Supplementary Materials: Meta-Study on Sulphur Supply of Various Crop Species in Organic Farming between 1998-2023 in European Countries

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Table S1: Description of sites, trial setup and variants, and the range of recorded and calculated results for the meta-study on sulphur trials in Europe.

Site	Soil type[1]	Clay content[2]	Precipitation		pH value	Livestock farming / Organic fertilisation(3)	Input	S_{min}[9] analysis[4]	Trail type[5]	S fertiliser		Crop species / Crop rotation[7]	Dry biomass yield level MP[9]		S content Standard variants[8]			N:S ratios Standard variants[8]			S balance (brutto)	S uptake	Legume portion of mixture		N content MP		N removal MP		N_2 fixation legumes	
no.			Average	Aktual			S Deposition	Standard variants		Type[6]	Amount		Standard variants	Fertilisation variants	Young plants	Vegetative harvest material (straw)	Grain material	Young plants	Vegetative harvest material (straw)	Grain material	Standard variants	Total plant: MP, BP[9], HRR[9]	Standard-variants	Fertilisation variants	Standard-variants	Fertilisation variants	Standard-variants	Fertilisation variants	Standard-variants	Fertilisation variants
		(% DM[9])	(mm)	(mm)		(LU[9] ha^{-1})	(kg S ha^{-1})	(kg S ha^{-1})			(kg S ha^{-1})		(t DM ha^{-1})	(t DM ha^{-1})	(% S DM)	(% S DM)	(% S DM)	(S=1)	(S=1)	(S=1)	(kg S ha^{-1} year^{-1})	(kg S ha^{-1})	(% legumes)	(% legumes)	(% N DM)	(% N DM)	(kg N ha^{-1})	(kg N ha^{-1})	(kg N ha^{-1})	(kg N ha^{-1})
1	-	23	750	700-750	6.5-6.8	0.5	6.0	9-20	O, K, V, 16/6	Kieserite, Gypsum	60	LCG:	7.4-9.2	7.5-10.5	0.28-0.29+			-+			-9.9	29.0	43 - 53	39 - 56	2.66-2.84	2.86-3.02	210-245	220-305	156-212	160-287
												Maize (grain):	8.4-10.5	8.3-11.7	0.20-0.22			6.8-8.2			- 11.8—6.1	19.4-25.2			1.48-1.67	1.47-1.84	141-155	150-162		

												Maize (silage):	29.6-44.2	26.0-53.5	0.37			12.3			-	19.4-25.2			-	-	-	-		
2	uL	25	800	740-850	6.5	0	5.5	5-20	O, K, V, 16/6	Kieserite, Gypsum	60	LCG:	7.4-10.2	7.7-14.0	0.24-0.31+			-+			-16.5	29.7-30.4	76-77	71-76	2.94-3.18	3.22-3.38	235-300	260-450	220-300	249-504
												W. wheat:	4.7-4.8	4.1-5.5	0.21-0.25			-			-4.8—4.5	12.6-12.9			1.50-1.58	1.50-2.07	71-75	77-86		
3	Lt	30	700	620-660	7.2-7.3	0.3	5.5-6.5	20-30	O, K, V, 16/6	Kieserite, Gypsum	60	LCG:	6.0-9.7	5.8-9.1	0.28-0.35+			-+			-5.5—5.0	23.4	63-72	60-79	3.12-3.22	3.07-3.28	187-255	183-280	164-235	161-261
												Triticale:	5.3-7.3	4.8-7.8	0.21-0.27			-			-5.4—3.9	16.8-18.7			1.60-1.73	1.67-1.75	91-116	84-116		
4	lS	20	720	650-700	7.1-7.2	0	6.5	30-50	O, K, V, 16/6	Kieserite, Gypsum	60	LCG:	6.4-7.5	6.0-7.6	0.30-0.31+			-+			-13.5	27.7	28-59	24-66	1.93-2.81	1.87-2.82	145-180	142-175	60-147	44-142
												W. wheat:	5.3	5.3-6.0	0.31			-			-10.6	19.8			1.83	1.86	97	99		
												Maize (grain):	10.8	10.5-11.0	0.21			6.8			-15.5	24.4-27.8			1.40	1.45	150	161		
												Maize (silage):	29.4	26.4-29.6	0.45			10.0			-15.5	24.4-27.8			-	-	-	-		
5	lS-sL	17	500	530-550	5.2-5.5	0.2	5.5	8-40	O, K, V, 16/6	Kieserite, Gypsum	60	LCG:	4.4-5.6	5.3-6.2	0.28-0.33+			-+			-5.5	21.2	38	40-43	1.59-2.45	1.48-2.64	70-137	80-164	75	82-104
												W. wheat:	1.7-2.4	1.6-2.6	0.23-0.29						+3.1-+3.5	7.0-7.5			1.51-1.56	1.46-1.48	27-36	24-38		
6	sL	15	563	590-600	5.3-5.4	0	5.5	15-70	O, K, V, 10/4	Kieserite, Gypsum	60	LCG:	7.2	6.0-7.0	0.27-0.30+			-			-15.5	27.3-28.7	65	67-70	1.44-2.29	1.94-2.22	23-165	34-155	137	102-129
												W. wheat:	2.2	1.8-2.3	0.22			-			+1.5	6.1			1.38	2.33	30	41		
7	sL-Lt	25	650	620-650	6.6	1.0	6.5	29-60	O, K, V, 16/6	Kieserite, Gypsum	60	LCG:	8.0-13.0	8.8-12.9	0.30-0.31+			-+			-24.5	45.9-47.1	42-62	38-66	2.38-2.88	2.27-3.12	190-375	195-377	133-385	137-392
												Spelt:	1.9-3.9	1.6-4.1	0.24-0.25			-			+3.8-+8.5	6.5-11.5			1.82-2.12	1.81-2.28	34-82	29-84		
8	S	6	488	525-680	4.5-4.9	0	7.5	9-29	O, K, V, 26/8	Kieserite, Gypsum, Elem. S, Epsom salt leaf 8.4	40	Lupine:	1.9-2.6	1.9-2.7	0.23	0.24-0.31	0.26-0.30	-	2.0-5.0	17.0-22.0	-9.0--5.5	15.9			5.24-5.38	5.18-5.57	97-140	98-140	95-148	96-151
												Pea:	0.8-2.4	0.4-2.7	0.25	0.14	0.17-0.22	-	6.2-9.0	20.0-22.0	+0.8-+3.5	5.1-8.0			2.69-4.02	2.75-4.32	22-97	12-114	37-95	32-110
												Pea-cereal mix:	2.1	1.7-2.1	-	-	-	-	-	-	+0.5	9.0	86	82-86	3.19	2.92-3.12	67	53-63	59	52-55
												W. wheat:	1.1-1.7	0.6-1.9	-	0.07-0.14	0.13-0.16	-	6.0-6.5	12.0-16.0	+2.5-+4.5	4.8-7.0			1.64-1.76	1.64-1.76	18-30	18-30		
9	sL	20	485	500-600	6.1-6.2	0	5.0	23	O, K, V, 30/9	Kieserite, Gypsum, Elem. S, Epsom salt leaf	40	Lupine:	1.3-2.5	1.1-2.6	0.22	0.24-0.36	0.20-0.30	-	2.5-3.7	16.5-25.0	-5.5--2.6	10.1-13.3			4.85-4.90	4.76-5.27	63-123	58-133	69-160	65-177

