

APPENDICES

Appendix 1. The family *Cyperaceae* and the associated genera within the Plant Kingdom (Cronquist, A. 1981).

Kingdom	<i>Plantae (Plants)</i>
Subkingdom	<i>Tracheobionta (Vascular plants)</i>
Superdivision	<i>Spermatophyta (Seed plants)</i>
Division	<i>Magnoliophyta Flowering plants)</i>
Class	<i>Liliopsida (Monocotyledons)</i>
Subclass:	<i>Commelinidae</i>
Order:	<i>Cyperales</i>
Family:	<i>Cyperaceae – Sedge family</i>

- Genus : *Abildgaardia*
- Genus : *Baumea*
- Genus : *Bolboschoenus*
- Genus : *Carex*
- Genus : *Cymophyllus*
- Genus : *Desmoschoenus*
- Genus : *Elyna*
- Genus : *Ficinia*
- Genus : *Fuirena*
- Genus : *Hypolytrum*
- Genus : *Kobresia*
- Genus : *Lepidosperma*
- Genus : *Lipocarpha*
- Genus : *Mapania*
- Genus : *Mesomelaena*
- Genus : *Oreobolus*
- Genus : *Pycreus*
- Genus : *Rhynchospora*
- Genus : *Schoenus*
- Genus : *Scirpoides*
- Genus : *Scleria*
- Genus : *Uncinia*
- Genus : *Actinoscirpus*
- Genus : *Blysmus*
- Genus : *Bulbostylis*
- Genus : *Cladium*
- Genus : *Cyperus*
- Genus : *Dulichium*
- Genus : *Eriophorum*
- Genus : *Fimbristylis*
- Genus : *Gahnia*
- Genus : *Isolepis*
- Genus : *Kyllinga*
- Genus : *Lepironia*
- Genus : *Machaerina*
- Genus : *Mariscus*
- Genus : *Morelotia*
- Genus : *Oxycaryum*
- Genus : *Remirea*
- Genus : *Schoenoplectus*
- Genus : *Scirpodendron*
- Genus : *Scirpus*
- Genus : *Trichophorum*
- Genus : *Websteria*

Appendix 2. Binomials, species and sub-species within the genus *Scirpus* and their respective Bayer Codes*.

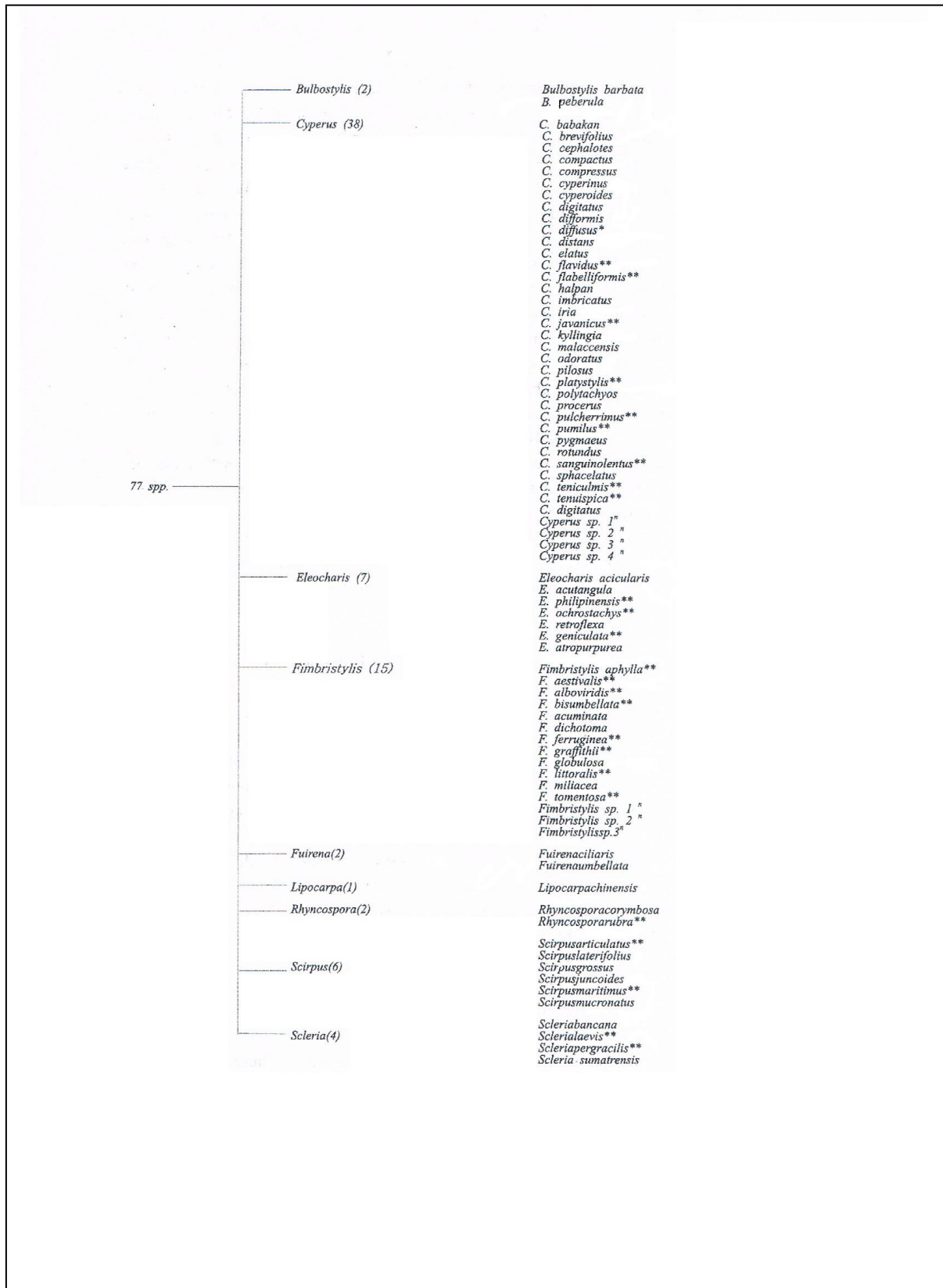
Species	Bayer Cod
<i>Scirpus acutus</i> MUHL .	SCPAC
<i>Scirpus americanus</i> PERS .	SCPAM
<i>Scirpus articulatus</i> L.	SCPAR
<i>Scirpus atrovirens</i> WILLD.	SCPAT
<i>Scirpus australis</i> MURR.	SCPAU
<i>Scirpus californicus</i> (C.AMEY.) STEUD./ BRITT.	SCPCA
<i>Scirpus capillaris</i> L.	BULCA
<i>Scirpus ciliaris</i> L.	FUICI
<i>Scirpus cognatus</i> HANCE	SCPAG
<i>Scirpus cubensis</i> POEPP. & KUNTH	SCPAU
<i>Scirpus cyperinus</i> (L.) KUNTH	SCPAY
<i>Scirpus dichotomus</i> L.	FIMDI
<i>Scirpus diphyllus</i> RETZ.	FIMDI
<i>Scirpus elegans</i> H.B.K.	ELDEL
<i>Scirpus erectus</i> POIR.	SCPJU
<i>Scirpus etuberculatus</i> O. KUNTZE ssp. <i>nipponicus</i> (MAINO) T. KOYAMA	SCPEN
<i>Scirpus fluitans</i> L.	SCPFL
<i>Scirpus fluviatilis</i> (TORR.) GRAY	SCPFV
<i>Scirpus giganteus</i> KUNTH	SCPGI
<i>Scirpus grossus</i> L. f.	SCPGR
<i>Scirpus hotarui</i> OHWI	SCPJU
<i>Scirpus juncooides</i> ROXB.	SCPJU
<i>Scirpus juncooides</i> ROXB. ssp. <i>Hotarui</i> (OHWI) T. KOYAMA	SCPJU
<i>Scirpus juncooides</i> ROXB. ssp. <i>Juncooides</i>	SCPJO
<i>Scirpus juncooides</i> ROXB. var. <i>ohwianus</i> T.KOYAMA	SCPJO
<i>Scirpus koilolepis</i> (STEUD.) GLEASON	SCPKL
<i>Scirpus komarovii</i> ROSHEV	SCPSL
<i>Scirpus lacustris</i> L.	SCPLA
<i>Scirpus lacustris</i> L. ssp. <i>Tabermontani</i> (GMEL.) SYME in SOW.	SCPTA
<i>Scirpus lateriflorus</i> J.F.GMEL.	SCPSU
<i>Scirpus lineolatus</i> FRANCH. & SAVI	SCPLI
<i>Scirpus maritimus</i> auct. Japon. , non L.	SCPFV
<i>Scirpus maritimus</i> L.	SCPMA
<i>Scirpus mucronatus</i> auct. Japon. , non L.	SCPTG
<i>Scirpus mucronatus</i> L.	SCPMU
<i>Scirpus mucronatus</i> L. ssp. <i>Robustus</i> T.KOYAMA	SCPTG
<i>Scirpus nipponicus</i> MAKINO	SCPEN

