



APPENDIX A

Table A1. Forage quality (Nitrogen (N) and Crude Protein (CP) contents) of Na₂SO₄ irrigated planted pastures, 2002-2003

Planted Pastures	Growing period	Mine water irrigated pastures			Fresh water irrigated pastures		
		Total Yield	Forage quality		Total Yield	Forage quality	
		(t ha ⁻¹)	N (g kg ⁻¹)	% CP	(t ha ⁻¹)	N (g kg ⁻¹)	% CP
Fescue (cv. Iewag)	Jan 02 - May 03	15.1	18.5	11.5	16-18	18-24	12-15
	Std err	± 0.4			-	-	-
Lucerne	Jan 02 - May 03	10.7	26.9	16.8	18-20	22-28	14-18
	Std err	± 0.05			-	-	-
Fescue (cv. Demeter)	Jan 02 - May 03	11.3	17.7	11.08	16-18	18-24	12-15
	Std err	± 0.04			-	-	-
Eragrostis	Jan 02 - May 02	10.2	16.6	10.4	16-18	18-20	12-13
	Std err	± 0.12			-	-	-
Kikuyu	Sep 02- Dec 02	11.4	-	-	20-24	35-38	20-24
	Std err	± 3.5			-	-	-

APPENDIX B

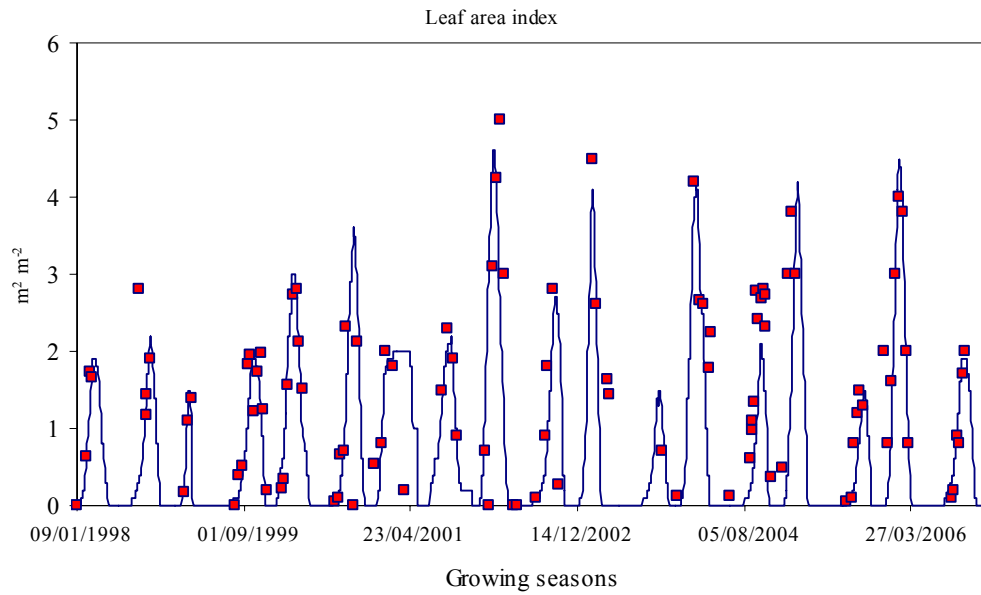


Figure B1. Simulated (solid lines) and measured (symbols) for LAI for Pivot TWF.

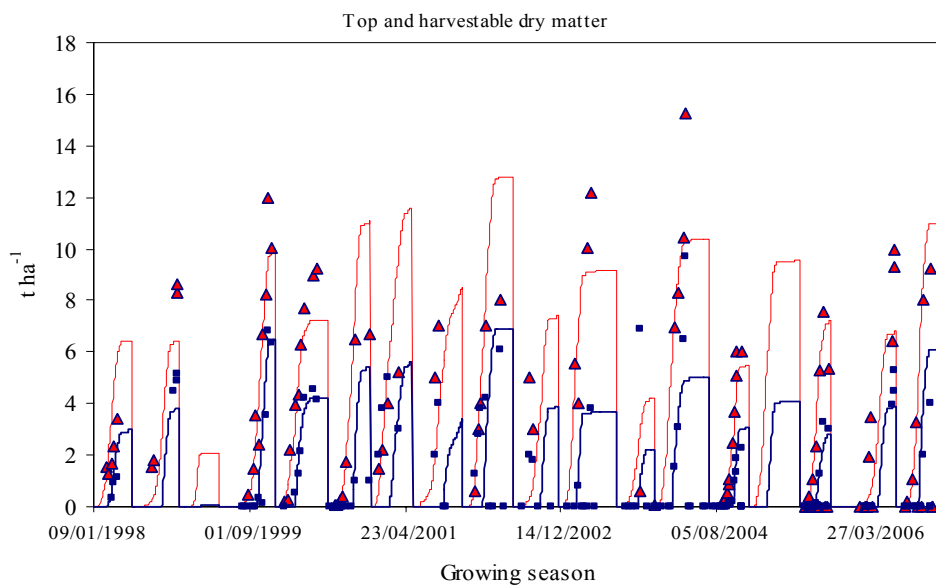


Figure B2. Simulated (solid lines) and measured (symbols) Top and harvestable dry matter for site TWF.

