



Table S1. Precipitation (Prc) and reference Evapotranspiration (ETo) averaged since 1982, driest and wettest year, average since 2007 (last 15 years) and daily ETo in both mentioned periods

Month	Avg. (1982)		Dry (1983)		Wet (2015)		Avg. (2007-2021)		Daily Eto	
	Prc.	ETo	Prc.	ETo	Prc.	ETo	Prc.	ETo	1982/2021	2007-2021
	mm month ⁻¹		mm month ⁻¹		mm month ⁻¹		mm month ⁻¹		mm day ⁻¹	
Jan	26	103	4	101	0	101	3	106	3.3	3.4
Feb	2	107	0	104	15	95	3	103	3.8	3.7
Mar	0	126	1	126	1	125	2	127	4.1	4.1
Apr	1	128	0	129	1	126	2	130	4.3	4.3
May	2	134	1	136	1	139	1	138	4.3	4.4
Jun	1	131	1	133	1	132	2	133	4.4	4.4
Jul	4	132	3	137	6	134	11	133	4.3	4.3
Aug	93	125	38	132	136	125	70	129	4.0	4.2
Sep	14	123	15	131	61	117	93	121	4.1	4.0
Oct	18	120	12	125	129	111	37	124	3.9	4.0
Nov	24	106	1	108	8	106	6	107	3.5	3.6
Dec	1	105	1	106	0	102	7	104	3.4	3.4
	mm year ⁻¹		mm year ⁻¹		mm year ⁻¹		mm year ⁻¹		mm day ⁻¹	
Total	186	1440	77	1468	359	1413	236	1454	3.9	4.0

Month	Prc. (mm month ⁻¹)															Mean
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2007-2021
Jan	2	0	0	1	0	1	0	2	0	2	2	0	1	4	30	3
Feb	0	4	0	7	2	1	15	1	1	5	3	1	1	1	1	3
Mar	1	0	1	1	6	1	1	1	2	0	1	1	1	4	3	2
Apr	1	2	1	1	0	1	1	0	1	19	0	1	0	1	3	2
May	1	0	1	1	1	1	1	1	0	1	1	0	0	1	1	1
Jun	2	2	1	1	2	1	1	1	1	1	2	1	1	4	2	2
Jul	6	20	6	5	4	10	6	3	16	9	7	8	12	42	10	11
Aug	110	62	40	19	57	16	136	29	80	62	47	55	133	162	39	70
Sep	28	150	58	88	5	170	61	101	167	115	21	186	144	52	49	93
Oct	15	9	23	15	0	67	129	4	5	32	112	79	43	24	5	37
Nov	4	0	0	1	2	38	8	4	9	15	0	5	1	4	0	6
Dec	13	1	1	0	1	3	0	5	65	3	0	2	2	1	1	7
Tot per year	183	250	132	140	80	310	359	152	347	264	196	339	339	300	144	236
Rain wet period	153	221	121	122	62	253	326	134	252	209	180	320	320	238	93	200
% wet/total	84	88	92	87	78	82	91	88	73	79	92	94	94	79	65	84

Month	ETo (mm month ⁻¹)															Mean
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2007-2021
Jan	106	109	101	109	104	108	101	104	109	102	113	105	107	105	106	106
Feb	104	104	103	96	105	105	95	108	102	101	112	103	101	103	104	103
Mar	125	130	132	127	123	123	125	124	127	129	129	135	123	126	131	127
Apr	132	134	128	126	133	129	126	131	128	122	130	135	128	133	129	130
May	137	139	135	130	138	132	139	137	145	140	135	142	136	139	140	138
Jun	134	136	133	130	133	133	132	134	131	134	130	135	132	133	132	133
Jul	135	135	134	131	138	131	134	133	131	133	136	136	135	128	128	133
Aug	129	130	130	132	131	132	125	127	128	128	130	130	124	124	131	129
Sep	127	118	119	119	136	112	117	122	114	116	132	115	116	125	124	121
Oct	130	126	126	122	135	119	111	124	124	121	122	117	124	124	129	124
Nov	102	110	111	111	107	98	106	110	106	106	110	105	112	107	111	107
Dec	100	101	104	105	112	103	102	102	101	112	110	105	100	103	103	104
Tot year	1461	1472	1456	1438	1495	1425	1413	1456	1446	1444	1489	1463	1438	1450	1468	1454
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean (year)	
		Mean ETo														
		2019	3.4	3.7	4.1	4.3	4.4	4.4	4.3	4.2	4.0	4.0	3.6	3.4	4.0	
		2020	3.3	3.7	4.3	4.3	4.4	4.4	4.3	4.2	4.0	4.1	3.7	3.4	4.0	
		2020	3.5	3.7	4.2	4.5	4.5	4.5	4.4	4.2	3.9	4.1	3.7	3.3	4.0	