Appendix 2 (continued)

Species	Bayer Cod
<i>Scirpus olneyi</i> GRAY ex ENGELM. & GRAY	SCPOL
<i>Scirpus ovatus</i> ROTH	ELOOV
<i>Scirpus palustris</i> L.	ELOPA
<i>Scirpus pendulus</i> MUHL.	SCPPE
<i>Scirpus planiculmis</i> FR. SCHMIDT	SCPPL
<i>Scirpus preslii</i> DIETR.	SCPTG
<i>Scirpus pungens</i> VAHL	SCPAM
<i>Scirpus silvaticus</i> (=sylvaticus) L.	SCPSI
<i>Scirpus smithii</i> A. GRAY ssp. <i>Leiocarpus</i> (KOMAROV) T. KOYAMA	SCPSL
<i>Scirpus sulcatus</i> ROTH	ELOFL
<i>Scirpus supinus</i> L.	SCPSU
<i>Scirpus tabernaemontani</i> GMEL.	SCPTA
<i>Scirpus triangulatus</i> ROXB.	SCPTG
<i>Scirpus triqueter</i> (= triquetrus) L.	SCPTR
<i>Scirpus validus</i> VAHL	SCPVA
<i>Scirpus wallichii</i> NEES	SCPWA
<i>Scirpus wichurai</i> BOECK.	SCPWI
<i>Scirpus wichurai</i> BOECK. ssp. <i>asiaticus</i> T. KOYAMA	SCPWI
<i>Scirpus</i> L. spec.	SCPSS

*Bayer, (1992).

Appendix 3: Dendrogram of *Scirpus* in Peninsular Malaysia and Sarawak. ** New to Malaysia. (Baki 2005).



Appendix 4. Summary of ANOVA on transformed data for gross no, mortality no and net population of *Scirpus grossus* plants grown in fertilized (F1) and unfertilized (F0) peat soils at MARDI Research Station, Jalan Kebun, Selangor, Malaysia

Source of Variation	Gross no. Log(x+1)			Mortality no. $\sqrt{(x+1)}$			Net population Log(x+1)			Flower no. $\sqrt{(x+1)}$			Av. Plant height			Total rhizome length		
	d.f.	MSS	p>F	d.f.	MSS	p>F	d.f.	MSS	p>F	d.f.	MSS	p>F	d.f.	MSS	p>F	d.f.	MSS	p>F
fer	1	0.30	0.82	1	102.09	0.52	1	102.09	0.52	1	102.09	0.52	1	2483.36	0.57	1	134515.95	0.88
Main plot error	4	5.18		4	209.01		4	209.01		4	209.01		4	6549.36		4	5242939.3	
wk	23	19.68	<0.0001	11	90.73	<0.0001	11	90.73	<0.0001	11	90.73	<0.0001	23	17986.97	<0.0001	23	8574466.4	<0.0001
ferxwk	23	0.02	0.99	11	1.01	0.99	11	1.01	0.99	11	1.01	0.99	23	192.72	0.69	23	6035.10	1.0
Subplot error	92	0.09		44	5.74		44	5.74		44	5.74		92	233.22		92	138868.40	
Total	143			71			71			71			143			143		

Appendix 5. Summary of ANOVA on transformed data for gross no, mortality no and net population of *Scirpus grossus* plants grown in fertilized (F1) and unfertilized (F0) paddy soils at MARDI Research Station, Tanjong Karang, Selangor, Malaysia

Source of Variation	Gross no. Log(x+1)			Mortality no. $\sqrt{(x+1)}$			Net population Log(x+1)			Flower no. $\sqrt{(x+1)}$			Av. Plant height			Total rhizome length		
	d.f.	MSS	p>F	d.f.	MSS	p>F	d.f.	MSS	p>F	d.f.	MSS	p>F	d.f.	MSS	p>F	d.f.	MSS	p>F
Fer	1	13.51	0.25	1	24.15	0.06	1	15.95	0.23	1	25.60	0.65	1	7722.02	0.55	1	60.82	0.03
Main plot error	4	7.58		4	15.11		4	8.16		4	106.07		4	17746.33		4	5.47	
Wk	23	20.16	<0.0001	19	12.79	<0.0001	23	19.50	<0.0001	11	22.90	<0.0001	23	19049.58	<0.0001	23	41.72	<0.0001
ferxwk	23	0.15	0.02	19	0.45	<0.0001	23	0.13	0.08	11	0.14	0.99	23	108.01	0.99	23	0.27	0.13
Subplot error	92	0.08		76	0.10		92	0.08		44	0.64		92	366.48		92	0.19	
Total	143			119			143			71			143			143		

Appendix 6. Summary of ANOVA on transformed data for plant number, mortality number, plant height and flower number of ramets (m^{-2}) of *Scirpus grossus* plants grown under different NPK concentrations and water depths on paddy soils in Universiti Putra Malaysia, Serdang, Selangor, Malaysia

Source of variation	d.f.	Plant number		Mortality number		Plant height		Flower number		Chlorophyll content		
		Log(x+1)	MSS	MSS	$\sqrt{(x+1)}$	MSS	MSS	p>F	MSS	p>F	d.f.	MSS
Rep	2	8.39	0.64	1238.47	0.76	0.76	0.61	8.39	0.09	2	447.00	0.14
Wd	3	171.81	42.39	41263.20	12.46	12.46	<0.0001	171.81	<0.0001	3	3244.31	<0.0001
Fer	4	30.96	73.49	22150.46	32.94	32.94	<0.0001	30.96	<0.0001	4	293.58	0.27
Wdxfer	12	14.86	6.32	8361.17	3.43	3.43	0.0021	14.86	0.0002	12	879.52	0.0004
Main plot error	38	3.35	3.61	2484.65	1.29	1.29		3.35		38	215.56	
Wk	15	56.81	120.51	10272.16	36.32	36.32	<0.0001	56.81	<0.0001	3	688.02	<0.0001
Wdxwk	45	1.95	2.77	2220.63	1.75	1.75	<0.0001	1.95	<0.0001	9	338.32	<0.0001
Ferxwk	60	0.42	2.99	463.40	2.12	2.12	<0.0001	0.42	<0.0001	12	65.60	0.41
Wdxferxwk	160	0.45	0.35	322	0.30	0.30	<0.0001	0.45	<0.0001	36	60.97	0.51
Sub-plot error	600	0.18	0.16	101.75	0.13	0.13		0.18		120	62.25	
Total	959									239		

Appendix 7. Mean plant number (ramets m⁻²) of *Scirpus grossus* plants grown under different NPK concentrations and water depths in paddy soils in Universiti Putra Malaysia, Serdang, Selangor, Malaysia*

