

# Supplementary Material 1 to The short-term effects of experimental forestry treatments on site conditions in an oak-hornbeam forest

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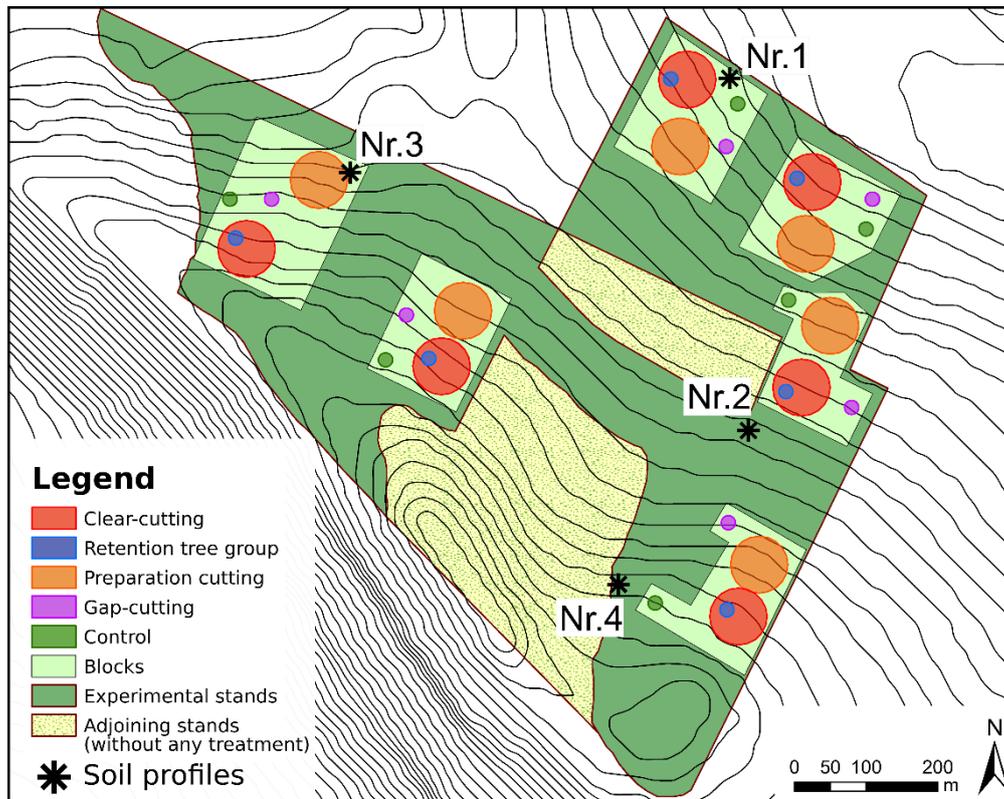
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## Supplementary Material 1 – Results of the soil profile analyses



**Figure S1.1.** Four soil profiles were conducted across the experimental site for studying the soil conditions. All soil profiles were established and analyzed in 18-19 June 2014. The locations are marked with asterisks.

Here we present a short description of soil characterization in the localities shown in Figure A1.1. and a brief overview about the results of the four soil profiles. According to the (MSZ-08-0205:1978) standards the following variables are shown in the tables: # – the number of the layer distinguished by expert judgement; layer – upper and lower limit horizon (cm from mineral soil surface); Coarse fragments – volume of the coarse particles (%); pH – pH measured by using H<sub>2</sub>O and KCl solutions, respectively; CaCO<sub>3</sub> – presence / content of carbonates within a given layer (%); y<sub>1</sub> – hydrolytic acidity; y<sub>2</sub> – exchangeable acidity; soil texture – the volumetric content of clay (<0.002 mm), silt (0.002-0.02 mm), fine sand (0.02-0.2 mm) and coarse sand (0.2-2 mm), separately (%); C – soil organic carbon content (%); N – total nitrogen content (%); P<sub>AL</sub> – extractable phosphorus (mg/100 g soil); K<sub>AL</sub> – extractable potassium (mg/100 g soil).