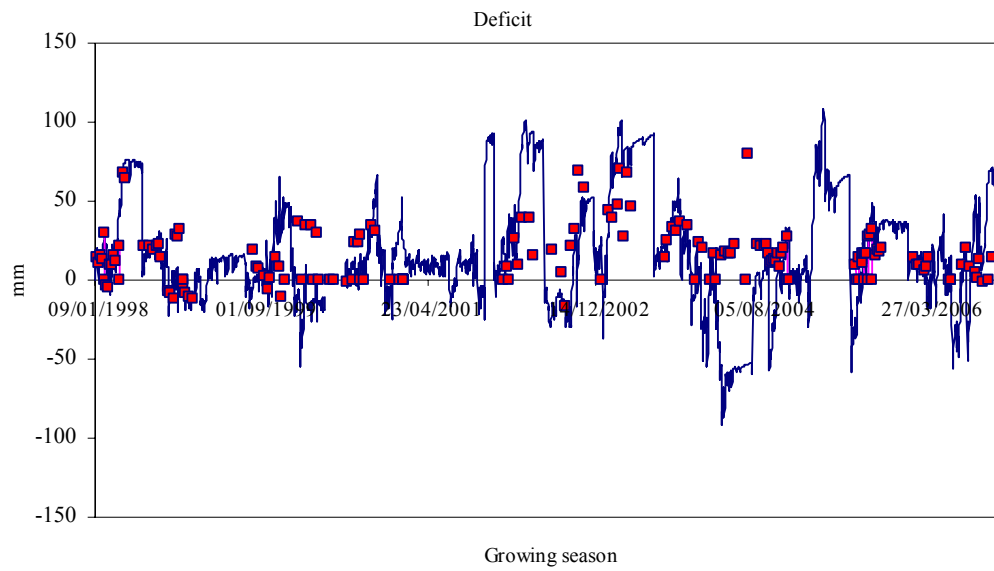


Figure B3. Simulated (solid lines) and measured (symbols) soil water deficit to field capacity (TWF, 1997/98-2006), positive values are deficit and negative values indicate profile wetter than field capacity

