

Supplement of SOIL, 7, 1–14, 2021  
<https://doi.org/10.5194/soil-7-1-2021-supplement>  
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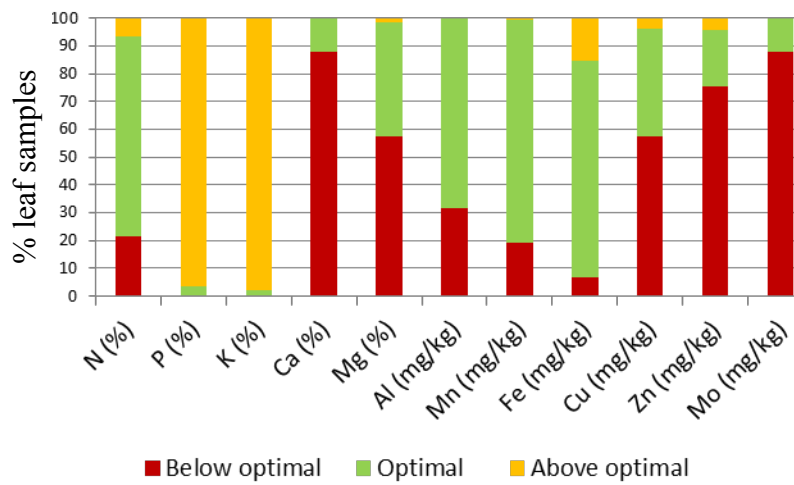
*Supplement of*

## **Altitude and management affect soil fertility, leaf nutrient status and Xanthomonas wilt prevalence in enset gardens**

**Sabura Shara et al.**

*Correspondence to:* Karen Vancampenhout ([karenvancampenhout@kuleuven.be](mailto:karenvancampenhout@kuleuven.be))

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Supplementary Fig. (Sf<sub>1</sub>). Percentage of observed enset leaf samples falling below (red), within (green) and above optimal (yellow) nutrient concentrations based on standard values for banana (Reuter & Robinson (1997)).

Supplementary Table (St<sub>1</sub>). Details on soil and plant sampling techniques in enset gadens.

N <sup>o</sup> of gardens/ households	Garden zones	N <sup>o</sup> of soil samples for inter and intra- garden nutrient comparison	N <sup>o</sup> of plant samples		
			For intra- garden nutrient comparison	For nutrient comparison between symptomatic and asymptomatic plants	For general leaf nutrient assessment
40 +27	Inner	40	19 from 19 gardens	Pair of 20 symptomatic and asymptomatic plants from 12 gardens	218 from 58 gardens (19+12+27 additional gardens)
	Outer	40	19 from 19 gardens		
	Outfield	28	-	-	-

Supplementary Table (St<sub>2</sub>). Foliar nutrient concentration for enset (inner and outer garden data pooled and varieties mixed). SD: standard deviation.

Nutrient	n	Mean	Minimum	Maximum	SD
C (%)	218	43.9	37.9	47.8	1.5
N (%)	218	3.2	1.9	4.4	0.5
P (%)	216	0.4	0.2	1.3	0.1
K (%)	216	5.6	3.2	8.2	0.8
Ca (%)	216	0.6	0.2	1.2	0.2
Mg (%)	216	0.3	0.2	0.5	0.1
Mn (mg/kg)	216	257.6	46.9	1361.2	232.1
Fe (mg/kg)	216	148.2	47.2	879.7	108.3
Al (mg/kg)	216	72.5	16.5	230.4	37.3
Cu (mg/kg)	179	8.6	2.4	78.3	8.7
Zn (mg/kg)	216	22.5	9.2	219.9	25.9
Mo (mg/kg)	215	1.8	0.2	10.8	1.6

Supplementary Table (St<sub>3</sub>). Prevalence of EXW and altitudinal distribution of symptomatic enset gardens (n=40) in the Chencha catchment, Gamo highlands. These gardens were those in which soil and plant nutrient status were studied.

Elevation	N <sup>o</sup> of assessed gardens	N <sup>o</sup> of symptomatic gardens		Prevalence (%)	
		Present	Past	Present	Past
Higher	14	3	5	21.4	35.7
Middle	15	4	10	26.7	66.7
Lower	11	7	5	63.6	45.5
Overall	40	14	20	35.0	50.0

Supplementary Table (St<sub>4</sub>). Comparison (mean±SD) of soil properties (SP) between currently symptomatic (S) and non-symptomatic (NS) enset gardens in the higher altitude of the Chencha catchment, Gamo highlands. EC in dS/m; TOC and TN in %; nutrients in mg/kg.