Soil pH was potentiometrically measured using supernatant suspension of 10 g air-dried and sieved (<2 mm) samples and 25 ml of distilled water (pH(H<sub>2</sub>O)) and 25 ml of 1 mol/l KCL (pH(KCL)) solution,

respectively (MSZ-08-0205:1978). In the case of  $y_1$ , 40 g air-dried soil sample was extracted with 100 ml 1 mol/l  $\text{Ca}(\text{CH}_3\text{COO})_2$  solution; regarding  $y_2$ , extractions were made using unbuffered 1 mol/l KCl solution. In both cases, measurements were performed by titration (Ballenegger and di Gléria 1962). Kuron's method was applied for gauging  $h_y$  of air-dry soils (Verstraeten & Livens, 1971): with 50% (v/v)  $\text{H}_2\text{SO}_4$  solution and 35.2% RH according to (MSZ-08-0205:1978). Chemical compounds were evaluated on composite samples of the 1:1 mixture of the four, sieved (<0.5 mm) subsamples per plot. Total soil carbon and nitrogen content were determined by dry combustion method using Elementar vario MAX CNS-analyzer (Elementar Analysensysteme, Langenselbold, Germany) applying the ISO standards (ISO 10694:1995; ISO 13878:1998): soil samples were weighed up to 80-100 g, and a tungsten oxide catalyst was added. The applied combustion temperature was 1140°C. Plant available phosphorus and potassium were determined by ammonium lactate (AL) solution method (0.1 M  $\text{NH}_4$ -lactate + 0.4 M HOAc, adjusted to pH 3.75) developed by Egnér et al. (1960 cf. Carter & Gregorich, 2008) according to the operative Hungarian standards (MSZ 20135:1999).  $\text{P}_2\text{O}_5$  was measured colorimetrically,  $\text{K}_2\text{O}_5$  was quantified by flame photometry.

## Soil profile Nr.1

### Bedrock:

loess with other sediments, limestone and sandstone stones and boulders are present

### Genetic soil type:

brown forest soils with clay illuviation (luvisol)

### Soil texture

loam / clay loam

### Coarse fragments:

below the depth of 100 cm; 10 V/V%

### Notes:

iron and manganese concretion in the deeper layers



Layer (cm)	Coarse fragm. (%)	pH (H <sub>2</sub> O)	pH (KCl)	CaCO <sub>3</sub> (%)	y <sub>1</sub>	y <sub>2</sub>	h <sub>y</sub>	Soil texture				SOC (%)	N (%)	P <sub>2</sub> O <sub>5</sub> K <sub>2</sub> O		
								Clay (%)	Silt (%)	Fine sand (%)	Coarse sand (%)			mg/100 g soil		
1	0-10	-	4.9	4.0	-	30.74	21.89	2.08	23	34	37	6	4.57	0.20	2.6	9.5
2	10-20	-	4.6	3.7	-	30.01	21.70	1.74	21	30	43	6	2.05	0.10	1.5	6.3
3	20-40	-	4.8	3.7	-	26.52	21.70	1.93	9	46	39	6	1.90	0.10	0.4	6.6
4	40-70	-	4.8	3.7	-	19.17	18.03	2.40	33	26	35	6	1.40	0.08	1.6	7.8
5	70-100	-	5.1	3.7	-	12.58	11.09	2.86	33	24	36	7	0.60	0.05	-	8.0
6	100-150	-	6.1	5.2	-	8.82	-	2.81	29	30	37	4	0.62	0.04	1.9	6.4
7	150-200	-	7.4	6.9	15	-	-	1.75	17	28	42	13	0.85	0.03	1.6	5.1

## Soil profile Nr.2

<p><b>Bedrock:</b></p> <p>loess with other sediments</p> <p><b>Genetic soil type:</b></p> <p>brown forest soils with clay illuviation (luvisol)</p> <p><b>Soil texture:</b></p> <p>loam / clay loam</p> <p><b>Coarse fragments:</b></p> <p>minimal</p> <p><b>Notes:</b></p> <p>iron and manganese concretion in the deeper layers</p>	
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	Layer (cm)	Coarse fragm. (%)	pH (H <sub>2</sub> O)	pH (KCl)	CaCO <sub>3</sub> (%)	y <sub>1</sub>	y <sub>2</sub>	h <sub>y</sub>	Soil texture				SOC (%)	N (%)	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
									Clay (%)	Silt (%)	Fine sand (%)	Coarse sand (%)				
1	0-10	-	4.6	3.7	-	39.01	23.38	1.95	23	26	45	6	3.97	0.19	4.0	7.5
2	10-20	-	4.4	3.5	-	37.41	26.23	1.64	21	30	43	6	2.52	0.13	1.0	5.3
3	20-50	-	4.7	3.6	-	25.10	20.01	1.64	21	32	41	6	1.21	0.07	0.2	5.2
4	50-90	-	5.1	3.8	-	13.57	10.08	2.84	31	30	34	5	0.58	0.04	2.2	8.8
5	90-130	-	5.5	4.8	-	10.39	4.77	2.91	29	30	35	6	0.46	0.04	6.2	8.8
6	130-210	-	7.8	6.8	5	-	-	1.83	17	32	44	7	0.72	0.04	2.8	5.4
7	210-250	-	7.7	6.9	2	-	-	3.80	39	20	28	13	0.47	0.04	2.9	7.2

