

Supplementary materials

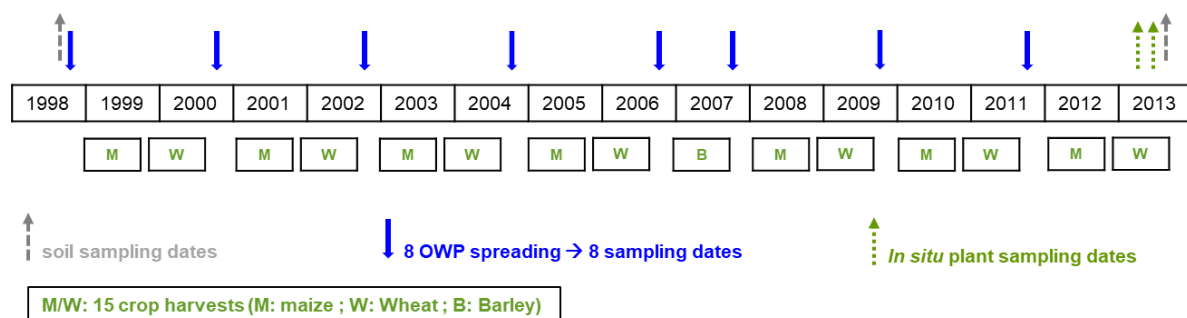


Figure S1. Field management and sampling periods for QualiAgro site.

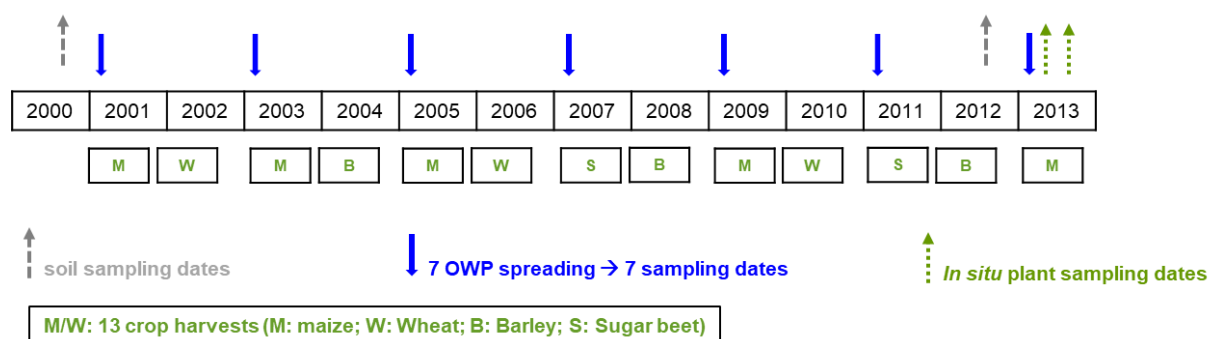


Figure S2. Field management and sampling periods for PROspective site.

Table S1. Initial chemical characteristics of the topsoil layer (0–25 cm, sieved < 2 mm).

With the following data presented: Mean values $\pm$ standard deviation of the four replicates (in each site, abc letters stand for significant difference between treatments with Newman-Keuls and Kruskal-Wallis tests). pH, cation exchange capacity (CEC), CaCO_3 and organic carbon (OC) content, content of Olsen phosphorus (Olsen P_2O_5), and trace element concentrations, DM for dry matter. QualiAgro site, co-compost of sewage sludge and green waste (Q-GWS), biowaste compost (Q-BIOW), compost of residual municipal solid waste (Q-MSW), farmyard manure (Q-FYM), no organic amendment (Q-CN). PROspective site, sewage sludge (P-SLU), co-compost of sewage sludge and green waste (P-GWS), biowaste compost (P-BIOW), farmyard manure (P-FYM), compost of farmyard manure (P-CFYM), no organic amendment (P-CN). na for not available.

Treatment	pH	CEC	CaCO_3	OC	Olsen P_2O_5
		$\text{cmol}^+ \text{kg}^{-1} \text{DM}$	$\text{g kg}^{-1} \text{DM}$	$\text{g kg}^{-1} \text{DM}$	$\text{g kg}^{-1} \text{DM}$
Q-GWS	7.0 $\pm$ 0.2 (a)	9.4 $\pm$ 0.7 (a)	na	10.6 $\pm$ 1.0 (a)	0.09 $\pm$ 0.02 (a)
Q-BIOW	7.2 $\pm$ 0.3 (a)	9.8 $\pm$ 0.8 (a)	na	10.8 $\pm$ 0.7 (a)	0.10 $\pm$ 0.01 (a)
Q-MSW	7.0 $\pm$ 0.2 (a)	9.3 $\pm$ 0.9 (a)	na	10.4 $\pm$ 0.7 (a)	0.09 $\pm$ 0.01 (a)
Q-FYM	7.0 $\pm$ 0.1 (a)	9.8 $\pm$ 0.8 (a)	na	10.6 $\pm$ 0.3 (a)	0.10 $\pm$ 0.01 (a)
Q-CN	7.1 $\pm$ 0.0 (a)	10.1 $\pm$ 0.9 (a)	na	10.7 $\pm$ 0.2 (a)	0.09 $\pm$ 0.01 (a)
P-SLU	8.2 $\pm$ 0.0 (a)	17.1 $\pm$ 0.3 (a)	118.0 $\pm$ 12.2 (a)	14.9 $\pm$ 0.7 (a)	0.08 $\pm$ 0.01 (a)
P-GWS	8.2 $\pm$ 0.0 (a)	17.1 $\pm$ 0.2 (a)	103.8 $\pm$ 13.4 (a)	14.8 $\pm$ 1.2 (a)	0.07 $\pm$ 0.01 (ab)
P-BIOW	8.3 $\pm$ 0.0 (a)	17.3 $\pm$ 0.2 (a)	114.3 $\pm$ 7.8 (a)	15.1 $\pm$ 1.0 (a)	0.07 $\pm$ 0.00 (ab)
P-FYM	8.3 $\pm$ 0.0 (a)	16.9 $\pm$ 0.6 (a)	110.3 $\pm$ 13.0 (a)	14.8 $\pm$ 0.4 (a)	0.08 $\pm$ 0.00 (a)
P-CFYM	8.3 $\pm$ 0.0 (a)	17.1 $\pm$ 0.2 (a)	106.1 $\pm$ 10.1 (a)	14.1 $\pm$ 0.8 (a)	0.06 $\pm$ 0.00 (b)
P-CN	8.3 $\pm$ 0.0 (a)	16.9 $\pm$ 0.1 (a)	116.0 $\pm$ 10.0 (a)	14.2 $\pm$ 1.1 (a)	0.06 $\pm$ 0.01 (b)
		Cd	Cr	Cu	Hg
		$\text{mg kg}^{-1} \text{DM}$	$\text{mg kg}^{-1} \text{DM}$	$\text{mg kg}^{-1} \text{DM}$	$\text{mg kg}^{-1} \text{DM}$
Q-GWS		0.24 $\pm$ 0.02 (a)	44.8 $\pm$ 4.0 (a)	11.8 $\pm$ 1.2 (a)	0.10 $\pm$ 0.02 (a)
Q-BIOW		0.23 $\pm$ 0.01 (a)	45.5 $\pm$ 3.4 (a)	12.1 $\pm$ 1.1 (a)	0.10 $\pm$ 0.02 (a)
Q-MSW		0.24 $\pm$ 0.01 (a)	46.8 $\pm$ 3.8 (a)	11.7 $\pm$ 0.3 (a)	0.10 $\pm$ 0.02 (a)
Q-FYM		0.24 $\pm$ 0.01 (a)	44.5 $\pm$ 1.7 (a)	12.6 $\pm$ 1.4 (a)	0.10 $\pm$ 0.02 (a)
Q-CN		0.24 $\pm$ 0.01 (a)	46.7 $\pm$ 3.0 (a)	12.0 $\pm$ 0.9 (a)	0.09 $\pm$ 0.01 (a)
P-SLU		0.24 $\pm$ 0.00 (a)	75.1 $\pm$ 6.5 (a)	26.6 $\pm$ 3.4 (a)	0.05 $\pm$ 0.01 (a)
P-GWS		0.24 $\pm$ 0.00 (a)	75.8 $\pm$ 6.4 (a)	25.9 $\pm$ 1.8 (a)	0.04 $\pm$ 0.00 (a)
P-BIOW		0.24 $\pm$ 0.01 (a)	75.8 $\pm$ 4.1 (a)	24.5 $\pm$ 0.9 (a)	0.06 $\pm$ 0.00 (a)
P-FYM		0.24 $\pm$ 0.00 (a)	75.1 $\pm$ 3.2 (a)	24.2 $\pm$ 1.0 (a)	0.04 $\pm$ 0.00 (a)
P-CFYM		0.23 $\pm$ 0.00 (a)	76.2 $\pm$ 2.7 (a)	24.4 $\pm$ 0.3 (a)	0.05 $\pm$ 0.01 (a)
P-CN		0.23 $\pm$ 0.00 (a)	76.8 $\pm$ 2.6 (a)	23.6 $\pm$ 1.3 (a)	0.05 $\pm$ 0.01 (a)
		Mo	Ni	Pb	Tl
		$\text{mg kg}^{-1} \text{DM}$	$\text{mg kg}^{-1} \text{DM}$	$\text{mg kg}^{-1} \text{DM}$	$\text{mg kg}^{-1} \text{DM}$
Q-GWS		na	14.6 $\pm$ 0.5 (a)	30.0 $\pm$ 7.5 (a)	na
Q-BIOW		na	14.7 $\pm$ 0.8 (a)	24.7 $\pm$ 0.8 (a)	na
Q-MSW		na	14.6 $\pm$ 0.5 (a)	25.2 $\pm$ 2.7 (a)	na
Q-FYM		na	14.8 $\pm$ 1.0 (a)	25.1 $\pm$ 2.8 (a)	na
Q-CN		na	15.1 $\pm$ 0.8 (a)	23.7 $\pm$ 0.9 (a)	na
P-SLU		0.55 $\pm$ 0.02 (a)	34.0 $\pm$ 1.1 (a)	25.9 $\pm$ 1.7 (a)	0.63 $\pm$ 0.03 (a)
P-GWS		0.56 $\pm$ 0.02 (a)	34.0 $\pm$ 0.4 (a)	25.3 $\pm$ 0.6 (a)	0.64 $\pm$ 0.03 (a)
P-BIOW		0.57 $\pm$ 0.01 (a)	33.7 $\pm$ 0.7 (a)	26.1 $\pm$ 1.3 (a)	0.63 $\pm$ 0.02 (a)
P-FYM		0.56 $\pm$ 0.01 (a)	33.7 $\pm$ 0.9 (a)	24.7 $\pm$ 1.1 (a)	0.63 $\pm$ 0.03 (a)
P-CFYM		0.55 $\pm$ 0.01 (a)	34.1 $\pm$ 1.5 (a)	24.6 $\pm$ 1.2 (a)	0.63 $\pm$ 0.03 (a)
P-CN		0.55 $\pm$ 0.01 (a)	33.7 $\pm$ 1.0 (a)	25.0 $\pm$ 1.4 (a)	0.62 $\pm$ 0.02 (a)

Table S2. Soil supplementary chemical properties.

Chemical properties measured in the topsoil layer (0–25 cm, sieved < 2 mm), compared to average French values, with the following data presented: mean values $\pm$ standard deviation of the four replicates (in each site, abc letters stand for significant difference between treatments per year with Newman-Keuls and Kruskal-Wallis tests). Total nitrogen content (N) and content of clay, silt and sand, DM for dry matter. QualiAgro site, co-compost of sewage sludge and green waste (Q-GWS), biowaste compost (Q-BIOW), compost of residual municipal solid waste (Q-MSW), farmyard manure (Q-FYM), no organic amendment (Q-CN). PROspective site, sewage sludge (P-SLU), co-compost of sewage sludge and green waste (P-GWS), biowaste compost (P-BIOW), farmyard manure (P-FYM), compost of farmyard manure (P-CFYM), no organic amendment (P-CN). na for not available.