										8.4																				
												Pea:	1.7-3.9	1.4-3.9	0.25-0.36	0.06	0.16-0.18	-	13.0-14.0	22.0	-3.0-+1.0	5.2-9.5			3.26-3.35	2.81-3.70	57-127	46-140	66-148	60-162
												Pea-cereal mix:	1.6-3.6	1.6-3.6	-	-	-	-	-	-	-2.5-+1.0	5.9-9.7	84-88	75-86	2.74-2.81	2.43-2.81	43-101	38-98	43-101	35-90
												W. wheat:	2.6-2.9	2.1-2.6	-	0.13	0.16	-	3.2	10.0	-5.5--2.5	9.6-12.2			1.50-1.62	1.44-1.52	41-47	32-33		
10	sL	17	612	630-750	5.0	0	7.5	22	O, K, V, 18/6	Kieserite, Gypsum, Elem. S, Epsom salt leaf 8.4	40	Lupine:	2.6	2.3-2.5	0.14	0.31	0.20	-	2.2	24.0	-7.0	17.4			4.46	4.45-5.06	116	109-117	106	103-115
												Pea:	2.3	1.9-2.3	0.20	0.09	0.16	-	11.7	18.0	+2.5	6.3			3.20	2.44-2.78	72	52-60	66	51-57
												Pea-cereal mix:	2.7	2.5-2.7	-	-	-	-	-	-	±0.0	9.6	46	47-53	1.37	1.36-1.58	37	36-41	14	14-18
												W. wheat:	1.5-1.8	1.4-2.1	-	0.06	0.15	-	6.5	13.0	+1.0-+2.0	7.5-8.5			2.89-3.13	2.61-2.75	47-52	47-53		
11	lS-L	17-23	834	800-860	6.7-7.4	0	5.5	12-21	O, K, V, 52/18	Kieserite, Gypsum, Elem. S, Epsom salt leaf 8.4	20-40	Field bean:	1.4-2.0	1.3-2.3	0.21	0.05-0.06	0.12-0.16	-	19.0-24.0		-0.5-+1.9	6.7-8.9			4.57-4.95	4.49-5.38	64-99	56-121	100-130	93-151
												Pea:	1.2-4.1	1.1-4.1	0.17-0.32	0.06-0.10	0.15-0.17	-	10.0-47.0		-5.3-+3.3	3.4-11.8			1.77-3.89	1.66-4.30	41-73	35-78	62-76	53-82
												Pea-cereal mix:	0.9-4.6	0.8-5.1	-	-	-	-	-		-5.0-+3.5	3.8-12.9	32-70	32-79	0.61-2.24	0.63-2.44	19-30	18-35	9-25	10-31
												W. wheat:	1.0-2.1	0.9-2.0	-	0.18	0.17	-	2.1		-2.0-+2.7	4.8-9.5			1.72-1.80	1.57-1.67	18-31	15-31		
												S. barley:	2.4	2.6	-	-	-	-	-		-0.3	6.6			-	-	-	-		
12	sL	20	861	680-700	6.4	0	6.5	15-25	O, K, V, 18/6	Kieserite, Gypsum, Elem. S, Epsom salt leaf 8.4	40	Field bean:	2.7	3.0-3.5	-	0.12	0.19	-	12.0	23.0	-7.5	17.3			4.37	4.20-4.42	118	126-152	153	161-193
												Pea:	1.1	1.0-1.8	-	0.12	0.17	-	10.0	18.0	+3.5	4.2			3.27	3.16-3.25	36	33-57	54	51-67
												Pea-cereal mix:	2.7	2.2-2.7	-	-	-	-	-	-	+0.5	8.1	49	52-60	1.52	1.74-1.97	41	25-50	21	21-31
												W. wheat:	2.9-3.4	2.7-3.6	-	0.12	0.16	-	5.5	11.0	-1.8--1.5	10.2-10.6			1.79-1.88	1.60-1.81	52-60	45-61		
13	sL	22-25	817	775	6.7	0	10.0	19	O. K. V. 27/8	Kieserite, Gypsum, Elem. S, Epsom salt leaf 8.4		Field bean:	4.8-5.4	4.1-6.4	-	0.09	0.20	-	11.0	19.0-23.0	-7.4--5.0	19.0-21.2	-	-	4.54-5.08	4.25-6.27	245	230-275	327-349	288-465

