



APPENDIX

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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Appendix 1 The interaction of planting dates and night break treatments on growth of *C. alismatifolia* at flowering stage.

Planting dates	Night break	Plant height (cm)	Number of leaves	Shoots per clump
Nov, 15	0 hr	30.5	3.8	1.4
	2 hr	37.7	3.8	1.5
Dec, 15	0 hr	30.5	4.0	1.4
	2 hr	37.2	3.9	1.5
May, 15	0 hr	56.4	3.6	1.6
	2 hr	61.4	3.6	2.1
LSD _{0.05}		ns	ns	ns
CV%		9.01	7.99	17.71

ns : not significantly different.

Appendix 2 The interaction of planting dates and night break treatments on leaf area of *C. alismatifolia* at different growth stages.

Factors		Leaf area (cm ²)			
Planting dates	Night break	L1	L2	L3	L4
Nov, 15	0 hr	65.3	95.4	116.4	105.8
	2 hr	64.3	91.0	125.3	127.0
Dec, 15	0 hr	60.8	98.3	118.2	108.9
	2 hr	63.3	92.3	128.7	120.0
May, 15	0 hr	76.0	121.9	130.6	122.0
	2 hr	71.7	123.8	132.1	125.6
LSD _{0.05}		ns	ns	ns	ns
CV%		15.38	6.20	12.75	10.89

ns : not significantly different.

Appendix 3 The interaction of planting dates and night break treatments on leaf color of *C. alismatifolia* different at growth stages.

Factors		Leaf color (SPAD unit)			
Planting dates	Night break	L1	L2	L3	L4
Nov, 15	0 hr	48.2 c	49.9 c	57.9	59.3 ab
	2 hr	54.7 b	55.0 abc	57.9	54.9 b
Dec, 15	0 hr	53.3 bc	56.4 ab	53.5	47.0 c
	2 hr	56.1 ab	59.2 a	52.7	43.2 c
May, 15	0 hr	60.7 a	60.2 a	62.0	61.9 a
	2 hr	57.9 bc	50.9 abc	51.5	48.5 c
LSD _{0.05}		*	*	ns	*
CV%		6.78	7.57	8.06	6.34

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 4 The interaction of planting dates and night break treatments on fully expanded leaf of *C. alismatifolia* at different growth stages.

Factors		Fully expanded leaf (Days)			
Planting dates	Night break	L1	L2	L3	L4
Nov, 15	0 hr	40.3	51.8	64.3	76.0
	2 hr	40.8	52.0	65.0	76.6
Dec, 15	0 hr	39.0	50.1	64.8	75.3
	2 hr	41.0	51.5	65.3	79.5
May, 15	0 hr	43.0	52.2	62.2	69.8
	2 hr	42.0	49.9	59.8	68.5
LSD _{0.05}		ns	ns	ns	ns
CV%		5.29	4.54	4.31	4.58

ns : not significantly different.

Appendix 5 The interaction of planting dates and night break treatments on flowers quality of *C. alismatifolia* at flowering stage.

Factors		Spike length	Stalk length	Number	Number	Number of	First floret
Planting dates	Night break	(cm)	(cm)	of green bracts	of pink bracts	inflorescences opening per clump	(Days)
Nov, 15	0 hr	9.7d	14.0e	6.6	8.0b	1.0	111.7a
	2 hr	14.2bc	41.8b	7.3	11.6a	1.5	94.9b
Dec, 15	0 hr	10.8d	21.3ld	6.9	11.3a	1.0	108.0a
	2 hr	13.7c	38.5c	6.4	11.9a	1.3	96.8b
May, 15	0 hr	15.5ab	44.5ab	8.8	11.7a	1.7	89.8b
	2 hr	16.5a	46.3a	9.1	12.0a	2.0	92.3b
LSD _{0.05}		*	*	ns	*	ns	*
CV%		6.87	6.08	8.80	8.15	20.34	5.59

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 6 The interaction of planting dates and night break treatments on total leaves dry weight of *C. alismatifolia* at different growth stages.

Factors		Dry weight of total leaves (g plant ⁻¹)			
Planting dates	Night break	L1	L2	L3	L4
Nov, 15	0 hr	1.4	1.9	4.3	4.4
	2 hr	1.3	1.9	4.0	4.4
Dec, 15	0 hr	1.2	1.9	3.8	4.4
	2 hr	1.2	2.3	4.1	4.5
May, 15	0 hr	1.9	2.7	4.4	4.7
	2 hr	1.9	2.6	4.5	5.0
LSD _{0.05}		ns	ns	ns	ns
CV%		12.68	9.85	9.11	8.12

ns : not significantly different.

Appendix 7 The interaction of planting dates and night break treatments on old rhizomes dry weight of *C. alismatifolia* at different growth stages.

Factors		Dry weight of old rhizomes (g plant ⁻¹)			
Planting dates	Night break	L1	L2	L3	L4
Nov, 15	0 hr	2.5	2.4	2.0	1.9
	2 hr	2.5	2.4	2.0	1.9
Dec, 15	0 hr	2.5	2.4	2.3	1.8
	2 hr	2.5	2.4	2.0	1.8
May, 15	0 hr	2.5	2.5	2.3	1.9
	2 hr	2.4	2.4	2.2	1.8
LSD _{0.05}		ns	ns	ns	ns
CV%		4.87	7.18	9.90	5.72

ns : not significantly different.

Appendix 8 The interaction of planting dates and night break treatments on new rhizomes dry weight of *C. alismatifolia* at different growth stages.

Factors		Dry weight of new rhizomes (g plant ⁻¹)			
Planting dates	Night break	L1	L2	L3	L4
Nov, 15	0 hr	0.39	0.43	0.59	0.69
	2 hr	0.35	0.42	0.48	0.62
Dec, 15	0 hr	0.36	0.44	0.48	0.51
	2 hr	0.32	0.50	0.55	0.64
May, 15	0 hr	0.37	0.44	0.44	0.59
	2 hr	0.41	0.43	0.53	0.67
LSD _{0.05}		ns	ns	ns	ns
CV%		22.66	15.09	17.79	20.13

ns : not significantly different.

Appendix 9 The interaction of planting dates and night break treatments on storage roots dry weight of *C. alismatifolia* at different growth stages.

Factors		Dry weight of storage roots(g plant ⁻¹)			
Planting dates	Night break	L1	L2	L3	L4
Nov, 15	0 hr	5.5	5.2	3.9	4.0
	2 hr	7.0	6.0	5.1	3.3
Dec, 15	0 hr	5.5	5.9	4.5	4.3
	2 hr	7.1	6.3	4.5	3.7
May, 15	0 hr	6.1	5.8	5.3	3.4
	2 hr	6.9	6.4	4.1	3.8
LSD _{0.05}		ns	ns	ns	ns
CV%		11.27	14.24	22.39	13.73

ns : not significantly different.

Appendix 10 The interaction of planting dates and night break treatments on fibrous roots dry weight of *C. alismatifolia* at different growth stages.

Factors		Dry weight of fibrous roots(g plant ⁻¹)			
Planting dates	Night break	L1	L2	L3	L4
Nov, 15	0 hr	0.3	0.4	0.8	2.3
	2 hr	0.4	0.5	0.6	2.8
Dec, 15	0 hr	0.3	0.5	0.7	1.9
	2 hr	0.3	0.4	0.7	1.6
May, 15	0 hr	0.4	0.6	0.7	2.2
	2 hr	0.4	0.6	0.7	1.6
LSD _{0.05}		ns	ns	ns	ns
CV%		18.73	16.88	21.02	28.12

ns : not significantly different.

Appendix 11 The interaction of planting dates and night break treatments on total dry weight of *C. alismatifolia* at different growth stages.

Factors		Total dry weight of plant (g plant ⁻¹)			
Planting dates	Night break	L1	L2	L3	L4
Nov, 15	0 hr	10.29	10.66	13.36	14.77
	2 hr	11.72	11.43	13.85	14.61
Dec, 15	0 hr	10.19	11.46	13.39	15.02
	2 hr	11.79	12.09	13.61	14.07
May, 15	0 hr	11.55	12.19	15.01	14.78
	2 hr	12.45	12.41	13.89	14.95
LSD _{0.05}		ns	ns	ns	ns
CV%		5.21	7.88	7.64	6.00

ns : not significantly different.

Appendix 12 The interaction of planting dates and night break treatments on rhizomes quality of *C. alismatifolia* at dormancy stage.

Factors		Rhizomes quality		
Planting dates	Night break	Number of new rhizomes	Number of new storage roots	New rhizome diameters (cm)
Nov, 15	0 hr	2.3c	7.0	2.1
	2 hr	3.1b	0.3	2.0
Dec, 15	0 hr	2.3c	7.0	2.1
	2 hr	2.3c	0.0	1.9
May, 15	0 hr	4.4a	8.6	2.5
	2 hr	3.9a	0.8	2.4
LSD _{0.05}		*	ns	ns
CV%		14.36	25.55	7.67

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.
ns : not significantly different.

Appendix 13 Environmental condition during the experimental period, year 2006-2007. Macroclimate referred to the meteorological data automatically recorded at the Multiple Cropping Center: MCC, Faculty of Agriculture Chiang Mai University weather station.

Month	Air temperature (°C)		Air humidity (%)		Rain mm	Wind km/day	Sunshine (hrs)		
	max	min	8:00	15:00				mean	
	2007								
MAY	32.7	23.3	27.4	89.7	64.6	76.3	359.1	87.0	12.9
JUN	34.2	23.9	28.3	87.7	62.8	76.1	139.8	82.7	13.1
JUL	32.9	24.2	27.9	86.5	67.3	77.3	118.9	80.6	13.0
AUG	32.9	23.9	27.7	90.9	70.0	80.9	160.8	79.7	12.6
SEP	33.2	23.7	27.7	90.9	64.8	79	204.7	73.1	12.1
OCT	32.4	22.1	26.5	92.2	59.5	75.9	93.0	64.6	11.6
Mean	33.1	23.5	27.6	89.7	64.8	77.6	179.4	78.0	13
	2006								
NOV	32.6	18.1	24.3	90.1	46.0	68.2	-	55.0	11.1
DEC	30.4	15.9	22.1	87.2	41.6	64.4	-	61.2	10.9
JAN	31.1	14.8	21.8	91.3	46.9	69.5	-	55.5	11.0
FEB	33.6	17.3	24.3	88.4	51.9	71.5	-	64.7	11.4
MAR	36.7	20	27.2	79.3	66.1	72.5	13.0	73.9	11.9
APR	35.6	22.7	28.2	81.3	79.3	78.2	177.5	91.2	12.4
Mean	33.3	18.1	24.7	86.3	55.3	70.7	31.8	66.9	11
	2006								
DEC	30.4	15.9	22.1	87.2	41.6	64.4	-	61.2	10.9
JAN	31.1	14.8	21.8	91.3	46.9	69.5	-	55.5	11.0
FEB	33.6	17.3	24.3	88.4	51.9	71.5	-	64.7	11.4
MAR	36.7	20	27.2	79.3	66.1	72.5	13.0	73.9	11.9
APR	35.6	22.7	28.2	81.3	79.3	78.2	177.5	91.2	12.4
MAY	32.3	22.8	26.9	86.6	68.5	78.1	256.0	85.5	12.9
Mean	33.3	18.9	25.1	85.7	59.1	72.4	74.4	72.0	12

Appendix 14 Environmental condition during the experimental period, year 2007. Macroclimate referred to the meteorological data automatically recorded at the Lampang Agricultural Research and Training Centre, Lampang.