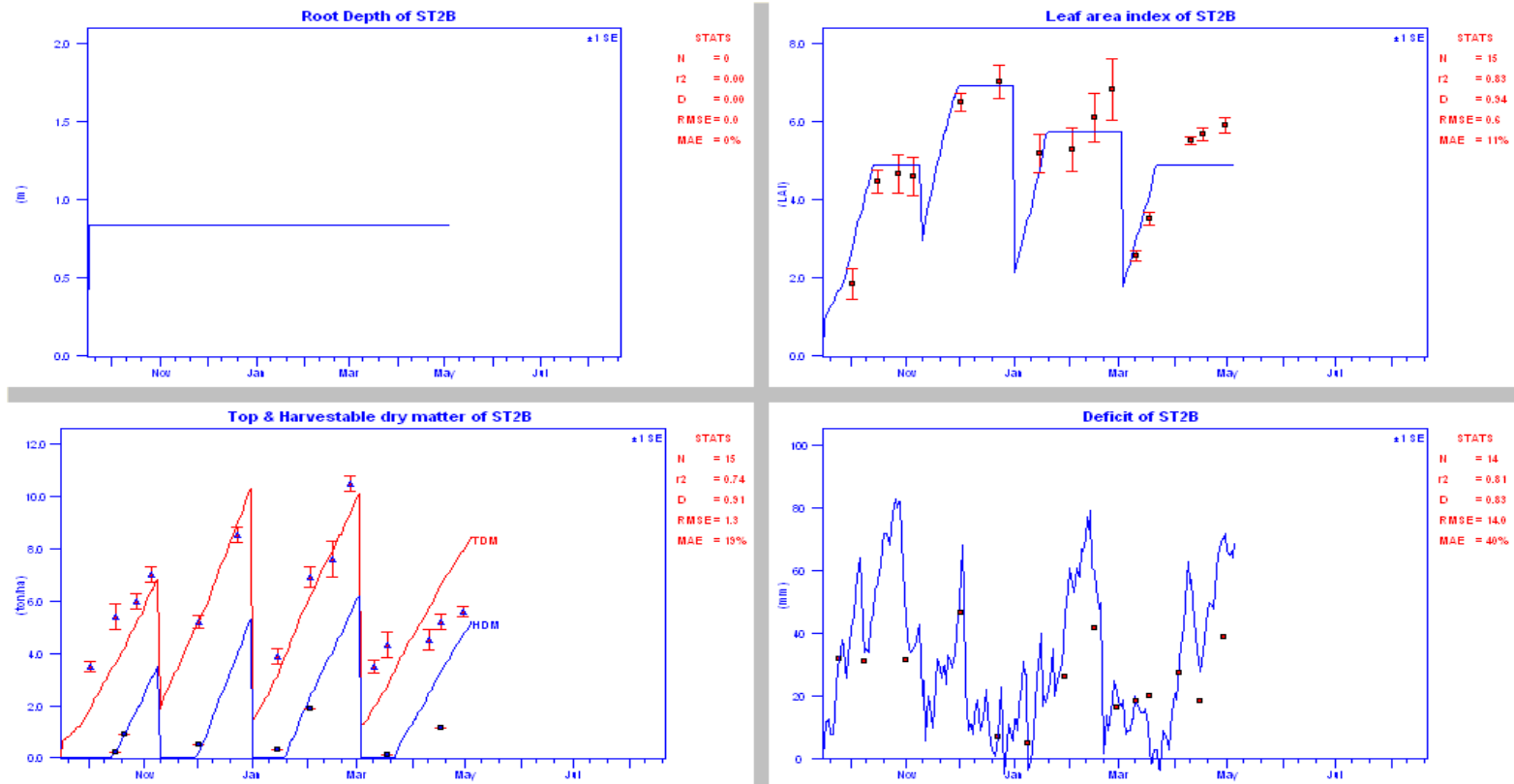


Figure B4. Simulated (solid lines) and measured values (symbols) of root depth (RD), leaf area index (LAI), top dry matter (TDM) and deficit to field capacity for Lucerne, September 2002 - May 2003

APPENDIX C

Table C1. Simulated seasonal values of the soil water balance components for each crop at the Syferfontein coal mine.

Crop	Growing period	Rainfall (measured) (mm)	Irrigation (measured) (mm)	Soil evaporation (simulated) (mm)	Crop transpiration (simulated) (mm)	Drainage (simulated) (mm)	Canopy interception (simulated) (mm)	Runoff (simulated) (mm)	Change in soil water storage (simulated) (mm)
Fescue (cv. lewag)	01/10/2001 to 17/04/2002	574	321	174	522	65	78	0	56
	01/05/2002 to 31/5/2003	801	1 417	346	1 636	107	191	0	-62
	01/06/2003 to 31/05/2004	861	489	225	916	72	91	56	-10
	Total	2236	810	745	1438	244	360	56	-16
Lucerne-fescue (cv. lewag)	01/10/2001 to 17/04/2002	574	278	121	659	21	91	0	-40
	01/01/02 to 31/5/2003	790	1 271	409	1203	54	209	121	65
	01/06/2003 to 31/05/2004	861	500	245	873	37	82	89	35
	Total	2225	778	775	2735	112	382	210	60
Fescue (cv. Demeter)	01/10/2001 to 17/04/2002	574	279	181	590	46	79	0	-43
	01/01/02 to 31/5/2003	828	1 797	320	1 818	265	221	0	-31
	Total	1402	279	501	590	311	300	0	-74
Eragrostis-ryegrass (cv. lewag)	01/10/2001 to 17/04/2002	574	278	172	594	51	76	0	-41
	01/01/02 to 31/5/2002	340	478	279	416	73	58	0	-8
	Total	914	756	451	1010	124	134	0	-49
Kikuyu	01/09/02 to 31/5/2003	359	984	238	923	84	110	0	-12



Table C2. Simulated seasonal values of the salt balance components for each crop at the Syferfontein coal mine.

Crop and season	Salts added (measured) (Mg ha ⁻¹)	Salts runoff (simulated) (Mg ha ⁻¹)	Salts leached (simulated) (Mg ha ⁻¹)	Gypsum precipitated (simulated) (Mg ha ⁻¹)	Change in soluble salt content in the soil (simulated) (Mg ha ⁻¹)
Fescue (cv. lewag) (from 01/10/2001 to 17/05/2004)	18.12	4.3	8.82	0.88	4.12
Lucerne-fescue (cv. lewag) (from 01/10/2001 to 17/05/2004)	21.47	3	9.53	3.67	5.27
Fescue (cv. Demeter) (from 01/10/2001 to 17/04/2002)	7.00	0	0.57	0.95	5.48
Eragrostis-ryegrass (cv. lewag) (from 01/10/2001 to 17/04/2002)	6.99	0	0.53	0.19	6.27
Average (from 01/10/2001 to 17/04/2002)	13.39	1.825	4.86	1.42	5.28