

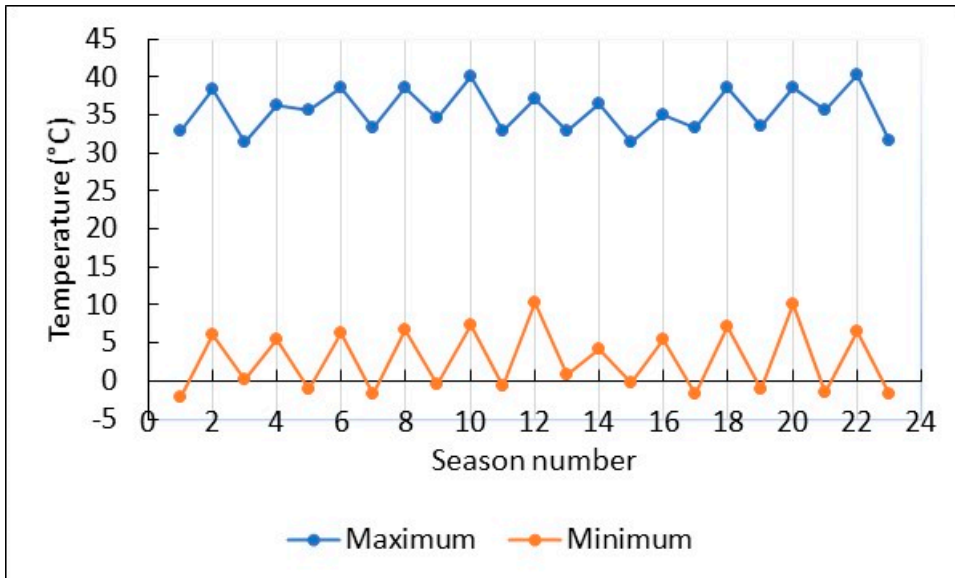
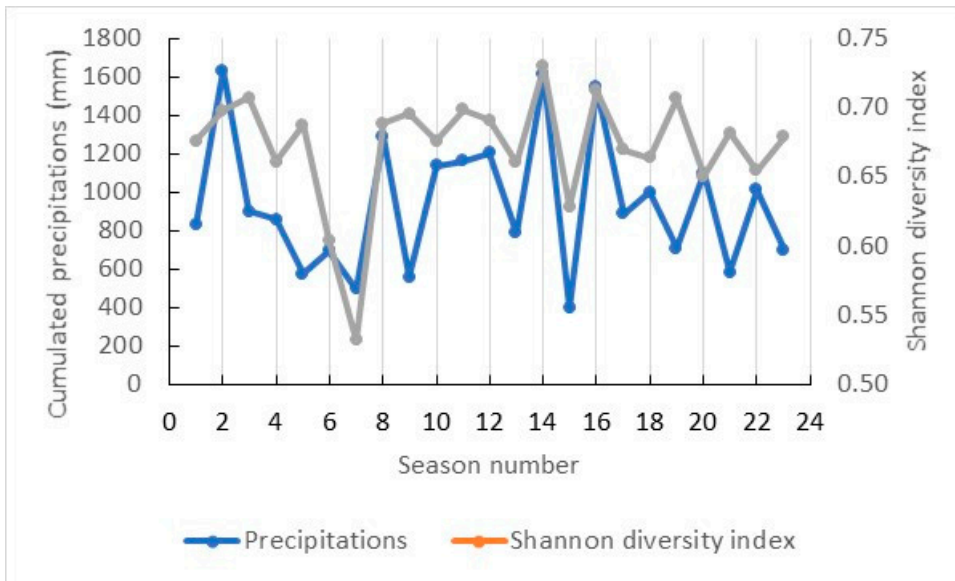
Supplementary Table S1. Total elements (mean ± standard deviation) supplied by the fertilization regime