Month	Air temperature (°C)			Air humidity (%)			Rain (mm)	Wind speed (km/day)	Sunshine (hrs)
	max	min	mean	max	min	mean			
January	32.6	17.9	24.2	80.5	22.4	51.4	0.0	58.3	11.0
February	36.0	16.9	24.2	80.2	10.8	43.9	0.0	79.8	11.4
March	40.6	22.3	30.1	78.0	12.7	45.4	0.0	80.2	11.9
April	38.2	27.5	32.1	75.7	17.9	46.8	22.2	101.9	12.4
May	34.5	27.8	30.6	80.8	42.5	61.7	327.1	56.3	12.9
June	33.3	28.3	30.4	83.6	42.1	62.9	54.6	27.6	13.1
July	31.9	27.3	29.3	75.8	40.9	58.4	89.5	23.1	13.0
August	32.1	27.7	29.6	77.2	44.7	60.9	488.0	53.1	12.6
September	35.1	27.0	30.5	81.2	46.4	63.8	222.5	18.9	12.1
October	32.8	32.7	32.8	82.7	47.7	64.5	44.2	18.3	11.6
November	28.0	22.7	25.0	84.1	42.7	63.4	8.0	17.8	11.1
December	27.7	19.5	23.0	82.6	56.9	69.8	0.0	14.6	10.9
Mean	33.6	24.8	28.5	80.2	35.6	57.7	104.7	45.8	12.0

Appendix 15 Environmental condition during the experimental period, year 2008. Macroclimate referred to the meteorological data automatically recorded at the Lampang Agricultural Research and Training Centre, Lampang.

2008 Month	Air temperature (°C)			Air humidity (%)			Rain (mm)	Wind speed (km/day)	Sunshine (hrs)
	max	min	mean	max	min	mean			
January	30.4	18.7	23.7	83.6	60.6	72.1	-	4.2	11.0
February	28.7	22.1	24.5	80.0	46.5	63.2	3.7	51.6	11.4
March	30.9	24.6	27.3	75.5	47.1	61.3	0.2	35.2	11.9
April	34.1	28.8	31.1	73.9	24.1	49.0	1.9	47.9	12.4
May	33.0	30.3	31.4	37.7	33.7	53.7	6.3	33.9	12.9
June	32.0	27.7	29.6	78.2	37.0	57.6	1.5	27.5	13.1
July	29.6	26.8	28.0	81.4	42.0	61.7	2.4	51.9	13.0
August	31.5	27.7	29.4	79.8	44.7	62.3	4.5	14.7	12.7
September	31.0	26.7	28.6	83.6	51.8	67.7	8.1	12.1	12.1
October	31.6	26.7	28.8	80.1	47.6	63.8	7.0	13.9	11.6
November	27.0	22.5	24.4	79.3	32.7	56.0	0.2	6.5	11.1
December	24.2	20.7	22.2	78.9	24.7	51.8	0.6	12.1	10.9
Mean	30.3	25.3	27.4	76.0	41.0	60.0	3.0	26.0	12.0

Appendix 16 Environmental condition during the experimental period, year 2009. Macroclimate referred to the meteorological data automatically recorded at the Lamphang Agricultural Research and Training Centre, Lamphang.

2009 Month	Air temperature (°C)			Air humidity (%)			Rain (mm)	Wind speed (km/day)	Sunshine (hrs)
	max	min	mean	max	min	mean			
January	22.4	16.7	19.1	74.8	18.7	46.7	-	28.7	11.0
February	29.4	21.4	24.0	81.4	25.6	51.7	-	26.2	11.4
March	32.7	23.9	27.7	83.0	27.0	55.0	-	46.7	11.9
April	34.7	26.6	30.1	75.9	32.1	54.0	2.8	46.5	12.4
May	32.0	25.4	28.2	73.5	32.2	52.8	9.7	24.0	12.9
June	33.1	25.1	28.5	68.7	39.4	54.0	2.6	14.6	13.1
July	33.0	26.2	29.1	70.6	47.3	58.9	5.1	20.2	13.0
August	34.6	31.3	32.7	71.1	39.2	55.2	1.4	16.8	12.7
September	37.4	28.7	32.4	70.3	44.1	57.2	15.4	8.4	12.1
October	43.1	28.2	34.6	71.7	41.8	56.8	1.9	4.9	11.6
November	33.3	23.3	27.6	70.7	33.4	52.0	-	12.5	11.1
December	31.5	19.0	24.4	70.0	16.6	43.3	-	12.5	10.9
Mean	33.1	24.7	28.2	73.5	33.1	53.1	3.2	21.8	12.0

Appendix 17 Interaction of planting dates and night break treatments on plant height of *C. alismatifolia* at different growth stages.

Planting dates	Factors Night break	Plant height (cm)				F
		L1	L2	L3	L4	
May, 15	0 hr	19.13	23.85b	28.44 b	32.88 b	33.88b
	2 hr	7.14	25.93a	32.17 a	36.06 a	36.64a
Nov, 15	0 hr	14.38	16.23c	18.95 c	22.06 c	22.83 d
	2 hr	14.91	16.22c	19.07 c	21.99 a	25.13 c
LSD _{0.05}		ns	*	*	*	*
CV%		14.49	6.73	7.89	7.35	6.77

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 18 Interaction of planting dates and fertilizer rates on plant height of *C. alismatifolia* at different growth stages.

Planting date	Factors Fertilizer rates	Plant height (cm)				F
		L1	L2	L3	L4	
May, 15	0.0 g pot ⁻¹	18.36	24.28a	29.18	33.68	33.76
	7.5 g pot ⁻¹	19.33	24.84a	31.18	35.58	36.00
	15.0g pot ⁻¹	19.88	25.55a	30.56	34.15	36.01
Nov, 15	0.0 g pot ⁻¹	7.39	16.81b	19.13	21.90	23.59
	7.5 g pot ⁻¹	7.50	17.00b	19.80	21.99	23.86
	15.0g pot ⁻¹	8.90	15.38c	18.10	22.19	24.49
LSD _{0.05}		ns	*	ns	ns	ns
CV%		14.49	6.73	7.89	7.35	6.77

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 19 Interaction of night break treatments and fertilizer rates on plant height of *C. alismatifolia* at different growth stages.

Night break	Factors Fertilizer rates	Plant height (cm)				F
		L1	L2	L3	L4	
0 hr	0.0 g pot ⁻¹	12.79	19.66	23.21	27.31	27.66
	7.5 g pot ⁻¹	13.91	20.43	24.29	27.76	28.40
	15.0g pot ⁻¹	13.74	20.03	23.76	27.33	29.00
2 hr	0.0 g pot ⁻¹	12.96	21.43	25.08	28.26	29.69
	7.5 g pot ⁻¹	14.31	21.42	26.69	29.80	31.46
	15.0g pot ⁻¹	16.64	20.90	24.90	29.01	31.50
LSD _{0.05}		ns	ns	ns	ns	ns
CV%		14.49	6.73	7.89	7.35	6.77

ns : not significantly different.

Appendix 20 Interaction of planting dates, night break treatments and fertilizer rates on plant height of *C. alismatifolia* at growth stages.

Planting dates	Factors		Plant height (cm)				
	Night break	Fertilizer rates	L1	L2	L3	L4	F
May, 15	0 hr	0.0 g pot ⁻¹	18.18	22.95	27.55	32.30	32.53
		7.5 g pot ⁻¹	19.35	24.30	29.30	33.68	34.33
		15.0g pot ⁻¹	19.88	24.30	28.48	32.65	34.78
	2 hr	0.0 g pot ⁻¹	18.55	25.60	30.80	35.05	35.00
		7.5 g pot ⁻¹	19.30	25.38	33.05	37.48	37.68
		15.0g pot ⁻¹	19.89	26.80	32.65	35.65	37.25
Nov, 15	0 hr	0.0 g pot ⁻¹	7.40	16.37	18.89	22.33	22.80
		7.5 g pot ⁻¹	8.98	16.55	19.28	21.85	22.48
		15.0g pot ⁻¹	7.60	15.75	19.05	22.00	23.23
	2 hr	0.0 g pot ⁻¹	7.38	17.25	19.38	21.48	24.38
		7.5 g pot ⁻¹	9.33	17.45	20.33	22.12	25.25
		15.0g pot ⁻¹	7.40	15.00	17.15	22.38	25.75
LSD _{0.05}		ns	ns	ns	ns	ns	
CV%		14.49	6.73	7.89	7.35	6.77	

ns : not significantly different.

Appendix 21 Interaction of planting dates and night break treatments on number of leaves of *C. alismatifolia* at different growth stages.

Planting dates	Factors		Number of leaves				
	Night break		L1	L2	L3	L4	F
May, 15	0 hr		1.00	2.05	3.21 b	4.03 b	4.03
	2 hr		1.00	2.00	3.17 b	3.78 c	3.97
Nov, 15	0 hr		0.98	2.60	3.68 a	4.30 a	4.32
	2 hr		1.00	2.40	3.60 a	4.50 a	4.52
LSD _{0.05}			ns	ns	*	*	ns
CV%			2.90	9.96	7.72	7.16	7.40

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 22 Interaction of planting dates and fertilizer rates on number of leaves of *C. alismatifolia* at different growth stages.

Planting dates	Factors	Number of leaves				
	Fertilizer rates	L1	L2	L3	L4	F
May, 15	0.0 g pot ⁻¹	1.00	1.97	3.27b	3.91	3.91
	7.5 g pot ⁻¹	1.00	2.11	3.31 b	3.93	4.00
	15.0g pot ⁻¹	1.00	1.98	2.97 c	3.87	4.08
Nov, 15	0.0 g pot ⁻¹	1.00	2.40	3.52 ab	4.33	4.33
	7.5 g pot ⁻¹	1.00	2.42	3.63 a	4.26	4.28
	15.0g pot ⁻¹	0.97	2.68	3.76 a	4.61	4.65
LSD _{0.05}		ns	ns	*	ns	ns
CV%		2.90	9.96	7.72	7.16	7.40

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.
ns : not significantly different.