Year	Treatment	Total N g kg ⁻¹ DM	Clay g kg ⁻¹ DM	Silt g kg ⁻¹ DM	Sand g kg ⁻¹ DM
1998	Q-GWS	1.1 $\pm$ 0.1 (a)	140.5 $\pm$ 7.5 (a)	790.8 $\pm$ 4.0 (a)	68.8 $\pm$ 5.6 (a)
1998	Q-BIOW	1.1 $\pm$ 0.1 (a)	146.8 $\pm$ 8.0 (a)	785.3 $\pm$ 2.8 (a)	68.0 $\pm$ 5.5 (a)
1998	Q-MSW	1.1 $\pm$ 0.0 (a)	144.8 $\pm$ 2.6 (a)	785.3 $\pm$ 3.3 (a)	70.0 $\pm$ 2.4 (a)
1998	Q-FYM	1.1 $\pm$ 0.0 (a)	145.5 $\pm$ 8.7 (a)	782.5 $\pm$ 5.9 (a)	72.0 $\pm$ 3.4 (a)
1998	Q-CN	1.1 $\pm$ 0.0 (a)	151.5 $\pm$ 7.9 (a)	781.5 $\pm$ 6.8 (a)	67.0 $\pm$ 5.5 (a)
2013	Q-GWS	1.5 $\pm$ 0.0 (a)	na	na	na
2013	Q-BIOW	1.5 $\pm$ 0.0 (a)	na	na	na
2013	Q-MSW	1.3 $\pm$ 0.0 (c)	na	na	na
2013	Q-FYM	1.4 $\pm$ 0.0 (b)	na	na	na
2013	Q-CN	1.0 $\pm$ 0.0 (d)	na	na	na
2000	P-SLU	1.4 $\pm$ 0.0 (a)	240.0 $\pm$ 18.8 (a)	636.0 $\pm$ 2.9 (a)	101.0 $\pm$ 17.3 (a)
2000	P-GWS	1.4 $\pm$ 0.0 (a)	248.5 $\pm$ 6.1 (a)	639.0 $\pm$ 5.6 (a)	91.0 $\pm$ 7.3 (a)
2000	P-BIOW	1.4 $\pm$ 0.0 (a)	239.8 $\pm$ 11.9 (a)	641.5 $\pm$ 14.6 (a)	96.3 $\pm$ 6.0 (a)
2000	P-FYM	1.4 $\pm$ 0.0 (a)	234.8 $\pm$ 17.6 (a)	654.3 $\pm$ 14.9 (a)	89.0 $\pm$ 3.6 (a)
2000	P-CFYM	1.4 $\pm$ 0.0 (a)	235.5 $\pm$ 16.8 (a)	648.8 $\pm$ 17.6 (a)	94.3 $\pm$ 4.3 (a)
2000	P-CN	1.4 $\pm$ 0.1 (a)	231.3 $\pm$ 17.2 (a)	655.8 $\pm$ 17.2 (a)	91.5 $\pm$ 4.1 (a)
2012	P-SLU	1.3 $\pm$ 0.0 (ab)	na	na	na
2012	P-GWS	1.4 $\pm$ 0.1 (b)	na	na	na
2012	P-BIOW	1.4 $\pm$ 0.0 (b)	na	na	na
2012	P-FYM	1.4 $\pm$ 0.0 (ab)	na	na	na
2012	P-CFYM	1.3 $\pm$ 0.0 (ab)	na	na	na
2012	P-CN	1.2 $\pm$ 0.0 (a)	na	na	na
French value*		na	217.0	459.5	247.0

* Median values for topsoil layer (0–30 cm) of arable crop systems cited in [58]

Table S3. Supplementary total trace elements concentrations measured in the topsoil layer (0–25 cm, sieved < 2 mm) for Ag, Al, As, B, Co, Fe, Se, compared to the average French trace element concentrations.

With the following data presented: mean values $\pm$ standard deviation of the four replicates (in each site, abc letters stand for significant difference between treatments per year with Newman-Keuls and Kruskal-Wallis tests); mg kg⁻¹ DM, DM for dry matter. QualiAgro site, co-compost of sewage sludge and green waste (Q-GWS), biowaste compost (Q-BIOW), compost of residual municipal solid waste (Q-MSW), farmyard manure (Q-FYM), no organic amendment (Q-CN). PROspective site, sewage sludge (P-SLU), co-compost of sewage sludge and green waste (P-GWS), biowaste compost (P-BIOW), farmyard manure (P-FYM), compost of farmyard manure (P-CFYM), no organic amendment (P-CN). na for not available.

Year	Treatment	Ag	Al	As	B
		mg kg ⁻¹ DM	g kg ⁻¹ DM	mg kg ⁻¹ DM	mg kg ⁻¹ DM
1998	Q-GWS	na	na	na	na
1998	Q-BIOW	na	na	na	na
1998	Q-MSW	na	na	na	na
1998	Q-FYM	na	na	na	na
1998	Q-CN	na	na	na	na
2013	Q-GWS	na	37.2 $\pm$ 0.8 (a)	8.6 $\pm$ 0.3 (a)	0.46 $\pm$ 0.02 (a)
2013	Q-BIOW	na	37.5 $\pm$ 0.6 (a)	8.9 $\pm$ 0.1 (a)	0.32 $\pm$ 0.01 (c)
2013	Q-MSW	na	37.3 $\pm$ 0.8 (a)	8.5 $\pm$ 0.1 (a)	0.28 $\pm$ 0.00 (d)
2013	Q-FYM	na	37.0 $\pm$ 1.0 (a)	8.6 $\pm$ 0.1 (a)	0.35 $\pm$ 0.01 (b)
2013	Q-CN	na	37.5 $\pm$ 1.1 (a)	8.8 $\pm$ 0.3 (a)	0.27 $\pm$ 0.02 (d)
2000	P-SLU	0.13 $\pm$ 0.00 (a)	49.8 $\pm$ 1.0 (a)	12.1 $\pm$ 1.0 (a)	0.34 $\pm$ 0.02 (a)
2000	P-GWS	0.13 $\pm$ 0.00 (a)	50.0 $\pm$ 1.2 (a)	12.4 $\pm$ 0.4 (a)	0.34 $\pm$ 0.01 (a)
2000	P-BIOW	0.12 $\pm$ 0.00 (a)	49.8 $\pm$ 0.5 (a)	12.4 $\pm$ 0.5 (a)	0.33 $\pm$ 0.01 (a)
2000	P-FYM	0.13 $\pm$ 0.01 (a)	49.5 $\pm$ 1.3 (a)	12.5 $\pm$ 0.7 (a)	0.34 $\pm$ 0.03 (a)
2000	P-CFYM	0.12 $\pm$ 0.00 (a)	50.0 $\pm$ 1.4 (a)	12.5 $\pm$ 0.3 (a)	0.34 $\pm$ 0.03 (a)
2000	P-CN	0.12 $\pm$ 0.01 (a)	49.3 $\pm$ 1.0 (a)	11.9 $\pm$ 0.4 (a)	0.32 $\pm$ 0.03 (a)
2012	P-SLU	0.19 $\pm$ 0.01 (a)	48.9 $\pm$ 0.7 (a)	13.7 $\pm$ 0.3 (a)	na
2012	P-GWS	0.20 $\pm$ 0.02 (a)	49.7 $\pm$ 1.2 (a)	13.8 $\pm$ 0.3 (a)	na
2012	P-BIOW	0.12 $\pm$ 0.01 (b)	49.0 $\pm$ 1.3 (a)	13.7 $\pm$ 0.5 (a)	na
2012	P-FYM	0.12 $\pm$ 0.01 (b)	49.4 $\pm$ 0.8 (a)	14.0 $\pm$ 0.4 (a)	na
2012	P-CFYM	0.12 $\pm$ 0.02 (b)	49.4 $\pm$ 0.5 (a)	13.7 $\pm$ 0.2 (a)	na
2012	P-CN	0.12 $\pm$ 0.02 (b)	48.7 $\pm$ 0.6 (a)	14.0 $\pm$ 0.4 (a)	na
French value*		na	43.2	11.5	0.23
		Co	Fe	Se	
		mg kg ⁻¹ DM	g kg ⁻¹ DM	mg kg ⁻¹ DM	
1998	Q-GWS	na	na	na	
1998	Q-BIOW	na	na	na	
1998	Q-MSW	na	na	na	
1998	Q-FYM	na	na	na	
1998	Q-CN	na	na	na	
2013	Q-GWS	7.7 $\pm$ 0.3 (a)	17.5 $\pm$ 0.5 (a)	na	
2013	Q-BIOW	7.7 $\pm$ 0.2 (a)	18.0 $\pm$ 0.3 (a)	na	
2013	Q-MSW	7.7 $\pm$ 0.5 (a)	17.7 $\pm$ 0.5 (a)	na	
2013	Q-FYM	7.7 $\pm$ 0.0 (a)	17.6 $\pm$ 0.5 (a)	na	
2013	Q-CN	7.7 $\pm$ 0.1 (a)	17.9 $\pm$ 0.5 (a)	na	
2000	P-SLU	12.2 $\pm$ 0.4 (a)	24.9 $\pm$ 0.4 (a)	0.19 $\pm$ 0.03 (a)	
2000	P-GWS	12.3 $\pm$ 0.4 (a)	25.3 $\pm$ 0.4 (a)	0.17 $\pm$ 0.01 (a)	
2000	P-BIOW	12.1 $\pm$ 0.7 (a)	25.3 $\pm$ 0.7 (a)	0.18 $\pm$ 0.04 (a)	

2000	P-FYM	11.8 ± 0.3 (a)	25.3 ± 0.8 (a)	0.19 ± 0.07 (a)
2000	P-CFYM	12.2 ± 0.5 (a)	25.2 ± 0.4 (a)	0.20 ± 0.04 (a)
2000	P-CN	12.0 ± 0.4 (a)	25.0 ± 0.3 (a)	0.17 ± 0.03 (a)
2012	P-SLU	9.0 ± 0.1 (a)	23.6 ± 0.4 (a)	0.15 ± 0.00 (a)
2012	P-GWS	9.2 ± 0.2 (a)	24.1 ± 0.8 (a)	0.15 ± 0.00 (a)
2012	P-BIOW	9.0 ± 0.1 (a)	23.9 ± 0.6 (a)	0.14 ± 0.00 (b)
2012	P-FYM	9.0 ± 0.2 (a)	24.1 ± 0.7 (a)	0.15 ± 0.00 (ab)
2012	P-CFYM	9.1 ± 0.1 (a)	23.9 ± 0.6 (a)	0.15 ± 0.00 (ab)
2012	P-CN	9.1 ± 0.1 (a)	23.7 ± 0.1 (a)	0.14 ± 0.00 (b)
French value*		8.8	21.5	na

* Median values for topsoil layer (0-30 cm) of arable crop systems cited in [58]

Table S4. Characteristics of the organic waste products studied in the QualiAgro site.

With the following data presented: mean values $\pm$ standard deviation of the three replicates (abc letters stand for significant difference between treatments with Newman-Keuls and Kruskal-Wallis tests); dry matter (DM) expressed as percentage of fresh matter (FM), pH, CaCO_3 content, organic carbon content (OC), content of total and Olsen phosphorus (Total/Olsen P_2O_5), total content of nitrogen (N) and potassium (K). QualiAgro site, co-compost of sewage sludge and green waste (Q-GWS), biowaste compost (Q-BIOW), compost of residual municipal solid waste (Q-MSW), farmyard manure (Q-FYM).