SP	S (n=3)	NS (n=11)	SP	S (n=3)	NS (n=11)
pH <sup>ns</sup>	6.4±0.7 <sup>a</sup>	6.3±0.8 <sup>a</sup>	K <sup>ns</sup>	1488.3±649.1 <sup>a</sup>	1791.4±925.1 <sup>a</sup>
EC <sup>ns</sup>	0.2±0.1 <sup>a</sup>	0.3±0.1 <sup>a</sup>	Ca <sup>ns</sup>	3719.5±1530.5 <sup>a</sup>	3845.3±1077.6 <sup>a</sup>
C/N <sup>ns</sup>	10.6±0.6 <sup>a</sup>	10.1±0.7 <sup>a</sup>	Mg <sup>ns</sup>	668.7±122.9 <sup>a</sup>	860.2±193.9 <sup>a</sup>
TOC <sup>ns</sup>	3.9±0.5 <sup>a</sup>	3.2±0.7 <sup>a</sup>	Mn <sup>ns</sup>	568.5±238.5 <sup>a</sup>	547.6±221.8 <sup>a</sup>
TN <sup>ns</sup>	0.4±0.0 <sup>a</sup>	0.3±0.1 <sup>a</sup>	Fe <sup>ns</sup>	490.9±158.0 <sup>a</sup>	486.5±114.4 <sup>a</sup>
P <sub>av</sub> <sup>ns</sup>	148.5±102.5 <sup>a</sup>	151.8±110.5 <sup>a</sup>	Al <sup>ns</sup>	522.1±84.9 <sup>a</sup>	570.5±99.7 <sup>a</sup>

Means followed by the same letters within a row are not significantly (ns) different (p<0.05).

Supplementary Table (St<sub>5</sub>). Comparison (mean±SD) of soil properties (SP) between currently symptomatic (S) and non-symptomatic (NS) enset gardens in the middle altitude of the Chencha catchment, Gamo highlands. EC in dS/m; TOC and TN in %; nutrients in mg/kg.

SP	S (n=4)	NS (n=11)	SP	S (n=4)	NS (n=11)
pH <sup>ns</sup>	6.7±0.3 <sup>a</sup>	6.3±0.6 <sup>a</sup>	K <sup>ns</sup>	2285.8±1321.9 <sup>a</sup>	1544.6±971.3 <sup>a</sup>
EC <sup>ns</sup>	0.2±0.1 <sup>a</sup>	0.3±0.1 <sup>a</sup>	Ca <sup>ns</sup>	3913.7±1184.4 <sup>a</sup>	3444.1±1561.3 <sup>a</sup>
C/N <sup>ns</sup>	10.30.6 <sup>a</sup>	10.5±0.8 <sup>a</sup>	Mg <sup>ns</sup>	771.7±283.9 <sup>a</sup>	675.9±205.6 <sup>a</sup>
TOC <sup>ns</sup>	3.9±0.9 <sup>a</sup>	3.6±0.9 <sup>a</sup>	Mn <sup>ns</sup>	521.7±174.9 <sup>a</sup>	436.9±105.6 <sup>a</sup>
TN <sup>ns</sup>	0.4±0.1 <sup>a</sup>	0.3±0.1 <sup>a</sup>	Fe <sup>ns</sup>	414.5±134.9 <sup>a</sup>	472.6±136.9 <sup>a</sup>
P <sub>av</sub> <sup>ns</sup>	459.2±435.2 <sup>a</sup>	365.3±284.9 <sup>a</sup>	Al <sup>ns</sup>	389.9±142.4 <sup>a</sup>	430.1±105.7 <sup>a</sup>

Means followed by the same letters within a row are not significantly (ns) different (p<0.05).

Supplementary Table (St<sub>6</sub>). Comparison (mean±SD) of soil properties (SP) between currently symptomatic (S) and non-symptomatic (NS) enset gardens in the lower altitude of the Chencha catchment, Gamo highlands. EC in dS/m; TOC and TN in %; nutrients in mg/kg.

SP	S (n=4)	NS (n=7)	SP	S (n=4)	NS (n=7)
pH	6.9±0.4 <sup>a</sup>	6.3±0.2 <sup>b</sup>	K	1927.4±544.4 <sup>a</sup>	767.8±262.0 <sup>b</sup>
EC <sup>ns</sup>	0.4±0.1 <sup>a</sup>	0.3±0.1 <sup>a</sup>	Ca	6743.8±1452.9 <sup>a</sup>	4394.5±1777.7 <sup>b</sup>
C/N <sup>ns</sup>	8.9±3.9 <sup>a</sup>	9.9±0.5 <sup>a</sup>	Mg <sup>ns</sup>	1035.3±173.1 <sup>a</sup>	853.6±220.3 <sup>a</sup>
TOC <sup>ns</sup>	3.5±2.1 <sup>a</sup>	3.7±0.9 <sup>a</sup>	Mn <sup>ns</sup>	572.4±139.9 <sup>a</sup>	569.9±80.1 <sup>a</sup>
TN <sup>ns</sup>	0.3±0.2 <sup>a</sup>	0.4±0.1 <sup>a</sup>	Fe <sup>ns</sup>	416.2±80.3 <sup>a</sup>	385.3±131.1 <sup>a</sup>
P <sub>av</sub>	1034.1±612.3 <sup>a</sup>	146.8±185.4 <sup>b</sup>	Al <sup>ns</sup>	369.1±58.0 <sup>a</sup>	443.5±157.8 <sup>a</sup>

Means followed by the same letters within a row are not significantly (ns) different (p<0.05).