Appendix 23 Interaction of night break treatments and fertilizer rates on number of leaves of *C. alismatifolia* at different growth stages.

Night break	Factors	Number of leaves				
	Fertilizer rates	L1	L2	L3	L4	F
0 hr	0.0 g pot ⁻¹	1.00	2.30	3.43	4.15	4.15
	7.5 g pot ⁻¹	1.00	2.30	3.45	4.03	4.03
	15.0g pot ⁻¹	0.97	2.37	3.45	4.31	4.35
2 hr	0.0 g pot ⁻¹	1.00	2.07	3.36	4.10	4.10
	7.5 g pot ⁻¹	1.00	2.23	3.50	4.16	4.25
	15.0g pot ⁻¹	1.00	2.30	3.28	4.17	4.38
LSD _{0.05}		ns	ns	ns	ns	ns
CV%		2.90	9.96	7.72	7.16	7.40

ns : not significantly different.

Appendix 24 Interaction of planting dates, night break treatments and fertilizer rates on number of leaves of *C. alismatifolia* at growth stages.

Planting dates	Factors		Number of leaves				F
	Night break	Fertilizer rates	L1	L2	L3	L4	
May, 15	0 hr	0.0 g pot ⁻¹	1.00	2.00	3.27	3.97	3.97
		7.5 g pot ⁻¹	1.00	2.15	3.27	4.02	4.02
		15.0g pot ⁻¹	1.00	2.00	3.07	4.10	4.10
	2 hr	0.0 g pot ⁻¹	1.00	1.95	3.27	3.85	3.85
		7.5 g pot ⁻¹	1.00	2.07	3.35	3.85	3.97
		15.0g pot ⁻¹	1.00	1.97	2.87	3.65	4.07
Nov, 15	0 hr	0.0 g pot ⁻¹	1.00	2.60	3.60	4.32	4.32
		7.5 g pot ⁻¹	1.00	2.45	3.62	4.05	4.05
		15.0g pot ⁻¹	0.95	2.75	3.82	4.52	4.60
	2 hr	0.0 g pot ⁻¹	1.00	2.20	3.45	4.35	4.35
		7.5 g pot ⁻¹	1.00	2.40	3.65	4.47	4.52
		15.0g pot ⁻¹	1.00	2.62	3.70	4.70	4.70
LSD _{0.05}		ns	ns	ns	ns	ns	
CV%		2.90	9.96	7.72	7.16	7.40	

ns : not significantly different.

Appendix 25 Interaction of planting dates and night break treatments on leaf area of *C. alismatifolia* at different growth stages.

Planting dates	Factors	Leaf area (cm ²)			
		Night break	L1	L2	L3
May, 15	0 hr	49.75	188.94a	224.84 a	350.00 a
	2 hr	50.48	146.57b	228.60 a	272.73 b
Nov, 15	0 hr	24.75	54.55c	121.08 c	165.32 d
	2 hr	26.79	60.81c	194.00 b	213.50 c
LSD _{0.05}		ns	*	*	*
CV%		12.99	25.75	12.77	10.61

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 26 Interaction of planting dates and fertilizer rates on leaf area of *C. alismatifolia* at different growth stages.

Planting dates	Factors		Leaf area (cm ²)			
	Fertilizer rates	L1	L2	L3	L4	
May, 15	0.0 g pot ⁻¹	51.12 a	136.52b	238.71 a	306.17	
	7.5 g pot ⁻¹	49.37 a	177.23a	217.25 a	325.60	
	15.0g pot ⁻¹	49.85 a	189.52a	224.20 a	302.33	
Nov, 15	0.0 g pot ⁻¹	21.38 c	54.21c	171.23 b	191.77	
	7.5 g pot ⁻¹	28.86 b	62.17c	169.00 b	199.71	
	15.0g pot ⁻¹	27.07 b	56.67c	132.40 c	176.75	
LSD _{0.05}		*	*	*	ns	
CV%		12.99	25.75	12.77	10.61	

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 27 Interaction of night break treatments and fertilizer rates on leaf area of *C. alismatifolia* at different growth stages.

Night break	Factors		Leaf area (cm ²)			
	Fertilizer rates	L1	L2	L3	L4	
0 hr	0.0 g pot ⁻¹	33.77 b	96.87	204.15 ab	246.04 b	
	7.5 g pot ⁻¹	42.25 a	125.27	182.17 b	291.63 a	
	15.0g pot ⁻¹	35.72 b	143.10	132.57 c	235.31 b	
2 hr	0.0 g pot ⁻¹	38.73 ab	93.86	205.79 ab	251.90 b	
	7.5 g pot ⁻¹	35.98 b	114.12	204.08 ab	233.68 b	
	15.0g pot ⁻¹	41.19 a	103.08	224.02 a	243.77 b	
LSD _{0.05}		*	ns	*	*	
CV%		12.99	25.75	12.77	10.61	

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 28 Interaction of planting dates, night break treatments and fertilizer rates on leaf area of *C. alismatifolia* at growth stages.

Planting dates	Factors		Leaf area (cm ²)			
	Night break	Fertilizer rates	L1	L2	L3	L4
May, 15	0 hr	0.0 g pot ⁻¹	47.83	144.67	268.92 ab	319.00 b
		7.5 g pot ⁻¹	53.08	195.12	240.17 bc	406.67 a
		15.0g pot ⁻¹	48.33	227.04	165.44 ef	324.33 b
	2 hr	0.0 g pot ⁻¹	54.41	128.38	208.50 cd	293.33 bc
		7.5 g pot ⁻¹	45.66	159.33	194.34 de	244.53 de
		15.0g pot ⁻¹	51.37	152.00	282.96 a	280.33 cd
Nov, 15	0 hr	0.0 g pot ⁻¹	19.72	49.08	139.38 fg	173.08 fg
		7.5 g pot ⁻¹	31.42	55.42	124.17 gh	176.58 fg
		15.0g pot ⁻¹	23.12	59.16	99.71 h	146.29 g
	2 hr	0.0 g pot ⁻¹	23.07	59.33	203.08 d	210.46 ef
		7.5 g pot ⁻¹	26.31	68.92	213.83 cd	222.83 e
		15.0g pot ⁻¹	31.01	54.17	165.08 ef	207.21 ef
LSD _{0.05}		ns	ns	*	*	
CV%		12.99	25.75	12.77	10.61	

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 29 Interaction of planting dates and night breaks on number of shoots per clump of *C. alismatifolia* at different growth stages.

Planting dates	Factors		Number of shoots per clump		
	Night break		L4	F	Fs
May, 15	0 hr		1.97	2.21a	2.55
	2 hr		1.95	2.05a	2.37
Nov, 15	0 hr		1.20	1.52b	1.57
	2 hr		0.99	1.98a	1.96
LSD _{0.05}			ns	*	ns
CV%			24.76	25.60	23.45

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 30 Interaction of planting dates and fertilizer rates on number of shoots per clump of *C. alismatifolia* at different growth stages.

Planting dates	Factors	Number of shoots per clump		
	Fertilizer rates	L4	F	Fs
May, 15	0.0 g pot ⁻¹	1.12 b	1.22e	1.85
	7.5 g pot ⁻¹	2.46 a	2.80a	2.93
	15.0g pot ⁻¹	2.30 a	2.37ab	2.61
Nov, 15	0.0 g pot ⁻¹	0.97 b	1.41de	1.37
	7.5 g pot ⁻¹	1.05 b	1.80cd	1.81
	15.0g pot ⁻¹	1.25 b	2.05bc	2.10
LSD _{0.05}		*	*	ns
CV%		24.76	25.60	23.45

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 31 Interaction of night break treatments and fertilizer rates on number of shoots per clump of *C. alismatifolia* at different growth stages.

Night break	Factors	Number of shoots per clump		
	Fertilizer rates	L4	F	Fs
0 hr	0.0 g pot ⁻¹	1.01	1.26	1.60
	7.5 g pot ⁻¹	1.86	2.10	2.11
	15.0g pot ⁻¹	1.88	2.25	2.47
2 hr	0.0 g pot ⁻¹	1.08	1.37	1.62
	7.5 g pot ⁻¹	1.65	2.50	2.63
	15.0g pot ⁻¹	1.66	2.17	2.24
LSD _{0.05}		ns	ns	ns
CV%		24.76	25.60	23.45

ns : not significantly different.

Appendix 32 Interaction of planting dates, night break treatments and fertilizer rates on number of shoots per clump of *C. alismatifolia* at different growth stages.

Planting dates	Factors		Number of shoots per clump		
	Night break	Fertilizer rates	L4	F	Fs
May, 15	0 hr	0.0 g pot ⁻¹	1.00	1.20	1.87
		7.5 g pot ⁻¹	2.52	2.90	2.90
		15.0g pot ⁻¹	2.40	2.55	2.90
	2 hr	0.0 g pot ⁻¹	1.25	1.25	1.82
		7.5 g pot ⁻¹	2.40	2.70	2.97
		15.0g pot ⁻¹	2.20	2.20	2.32
Nov, 15	0 hr	0.0 g pot ⁻¹	1.02	1.32	1.32
		7.5 g pot ⁻¹	1.20	1.30	1.32
		15.0g pot ⁻¹	1.37	1.95	2.05
	2 hr	0.0 g pot ⁻¹	0.91	1.50	1.42
		7.5 g pot ⁻¹	0.91	2.30	2.30
		15.0g pot ⁻¹	1.13	2.15	2.15
LSD _{0.05}		ns	ns	ns	
CV%		24.76	25.60	23.45	

ns : not significantly different.

Appendix 33 Interaction of planting dates and night break treatments on flower quality of *C. alismatifolia* at flowering stage.

Factors		Flower quality				
Planting dates	Night break	Stalk length	Spike length	Green bract	Pink bract	First floret opening
May, 15	0 hr	43.97 a	16.61a	9.75 a	9.69 a	80.75b
	2 hr	44.59 a	16.25a	9.78 a	9.61 a	75.33c
Nov, 15	0 hr	7.80 c	2.51c	1.72 c	2.13 b	80.75b
	2 hr	30.97b	11.03b	7.11 b	9.08 b	93.79a
LSD _{0.05}		*	*	*	*	*
CV%		4.60	5.87	5.56	9.68	6.59

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

Appendix 34 Interaction of planting dates and fertilizer rates on flower quality of *C. alismatifolia* at flowering stage.