Weeks after planting	F0 (Control)						D1 (Control)									
	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5
1	0.34*	0.00*	0.00*	0.34	0.34	0.00	0.33	0.00	0.33	0.67	0.33	0.00	1.00	0.33	0.67	1.00
2	1.33*	0.66	0.66	0.67	0.67	0.00	0.00	0.33	0.33	1.66	0.33	0.33	1.66	0.00	1.33	1.33
3	0.00	0.33	1.00	0.33	1.00	0.67	1.33	0.67	1.33	0.67	2.00	2.66	2.00	0.66	0.00	0.66
4	0.33	2.00	3.00*	2.33	2.67*	5.00	4.33	2.00*	2.67	3.00	6.33*	7.00	7.33	0.67*	1.00	0.33
5	2.33*	1.00	6.33*	1.33	4.00	5.33	0.67	2.00	0.33	4.67	2.67	1.00	5.34	1.67	2.67	4.34
6	5.00	0.67	4.67	4.33	0.33	4.00	5.67	1.00	4.67	3.00	6.67	10.34	8.67	3.67	2.00	1.67
7	4.34	1.34	8.00	3.00	3.66	6.66	6.33	0.00	4.34	2.00	6.33	10.67	8.33	4.34	2.00	2.34
8	5.00	1.67	14.67*	3.33	9.67*	13.00*	5.33	0.67	5.00	1.67	6.00	10.33	7.00	4.33	1.00	3.33
9	4.66	2.00	21.00*	2.66	16.34*	19.00	5.34	0.66	5.33	2.00	6.00	10.67	7.34	4.67	1.34	3.33
10	3.66	2.00	23.00*	1.66	19.34*	21.00*	1.67	1.66	2.33	4.33	3.33	4.00	6.00	0.67	2.67	2.00
11	5.00	1.66	27.33*	3.34	22.33*	25.67*	1.00	3.00	4.33	4.66	4.00	5.33	5.66	1.33	1.66	0.33
12	5.00	0.33	27.00*	4.67	22.00*	26.67*	1.67	3.33	4.67	5.33	1.66	3.00	3.66	1.34	2.00	0.66
13	6.00	0.67	28.33	5.33	22.33*	27.66*	1.00	2.33	4.67	10.33	1.33	3.67	9.33	2.34	8.00	5.66
14	6.34	6.34	40.34*	0.00	34.00*	34.00*	1.67	3.67	6.34	12.00	2.00	4.67	10.33	2.67	8.33	5.66
15	6.00	14.00	54.00*	8.00	48.00*	40.00*	4.33	5.00	9.33	17.00	0.67	5.00	12.67	4.33	12.00	7.67
16	6.00	14.00	55.67*	8.00	49.67*	41.67*	3.34	4.00	10.34	18.00	0.66	7.00	14.66	6.34	14.00	7.66
Weeks after planting	F2 (with 50g fertilizer)						D2 (with 5cm water depth)									
	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5
1	0.33	0.33	0.00	0.00	0.33	0.33	0.34*	1.33*	0.67	1.33	1.67	0.33	1.67*	2.00	0.00*	2.00
2	0.33	0.33	0.67	0.00	1.00	1.00	1.00	1.33	1.00	1.00	2.33	0.00	2.00	2.33	0.33	2.00
3	1.34	1.34	3.34	0.00	2.00	2.00	2.67	0.67	0.00	0.67	3.34	2.67	3.34	0.67	0.00	0.67
4	0.33	1.00	7.34*	0.67	7.67*	8.34*	3.67	6.33	2.33	3.00*	10.00	6.00	6.67	4.00	3.33*	0.67
5	5.66	5.00	25.33*	0.66	19.67*	20.33*	4.00	11.00	1.34	4.00	15.00*	2.66	8.00	12.34	7.00*	5.34
6	3.00	0.00	27.66*	3.00	24.66*	27.66*	13.67	3.67	2.67	3.67	17.34	11.00	10.00	6.34	7.34*	1.00*
7	0.00	0.67	27.67*	0.67	27.67*	28.34*	10.67	4.33	2.00	3.00	15.00	8.67	7.67	6.33	7.33	1.00
8	2.33	1.33	28.00*	1.00	30.33*	29.33*	8.00	5.33	2.33	2.00	13.33	5.67	6.00	7.66	7.33	0.33
9	6.00	3.00	29.33*	3.00	35.33*	32.33*	4.00	5.00	1.66	1.33	9.00	2.34	2.67	6.66	6.33	0.33
10	4.00	3.67	32.33*	0.33	36.33*	36.00*	1.33	7.00	1.33	1.67	8.33	0.00	3.00	8.33	5.33	3.00
11	5.66	8.66	29.67*	3.00	35.33*	38.33*	0.34	6.66	3.34	2.33	7.00	3.00	2.67	10.00	4.33	5.67

Appendix 7 (continued)

12	5.66	8.00	35.00*	2.34	40.66*	43.00*	2.33	6.67	5.33	4.33	4.34	7.66	2.00	12.00	2.34	9.66
13	10.33	13.00	34.33*	2.67	44.66*	47.33*	5.33	6.00	4.33	6.67	0.67	9.66	1.34	10.33	0.67	11.00
14	9.33	13.00	34.67*	3.67	44.00*	47.67*	4.66	3.66	1.66	6.33	1.00	3.00	1.67	2.00	2.67	4.67
15	6.33	15.00	30.33*	8.67	36.66*	45.33*	4.66	5.33	4.66	8.33	0.67	0.00	3.67	0.67	3.00	3.67
16	6.33	15.66	30.34*	9.33	36.67*	46.00*	3.67	5.34	4.67	7.34	1.67	1.00	3.67	0.67	2.00	2.67
	F3 (with 75g fertilizer)						D3 (with 10cm water depth)									
Weeks after planting	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5
1	1.67*	0.00	0.33	1.67	2.00*	0.33	0.00	0.00	1.00	0.33	0.00	1.00	0.33	1.00	0.33	1.33*
2	2.33	0.67	3.00*	3.00	5.33*	2.33*	0.33	1.00	1.34	2.00*	0.67	1.67	1.67	2.34	1.00	3.34*
3	0.00	3.34	7.67*	3.34	7.67*	4.33*	2.34*	2.34	0.34	5.34*	0.00	2.00	3.00	2.00	3.00*	5.00*
4	4.00*	9.33	14.67*	13.33*	18.67*	5.34*	5.33*	9.33*	5.33	13.67*	4.00	0.00	8.34*	4.00	4.34*	8.34*
5	6.67	21.33	28.67*	28.00*	35.34*	7.34*	4.67*	18.33*	14.00*	24.00*	13.66	9.33	19.33*	4.33	5.67*	10.00*
6	7.67	25.00*	35.00*	32.67*	42.67*	10.00*	6.34*	24.67*	9.67*	32.34*	18.33*	3.33	26.00*	15.00	7.67*	22.67*
7	8.67	22.33	33.66*	31.00*	42.33*	11.33*	7.00*	23.67*	10.67*	32.67*	16.67	3.67	25.67*	13.00	9.00*	22.00*
8	9.66	21.00	35.00*	30.66*	44.66*	14.00*	5.67*	22.00*	10.34*	32.00*	16.33	4.67	26.33*	11.66	10.00*	21.66*
9	9.00	19.00	36.33*	28.00	45.33*	17.33*	4.34*	20.34*	10.00	31.00*	16.00	5.66	26.66*	10.34	10.66*	21.00*
10	9.00	16.33	37.00*	25.33	46.00*	20.67*	0.00	16.67*	6.67	29.67*	16.67	6.67	29.67*	10.00	13.00*	23.00*
11	8.66	12.67	37.67*	21.33	46.33*	25.00*	6.00*	11.33*	2.33	26.00*	17.33	8.33	32.00*	9.00	14.67*	23.67*
12	8.34	10.33	40.33*	18.67	48.67*	30.00*	9.34*	7.33	1.34	23.00*	16.67	8.00	32.34*	8.67	15.67*	24.34*
13	9.67	4.66	40.00*	14.33	49.67*	35.34*	13.33*	3.00	1.66	19.00*	16.33	11.67	32.33*	4.66	16.00*	20.66*
14	6.33	1.67	34.67*	8.00	41.00*	33.00*	8.33*	4.34	0.33	22.00*	12.67	8.00	30.33*	4.67	17.66*	22.33*
15	6.33	1.33	34.34*	5.00	40.67*	35.67*	5.33*	7.67	5.34	25.34*	13.00	10.67	30.67*	2.33	17.67*	20.00*
16	7.34	3.00	33.33*	4.34	40.67*	36.33*	5.00*	7.00	3.66	23.33*	12.00	8.66	28.33*	3.34	16.33*	19.67*
	F4 (with 100g fertilizer)						D4 (with 20cm water depth)									
Weeks after planting	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5
1	0.00	1.33*	0.67	1.33	0.67	0.66	0.33	0.33	0.34	0.00	0.00	0.67	0.33	0.67	0.33	0.34
2	0.00	1.67	0.67	1.67	0.67	2.34	1.33	3.33*	1.00	1.33	2.00	0.33	0.00	2.33	2.00	0.33
3	1.33	2.00	6.00*	0.67	4.67*	4.00*	3.67	6.00*	3.67	4.00	2.33	0.00	0.33	2.33	2.00	0.33
4	0.67	6.00	13.67*	5.33	13.00*	7.67*	8.67*	9.67*	8.00*	9.00*	1.00	0.67	0.33	1.67	0.67	1.00
5	4.00	15.33*	23.66*	11.33*	19.66*	8.33*	19.67*	20.34*	17.00*	20.00*	0.67	2.67	0.33	3.34	0.34	3.00
6	2.34	13.67*	36.00*	11.33*	33.66*	22.33*	38.00*	38.67*	36.00*	39.00*	0.67	2.00	1.00	2.67	0.33	3.00
7	2.00	13.67*	37.00*	11.67*	35.00*	23.33*	42.00*	41.66*	40.66*	43.66*	0.34	1.34	1.66	1.00	2.00	3.00

