



APPENDIX

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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**Appendix table 1** The chlorophyll a changes ( $\mu\text{g}\cdot\text{gFW}^{-1}$ ) of leaves of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Treatments	Chlorophyll a Changes ( $\mu\text{g}\cdot\text{gFW}^{-1}$ )					
	Day (s) after treatments (DAT)					
	0	5	10	15	20	25
R	0.00	2.57	0.42	3.93	10.40 a	2.06
R+KClO <sub>3</sub>	0.00	0.98	-0.79	2.95	9.45 a	1.77
DR	0.00	-2.64	-5.94	-7.91	-8.06 b	-13.94
DR+KClO <sub>3</sub>	0.00	-1.04	-4.33	-3.13	1.05 ab	-7.79
LSD <sub>0.05</sub>	-	ns	ns	ns	11.50	ns

ns: Means within the same column were non significant difference at  $p \leq 0.05$  by LSD

a, b: Means within the same column followed by different letters were significant differences at  $p \leq 0.05$  by LSD

**Appendix table 2** The chlorophyll b changes ( $\mu\text{g}\cdot\text{gFW}^{-1}$ ) of leaves of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Treatments	Chlorophyll b Changes ( $\mu\text{g}\cdot\text{gFW}^{-1}$ )					
	Day (s) after treatments (DAT)					
	0	5	10	15	20	25
R	0.00	1.61	0.37	2.99	7.54	2.16
R+KClO <sub>3</sub>	0.00	1.77	3.51	5.32	6.48	8.82
DR	0.00	-5.22	-10.23	-15.65	-19.22	-25.85
DR+KClO <sub>3</sub>	0.00	-1.37	-5.55	-4.10	1.11	-10.05
LSD <sub>0.05</sub>	-	ns	ns	ns	ns	ns

ns: Means within the same column were non significant difference at  $p \leq 0.05$  by LSD

**Appendix table 3** Total chlorophyll changes ( $\mu\text{g}\cdot\text{gFW}^{-1}$ ) of leaves of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Treatments	Total Chlorophyll Changes ( $\mu\text{g}\cdot\text{gFW}^{-1}$ )					
	Day (s) after treatments (DAT)					
	0	5	10	15	20	25
R	0.00	4.17	0.79	6.92	17.93 a	4.22
R+KClO <sub>3</sub>	0.00	2.76	2.72	8.27	15.92 a	10.59
DR	0.00	-7.85	-16.16	-23.55	-27.27 b	-39.77
DR+KClO <sub>3</sub>	0.00	-2.38	-9.77	-7.13	2.19 ab	-17.62
LSD <sub>0.05</sub>	-	ns	ns	ns	34.51	ns

ns: Means within the same column were non significant difference at  $p \leq 0.05$  by LSD

a, b: Means within the same column followed by different letters were significant differences at  $p \leq 0.05$  by LSD

**Appendix table 4** Total nonstructural carbohydrate (mg D-glucose equivalent·gDW<sup>-1</sup>) changes of leaves and shoots of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Plant organs	Treatments	TNC changes (mg D-glucose equivalent·gDW <sup>-1</sup> )					
		Day (s) after treatments (DAT)					
		0	5	10	15	20	25
Leaves	R	0.00	-0.12	-0.79	-2.34	-2.19	-3.11
	R+KClO <sub>3</sub>	0.00	-1.37	-1.54	-2.41	-2.65	-3.51
	DR	0.00	-0.65	-0.42	-1.28	-2.00	-2.76
	DR+KClO <sub>3</sub>	0.00	-1.62	-2.82	-2.99	-3.80	-4.51
LSD <sub>0.05</sub>	-	ns	ns	ns	ns	ns	
Shoots	R	0.00	-1.04	-1.68 a	-3.18	-3.72	-4.09
	R+KClO <sub>3</sub>	0.00	-3.00	-4.33 b	-5.34	-5.45	-6.01
	DR	0.00	-1.78	-4.12 b	-3.87	-3.58	-4.54
	DR+KClO <sub>3</sub>	0.00	-1.43	-1.66 a	-3.02	-4.00	-4.78
LSD <sub>0.05</sub>	-	ns	1.44	ns	ns	ns	

ns: Means within the same column were non significant difference at  $p \leq 0.05$  by LSD

a, b: Means within the same column followed by different letters were significantly different at  $p \leq 0.05$  by LSD

