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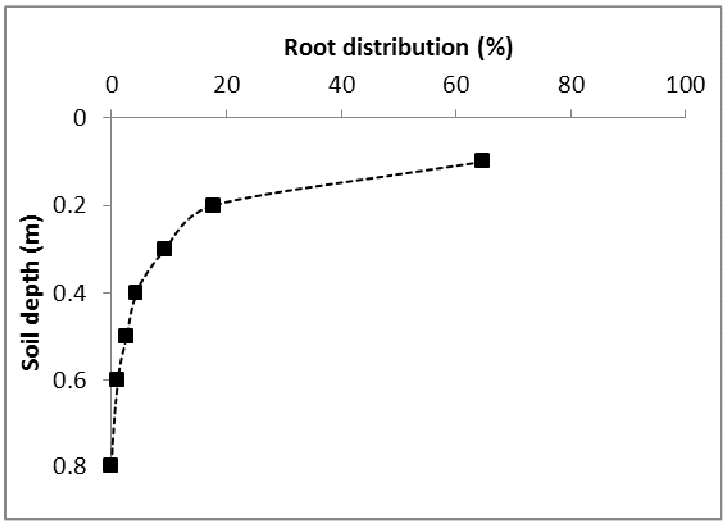
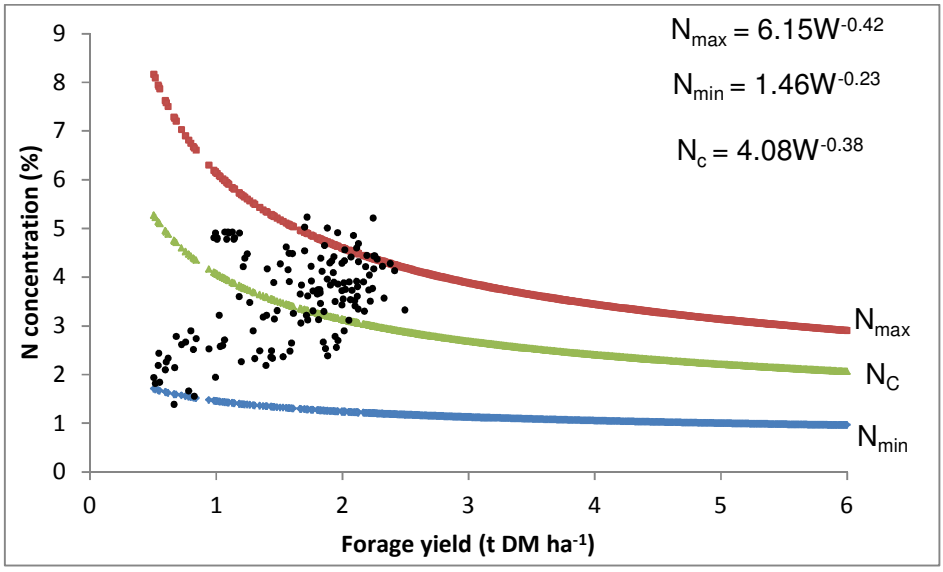
APPENDIX



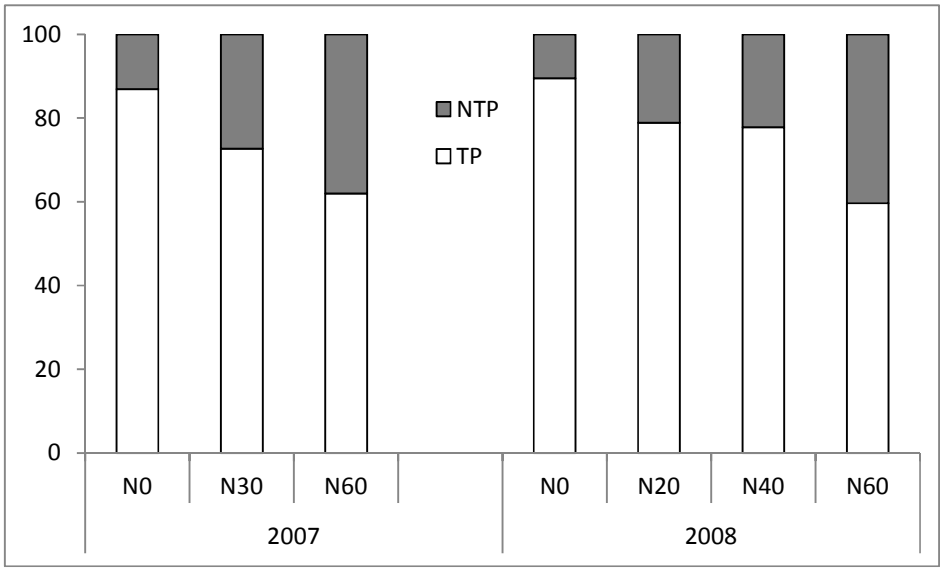
Appendix A1 Mean root biomass percentages of annual ryegrass for non N limiting well watered treatment