Appendix 7 (continued)

8	2.33	13.67*	37.67*	11.34*	35.34*	24.00*	48.00*	49.00*	47.34*	51.00*	1.00	0.66	3.00	1.66	2.00	3.66
9	2.33	13.33*	39.67*	11.00	37.34*	26.34*	55.67*	56.67*	55.34*	59.00*	1.00	0.33	3.33	1.33	2.33	3.66
10	0.00	7.00	41.33*	7.00	41.33*	34.33*	57.00*	58.34*	62.00*	65.00*	1.34	5.00	8.00	3.66	6.66*	3.00
11	2.67	5.00	46.67*	2.33	44.00*	41.67*	58.00*	62.00*	69.67*	72.67*	4.00	11.67	14.67	7.67	10.67*	3.00
12	5.00	3.00	51.00*	2.00	46.00*	48.00*	60.33*	64.00*	73.33*	76.67*	3.67	13.00	16.34	9.33*	12.67*	3.34
13	3.00	2.34	53.00*	0.66	50.00*	50.66*	61.66*	66.00*	76.66*	80.00*	4.34	15.00	18.34	10.66*	14.00*	3.34
14	1.66	0.33	57.34*	1.33	59.00*	57.67*	73.34*	71.34*	91.34*	96.67*	2.00	18.00	23.33*	20.00*	25.33*	5.33
15	1.33	0.67	62.33*	2.00	63.66*	61.66*	80.00*	83.34*	107.00*	112.67*	3.34	27.00	32.67*	23.66*	29.33*	5.67
16	0.33	0.00	65.34*	0.33	65.67*	65.34*	82.67*	85.00*	110.67*	117.00*	2.33	28.00	34.33*	25.67*	32.00*	6.33
F5 (with 125g fertilizer)																
Weeks after planting	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4										
1	1.00	1.00	0.67	2.00	1.67	0.33										
2	0.67	3.00	2.33	3.67*	3.00	0.67										
3	0.00	6.34*	5.67*	6.34*	5.67*	0.67										
4	0.33	14.67*	15.00*	14.34*	14.67*	0.33										
5	3.00	29.67*	31.00*	26.67*	28.00*	1.33*										
6	1.67	34.67*	37.33*	33.00*	35.66*	2.66*										
7	0.66	33.33*	37.66*	32.67*	37.00*	4.33*										
8	1.33	32.00*	38.00*	33.33*	39.33*	6.00*										
9	1.33	31.00*	40.00*	32.33*	41.33*	9.00*										
10	1.00	32.00*	46.33*	33.00*	47.33*	14.33*										
11	2.67	29.00*	50.00*	31.67*	52.67*	21.00*										
12	4.00	28.00*	55.00*	32.00*	59.00*	27.00*										
13	2.34	28.66	62.00*	31.00	64.34*	33.34*										
14	0.67	27.66	68.33*	28.33	69.00*	40.67*										
15	2.67	28.34	75.67*	25.67	73.00*	47.33*										
16	4.66	27.33	79.33*	22.67	74.67*	52.00*										

Appendix 8. Mean mortality number of ramets (m^{-2}) of *Scirpus grossus* plants grown under different NPK concentrations and water depths in paddy soils in Universiti Putra Malaysia, Serdang, Selangor, Malaysia

Weeks after planting	F0 (Control)						D1 (Control)										
	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.67	0.00	0.00	0.67	0.67	0.00	0.00	0.00	0.33	0.00	0.00	0.33	0.00	0.33	0.00	0.33	0.00
5	2.33*	1.00	1.00	1.33	1.33	0.00	2.33	0.00	1.33	0.00	2.33	1.00	2.33	1.33	0.00	1.33	0.00
6	4.00*	2.00	2.34*	2.00	1.66	0.34	7.67	0.34	2.34	0.33	7.33*	5.33*	8.00*	2.00	0.67	2.67	0.00
7	5.00*	3.00	3.66*	2.00	1.34	0.66	10.00	0.00	2.00	1.67	10.00*	8.00*	11.67*	2.00	1.67	3.67	0.00
8	5.00*	3.66	4.00*	1.34	1.00	0.34	10.33	0.67	0.33	4.34*	11.00*	10.00*	14.67*	1.00	3.67*	4.67*	0.00
9	2.00	0.67	1.67	1.33	0.33	1.00	9.00	2.33	3.33*	9.00*	11.33*	12.33*	18.00*	1.00	6.67*	5.67*	0.00
10	0.67	0.34	0.33	0.33	1.00	0.67	6.66	5.00	7.00*	13.67*	11.66*	13.66*	20.33*	2.00	8.67*	6.67*	0.00
11	1.00	2.00	2.33	1.00	1.33	0.33	5.00	7.00	11.00*	17.66*	12.00*	16.00*	22.66*	4.00	10.66*	6.66*	0.00
12	1.34	3.34	3.00	2.00	1.66	0.34	2.66	10.00*	13.34*	21.00*	12.66*	16.00*	23.66*	3.34	11.00*	7.66*	0.00
13	3.67	5.67	5.34	2.00	1.67	0.33	0.00	13.00*	16.34*	24.67*	13.00*	16.34*	24.67*	3.34	11.67*	8.33*	0.00
14	5.67	9.00*	6.00	3.33	0.33	3.00	1.67	15.67*	20.33*	28.67*	14.00*	18.66*	27.00*	4.66	13.00*	8.34*	0.00
15	4.00	8.34	3.67	4.34	0.33	4.67	2.67	15.00*	20.34*	30.00*	12.33*	17.67*	27.33*	5.34	15.00*	9.66*	0.00
16	7.66	8.33	2.33	0.67	5.33	6.00	5.66	18.33*	22.33*	32.00*	12.67*	16.67*	26.34*	4.00	13.67*	9.67*	0.00
Weeks after planting	F2 (with 50g fertilizer)						D2 (with 5cm water depth)										
	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	1.00	0.00	1.00	1.00	0.67	0.67	0.67	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.00	2.33	1.00	0.33	1.00	1.33	2.00*	2.33*	2.33*	2.33*	0.33	0.33	0.33	0.00	0.00	0.00	0.00
6	5.67*	7.33*	6.67*	1.66	1.00	0.66	2.00*	4.00*	2.33*	4.33*	2.00*	0.33	2.33*	1.67	0.33	2.00	0.00
7	7.67*	9.34*	9.34*	1.67	1.67	0.00	2.67*	3.67*	2.67*	6.67*	1.00	0.00	4.00*	1.00	3.00*	4.00*	0.00
8	8.33*	11.67*	11.67*	3.34	3.34	0.00	3.00*	4.67*	3.00*	9.67*	1.67	0.00	6.67*	1.67	5.00*	6.67*	0.00
9	10.00*	12.00*	15.00*	2.00	5.00*	3.00	3.00*	4.67*	2.33	11.33*	1.67	0.67	8.33*	2.34*	6.66*	9.00*	0.00
10	10.66*	12.66*	17.00*	2.00	6.34*	4.34	3.33*	4.67*	3.00	13.33*	1.34	0.33	10.00*	1.67	8.66*	10.33*	0.00

Appendix 8 (continued)