**Appendix table 5** Total sugar (TS) (mg D-glucose equivalent·gDW<sup>-1</sup>) changes of leaves and shoots of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Plant organs	Treatments	TS changes (mg D-glucose equivalent·gDW <sup>-1</sup> )					
		Day (s) after treatments (DAT)					
		0	5	10	15	20	25
Leaves	R	0.00	-1.43	-1.84	-0.71	-2.13	-2.15 a
	R+KClO <sub>3</sub>	0.00	0.07	-1.33	-0.55	-1.57	-2.32 a
	DR	0.00	-1.35	-0.36	-0.85	-1.29	-1.94 a
	DR+KClO <sub>3</sub>	0.00	-1.01	-1.69	-2.75	-3.66	-4.49 b
LSD <sub>0.05</sub>	-	ns	ns	ns	ns	1.76	
Shoots	R	0.00	-0.87	-0.18 a	-1.34	-1.25 a	-2.05
	R+KClO <sub>3</sub>	0.00	-0.78	-1.68 b	-2.52	-2.87 c	-2.36
	DR	0.00	-0.35	-0.86 ab	-1.02	-1.12 a	-2.16
	DR+KClO <sub>3</sub>	0.00	-0.84	-1.95 b	-1.86	-1.98 b	-2.29
LSD <sub>0.05</sub>	-	ns	1.18	ns	0.68	ns	

ns: Means within the same column were non significant difference at  $p \leq 0.05$  by LSD

a, b, c: Means within the same column followed by different letters were significant differences at  $p \leq 0.05$  by LSD

**Appendix table 6** Reducing sugar contents (RS) (mg D-glucose equivalent·gDW<sup>-1</sup>) changes of leaves and shoots of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Plant organs	Treatments	RS changes (mg D-glucose equivalent·gDW <sup>-1</sup> )					
		Day (s) after treatments (DAT)					
		0	5	10	15	20	25
Leaves	R	0.00	-0.37	-1.63	-1.37	-1.27	-0.85
	R+KClO <sub>3</sub>	0.00	0.71	0.57	0.20	-0.71	-0.04
	DR	0.00	-0.85	-1.37	-1.77	-2.03	-1.79
	DR+KClO <sub>3</sub>	0.00	-0.91	-1.21	-1.21	-0.85	-1.50
LSD <sub>0.05</sub>	-	ns	ns	ns	ns	ns	
Shoots	R	0.00	-0.13	-0.22	-0.11	-1.01	-1.01
	R+KClO <sub>3</sub>	0.00	-0.79	-0.38	-0.46	-1.58	-1.58
	DR	0.00	-0.74	-0.85	-1.27	-1.54	-1.54
	DR+KClO <sub>3</sub>	0.00	-0.61	-0.57	-1.26	-1.89	-1.89
LSD <sub>0.05</sub>	-	ns	ns	ns	ns	ns	

ns: Means within the same column were non significant difference at  $p \leq 0.05$  by LSD