Fertilizer	C	N	P	K	Ca	Mg	Cu	Zn	Mn
	-----kg ha <sup>-1</sup> -----					-----g ha <sup>-1</sup> -----			
Total element inputs from fertilizers over the experimental period									
Control	0	0	0	0	0	0	0	0	0
Mineral	0	2110±106	589±35	30±9	0	0	0	0	0
Cattle Slurry	30131±2348	3917±267	1239±127	1746±44	2899±96	991±38	16±2	29±1	33±1
Pig deep litter	77142±5995	3210±99	1825±149	4246±363	7723±513	1847±121	22±2	107±6	69±2
Pig Slurry	19319±3072	2512±119	1379±102	2707±266	892±33	340±10	37±2	92±2	70±2
Total element inputs from leftover residues over the experimental period									
Control	31329±482	2990±44	431±5	3069±49	799±36	523±10	4640±66	1491±20	8502±124
Mineral	51725±1012	4935±80	712±10	5067±94	1313±58	860±13	7665±130	2464±41	14044±222
Cattle Slurry	48363±1553	5743±179	812±16	5883±182	1652±133	1026±45	8588±77	2772±38	15861±248

Pig deep litter	33702±4961	6007±204	863±18	6063±214	1722±145	1092±48	9111±96	2901±48	16166±314
Pig Slurry	65446±513	6624±206	944±18	6760±215	1874±145	1185±48	10035±67	3221±42	18294±268
Element outputs by grain over the experimental period									
Control	-	457±12	105±5	159±1	21±1	47±0	802±33	42±1	201±1
Mineral	-	818±20	189±8	282±1	36±2	82±0	1445±53	75±1	356±1
Cattle Slurry	-	1048±7	236±7	372±7	52±5	110±3	1816±44	102±5	472±11
Pig deep litter	-	1370±4	308±8	489±12	69±7	145±5	2368±49	134±7	621±17
Pig Slurry	-	1143±8	261±6	399±6	53±4	117±3	2003±41	107±4	505±9
Elemental budgets over the experimental period									
Control	34461±530	2990±44	431±5	3069±49	799±36	523±10	4640±66	1491±20	8502±124
Mineral	56897±1113	7045±182	1301±45	5097±98	1313±58	860±13	7665±130	2464±41	14044±222
Cattle Slurry	8331±818	25276±3544	2051±136	7630±221	4551±206	2017±82	8604±78	2801±39	15894±248

Pig deep litter	114214±1310	9216±262	2688±166	10309±570	9445±653	2939±166	9133±97	3007±53	16235±316
Pig Slurry	91309±2701	14423±1126	2323±119	9468±481	2766±162	1525±47	10072±66	3313±41	18364±267

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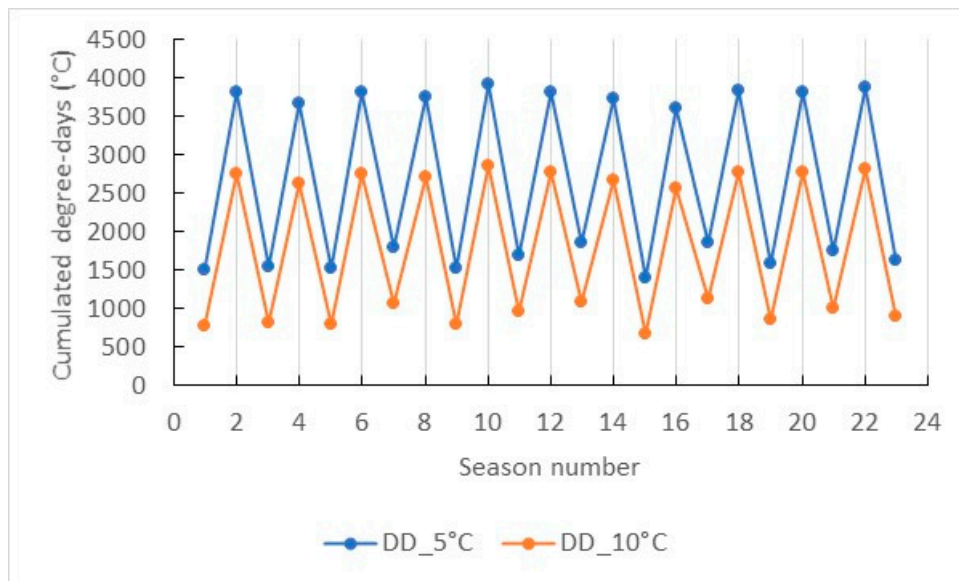


Figure S1. Change in climatic across seasons between winter 2009(#1) and winter 2020 (#23). Winter and summer periods extend from May through September and from October to April, respectively.