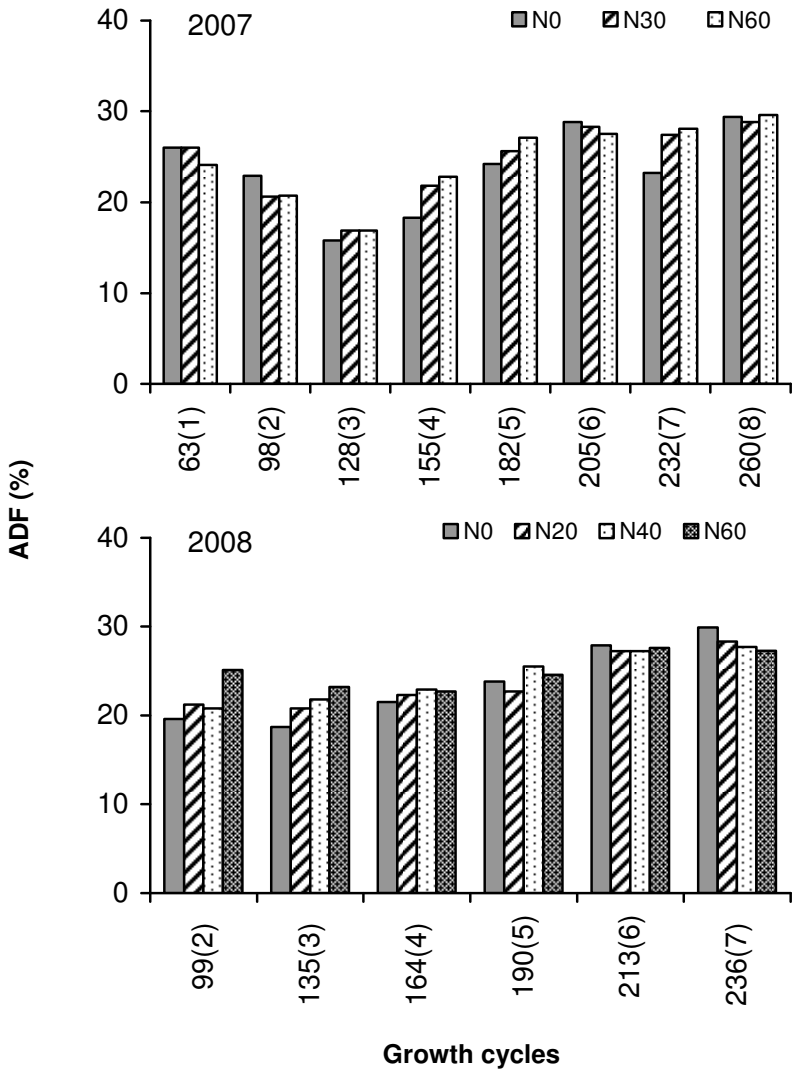
Appendix A2 Forage yield in relation to N concentration of annual ryegrass for data collected from a range of N application rates for eight growth cycles in 2007 (0, 30, 60 kg ha^{-1} $cycle^{-1}$ for N_0, N_{30}, N_{60}) and seven growth cycles in 2008 (0, 20, 40 60 kg ha^{-1} $cycle^{-1}$ for N_0, N_{20}, N_{40}, N_{60}). Maximum (N_{max}), minimum (N_{min}) and critical (N_c) forage N concentration developed using dilution curves of Marino *et al.* (2004).

