

SUPPORTING INFORMATION (TABLE X – Z):

Table X. Phenolic Acid Concentrations in Wheat Harvested in 2003 (*Triticum aestivum* L., cultivar Titlis) from One Untreated, Two Organic, and Two Conventional Farming Systems^a

2003		Production Method				
		BIODYN (n=20)	BIOORG (n=20)	CONFYM (n=20)	CONMIN (n=20)	NOFERT (n=20)
Hydroxycinnamic acids [µg/g]						
Sinapic acid	FP	0.25 ± 0.17	0.46 ± 0.17	0.41 ± 0.22	0.44 ± 0.20	0.47 ± 0.35
	SP	1.80 ± 0.83	0.78 ± 0.40	1.39 ± 1.10	0.67 ± 0.12	5.63 ± 9.81
	BP	24 ± 3	12 ± 2	18 ± 5	10 ± 7	23 ± 5
Ferulic acid	FP	1.07 ± 0.31	0.98 ± 0.27	1.76 ± 0.68	1.18 ± 0.61	1.08 ± 0.50
	SP	1.06 ± 0.32	0.64 ± 0.45	1.50 ± 0.91	0.20 ± 0.05	3.46 ± 4.25
	BP	444 ± 48	232 ± 26	856 ± 102	169 ± 143	399 ± 85
Diferulic acid	FP	0.58 ± 0.11	0.30 ± 0.04	0.47 ± 0.13	0.64 ± 0.43	0.81 ± 0.19
	SP	0.40 ± 0.24	n.d.	0.82 ± 0.12	0.47 ± 0.27	0.88 ± 0.84
	BP	84 ± 10	24 ± 5	38 ± 7	15 ± 11	89 ± 13
Coumaric acid	FP	0.10 ± 0.04	0.09 ± 0.04	0.11 ± 0.06	0.32 ± 0.18	0.18 ± 0.10
	SP	0.89 ± 0.04	0.87 ± 0.05	0.18 ± 0.11	0.77 ± 0.31	0.92 ± 0.31
	BP	15 ± 3	8 ± 1	8 ± 1	7 ± 4	14 ± 4
Caffeic acid	FP	0.38 ± 0.16	0.27 ± 0.04	0.29 ± 0.10	0.28 ± 0.15	0.48 ± 0.14
	SP	n.d.	n.d.	0.23 ± 0.05	0.72 ± 0.26	0.40 ± 0.04
	BP	7.3 ± 1.7	3.3 ± 0.6	0.6 ± 0.2	2.1 ± 1.7	6.3 ± 2.9
Hydroxybenzoic acid [µg/g]						
Syringic acid	FP	0.62 ± 0.08	0.45 ± 0.08	0.41 ± 0.08	0.52 ± 0.24	0.63 ± 0.31
	SP	0.64 ± 0.16	0.41 ± 0.10	0.45 ± 0.11	0.61 ± 0.04	1.19 ± 1.05
	BP	3.50 ± 0.62	1.93 ± 0.23	0.88 ± 0.14	7.51 ± 9.14	3.28 ± 0.70
Vanillic acid	FP	1.05 ± 0.14	0.63 ± 0.27	0.97 ± 0.1	1.18 ± 0.08	1.01 ± 0.20
	SP	0.35 ± 0.12	0.28 ± 0.11	0.44 ± 0.13	0.87 ± 0.31	0.61 ± 0.73
	BP	6.3 ± 2.0	2.6 ± 0.3	2.4 ± 0.2	101 ± 140	4.8 ± 2.5
Para-Hydroxybenzoic acid	FP	0.26 ± 0.09	0.30 ± 0.11	0.45 ± 0.04	0.88 ± 0.80	0.30 ± 0.14
	SP	0.15 ± 0.07	n.d.	0.23 ± 0.04	0.42 ± 0.31	0.51 ± 0.45
	BP	1.94 ± 1.40	1.79 ± 0.12	1.72 ± 0.14	5.52 ± 4.71	2.81 ± 1.70

^aNOFERT, no fertilizers; BIODYN, biodynamic; BIOORG, bioorganic; CONFYM, mineral fertilizers plus farmyard manure; CONMIN, using mineral fertilizer. Wheat was harvested in Switzerland as part of the DOC long-term field trial. Free phenolic acids = FP; soluble conjugated phenolic acids = SP and bound phenolic acids = BP; n.d.= not detectable.

Table Y. Phenolic Acid Concentrations in Wheat Harvested in 2005 (*Triticum aestivum* L., cultivar Titlis) from One Untreated, Two Organic, and Two Conventional Farming Systems^a