**Appendix table 7** The total nitrogen content (TN) (%) changes of leaves and shoots of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Plant organs	Treatments	TN changes (%)					
		Day (s) after treatments (DAT)					
		0	5	10	15	20	25
Leaves	R	0.00	-0.74	-2.02	-1.86	-1.94	-1.91
	R+KClO <sub>3</sub>	0.00	-2.15	-2.10	-1.75	-2.15	-2.13
	DR	0.00	-1.81	-1.65	-1.79	-1.93	-1.59
	DR+KClO <sub>3</sub>	0.00	-1.75	-2.15	-1.85	-1.73	-1.85
	LSD <sub>0.05</sub>	-	ns	ns	ns	ns	ns
Shoots	R	0.00	-0.13	-0.58	-0.64	-0.55	-0.61
	R+KClO <sub>3</sub>	0.00	0.06	0.01	-0.18	-0.14	-0.14
	DR	0.00	-0.69	-0.65	-0.69	-0.81	-0.84
	DR+KClO <sub>3</sub>	0.00	-0.15	-0.42	-0.41	-0.7	-0.69
	LSD <sub>0.05</sub>	-	ns	ns	ns	ns	ns

ns: Means within the same column were non significant difference at  $p \leq 0.05$  by LSD



**Appendix table 8** The carbohydrate per nitrogen ratios (C:N) (%) changes of leaves and shoots of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Plant organs	Treatments	C:N ratios (%)					
		Day (s) after treatments (DAT)					
		0	5	10	15	20	25
Leaves	R	0	1.15	4.34	3.29	3.60	3.19
	R+KClO <sub>3</sub>	0	3.97	3.74	2.48	3.56	3.22
	DR	0	3.52	3.11	3.29	3.51	2.29
	DR+KClO <sub>3</sub>	0	4.66	4.66	3.39	2.75	2.89
LSD <sub>0.05</sub>	-	ns	ns	ns	ns	ns	
Shoots	R	0	0.09	1.27 a	1.05	0.61	0.69
	R+KClO <sub>3</sub>	0	-1.04	-1.26 b	-0.95	-1.12	-1.28
	DR	0	1.80	0.98 a	1.20	1.74	1.52
	DR+KClO <sub>3</sub>	0	0.04	0.74 a	0.35	0.98	0.72
LSD <sub>0.05</sub>	-	ns	1.44	ns	ns	ns	

ns: Means within the same column were non significant difference at  $p \leq 0.05$  by LSD

a, b: Means within the same column followed by different letters were significant differences at  $p \leq 0.05$  by LSD

**Appendix table 9** The percentage of nitrate ( $\text{NO}_3^-$ ) changes in leaves of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+ $\text{KClO}_3$ ) at the concentration of 500 ppm

Treatments	$\text{NO}_3^-$ changes (%)					
	Day (s) after treatments (DAT)					
	0	5	10	15	20	25
R	0.0000	0.0997 a	0.0989	0.0742	0.0409	0.0624
R+ $\text{KClO}_3$	0.0000	-0.0012 b	0.0311	-0.0037	-0.0764	0.0322
DR	0.0000	0.0189 b	0.0926	0.0567	-0.0494	0.1571
DR+ $\text{KClO}_3$	0.0000	0.0290 b	0.0578	0.0871	0.1051	0.1449
LSD <sub>0.05</sub>	-	0.0610	ns	ns	ns	ns

ns: Means within the same column were non significant difference at  $p \leq 0.05$  by LSD

a, b: Means within the same column followed by different letters were significant differences at  $p \leq 0.05$  by LSD

**Appendix table 10** The percentage of phosphorus (%) changes of leaves and shoots of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Plant organs	Treatments	Phosphorus changes (%)					
		Day (s) after treatments (DAT)					
		0	5	10	15	20	25
Leaves	R	0.0000	-0.0067	-0.0200	-0.0133	-0.0167	-0.0267
	R+KClO <sub>3</sub>	0.0000	-0.0033	-0.0167	-0.0067	-0.0200	-0.0100
	DR	0.0000	-0.0233	-0.0300	-0.0300	-0.0267	-0.0300
	DR+KClO <sub>3</sub>	0.0000	0.0000	-0.0200	-0.0200	-0.0233	-0.0233
LSD <sub>0.05</sub>	-	ns	ns	ns	ns	ns	
Shoots	R	0.0000	-0.0100	-0.0167	-0.0167	-0.0200	-0.0100 a
	R+KClO <sub>3</sub>	0.0000	-0.0267	-0.0467	-0.0567	-0.0667	-0.0600 b
	DR	0.0000	-0.0300	-0.0200	-0.0200	-0.0100	-0.0200 a
	DR+KClO <sub>3</sub>	0.0000	-0.0167	0.0000	-0.0167	-0.0067	-0.0100 a
LSD <sub>0.05</sub>	-	ns	ns	ns	ns	0.0000	

ns: Means within the same column were non significant difference at  $p \leq 0.05$  by LSD

a, b: Means within the same column followed by different letters were significant differences at  $p \leq 0.05$  by LSD

