1.13	
Zn/Mn	1.73	59.4	1.06	1.58	55.3	0.76	0.72	
Mn/Zn	0.73 ^{ns}	43.8	0.10	0.84	59.4	0.25	2.45 ^{**}	X

Mean of nutrient ratios of low and high yield groups are significantly different at 1% (***) , 5% (**) and 10% (*) level of probability by T test; variances of nutrient ratios of low and high yield groups are significantly different at 1% (***) , 5% (**) and 10% (*) level of probability by F test; ns: no significant difference.

Supplementary Table 5. DRIS indices of N, P, K, Ca and Mg based on DRIS norms established from E leaf of pineapple cultivated in acid sulfate soil in leaf development stage.

f value of nutrient ratios	NF	NPKCaMg	PKCaMg	NKCaMg	NPCaMg	NPKMg	NPKCa	FFP
f(N/P)	179.6	229.3	209.0	216.1	258.4	243.7	220.9	206.9
f(N/K)	103.6	87.9	75.2	69.2	89.8	103.2	68.4	116.2
f(K/P)	27.1	45.5	59.0	50.0	29.0	26.3	61.5	22.6
f(Ca/P)	290.9	1036	485.4	292.3	350.7	324.5	490.5	354.0
f(Mg/P)	188.9	205.6	245.0	223.8	278.4	216.8	187.1	192.2
IN	141.6	158.6	142.1	142.6	174.1	173.5	144.6	161.6
IP	-171.7	-379.3	-249.6	-205.9	-229.1	-200.2	-240.0	-193.9
IK	-38.2	-21.2	-8.1	-9.6	-30.4	-47.7	-3.4	-46.8
Ica	290.9	1036	485.4	330.8	350.7	324.5	490.5	354.0
IMg	188.9	205.6	245.0	223.8	278.4	216.8	187.1	192.2

NF: no fertilization, NPKCaMg: Fully fertilized plot, PKCaMg: Nitrogen omission plot, NKCaMg: Phosphorus omission plot, NPCaMg: Potassium omission plot, NPKMg: Calcium omission plot, NPKCa: Magnesium omission plot, and FFP: Farmers' fertilizer practice.

Supplementary Table 6. DRIS indices of N, P, K, Ca and Mg based on DRIS norms established from D leaf of pineapple cultivated in acid sulfate soil at leaf development stage.

f value of nutrient ratios	NF	NPKCaMg	PKCaMg	NKCaMg	NPCaMg	NPKMg	NPKCa	FFP
f(N/P)	204.8	221.4	195.0	221.4	212.8	203.3	230.4	215.0
f(N/K)	85.7	70.9	63.4	95.6	90.0	119.4	109.9	109.5
f(P/K)	19.2	-33.0	-26.9	-22.9	-5.35	-11.5	-20.5	-15.6
f(Mg/P)	125.1	141.6	161.4	127.7	147.2	131.4	129.3	134.1
f(Mg/K)	44.6	40.2	55.6	48.4	95.5	76.0	60.7	56.2
f(N/Ca)	12.7	1.58	11.0	10.6	10.7	12.7	1.8	15.5
f(Ca/K)	175.0	670.9	651.6	472.5	578.0	504.2	680.4	399.7
IN	101.1	98.0	89.8	109.2	104.5	111.8	114.0	113.3
IP	-103.6	-132.0	-127.8	-124.0	-124.3	-115.4	-126.7	-121.5
IK	-81.1	-187.2	-185.9	-148.4	-167.9	-172.0	-207.6	-137.5
ICa	81.1	334.7	320.3	231.0	272.7	245.8	339.3	192.1
IMg	84.9	90.9	108.5	88.0	121.4	103.7	95.0	95.1

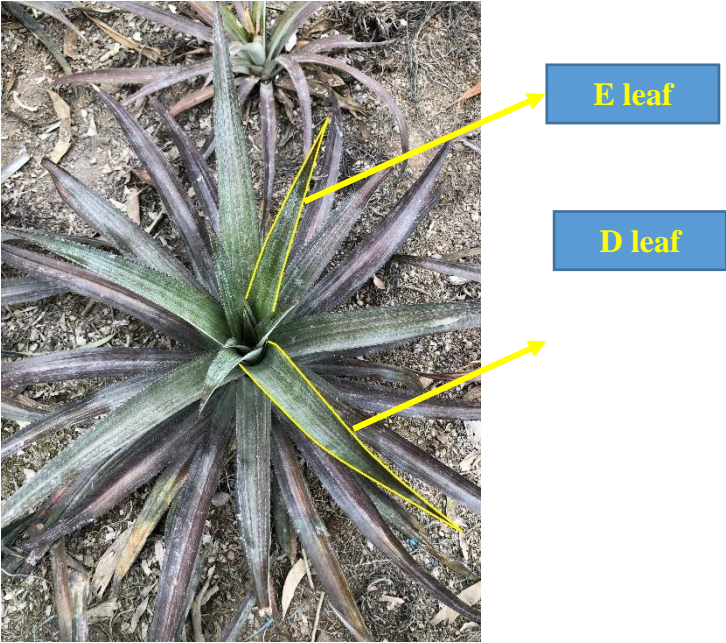
NF: no fertilization, NPKCaMg: Fully fertilized plot, PKCaMg: Nitrogen omission plot, NKCaMg: Phosphorus omission plot, NPCaMg: Potassium omission plot, NPKMg: Calcium omission plot, NPKCa: Magnesium omission plot, and FFP: Farmers' fertilizer practice.

Supplementary Table 7. Physicochemical properties of soil profile in acid sulfate soils of studied sites in Hau Giang.