11	12.00*	14.00*	20.00*	2.00	8.00*	6.00*	6.00*	6.66*	5.00*	16.33*	0.66	1.00	10.33*	1.66	9.67*	11.33*	
12	11.33*	13.66*	21.66*	2.33	10.33*	8.00*	7.33*	8.66*	7.66*	19.66*	1.33	0.33	12.33*	1.00	11.00*	12.00*	
13	10.34	13.34*	23.67*	3.00	13.33*	10.33*	6.67*	8.67*	8.33*	21.33*	2.00	1.66	14.66*	0.34	12.66*	13.00*	
14	9.33	12.66*	27.00*	3.33	17.67*	14.34*	5.33*	9.33*	9.66*	23.00*	4.00	4.33*	17.67*	0.33	13.67*	13.34*	
15	5.67	11.67	29.33*	6.00	23.66*	17.66*	4.34	11.67*	12.34*	26.34*	7.33*	8.00*	22.00*	0.67	14.67*	14.00*	
16	3.00	9.67	29.67*	6.67	26.67*	20.00*	1.00	9.34*	10.67*	26.67*	8.34*	9.67*	25.67*	1.33	17.33*	16.00*	
		F3 (with 75g fertilizer)						D3 (with 10cm water depth)									
Weeks after planting	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.67	1.00	0.00	0.33	0.00	0.33	0.00	0.33	
6	0.34	0.34	0.67	0.00	0.33	0.33	1.66	2.00	1.00	2.33	0.34	0.66	0.67	1.00	0.33	1.33	
7	1.33	0.00	1.67	1.33	3.00*	1.67	2.34	3.00	2.00	4.34*	0.66	0.34	2.00*	1.00	1.34	2.34	
8	1.00	1.33	3.67*	2.33	4.67*	2.34*	5.00*	5.66*	4.33*	8.00*	0.66	0.67	3.00*	1.33	2.34*	3.67*	
9	0.34	3.67*	6.67*	3.33*	6.33*	3.00*	3.67	6.67*	5.34*	9.67*	3.00*	1.67	6.00*	1.33	3.00*	4.33*	
10	0.34	3.00	9.34*	2.66	9.00*	6.34*	5.66*	7.66*	8.66*	13.33*	2.00	3.00*	7.67*	1.00	5.67*	4.67*	
11	0.66	5.00*	12.33*	4.34	11.67*	7.33*	7.00*	10.00*	10.33*	16.00*	3.00	3.33	9.00*	0.33	6.00*	5.67*	
12	0.00	4.34	12.67*	4.34	12.67*	8.33*	7.66*	11.00*	11.33*	19.33*	3.34	3.67	11.67*	0.33	8.33*	8.00*	
13	0.66	4.00	14.67*	4.66	15.33*	10.67*	7.67*	11.33*	12.67*	21.67*	3.66	5.00*	14.00*	1.34	10.34*	9.00*	
14	0.67	3.66	17.00*	4.33	17.67*	13.34*	5.33	10.33*	13.00*	22.67*	5.00	7.67*	17.34*	2.67	12.34*	9.67*	
15	0.67	5.00	20.34*	4.33	19.67*	15.34*	6.00	11.66*	14.33*	24.66*	5.66	8.33*	18.66*	2.67	13.00*	10.33*	
16	1.33	3.00	21.67*	4.33	23.00*	18.67*	7.00	13.00*	16.33*	28.33*	6.00	9.33*	21.33*	3.33	15.33*	12.00*	
		F4 (with 100g fertilizer)						D4 (with 20cm water depth)									
Weeks after planting	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4	0.33	0.33	0.00	0.00	0.33	0.33	1.00	0.00	0.33	0.33	1.00	0.67	0.67	0.33	0.33	0.00	
5	1.33	1.00	1.00	0.33	0.33	0.00	0.33	1.00	0.67	0.00	1.33	1.00	0.33	0.33	1.00	0.67	
6	0.67	1.34	2.34	0.67	1.67	1.00	1.34	2.67	2.34	1.34	1.33	1.00	0.00	0.33	1.33	1.00	

Appendix 8 (continued)

7	0.33	1.00	3.00	1.33	3.33	2.00	3.00	5.33*	4.66*	4.00*	2.33	1.66	1.00	0.67	1.33	0.66
8	1.67	1.00	4.00	2.67	5.67*	3.00	5.34*	8.34*	7.67*	7.00*	3.00	2.33	1.66	0.67	1.34	0.67
9	3.00*	1.34	5.67	4.34	8.67*	4.33	7.67*	10.67*	10.67*	10.00*	3.00	3.00	2.33	0.00	0.67	0.67
10	3.33	2.00	7.34*	5.33	10.67*	5.34*	10.67*	14.67*	14.67*	14.33*	4.00	4.00	3.66	0.00	0.34	0.34
11	5.00	1.33	8.66*	6.33	13.66*	7.33*	12.67*	17.00*	17.33*	17.33*	4.33	4.66	4.66	0.33	0.33	0.00
12	4.34	1.33	11.00*	5.67	15.34*	9.67*	16.00*	19.67*	21.34*	22.00*	3.67	5.34	6.00	1.67	2.33	0.66
13	4.34	2.00	14.00*	6.34	18.34*	12.00*	18.33*	22.33*	25.00*	25.66*	4.00	6.67	7.33*	2.67	3.33	0.66
14	5.00	1.67	16.00*	6.67	21.00*	14.33*	22.67*	26.67*	30.33*	31.33*	4.00	7.66	8.66*	3.66	4.66*	1.00*
15	4.00	2.33	19.66*	6.33	23.66*	17.33*	28.33*	31.67*	36.33*	37.33*	3.34	8.00	9.00*	4.66	5.66*	1.00*
16	4.00	2.33	23.33*	6.33	27.33*	21.00*	33.00*	37.67*	43.33*	44.33*	4.67	10.33*	11.33*	5.66*	6.66*	1.00*
F5 (with 125g fertilizer)																
Weeks after planting	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4										
1	0.00	0.00	0.00	0.00	0.00	0.00										
2	0.00	0.00	0.00	0.00	0.00	0.00										
3	0.00	0.00	0.00	0.00	0.00	0.00										
4	0.00	0.00	0.33	0.00	0.33	0.33										
5	0.00	0.00	1.00	0.00	1.00	1.00										
6	0.00	0.00	1.33	0.00	1.33	1.33										
7	0.00	0.33	1.33	0.33	1.33	1.00										
8	0.33	0.00	1.34	0.33	1.67	1.34										
9	0.33	0.00	0.67	0.33	1.00	0.67										
10	0.33	0.00	0.33	0.33	0.00	0.33										
11	0.33	0.34	2.00	0.67	2.33*	1.66										
12	0.00	1.67	4.00*	1.67	4.00*	2.33*										
13	0.33	2.67	6.33*	2.34	6.00*	3.66*										
14	0.00	3.00	8.66*	3.00	8.66*	5.66*										
15	0.34	3.00	11.00*	2.66	10.66*	8.00*										
16	2.33	4.66*	14.66*	2.33	12.33*	10.00*										

Appendix 9. Mean plant height (ramet) of *Scirpus grossus* plants grown under different NPK concentrations and water depths in paddy soils in Universiti Putra Malaysia, Serdang, Selangor, Malaysia*