Factors		Flower quality				
Planting dates	Fertilizer rates	Stalk length	Spike length	Green bract	Pink bract	First floret opening
May, 15	0.0 g pot ⁻¹	44.17 ab	16.46ab	9.54 b	8.95a	80.25
	7.5 g pot ⁻¹	43.25 b	16.85a	10.04 a	10.37a	78.75
	15.0g pot ⁻¹	45.44 a	15.98b	9.71 ab	9.62ab	75.12
Nov, 15	0.0 g pot ⁻¹	27.85 c	9.27c	5.95 c	7.87c	102.90
	7.5 g pot ⁻¹	14.65 d	5.48d	3.83 d	4.33d	46.23
	15.0g pot ⁻¹	15.67 d	5.54d	3.46 d	4.62d	48.00
LSD _{0.05}		*	*	*	*	ns
CV%		4.60	5.87	5.56	9.68	6.59

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 35 Interaction of night break treatments and fertilizer rates on flower quality of *C. alismatifolia* at flowering stage.

Factors		Flower quality				
Night break	Fertilizer rates	Stalk length	Spike length	Green bract	Pink bract	First floret opening
0 hr	0.0 g pot ⁻¹	33.28 c	12.10b	7.46 c	7.58b	98.31
	7.5 g pot ⁻¹	21.93 d	8.50c	4.96 d	5.25c	41.25
	15.0g pot ⁻¹	22.52 d	8.08c	4.79 d	4.91c	38.00
2 hr	0.0 g pot ⁻¹	38.81 a	13.62a	8.04b	9.25a	84.83
	7.5 g pot ⁻¹	35.96 b	13.83a	8.91 a	9.45a	83.72
	15.0g pot ⁻¹	38.58 a	13.44a	8.37 b	9.33a	85.12
LSD _{0.05}		*	*	*	*	ns
CV%		4.60	5.87	5.56	9.68	6.59

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 36 Interaction of planting dates, night break treatments and fertilizer rates on flower quality of *C. alismatifolia* at flowering stage.

Factors			Flower quality				
Planting dates	Night break	Fertilizer rates	Stalk length	Spike length	Green bract	Pink bract	First floret opening
May, 15	0 hr	0.0 g pot ⁻¹	43.00 bc	16.67ab	9.75 a	8.75 d	83.75
		7.5 g pot ⁻¹	43.87 abc	17.00a	9.91 ab	10.50 a	82.50
		15.0g pot ⁻¹	45.04 abc	16.17bc	9.58 bc	9.83 abc	76.00
	2 hr	0.0 g pot ⁻¹	45.33 ab	16.25abc	9.33 c	9.16 cd	76.75
		7.5 g pot ⁻¹	42.62 c	16.71ab	10.16 a	10.25 ab	75.00
		15.0g pot ⁻¹	45.83 a	15.79c	9.83 abc	9.41 bcd	74.25
Nov, 15	0 hr	0.0 g pot ⁻¹	23.41 f	7.54e	5.16 f	6.41 e	112.88
		7.5 g pot ⁻¹	-	-	-	-	-
		15.0g pot ⁻¹	-	-	-	-	-
	2 hr	0.0 g pot ⁻¹	32.29 e	10.99d	6.75 e	9.33 bcd	92.92
		7.5 g pot ⁻¹	29.29 e	10.96d	7.66 d	8.66 d	92.45
		15.0g pot ⁻¹	31.33 de	11.08d	6.12 e	9.25 bcd	96.00
LSD _{0.05}		*	*	*	*	ns	
CV%		4.60	5.87	5.56	9.68	6.59	

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 37 Interaction of planting dates and night break treatments on underground parts quality of *C. alismatifolia* at dormancy stage.

Factors		Underground quality						
Planting dates	Night break	Fresh weight rhizome	Fresh weight storage root	Total fresh weight	Number of storage roots	Number of rhizome	Length of storage root	Size of rhizome
May, 15	0 hr	17.53	83.93b	101.15	5.08 b	3.41c	7.77a	2.39a
	2 hr	16.12	49.31c	59.32	2.38 c	3.75bc	6.07b	2.31b
Nov, 15	0 hr	22.14	103.11a	110.15	6.80 a	4.25b	2.28c	2.07c
	2 hr	18.26	26.43d	80.78	0.56 d	5.91a	1.96c	1.78d
LSD _{0.05}		ns	*	ns	*	*	*	*
CV%		20.09	15.31	15.28	27.55	14.48	14.39	3.34

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 38 Interaction of planting dates and fertilizer rates on underground parts quality of *C. alismatifolia* at dormancy stage.

Factors		Underground quality						
Planting dates	Fertilizer rates	Fresh weight rhizome	Fresh weight storage root	Total fresh weight	Number of storage roots	Number of rhizome	Length of storage root	Size of rhizome
May, 15	0.0 g pot ⁻¹	6.28 d	41.91d	47.58 c	4.11	1.62 c	8.30a	2.18c
	7.5 g pot ⁻¹	21.37 b	68.88b	92.57 ab	3.02	4.62b	6.12b	2.37b
	15.0g pot ⁻¹	22.84 ab	89.06a	100.55 a	4.06	4.50 b	6.34b	2.50a
Nov, 15	0.0 g pot ⁻¹	14.34 c	64.95bc	100.77 a	4.11	4.00b	2.08c	1.89e
	7.5 g pot ⁻¹	26.42 a	71.23b	103.50 a	3.28	5.37 a	2.16c	1.99d
	15.0g pot ⁻¹	19.89 b	58.12c	83.12 b	3.66	5.87 a	2.12c	1.90e
LSD _{0.05}		*	*	*	ns	*	*	*
CV%		20.09	15.31	15.28	27.55	14.48	14.39	3.34

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 39 Interaction of night break treatments and fertilizer rates on underground parts quality of *C. alismatifolia* at dormancy stage.

Factors		Underground quality						
Night break	Fertilizer rates	Fresh weight rhizome	Fresh weight storage root	Total fresh weight	Number of storage roots	Number of rhizome	Length of storage root	Size of rhizome
0 hr	0.0 g pot ⁻¹	10.33	67.04b	74.38 c	5.87ab	2.25 e	5.26a	2.14
	7.5 g pot ⁻¹	27.39	108.93a	133.49 a	5.33b	5.12 b	4.69a	2.27
	15.0g pot ⁻¹	21.84	104.59a	110.08 b	6.62a	4.12 c	5.13a	2.28
2 hr	0.0 g pot ⁻¹	10.29	39.82cd	73.98 c	2.34c	3.37 d	5.12a	1.93
	7.5 g pot ⁻¹	20.39	31.18d	62.58 c	0.97d	4.87 b	3.59b	2.08
	15.0g pot ⁻¹	20.89	42.59c	73.59 c	1.10d	6.25 a	3.33b	2.12
LSD _{0.05}		ns	*	*	*	*	*	ns
CV%		20.09	15.31	15.28	27.55	14.48	14.39	3.34

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 40 Interaction of planting dates, night break treatments and fertilizer rates on underground parts quality of *C. alismatifolia* at dormancy stage.

Factors			Underground quality						
Planting dates	Night break	Fertilizer rates	Fresh weight rhizome	Fresh weight storage root	Total fresh weight	Number of storage roots	Number of rhizome	Length of storage root	Size of rhizome
May, 15	0 hr	0.0 g pot ⁻¹	5.62	43.05	48.58 e	5.00	1.50	8.31a	2.20d
		7.5 g pot ⁻¹	23.33	95.21	125.64 a	4.25	5.00	7.08b	2.41 bc
		15.0g pot ⁻¹	23.63	113.54	129.25 a	6.00	3.75	7.94ab	2.57a
	2 hr	0.0 g pot ⁻¹	6.94	40.77	46.59 e	3.22	1.75	8.29a	2.16de
		7.5 g pot ⁻¹	19.38	42.56	59.50 de	1.79	4.25	5.16c	2.33 c
		15.0g pot ⁻¹	22.04	64.59	71.86 cd	2.12	5.25	4.74c	2.44b
Nov, 15	0 hr	0.0 g pot ⁻¹	15.03	91.03	100.17 b	6.75	3.00	2.21d	2.08ef
		7.5 g pot ⁻¹	31.44	122.65	141.34 a	6.42	5.25	2.31d	2.14de
		15.0g pot ⁻¹	20.04	95.65	90.91 bc	7.25	4.50	2.32d	2.00f
	2 hr	0.0 g pot ⁻¹	13.64	38.87	101.36 b	1.47	5.00	1.95d	1.69h
		7.5 g pot ⁻¹	21.41	19.81	65.66 de	0.15	5.50	2.01d	1.83 g
		15.0g pot ⁻¹	19.73	20.60	75.33 cd	0.07	7.25	1.92d	1.81 g
LSD _{0.05}		ns	ns	*	ns	ns	*	*	
CV%		20.09	15.31	15.28	27.55	14.48	14.39	3.34	

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 41 Interaction of planting dates and night break treatments on total dry weight of *C. alismatifolia* at different growth stages.

Factors		Total dry weight (g plant ⁻¹)						
Planting dates	Night break	L1	L2	L3	L4	F	Fs	H
May, 15	0 hr	3.97	4.42	5.19 c	8.55	11.73a	16.17b	14.70b
	2 hr	4.34	5.08	5.43 c	7.88	11.09a	11.48c	6.03c
Nov, 15	0 hr	4.36	4.87	7.99 a	7.21	9.12b	16.85d	21.77a
	2 hr	4.97	5.20	6.77 b	8.53	11.15a	18.99a	20.77a
LSD _{0.05}		ns	ns	*	ns	*	*	*
CV%		10.41	9.45	13.48	14.09	7.72	10.81	22.82

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

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Appendix 42 Interaction of planting dates and fertilizer rates on total dry weight of *C. alismatifolia* at different growth stages.

Factors		Total dry weight (g plant ⁻¹)						
Planting dates	Fertilizer rates	L1	L2	L3	L4	F	Fs	H
May, 15	0.0 g pot ⁻¹	4.08	4.70b	5.19 cd	8.56	10.48 c	13.43b	6.11
	7.5 g pot ⁻¹	3.88	4.61b	4.75 d	8.40	12.33 a	14.37b	12.51
	15.0g pot ⁻¹	4.51	4.94ab	5.98 c	7.69	11.42 b	13.67b	13.48
Nov, 15	0.0 g pot ⁻¹	4.89	5.17a	7.82 a	8.51	10.48 c	14.95b	18.84
	7.5 g pot ⁻¹	4.49	5.22a	7.45 ab	8.01	10.28 c	19.53a	24.43
	15.0g pot ⁻¹	4.61	4.70b	6.86 b	8.61	9.66 c	19.28a	20.53
LSD _{0.05}		ns	*	*	ns	*	*	ns
CV%		10.41	9.45	13.48	14.09	7.72	10.81	22.82

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 43 Interaction of night break treatments and fertilizer rates on total dry weight of *C. alismatifolia* at different growth stages.