Year	Treatment	DM % FM	pH	CaCO_3 g kg^{-1} DM	OC g kg^{-1} DM
1998	Q-GWS	53.5	8.5 $\pm$ 0.1 (ab)	10.4 $\pm$ 1.4 (a)	272.7 $\pm$ 11.1 (ab)
1998	Q-BIOW	77.3	8.6 $\pm$ 0.1 (ab)	55.5 $\pm$ 0.4 (ab)	157.5 $\pm$ 13.2 (a)
1998	Q-MSW	71.5	8.1 $\pm$ 0.2 (a)	70.5 $\pm$ 8.6 (b)	303.7 $\pm$ 17.7 (b)
1998	Q-FYM	23.8	8.8 $\pm$ 0.1 (b)	48.1 $\pm$ 5.6 (ab)	286.5 $\pm$ 5.2 (ab)
2000	Q-GWS	60.0 $\pm$ 0.4	8.4 $\pm$ 0.1 (ab)	10.3 $\pm$ 3.3 (a)	191.1 $\pm$ 3.5 (ab)
2000	Q-BIOW	60.8 $\pm$ 0.6	8.5 $\pm$ 0.2 (ab)	89.3 $\pm$ 9.2 (b)	176.1 $\pm$ 7.5 (a)
2000	Q-MSW	81.2 $\pm$ 0.9	7.0 $\pm$ 0.2 (a)	53.1 $\pm$ 24 (ab)	313.2 $\pm$ 3.4 (ab)
2000	Q-FYM	43.7 $\pm$ 1.4	9.0 $\pm$ 0.1 (b)	17.6 $\pm$ 2.9 (ab)	384.8 $\pm$ 32.8 (b)
2002	Q-GWS	53.1 $\pm$ 2.1	6.7 $\pm$ 0.1 (a)	20.8 $\pm$ 4.7 (a)	349.3 $\pm$ 47.2 (a)
2002	Q-BIOW	69.5 $\pm$ 0.3	8.2 $\pm$ 0.1 (ab)	163.7 $\pm$ 8.2 (b)	177.5 $\pm$ 7.2 (a)
2002	Q-MSW	74.5 $\pm$ 0.4	7.3 $\pm$ 0.1 (ab)	65.0 $\pm$ 4.2 (ab)	277.4 $\pm$ 17.3 (a)
2002	Q-FYM	37.9 $\pm$ 1.1	8.9 $\pm$ 0.1 (b)	65.7 $\pm$ 10.2 (ab)	344.6 $\pm$ 18.7 (a)
2004	Q-GWS	63 $\pm$ 0.7	7.2 $\pm$ 0.1 (ab)	24.8 $\pm$ 2.6 (a)	310.7 $\pm$ 21.9 (ab)
2004	Q-BIOW	65 $\pm$ 0.5	8.6 $\pm$ 0.1 (ab)	169.7 $\pm$ 29.3 (b)	168.0 $\pm$ 2.0 (a)
2004	Q-MSW	83.6 $\pm$ 0.4	7.1 $\pm$ 0.0 (a)	75.2 $\pm$ 1.1 (ab)	263.3 $\pm$ 8.6 (ab)
2004	Q-FYM	37.5 $\pm$ 1.4	9.3 $\pm$ 0.0 (b)	44.0 $\pm$ 9.6 (ab)	384 $\pm$ 15.6 (b)
2006	Q-GWS	66.9 $\pm$ 8.0	7.7 $\pm$ 0.1 (ab)	38.2 $\pm$ 2.0 (a)	244.7 $\pm$ 4.0 (ab)
2006	Q-BIOW	59.6 $\pm$ 0.4	8.6 $\pm$ 0.0 (ab)	167.0 $\pm$ 2.0 (b)	196.0 $\pm$ 10.4 (a)
2006	Q-MSW	55.8 $\pm$ 0.6	7.5 $\pm$ 0.0 (a)	48.0 $\pm$ 20.0 (ab)	390.3 $\pm$ 12.1 (b)
2006	Q-FYM	38.6 $\pm$ 1.2	8.8 $\pm$ 0.1 (b)	58.8 $\pm$ 0.6 (ab)	278.7 $\pm$ 18.6 (ab)
2007	Q-GWS	59.2 $\pm$ 0.7	7.4 $\pm$ 0.0 (ab)	35.1 $\pm$ 0.7 (a)	238.3 $\pm$ 3.8 (ab)
2007	Q-BIOW	64.8 $\pm$ 0.8	7.6 $\pm$ 0.0 (ab)	77.9 $\pm$ 3.9 (b)	228.7 $\pm$ 5.0 (a)
2007	Q-MSW	45.5 $\pm$ 0.2	7.0 $\pm$ 0.4 (a)	60.9 $\pm$ 2.9 (ab)	359.3 $\pm$ 6.4 (b)
2007	Q-FYM	35.6 $\pm$ 1.4	9.3 $\pm$ 0.0 (b)	54.4 $\pm$ 7.5 (ab)	274.7 $\pm$ 4.2 (ab)
2009	Q-GWS	77.2 $\pm$ 0.3	7.1 $\pm$ 0.1 (a)	35.4 $\pm$ 2.7 (ab)	256.3 $\pm$ 3.5 (a)
2009	Q-BIOW	82.9 $\pm$ 0.5	7.5 $\pm$ 0.1 (ab)	46.5 $\pm$ 1.3 (ab)	263.3 $\pm$ 14.2 (ab)
2009	Q-MSW	67.8 $\pm$ 0.3	7.8 $\pm$ 0.1 (ab)	59.9 $\pm$ 0.3 (b)	310.3 $\pm$ 22.4 (ab)
2009	Q-FYM	58.2 $\pm$ 1.3	9.2 $\pm$ 0.1 (b)	24.8 $\pm$ 2.5 (a)	406.7 $\pm$ 2.5 (b)
2011	Q-GWS	73.3 $\pm$ 0.3	6.7 $\pm$ 0.0 (a)	31.5 $\pm$ 7.1 (ab)	261.3 $\pm$ 17.0 (ab)
2011	Q-BIOW	80.9 $\pm$ 0.0	7.5 $\pm$ 0.0 (ab)	22.5 $\pm$ 0.6 (a)	295.3 $\pm$ 10.0 (b)
2011	Q-MSW	62.2 $\pm$ 0.6	8.2 $\pm$ 0.1 (ab)	125.7 $\pm$ 11 (b)	248.7 $\pm$ 13.3 (ab)
2011	Q-FYM	43.8 $\pm$ 1.5	9.4 $\pm$ 0.1 (b)	64.3 $\pm$ 4.0 (ab)	199.0 $\pm$ 5.3 (a)

Year	Treatment	Total N g kg ⁻¹ DM	Olsen P ₂ O ₅ g kg ⁻¹ DM	Total P ₂ O ₅ g kg ⁻¹ DM	K g kg ⁻¹ DM
1998	Q-GWS	28.3 ± 0.7 (b)	1.2 ± 0.0 (ab)	18.9 ± 1.1 (b)	17.5 ± 0.1 (ab)
1998	Q-BIOW	16.3 ± 0.9 (a)	0.8 ± 0.0 (ab)	7.0 ± 0.2 (a)	15.8 ± 0.2 (ab)
1998	Q-MSW	20.2 ± 0.3 (ab)	0.3 ± 0.0 (a)	9.0 ± 0.5 (ab)	10.9 ± 0.3 (a)
1998	Q-FYM	23.9 ± 0.3 (ab)	4.0 ± 0.2 (b)	14.3 ± 0.6 (ab)	34.4 ± 0.9 (b)
2000	Q-GWS	18.5 ± 0.4 (ab)	2.9 ± 0.3 (b)	16.3 ± 0.2 (a)	24.1 ± 0.4 (ab)
2000	Q-BIOW	11.9 ± 0.5 (a)	1.2 ± 0.2 (ab)	8.9 ± 2 (a)	17.8 ± 0.4 (ab)
2000	Q-MSW	20.7 ± 0.6 (b)	0.6 ± 0.2 (a)	8.3 ± 0.2 (a)	9.8 ± 0.1 (a)
2000	Q-FYM	19.4 ± 1.6 (ab)	2.3 ± 0.2 (ab)	8.2 ± 0.9 (a)	31.2 ± 1.3 (b)
2002	Q-GWS	23.1 ± 1.4 (ab)	1.6 ± 0.1 (ab)	27.1 ± 10.1 (b)	9.0 ± 2.5 (ab)
2002	Q-BIOW	13.9 ± 0.3 (a)	1.3 ± 0.0 (ab)	8.6 ± 0.4 (ab)	21.3 ± 0.4 (ab)
2002	Q-MSW	16.5 ± 0.9 (ab)	0.4 ± 0.0 (a)	6.5 ± 0.3 (a)	8.5 ± 0.2 (a)
2002	Q-FYM	26.8 ± 0.9 (b)	4.8 ± 0.8 (b)	15.9 ± 1.6 (ab)	36.1 ± 0.8 (b)
2004	Q-GWS	21.0 ± 0.4 (ab)	2 ± 0.1 (ab)	31.7 ± 3.2 (b)	10.2 ± 0.8 (ab)
2004	Q-BIOW	13.1 ± 0.5 (a)	1.2 ± 0.1 (ab)	8.8 ± 1.1 (ab)	23.4 ± 0.6 (ab)
2004	Q-MSW	16.8 ± 1.2 (ab)	0.7 ± 0.1 (a)	7.3 ± 0.2 (a)	9.2 ± 0.0 (a)
2004	Q-FYM	23.3 ± 0.5 (b)	2.7 ± 0.1 (b)	10.0 ± 0.5 (ab)	39.8 ± 0.9 (b)
2006	Q-GWS	25.0 ± 0.8 (b)	1.3 ± 0.0 (ab)	36.7 ± 0.3 (b)	14.8 ± 0.7 (ab)
2006	Q-BIOW	15.5 ± 0.4 (ab)	1.0 ± 0.0 (ab)	10.1 ± 0.7 (ab)	25.2 ± 0.3 (ab)
2006	Q-MSW	15.3 ± 0.2 (a)	0.2 ± 0.0 (a)	5.6 ± 0.3 (a)	7.2 ± 0.2 (a)
2006	Q-FYM	22.7 ± 1.5 (ab)	2.8 ± 0.1 (b)	13.8 ± 0.5 (ab)	38.6 ± 1.6 (b)
2007	Q-GWS	23.3 ± 0.8 (b)	1.6 ± 0.0 (ab)	34.9 ± 0.5 (b)	13.9 ± 0.2 (ab)
2007	Q-BIOW	22.5 ± 0.2 (ab)	1.1 ± 0.0 (ab)	20.2 ± 0.6 (ab)	19.4 ± 0.4 (ab)
2007	Q-MSW	15.1 ± 0.7 (a)	0.3 ± 0.0 (a)	7.3 ± 0.5 (a)	7.5 ± 0.2 (a)
2007	Q-FYM	20.8 ± 0.6 (ab)	3.7 ± 0.1 (b)	14.2 ± 0.7 (ab)	33.9 ± 1.5 (b)
2009	Q-GWS	23.7 ± 0.4 (b)	0.9 ± 0.0 (ab)	32.5 ± 0.4 (b)	15.3 ± 0.4 (ab)
2009	Q-BIOW	22.4 ± 0.7 (ab)	0.6 ± 0.0 (a)	12.5 ± 0.4 (ab)	23.4 ± 0.3 (ab)
2009	Q-MSW	19.3 ± 1.4 (a)	0.8 ± 0.0 (ab)	8.2 ± 0.6 (a)	14.6 ± 0.5 (a)
2009	Q-FYM	22.7 ± 0.5 (ab)	2.4 ± 0.1 (b)	12.9 ± 0.2 (ab)	35.8 ± 1.4 (b)
2011	Q-GWS	24.7 ± 0.7 (b)	0.8 ± 0.0 (ab)	39.3 ± 2.8 (a)	11.0 ± 0.4 (a)
2011	Q-BIOW	23.8 ± 0.2 (ab)	0.5 ± 0.0 (a)	11.8 ± 0.3 (a)	21.5 ± 0.2 (ab)
2011	Q-MSW	17.3 ± 0.1 (ab)	0.7 ± 0.0 (ab)	11.6 ± 0.2 (a)	15.6 ± 0.4 (ab)
2011	Q-FYM	15.7 ± 0.3 (a)	2.1 ± 0.1 (b)	11.8 ± 0.6 (a)	34.8 ± 1.1 (b)

Table S5. Characteristics of the organic waste products studied in the PROspective site.

With the following data presented: mean values $\pm$ standard deviation of the three replicates (abc letters stand for significant difference between treatments with Newman-Keuls and Kruskal-Wallis tests); dry matter (DM) expressed as percentage of fresh matter (FM), pH, CaCO_3 content, organic carbon content (OC), content of total and Olsen phosphorus (Total/Olsen P_2O_5), total content of nitrogen (N) and potassium (K). PROspective site, sewage sludge (P-SLU), co-compost of sewage sludge and green waste (P-GWS), biowaste compost (P-BIOW), farmyard manure (P-FYM), compost of farmyard manure (P-CFYM).