Table S3. Soil parameters comparison at the end of the experiment, between top soil (0-0.07 m) and deeper (0.07-0.2 m)

TRAT	prof	pH	CE	MO	Nt	C/N	Nitrate	Polisen	K	Ca	Mg	Na	B	Cu	Fe	Mn	Zn
dec 2020			dS m ⁻¹		%		mg kg ⁻¹			meq 100g ⁻¹					mg kg ⁻¹		
1	1	8.42	3.93	3.11	0.27	7.56	4741,0	131	8.4	20.7	11.5	11.1	2.3	1.09	4.6	3.5	2.11
1	2	8.18	1.72	3.06	0.22	8.2	1750	173	6.3	22.9	13.9	7.4	2.2	1.3	6.5	3.2	2.54
2	1	8.38	1.25	3.02	0.21	8.5	1370	138	6.5	22.2	13.3	7.6	1.9	1.03	5.7	3.6	1.8
2	2	8.27	1.71	2.16	0.15	8.5	1540	77	4.7	20.7	12.8	9.2	1.9	2.6	6	2.8	3.14
3	1	8.53	1.11	2.4	0.14	9.7	603	102	7.2	18.7	12.4	7.9	1.8	1.02	4.9	3.2	1.64
3	2	9.05	0.53	2.02	0.12	10.2	250	62	5.6	18.2	12.1	7.2	1.5	1.2	6.8	2.9	1.9

1: top soil from 0- 0.07 m 2: from 0.07 to 0.2 m

Table S4. Nitrogen balance, made by comparing N uptake by green plants per harvest and N supplied by irrigation water along the different cultivated periods

trat	date	Yield kg ha ⁻¹	N in leaves & stems %	N exported kg ha ⁻¹	Water amount m3 ha ⁻¹	N contents mgN L ⁻¹	N added by water kgN ha ⁻¹	Balance
RW SDI	07.08.2019	20796	2,02	419	3204	92,58	297	-123
	08.29.2019	17320	1,60	277	2167	92,58	201	-76
	12.17.2019	10691	1,32	141	4201	92,58	389	248
	02.03.2020	8275	1,86	154	1472	92,58	136	-18
	03.25.2020	18799	2,26	425	1503	92,58	139	-286
	05.20.2020	20937	1,82	381	2240	92,58	207	-174
	07.09.2020	14992	1,82	273	2341	92,58	217	-57
	09.03.2020	19438	1,83	355	2096	92,58	194	-161
	11.06.2020	24419	1,60	391	2034	92,58	188	-202
	tot	17296		2817	21257	92,58	1968	-849
RW DI	07.08.2019	9302	2,01	187	3204	92,58	297	109
	08.29.2019	9505	1,65	157	2167	92,58	201	43
	12.17.2019	18088	1,34	243	4201	92,58	389	146
	02.03.2020	5288	1,75	92	1472	92,58	136	44
	03.25.2020	13342	1,88	251	1503	92,58	139	-112
	05.20.2020	11825	1,53	181	2240	92,58	207	26
	07.09.2020	10608	1,74	184	2341	92,58	217	33
	09.03.2020	13012	1,94	252	2096	92,58	194	-58
	11.06.2020	21466	1,36	293	2034	92,58	188	-104
	tot	12493		1841	21257	92,58	1968	127
CW SDI	07.08.2019	12742	1,81	231	3204	10,16	33	-198
	08.29.2019	10837	1,37	149	2167	10,16	22	-127
	12.17.2019	22462	1,10	246	4201	10,16	43	-204
	02.03.2020	6347	1,48	94	1472	10,16	15	-79
	03.25.2020	13730	1,78	245	1503	10,16	15	-230
	05.20.2020	15092	1,71	258	2240	10,16	23	-235
	07.09.2020	15558	1,85	288	2341	10,16	24	-265
	09.03.2020	18275	2,00	366	2096	10,16	21	-344
	11.06.2020	22832	1,44	330	2034	10,16	21	-309
	tot	15320		2206	21257	10,16	216	-1990

