

Supplementary table S1.

Supplementary table 1. Mineralogical composition (XRPD Rietveld-RIR method) of the kaolin and CHA-zeolitite supplied by Balco s.p.a and used in the experimentation. Data from the product's technical sheet supplied by the company

Mineralogical composition (%)	Kaolin	CHA-zeolitite
Kaolinite	87	0
Quartz	3	0
Muscovite	4	0
Chabazite	0	65
Phillipsite	0	3
K-feldspar	0	5
Biotite	0	2
Pyroxene	0	3
Volcanic glass	0	22
Others	6	0
Total Zeolitic content	0	68

Supplementary table 2: Results of soil analysis (oven-combustion, EA-IRMS) from each experimental plant treated with kaolin (K), CHA-zeolitite (Z) and the control (T). SOM is the soil organic matter measured by combustion at 550 °C (mean of 2 replicates), TN and TC are the total nitrogen and carbon content measured by EA analysis, $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$ are the isotopic signature expressed as delta notation by IRMS (values are expressed as mean of 3 replicates). Standard deviation within brackets. Same letters express no significant differences ($p>0.05$) as results of ANOVA and TUKEY (HSD) tests.

	T	K	Z
%			
SOM	7.90	8.45	7.95
TN	0.29 (0.02) ^a	0.31 (0.04) ^a	0.27 (0.05) ^a
TC	5.11 (0.45) ^a	5.06 (0.14) ^a	4.93 (0.18) ^a
‰			
$\delta^{15}\text{N}$	+2.17 (0.77) ^a	+2.79 (0.62) ^a	+1.29 (1.28) ^a
$\delta^{13}\text{C}$	-17.57 (1.08) ^a	-18.12 (0.37) ^a	-17.31 (1.05) ^a

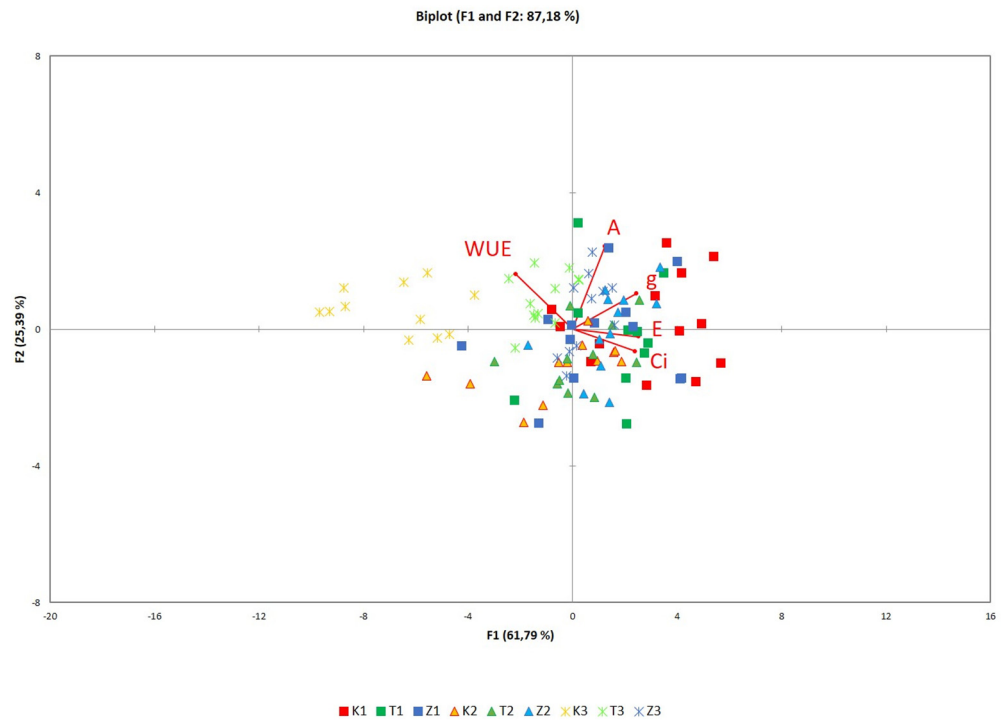
Supplementary table 3: Results of soil analysis (2 replicates) by X-Ray Fluorescence (XRF) from each experimental plant treated with kaolin (K 1 and 2), CHA-zeolitite (Z 1 and 2) and the control (T 1 and 2). LOI represent the loss on ignition (volatile losses at 1000°C).