**Appendix table 11** The percentage of potassium (%) changes of leaves and shoots of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Plant organs	Treatments	Potassium changes (%)					
		Day (s) after treatments (DAT)					
		0	5	10	15	20	25
Leaves	R	0.0000	-0.0467	-0.0267	-0.1167	-0.0367ab	-0.0233
	R+KClO <sub>3</sub>	0.0000	0.0167	-0.0867	0.1567	0.0000ab	0.1167
	DR	0.0000	-0.2067	-0.1567	-0.1367	-0.2400b	-0.1667
	DR+KClO <sub>3</sub>	0.0000	0.0733	0.0433	0.0933	0.1667a	0.2100
LSD <sub>0.05</sub>	-	ns	ns	ns	0.2451	ns	
Shoots	R	0.0000	0.1133	-0.0267	-0.0367	-0.1767c	-0.0467
	R+KClO <sub>3</sub>	0.0000	0.1067	-0.0100	0.0167	0.0100ab	0.0200
	DR	0.0000	0.2033	0.1433	0.0733	0.0733a	0.0033
	DR+KClO <sub>3</sub>	0.0000	0.1400	0.0800	0.0167	-0.0100b	-0.0200
LSD <sub>0.05</sub>	-	ns	ns	ns	0.0831	ns	

ns: Means within the same column were non significant difference at  $p \leq 0.05$  by LSD

a, b, c: Means within the same column followed by different letters were significant differences at  $p \leq 0.05$  by LSD

**Appendix table 12** The percentage of calcium (%) changes of leaves and shoots of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Plant organs	Treatment s	Calcium changes (%)					
		Day (s) after treatments (DAT)					
		0	5	10	15	20	25
Leaves	R	0.0000	-0.4133	0.2000	-0.1300	0.2167	0.2467
	R+KClO <sub>3</sub>	0.0000	-0.0033	0.1700	0.5933	0.4733	0.5367
	DR	0.0000	-0.3533	-0.0100	-0.2667	-0.1033	0.0933
	DR+KClO <sub>3</sub>	0.0000	-0.1800	-0.2700	-0.0867	0.0367	0.2833
LSD <sub>0.05</sub>	-	ns	ns	ns	ns	ns	
Shoots	R	0.0000	0.3300	0.3700 a	0.3600 a	0.3500 a	0.3067 a
	R+KClO <sub>3</sub>	0.0000	-0.2600	-0.5400 b	-0.6700 b	-0.6233 b	-0.7500 b
	DR	0.0000	0.0200	-0.0067 ab	-0.0067 ab	0.0000 ab	-0.1467 ab
	DR+KClO <sub>3</sub>	0.0000	-0.1600	-0.5200 b	-0.6833 b	-0.6100 b	-0.8400 b
LSD <sub>0.05</sub>	-	ns	0.6945	0.7508	0.6243	0.6683	

ns: Means within the same column were non significant difference at  $p \leq 0.05$  by LSD

a, b: Means within the same column followed by different letters were significant differences at  $p \leq 0.05$  by LSD