												Pea:	4.3-6.0	3.0-6.1	0.29	0.12	0.22	-	6.0	16.0-16.5	-6.8--1.9	13.5-18.6	-	-	-	-	-	-	-	-
												Pea-cereal mix:	5.7-6.5	3.0-6.5	-	-	-	-	-	14.0	-6.5--5.9	18.5-19.2	24	25-34	0.85-0.97	0.92-1.22	55	57-75	16-20	18-36
												W. wheat:	3.5-3.9	3.6-4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	sL	18	612	600-750	5.6	0	7.5	6-22	O, K, V, 18/6	Kieserite. Gypsum, Elem. S, Epsom salt leaf 8.4	40	Lupine:	1.6	1.4-1.7	0.22	0.27	0.32	-	4.0	19.0	-9.0	19.1			6.00	5.73-6.20	93	80-101	95	85-101
												Pea:	2.3	2.2-2.6	0.31	0.13	0.21	-	13.0	17.0	+0.5	8.3			3.72	3.70-3.81	86	82-99	85	83-95
												Pea-cereal mix:	3.3	3.1-3.4	-	-	-	-	-	-	-8.0	17.7	38	35-48	1.56	1.41-1.76	51	48-59	19	16-27
												W. wheat:	2.8-3.3	3.1-3.7	-	0.08	0.14	-	6.0	12.0	-1.5--0.2	9.9-11.2			1.71-1.78	1.64-2.42	48-58	51-80		
15	lS-sL	16-20	817	630	7.0	0.2	10.0	14	O, K, 8/2	Kieserite, Gypsum, Elem. S, Epsom salt leaf 8.4		Field bean:	2.2-3.9	1.9-4.2	-	0.09	0.22	-	15.4	22.0	-1.0-+5.3	10.6-14.6			4.74-8.60	4.50-9.11	185	158-192	210-235	178-246
16	lS	12	665	575	6.3	0	7.5	6	O, K, 11/4	Kieserite, Gypsum, Elem. S, Epsom salt leaf 8.4	40	Pea:	0.7	0.5-0.7	0.31	0.13	0.22	-	10.0	22.0	+3.5	5.1			5.14	5.53	36	25-28	66	46-57
												Pea-cereal mix:	1.1	0.9-1.2	-	-	-	-	-	-	+3.7	5.6	58	50-67	2.18	2.00-2.66	24	23-25	21	17-26
17	lS	10	566	550	5.3	0	5.5	7	O, K, 16/4	Kieserite, Gypsum, Elem. S, Epsom salt leaf 8.4	40	Pea:	2.9	2.9-3.2	0.34	0.10	0.20	-	13.0	22.0	-2.8	9.7			3.16	3.30-3.54	92	97-113	87	92-108
												Pea-cereal mix:	2.4	2.5-2.6	-	-	-	-	-	-	-2.6	10.2	67	66-70	2.27	2.24-2.46	55	56-62	36	37-41
18	sL	20	656	600	5.2	0	7.5	11	O, K, 6/2	Kieserite, Gypsum, Elem. S, Epsom salt leaf 8.4	40	Field bean:	3.2	3.1-3.7	0.32	0.09	0.26	-	11.8	20.0	-4.0	14.9			5.00	4.98-5.25	160	160-188	191	191-225
19	lU	17	624	590	6.0	0	7.5	9	O, K, 14/5	Kieserite, Gypsum, Elem. S, Epsom salt leaf	40	Lupine:	1.2	0.9-1.1	0.24	0.12	0.27	-	7.5	19.0	+2.1	7.9			5.00	4.72-5.62	60	47-56	67	57-68

										8.4																				
												Pea:	2.1	1.8-2.1	0.29	0.09	0.16	-	11.0	22.0	+2.5	6.3			3.24	3.02-3.32	68	60-64	70	66-67
												Pea-cereal mix:	2.2	2.1-2.3	-	-	-	-	-	-	+1.7	7.8	63	62-68	1.91	1.91-2.10	42	42-47	27	27-31
20	lS	15	858	760	6.3	0	6.0	13	O, K, 16/4	Kieserite, Gypsum, Elem. S, Epsom salt leaf 8.4	40	Field bean:	1.3	1.1-1.4	0.27	0.10	0.20	-	15.5	26.0	-1.0	9.9			5.04	4.14-5.57	63	46-64	102	77-107
												Pea:	1.2	1.2-1.6	0.32	0.14	0.19	-	7.5	22.0	+2.5	4.7			2.88	2.69-2.85	35	33-43	49	47-52
												Pea-cereal mix:	1.8	1.8-1.9	-	-	-	-	-	-	+1.7	6.2	55	50-61	1.53	1.36-1.67	28	25-30	17	14-20
21	lS	10	816	700-740	6.2-6.4	0.0-0.6	10.0	15-22	O, K, 25/7	Kieserite, Gypsum, Elem. S, Epsom salt leaf 8.4	40	Field bean:	2.3-3.0	2.1-3.0	0.21	0.09	0.24	-	16.0	21.0	2.0-6.8	11.4			4.73-6.23	4.82-6.63	142	124-145	171-183	159-184
												Pea:	3.1-3.7	3.1-3.8	0.32	0.16	0.21	-	7.0	18.0	-0.2-+6.3	10.1-11.7			-	-	-	-	-	-
												Pea-cereal mix:	3.7-4.4	3.3-4.5	-	-	-	-	-	-	-2.0-+2.7	14.2-14.7	18	14-27	0.55-0.71	0.52-1.03	24	20-37	4-5	3-10
												S. wheat:	4.5	4.7	-	-	-	-	-	-	+4.6	12.3			2.19	2.11	99	99		
22	sL	18	883	770	5.7	0	6.5	13	O, K, 12/3	Kieserite, Gypsum, Elem. S, Epsom salt leaf 8.4	40	Field bean:	4.0	3.5-3.6	0.30	0.07	0.20	-	19.0	26.0	-5.5	15.6			5.08	5.08-5.45	203	183-193	265	235-248
												Pea:	3.8	3.4-4.2	0.22	0.12	0.22	-	10.0	22.0	-5.5	13.5			3.55	3.37-3.78	133	123-143	142	128-160
												Pea-cereal mix:	4.4	4.0-4.3	-	-	-	-	-	-	-5.0	13.9	68	64-69	2.86	2.49-2.60	126	92-112	97	65-90
23	S-Sl	6-8	542	542-688	5.9-6.3	0.5	5.0-5.5	9-48	O-s, K, 31/7	Kieserite, Gypsum, Elem. S, Potassium sulphate. Kainite	30-120	Clover-grass:	7.9-10.4	7.7-10.6	0.10-0.20	-	-	-	-	-	+0.5-+49.2	16.6-29.5			-	-	-	-	-	-
												Lupine:	2.5	2.1-2.5	0.31	0.12	0.21	-	-	-	-0.5-+1.9	10.9-13.3			4.48	4.51-4.71	112	97-114	121	100-123
												Pea:	2.4	2.5-2.7	0.29	0.12	0.21	-	-	-	+1.5-+3.3	8.0-9.8			2.64	2.54-4.10	64	64-106	67	67-109
												S. wheat:	3.2	3.5	0.28	0.07	0.12	14.6	7.1	17.5	+3.0	9.2			2.10	2.02	68	70		