Factors		Total dry weight (g plant ⁻¹)						
Night break	Fertilizer rates	L1	L2	L3	L4	F	Fs	H
0 hr	0.0 g pot ⁻¹	4.17	4.69	6.59	8.18	9.99	14.45c	13.68
	7.5 g pot ⁻¹	4.02	4.87	6.41	8.78	11.23	18.87a	22.61
	15.0g pot ⁻¹	4.31	4.38	6.76	8.19	10.07	16.21b	18.41
2 hr	0.0 g pot ⁻¹	4.79	5.19	6.42	8.89	0.98	13.94c	18.26
	7.5 g pot ⁻¹	4.36	4.96	5.79	7.63	1.37	15.04bc	14.23
	15.0g pot ⁻¹	4.82	5.27	6.08	8.11	11.01	16.73b	14.60
LSD _{0.05}		ns	ns	ns	ns	ns	*	ns
CV%		10.41	9.45	13.48	14.09	7.72	10.81	22.82

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 44 Interaction of planting dates, night break treatments and fertilizer rates on total dry weight of *C. alismatifolia* at different growth stages.

Planting dates	Factors		total dry weight (g plant ⁻¹)						
	Night break	Fertilizer rates	L1	L2	L3	L4	F	Fs	H
May, 15	0 hr	0.0 g pot ⁻¹	3.90	4.42	5.11	8.18	10.07c	13.90ef	7.70
		7.5 g pot ⁻¹	3.74	4.51	4.55	9.34	13.64a	19.32abc	19.20
		15.0g pot ⁻¹	4.27	4.34	5.90	8.13	11.49b	15.29de	17.21
	2 hr	0.0 g pot ⁻¹	4.25	4.98	5.28	8.93	10.89bc	12.68ef	4.52
		7.5 g pot ⁻¹	4.02	4.71	4.94	7.47	11.02bc	9.42g	5.82
		15.0g pot ⁻¹	4.76	5.55	6.06	7.25	11.35d	12.05f	7.75
Nov, 15	0 hr	0.0 g pot ⁻¹	4.45	4.96	8.08	8.17	9.90cd	15.00de	19.67
		7.5 g pot ⁻¹	4.29	5.23	8.27	8.22	8.82de	18.41bc	26.02
		15.0g pot ⁻¹	4.34	4.42	7.62	8.25	8.65e	17.14cd	19.61
	2 hr	0.0 g pot ⁻¹	5.33	5.39	7.56	8.84	11.07bc	14.91de	18.01
		7.5 g pot ⁻¹	4.70	5.21	6.64	7.79	11.73b	20.65ab	22.84
		15.0g pot ⁻¹	4.88	4.99	6.11	8.97	10.66bc	21.42a	21.46
LSD _{0.05}		ns	ns	ns	ns	*	*	ns	
CV%		10.41	9.45	13.48	14.09	7.72	10.81	22.82	

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 45 Interaction of planting dates and night break treatments on photosynthetic rate (P_n) and PAR on leaf surface (Q_{leaf}) of *C. alismatifolia* at flowering stage.

Planting date	Factors	Flowering stage	
		P_n ($\mu\text{molCO}_2\text{m}^{-2}\text{s}^{-1}$)	$PAR Q_{leaf}$ ($\mu\text{molm}^{-2}\text{s}^{-1}$)
May, 15	0 hr	6.04	970.9
	2 hr	6.60	1066.5
Nov, 15	0 hr	3.79	571.1
	2 hr	4.88	541.8
LSD _{0.05}		ns	ns
CV%		31.71	21.78

ns : not significantly different.

Appendix 46 Interaction of planting dates and fertilizer rates on photosynthetic rate (P_n) and PAR on leaf surface (Q_{leaf}) of *C. alismatifolia* at flowering stage.

Planting date	Factors Fertilizer rates	Flowering stage	
		P_n ($\mu\text{molCO}_2\text{m}^{-2}\text{s}^{-1}$)	$PAR Q_{leaf}$ ($\mu\text{molm}^{-2}\text{s}^{-1}$)
May, 15	0.0 g pot ⁻¹	5.89	978.3
	7.5 g pot ⁻¹	7.04	975.3
	15.0g pot ⁻¹	6.02	1102.5
Nov, 15	0.0 g pot ⁻¹	4.52	557.8
	7.5 g pot ⁻¹	4.54	531.5
	15.0g pot ⁻¹	3.95	580.0
LSD _{0.05}		ns	ns
CV%		31.71	21.78

ns : not significantly different.

Appendix 47 Interaction of night break treatments and fertilizer rates on photosynthetic rate (P_n) and PAR on leaf surface (Q_{leaf}) of *C. alismatifolia* at flowering stage.

Night break	Factors Fertilizer rates	Flowering stage	
		P_n ($\mu\text{molCO}_2\text{m}^{-2}\text{s}^{-1}$)	$PAR Q_{leaf}$ ($\mu\text{molm}^{-2}\text{s}^{-1}$)
0 hr	0.0 g pot ⁻¹	4.85	694.64
	7.5 g pot ⁻¹	5.00	748.92
	15.0g pot ⁻¹	4.87	869.44
2 hr	0.0 g pot ⁻¹	5.56	838.50
	7.5 g pot ⁻¹	6.58	760.83
	15.0g pot ⁻¹	5.09	813.10
LSD _{0.05}		ns	ns
CV%		31.71	21.78

ns : not significantly different.

Appendix 48 Interaction of planting dates night break treatments and fertilizer rates on photosynthetic rate (P_n) and PAR on leaf surface (Q_{leaf}) of *C. alismatifolia* at flowering stage.

Planting dates	Factors		Flowering stage	
	Night break	Fertilizer rates	P_n ($\mu\text{molCO}_2\text{m}^{-2}\text{s}^{-1}$)	PAR Q_{leaf} ($\mu\text{molm}^{-2}\text{s}^{-1}$)
May, 15	0 hr	0.0 g pot ⁻¹	5.67	818.2
		7.5 g pot ⁻¹	6.11	970.6
		15.0g pot ⁻¹	6.33	1123.8
	2 hr	0.0 g pot ⁻¹	6.12	1132.5
		7.5 g pot ⁻¹	7.98	986.0
		15.0g pot ⁻¹	5.71	1081.2
Nov, 15	0 hr	0.0 g pot ⁻¹	4.04	571.1
		7.5 g pot ⁻¹	3.90	527.3
		15.0g pot ⁻¹	3.41	615.1
	2 hr	0.0 g pot ⁻¹	5.00	544.5
		7.5 g pot ⁻¹	5.17	535.7
		15.0g pot ⁻¹	4.48	554.0
LSD _{0.05}		ns	ns	
CV%		31.71	21.78	

ns : not significantly different.

Appendix 49 Interaction of planting dates and night break treatments on chlorophyll fluorescence of *C. alismatifolia* at flowering stage.

Planting dates	Factors	Flowering stage	
		10.00am (F_v/F_m)	21.00pm (F_v/F_m)
May, 15	0 hr	0.802	0.790
	2 hr	0.797	0.799
Nov, 15	0 hr	0.773	0.802
	2 hr	0.749	0.796
LSD _{0.05}		ns	ns
CV%		4.22	4.38

ns : not significantly different.

Appendix 50 Interaction of planting dates and fertilizer rates on chlorophyll fluorescence of *C. alismatifolia* at flowering stage.

Factors		Flowering stage	
		10.00am	21.00pm
Planting dates	Fertilizer rates	(Fv/Fm)	(Fv/Fm)
May, 15	0.0 g pot ⁻¹	0.801	0.807
	7.5 g pot ⁻¹	0.796	0.789
	15.0g pot ⁻¹	0.802	0.786
Nov, 15	0.0 g pot ⁻¹	0.741	0.799
	7.5 g pot ⁻¹	0.764	0.799
	15.0g pot ⁻¹	0.781	0.800
LSD _{0.05}		ns	ns
CV%		4.22	4.38

ns : not significantly different.

Appendix 51 Interaction of night break treatments and fertilizer rates on chlorophyll fluorescence of *C. alismatifolia* at flowering stage.

Factors		Flowering stage	
		10.00am	21.00pm
Night break	Fertilizer rates	(Fv/Fm)	(Fv/Fm)
0 hr	0.0 g pot ⁻¹	0.771	0.812
	7.5 g pot ⁻¹	0.790	0.794
	15.0g pot ⁻¹	0.802	0.784
2 hr	0.0 g pot ⁻¹	0.770	0.795
	7.5 g pot ⁻¹	0.770	0.795
	15.0g pot ⁻¹	0.780	0.803
LSD _{0.05}		ns	ns
CV%		4.22	4.38

ns : not significantly different.

Appendix 52 Interaction of planting dates, night break treatments and fertilizer rates on chlorophyll fluorescence of *C. alismatifolia* at flowering stage.

Planting dates	Factors		Flowering stage	
	Night break	Fertilizer rates	10.00am (Fv/Fm)	21.00pm (Fv/Fm)
May, 15	0 hr	0.0 g pot ⁻¹	0.802	0.812
		7.5 g pot ⁻¹	0.802	0.788
		15.0g pot ⁻¹	0.803	0.770
	2 hr	0.0 g pot ⁻¹	0.800	0.802
		7.5 g pot ⁻¹	0.791	0.791
		15.0g pot ⁻¹	0.800	0.802
Nov, 15	0 hr	0.0 g pot ⁻¹	0.741	0.811
		7.5 g pot ⁻¹	0.779	0.800
		15.0g pot ⁻¹	0.800	0.797
	2 hr	0.0 g pot ⁻¹	0.740	0.787
		7.5 g pot ⁻¹	0.748	0.799
		15.0g pot ⁻¹	0.761	0.803
LSD _{0.05}		ns	ns	
CV%		4.22	4.38	

ns : not significantly different.

Appendix 53 Interaction of planting dates and night break treatments on nitrogen concentrations of *C. alismatifolia* at flowering stage.

Planting dates	Night break	Nitrogen concentration (mg gDW ⁻¹)					
		Old rhizome	New rhizome	Old storage root	New storage root	Inflorescence	Leaves
May, 15	0 hr	16.40 c	33.55b	11.37a	0.00b	11.07 b	9.71
	2 hr	18.48 b	38.10a	8.63b	0.00b	11.01 b	10.11
Nov, 15	0 hr	29.29 a	22.98c	7.94b	11.57a	2.56 c	21.98
	2 hr	28.11 a	22.99c	11.51a	0.00b	16.83 a	22.64
LSD _{0.05}		*	*	*	*	*	ns
CV%		8.29	10.34	17.52	36.34	17.96	4.99

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 54 Interaction of planting dates and fertilizer rates on nitrogen concentrations of *C. alismatifolia* at flowering stage.

