

Table S1. Selected characteristics in the surface layer (0–20 cm for texture, 0–10 cm for total C and bulk density) of the different field plots studied at Jokioinen in south-western Finland and Maaninka in central-eastern Finland

Research station, field	Location	Clay ^a <0.002 mm (%)	Fine and medium silt 0.002- 0.02 mm (%)	Coarse silt 0.02-0.06 mm (%)	Fine sand 0.06-0.2 mm (%)	Total C ^b (%)	Bulk density ^c (g cm ⁻³)	Crop	Year of measurement	Number of measurement events and replicates per event ^d	Experimental setup
Jokioinen, Kotkanoja (KO B)	60° 48' 56" N, 23° 30' 40" E	59	21	9	4	2.9	1.2	Cereal	2017 2018	9 (4, 5, 8)	Tillage Earthworm
Jokioinen, Kotkanoja (KO C)	60° 48' 56" N, 23° 30' 40" E							Cereal	2017 2018	7 (4)	Tillage
Jokioinen, Ojainen (OV)	60° 48' 13" N, 23° 28' 1" E	62	19	11		2.6	1.2	Cereal	2016	1 (8)	
Jokioinen, Päätilä (JII)	60° 48' 47" N, 23° 30' 28" E	71	18	6	3	3.2	1.1	Cereal	2016 2018	4 (4)	Antecedent moisture
Jokioinen, Päätilä (JX)	60° 48' 47" N, 23° 30' 0" E	71	10	6	4	3.7	1.2	Cereal	2016 2018	2 (4, 6)	
Jokioinen, Kuuma (KII)	60° 54' 24" N, 23° 30' 13" E	69	18	7	3	8.3	0.9	Cereal	2016 2018	4 (4)	Antecedent moisture
Jokioinen, Yöni (YI)	60° 51' 48" N, 23° 31' 18" E	71	11	7	5	3.8	1.1	Cereal	2016	1 (4)	
Jokioinen, Pellilä (PII)	60° 48' 11" N, 23° 30' 22" E	77	12	5	3	4.5	1.0	Cereal	2016	1 (4)	
Jokioinen, Ypääjä (HVII) ¹ ,1	60° 47' 42" N, 23° 19' 20" E	50	37	8	2	2.5	na	Perennial grass	2018	1 (4)	
Jokioinen, Ypääjä (HVII) ² ,2	60° 47' 42" N, 23° 19' 20" E							Perennial grass	2018	1 (4)	
Jokioinen, Ypääjä (HVII) ³ ,3	60° 47' 42" N, 23° 19' 20" E							Perennial grass	2018	1 (4)	
Jokioinen, Rehtijärvi (RVI)	60° 50' 50" N, 23° 27' 59" E	47	22	10	12	3.3	1.1	Cereal	2017	5 (1, 2, 4)	
Jokioinen, Koulutila (TI)	60° 51' 6" N, 23° 27' 18" E	51	12	5	13	3.2	1.1	Cereal	2016	1 (4)	

Jokioinen, Koulutila (TII)	60° 51'11"N, 23° 27'15"E	78	13	6	2	4.3	1.1	Cereal	2017	3 (4)
Maaninka, Koulupelto	63°9'35"N, 27°14'44"E	25	31	23	19	2.4	1.2	Cereal	2016 2017	4 (1, 4)
Maaninka, Mäntypelto	63°9'50"N, 27°13'47"E	5	31	39	21	2.3	1.1	Cereal	2016 2017	4 (1, 3)
Maaninka, Pihapelto	63°9'59"N, 27°14'8"E	0	13	16	42	2.2	1.3	Cereal	2016	1 (4)
Maaninka, Puimalapelto	63°9'31"N, 27°14'41"E	10	14	5	44	2.0	1.4	Cereal	2016 2017	4 (1, 4)
Maaninka, Pohjoispelto 1	63°8'40"N, 27°18'54"E	9	18	28	38	1.6	1.4	Perennial grass	2018	3 (2, 3, 4)
Maaninka, Pohjoispelto 2	63°8'38"N, 27°18'59"E	7	17	22	43	2.1	1.5	Perennial grass	2018	3 (3, 4)

a = Particle size distribution determined by the pipette method (Elonen 1971); b = Total organic C determined by dry combustion using a Leco TruMac® CN analyzer; c = For determination of dry bulk density, soil samples to 10 cm depth were taken by auger with 4.6 cm diameter; d = Each measurement event consisted of replicate measurements (number given in parenthesis) conducted either simultaneously or over a few successive days with similar conditions at the specific site. In RVI, TII, Mäntypelto, Koulupelto and Puimalapelto measurements conducted over three days in 2017 were considered individual measurement events, each with one replicate only, due to changes in soil moisture regime. In the setup of antecedent moisture, instead of the intended four replicate measurements, in Pohjoispelto 1, the final data contained 2 and 3 replicates from the first and third day, respectively, and in Pohjoispelto 2, 3 replicate measurements from the two first days due to operation errors. e = The Ypäjä field is a long-term set-aside experiment established in May 2003. Measurements were conducted in three different treatments: 1= Not mown, less competitive grass mixture, 2 = mown, meadow plant mixture and 3 = not mown, meadow plant mixture. Further details on the site can be found in Hyvönen and Huusela-Veistola (2011). Textural composition data from the nearest available site in the stretch of field.