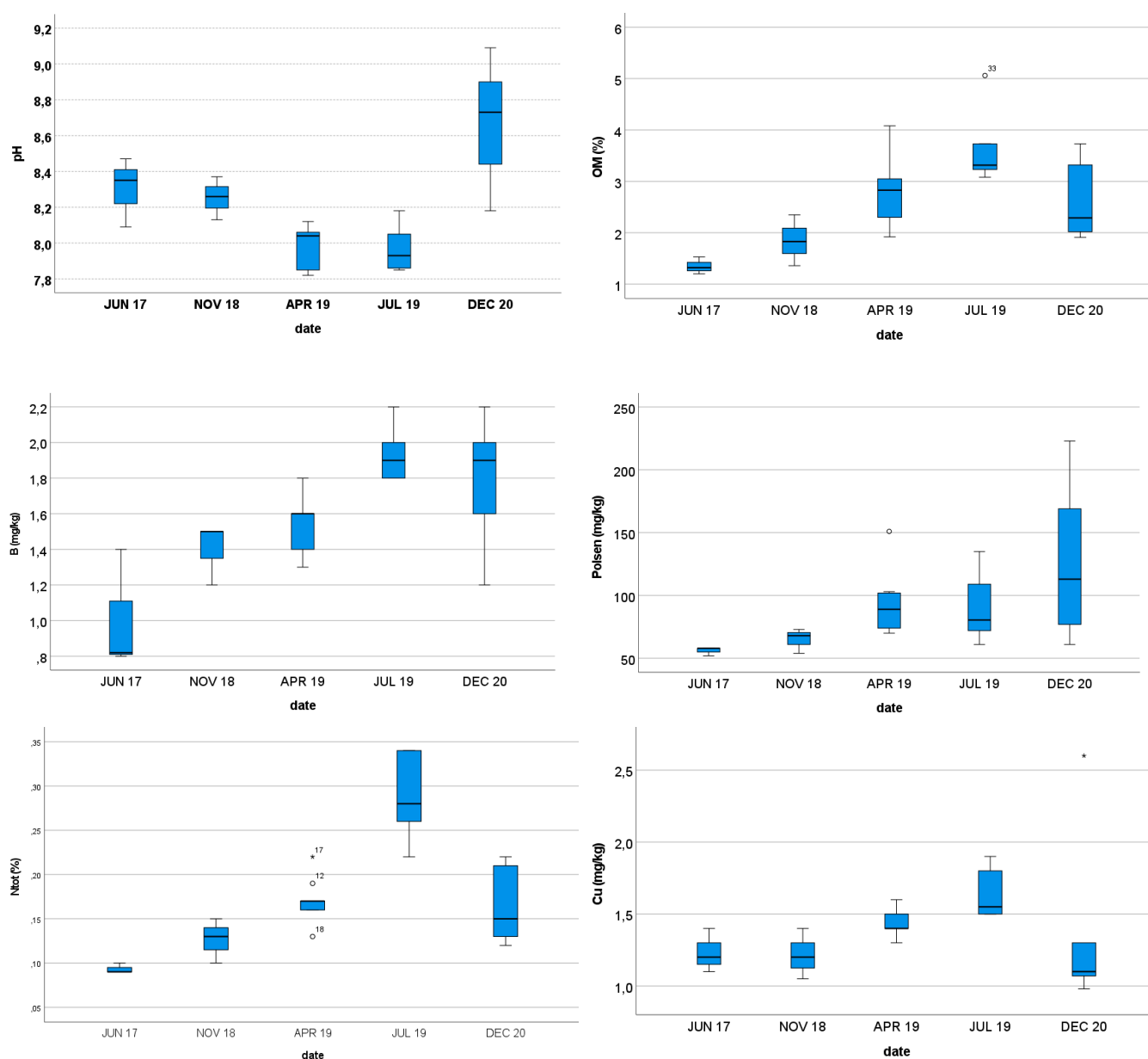


Figure S1. Soil parameters evolution trough time: pre (Jun 2017) and post manure use (Nov 2018), at seedling (April 2019), after the first harvest (Jul 2019) and one month after the last harvest (Dec 2020): pH, OM, B (α : 0.05), P Olsen (α : 0.1), and Ntot are significantly affected by time different at level 0.05, while Cu, is not significantly.