Factors		Nitrogen concentration (mg gDW ⁻¹)					
Planting date	Fertilizer rates	Old rhizome	New rhizome	Old storage root	New storage root	Inflorescence	Leaves
May, 15	0.0 g pot ⁻¹	5.96 f	19.28d	5.76e	0.00 c	10.19 bc	6.72 c
	7.5 g pot ⁻¹	20.64 d	41.43b	9.58c	0.00 c	13.97 a	11.00 b
	15.0g pot ⁻¹	25.71 c	46.78a	14.67a	0.00 c	8.96 cd	12.01 b
Nov, 15	0.0 g pot ⁻¹	9.85 e	7.38e	7.37d	2.09 b	8.43 d	12.18 b
	7.5 g pot ⁻¹	34.58 b	30.42c	10.57bc	7.34 a	9.84 bcd	27.64 a
	15.0g pot ⁻¹	41.68 a	31.15c	11.24b	7.92 a	10.82 b	27.11 a
LSD _{0.05}		*	*	*	*	*	*
CV%		8.29	10.34	17.52	36.34	17.96	4.99

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

Appendix 55 Interaction of night break treatments and fertilizer rates on nitrogen concentrations of *C. alismatifolia* at flowering stage.

Factors		Nitrogen concentration (mg gDW ⁻¹)					
Night break	Fertilizer rates	Old rhizome	New rhizome	Old storage root	New storage root	Inflorescence	Leaves
0 hr	0.0 g pot ⁻¹	6.56 f	10.81d	6.08	2.09b	9.01 b	9.29
	7.5 g pot ⁻¹	26.44 d	35.26b	9.37	7.34a	7.03 c	19.57
	15.0g pot ⁻¹	35.54 a	38.72a	13.52	7.92a	4.40 d	18.69
2 hr	0.0 g pot ⁻¹	9.25 e	15.85c	7.05	0.00c	9.61 b	9.62
	7.5 g pot ⁻¹	28.78 c	36.58ab	10.78	0.00c	16.77 a	19.08
	15.0g pot ⁻¹	31.85 b	39.21a	12.38	0.00c	15.37 a	20.44
LSD _{0.05}		*	*	ns	*	*	ns
CV%		8.29	10.34	17.52	36.34	17.96	4.99

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 56 Interaction of planting dates night break treatments and fertilizer rates on nitrogen concentrations of *C. alismatifolia* at flowering stage.

Factors			Nitrogen concentration(mg gDW ⁻¹)					
Planting dates	Night break	Fertilizer rates	Old rhizome	New rhizome	Old storage root	New storage root	Inflorescence	Leaves
May, 15	0 hr	0.0 g pot ⁻¹	5.41i	11.28g	5.77 g	0.00c	10.36 c	7.42
		7.5 g pot ⁻¹	19.35g	43.05bc	10.00 de	0.00c	14.06 b	10.48
		15.0g pot ⁻¹	24.43e	46.31ab	18.35 a	0.00c	8.80 cd	11.23
	2 hr	0.0 g pot ⁻¹	6.52i	27.27f	5.75 g	0.00c	10.03 cd	6.02
		7.5 g pot ⁻¹	21.93f	39.80c	9.16 de	0.00c	13.87 b	11.52
		15.0g pot ⁻¹	27.00d	47.25a	10.99 cd	0.00c	9.12 cd	12.80
Nov, 15	0 hr	0.0 g pot ⁻¹	7.71i	10.33g	6.38 fg	4.18b	7.67 d	11.15
		7.5 g pot ⁻¹	33.53c	27.48ef	8.74 e	14.68a	0.00 e	28.65
		15.0g pot ⁻¹	46.65a	31.13de	8.70 e	15.84a	0.00 e	26.15
	2 hr	0.0 g pot ⁻¹	11.98h	4.43h	8.35 ef	0.00c	9.19 cd	13.21
		7.5 g pot ⁻¹	35.62bc	33.36d	12.41 bc	0.00c	19.67 a	26.63
		15.0g pot ⁻¹	36.71b	31.18de	13.77 b	0.00c	21.63 a	28.08
LSD _{0.05}			*	*	*	*	*	ns
CV%			8.29	10.34	17.52	36.34	17.96	4.99

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 57 Interaction of planting dates and night break treatments on phosphorus concentrations of *C. alismatifolia* at flowering stage.

Factors		Phosphorus concentration (mg gDW ⁻¹)					
Planting dates	Night break	Old rhizome	New rhizome	Old storage root	New storage root	Inflorescence	Leaves
May, 15	0 hr	4.82 a	7.01	7.00	0.00 b	2.67 a	2.16 b
	2 hr	5.01 a	6.58	6.79	0.00 b	2.61 a	1.72 c
Nov, 15	0 hr	3.93 b	4.16	3.31	3.54 a	0.68 c	2.35 b
	2 hr	3.42 c	4.33	3.58	0.00 b	2.03 b	2.67 a
LSD _{0.05}		*	ns	ns	*	*	*
CV%		11.16	15.28	17.30	41.83	12.33	14.45

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 58 Interaction of planting dates and fertilizer rates on phosphorus concentrations of *C. alismatifolia* at flowering stage.

Factors		Phosphorus concentration (mg gDW ⁻¹)					
Planting dates	Fertilizer rates	Old rhizome	New rhizome	Old storage root	New storage root	Inflorescence	Leaves
May, 15	0.0 g pot ⁻¹	2.75 d	5.65a	5.04bc	1.41b	2.52 b	1.75 c
	7.5 g pot ⁻¹	4.82 bc	5.76a	4.60c	1.98a	2.63 ab	2.12 bc
	15.0g pot ⁻¹	5.56 a	5.34ab	5.83ab	1.93a	2.78 a	1.95 c
Nov, 15	0.0 g pot ⁻¹	3.06 d	4.84b	4.63c	0.00c	1.88 c	1.84 c
	7.5 g pot ⁻¹	4.50 c	5.49ab	4.86c	0.00c	1.14 d	2.48 b
	15.0g pot ⁻¹	5.08 b	6.04a	6.06a	0.00c	1.05 d	3.21 a
LSD _{0.05}		*	*	*	*	*	*
CV%		11.16	15.28	17.30	41.83	12.33	14.45

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

Appendix 59 Interaction of night break treatments and fertilizer rates on phosphorus concentrations of *C. alismatifolia* at flowering stage.

Factors		Phosphorus concentration (mg gDW ⁻¹)					
Night break	Fertilizer rates	Old rhizome	New rhizome	Old storage root	New storage root	Inflorescence	Leaves
0 hr	0.0 g pot ⁻¹	2.75 d	5.65a	5.04bc	1.41b	2.33 a	1.78
	7.5 g pot ⁻¹	4.82 bc	5.76a	4.60c	1.98a	1.33 c	2.26
	15.0g pot ⁻¹	5.56 a	5.34ab	5.83ab	1.93a	1.38 c	2.71
2 hr	0.0 g pot ⁻¹	3.06 d	4.84b	4.63c	0.00c	2.07 b	1.80
	7.5 g pot ⁻¹	4.50 c	5.49ab	4.86c	0.00c	2.45 a	2.34
	15.0g pot ⁻¹	5.08 b	6.04a	6.06a	0.00c	2.44 a	2.46
LSD _{0.05}		*	*	*	*	*	ns
CV%		11.16	15.28	17.30	41.83	12.33	14.45

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 60 Interaction of planting dates, night break treatments and fertilizer rates on phosphorus concentrations of *C. alismatifolia* at flowering stage.

Factors			Phosphorus concentration (mg gDW ⁻¹)					
Planting dates	Night break	Fertilizer rates	Old rhizome	New rhizome	Old storage roots	New storage roots	Inflorescence	Leaves
May, 15	0 hr	0.0 g pot ⁻¹	3.13	8.26	6.89	0.00c	2.60 ab	1.92
		7.5 g pot ⁻¹	5.38	6.94	7.06	0.00c	2.65 ab	2.42
		15.0g pot ⁻¹	5.97	5.83	7.04	0.00c	2.77 a	2.13
	2 hr	0.0 g pot ⁻¹	4.10	6.74	5.87	0.00c	2.44 bc	1.58
		7.5 g pot ⁻¹	5.00	6.30	7.32	0.00c	2.61 ab	1.81
		15.0g pot ⁻¹	5.92	6.69	7.18	0.00c	2.79 a	1.77
Nov, 15	0 hr	0.0 g pot ⁻¹	2.37	3.04	3.19	2.82b	2.05 d	1.65
		7.5 g pot ⁻¹	4.26	4.57	2.14	3.95a	0.00 f	2.10
		15.0g pot ⁻¹	5.16	4.85	4.61	3.86a	0.00 f	3.29
	2 hr	0.0 g pot ⁻¹	2.02	2.94	3.38	0.00c	1.71 e	2.02
		7.5 g pot ⁻¹	3.99	4.67	2.41	0.00c	2.28 cd	2.86
		15.0g pot ⁻¹	4.23	5.39	4.93	0.00c	2.10 d	3.14
LSD _{0.05}			ns	ns	ns	*	*	ns
CV%			11.16	15.28	17.30	41.83	12.33	14.45

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 61 Interaction of planting dates and night break treatments on potassium concentrations of *C. alismatifolia* at flowering stage.

Factors		Potassium concentration (mg gDW ⁻¹)					
Planting dates	Night break	Old rhizome	New rhizome	Old storage root	New storage root	Inflorescence	Leaves
May, 15	0 hr	18.77 c	31.32a	54.55c	0.00 b	44.45 b	25.46
	2 hr	19.64 c	30.97a	53.89c	0.00 b	42.38 c	25.19
Nov, 15	0 hr	25.09 a	19.16b	66.21a	54.71a	16.02 d	36.14
	2 hr	22.63 b	28.59a	59.14b	0.00 b	58.04 a	40.48
LSD _{0.05}		*	*	*	*	*	ns
CV%		10.14	13.95	7.28	20.91	6.19	20.24

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 62 Interaction of planting dates and fertilizer rates on potassium concentrations of *C. alismatifolia* at flowering stage.

Factors		Potassium concentration (mg gDW ⁻¹)					
Planting dates	Fertilizer rates	Old rhizome	New rhizome	Old storage roots	New storage roots	Inflorescence	Leaves
May, 15	0.0 g pot ⁻¹	16.74 c	47.12a	49.81d	0.00c	48.22 b	22.86
	7.5 g pot ⁻¹	20.81 b	25.66c	58.79b	0.00c	40.47 c	26.82
	15.0g pot ⁻¹	20.06 b	20.66d	54.05c	0.00c	41.56 c	26.28
Nov, 15	0.0 g pot ⁻¹	19.78 b	29.76b	60.26b	23.85b	56.10 a	31.39
	7.5 g pot ⁻¹	25.23 a	21.16d	66.36a	29.85a	28.42 d	39.05
	15.0g pot ⁻¹	26.57 a	20.71d	61.41b	28.37a	26.56 d	44.50
LSD _{0.05}		*	*	*	*	*	ns
CV%		10.14	13.95	7.28	20.91	6.19	20.24

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 63 Interaction of night break treatments and fertilizer rates on potassium concentrations of *C. alismatifolia* at flowering stage.