24	sL	21-22	706	660-710	6.4	0.5	6.0	-	O-s, K, 17/10	Kieserite, Gypsum	30-60	Clover-grass:	6.8-12.4	8.0-12.9	0.13-0.24	-	-	12.9-21.5	-	-	-5.0-+21.7	16.4-32.6			2.26-3.37	2.37-3.39	153-419	238-439	-	-
												Lupine:	1.9-3.2	2.0-3.1	-	-	-	-	-	-	-3.5-+2.5	10.2-16.5			4.54-6.05	4.60-6.19	94-167	89-162	91-178	87-168
25	sL	20	850	850	5.3-5.6	2	6.5	-	L, K, 5/2	Korn-Kali, Elem. S, Mg-Kainite	25-55	Permanent grassland:	11.7-12.5	11.7-12.7	0.26	-	-	10.0	-	-	-5.5--3.5	27.0-29.0			2.30-2.37	2.24-2.35	269-297	275-294	-	-
26	uL-lU	26-28	670	560-650	5.9-7.0	1.0+	6.0-6.5	2-(50)	O-s, K, V, 98/38	Kieserite, Gypsum, Elem. S, +	15-140 (696)	LCG:	3.1-15.2	4.6-15.6	0.17-0.29+	-	-	13.2-17.2+	-	-	-17.6-+39.2	15.0-48.6	70-81	70-87	2.45-4.57	2.67-4.67	127-470	209-490	178-542	235-577
												W. wheat:	2.8-4.0	2.3-5.3	-	-	-	-	-	-	-3.2-+43.8	9.4-11.9			-	-	-	-		
												W. rape:	0.4-1.9	1.5-1.9	0.37-0.52	-	-	9.2-13.0	-	-	+5.7-+78.0	5.5-20.0			-	-	-	-		
												Spelt:	4.1	3.9-4.1	-	-	-	-	-	-	-5.4	11.3			-	-	-	-		
27	lS-lU	12	840	724-822	5.8-6.3	0.8	9.5-11.0	5-40	O, K, 17/11	Gypsum, Elem. S, Potassium sulphate, +	35-40	Field bean:	1.7-4.2	2.1-4.5	0.13-0.25	0.11-0.24	0.15-0.21	19.7-33.0	8.2-32.6	21.0-34.3	-4.9-+6.4	9.2-25.0			1.53-8.11	1.64-8.15	58-235	67-235	88-277	90-286
												Soya bean:	2.4-4.3	2.1-4.5	0.20-0.24	0.21-0.24	0.33-0.72	10.0-16.7	6.4-16.3	9.4-19.4	-15.3-+3.4	18.1-34.7			4.80-6.72	4.87-6.95	120-284	102-300	52-91	57-99
28	sL	28	650	627-933	6.0-6.2	0	10.0	-	O-s, K, 15/6	Elem. S, Epsom salt	20-60	W. wheat:	1.8-2.6	1.7-2.6	-	-	0.13-0.16	-	-	11.9-14.2	+1.8-+44.8	7.1-12.2			1.63-2.14	1.44-2.10	30-54	29-54		
29	sL	22	650	610-900	5.5-6.2	0	10.0	-	O-s, K, 16/6	Elem. S, Epsom salt	20-60	W. wheat:	1.9-4.6	1.8-4.5	-	-	0.13-0.15	-	-	12.3-15.4	+0.3-+42.5	8.7-15.0			1.61-2.13	1.57-2.08	38-77	33-74		
30	L	25	630	673	6.5	0.5	10.0	-	O-s, K, 10/3	Potash magnesia	50-400	W. wheat:	4.1-4.3	4.2-4.3	-	-	0.14-0.15	-	-	13.8-14.0	+2.0-+185.9	15.3-21.5			1.96-2.04	1.94-2.07	80-87	83-89		
31	lS-sL	17	750	750	6.3	0	-	(15)	O, K, 1/1	Potassium sulphate	35	Field bean:	1.1	1.1	0.23	-	-	-	-	-	+7.0	6.9			4.88	4.88	55	52	-	-
32	sL	20	750	718	6.1	2.0	-	(10)	O, K, 1/1	Potassium sulphate	35	Field bean:	0.8	1.1	0.23	-	-	23.9	-	-	+18.2	5.6			4.88	4.88	38	55	73	97
33	uL-Lt	27	779	545-682	6.0-6.9	0	9.5	(20)	O, K, 7/5	Gypsum, Elem. S, Potassium sulphate. +	35-40	Field bean:	2.6-3.9	2.9-4.3	0.11-0.28	0.10-0.11	0.13-0.16	17.9-33.5	32.0-33.5	25.5-32.0	-4.6-+18.2	12.8-17.0			4.18-4.88	3.88-4.88	129-164	141-162	79-90	76-173
												S. wheat:	3.1	3.3	-	-	-	-	-	-	+4.0	8.7			-	-	-	-		
34	lS-	15	816	800-	6.3-	0	5.0	-	O, K, 4/2	Kieserite.	40	Pea:	4.8-	4.7-	-	-	-	-	-	-	-9.1--	14.9-			-	-	-	-	-	-