Weeks after planting	F0 (Control)						D1 (Control)									
	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5
1	4.00	1.00	0.83	3.00	4.83	1.83	0.67	4.00	4.00	0.33	3.33	3.33	1.00	0.00	4.33	4.33
2	10.00	2.17	21.83*	7.83	11.83	19.66*	10.33	5.50	5.33	13.17	4.83	5.00	2.84	0.17	7.67	7.84
3	12.16	6.00	25.33*	6.16	13.17*	19.33*	7.50	4.50	11.50	12.00	3.00	4.00	4.50	7.00	7.50	0.50
4	8.67	9.67	16.17*	1.00	7.50	6.50	1.67	2.83	0.50	4.83	4.50	2.17	3.16	2.33	7.66	5.33
5	12.00	21.33*	20.33*	9.33	8.33	1.00	0.67	1.00	13.67*	5.33	1.67	13.00	6.00	14.67*	4.33	19.00*
6	9.00	14.67*	22.34*	5.67	13.34*	7.67	9.00	10.00	2.00	14.33*	1.00	11.00	5.33	12.00	4.33	16.33*
7	9.00	0.00	24.00*	9.00	15.00*	24.00*	5.34	10.00	2.00	15.67*	4.66	7.34	10.33	12.00	5.67	17.67*
8	12.00	28.66*	23.66*	16.66*	11.66	5.00	7.34	11.00	3.00	16.34*	3.66	10.34	9.00	14.00*	5.34	19.34*
9	15.34*	37.34*	26.34*	22.00*	11.00	11.00	7.33	12.00	2.67	17.66*	4.67	10.00	10.33	14.67*	5.66	20.33*
10	15.00*	30.66*	29.33*	15.66*	14.33*	1.33	6.00	11.00	3.00	24.00*	5.00	3.00	18.00*	8.00	13.00	21.00*
11	12.33*	22.00*	28.00*	9.67	15.67*	6.00	12.67	7.34	11.34	33.34*	5.33	1.33	20.67*	4.00	26.00*	22.00*
12	3.34	10.00	18.34*	6.66	15.00*	8.34	18.33*	8.00	20.33*	39.33*	10.33	2.00	21.00*	12.33	31.33*	19.00*
13	1.67	11.00	21.34*	9.33	19.67*	10.34	11.33	8.00	20.33*	32.33*	3.33	9.00	21.00*	12.33	24.33*	12.00
14	0.67	12.00	17.00*	11.33	16.33*	5.00	5.66	3.34	19.66*	26.33*	9.00	14.00*	20.67*	23.00*	29.67*	6.67
15	3.00	8.33	16.00*	11.33	19.00*	7.67	5.00	0.33	22.00*	20.67*	5.33	17.00*	15.67*	22.33*	21.00*	1.33
16	4.33	8.00	21.00*	12.33*	25.33*	13.00*	5.66	1.66	21.33*	10.66	4.00	15.67*	5.00	19.67*	9.00	10.67
Weeks after planting	F2 (with 50g fertilizer)						D2 (with 5cm water depth)									
	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5
1	4.17	0.84	3.33	3.33	7.50	4.17	7.50	7.33	4.50	3.50	0.17	3.00	4.00	2.83	3.83	1.00
2	12.50	7.66	2.66	4.84	9.84	5.00	12.17	6.33	9.50	7.00	5.84	2.67	5.17	3.17	0.67	2.50
3	10.34	9.17	8.50	1.17	1.84	0.67	15.00*	9.33	9.66	10.33	5.67	5.34	4.67	0.33	1.00	0.67
4	3.17	9.67	15.84	6.50	12.67	6.17	10.17	6.50	14.34	15.00*	3.67	4.17	4.83	7.84	8.50	0.66
5	0.66	3.00	10.66	3.66	10.00	13.66	10.67	2.33	21.33*	21.33*	8.34	10.66	10.66	19.00*	19.00*	0.00
6	4.00	19.00	6.34	23.00	10.34	12.66	22.00*	2.33	20.00*	25.33*	19.67*	2.00	3.33	17.67*	23.00*	5.33
7	7.66	22.34	1.67	30.00*	9.33	20.67	22.00*	1.34	18.00*	25.34*	20.66*	4.00	3.34	16.66*	24.00*	7.34
8	7.33	33.00	2.34	40.33*	9.67	30.66*	26.67*	4.67	20.67*	23.34*	22.00*	6.00	3.33	16.00*	18.67*	2.67
9	5.00	41.67*	1.33	46.67*	6.33	40.34*	27.67*	8.00	22.00*	22.34*	19.67*	5.67	5.33	14.00	14.34	0.34
10	2.34	33.66*	15.00	36.00*	12.66	48.66*	23.34*	6.67	26.00*	25.00*	16.67*	2.66	1.66	19.33*	18.33*	1.00

Appendix 9 (continued)

11	4.00	37.33*	23.33	33.33*	27.33*	60.66*	21.00*	8.00	22.00*	27.33*	13.00	1.00	6.33	14.00	19.33*	5.33	
12	3.67	33.67*	32.33*	30.00*	36.00*	66.00*	18.00*	6.00	12.00	12.67	24.00*	6.00	5.33	18.00*	18.67*	0.67	
13	1.67	36.33*	39.33*	38.00*	37.66*	75.66*	14.67	8.00	10.33	5.67	22.67*	4.34	9.00	18.33*	13.67	4.66	
14	6.00	30.00*	49.67*	36.00*	43.67*	79.67*	12.33	16.67*	13.67	0.33	29.00*	1.34	12.66	30.34*	16.34*	14.00	
15	1.00	30.33*	55.00*	31.33*	54.00*	85.33*	3.00	21.00*	6.34	1.66	24.00*	3.34	4.66	27.34*	19.34*	8.00	
16	6.33	34.00*	53.34*	27.67*	59.67*	87.34*	5.00	23.67*	2.00	5.33	18.67*	7.00	0.33	25.67*	18.34*	7.33	
		F3 (with 75g fertilizer)					D3 (with 10cm water depth)										
Weeks after planting	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5	
1	7.33	2.17	0.00	5.16	7.33	2.17	1.17	0.83	2.83	3.00	2.00	1.66	4.17	3.66	2.17	5.83	
2	1.83	3.17	22.50*	1.34	20.67*	19.33*	0.50	0.16	3.16	8.00	0.34	2.66	8.50	3.00	8.16	11.16	
3	1.67	6.17	36.67*	4.50	35.00*	30.50*	7.67	7.67	2.84	22.50*	0.00	4.83	14.83	4.83	14.83	19.66*	
4	5.00	10.34	35.34*	15.34	40.34*	25.00*	17.67*	22.84*	17.67*	34.84*	5.17	0.00	17.17*	5.17	12.00	17.17*	
5	10.67	3.00	50.33*	7.67	61.00*	53.33*	23.66*	19.33*	2.34	36.00*	4.33	26.00*	12.34*	21.67*	16.67	38.34*	
6	16.67*	1.00	31.33*	15.67	48.00*	32.33*	4.67	23.67*	3.00	38.67*	19.00*	1.67	34.00*	20.67*	15.00	35.67*	
7	17.66*	5.33	30.00*	12.33	47.66*	35.33*	17.00	4.67	11.33	20.34*	21.67*	5.67	37.34*	16.00	15.67	31.67*	
8	18.33*	9.66	24.67*	8.67	43.00*	34.33*	3.00	30.00*	15.00	43.33*	27.00*	12.00	40.33*	15.00	13.33	28.33*	
9	19.34*	14.00	20.33*	5.34	39.67*	34.33*	3.00	35.34*	18.67*	47.00*	32.34*	15.67	44.00*	16.67	11.66	28.33*	
10	19.33*	5.66	35.34*	13.67	54.67*	41.00*	3.00	36.00*	18.66*	40.00*	33.00*	15.66	37.00*	17.34*	4.00	21.34*	
11	11.67	5.66	47.33*	17.33*	59.00*	41.67*	2.66	35.00*	19.00*	26.34*	37.66*	21.66*	29.00*	16.00	8.66	7.34	
12	17.34*	13.66	58.33*	31.00*	75.67*	44.67*	5.34	31.66*	14.66	19.66*	37.00*	20.00*	25.00*	17.00	12.00	5.00	
13	17.67*	7.66	61.00*	25.33*	78.67*	53.34*	14.00	26.66*	10.33	7.33	40.66*	24.33*	21.33*	16.33	19.33*	3.00	
14	14.00	15.67	77.34*	29.67*	91.34*	61.67*	12.34	24.33*	9.66	4.33	36.67*	22.00*	16.67	14.67	20.00*	5.33	
15	17.67*	11.33	73.00*	29.00*	90.67*	61.67*	17.00	19.33*	8.33	1.67	36.33*	25.33*	18.67*	11.00	17.66*	6.66	
16	21.00*	5.67	68.34*	26.67*	89.34*	62.67*	20.34*	15.33	6.66	1.67	35.67*	27.00*	18.67*	8.67	17.00	8.33	
		F4 (with 100g fertilizer)					D4 (with 20cm water depth)										
Weeks after planting	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5	
1	4.50	5.83	7.83	1.33	3.33	2.00	4.83	4.83	3.00	0.50	0.00	7.83	4.33	7.83	4.33	3.50	
2	4.83	0.00	5.00	4.83	9.83	5.00	14.16	38.83*	11.50	11.16	24.67	2.66	3.00	27.33	27.67	0.34	
3	9.00	8.34	13.17	0.66	4.17	4.83	26.33	57.50*	27.00	24.50	31.17*	0.67	1.83	30.50	33.00*	2.50	
4	5.17	7.50	13.67	2.33	8.50	6.17	30.34	54.34*	30.34	18.67	24.00	0.00	11.67	24.00	35.67*	11.67	
5	23.00*	10.00	30.00*	33.00*	7.00	40.00*	9.00	71.66*	36.66*	26.00	62.66*	27.66	17.00	35.00*	45.66*	10.66	
6	13.00	9.67	24.33*	22.67*	11.33	34.00*	25.00	63.67*	44.67*	39.00*	38.67*	19.67	14.00	19.00	24.67	5.67	