Factors		Potassium concentration (mg gDW ⁻¹)					
Night break	Fertilizer rates	Old rhizome	New rhizome	Old storage roots	New storage roots	Inflorescence	Leaves
0 hr	0.0 g pot ⁻¹	19.28 c	37.77a	57.54	23.85b	48.79 b	27.44
	7.5 g pot ⁻¹	24.56 a	21.15c	65.30	29.85a	21.32 c	32.66
	15.0g pot ⁻¹	21.95 b	16.80d	58.28	28.37a	20.59 c	32.29
2 hr	0.0 g pot ⁻¹	17.24 d	39.11a	52.52	0.00c	55.53 a	26.81
	7.5 g pot ⁻¹	21.48 b	25.67b	59.85	0.00c	47.57 b	33.21
	15.0g pot ⁻¹	24.68 a	24.56bc	57.18	0.00c	47.53 b	38.49
LSD _{0.05}		*	*	ns	*	*	ns
CV%		10.14	13.95	7.28	20.91	6.19	20.24

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 64 Interaction of planting dates, night break treatments and fertilizer rates on potassium concentrations of *C. alismatifolia* at flowering stage.

Factors			Potassium concentration (mg gDW ⁻¹)					
Planting dates	Night break	Fertilizer rates	Old rhizome	New rhizome	Old storage roots	New storage roots	Inflorescence	Leaves
May, 15	0 hr	0.0 g pot ⁻¹	16.59	53.81a	49.93	0.00c	49.53 d	24.97
		7.5 g pot ⁻¹	21.18	23.55cde	57.58	0.00c	42.64 e	26.77
		15.0g pot ⁻¹	18.54	16.10g	56.13	0.00c	41.17 ef	24.63
	2 hr	0.0 g pot ⁻¹	16.88	40.43b	49.68	0.00c	46.91 d	20.75
		7.5 g pot ⁻¹	20.44	27.77c	60.01	0.00c	38.29 f	26.88
		15.0g pot ⁻¹	21.59	24.71cd	51.97	0.00c	41.95 e	27.94
Nov, 15	0 hr	0.0 g pot ⁻¹	21.96	21.73def	65.16	47.69b	48.04 d	29.91
		7.5 g pot ⁻¹	27.94	18.75efg	73.03	59.70a	0.00 g	38.56
		15.0g pot ⁻¹	25.36	17.00fg	60.43	56.74a	0.00 g	39.96
	2 hr	0.0 g pot ⁻¹	17.59	37.79b	55.35	0.00c	64.16 a	32.87
		7.5 g pot ⁻¹	22.52	23.56cde	59.68	0.00c	56.84 b	39.54
		15.0g pot ⁻¹	27.78	24.41cd	62.39	0.00c	53.12 c	49.04
LSD _{0.05}		ns	*	ns	*	*	ns	
CV%		10.14	13.95	7.28	20.91	6.19	20.24	

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 65 Interaction of planting dates and night break treatments on calcium concentrations of *C. alismatifolia* at flowering stage.

Factors		Calcium concentration (mg gDW ⁻¹)					
Planting dates	Night break	Old rhizome	New rhizome	Old storage roots	New storage roots	Inflorescence	Leaves
May, 15	0 hr	7.98	11.69	5.77b	0.00b	13.47 a	41.42
	2 hr	8.43	11.49	7.35a	0.00b	10.04 b	44.21
Nov, 15	0 hr	4.90	4.03	3.78c	3.70a	1.99 d	7.10
	2 hr	4.70	4.00	3.45c	0.00b	4.74 c	6.73
LSD _{0.05}		ns	ns	*	*	*	ns
CV%		35.65	33.38	14.10	16.95	17.26	15.46

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 66 Interaction of planting dates and fertilizer rates on calcium concentrations of *C. alismatifolia* at flowering stage.

Factors		Calcium concentration(mg gDW ⁻¹)					
Planting dates	Fertilizer rates	Old rhizome	New rhizome	Old storage roots	New storage roots	Inflorescence	Leaves
May, 15	0.0 g pot ⁻¹	6.10 bc	14.62a	4.30c	0.00	15.82 a	36.26 b
	7.5 g pot ⁻¹	7.42 b	11.78b	5.77b	0.00	5.05 c	45.90 a
	15.0g pot ⁻¹	11.10 a	8.36c	9.61a	0.00	14.38 b	46.29 a
Nov, 15	0.0 g pot ⁻¹	4.42 c	4.35d	3.64d	1.86	5.50 c	6.36 c
	7.5 g pot ⁻¹	4.69 c	3.82d	3.62d	1.85	2.28 d	7.49 c
	15.0g pot ⁻¹	5.29 c	3.87d	3.59d	1.85	2.31 d	6.89 c
LSD _{0.05}		*	*	*	ns	*	*
CV%		35.65	33.38	14.10	16.95	17.26	15.46

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.
ns : not significantly different.

Appendix 67 Interaction of night break treatments and fertilizer rates on calcium concentrations of *C. alismatifolia* at flowering stage.

Factors		Calcium concentration (mg gDW ⁻¹)					
Night break	Fertilizer rates	Old rhizome	New rhizome	Old storage roots	New storage roots	Inflorescence	Leaves
0 hr	0.0 g pot ⁻¹	5.42	10.85a	3.81	1.86	13.85 a	20.01
	7.5 g pot ⁻¹	6.54	7.24bc	4.36	1.85	2.56 e	26.87
	15.0g pot ⁻¹	7.36	5.48c	6.15	1.85	6.78 c	25.92
2 hr	0.0 g pot ⁻¹	5.09	8.13b	4.12	0.00	7.48 c	22.62
	7.5 g pot ⁻¹	5.58	8.35b	5.03	0.00	4.77 d	26.52
	15.0g pot ⁻¹	9.02	6.75bc	7.05	0.00	9.91 b	27.26
LSD _{0.05}		ns	*	ns	ns	*	ns
CV%		35.65	33.38	14.10	16.95	17.26	15.46

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.
ns : not significantly different.

Appendix 68 Interaction of planting dates, night break treatments and fertilizer rates on calcium concentrations of *C. alismatifolia* at flowering stage.

Factors			Calcium concentration(mg gDW ⁻¹)					
Planting dates	Night break	Fertilizer rates	Old rhizome	New rhizome	Old storage roots	New storage roots	Inflorescence	Leaves
May, 15	0 hr	0.0 g pot ⁻¹	6.15	17.42a	3.87	0.00	21.72 a	33.70
		7.5 g pot ⁻¹	8.07	10.44bcd	4.99	0.00	5.13 d	45.60
		15.0g pot ⁻¹	9.72	7.20de	8.46	0.00	13.56 b	44.96
	2 hr	0.0 g pot ⁻¹	6.04	11.82bc	4.73	0.00	9.92 c	38.82
		7.5 g pot ⁻¹	6.77	13.12b	6.56	0.00	4.98 d	46.19
		15.0g pot ⁻¹	12.48	9.51cd	10.76	0.00	15.20 b	47.61
Nov, 15	0 hr	0.0 g pot ⁻¹	4.69	4.28ef	3.75	3.72	5.97 d	6.31
		7.5 g pot ⁻¹	5.00	4.04ef	3.74	3.69	0.00 e	8.14
		15.0g pot ⁻¹	5.00	3.76f	3.84	3.69	0.00 e	6.87
	2 hr	0.0 g pot ⁻¹	4.14	4.43ef	3.52	0.00	5.04 d	6.42
		7.5 g pot ⁻¹	4.38	3.59f	3.49	0.00	4.56 d	6.85
		15.0g pot ⁻¹	5.57	3.98ef	3.34	0.00	4.62 d	6.91
LSD _{0.05}		ns	*	ns	ns	*	ns	
CV%		35.65	33.38	14.10	16.95	17.26	15.46	

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 69 Interaction of planting dates and night break treatments on magnesium concentrations of *C. alismatifolia* at flowering stage.

Factors			Magnesium concentration (mg gDW ⁻¹)				
Planting dates	Night break	Old rhizome	New rhizome	Old storage roots	New storage roots	Inflorescence	Leaves
May, 15	0 hr	2.38	0.00	2.96c	0.00b	3.25 c	3.94
	2 hr	2.19	0.00	2.72c	0.00b	2.87 c	4.20
Nov, 15	0 hr	20.77	15.88	20.79a	15.88a	9.26 b	17.27
	2 hr	21.04	0.00	18.16b	0.00b	22.95 a	17.02
LSD _{0.05}		ns	ns	*	*	*	ns
CV%		12.26	17.78	9.65	17.78	7.66	9.28

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 70 Interaction of planting dates and fertilizer rates on magnesium concentrations of *C. alismatifolia* at flowering stage.

Factors		Magnesium concentration (mg gDW ⁻¹)					
Planting dates	Fertilizer rates	Old rhizome	New rhizome	Old storage root	New storage root	Inflorescence	Leaves
May, 15	0.0 g pot ⁻¹	2.98 d	0.00c	2.81	0.00	4.59 c	3.70 c
	7.5 g pot ⁻¹	1.98 d	0.00c	2.90	0.00	2.38 d	4.29 c
	15.0g pot ⁻¹	1.90 d	0.00c	2.81	0.00	2.21 d	4.23 c
Nov, 15	0.0 g pot ⁻¹	18.37 c	8.47a	18.88	8.47	28.50 a	21.13 a
	7.5 g pot ⁻¹	23.11 a	7.72b	20.21	7.72	10.16 b	15.49 b
	15.0g pot ⁻¹	21.23 b	7.64b	19.32	7.64	9.65 b	14.83 b
LSD _{0.05}		*	*	ns	ns	*	*
CV%		12.26	17.78	9.65	17.78	7.66	9.28

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.
ns : not significantly different.

Appendix 71 Interaction of night break treatments and fertilizer rates on magnesium concentrations of *C. alismatifolia* at flowering stage.

Factors		Magnesium concentration (mg gDW ⁻¹)					
Night break	Fertilizer rates	Old rhizome	New rhizome	Old storage roots	New storage roots	Inflorescence	Leaves
0 hr	0.0 g pot ⁻¹	10.41	8.47	11.75	8.47	16.39 a	12.53 a
	7.5 g pot ⁻¹	12.75	7.72	12.38	7.72	1.25 c	10.06 b
	15.0g pot ⁻¹	11.56	7.64	11.50	7.64	1.12 c	9.23 b
2 hr	0.0 g pot ⁻¹	10.94	0.00	9.94	0.00	16.71 a	12.30 a
	7.5 g pot ⁻¹	12.34	0.00	10.74	0.00	11.29 b	9.71 b
	15.0g pot ⁻¹	11.57	0.00	10.63	0.00	10.74 b	9.82 b
LSD _{0.05}		ns	ns	ns	ns	*	ns
CV%		12.26	17.78	9.65	17.78	7.66	9.28

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 72 Interaction of planting dates, night break treatments and fertilizer rates on magnesium concentrations of *C. alismatifolia* at flowering stage.