	sL			820	6.4					Gypsum			5.0	4.8							8.3	15.8								
35	sL	20	816	810-900	6.8	0	5.5	-	O, K, 4/4	Kieserite	30	Field bean:	3.1-5.3	3.1-5.4	-	-	-	-	-	-	-13.9--5.7	14.6-23.1			-	-	-	-	-	-
												Pea:	4.1-4.3	3.9-4.3	-	-	-	-	-	-	-6.5--6.0	13.1-13.6			-	-	-	-	-	-
34 36	lS-sL	13-18	800	800	6.2	0	5.0	-	O-s, K, 7/4	Kieserite	20-40	LCG:	12.3-15.0	14.2-15.5	-	-	-	-	-	-	-31.9--13.2	42.1-50.1	65-78	63-78	2.65-2.90	2.85-2.98	326-435	403-461	330-416	441-508
												W. wheat:	5.5	5.6	-	-	-	-	-	-	-8.2	15.9			1.83	1.84	101	102		
34 36 37 38	lS-uL	13	632-1007	-	-	0.1	5.0	-	O-s, K, V, 41/16	Kieserite, Gypsum, Elem. S	20-60	LCG:	12.4-15.8	13.1-15.8	0.09-0.19	-	-	17.4-39.9	-	-	-26.7-+7.7	42.5-52.4	74-84	77-92	2.81-2.92	2.84-3.13	350-363	378-449	365-387	405-509
												W. wheat:	4.0	4.3-4.7	-	-	-	-	-	-	-4.6	-			-	-	-	-		
11 34 36 39 40	lS-uL	13	677-887	-	-	0	5.0	-	O, K, 5/5	Kieserite, Gypsum	40	W. wheat:	3.4-5.0	3.6-5.0	-			-			-6.9--3.3	10.6-14.5			-	-				
36 39 40	sL-uL	20	604-786	-	-	0	5.0	-	O, K, 1/-	Kieserite	40	W. wheat:	4.9	5.0	-	-	-	-	-	-	-6.3	14.5			1.79	1.79	88	89		
41	sL	20	835	630	6.4	0.3	6.5	11-(25)	O-s, K, 18/9	Gypsum, Elem. S	30-60	Lupine:	2.4-2.5	2.3-2.7	0.18-0.21	-	-	14.9-16.8	-	-	-0.5-+26.1	12.8-13.3			5.48-5.67	5.49-5.82	135-141	126-154	140-149	130-166
												Pea:	2.9-3.0	2.6-3.0	0.17	-	-	18.1-22.1	-	-	+1.4-+28.3	9.5-9.8			3.51-3.75	3.65-3.76	105-110	99-112	105-110	100-112
												Field bean:	3.2-3.9	3.4-3.9	0.26-0.27	-	-	22.5-23.2	-	-	-2.2-+23.6	15.1-17.5			4.63-4.77	4.75-4.81	150-184	160-184	187-233	200-233
42	sL	20-25	700	600-1100	6.3-6.9	0.3	6.0-6.5	14-128	O-s, K, 31/12	Kieserite, Gypsum, Elem. S, Epsom salt leaf 16, +	25-60	Pea:	3.3-3.6	3.3-3.6	0.16-0.18	-	-	15.8-17.8	-	-	-0.8-+30.4	10.5-11.5			2.89-3.09	2.89-2.99	98-111	98-106	96-111	96-107
												W. wheat:	4.3-7.0	4.2-7.0	0.20-0.24	-	-	10.9-11.4	-	-	-7.8-+26.1	12.9-19.8			1.84-1.91	1.58-1.97	80-134	80-126		
												W. rape:	1.0-2.7	1.2-2.6	0.58-0.84	-	-	4.0-5.5	-	-	-10.3-+0.6	11.4-27.6			-	-	-	-		
43	lS-sL	12-19	824	830-850	6.1	0	6.5	-	O, K, 4/2	Gypsum, Elem. S	50	Pea:	2.3	2.5-2.8	-	-	-	-	-	-	+0.2	7.6			4.10	4.16-4.18	92	104-116	95	104-114
												Field bean:	3.8	3.3-3.6	-	-	-	-	-	-	-7.0	17.0			4.46	4.82-4.86	167	157-175	207	193-215
44	-	-	824	-	-	0	-	-	O-s, K, 6/-	Gypsum, Elem. S	30-60	Lupine:	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-
45	lS	10-12	760-780	650-824	5.5-6.2	0	6.0-7.5	7-(65)	O-s, K, 37/13	Kieserite, Gypsum, Elem. S, Patent-Kali, Epsom salt leaf 16, +	20-80	W. wheat:	3.0-5.1	2.8-5.4	0.18-0.20	-	-	10.4-12.5	-	-	-6.3-+25.9	9.4-14.9			1.79-2.07	1.79-2.04	60-96	51-103		
												Soya bean:	1.3-1.7	1.4-2.0	0.23-0.26	-	-	-	-	-	+1.5-+62.1	7.4-9.0			5.97-7.14	5.79-6.56	79-107	79-131	48-72	55-89