Year	Treatment	DM % FM	pH	CaCO_3 g kg^{-1} DM	OC g kg^{-1} DM
2001	P-SLU	18.7	7.2	30	313.9
2001	P-GWS	46.2	7.1	19	353.2
2001	P-BIOW	58.1	8.1	87	220.8
2001	P-FYM	21.4	10.0	37	358.2
2001	P-CFYM	17.5	9.8	79	331.1
2003	P-SLU	19.5 $\pm$ 0.5	7.4 $\pm$ 0.2 (a)	17.7 $\pm$ 1.2 (ab)	337.6 $\pm$ 2.4 (ab)
2003	P-GWS	44.8 $\pm$ 0.6	7.4 $\pm$ 0.1 (a)	16.0 $\pm$ 0.0 (a)	355.4 $\pm$ 3.0 (ab)
2003	P-BIOW	48.9 $\pm$ 0.7	8.4 $\pm$ 0.0 (a)	96.0 $\pm$ 4.6 (b)	227.5 $\pm$ 19.6 (a)
2003	P-FYM	21.8 $\pm$ 1.8	9.7 $\pm$ 0.2 (a)	35.0 $\pm$ 6.0 (ab)	390.1 $\pm$ 7.3 (b)
2003	P-CFYM	19.5 $\pm$ 0.6	9.7 $\pm$ 0.0 (a)	41.7 $\pm$ 0.6 (ab)	370.7 $\pm$ 0.8 (ab)
2005	P-SLU	18.0 $\pm$ 0.2	6.8 $\pm$ 0.1 (a)	6.9 $\pm$ 0.5 (a)	393.3 $\pm$ 0.6 (ab)
2005	P-GWS	53.1 $\pm$ 2.5	7.9 $\pm$ 0.0 (ab)	15.2 $\pm$ 2.9 (ab)	338.7 $\pm$ 10.4 (ab)
2005	P-BIOW	47.1 $\pm$ 1.1	9.2 $\pm$ 0.1 (ab)	108.3 $\pm$ 4.9 (b)	239 $\pm$ 11.4 (a)
2005	P-FYM	18.8 $\pm$ 0.7	9.4 $\pm$ 0.0 (b)	41.9 $\pm$ 5.5 (ab)	402.3 $\pm$ 8.1 (b)
2005	P-CFYM	17.8 $\pm$ 0.4	9.2 $\pm$ 0.1 (ab)	41.9 $\pm$ 3.5 (ab)	387.7 $\pm$ 4.0 (ab)
2007	P-SLU	15.1 $\pm$ 0.2	7.3 $\pm$ 0.5 (a)	10.1 $\pm$ 5.8 (a)	373.7 $\pm$ 2.1 (ab)
2007	P-GWS	52.1 $\pm$ 0.8	7.3 $\pm$ 0.2 (a)	36.4 $\pm$ 4.9 (ab)	285.3 $\pm$ 6.7 (ab)
2007	P-BIOW	51.6 $\pm$ 0.6	8.3 $\pm$ 0.0 (ab)	120.3 $\pm$ 6.8 (b)	248.3 $\pm$ 7.2 (a)
2007	P-FYM	18.5 $\pm$ 1.0	9.9 $\pm$ 0.1 (b)	38.6 $\pm$ 8.9 (ab)	400.7 $\pm$ 16.1 (b)
2007	P-CFYM	19.3 $\pm$ 0.4	9.7 $\pm$ 0.0 (ab)	56.2 $\pm$ 1.7 (ab)	356 $\pm$ 2.0 (ab)
2009	P-SLU	18.4 $\pm$ 2.1	6.1 $\pm$ 0.1 (a)	11.8 $\pm$ 0.3 (a)	403.7 $\pm$ 2.3 (ab)
2009	P-GWS	55.1 $\pm$ 1.3	7.6 $\pm$ 0.1 (ab)	50.9 $\pm$ 13.1 (ab)	250 $\pm$ 14.7 (ab)
2009	P-BIOW	57.1 $\pm$ 1.1	8.5 $\pm$ 0.4 (ab)	57.9 $\pm$ 4.8 (b)	242.3 $\pm$ 6.5 (a)
2009	P-FYM	18.3 $\pm$ 0.8	9.4 $\pm$ 0.1 (b)	27.1 $\pm$ 5 (ab)	426.3 $\pm$ 0.6 (b)
2009	P-CFYM	19.9 $\pm$ 0.2	9.3 $\pm$ 0.1 (ab)	32.5 $\pm$ 3 (ab)	377.3 $\pm$ 5.5 (ab)
2011	P-SLU	17.0 $\pm$ 0.2	8.5 $\pm$ 0.1 (a)	8.1 $\pm$ 1.3 (a)	385 $\pm$ 8.9 (b)
2011	P-GWS	66.3 $\pm$ 0.9	8.4 $\pm$ 0.0 (a)	43.7 $\pm$ 2.4 (ab)	234.3 $\pm$ 9.0 (a)
2011	P-BIOW	83.2 $\pm$ 1.5	8.7 $\pm$ 0.0 (a)	50.4 $\pm$ 0.8 (ab)	251 $\pm$ 2.6 (ab)
2011	P-FYM	19.2 $\pm$ 0.2	8.8 $\pm$ 0.1 (a)	25.8 $\pm$ 2.8 (ab)	384 $\pm$ 4.6 (b)
2011	P-CFYM	22.2 $\pm$ 0.5	8.8 $\pm$ 0.0 (a)	58.2 $\pm$ 5.5 (b)	301.3 $\pm$ 10.0 (ab)
2013	P-SLU	16.9	6.9 $\pm$ 0.4 (a)	17.8 $\pm$ 3.5 (a)	388 $\pm$ 6.2 (ab)
2013	P-GWS	50.4	7.4 $\pm$ 0.0 (ab)	33.6 $\pm$ 2.7 (a)	238 $\pm$ 5.6 (a)
2013	P-BIOW	76.7	8.2 $\pm$ 0.1 (ab)	32.4 $\pm$ 9.0 (a)	284 $\pm$ 4.0 (ab)
2013	P-FYM	17.9	9.3 $\pm$ 0.1 (b)	22.6 $\pm$ 4.4 (a)	402.7 $\pm$ 6.1 (b)
2013	P-CFYM	15.5	9.3 $\pm$ 0.1 (ab)	26.6 $\pm$ 3.6 (a)	371 $\pm$ 6.6 (ab)

Year	Treatment	Total N	Olsen P ₂ O ₅	Total P ₂ O ₅	K
		g kg ⁻¹ DM	g kg ⁻¹ DM	g kg ⁻¹ DM	g kg ⁻¹ DM
2001	P-SLU	57.3	5.0	69.2	6.2
2001	P-GWS	24.8	1.6	22.4	7.4
2001	P-BIOW	14.5	0.9	7.4	15.3
2001	P-FYM	33.8	4.5	18.7	42.2
2001	P-CFYM	23.3	3.9	19.3	38.2
2003	P-SLU	57.9 ± 1.2 (b)	5.2 ± 0.3 (b)	66.0 ± 1.1 (b)	4.0 ± 0.1 (a)
2003	P-GWS	20.5 ± 0.2 (ab)	1.8 ± 0.0 (ab)	29.2 ± 0.6 (ab)	6.2 ± 0.2 (ab)
2003	P-BIOW	17.4 ± 1.1 (a)	0.8 ± 0.0 (a)	8.7 ± 0.3 (a)	16.3 ± 0.3 (ab)
2003	P-FYM	23.2 ± 1.3 (ab)	4.1 ± 0.3 (ab)	13.4 ± 1.3 (ab)	33.5 ± 1.7 (ab)
2003	P-CFYM	25.3 ± 0.6 (ab)	4.4 ± 0.2 (ab)	16.6 ± 0.4 (ab)	38.2 ± 0.7 (b)
2005	P-SLU	60.1 ± 0.6 (b)	5.5 ± 0.1 (b)	69.5 ± 1.4 (b)	5.1 ± 0.0 (a)
2005	P-GWS	26.6 ± 1.2 (ab)	2.5 ± 0.2 (ab)	37.4 ± 1.6 (ab)	9.1 ± 0.4 (ab)
2005	P-BIOW	17.6 ± 0.3 (a)	1.6 ± 0.1 (a)	9.7 ± 1.5 (a)	23.6 ± 0.1 (ab)
2005	P-FYM	27.4 ± 2.7 (ab)	4.4 ± 0.6 (ab)	11.3 ± 0.8 (ab)	41.2 ± 1.2 (b)
2005	P-CFYM	26.2 ± 0.5 (ab)	4.5 ± 0.2 (ab)	12.7 ± 0.3 (ab)	39.7 ± 1.3 (ab)
2007	P-SLU	59.6 ± 0.8 (b)	3.4 ± 0.3 (ab)	71.3 ± 1.4 (b)	5.8 ± 0.1 (a)
2007	P-GWS	24.8 ± 0.2 (ab)	1.7 ± 0.1 (ab)	33.2 ± 1.3 (ab)	14.8 ± 0.2 (ab)
2007	P-BIOW	21.3 ± 0.5 (a)	1.3 ± 0.0 (a)	10.7 ± 0.5 (a)	25.9 ± 0.6 (ab)
2007	P-FYM	24.4 ± 2.5 (ab)	3.9 ± 0.5 (b)	12.9 ± 1.9 (ab)	40.9 ± 5.5 (ab)
2007	P-CFYM	27.6 ± 0.2 (ab)	3.6 ± 0.1 (ab)	16.8 ± 0.3 (ab)	48.1 ± 1.6 (b)
2009	P-SLU	63.8 ± 0.8 (b)	5.7 ± 0.2 (b)	61.8 ± 0.5 (b)	8.4 ± 0.1 (a)
2009	P-GWS	28.2 ± 0.8 (ab)	1.5 ± 0.0 (ab)	34.9 ± 1.2 (ab)	16.5 ± 0.3 (ab)
2009	P-BIOW	22.3 ± 0.6 (a)	0.9 ± 0.0 (a)	10.8 ± 0.4 (a)	25.1 ± 0.9 (ab)
2009	P-FYM	24.2 ± 1.0 (ab)	3 ± 0.2 (ab)	12 ± 0.6 (ab)	27.8 ± 0.6 (ab)
2009	P-CFYM	28.3 ± 0.9 (ab)	3.6 ± 0.0 (ab)	15.7 ± 0.3 (ab)	38.3 ± 0.5 (b)
2011	P-SLU	59.5 ± 0.6 (b)	4.9 ± 0.0 (ab)	66.5 ± 1 (b)	6.9 ± 0.6 (a)
2011	P-GWS	25.7 ± 0.3 (ab)	0.8 ± 0.0 (ab)	40.5 ± 0.2 (ab)	14.3 ± 0.2 (ab)
2011	P-BIOW	23.3 ± 0.5 (a)	0.5 ± 0.0 (a)	12.3 ± 0.5 (a)	22.4 ± 0.1 (ab)
2011	P-FYM	26.9 ± 1.3 (ab)	6.5 ± 0.2 (b)	22.1 ± 1.2 (ab)	46.7 ± 3.5 (b)
2011	P-CFYM	24.7 ± 0.8 (ab)	4 ± 0.1 (ab)	22.1 ± 0.5 (ab)	44.6 ± 1.4 (ab)
2013	P-SLU	68.7 ± 1.2 (b)	5.5 ± 0.1 (b)	63.2 ± 1.3 (b)	6.2 ± 0.2 (a)
2013	P-GWS	21.4 ± 0.5 (a)	1.1 ± 0.0 (ab)	19.9 ± 0.8 (ab)	22.2 ± 0.4 (ab)
2013	P-BIOW	23.3 ± 0.7 (ab)	0.7 ± 0.0 (a)	11.1 ± 0.4 (a)	23.4 ± 0.5 (ab)
2013	P-FYM	25.5 ± 1.0 (ab)	5.1 ± 1.1 (ab)	15.8 ± 1.7 (ab)	33.3 ± 2.5 (b)
2013	P-CFYM	25.0 ± 0.3 (ab)	3.4 ± 0.2 (ab)	17.6 ± 0.5 (ab)	29.6 ± 2.1 (ab)

With the following data presented: total observations = 67, with 32 for QualiAgro site and 35 for PROspective site. QualiAgro site (green symbols), co-compost of sewage sludge and green waste (Q-GWS), biowaste compost (Q-BIOW), compost of residual municipal solid waste (Q-MSW), farmyard manure (Q-FYM), no organic amendment (Q-CN). PROspective site (blue symbols), sewage sludge (P-SLU), co-compost of sewage sludge and green waste (P-GWS), biowaste compost (P-BIOW), farmyard manure (P-FYM), compost of farmyard manure (P-CFYM), no organic amendment (P-CN).