Factors			Magnesium concentration (mg gDW ⁻¹)					
Planting dates	Night break	Fertilizer rates	Old	New	Old	New	Inflorescence	Leaves
			rhizome	rhizome	storage roots	storage roots		
May, 15	0 hr	0.0 g pot ⁻¹	3.09	0.00c	3.09	0.00	5.00 c	3.72
		7.5 g pot ⁻¹	2.13	0.00c	2.88	0.00	2.50 f	4.16
		15.0g pot ⁻¹	1.92	0.00c	2.91	0.00	2.24 f	3.95
	2 hr	0.0 g pot ⁻¹	2.87	0.00c	2.54	0.00	4.19 e	3.68
		7.5 g pot ⁻¹	1.83	0.00c	2.92	0.00	2.25 f	4.41
		15.0g pot ⁻¹	1.88	0.00c	2.71	0.00	2.18 f	4.51
Nov, 15	0 hr	0.0 g pot ⁻¹	17.73	16.93a	20.42	16.93	27.77 b	21.33
		7.5 g pot ⁻¹	23.37	15.44b	21.87	15.44	0.00 g	15.96
		15.0g pot ⁻¹	21.21	15.28b	20.09	15.28	0.00 g	14.51
	2 hr	0.0 g pot ⁻¹	19.02	0.00c	17.35	0.00	29.22 a	20.93
		7.5 g pot ⁻¹	22.85	0.00c	18.56	0.00	20.33 c	15.01
		15.0g pot ⁻¹	21.26	0.00c	18.56	0.00	19.30 d	15.14
LSD _{0.05}		ns	*	ns	ns	*	ns	
CV%		12.26	17.78	9.65	17.78	7.66	9.28	

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 73 Interaction of planting dates and night break treatments on TNC of *C. alismatifolia* at flowering stage.

Factors			TNC (mg-D-glucose gDW ⁻¹)			
Planting dates	Night break	Old rhizome	New	Old storage	New	Inflorescence
			rhizome	roots	storage roots	
May, 15	0 hr	34.91 b	31.70	21.03b	0.00b	20.91 ab
	2 hr	30.25 c	18.74	24.56a	0.00b	22.77 a
Nov, 15	0 hr	56.46 a	28.72	7.21c	33.09a	10.84 c
	2 hr	25.49 d	18.87	6.65c	0.00b	18.38 b
LSD _{0.05}		*	ns	*	*	*
CV%		14.25	18.53	14.77	63.66	21.65

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 74 Interaction of planting dates and fertilizer rates on TNC of *C. alismatifolia* at flowering stage.

Factors		TNC (mg-D-glucose gDW ⁻¹)				
Planting dates	Fertilizer rates	Old rhizome	New rhizome	Old storage roots	New storage roots	Inflorescence
May, 15	0.0 g pot ⁻¹	77.05 a	37.83b	62.27a	0.00c	13.38 d
	7.5 g pot ⁻¹	11.54 e	15.50d	2.73d	0.00c	19.14 c
	15.0g pot ⁻¹	9.16 e	22.34c	3.38d	0.00c	33.00 a
Nov, 15	0.0 g pot ⁻¹	48.23 b	50.43a	8.42b	34.39a	25.84 b
	7.5 g pot ⁻¹	41.49 c	9.86e	5.94c	8.35b	9.32 e
	15.0g pot ⁻¹	33.21 d	11.10e	6.43c	6.90b	8.66 e
LSD _{0.05}		*	*	*	*	*
CV%		14.25	18.53	14.77	63.66	21.65

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

Appendix 75 Interaction of night break treatments and fertilizer rates on TNC of *C. alismatifolia* at flowering stage.

Factors		TNC (mg-D-glucose gDW ⁻¹)				
Night break	Fertilizer rates	Old rhizome	New rhizome	Old storage roots	New storage roots	Inflorescence
0 hr	0.0 g pot ⁻¹	68.79 a	53.62a	32.84b	34.39a	22.92 ab
	7.5 g pot ⁻¹	37.23 c	13.89d	4.26c	8.35b	8.79 e
	15.0g pot ⁻¹	31.04 d	23.13c	5.26c	6.90b	15.91 d
2 hr	0.0 g pot ⁻¹	56.49 b	34.64b	37.86a	0.00c	16.31 cd
	7.5 g pot ⁻¹	15.80 e	11.47d	4.40c	0.00c	19.67 bc
	15.0g pot ⁻¹	11.33 e	10.30d	4.56c	0.00c	25.74 a
LSD _{0.05}		*	*	*	*	*
CV%		14.25	18.53	14.77	63.66	21.65

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

Appendix 76 Interaction of planting dates, night break treatments and fertilizer rates on TNC of *C. alismatifolia* at flowering stage.

Factors			TNC (mg-D-glucose gDW ⁻¹)				
Planting dates	Night break	Fertilizer rates	Old rhizome	New rhizome	Old storage roots	New storage roots	Inflorescence
May, 15	0 hr	0.0 g pot ⁻¹	78.15	48.80ab	56.92 b	0.00c	13.33 c
		7.5 g pot ⁻¹	15.78	13.39fg	2.78 f	0.00c	17.58 bc
		15.0g pot ⁻¹	10.79	32.92d	3.38 ef	0.00c	31.82 a
	2 hr	0.0 g pot ⁻¹	75.95	26.86e	67.62 a	0.00c	13.43 c
		7.5 g pot ⁻¹	7.29	17.62f	2.68 f	0.00c	20.70 b
		15.0g pot ⁻¹	7.52	11.75g	3.38 ef	0.00c	34.17 a
Nov, 15	0 hr	0.0 g pot ⁻¹	59.42	58.43a	8.76 c	68.77a	32.51 a
		7.5 g pot ⁻¹	58.68	14.39fg	5.74 de	16.70b	0.00 d
		15.0g pot ⁻¹	51.28	13.34fg	7.13 cd	13.81b	0.00 d
	2 hr	0.0 g pot ⁻¹	37.03	42.43c	8.09 cd	0.00c	19.18 b
		7.5 g pot ⁻¹	24.30	5.33h	6.13 cde	0.00c	18.64 b
		15.0g pot ⁻¹	15.14	8.85gh	5.73 de	0.00c	17.31 bc
LSD _{0.05}		ns	*	*	*	*	
CV%		14.25	18.53	14.77	63.66	21.65	

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 77 Interaction of planting dates and night break treatments on TNC of *C. alismatifolia* at different growth stages.

Factors		TNC (mg-D-glucose gDW ⁻¹)			
Planting dates	Night break	L1	L2	L3	L4
May, 15	0 hr	12.25	6.26	5.22	13.74c
	2 hr	10.57	6.32	7.00	14.83c
Nov, 15	0 hr	12.96	16.79	25.32	48.39a
	2 hr	13.58	16.34	29.09	42.45b
LSD _{0.05}		ns	ns	ns	*
CV%		33.99	27.03	21.56	19.09

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 78 Interaction of planting dates and fertilizer rates on TNC of *C. alismatifolia* at different growth stages.

Factors		TNC (mg-D-glucose gDW ⁻¹)			
Planting dates	Fertilizer rates	L1	L2	L3	L4
May, 15	0.0 g pot ⁻¹	16.47a	8.18c	5.46c	7.49f
	7.5 g pot ⁻¹	12.89ab	5.75cd	7.14c	14.82e
	15.0g pot ⁻¹	4.86c	4.95d	5.74c	20.54d
Nov, 15	0.0 g pot ⁻¹	15.72ab	11.53b	19.54b	52.21a
	7.5 g pot ⁻¹	12.07b	17.73a	22.22b	39.44c
	15.0g pot ⁻¹	12.02b	20.44a	39.86a	44.62b
LSD _{0.05}		*	*	*	*
CV%		33.99	27.03	21.56	19.09

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

Appendix 79 Interaction of night break treatments and fertilizer rates on TNC of *C. alismatifolia* at different growth stages.

Factors		TNC (mg-D-glucose gDW ⁻¹)			
Night break	Fertilizer rates	L1	L2	L3	L4
0 hr	0.0 g pot ⁻¹	18.53a	9.57	12.20	27.35 bc
	7.5 g pot ⁻¹	11.06bc	12.85	12.61	31.16 ab
	15.0g pot ⁻¹	8.22c	12.18	21.01	34.69 a
2 hr	0.0 g pot ⁻¹	13.66b	10.15	12.80	32.35 ab
	7.5 g pot ⁻¹	13.91b	10.63	16.75	23.10 c
	15.0g pot ⁻¹	8.66c	13.21	24.59	30.47 ab
LSD _{0.05}		*	ns	ns	*
CV%		33.99	27.03	21.56	19.09

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

Appendix 80 Interaction of planting dates, night break treatments and fertilizer rates on

TNC of *C. alismatifolia* at different growth stages.

Planting dates	Factors		TNC (mg-D-glucose gDW ⁻¹)			
	Night break	Fertilizer rates	L1	L2	L3	L4
May, 15	0 hr	0.0 g pot ⁻¹	18.54	7.61efg	5.56	6.73g
		7.5 g pot ⁻¹	12.92	5.45fg	5.35	14.11ef
		15.0g pot ⁻¹	5.27	5.73fg	4.76	20.39e
	2 hr	0.0 g pot ⁻¹	14.39	8.75def	5.36	8.25fg
		7.5 g pot ⁻¹	12.86	6.04fg	8.93	15.54e
		15.0g pot ⁻¹	4.46	4.17g	6.72	20.69e
Nov, 15	0 hr	0.0 g pot ⁻¹	18.51	11.52cde	18.83	47.97b
		7.5 g pot ⁻¹	9.20	20.24a	19.87	48.22b
		15.0g pot ⁻¹	11.17	18.62ab	37.25	48.98b
	2 hr	0.0 g pot ⁻¹	12.93	11.55cd	20.25	56.45a
		7.5 g pot ⁻¹	14.95	15.22bc	24.56	30.66d
		15.0g pot ⁻¹	12.86	22.25a	42.46	40.26c
LSD _{0.05}		ns	*	ns	*	
CV%		33.99	27.03	21.56	19.09	

Means within the factor in the same columns followed by different characters showed significantly different between treatments by LSD test at $P < 0.05$.

ns : not significantly different.

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