46	lS	12	750	660	-	0	6.0	11-(27)	O-s, K, 6/-	Gypsum, Elem. S	30-60	Field bean:	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-
47	sL	19	618	595	5.2	0	6.0	-	O, K, 5/1	Kieserite, Gypsum, Elem. S	40	W. pea-triticale mix:	2.8	2.2-2.8	0.10	-	-	24.0	-	-	-1.0	9.1	56	52-76	2.44	2.44-3.01	67	58-72	36	33-47
48	sL-L	26	667	800-990	6.3	0	8.5	30-57	O, K, 7/6	Kieserite	25	Edible pea:	1.2-2.8	0.6-2.9	-	0.09-0.18	0.15-0.18	16.8-22.0	12.7-18.6	21.3-26.3	-6.6-+2.4	7.4-16.5			3.71-4.47	3.75-4.34	45-105	24-109	64-100	46-104
49	L	28	700	540-800	6.5	0	7.0-8.5	-	L, K, 13/7	Gypsum, Elem. S	25-30	Clover-grass:	10.4-12.3	9.3-13.1	-	-	-	-	-	-	-26.1--20.5	36.5-42.0			-	-	-	-	-	-
												Field bean:	4.1	4.2-4.3	-	-	0.24	-	-	-	-6.4	18.5			-	-	-	-	-	-
												Maize (grain):	3.1	3.5	-	-	-	-	-	-	-1.5	11.3			-	-	-	-		
												Triticale:	5.1	4.6-5.6	-	-	-	-	-	-	-4.2	14.1			-	-	-	-		
												Spelt:	4.5	4.0-4.6	-	-	-	-	-	-	-1.8	12.2			-	-	-	-		
50	S-Sl	7-8	600-900	-	-	0.7	10.0	-	O, K, 8/8	Kieserite	50-60	W. vetch (catch crop):	1.5	2.2	0.10	-	-	29.0	-	-	13.6	2.5			0.45	0.63	7	14	-	-
												Clover-grass:	6.7-15.3	7.2-17.0	-	-	-	12.3-16.4	-	-	-16.0-+0.9	21.4-40.1			2.43-3.09	2.44-2.91	168-418	195-483	-	-
51	-	19-20	600-900	-	-	0.7	9.5	-	L, K, 3/3	Kieserite	60	Permanent grassland:	6.4-9.0	5.6-8.7	-	-	-	9.0-11.8	-	-	-7.0--4.6	19.1-21.5			2.13-2.54	2.09-2.79	191-221	182-230	-	-
52	lS	10-12	600-900	-	-	0.6	-	-	L, K, 4/4	Kieserite	60	Permanent grassland:	7.6-11.7	7.2-12.5	-	-	-	7.1-12.0	-	-	-13.5--6.9	21.4-28.0			2.00-2.52	2.17-2.44	152-248	157-261	-	-
53	L	26-27	600-900	-	-	0.6	-	-	O, K, 4/4	Kieserite	60	Clover-grass:	12.2-16.9	12.4-17.2	-	-	-	12.4-16.1	-	-	-25.0--10.1	33.5-49.4			2.53-3.34	2.61-3.25	309-544	325-560	-	-
54	sL	20	817	643	6.7	0	3.0	35	O, K, 3/1	Patent-Kali, Epsom salt leaf 3, +	40	Edible pea:	0.6	0.5-0.6	-	-	0.19	-	-	22.8	+0.9	3.3			4.34	4.27-4.43	27	22-27	58	50-59
55	Sl	8	760	660-680	6.0	0	7.5	15-(115)	O-s, K, 20/8	Patent-Kali	20-80	Soya bean:	1.4-1.9	1.4-1.9	0.24-0.27	-	-	-	-	-	+1.3-+62.0	7.7-9.5			6.10-6.41	5.80-6.32	88-108	86-116	58-70	56-75
56	Lt	27	420	425	-	0	5.0	18	S, K, 3/1	Gypsum, Elem. S, +	40	Clover-grass:	4.4	4.1-5.2	-	-	-	-	-	-	-3.0	15.3	49	-	-	-	-	-	-	-
57	Lt	28	730	563	-	0	5.0	9	S, K, 3/1	Kieserite, Gypsum, Elem. S, +	40	Clover-grass:	2.9	2.5-2.7	0.12-0.14	-	-	7.1-10.0	-	-	+1.2	10.8	62	62-65	4.61	5.06-5.61	133	138-142	102	109-111
58	Sl	7	780	723	-	0	5.0	6	S, K, 4/1	Kieserite, Gypsum, Elem. S, Patent-Kali	40	Clover-grass:	3.5	2.1-3.6	-	-	-	-	-	-	-1.4	13.5	18	-	-	-	-	-	-	-
59	uL	18	690	563	-	0	5.0	8	S, K, 2/1	Gypsum, Elem. S	40	Clover-grass:	1.9	2.0	0.20	-	-	12.7	-	-	-1.2	10.6	91	92	6.96	6.68-6.71	133	131-134	104	101-104
60	sL-uL	17	560	437	-	0	5.0	21	S, K, 2/1	Gypsum, Elem. S	40	Clover-grass:	4.1	3.5-4.2	-	-	-	-	-	-	-2.4	14.7	-	-	-	-	-	-	-	-

61	sL-uL	18	816	752	-	0	5.0	18	S, K, 2/1	Kieserite, Gypsum	40	Clover-grass:	4.5	4.6-5.0	0.17-0.20	-	-	13.3-15.2	-	-	-3.1	15.4	37	34	3.46	2.55-2.83	156	128-131	91	58-61
62	sL-uL	17	760	710	7.3	0	5.0	5	S, K, 3/1	Kieserite, Gypsum, Elem. S	40	Clover-grass:	5.4	8.4-12.8	0.11	-	-	20.5-22.4	-	-	-1.0	13.5	60	67 - 82	2.24	2.33-2.51	122	197-313	89	172-314
63	uL	19	710	653	7.4	0	5.0	8	S, K, 3/1	Kieserite, Gypsum, Elem. S, +	40	Clover-grass:	4.8	4.3-7.2	0.11-0.12	-	-	23.1-25.5	-	-	-0.8	13.2	70	65 - 70	2.67	2.69-3.08	129	117-220	103	88-199
64	Sl	7	713	702	5.0	0	5.0	4	S, K, 3/1	Kieserite, Gypsum, Elem. S	40	Clover-grass:	5.1	4.0-4.9	-	-	-	-	-	-	-4.1	16.6	-	-	-	-	-	-	-	-
65	Sl	8	883	678	6.4	0	5.0	9	S, K, 3/1	Kieserite, Gypsum, Elem. S	40	Clover-grass:	16.9	17.8-21.4	-	-	-	-	-	-	-25.4	40.3	-	-	-	-	-	-	-	-
66	sL-uL	18	930	762	-	0	5.0	9	S, K, 3/1	Kieserite, Gypsum, Elem. S	40	Clover-grass:	3.7	2.8-4.2	0.18	-	-	10.3	-	-	-1.6	13.8	59	45 - 53	3.97	4.25-4.97	146	141-202	112	91-162
67	L	30	748	680	7.3	0+	5.0	20	S, K, 2/2	Elem. S	40	Soya bean:	3.2-3.4	3.4-3.7	0.23-0.24	-	-	17.0-17.6	-	-	-7.7-+29.9	14.8-15.5			5.70	5.74-5.77	182-191	199-212	154-157	165-192
68	L	28	816	-	-	0.5 +	5.0	-	S, K, 4/4	Kieserite, Gypsum, Elem. S, +	40	W. wheat:	5.0-6.5	5.5-5.8	0.12-0.21	-	-	-	-	-	-6.6--2.8	14.5-18.6			-	-	-	-		
69	tL	36	539	-	-	0	5.0	8	S, K, 3/3	Gypsum	40	Lucerne:	5.8-7.3	6.3-7.2	0.22	-	-	14.9	-	-	-8.2--5.4	13.1-16.2	10 0	10 0	3.25	3.18	187-238	200-229	157-218	172-207
70	L	27	602	520	-	0	5.0	-	O, K, 1/1	Kieserite	40	Millet:	2.6	2.6	-	-	-	-	-	-	-3.7				2.23	1.92	59	50		
71	sL	22	796	616-642	-	0	-	-	O, K, 2/2	Kieserite	40	Millet:	1.0-2.9	0.9-2.8	-	-	-	-	-	-	-4.4-+1.8	-			1.53-2.22	1.73-2.09	21-44	19-49		
72	L	24-26	1142	968-1164	6.2	2.0 +	3.0-4.0	(12-28)	L-s, K, 39/26	Kieserite. Gypsum, Elem. S	30 - 90	Permanent grassland:	7.6-16.1	8.3-16.2	0.19-0.34	-	-	6.6-12.8	-	-	-34.8-+49.2	14.6-54.6	5-13	5-14	2.03-3.76	2.06-3.78	155-466	171-458	19-66	21-72
73	uL	23-25	568	363-378	7.6	0	5.0	8-(27)	O-s, K, 19/10	Kieserite, Gypsum, Elem. S, +	35 - 70	Lucerne:	9.7-10.0	9.6-10.1	0.22-0.25	-	-	11.5-12.3	-	-	-16.5-+18.1	28.7-33.4	10 0	10 0	2.83-2.96	2.91-2.96	276-294	284-294	275-298	285-298
												Pea:	1.8-1.9	1.9-2.0	-	-	-	-	-	-	-9.8--8.5	14.7-15.7			3.45-3.53	3.43-3.47	63-67	64-68	73-76	73-76
												Soya bean:	3.0-3.4	2.8-3.0	-	-	-	-	-	-	-9.5--8.3	16.0-17.0			6.60-6.75	6.51-6.73	199-227	189-198	49-53	46-50
												W. wheat:	5.3-5.5	5.5-5.8	0.14-0.16	-	0.15	8.1-13.1	-	13.1	-12.2-+21.1	19.9-21.6			1.84-1.97	1.84-1.88	101-104	101-108		
74	-	-	759	-	-	0	5.0	-	O, K, 2/1	Kieserite, Elem. S	10 - 40	Soya bean:	3.3	2.9-3.5	-	-	-	-	-	-	-7.4	15.1			7.04	7.04-7.15	230	208-249	62	56-68
75	-	-	759	588	-	0	-	-	O, K, 1/1	Kieserite	40	Maize (grain):	7.7	7.8	-	-	-	-	-	-	-6.6	13.7			-	-	-	-		
76	Lt	30	759	588	7.2	0	-	-	O, K, 1/1	Kieserite	40	Maize (grain):	9.9	93	-	-	-	-	-	-	-9.9	17.2			-	-	-	-		
77	lS-uL	12-17	840	713-1111	6.8-6.9	0	4.5-5.0	-	O-s, K, V, 54/34	Kieserite, Gypsum, Elem. S,		LCG:	8.4-10.3	9.2-11.0	0.15	-	-	16.7-16.9	-	-	-14.0-+29.6	21.8-26.9	60 - 65	57 - 65	2.26-2.69	2.29-2.72	227-249	247-252	204-225	224-230