Site	Value	pH _{H2O}	pH _{KCl}	EC (mS cm ⁻¹)	Acidity (meq H ⁺ 100 g ⁻¹)	Al _{exch} (meq Al ³⁺ 100 g ⁻¹)	Fe ₂ O ₃ (%)	Fe _{dissolved} (mg kg ⁻¹)	Fe ²⁺ (mg kg ⁻¹)	N _{total} (%)	NH ₄ ⁺ (mg kg ⁻¹)	NO ₃ ⁻ (mg kg ⁻¹)	P _{total} (%P)	P _{available} (mg kg ⁻¹)	Al-P (mg kg ⁻¹)	Ca-P (mg kg ⁻¹)	Fe-P (mg kg ⁻¹)	Mn (%)	OM (%C)	CEC (meq 100 g ⁻¹)	Na ⁺ (meq 100 g ⁻¹)	K ⁺ (meq 100 g ⁻¹)	Mg ²⁺ (meq 100 g ⁻¹)	Ca ²⁺ (meq 100 g ⁻¹)
HT	Max	3.93	3.13	6.80	18.3	12.08	2.16	425.1	342.7	0.32	532.2	174.4	0.12	186.6	199.1	39.4	893.5	5.86	9.10	17.92	1.96	2.08	3.00	5.95
	Mean	3.41	2.80	3.63	15.4	10.41	1.48	146.5	131.5	0.22	138.2	45.8	0.05	55.2	60.3	16.8	251.1	3.20	5.12	15.96	0.73	0.71	0.95	2.47
	Med	3.41	2.87	2.96	15.9	10.97	1.50	135.0	113.7	0.22	112.4	37.4	0.04	39.1	46.6	15.2	222.7	3.28	4.70	16.03	0.64	0.62	0.62	2.45
	Min	3.00	2.46	1.51	7.6	5.58	0.57	8.9	8.2	0.15	33.7	12.7	0.01	11.7	18.8	2.2	10.3	1.55	2.23	14.31	0.04	0.33	0.14	0.95
TT	Max	3.71	3.62	10.55	28.4	20.67	2.86	765.0	740.5	0.43	296.1	125.4	0.07	162.0	172.9	107.0	601.3	7.59	15.9	17.77	1.71	0.76	2.43	4.45
	Mean	3.23	2.90	4.72	16.0	11.57	1.70	278.4	250.0	0.26	122.8	51.3	0.05	37.2	46.3	21.6	238.3	3.63	5.89	15.22	0.60	0.48	0.87	2.52
	Med	3.24	2.84	4.35	15.7	11.40	1.72	205.6	180.7	0.25	86.2	40.8	0.04	30.5	39.9	17.8	221.9	3.06	5.25	15.13	0.56	0.47	0.70	2.45
	Min	2.75	2.63	1.30	7.4	7.28	0.86	16.0	15.0	0.15	48.7	6.5	0.02	6.5	21.2	4.7	71.5	1.55	1.98	12.42	0.04	0.28	0.17	0.95
VV	Max	3.97	3.21	10.56	25.7	12.91	2.86	608.1	463.9	0.39	307.4	62.9	0.05	129.9	143.5	48.1	737.9	6.72	9.65	14.92	3.91	0.15	3.20	5.95
	Mean	3.38	2.86	3.85	16.9	11.00	1.83	194.8	171.2	0.25	133.7	27.5	0.03	47.6	58.6	23.3	257.4	3.24	5.90	12.90	0.41	0.09	0.79	4.11
	Med	3.44	2.82	2.11	16.5	11.36	1.72	110.8	104.4	0.25	123.7	23.6	0.03	36.1	47.0	22.1	211.6	3.28	6.10	13.28	0.24	0.09	0.50	3.95
	Min	2.78	2.46	1.19	11.5	8.78	1.29	30.8	29.8	0.12	71.2	3.6	0.01	10.6	17.2	8.2	82.6	1.55	2.22	9.32	0.10	0.04	0.21	1.95
VVA	Max	4.15	3.37	19.08	20.7	16.50	1.86	1538.5	1260.8	0.46	307.4	112.6	0.04	192.2	229.3	37.7	766.4	5.00	13.7	15.26	0.62	0.15	5.22	6.95
	Mean	3.34	2.80	3.93	17.0	10.56	1.34	224.8	199.1	0.23	124.8	36.9	0.02	52.3	58.1	16.5	230.7	2.93	7.65	12.55	0.26	0.08	1.19	4.40
	Med	3.36	2.80	2.58	16.8	10.24	1.29	144.1	127.2	0.20	101.2	27.9	0.02	31.6	37.8	15.2	177.9	2.85	7.60	12.57	0.17	0.07	0.84	3.95
	Min	2.65	2.37	1.16	12.7	5.24	0.86	47.1	43.2	0.15	18.7	6.1	0.01	6.8	10.9	2.2	42.9	1.55	2.56	10.14	0.09	0.04	0.15	3.45
Vi Thanh Long My	Mean	3.32	2.85	4.18	15.7	10.95	1.59	212.5	190.8	0.24	130.5	48.6	0.11	46.2	53.3	19.2	244.7	5.02	5.50	15.59	0.67	0.59	0.91	2.50
		3.36	2.83	3.89	16.9	10.78	1.61	209.8	185.2	0.24	129.3	32.1	0.06	49.9	58.4	19.9	244.1	3.09	6.78	12.73	0.34	0.09	0.99	4.25

HT: Hoa Tien; TT: Tan Tien; VV: Vinh Vien; VVA: Vinh Vien A; OM: organic matter; CEC cations exchangeable capacity

Supplementary Figures



Supplementary Figure 1. The position of the E leaf (+1 Leaf) and the D leaf (+3 Leaf) on a pineapple plant.