	T 1	T 2	K 1	K 2	Z1	Z 2
%						
SiO₂	50.87	53.76	52.62	52.56	50.72	51.10

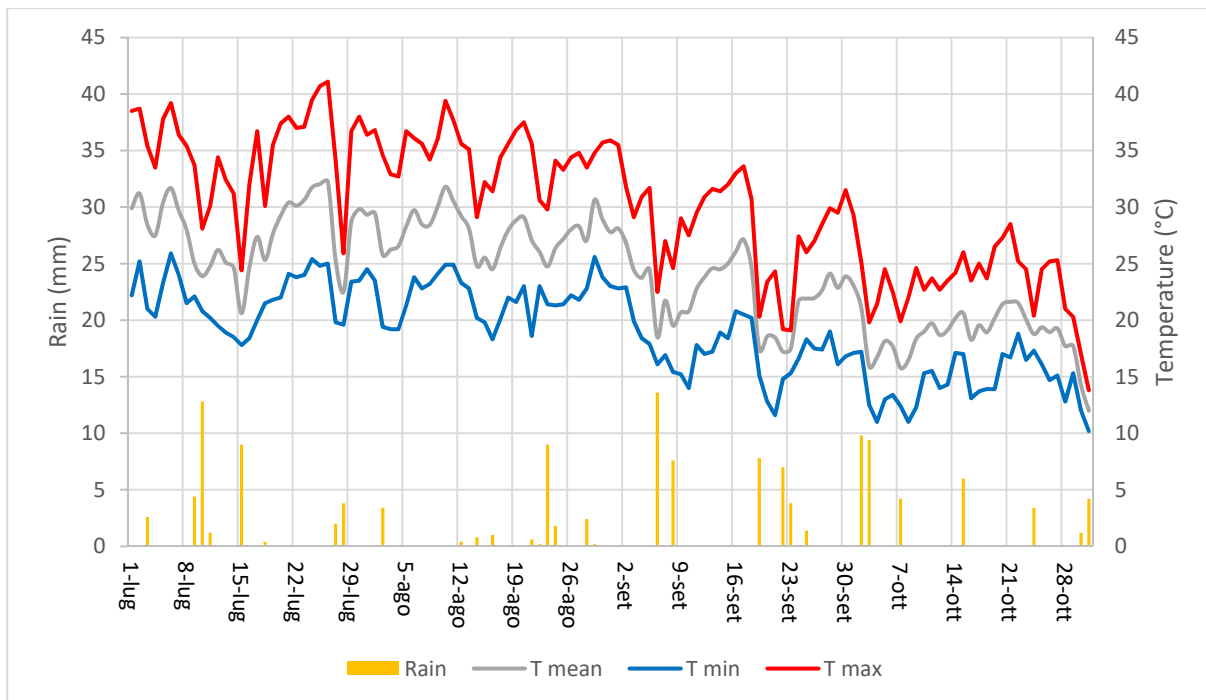
TiO₂	0.54	0.50	0.58	0.54	0.52	0.55
Al₂O₃	12.59	12.15	13.29	12.61	12.65	12.64
Fe₂O₃	4.25	4.00	4.45	4.10	4.20	4.31
MnO	0.11	0.11	0.11	0.11	0.12	0.11
MgO	2.51	2.34	2.55	2.48	2.50	2.47
CaO	9.77	9.12	8.38	8.63	9.78	9.32
Na₂O	0.85	0.94	0.85	0.85	0.87	0.86
K₂O	2.27	2.33	2.43	2.32	2.28	2.27
P₂O₅	0.18	0.18	0.20	0.21	0.16	0.19
LOI	16.06	14.57	14.53	15.59	16.19	16.19
Total	100.0	100.0	100.0	100.0	100.0	100.0

ppm

Ba	393	385	410	402	399	398
Ce	39	36	40	40	40	42
Co	13	13	14	12	12	13
Cr	90	89	97	90	87	90
Cu	73	57	57	73	59	67
Ga	15	14	16	15	15	17
Hf	3	3	3	3	5	4
La	12	9	15	10	13	15
Nb	12	11	12	12	11	12
Nd	26	18	23	23	18	23
Ni	66	61	65	62	61	62
Pb	32	33	34	37	27	32
Rb	95	100	106	100	93	98
Sc	9	8	9	8	10	10
Sr	295	279	273	269	294	289
Th	6	5	6	5	5	6
V	81	72	83	78	78	84
Y	19	19	20	18	19	19
Zn	75	76	86	81	67	74
Zr	185	160	167	156	195	179



Supplementary figure 1. PCA of the ecophysiological parameters measured after the foliar applications of K (kaolin), Z (CHA-zeolite), and T (control).



Supplementary figure 2. Minimum, mean and maximum temperature (°C) and rainfall (mm) recorded in the period 1st July-31st October.