**Appendix table 13** The nitrate reductase activity (NRA) ( $\mu\text{moleNO}_2\text{h}^{-1}\cdot\text{gFW}^{-1}$ ) changes of leaves of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Treatments	NRA changes ( $\mu\text{moleNO}_2\text{h}^{-1}\cdot\text{gFW}^{-1}$ )					
	Day (s) after treatments (DAT)					
	0	5	10	15	20	25
R	0.00	7.82 a	1.67 a	-1.27 a	-0.55 a	-12.18 a
R+KClO <sub>3</sub>	0.00	-4.50 b	-10.35 b	-13.49 c	-13.28 c	-24.04 c
DR	0.00	-3.45 b	-9.08 b	-10.35 bc	-7.75 b	-19.74 bc
DR+KClO <sub>3</sub>	0.00	-2.89 b	-7.79 b	-8.66 b	-6.07 b	-16.73 b
LSD <sub>0.05</sub>	-	3.26	3.51	3.85	5.41	4.99

a, b, c: Means within the same column followed by different letters were significant differences at  $p \leq 0.05$  by LSD

**Appendix table 14** IAA changes ( $\mu\text{M}\cdot\text{gFW}^{-1}$ ) of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Plant organs	Treatments	IAA changes ( $\mu\text{M}\cdot\text{gFW}^{-1}$ )					
		Day (s) after Treatments (DAT)					
		0	5	10	15	20	25
Leaves	R	0.00	-1.83	-2.80	-2.47	-3.10	-4.40
	R+KClO <sub>3</sub>	0.00	-1.36	-2.71	-3.75	-6.18	-6.45
	DR	0.00	-0.97	-1.65	-3.42	-3.68	-4.78
	DR+KClO <sub>3</sub>	0.00	-0.91	-1.96	-2.42	-3.79	-4.52
LSD <sub>0.05</sub>	-	ns	ns	ns	ns	ns	
Shoots	R	0.00	-0.57 b	-2.70 a	-3.65	-6.60 a	-7.90 a
	R+KClO <sub>3</sub>	0.00	-0.57 b	-1.32 b	-1.92	-1.32 c	-3.42 b
	DR	0.00	-1.18 ab	-2.86 a	-3.01	-4.31 b	-6.36 a
	DR+KClO <sub>3</sub>	0.00	-1.61 a	-2.61 a	-5.46	-6.96 a	-7.46 a
LSD <sub>0.05</sub>	-	0.65	1.03	ns	2.00	2.71	

ns: Means within the same column were non significant difference at  $p \leq 0.05$  by LSD

a, b, c: Means within the same column followed by different letters were significant differences at  $p \leq 0.05$  by LSD

**Appendix table 15** Gibberellin-like substance (GAs) changes ( $\mu\text{g GA}_3$  (Kyowa equivalent·gFW<sup>-1</sup>) of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Plant organs	Treatments	GAs changes ( $\mu\text{g GA}_3$ (Kyowa) equivalent·gFW <sup>-1</sup> )					
		Day (s) after treatments (DAT)					
		0	5	10	15	20	25
Leaves	R	0.00	0.0447a	-0.0273a	-0.0551a	-0.1055a	-0.1989a
	R+KClO <sub>3</sub>	0.00	-0.0513b	-0.1251b	-0.1401b	-0.1655b	-0.2877b
	DR	0.00	-0.0495b	-0.1102b	-0.1469b	-0.1681b	-0.2682b
	DR+KClO <sub>3</sub>	0.00	-0.0549b	-0.1190b	-0.1642b	-0.1936b	-0.2923b
LSD <sub>0.05</sub>		-	0.0326	0.0321	0.0390	0.0347	0.0372
Shoots	R	0.00	0.0396a	-0.0241a	-0.0651a	-0.0676a	-0.1925a
	R+KClO <sub>3</sub>	0.00	-0.0552b	-0.1241c	-0.1598b	-0.1919d	-0.2975c
	DR	0.00	-0.0461b	-0.1073b	-0.1359b	-0.1442b	-0.2583b
	DR+KClO <sub>3</sub>	0.00	-0.0450b	-0.1002b	-0.1334b	-0.1531c	-0.2437b
LSD <sub>0.05</sub>		-	0.0146	0.0156	0.0309	0.0059	0.0309

a, b, c, d: Means within the same column followed by different letters were significant differences at  $p \leq 0.05$  by LSD