										+																				
												Lucerne, Lucerne-grass:	9.6-12.0	9.6-12.0	-	-	-	-	-	-	-15.7-+25.6	26.1-31.2	65-72	56-76	2.47-2.62	2.56-2.66	248-315	246-315	232-317	217-317
												Red clover, Red clover-grass:	8.1-9.0	8.6-9.5	-	-	-	-	-	-	-10.9-+29.0	21.7-22.8	51-59	51-60	2.29-2.44	2.30-2.46	186-216	198-229	149-178	159-201
												Lucerne:	1.2-1.8	0.9-1.8	-	-	0.28-0.33	-	-	15.2-16.7	-1.2-+0.2	6.9-8.2			4.75-5.27	4.46-5.49	47-92	41-98	57-91	52-96
												Pea:	1.7-2.3	1.7-2.0	-	-	0.22-0.26	-	-	17.4-18.0	-4.4--3.3	9.1-10.1			4.38-5.27	4.43-5.49	88-104	91-98	96-105	95-109
												Field bean:	1.7-1.8	1.7-1.8	-	-	0.24	-	-	21.9	-2.2--2.1	9.6-9.7			5.12-5.27	5.31-5.49	88-92	96-98	125-131	136
												Soya bean:	1.7-3.8	1.7-3.7	-	-	0.33-0.38	-	-	17.8-20.1	-13.8--6.5	13.4-21.1			5.12-6.74	5.31-7.09	92-254	98-261	57-75	56-72
												W. field bean:	1.4	1.3-1.5	-	-	-	-	-	-	-0.1	-			-	-	-	-	-	-
												W. pea:	2.4	2.4-2.9	-	-	-	-	-	-	-1.7	-			-	-	-	-	-	-
												Edible bean:	1.3	1.1-1.4	-	-	-	-	-	-	0.4	7.5			3.82	3.80-4.46	49	50-53	78	81-84
												Edible lentil:	0.6	0.5-0.8	-	-	-	-	-	-	+3.0	3.7			7.53	6.48-8.17	44	39-45	-	-
												Edible lentil-cereal mix:	0.8	0.7-0.8	-	-	-	-	-	-	-	-			-	-	-	-	-	-
												W. wheat:	4.3	4.3	-	-	-	-	-	-	-5.8-+34.1	12.8			-	-	-	-		
78	lS-sL	12-15	840-1002	1000-1111	6.7-6.8	0	4.5	-	O-s, K, V, 21/14	Elem. S	40-80	LCG:	5.4-8.9	5.5-8.9	0.18	-	-	13.4-13.7	-	-	-10.7-+34.7	16.8-24.1	58-66	60-66	2.42-2.44	2.43-2.50	129-217	134-217	95-190	105-190
												Lucerne, Lucerne-grass:	4.8-5.5	4.6-5.5	-	-	-	-	-	-	-5.1-+35.7	16.1-17.3	30-74	30-74	2.42-2.53	2.46-2.61	118-137	120-137	51-98	56-98
												Red clover, Red clover-grass:	5.2-6.0	5.6-6.0	-	-	-	-	-	-	-6.4-+34.4	15.1-17.7	66-86	66-86	2.34-2.43	2.35-2.53	127-142	134-142	102-117	107-121
												W. wheat:	2.5	2.5	-	-	-	-	-	-	-1.4-+38.5	8.1			-	-	-	-		
79	lS-uL	10	833	836	-	0	5.0	-	S, K, 2/2	Kieserite	30	Soya bean:	2.3-2.6	2.5-2.8	-	-	-	-	-	-	-4.8--3.6	11.2-12.4			6.83-7.23	7.17-7.19	164-176	179-199	49-53	51-54
80	S	5	964	964	6.1	ja	10.0	-	L, K, 1/1	Gypsum	30	S. barley:	1.7	2.1	-	-	-	-	-	-	+23.6	6.6			-	-	-	-		
81	lS	9	704	704	6.5	ja	7.0	-	L, K, 2/2	Gypsum	30	S. barley:	1.6-2.6	2.0-2.6	-	-	0.10	-	-	-	+2.9-+5.1	5.0-7.4			-	-	-	-		
82	sL	16	626	626	7.4	ja	13.0	-	L, K, 1/1	Gypsum	30	S. barley:	2.8	2.8	-	-	0.10	-	-	-	+10.7	8.6			-	-	-	-		
83	-	-	816	816	-	0.4	5.0	-	L, K, 1/1	Kieserite	40	Permanent grassland:	7.4	7.9	0.12-0.20	-	-	12.1-13.0	-	-	-6.8	14.8			-	-	-	-	-	-
84	sL	18	627	627	5.0	0.3+	5.0	-	O-s, K, 7/5	Kieserite	40-80	Clover-grass:	7.4-10.2	8.4-10.5	0.24-0.36	-	-	-	-	-	-10.5-+23.7	26.4-44.7			-	-	-	-	-	-
85	Sl	7	515	515	6.0	1.3	8.0	14	L, K, 2/2	Potassium sulphate, +	59	S. barley:	4.1	3.3-7.4	-	-	-	-	-	-	+6.7	12.7			-	-	-	-		