Appendix 9 (continued)

7	11.00	9.33	26.67*	20.33*	15.67	36.00*	27.67	64.00*	48.67*	43.34*	36.33*	21.00	15.67	15.33	20.66	5.33
8	11.67	10.66	30.00*	22.33*	18.33	40.66*	28.66	59.33*	50.66*	45.33*	30.67*	22.00	16.67	8.67	14.00	5.33
9	9.33	16.00	36.67*	25.33*	27.34*	52.67*	32.34*	58.67*	60.34*	49.67*	26.33	28.00	17.33	1.67	9.00	10.67
10	8.00	15.00	47.34*	23.00*	39.34*	62.34*	50.33*	75.67*	79.67*	72.00*	25.34	29.34	21.67	4.00	3.67	7.67
11	1.67	14.34	53.00*	12.67*	54.67*	67.34*	64.00*	82.67*	92.34*	88.34*	18.67	28.34	24.34	9.67	5.67	4.00
12	11.67	15.67	60.00*	4.00	71.67*	75.67*	69.00*	84.67*	98.67*	96.00*	15.67	29.67	27.00	14.00	11.33	2.67
13	11.67	21.00*	62.00*	9.33	73.67*	83.00*	72.00*	90.34*	103.67*	103.67*	18.34	31.67*	31.67*	13.33	13.33	0.00
14	6.66	22.00*	67.34*	15.34	74.00*	89.34*	72.33*	91.00*	104.00*	106.33*	18.67	31.67*	34.00*	13.00	15.33	2.33
15	12.66	22.00*	72.00*	9.34	84.66*	94.00*	76.00*	88.67*	110.00*	113.00*	12.67	34.00*	37.00*	21.33	24.33	3.00
16	15.00	22.67*	74.67*	7.67	89.67*	97.34*	80.00*	91.00*	117.00*	121.66*	11.00	37.00*	41.66*	26.00	30.66*	4.66
F5 (with 125g fertilizer)																
Weeks after planting	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4										
1	0.83	4.33	0.00	3.50	0.83	4.33										
2	10.17	19.00	2.50	8.83	7.67	16.50										
3	10.17	28.50*	11.17	18.33	1.00	17.33										
4	11.16	30.00*	7.33	18.84	3.83	22.67*										
5	4.00	9.34	0.34	5.34	3.66	9.00										
6	2.00	9.67	2.33	7.67	0.33	7.34										
7	0.67	4.67	3.67	4.00	3.00	1.00										
8	5.00	1.67	5.33	3.33	10.33	7.00										
9	10.66	8.00	5.67	2.66	16.33	13.67										
10	14.00	14.66	18.67	0.66	32.67*	33.33*										
11	18.34	29.00*	27.00*	10.66	45.34*	56.00*										
12	30.00*	29.67*	38.33*	0.33	68.33*	68.00*										
13	28.33*	36.00*	50.00*	7.67	78.33*	86.00*										
14	27.33*	34.00*	63.00*	6.67	90.33*	97.00*										
15	19.33	27.33*	76.33*	8.00	95.66*	103.66*										
16	11.66	20.33	90.00*	8.67	101.66*	110.33*										

Appendix 10. Mean flower number (ramets) of *Scirpus grossus* plants grown under different NPK concentrations and water depths in paddy soils in Universiti Putra Malaysia, Serdang, Selangor, Malaysia*

Weeks after planting	F0 (Control)						D1 (Control)										
	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	1.00	0.67	1.00	0.67	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	2.33*	2.33*	2.33*	2.33*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.33	4.00*	4.00*	3.67*	3.67*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.34	6.00*	4.34*	5.66*	4.00*	1.66	0.33	0.33	0.33	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	1.00	6.33*	6.66*	5.33*	5.66*	0.33	1.34	1.34	1.67	1.67	0.00	0.33	0.33	0.33	0.33	0.33	0.00
11	2.00*	9.33*	8.00*	7.33*	6.00*	1.33	2.00	1.67	2.67*	3.00*	0.33	0.67	1.00	1.00	1.33	1.33	0.33
12	6.33*	10.33*	9.66*	4.00	3.33	0.67	2.00	2.67*	4.00*	4.67*	0.67	2.00	2.67*	1.33	2.00	0.67	0.67
13	8.00*	11.33*	10.33*	3.33	2.33	1.00	1.67	2.00	4.67*	5.67*	0.33	3.00*	4.00*	2.67*	3.67*	3.67*	1.00
14	6.67*	11.00*	10.00*	4.33	3.33	1.00	3.66*	3.00*	7.33*	9.00*	0.66	3.67*	5.34*	4.33*	6.00*	6.00*	1.67
15	9.66*	12.00*	9.33*	2.34	0.33	2.67	1.34	0.66	8.00*	9.34*	2.00	6.66*	8.00*	8.66*	10.00*	10.00*	1.34
16	10.67*	10.00*	7.33*	0.67	3.34	2.67	0.33	1.00	10.33*	11.33*	1.33	10.66*	11.66*	9.33*	10.33*	10.33*	1.00
Weeks after planting	F2 (with 50g fertilizer)						D2 (with 5cm water depth)										
	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.67	0.33	0.67	0.33	0.34	0.67	0.67	0.67	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.67	5.33*	0.67	6.00*	1.34	4.66*	4.67*	4.00*	4.33*	4.00*	0.67	0.34	0.67	0.33	0.00	0.00	0.33

Appendix 10 (continued)

11	1.34	9.00*	0.34	10.34*	1.00	9.34*	9.67*	8.00*	9.00*	8.67*	1.67	0.67	1.00	1.00	0.67	0.33	
12	2.00	13.00*	0.67	15.00*	1.33	13.67*	11.67*	10.34*	11.34*	10.67*	1.33	0.33	1.00	1.00	0.33	0.67	
13	0.67	17.00*	2.00*	17.67*	1.33	19.00*	11.00*	10.00*	10.00*	11.00*	1.00	1.00	0.00	0.00	1.00	1.00	
14	1.67	18.67*	6.00*	17.00*	7.67*	24.67*	9.33*	13.00*	12.00*	15.00*	3.67*	2.67	5.67*	1.00	2.00	3.00*	
15	0.66	16.00*	11.00*	16.66*	10.34*	27.00*	11.00*	15.67*	12.67*	17.34*	4.67*	1.67	6.34*	3.00*	1.67	4.67*	
16	0.67	5.33*	0.67	6.00*	1.34	4.66*	4.67*	4.00*	4.33*	4.00*	0.67	0.34	0.67	0.33	0.00	0.33	
		F3 (with 75g fertilizer)						D3 (with 10cm water depth)									
Weeks after planting	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
7	0.00	0.00	0.00	0.00	0.00	0.00	2.33*	2.33*	2.33*	2.33*	0.00	0.00	0.00	0.00	0.00	0.00	
8	0.00	0.00	0.00	0.00	0.00	0.00	4.00*	4.00*	4.00*	4.00*	0.00	0.00	0.00	0.00	0.00	0.00	
9	0.00	0.00	0.00	0.00	0.00	0.00	5.66*	6.33*	6.33*	6.33*	0.67	0.67	0.67	0.00	0.00	0.00	
10	0.33	0.33	0.33	0.00	0.00	0.00	5.33*	8.00*	7.67*	8.00*	2.67*	2.34*	2.67*	0.33	0.00	0.33	
11	0.33	0.33	1.33	0.00	1.00	1.00	6.00*	11.33*	10.66*	12.00*	5.33*	4.66*	6.00*	0.67	0.67	1.34	
12	1.00	0.33	2.00*	1.33	3.00*	1.67*	3.33*	13.33*	12.00*	13.00*	10.00*	8.67*	9.67*	1.33	0.33	1.00	
13	0.34	1.00	3.67*	0.66	3.33*	2.67*	0.00	14.33*	12.00*	14.33*	14.33*	12.00*	14.33*	2.33*	0.00	2.33*	
14	0.33	2.33	6.33*	2.00	6.00*	4.00*	2.34*	16.33*	12.33*	16.00*	18.67*	14.67*	18.34*	4.00*	0.33	3.67*	
15	4.00	6.66*	12.00*	2.66	8.00*	5.34*	5.33*	18.00*	13.67*	16.67*	23.33*	19.00*	22.00*	4.33*	1.33	3.00*	
16	4.00	7.00*	12.33*	3.00	8.33*	5.33*	6.33*	18.00*	12.33*	15.67*	24.33*	18.66*	22.00*	5.67*	2.33	3.34*	
		F4 (with 100g fertilizer)						D4 (with 20cm water depth)									
Weeks after planting	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4	F0-F2	F0-F3	F0-F4	F0-F5	F2-F3	F2-F4	F2-F5	F3-F4	F3-F5	F4-F5	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.67	0.67	0.67	0.00	0.00	0.00	0.00	0.00	0.00	