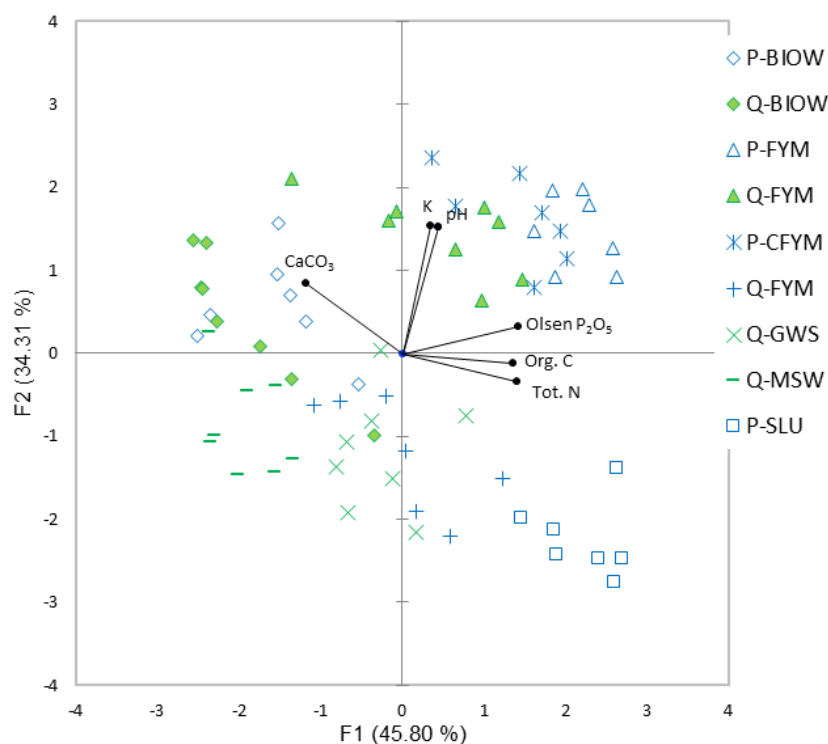


Figure S3. Principal Component Analysis of organic waste product chemical properties for both sites.

Table S6. Trace element concentration (mg kg⁻¹ DM, DM for dry matter) of the organic waste products studied at the QualiAgro site.

With the following data presented: mean values $\pm$ standard deviation of the three replicates (abc letters stand for significant difference between treatments with Newman-Keuls and Kruskal-Wallis tests). QualiAgro site, co-compost of sewage sludge and green waste (Q-GWS), biowaste compost (Q-BIOW), compost of residual municipal solid waste (Q-MSW), farmyard manure (Q-FYM). < QL at least half of values were lower than the quantification limit.

Year	Treatment	Cd	Cr	Cu	Hg
		mg kg ⁻¹ DM	mg kg ⁻¹ DM	mg kg ⁻¹ DM	mg kg ⁻¹ DM
1998	Q-GWS	2.9 $\pm$ 0.2 (ab)	30.0 $\pm$ 0.7 (a)	154.3 $\pm$ 13.4 (ab)	1.1 $\pm$ 0.1 (ab)
1998	Q-BIOW	0.7 $\pm$ 0.0 (a)	45.2 $\pm$ 6.2 (ab)	57.8 $\pm$ 1.2 (a)	0.5 $\pm$ 0.0 (ab)
1998	Q-MSW	2.3 $\pm$ 0.7 (ab)	162.3 $\pm$ 21.9 (b)	312.3 $\pm$ 76.1 (b)	2.4 $\pm$ 0.2 (b)
1998	Q-FYM	3.6 $\pm$ 0.1 (b)	78.1 $\pm$ 6.8 (ab)	207.2 $\pm$ 4.3 (ab)	0.2 $\pm$ 0.0 (a)
2000	Q-GWS	0.7 $\pm$ 0 (ab)	31.1 $\pm$ 1.8 (ab)	86.1 $\pm$ 1.3 (ab)	0.5 $\pm$ 0.0 (ab)
2000	Q-BIOW	2.5 $\pm$ 0.1 (b)	67.2 $\pm$ 4.8 (ab)	117.6 $\pm$ 40.3 (ab)	0.3 $\pm$ 0.0 (ab)
2000	Q-MSW	1.7 $\pm$ 0.4 (ab)	98.7 $\pm$ 16.1 (b)	201.6 $\pm$ 2.3 (b)	1.6 $\pm$ 0.0 (b)
2000	Q-FYM	0.5 $\pm$ 0.0 (a)	11.7 $\pm$ 3.4 (a)	45.8 $\pm$ 3.5 (a)	< QL (a)
2002	Q-GWS	1.0 $\pm$ 0.3 (a)	33.9 $\pm$ 10.5 (ab)	150.5 $\pm$ 38.5 (a)	1 $\pm$ 0.4 (a)
2002	Q-BIOW	0.8 $\pm$ 0.0 (a)	44.4 $\pm$ 0.4 (ab)	46.6 $\pm$ 0.8 (a)	0.2 $\pm$ 0.0 (a)
2002	Q-MSW	1.5 $\pm$ 0.4 (a)	166.9 $\pm$ 13.4 (b)	167.6 $\pm$ 6.8 (a)	1.1 $\pm$ 0.1 (a)
2002	Q-FYM	0.7 $\pm$ 0.1 (a)	24.4 $\pm$ 2.3 (a)	83 $\pm$ 41.8 (a)	0.1 $\pm$ 0.0 (a)
2004	Q-GWS	0.9 $\pm$ 0.1 (ab)	37 $\pm$ 3.5 (ab)	166.7 $\pm$ 12.9 (b)	0.8 $\pm$ 0.1 (b)
2004	Q-BIOW	< QL (a)	45.3 $\pm$ 2.6 (ab)	43.7 $\pm$ 2.1 (a)	0.1 $\pm$ 0.0 (ab)
2004	Q-MSW	1.8 $\pm$ 0.4 (b)	129.3 $\pm$ 12.3 (b)	95.1 $\pm$ 2.8 (ab)	0.5 $\pm$ 0.0 (ab)
2004	Q-FYM	0.8 $\pm$ 0.2 (ab)	25.7 $\pm$ 2.5 (a)	81.3 $\pm$ 7.6 (ab)	0.1 $\pm$ 0.0 (a)
2006	Q-GWS	0.9 $\pm$ 0.0 (ab)	47.6 $\pm$ 0.9 (a)	181.3 $\pm$ 7.5 (b)	1.0 $\pm$ 0.1 (b)
2006	Q-BIOW	< QL (a)	40 $\pm$ 1.8 (a)	52.3 $\pm$ 3.9 (a)	0.1 $\pm$ 0.0 (ab)
2006	Q-MSW	0.7 $\pm$ 0.1 (ab)	42.9 $\pm$ 7.2 (a)	104.3 $\pm$ 4.2 (ab)	0.3 $\pm$ 0.0 (ab)
2006	Q-FYM	1.2 $\pm$ 0.2 (b)	47.7 $\pm$ 15.2 (a)	100.5 $\pm$ 8.5 (ab)	0.1 $\pm$ 0.0 (a)
2007	Q-GWS	1.1 $\pm$ 0.1 (ab)	40.9 $\pm$ 1.9 (ab)	194 $\pm$ 21.2 (ab)	0.7 $\pm$ 0.0 (b)
2007	Q-BIOW	0.5 $\pm$ 0.0 (a)	28.0 $\pm$ 1.8 (a)	89.7 $\pm$ 2.1 (a)	0.1 $\pm$ 0.0 (ab)
2007	Q-MSW	1.7 $\pm$ 0.7 (ab)	50.2 $\pm$ 15.8 (ab)	93.2 $\pm$ 0.4 (ab)	0.3 $\pm$ 0.0 (ab)
2007	Q-FYM	2.1 $\pm$ 0.5 (b)	61.3 $\pm$ 13.8 (b)	215.3 $\pm$ 40.0 (b)	0.1 $\pm$ 0.0 (a)
2009	Q-GWS	0.7 $\pm$ 0.1	51.8 $\pm$ 1.9 (b)	187.3 $\pm$ 37.9 (a)	0.5 $\pm$ 0.0 (b)
2009	Q-BIOW	< QL	25.4 $\pm$ 0.8 (ab)	58.0 $\pm$ 3.8 (a)	0.1 $\pm$ 0.0 (ab)
2009	Q-MSW	< QL	23.3 $\pm$ 1.4 (ab)	46.7 $\pm$ 12.4 (a)	0.2 $\pm$ 0.0 (ab)
2009	Q-FYM	< QL	9.4 $\pm$ 0.8 (a)	45.8 $\pm$ 4.1 (a)	0.0 $\pm$ 0.0 (a)
2011	Q-GWS	0.8 $\pm$ 0.0	42.6 $\pm$ 2.2 (b)	240.3 $\pm$ 10.8 (b)	1.3 $\pm$ 0.0 (a)
2011	Q-BIOW	< QL	21.3 $\pm$ 2.4 (a)	60.0 $\pm$ 3.2 (ab)	0.2 $\pm$ 0.1 (a)
2011	Q-MSW	< QL	22.8 $\pm$ 0.8 (ab)	56.0 $\pm$ 4.4 (ab)	0.2 $\pm$ 0.0 (a)
2011	Q-FYM	< QL	33.0 $\pm$ 1.0 (ab)	31.7 $\pm$ 0.9 (a)	0.1 $\pm$ 0.0 (a)