86	L	28	697	697	6.5	0	2.0	41-(52)	O-s, K, 6/3	Kieserite, Gypsum	20-40	Field bean:	3.1	2.7-3.1	-	-	-	-	-	-	-9.0-+10.9	14.4			5.61-5.71	5.56-5.66	173-175	155-174	208-210	190-209
87	SL	13	1080	1080	6.6	0	2.0	34-(48)	O-s, K, 6/3	Kieserite, Gypsum	20-40	Field bean:	2.9-3.0	2.7-2.9	-	-	-	-	-	-	-8.7-+11.6	13.7-14.1			5.48-5.61	5.49-5.61	158-167	149-163	192-201	184-197
88	sL	25	520	520	6.5	0	2.0	23-(26)	O-s, K, 6/3	Kieserite, Gypsum	20-40	Field bean:	3.2-3.4	3.3-3.5	-	-	-	-	-	-	-9.4-+10.2	14.8-15.7			5.96-5.99	5.97-6.01	188-203	196-209	226-243	234-249
89	L	40	671	671	7.3	0	2.0	(31-40)	O-s, K, 6/3	Kieserite, Gypsum	20-40	Field bean:	2.6-2.7	2.6	-	-	-	-	-	-	-7.6-+12.8	12.5-12.9			5.74-5.88	5.81-5.95	151-153	151-155	187-189	187-192
86 87 88 89	SL-L	14-29	742	-	6.2-6.8	0	2.0	25-(75)	O-s, K, 12/6	Kieserite, Gypsum	20-40	Field bean biomass:	2.4-5.7	2.3-5.8	0.12-0.21	-	-	21.0-33.0	-	-	-9.6-+18.9	5.9-15.2			3.80-4.61	3.68-4.62	93-262	85-268	-	-
90	Mo	25	800	800	6.9	0.4+	3.0	-	L, K, 6/2	Kieserite, Gypsum, Potassium sulphate	20	Permanent grassland:	6.6-9.4	6.9-9.4	0.12-0.17	-	-	15.7-18.0	-	-	-5.1--1.9	11.1-15.9	38-43	40-50	2.25-2.29	2.00-2.46	148-214	141-228	100-161	138-163
91	SL	15	680	680	6.4	0.3+	3.0	-	L, K, 4/2	Kieserite, Gypsum	20	Permanent grassland:	7.5-8.8	7.6-8.9	0.14-0.17	-	-	14.6-16.5	-	-	-6.7--0.1	12.7-14.1	33-41	27-37	2.33-2.45	2.20-2.29	174-215	168-201	116-123	95-115
92 93 94 95	S-lS	8	769-1958	-	6.2	0.3	2.5-3.0	-	O-s, K, 39/27	Kieserite, Gypsum	20-60	Clover-grass:	5.5-9.7	5.9-9.6	0.06-0.17	-	-	-	-	-	-12.0-+28.8	17.4-25.9	13-63	16-63	2.11-2.50	2.05-2.50			55-173	90-169
96	sL-L	25-30	823	703-910	-	0	8.0	-	O, K, 13/3	Elem. S, +	10-20	W. wheat:	2.4-6.3	2.7-6.5	-	-	-	-	-	-	-7.1-+2.2	7.9-17.9			1.70-2.09	1.73-2.06				
97	sL	22	560	560	-	0	5.0	19-20	O-s, K, 3/2	Potassium sulphate, +	30-60	Field bean:	4.1-4.7	4.7-4.9	-	-	-	-	-	-	-9.7-+18.3	18.3-20.5			4.25	4.26-4.29			212-251	251-271
98	lT	50	658	593	7.3	0+	5.0	37	O, K, 3/3	Elem. S	70	Durum wheat:	3.6	3.9-4.2	-	-	-	-	-	-	-4.1--3.0	9.8-10.9			2.26	2.40				

(1) Soil types: **Light soils**: sand (S), poor loamy sand (Sl); **Medium soils:** loamy sand (lS), high loamy sand (SL), loamy silt (lU), sandy loam (sL), silty loam (uL); **Heavy soils:** loam (L), slightly clayey loam (Lt), clayey loam (tL), loamy clay (lT); moor (Mo).

(2) Clay content: if not specified, estimated from soil type.

(3) Magnitude of long-term livestock farming: 1.0 LU ha^{-1} ~7.1 kg S $ha^{-1}year^{-1}$; yes = scope of livestock farming cannot be estimated; + = additional organic fertiliser given in the trial.

(4) S_{min} soil analysis 0-60 cm soil depth; values in brackets = estimated values derived from S fertiliser trials.

(5) Trial type: long-term trial including permanent grassland (L), trial with annual change of site (O), strip trial (S); fertilisation to crop (K), fertilisation to previous crop (V); number of fertilisation variants / number of standard variants, -s = trials including stepwise S amount variants.

(6) S fertiliser type: Epsom salt as foliar fertiliser including information on the amount of S; + = other chemical agents used in the trial.

(7) Forage with legumes corresponds to the information provided by the trial organisers: LCG = lucerne-clover-grass.

(8) S contents. N:S ratios: + = values of other plant organs present.

(9) Further abbreviations: DM = dry matter; S_{min} = mineral SO_4-S content of the soil extractable in 0.0125 M $CaCl_2$; MP = main product; BP = by-product; HRR = harvest and root residues; LU = livestock unit.