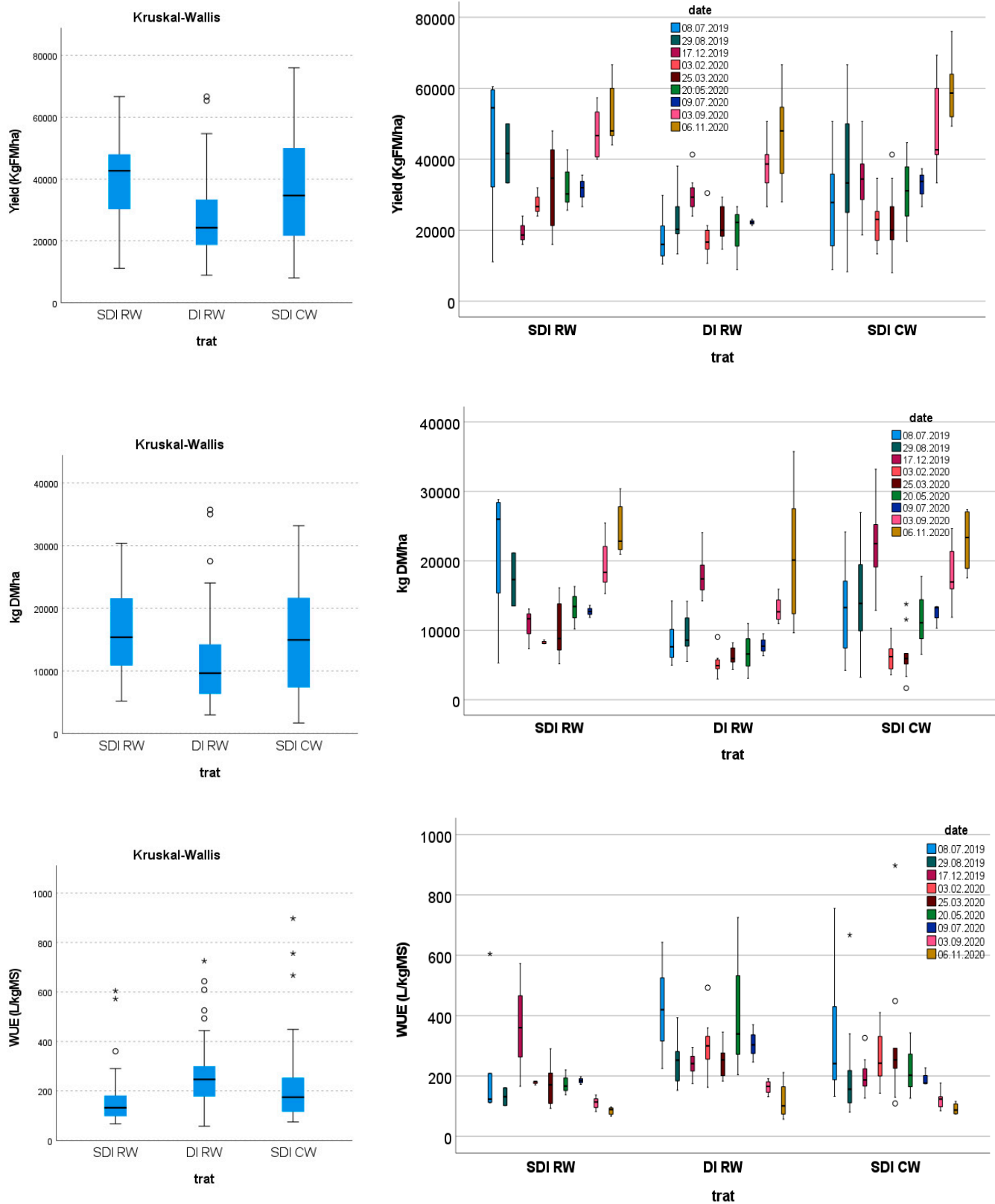


Figure S2. Yield (expressed as Fresh and Dry matter, kg ha⁻¹) and WUE (L kg⁻¹ of DM) obtained by each treatment and over time.