Year	Treatment	Mn	Ni	Pb	Zn
		mg kg ⁻¹ DM	mg kg ⁻¹ DM	mg kg ⁻¹ DM	mg kg ⁻¹ DM
1998	Q-GWS	491.2 ± 23.1 (b)	36.7 ± 32.6 (a)	84.6 ± 11.1 (a)	383.3 ± 15.0 (ab)
1998	Q-BIOW	304.0 ± 4.5 (ab)	19.4 ± 2.5 (a)	125.1 ± 8.5 (ab)	210.8 ± 7.0 (a)
1998	Q-MSW	285.2 ± 14.2 (a)	68.6 ± 10.0 (a)	245.4 ± 46.6 (ab)	574.2 ± 50.3 (ab)
1998	Q-FYM	446.6 ± 6.9 (ab)	34.6 ± 1.6 (a)	404.3 ± 57.6 (b)	715.7 ± 14.0 (b)
2000	Q-GWS	412.0 ± 7.2 (b)	14.1 ± 0.4 (ab)	57.7 ± 2.9 (ab)	186.9 ± 4.6 (ab)
2000	Q-BIOW	398.2 ± 7.4 (ab)	86.2 ± 2.1 (b)	204.5 ± 25.0 (b)	492.3 ± 14.5 (ab)
2000	Q-MSW	277.7 ± 16.5 (ab)	37.5 ± 10.1 (ab)	171.5 ± 5.5 (ab)	664.7 ± 18.3 (b)
2000	Q-FYM	196.1 ± 27.3 (a)	6.3 ± 1.4 (a)	34.7 ± 4.4 (a)	150.7 ± 9.9 (a)
2002	Q-GWS	351 ± 111.3 (ab)	33.5 ± 9.0 (b)	53.3 ± 20.7 (a)	397.1 ± 125.5 (a)
2002	Q-BIOW	754.1 ± 36.7 (b)	22.1 ± 0.1 (ab)	75.2 ± 3.2 (a)	222.5 ± 6.5 (a)
2002	Q-MSW	243.3 ± 32.5 (a)	28.8 ± 7.3 (ab)	274.4 ± 43.5 (a)	331.4 ± 11.7 (a)
2002	Q-FYM	297.5 ± 31.2 (ab)	8.3 ± 1.0 (a)	68 ± 50.6 (a)	313.2 ± 9.6 (a)
2004	Q-GWS	256.7 ± 17.8 (a)	33.7 ± 2.8 (b)	51.6 ± 4.1 (a)	415 ± 43.7 (b)
2004	Q-BIOW	753.0 ± 4 (a)	26.5 ± 3.9 (ab)	79.2 ± 2.1 (ab)	222.7 ± 15.4 (a)
2004	Q-MSW	264.7 ± 44.6 (a)	25.2 ± 4.0 (ab)	201.7 ± 21.5 (b)	346 ± 11.3 (ab)
2004	Q-FYM	291.0 ± 31.2 (a)	13.8 ± 1.7 (a)	111.4 ± 24.9 (ab)	371.7 ± 19.2 (ab)
2006	Q-GWS	376.3 ± 3.1 (ab)	26.7 ± 0.4 (a)	58.8 ± 0.9 (a)	443.7 ± 8.0 (b)
2006	Q-BIOW	802.7 ± 18.1 (b)	30.8 ± 19.1 (a)	73.9 ± 18.9 (ab)	231.0 ± 10.1 (a)
2006	Q-MSW	114.0 ± 8.5 (a)	23.0 ± 3.9 (a)	63.0 ± 1.6 (ab)	278.0 ± 3.6 (ab)
2006	Q-FYM	402.7 ± 44.6 (ab)	11.3 ± 2 (a)	143.3 ± 17.6 (b)	445.0 ± 139.3 (ab)
2007	Q-GWS	336.3 ± 5.1 (ab)	25.3 ± 1.3 (ab)	71.5 ± 4.1 (ab)	409.0 ± 9.5 (ab)
2007	Q-BIOW	272.3 ± 1.2 (ab)	11.4 ± 0.6 (a)	51.0 ± 2.2 (a)	234.0 ± 3.6 (a)
2007	Q-MSW	148.7 ± 40.3 (a)	28.4 ± 10.1 (b)	102.8 ± 15.9 (ab)	279.5 ± 7.5 (ab)
2007	Q-FYM	337.3 ± 24.0 (b)	14.9 ± 1.2 (ab)	210.5 ± 10.5 (b)	506.0 ± 43.0 (b)
2009	Q-GWS	407.3 ± 4.0 (b)	32.3 ± 0.7 (b)	64.9 ± 7.2 (b)	454.7 ± 7.6 (b)
2009	Q-BIOW	269.0 ± 5.6 (ab)	9.7 ± 0.3 (ab)	41.0 ± 1.9 (ab)	171.7 ± 7.0 (ab)
2009	Q-MSW	263.7 ± 35.8 (ab)	10.4 ± 0.8 (ab)	53.1 ± 7.3 (ab)	158.0 ± 14.1 (a)
2009	Q-FYM	219.3 ± 3.1 (a)	4.3 ± 0.5 (a)	27.1 ± 7.9 (a)	204.7 ± 7.5 (ab)
2011	Q-GWS	399.0 ± 26.7 (ab)	22.9 ± 2.1 (b)	53.5 ± 4.8 (b)	490.3 ± 20.3 (b)
2011	Q-BIOW	272.7 ± 5.7 (ab)	9.1 ± 0.6 (a)	38.9 ± 0.3 (ab)	173.3 ± 4.5 (ab)
2011	Q-MSW	235.0 ± 3.6 (a)	10.7 ± 0.2 (ab)	32.2 ± 1.1 (ab)	162.0 ± 2.0 (ab)
2011	Q-FYM	435.0 ± 8.9 (b)	11.6 ± 0.3 (ab)	22.0 ± 0.7 (a)	155.7 ± 9.1 (a)

Table S7. Trace element concentration (mg kg⁻¹ DM; DM for dry matter) of the organic waste products studied at the PROspective site.

With the following data presented: mean values $\pm$ standard deviation of the three replicates (abc letters stand for significant difference between treatments with Newman-Keuls and Kruskal-Wallis tests). PROspective site, sewage sludge (P-SLU), co-compost of sewage sludge and green waste (P-GWS), biowaste compost (P-BIOW), farmyard manure (P-FYM), compost of farmyard manure (P-CFYM). < QL at least half of values were lower than the quantification limit.

Year	Treatment	Cd mg kg ⁻¹ DM	Cr mg kg ⁻¹ DM	Cu mg kg ⁻¹ DM	Hg mg kg ⁻¹ DM	Mn mg kg ⁻¹ DM
2001	P-SLU	1.4	37.9	260.5	2.0	132.2
2001	P-GWS	0.9	27.7	108.9	1.1	382.5
2001	P-BIOW	1.7	90.2	155.4	0.7	537.6
2001	P-FYM	0.2	5.2	26.6	0.1	261.3
2001	P-CFYM	0.2	7.1	25.0	0.0	319.4
2003	P-SLU	1.1 $\pm$ 0.0	29.2 $\pm$ 0.9 (ab)	238.9 $\pm$ 3.9 (b)	1.4 $\pm$ 0.0 (b)	105.8 $\pm$ 2.4 (a)
2003	P-GWS	0.8 $\pm$ 0.0	48.2 $\pm$ 25.5 (ab)	186.6 $\pm$ 18.9 (ab)	0.9 $\pm$ 0.2 (ab)	200.2 $\pm$ 2.5 (ab)
2003	P-BIOW	< QL	77.1 $\pm$ 7.0 (b)	167.3 $\pm$ 54.6 (ab)	0.7 $\pm$ 0.2 (ab)	491.4 $\pm$ 19.7 (b)
2003	P-FYM	< QL	4.8 $\pm$ 0.7 (a)	21.6 $\pm$ 1.7 (a)	0.0 $\pm$ 0.0 (a)	232.2 $\pm$ 61.3 (ab)
2003	P-CFYM	< QL	7.2 $\pm$ 1.4 (ab)	30.2 $\pm$ 0.4 (ab)	0.0 $\pm$ 0.0 (ab)	309.1 $\pm$ 6.6 (ab)
2005	P-SLU	0.9 $\pm$ 0.1	32.2 $\pm$ 0.9 (a)	251.3 $\pm$ 4.7 (b)	0.9 $\pm$ 0.1 (b)	88.1 $\pm$ 1.1 (a)
2005	P-GWS	0.9 $\pm$ 0.0	42.0 $\pm$ 5.2 (a)	195.7 $\pm$ 6.8 (ab)	0.8 $\pm$ 0.1 (ab)	227.0 $\pm$ 12.5 (ab)
2005	P-BIOW	< QL	38.4 $\pm$ 0.9 (a)	45.4 $\pm$ 4.4 (ab)	0.2 $\pm$ 0.0 (ab)	584.0 $\pm$ 28.0 (b)
2005	P-FYM	< QL	5.8 $\pm$ 1.2 (a)	27.6 $\pm$ 2.3 (a)	0.0 $\pm$ 0.0 (ab)	226.3 $\pm$ 14.8 (ab)
2005	P-CFYM	< QL	5.5 $\pm$ 1.7 (a)	28.1 $\pm$ 1.4 (a)	0.0 $\pm$ 0.0 (a)	274.0 $\pm$ 14.0 (ab)
2007	P-SLU	1.1 $\pm$ 0.0	40.2 $\pm$ 1.2 (b)	282.7 $\pm$ 4.9 (b)	0.9 $\pm$ 0.1 (b)	98.6 $\pm$ 3.0 (a)
2007	P-GWS	0.7 $\pm$ 0.0	39.9 $\pm$ 4.0 (ab)	160.3 $\pm$ 7.6 (ab)	0.6 $\pm$ 0.2 (ab)	298.7 $\pm$ 2.1 (ab)
2007	P-BIOW	< QL	36.3 $\pm$ 2.2 (ab)	52.7 $\pm$ 1.6 (ab)	0.1 $\pm$ 0.0 (ab)	597.7 $\pm$ 44.6 (b)
2007	P-FYM	< QL	5.7 $\pm$ 0.4 (a)	31.1 $\pm$ 2.1 (a)	0.0 $\pm$ 0.0 (a)	209.0 $\pm$ 32.1 (ab)
2007	P-CFYM	< QL	7.9 $\pm$ 0.7 (ab)	39.3 $\pm$ 10.4 (ab)	0.0 $\pm$ 0.0 (ab)	297.3 $\pm$ 3.5 (ab)
2009	P-SLU	1 $\pm$ 0.1	39.7 $\pm$ 1 (ab)	274 $\pm$ 2.6 (b)	0.8 $\pm$ 0.1 (b)	121.0 $\pm$ 2.6 (a)
2009	P-GWS	0.7 $\pm$ 0.1	51.7 $\pm$ 2 (b)	214.0 $\pm$ 35.0 (ab)	0.6 $\pm$ 0.0 (ab)	371.0 $\pm$ 7.8 (b)
2009	P-BIOW	< QL	29.9 $\pm$ 1.7 (ab)	64.7 $\pm$ 2.2 (ab)	0.1 $\pm$ 0.0 (ab)	296.3 $\pm$ 4.2 (ab)
2009	P-FYM	< QL	6.0 $\pm$ 1.0 (a)	18.0 $\pm$ 1.6 (a)	0.0 $\pm$ 0.0 (a)	163.0 $\pm$ 4.0 (ab)
2009	P-CFYM	< QL	7.6 $\pm$ 0.2 (ab)	24.3 $\pm$ 0.1 (ab)	0.0 $\pm$ 0.0 (ab)	234.0 $\pm$ 6.2 (ab)
2011	P-SLU	0.8 $\pm$ 0.0 (a)	33.3 $\pm$ 0.4 (ab)	352.7 $\pm$ 4.0 (b)	1.2 $\pm$ 0.0 (b)	109.7 $\pm$ 1.2 (a)
2011	P-GWS	0.8 $\pm$ 0.0 (a)	55.7 $\pm$ 2.2 (b)	215.3 $\pm$ 5.9 (ab)	0.7 $\pm$ 0.0 (ab)	354.0 $\pm$ 12.3 (b)
2011	P-BIOW	0.4 $\pm$ 0.0 (a)	25.4 $\pm$ 0.2 (ab)	66.9 $\pm$ 2.9 (ab)	0.2 $\pm$ 0.0 (ab)	295.3 $\pm$ 9.9 (ab)
2011	P-FYM	0.3 $\pm$ 0.0 (a)	12.7 $\pm$ 4.5 (ab)	47.3 $\pm$ 1.5 (ab)	0.1 $\pm$ 0.0 (ab)	274.7 $\pm$ 14.6 (ab)
2011	P-CFYM	0.3 $\pm$ 0.0 (a)	13.5 $\pm$ 0.5 (a)	42.4 $\pm$ 1.0 (a)	0.1 $\pm$ 0.0 (a)	285.3 $\pm$ 3.8 (ab)
2013	P-SLU	0.8 $\pm$ 0.1	37.3 $\pm$ 0.6 (ab)	298.7 $\pm$ 1.5 (b)	0.6 $\pm$ 0.1 (b)	162.3 $\pm$ 6.1 (a)
2013	P-GWS	< QL	41.4 $\pm$ 1.8 (b)	117.3 $\pm$ 1.5 (ab)	0.2 $\pm$ 0.0 (ab)	410.0 $\pm$ 5.2 (b)
2013	P-BIOW	< QL	23.9 $\pm$ 1.6 (ab)	54.3 $\pm$ 8.8 (ab)	0.1 $\pm$ 0.0 (ab)	274.3 $\pm$ 15.0 (ab)
2013	P-FYM	< QL	6.6 $\pm$ 0.6 (a)	43.9 $\pm$ 5.5 (a)	0.0 $\pm$ 0.0 (ab)	206.7 $\pm$ 7.1 (ab)
2013	P-CFYM	< QL	14.9 $\pm$ 2.2 (ab)	52 $\pm$ 0.7 (ab)	0.0 $\pm$ 0.0 (a)	227.0 $\pm$ 5.6 (ab)