**Appendix table 16** Cytokinin-like substances (CKs) changes ( $\mu\text{g}$  kinetin equivalent $\cdot\text{gFW}^{-1}$ ) of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Plant organs	Treatments	CKs changes ( $\mu\text{g}$ kinetin equivalent $\cdot\text{gFW}^{-1}$ )					
		Day (s) after treatments (DAT)					
		0	5	10	15	20	25
Leaves	R	0.00	-0.0072	-0.0109	-0.0172	-0.0153	-0.0247
	R+KClO <sub>3</sub>	0.00	-0.0042	-0.0089	-0.0111	-0.0189	-0.0204
	DR	0.00	-0.0027	-0.0045	-0.0069	-0.0153	-0.0106
	DR+KClO <sub>3</sub>	0.00	-0.0057	-0.0123	-0.0155	-0.0233	-0.0286
LSD <sub>0.05</sub>	-	ns	ns	ns	ns	ns	
Shoots	R	0.00	-0.0041a	-0.0097	-0.0175a	-0.0221a	-0.0288a
	R+KClO <sub>3</sub>	0.00	-0.0056a	-0.0108	-0.0172a	0.0228a	-0.0276a
	DR	0.00	-0.0074a	-0.0172	0.0207a	0.0248a	-0.0404a
	DR+KClO <sub>3</sub>	0.00	-0.0140b	-0.0227	0.0499b	0.0565b	-0.0672b
LSD <sub>0.05</sub>	-	0.0049	ns	0.0049	0.0053	0.0253	

ns: Means within the same column were non significant difference at  $p \leq 0.05$  by LSD

a, b: Means within the same column followed by different letters were significant differences at  $p \leq 0.05$  by LSD

**Appendix table 17** Ethylene changes (ppm) of air-layered (R) and derooted air-layered (DR) longan cv. Daw, non-treated and treated with potassium chlorate (+KClO<sub>3</sub>) at the concentration of 500 ppm

Plant organs	Treatment	Ethylene changes (ppm)					
		Day (s) after treatments (DAT)					
		0	5	10	15	20	25
Leaves	R	0.00	0.11	0.29 a	0.30	0.37	0.43
	R+KClO <sub>3</sub>	0.00	0.02	0.09 c	0.19	0.23	0.36
	DR	0.00	0.05	0.15 bc	0.23	0.28	0.40
	DR+KClO <sub>3</sub>	0.00	0.13	0.22 ab	0.24	0.29	0.35
LSD <sub>0.05</sub>	-	ns	0.12	ns	ns	ns	
Shoots	R	0.00	0.01	0.00	0.16	0.25	0.28
	R+KClO <sub>3</sub>	0.00	0.02	0.03	0.24	0.24	0.31
	DR	0.00	0.05	0.15	0.37	0.34	0.48
	DR+KClO <sub>3</sub>	0.00	0.09	0.08	0.26	0.44	0.49
LSD <sub>0.05</sub>	-	ns	ns	ns	ns	ns	

ns: Means within the same column were non significant difference at  $p \leq 0.05$  by LSD

a, b, c: Means within the same column followed by different letters were significant differences at  $p \leq 0.05$  by LSD

**CURRICULUM VITAE**

<b>Name</b>	Miss Sawaman Wijarn
<b>Date of birth</b>	October 5, 1961
<b>Place of birth</b>	Bangkok, Thailand
<b>Education background</b>	
1975 – 1979	Mathayom 5 Satrividhaya school, Bangkok, Thailand
1979 – 1983	B.S. (Agriculture) major Agronomy Kasetsart University, Bangkok, Thailand
1986 – 1990	M.S. (Agriculture) major Plant pathology Kasetsart University, Bangkok, Thailand
<b>Work experience</b>	
1983 – present	Lecturer Faculty of Plant Science Chaiyaphum College of Agriculture and Technology Chaiyaphum province, Thailand. 36000