Appendix B1 Days after planting (DAP) and growing day degrees (GDD) after planting for growth cycles in 2007 and 2008

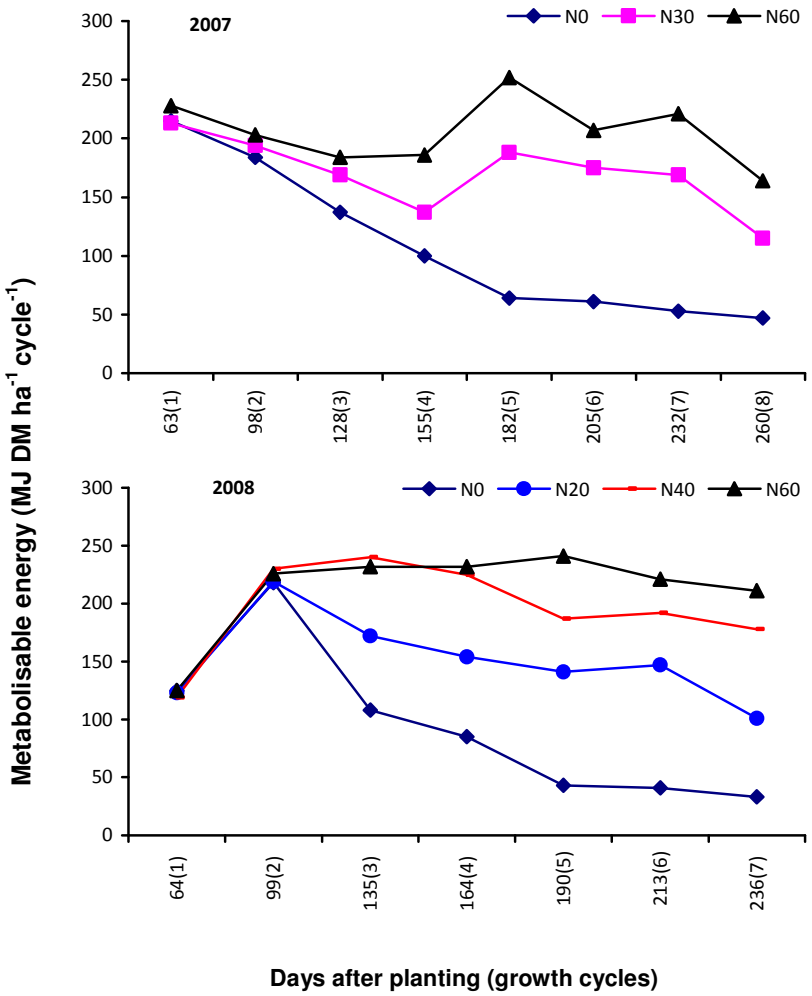
Growth cycle	DAP		Cumulative GDD		Days cycle^{-1}		GDD cycle^{-1}	
	2007	2008	2007	2008	2007	2008	2007	2008
1	63	64	780	735	63	64	780	735
2	98	99	1106	1023	35	35	326	288
3	128	135	1340	1333	30	36	234	310
4	155	164	1587	1645	27	29	247	312
5	182	190	1856	1943	27	26	269	298
6	205	213	2169	2235	23	23	313	292
7	232	236	2528	2555	27	23	359	320
8	259	-	2856	-	27	-	328	-