Year	Treatment	Mo	Ni	Pb	Tl	Zn
		mg kg ⁻¹ DM	mg kg ⁻¹ DM	mg kg ⁻¹ DM	mg kg ⁻¹ DM	mg kg ⁻¹ DM
2001	P-SLU	6.2	35.9	79.2	na	708.0
2001	P-GWS	2.7	22.2	45.3	na	378.9
2001	P-BIOW	8.0 ± 0.0	35.9	174.1	na	444.7
2001	P-FYM	3.8 ± 0.0	3.5	2.3	na	140.7
2001	P-CFYM	3.3 ± 0.0	4.3	3.8	na	128.9
2003	P-SLU	5.8 ± 0.2 (b)	35.2 ± 0.5 (b)	35.2 ± 2.2 (ab)	0.17 ± 0.00 (ab)	469.7 ± 12.8 (b)
2003	P-GWS	4.0 ± 0.2 (ab)	25.9 ± 1.0 (ab)	41.0 ± 5.3 (ab)	0.14 ± 0.07 (ab)	439.2 ± 65.1 (ab)
2003	P-BIOW	3.5 ± 0.3 (a)	27.6 ± 2.8 (ab)	114.7 ± 22.0 (b)	0.28 ± 0.01 (b)	386.5 ± 8.6 (ab)
2003	P-FYM	3.6 ± 0.4 (ab)	4.3 ± 0.6 (a)	2.2 ± 0.9 (a)	0.05 ± 0.02 (ab)	111.5 ± 8.7 (a)
2003	P-CFYM	4.5 ± 0.0 (ab)	5.3 ± 0.8 (ab)	3.1 ± 0.2 (ab)	0.04 ± 0.01 (a)	154.0 ± 7.8 (ab)
2005	P-SLU	8.5 ± 0.2 (b)	39.4 ± 0.8 (a)	45.8 ± 1.8	0.15 ± 0.00 (ab)	498.3 ± 4.0 (b)
2005	P-GWS	6.2 ± 0.1 (ab)	37.5 ± 4.2 (a)	88.1 ± 39.0	0.14 ± 0.05 (ab)	504.0 ± 67.6 (ab)
2005	P-BIOW	2.7 ± 0.3 (ab)	18.3 ± 2.2 (a)	54.2 ± 0.7	0.36 ± 0.03 (b)	205.0 ± 5.2 (ab)
2005	P-FYM	2.0 ± 0.2 (a)	3.7 ± 0.5 (a)	< QL	0.04 ± 0.01 (a)	109.7 ± 4.7 (a)
2005	P-CFYM	2.2 ± 0.1 (ab)	< QL (a)	< QL	0.06 ± 0.02 (ab)	115.3 ± 6.0 (ab)
2007	P-SLU	11.0 ± 0.1 (b)	25.9 ± 0.4 (b)	51.1 ± 0.6 (ab)	0.17 ± 0.01 (ab)	600.3 ± 12.5 (b)
2007	P-GWS	5.7 ± 0.1 (ab)	24.2 ± 3.1 (ab)	45.7 ± 0.1 (ab)	0.26 ± 0.02 (ab)	342.0 ± 8.7 (ab)
2007	P-BIOW	2.6 ± 0.2 (ab)	16.1 ± 0.5 (ab)	58.6 ± 4.5 (b)	0.36 ± 0.05 (b)	224.0 ± 4.4 (ab)
2007	P-FYM	1.9 ± 0.3 (a)	2.9 ± 0.2 (a)	2.7 ± 1.0 (a)	0.03 ± 0 (a)	138.0 ± 7.0 (ab)
2007	P-CFYM	2.2 ± 0.1 (ab)	3.8 ± 0.2 (ab)	3.5 ± 1.3 (ab)	0.07 ± 0.02 (ab)	132.0 ± 3.6 (a)
2009	P-SLU	7.6 ± 0.1 (b)	21.1 ± 0.7 (ab)	49.4 ± 1.5 (b)	0.21 ± 0.00 (ab)	583.0 ± 13.0 (b)
2009	P-GWS	4.9 ± 0.3 (ab)	27.6 ± 1.0 (b)	49.3 ± 1.7 (ab)	0.32 ± 0.01 (ab)	465.3 ± 13.6 (ab)
2009	P-BIOW	1.6 ± 0.0 (a)	12.0 ± 0.5 (ab)	44.0 ± 3.1 (ab)	0.44 ± 0.01 (b)	174.7 ± 1.5 (ab)
2009	P-FYM	2.1 ± 0.2 (ab)	2.6 ± 0.2 (a)	< QL (a)	0.03 ± 0.00 (a)	77.0 ± 1.7 (a)
2009	P-CFYM	3.5 ± 0.1 (ab)	3.7 ± 0.1 (ab)	3.2 ± 0.3 (ab)	0.10 ± 0.04 (ab)	108.7 ± 1.2 (ab)
2011	P-SLU	8.3 ± 0.1 (b)	19.6 ± 0.5 (ab)	33.8 ± 0.4 (ab)	0.16 ± 0.01 (ab)	456.3 ± 7.1 (a)
2011	P-GWS	5.7 ± 0.1 (ab)	33.1 ± 1.1 (b)	62.8 ± 5.1 (b)	0.4 ± 0.09 (ab)	575.7 ± 3.1 (a)
2011	P-BIOW	1.5 ± 0.0 (a)	10.3 ± 0.6 (ab)	52.3 ± 9.0 (ab)	0.45 ± 0.03 (b)	237.3 ± 62.1 (a)
2011	P-FYM	2.4 ± 0.0 (ab)	5.8 ± 2.3 (a)	1.6 ± 0.0 (a)	0.02 ± 0.01 (a)	275.0 ± 19.3 (a)
2011	P-CFYM	2.8 ± 0.1 (ab)	7.2 ± 0.2 (ab)	5.0 ± 0.1 (ab)	0.09 ± 0.00 (ab)	254.0 ± 8.0 (a)
2013	P-SLU	6.0 ± 0.1 (b)	35.2 ± 0.4 (b)	42.3 ± 0.3 (a)	0.18 ± 0.02 (ab)	508.3 ± 4.0 (b)
2013	P-GWS	2.9 ± 0.1 (ab)	20.6 ± 0.2 (ab)	49.8 ± 11.1 (a)	0.56 ± 0.03 (b)	243.3 ± 3.2 (ab)
2013	P-BIOW	1.8 ± 0.2 (ab)	12.0 ± 0.6 (ab)	46.6 ± 9.8 (a)	0.33 ± 0.01 (ab)	185.3 ± 16.3 (a)
2013	P-FYM	1.5 ± 0.1 (a)	4.4 ± 0.2 (a)	2.4 ± 1.0 (a)	0.06 ± 0.02 (a)	236.0 ± 30.0 (ab)
2013	P-CFYM	1.6 ± 0.1 (ab)	5.9 ± 0.0 (ab)	4.3 ± 0.8 (a)	0.09 ± 0.00 (ab)	262.7 ± 8.1 (ab)

With the following data presented: total observations = 67, with 32 for QualiAgro site and 35 for PROspective site. QualiAgro site (green symbols), co-compost of sewage sludge and green waste (Q-GWS), biowaste compost (Q-BIOW), compost of residual municipal solid waste (Q-MSW), farmyard manure (Q-FYM), no organic amendment (Q-CN). PROspective site (blue symbols), sewage sludge (P-SLU), co-compost of sewage sludge and green waste (P-GWS), biowaste compost (P-BIOW), farmyard manure (P-FYM), compost of farmyard manure (P-CFYM), no organic amendment (P-CN).

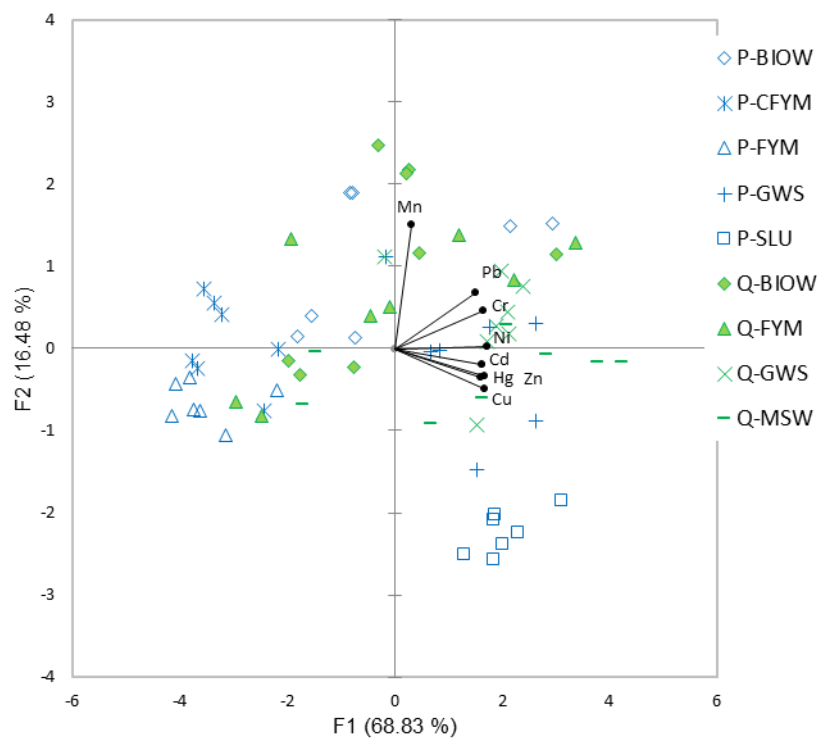


Figure S4. Principal Component Analysis of organic waste product trace element concentrations for both sites.

Table S8. Cumulated input fluxes of trace elements (kg ha⁻¹) by organic waste products.

With the following data presented: cumulated input flux with the percentage of the considered flux with respect to the initial soil stock written into brackets. QualiAgro site, co-compost of sewage sludge and green waste (Q-GWS), biowaste compost (Q-BIOW), compost of residual municipal solid waste (Q-MSW), farmyard manure (Q-FYM). PROspective site, sewage sludge (P-SLU), co-compost of sewage sludge and green waste (P-GWS), biowaste compost (P-BIOW), farmyard manure (P-FYM), compost of farmyard manure (P-CFYM). For values inferior to the quantification limit (QL) the QL divided by 2 were considered to calculate fluxes. na for not available.

Treatment	Cd kg ha ⁻¹	Cr kg ha ⁻¹	Cu kg ha ⁻¹	Hg kg ha ⁻¹	Mn kg ha ⁻¹
Q-GWS	0.13 (15.1%)	5.2 (2.7%)	21.9 (48.0%)	0.11 (31.5%)	na
Q-BIOW	0.12 (13.9%)	6.4 (3.3%)	10.2 (21.7%)	0.03 (8.3%)	na
Q-MSW	0.13 (14.9%)	8.5 (4.3%)	13.2 (28.9%)	0.08 (23.9%)	na
Q-FYM	0.13 (14.7%)	4.0 (2.1%)	10.9 (22.5%)	0.01 (3.0%)	na
P-SLU	0.02 (2.3%)	0.7 (0.2%)	5.1 (5.3%)	0.022 (11.1%)	2.2 (0.1%)
P-GWS	0.04 (4.3%)	2.2 (0.8%)	8.4 (8.9%)	0.037 (22.9%)	16.8 (0.5%)
P-BIOW	0.04 (4.2%)	2.9 (1.0%)	5.4 (6.1%)	0.019 (9.3%)	26.4 (0.8%)
P-FYM	0.01 (1.2%)	0.3 (0.1%)	1.4 (1.6%)	0.002 (1.2%)	10.9 (0.3%)
P-CFYM	0.01 (1.2%)	0.4 (0.1%)	1.4 (1.6%)	0.002 (0.9%)	11.8 (0.3%)
	Mo kg ha ⁻¹	Ni kg ha ⁻¹	Pb kg ha ⁻¹	Tl kg ha ⁻¹	Zn kg ha ⁻¹
Q-GWS	na	3.6 (6.4%)	8.0 (7.4%)	na	51.4 (26.2%)
Q-BIOW	na	4.6 (8.1%)	15.1 (16.5%)	na	39.2 (20.5%)
Q-MSW	na	2.8 (5.0%)	13.9 (15.0%)	na	36.0 (18.0%)
Q-FYM	na	1.4 (2.5%)	13.8 (14.9%)	na	38.6 (19.7%)
P-SLU	0.14 (6.9%)	0.6 (0.5%)	0.9 (1.0%)	0.003 (0.2%)	10.3 (4.5%)
P-GWS	0.22 (10.9%)	1.4 (1.1%)	2.7 (3.0%)	0.015 (0.6%)	21.1 (9.2%)
P-BIOW	0.20 (9.7%)	1.2 (1.0%)	4.9 (5.2%)	0.021 (0.9%)	16.3 (7.2%)
P-FYM	0.12 (6.1%)	0.2 (0.2%)	0.1 (0.1%)	0.002 (0.1%)	7.1 (3.1%)
P-CFYM	0.12 (6.1%)	0.2 (0.2%)	0.1 (0.2%)	0.003 (0.1%)	6.9 (2.8%)

Table S9. Supplementary trace elements concentrations in the applied organic waste products studied over the period 1998-2013 at the QualiAgro and PROspective sites, for Ag, Al, As, Co, Fe and Se.