Appendix 10 (continued)

7	0.00	0.00	0.00	0.00	0.00	0.00	2.33*	2.33*	2.33*	2.33*	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	4.00*	4.00*	4.00*	4.00*	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	4.34*	4.67*	4.67*	4.67*	0.33	0.33	0.33	0.00	0.00	0.00
10	0.00	0.33	0.00	0.33	0.00	0.33	7.66*	8.33*	8.33*	8.33*	0.67	0.67	0.67	0.00	0.00	0.00
11	0.34	1.34*	0.33	1.00*	0.67	1.67*	9.33*	11.00*	11.00*	11.00*	1.67	1.67	1.67	0.00	0.00	0.00
12	1.33*	2.33*	0.67	1.00*	2.00*	3.00*	12.00*	14.33*	14.33*	14.33*	2.33*	2.33*	2.33*	0.00	0.00	0.00
13	1.33*	4.00*	1.00*	2.67*	2.33*	5.00*	12.67*	16.00*	16.00*	16.00*	3.33*	3.33*	3.33*	0.00	0.00	0.00
14	4.00*	6.00*	2.00*	2.00*	6.00*	8.00*	15.66*	19.33*	19.33*	19.33*	3.67*	3.67*	3.67*	0.00	0.00	0.00
15	5.66*	6.33*	3.67*	0.67	9.33*	10.00*	16.67*	20.67*	21.00*	21.00*	4.00*	4.33*	4.33*	0.33	0.33	0.00
16	8.33*	8.00*	4.34*	0.33	12.67*	12.34*	18.00*	20.66*	22.00*	22.33*	2.66*	4.00*	4.33*	1.34	1.67	0.33
F5 (with 125g fertilizer)																
Weeks after planting	D1-D2	D1-D3	D1-D4	D2-D3	D2-D4	D3-D4										
1	0.00	0.00	0.00	0.00	0.00	0.00										
2	0.00	0.00	0.00	0.00	0.00	0.00										
3	0.00	0.00	0.00	0.00	0.00	0.00										
4	0.00	0.00	0.00	0.00	0.00	0.00										
5	0.00	0.00	0.00	0.00	0.00	0.00										
6	0.00	0.00	0.00	0.00	0.00	0.00										
7	0.00	0.00	0.00	0.00	0.00	0.00										
8	0.00	0.00	0.00	0.00	0.00	0.00										
9	0.00	0.00	0.00	0.00	0.00	0.00										
10	0.33	0.00	0.00	0.33	0.33	0.00										
11	1.00*	0.33	0.00	0.67	1.00*	0.33										
12	2.33*	2.00*	0.00	0.33	2.33*	2.00*										
13	3.00*	2.67*	0.00	0.33	3.00*	2.67*										
14	4.67*	4.00*	0.33	0.67	5.00*	4.33*										
15	4.00*	4.67*	2.33*	0.67	6.33*	7.00*										
16	4.66*	5.66*	3.67*	1.00	8.33*	9.33*										

Appendix 11. Summary of ANOVA on transformed data for gross leaves no, mortality leaves no and net leaves population of *Scirpus grossus* plants grown in fertilized (F1) and unfertilized (F0) peat soils at MARDI Research Station, Jalan Kebun, Selangor, Malaysia

Source of Variation	Leaf no. log(x+1)			Leaf mortality $\sqrt{x+1}$			Leaf net population Log(x+1)		
	d.f.	MSS	p>F	d.f.	MSS	p>F	d.f.	MSS	p>F
Fer	1	2550.03	<0.0001	1	0.1280	0.12	1	299.47	<0.0001
Main plot error	28	3.33		28	0.0500		28	0.27	
Wk	23	406.25	<0.0001	23	13.8527	<0.0001	23	0.57	<0.0001
Ferxwk	23	15.01	<0.0001	23	0.0057	<0.0001	23	0.75	<0.0001
Subplot error	644	0.48		644	0.0080		609	0.05	
Total	719			719			684		

Appendix 12. Summary of ANOVA on transformed data for gross leaves no, mortality leaves no and net leaves population of *Scirpus grossus* plants grown in fertilized (F1) and unfertilized (F0) paddy soils at MARDI Research Station, Tanjong Karang, Selangor, Malaysia

Source of Variation	d.f.	Leaf no. log(x+1)		d.f.	Leaf mortality ($\sqrt{x+1}$)		d.f.	Leaf net population Log(x+1)	
		MSS	p>F		MSS	p>F		MSS	p>F
Fer	1	1.17	0.77	1	0.06	0.50	1	0.0039	0.93
Main plot error	28	13.80		28	0.13		28	0.4690	
Wk	23	584.28	<0.0001	23	14.98	<0.0001	23	0.60	<0.0001
Ferxwk	23	16.01	<0.0001	23	0.0023	<0.0001	23	0.78	<0.0001
Subplot error	644	0.93		644	0.0161		644	0.09	
Total	719			719			684		

Appendix 13. Summary of ANOVA on transformed data for chlorophyll contents, chlorophyll florescence and aerial weight of *Scirpus grossus* plants grown in fertilized (F1) and unfertilized (F0) peat soils at MARDI Research Station, Jalan Kebun, Selangor, Malaysia

Source of Variation	Chlorophyll content			Florescence (Fv/Fm)			Aerial weight		
	d.f.	d.f.	d.f.	d.f.	d.f.	p>F	d.f.	MSS	p>F
Fer	1	1	1	1	1	0.19	1	0.0016	0.16
Main plot error	88	28	58	58	58		28	0.0008	
Pos/ part	1	1	2	2	2	0.38	1	0.0202	<0.0001
Ferxpos	1	1	2	2	2	0.70	1	0.0004	0.30
Subplot error	88	28	116	116	116		28	0.0004	
Total	179	59	179	179	179		59		

Appendix 14. Summary of ANOVA on transformed data for chlorophyll contents, chlorophyll florescence and aerial weight of *Scirpus grossus* plants grown in fertilized (F1) and unfertilized (F0) paddy soils at MARDI Research Station, Tanjong Karang, Selangor, Malaysia

Source of Variation	Chlorophyll content			Florescence (Fv/Fm)			Aerial weight		
	d.f.	MSS	p>F	d.f.	MSS	p>F	d.f.	MSS	p>F
Fer	1	46.01	0.34	1	0.00022	0.56	d.f.	MSS	p>F
Main plot error	88	49.74		28	0.00059		1	66.25	0.09
Pos/ part	1	12.06	0.57	1	0.00791	0.0015	58	22.52	
Ferxpos	1	347.78	0.0033	1	0.00006	0.76	2	3770.06	<0.0001
Subplot error	88	38.01		28	0.00064		2	4.68	0.36
Total	179			59			116	4.52	