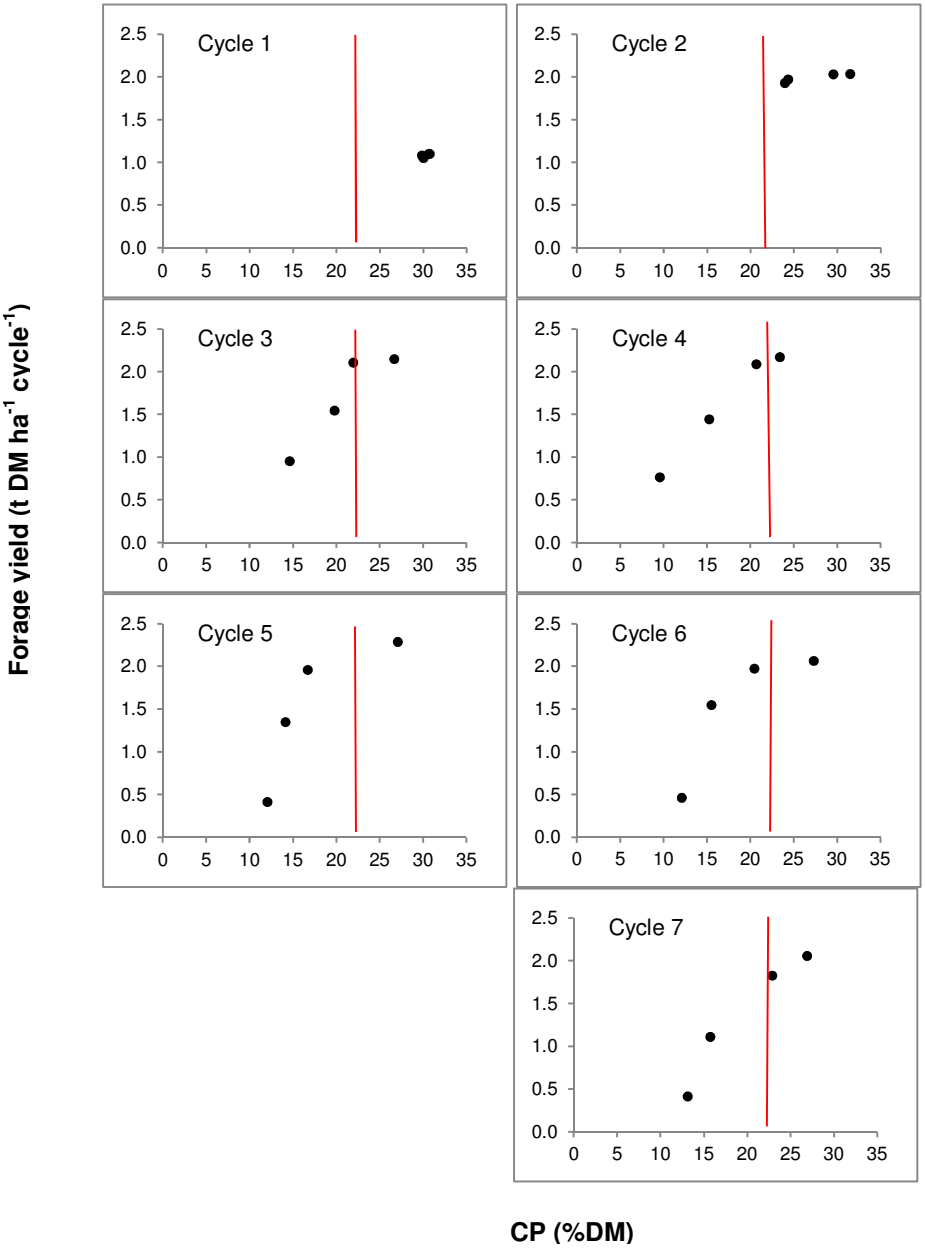
Appendix B2 Seasonal mean true protein (TP) and non-true protein (NTP) percentages of crude protein (CP) of annual ryegrass under a range of N application rates in 2007 (0, 30, 60 kg ha^{-1} $cycle^{-1}$ for N_0, N_{30}, N_{60}) and 2008 (0, 20, 40 60 kg ha^{-1} $cycle^{-1}$ for N_0, N_{20}, N_{40}, N_{60})



Appendix B3 Acid detergent fibre (ADF) of annual ryegrass under a range of N application rates for eight growth cycles in 2007 (0, 30, 60 kg ha^{-1} $cycle^{-1}$ for N_0, N_{30}, N_{60}) and seven growth cycles in 2008 (0, 20, 40 60 kg ha^{-1} $cycle^{-1}$ for N_0, N_{20}, N_{40}, N_{60})



Appendix B4 Metabolisable energy (ME) concentrations of annual ryegrass under a range of N application rates for eight growth cycles in 2007 (0, 30, 60 kg ha^{-1} $cycle^{-1}$ for N_0, N_{30}, N_{60}) and seven growth cycles in 2008 (0, 20, 40 60 kg ha^{-1} $cycle^{-1}$ for N_0, N_{20}, N_{40}, N_{60})



Appendix B5 Crude protein vs forage yield of annual ryegrass under a range of N application rates for seven growth cycles in 2008 (0, 20, 40 60 kg ha^{-1} $cycle^{-1}$). Vertical lines are maximum CP (22%)