With the following data presented: concentration of total Ag, Al, As, B, Co, Fe, Se, expressed as g kg⁻¹ and mg kg⁻¹ of dry matter (DM); average values for the period 1998-2013 ± standard deviations (n = 8 for QualiAgro, n = 7 for PROspective). QualiAgro site, co-compost of sewage sludge and green waste (Q-GWS), biowaste compost (Q-BIOW), compost of residual municipal solid waste (Q-MSW), farmyard manure (Q-FYM). PROspective site, sewage sludge (P-SLU), co-compost of sewage sludge and green waste (P-GWS), biowaste compost (P-BIOW), farmyard manure (P-FYM), compost of farmyard manure (P-CFYM). < QL at least half of values were inferior to the quantification limit. na for not available.

Treatment	Ag mg kg ⁻¹ DM	Al g kg ⁻¹ DM	As mg kg ⁻¹ DM	Co mg kg ⁻¹ DM	Fe g kg ⁻¹ DM	Se mg kg ⁻¹ DM
Q-GWS	na	26.4 ± 5.5	6.6 ± 3.5	6.6 ± 3.5	16.5 ± 8.1	1.0 ± 1.1
Q-BIOW	na	25.2 ± 4.9	10.3 ± 6.4	10.3 ± 6.4	17.1 ± 6.9	< QL
Q-MSW	na	15.0 ± 2	2.4 ± 1.7	2.4 ± 1.7	8.4 ± 1.6	< QL
Q-FYM	na	8.5 ± 5.5	2.0 ± 1.8	2.0 ± 1.8	7.9 ± 4.7	< QL
P-SLU	15.6 ± 16.3	37 ± 5.7	9.1 ± 2.1	13.2 ± 10.9	8.0 ± 2.6	1.8 ± 0.4
P-GWS	6.4 ± 4.5	26.8 ± 5.4	7.9 ± 4	12.5 ± 7.4	13.5 ± 6.2	0.8 ± 0.4
P-BIOW	0.5 ± 0.6	24.0 ± 2.4	9.1 ± 3.3	15.2 ± 10.6	16.0 ± 5.0	0.2 ± 0.1
P-FYM	0.03 ± 0.02	2.5 ± 0.7	1.0 ± 0.3	4.0 ± 1	1.7 ± 0.4	0.4 ± 0.3
P-CFYM	0.07 ± 0.05	5.0 ± 1.5	1.6 ± 0.5	5.0 ± 2.8	3.2 ± 0.9	0.4 ± 0.2

Table S10. Supplementary trace element concentrations in plantlets for Ag, Al, As, B, Co, Fe, Sb, Se, Sn and rare earth elements Ce, La.

With the following data presented: mean values $\pm$ standard deviation of the four replicates (in each site, abc letters stand for significant difference between treatments per plant part with Newman-Keuls and Kruskal-Wallis tests); mg kg⁻¹ DM, DM for dry matter. For QualiAgro site with winter wheat, co-compost of sewage sludge and green waste (Q-GWS), biowaste compost (Q-BIOW), compost of residual municipal solid waste (Q-MSW), farmyard manure (Q-FYM), no organic amendment (Q-CN). For PROspective site with maize, sewage sludge (P-SLU), co-compost of sewage sludge and green waste (P-GWS), biowaste compost (P-BIOW), farmyard manure (P-FYM), compost of farmyard manure (P-CFYM), no organic amendment (P-CN). < QL at least half of values were inferior to the quantification limit. na for not available.

For Ag, values were inferior to QL in wheat and maize plantlets.

Treatment	Al mg kg ⁻¹ DM	As mg kg ⁻¹ DM	B mg kg ⁻¹ DM	Co mg kg ⁻¹ DM	Fe mg kg ⁻¹ DM
Q-GWS	30.5 $\pm$ 1.9 (a)	0.10 $\pm$ 0.01 (a)	3.04 $\pm$ 0.3 (a)	0.03 $\pm$ 0.01 (a)	na
Q-BIOW	33.0 $\pm$ 8.5 (a)	0.12 $\pm$ 0.02 (a)	2.40 $\pm$ 0.32 (a)	0.02 $\pm$ 0.00 (a)	na
Q-MSW	35.4 $\pm$ 13.1 (a)	0.11 $\pm$ 0.01 (a)	2.36 $\pm$ 0.17 (a)	0.03 $\pm$ 0.01 (a)	na
Q-FYM	31.1 $\pm$ 5.1 (a)	0.10 $\pm$ 0.01 (a)	2.21 $\pm$ 0.27 (a)	0.02 $\pm$ 0.00 (a)	na
Q-CN	31.5 $\pm$ 4.7 (a)	0.10 $\pm$ 0.01 (a)	2.53 $\pm$ 0.66 (a)	0.03 $\pm$ 0.00 (a)	na
P-SLU	69.7 $\pm$ 0.9 (a)	0.08 $\pm$ 0.00 (ab)	na	0.06 $\pm$ 0.00 (a)	na
P-GWS	81.4 $\pm$ 12.5 (a)	0.10 $\pm$ 0.02 (ab)	na	0.06 $\pm$ 0.01 (a)	na
P-BIOW	73.2 $\pm$ 0.9 (a)	0.07 $\pm$ 0.00 (b)	na	0.06 $\pm$ 0.00 (a)	na
P-FYM	93.3 $\pm$ 0.8 (a)	0.12 $\pm$ 0.00 (a)	na	0.08 $\pm$ 0.00 (a)	na
P-CFYM	71.8 $\pm$ 2.3 (a)	0.09 $\pm$ 0.00 (ab)	na	0.06 $\pm$ 0.00 (a)	na
P-CN	71.8 $\pm$ 0.6 (a)	0.07 $\pm$ 0.00 (b)	na	0.06 $\pm$ 0.00 (a)	na
	Sb mg kg ⁻¹ DM	Se mg kg ⁻¹ DM	Sn mg kg ⁻¹ DM	Ce mg kg ⁻¹ DM	La mg kg ⁻¹ DM
Q-GWS	0.008 $\pm$ 0.003 (a)	< QL (a)	0.01 $\pm$ 0.00 (a)	0.09 $\pm$ 0.02 (a)	0.05 $\pm$ 0.01 (a)
Q-BIOW	0.007 $\pm$ 0.002 (a)	0.09 $\pm$ 0.01 (a)	0.03 $\pm$ 0.03 (a)	0.09 $\pm$ 0.03 (a)	0.05 $\pm$ 0.01 (a)
Q-MSW	0.007 $\pm$ 0.002 (a)	0.17 $\pm$ 0.18 (a)	0.03 $\pm$ 0.01 (a)	0.11 $\pm$ 0.05 (a)	0.07 $\pm$ 0.06 (a)
Q-FYM	0.005 $\pm$ 0.001 (a)	0.12 $\pm$ 0.10 (a)	0.01 $\pm$ 0.00 (a)	0.10 $\pm$ 0.04 (a)	0.05 $\pm$ 0.02 (a)
Q-CN	0.006 $\pm$ 0.003 (a)	0.12 $\pm$ 0.02 (a)	0.01 $\pm$ 0.00 (a)	0.09 $\pm$ 0.02 (a)	0.05 $\pm$ 0.01 (a)
P-SLU	0.005 $\pm$ 0.000 (a)	0.15 $\pm$ 0.00 (a)	0.01 $\pm$ 0.00 (c)	0.13 $\pm$ 0.00 (a)	0.06 $\pm$ 0.00 (a)
P-GWS	0.007 $\pm$ 0.001 (a)	0.10 $\pm$ 0.05 (ab)	0.03 $\pm$ 0.01 (a)	0.13 $\pm$ 0.02 (a)	0.06 $\pm$ 0.01 (a)
P-BIOW	0.005 $\pm$ 0.000 (a)	0.08 $\pm$ 0.00 (ab)	0.03 $\pm$ 0.00 (ab)	0.12 $\pm$ 0.00 (a)	0.05 $\pm$ 0.00 (a)
P-FYM	0.006 $\pm$ 0.000 (a)	0.04 $\pm$ 0.00 (b)	0.03 $\pm$ 0.00 (abc)	0.16 $\pm$ 0.00 (a)	0.07 $\pm$ 0.00 (a)
P-CFYM	0.005 $\pm$ 0.000 (a)	0.08 $\pm$ 0.00 (ab)	0.02 $\pm$ 0.00 (bc)	0.12 $\pm$ 0.00 (a)	0.06 $\pm$ 0.00 (a)
P-CN	0.006 $\pm$ 0.000 (a)	0.14 $\pm$ 0.00 (a)	0.02 $\pm$ 0.00 (abc)	0.12 $\pm$ 0.00 (a)	0.05 $\pm$ 0.00 (a)

Table S11. Supplementary trace element concentrations in consumed exported grains for Ag, Al, As, B, Co, Fe, Sb, Se, Sn and rare earth elements Ce, La.

With the following data presented: mean values $\pm$ standard deviation of the four replicates (in each site, abc letters stand for significant difference between treatments per plant part with Newman-Keuls and Kruskal-Wallis tests); mg kg⁻¹ DM, DM for dry matter. For QualiAgro site with winter wheat, co-compost of sewage sludge and green waste (Q-GWS), biowaste compost (Q-BIOW), compost of residual municipal solid waste (Q-MSW), farmyard manure (Q-FYM), no organic amendment (Q-CN). For PROspective site with maize, sewage sludge (P-SLU), co-compost of sewage sludge and green waste (P-GWS), biowaste compost (P-BIOW), farmyard manure (P-FYM), compost of farmyard manure (P-CFYM), no organic amendment (P-CN). < QL at least half of values were inferior to the quantification limit. na for not available.

For Ag, values were inferior to QL in maize grains, and not available for wheat grains.

Treatment	Al mg kg ⁻¹ DM	As mg kg ⁻¹ DM	B mg kg ⁻¹ DM	Co mg kg ⁻¹ DM	Fe mg kg ⁻¹ DM
Q-GWS	< QL	< QL	< QL	< QL	29.5 $\pm$ 2.7 (a)
Q-BIOW	< QL	< QL	< QL	< QL	31.6 $\pm$ 8.9 (a)
Q-MSW	< QL	< QL	< QL	< QL	26.3 $\pm$ 1.0 (a)
Q-FYM	< QL	< QL	< QL	< QL	34.7 $\pm$ 11.2 (a)
Q-CN	< QL	< QL	< QL	0.01 $\pm$ 0.00	27.6 $\pm$ 5.1 (a)
P-SLU	< QL	< QL	< QL	< QL	19.7 $\pm$ 6.0 (a)
P-GWS	< QL	< QL	< QL	< QL	11.7 $\pm$ 0.9 (b)
P-BIOW	< QL	< QL	2.4 $\pm$ 1.0	< QL	11.2 $\pm$ 3.6 (b)
P-FYM	< QL	< QL	< QL	< QL	13.6 $\pm$ 1.0 (ab)
P-CFYM	< QL	< QL	< QL	< QL	15.1 $\pm$ 4.4 (ab)
P-CN	< QL	< QL	< QL	< QL	13.4 $\pm$ 2.3 (ab)
(1)	na	0.01	1.2	0.02	na
(2)	31.0	0.003-0.01	0.69	0.0011-0.018	17-50
(3)	na	na	na	na	na
	Sb mg kg ⁻¹ DM	Se mg kg ⁻¹ DM	Sn mg kg ⁻¹ DM	Ce mg kg ⁻¹ DM	La mg kg ⁻¹ DM
Q-GWS	na	na	na	na	na
Q-BIOW	na	na	na	na	na
Q-MSW	na	na	na	na	na
Q-FYM	na	na	na	na	na
Q-CN	na	na	na	na	na
P-SLU	na	< QL	na	na	na
P-GWS	na	< QL	na	na	na
P-BIOW	na	< QL	na	na	na
P-FYM	na	< QL	na	na	na
P-CFYM	na	< QL	na	na	na
P-CN	na	< QL	na	na	na
(1)	na	na	na	na	na
(2)	0.0005	0.001-0.19	0.01-0.12	na	na
(3)	<0.002	na	na	na	na

(1) wheat grains [62]; (2) wheat grains [18]; (3) maize cobs/grains [18]