### Soil profile Nr.3

**Bedrock:**

limestone and loess with other sediments

**Genetic soil type:**

rendzic leptosol and brown forest soils with clay illuviation (luvisol)

**Soil texture:**

loam

**Coarse fragments:**

increasing downwards

**Notes:**

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	Layer (cm)	Coarse fragm. (%)	pH (H <sub>2</sub> O)	pH (KCl)	CaCO <sub>3</sub> (%)	y <sub>1</sub>	y <sub>2</sub>	h <sub>y</sub>	Soil texture				SOC (%)	N (%)	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
									Clay (%)	Silt (%)	Fine sand (%)	Coarse sand (%)			mg/100 g soil	
1	0-10	-	4.6	3.7	-	40.89	20.49	2.23	19	28	44	9	5.70	0.26	0-10	-
2	10-20	-	4.6	3.5	-	33.75	19.29	1.96	25	26	39	10	2.53	0.12	10-20	-
3	20-30	-	5.3	4.1	-	18.08	7.33	2.36	29	26	34	11	2.25	0.12	20-30	-
4	30-70	21	6.9	6.2	-	-	-	3.61	35	26	27	12	2.63	0.12	30-70	21

## Soil profile Nr.4

**Bedrock:**

limestone and loess with other sediments

**Genetic soil type:**

brown forest soils with clay illuviation  
(luvisol)

**Soil texture:**

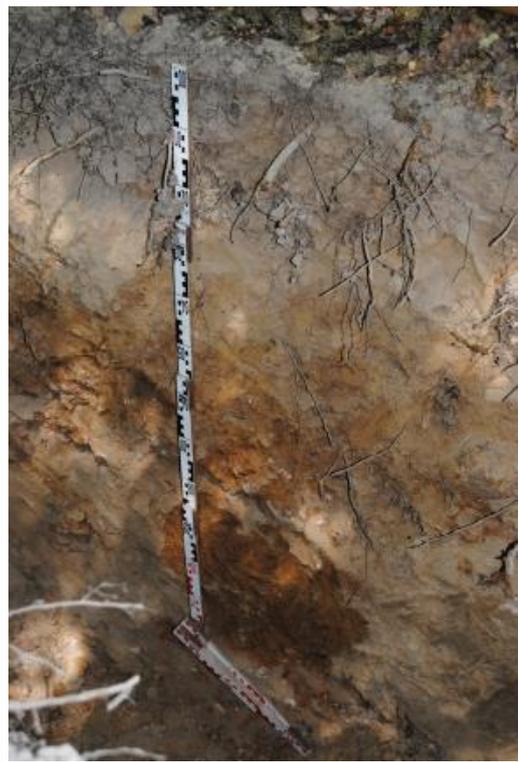
loam / clay loam

**Coarse fragments:**

minimal

**Notes:**

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	Layer (cm)	Coarse fragm. (%)	pH (H <sub>2</sub> O)	pH (KCl)	CaCO <sub>3</sub> (%)	y <sub>1</sub>	y <sub>2</sub>	hy	Soil texture				SOC (%)	N (%)	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
									Clay (%)	Silt (%)	Fine sand (%)	Coarse sand (%)			mg/100 g soil	
1	0-10	-	4.7	3.6	-	31.99	16.63	1.44	11	26	44	19	3.66	0.15	3.0	6.4
2	10-20	-	4.3	3.6	-	25.39	19.12	0.99	11	26	42	21	2.04	0.08	0.8	3.5
3	20-50	-	4.3	3.5	-	24.71	24.11	0.99	13	26	41	20	0.89	0.05	0.5	2.8
4	50-80	-	4.7	3.5	-	24.16	23.02	2.11	25	22	38	15	0.59	0.04	0.1	6.1