2005		Production Method				
		BIODYN (n=20)	BIOORG (n=20)	CONFYM (n=20)	CONMIN (n=20)	NOFERT (n=20)
Hydroxycinnamic acids [$\mu\text{g/g}$]						
Sinapic acid	FP	0.43 ± 0.12	0.82 ± 0.83	0.22 ± 0.16	0.56 ± 0.45	0.64 ± 0.40
	SP	0.37 ± 0.06	1.76 ± 0.97	0.23 ± 0.17	1.83 ± 1.51	1.21 ± 0.96
	BP	11.9 ± 1.3	20.5 ± 4.0	9.6 ± 1.1	16.6 ± 9.3	15.2 ± 3.8
Ferulic acid	FP	0.81 ± 0.15	1.13 ± 0.63	0.46 ± 0.16	1.00 ± 0.20	0.88 ± 0.15
	SP	0.63 ± 0.38	1.09 ± 0.47	1.20 ± 0.77	1.41 ± 0.77	1.98 ± 2.02
	BP	507 ± 45	481 ± 41	411 ± 97	439 ± 108	430 ± 223
Diferulic acid	FP	0.37 ± 0.08	0.35 ± 0.07	0.21 ± 0.05	0.32 ± 0.09	0.55 ± 0.07
	SP	0.42 ± 0.06	n.d.	0.37 ± 0.15	0.47 ± 0.13	n.d.
	BP	21.7 ± 1.6	48.7 ± 16.3	21.1 ± 3.9	30.0 ± 18.1	19.8 ± 9.5
Coumaric acid	BP	5.3 ± 5.6	13.8 ± 1.4	4.7 ± 1.9	8.4 ± 4.7	8.3 ± 2.0
Caffeic acid	BP	2.4 ± 1.33	9.53 ± 1.7	1.28 ± 1.39	3.29 ± 3.70	4.30 ± 2.40
Hydroxybenzoic acid [$\mu\text{g/g}$]						
Syringic acid	FP	0.45 ± 0.22	0.44 ± 0.13	0.27 ± 0.18	0.44 ± 0.12	0.47 ± 0.15
	SP	0.20 ± 0.04	0.40 ± 0.08	0.25 ± 0.12	0.39 ± 0.25	0.55 ± 0.22
	BP	0.54 ± 0.03	3.25 ± 0.27	0.94 ± 0.78	2.41 ± 1.50	1.71 ± 0.56
Vanillic acid	FP	0.36 ± 0.25	0.70 ± 0.14	0.37 ± 0.20	0.45 ± 0.16	0.73 ± 0.29
	SP	0.21 ± 0.03	0.37 ± 0.13	0.47 ± 0.25	0.53 ± 0.26	0.32 ± 0.26
	BP	0.92 ± 0.11	3.69 ± 0.52	1.58 ± 0.94	2.84 ± 1.91	1.75 ± 0.32
Para-Hydroxybenzoic acid	FP	1.24 ± 0.58	0.18 ± 0.14	0.44 ± 0.43	1.10 ± 1.02	1.34 ± 0.37
	SP	2.06 ± 0.17	0.28 ± 0.14	0.77 ± 0.44	1.55 ± 0.31	1.04 ± 0.16
	BP	n.d.	2.78 ± 0.70	0.95 ± 0.25	1.55 ± 1.11	2.11 ± 2.10

^aNOFERT, no fertilizers; BIODYN, biodynamic; BIOORG, bioorganic; CONFYM, mineral fertilizers plus farmyard manure; CONMIN, using mineral fertilizer. Wheat was harvested in Switzerland as part of the DOC long-term field trial. Free phenolic acids = FP; soluble conjugated phenolic acids = SP and bound phenolic acids = BP; Coumaric acid and caffeic acid were in the free and soluble fractions not detectable (n.d.= not detectable).

Table Z. Phenolic Acid Concentrations in Wheat Harvested in 2006 (*Triticum aestivum* L., cultivar Runal) from one Untreated, Two Organic, and Two Conventional Farming Systems^a

2006		Production Method				
		BIODYN (n=20)	BIOORG (n=20)	CONFYM (n=20)	CONMIN (n=20)	NOFERT (n=20)
Hydroxycinnamic acids [µg/g]						
Sinapic acid	FP	1.28 ± 0.26	1.25 ± 0.45	4.47 ± 1.94	2.51 ± 2.95	1.48 ± 0.60
	SP	0.26 ± 0.11	0.31 ± 0.07	0.31 ± 0.07	0.41 ± 0.26	0.36 ± 0.08
	BP	9.71 ± 6.06	8.33 ± 5.48	11.4 ± 2.54	6.89 ± 3.71	8.60 ± 3.00
Ferulic acid	FP	0.91 ± 0.22	0.85 ± 0.37	3.65 ± 1.10	1.44 ± 1.10	1.28 ± 0.64
	SP	1.30 ± 0.43	2.32 ± 1.81	2.66 ± 0.56	3.19 ± 1.20	1.95 ± 0.50
	BP	588 ± 113	611 ± 84	1164 ± 92	566 ± 184	609 ± 129
Diferulic acid	FP	0.68 ± 0.54	0.55 ± 0.13	3.87 ± 1.60	1.28 ± 1.34	0.69 ± 0.28
	SP	0.73 ± 0.20	0.56 ± 0.20	3.29 ± 0.80	0.76 ± 0.21	0.52 ± 0.07
	BP	22.1 ± 5.5	29.6 ± 4.1	41.7 ± 14.1	31.6 ± 13.6	22.1 ± 5.5
Coumaric acid	BP	7.2 ± 1.7	7.6 ± 1.1	13.5 ± 1.7	6.3 ± 1.3	8.3 ± 2.2
Caffeic acid	BP	1.76 ± 0.90	2.19 ± 0.63	2.60 ± 0.41	1.27 ± 0.55	1.37 ± 0.56
Hydroxybenzoic acid [µg/g]						
Syringic acid	FP	0.41 ± 0.07	0.37 ± 0.03	0.91 ± 0.15	0.47 ± 0.12	0.62 ± 0.14
	SP	0.20 ± 0.04	0.11 ± 0.06	0.37 ± 0.03	0.39 ± 0.26	0.88 ± 0.09
	BP	0.72 ± 0.14	0.89 ± 0.12	2.30 ± 0.42	1.06 ± 0.28	1.06 ± 0.28
Vanillic acid	FP	0.83 ± 0.22	0.74 ± 0.15	0.67 ± 0.49	0.69 ± 0.18	0.63 ± 0.32
	SP	0.20 ± 0.06	0.09 ± 0.02	0.19 ± 0.12	0.33 ± 0.40	0.63 ± 0.16
	BP	1.09 ± 0.47	1.37 ± 0.44	2.33 ± 0.18	1.62 ± 0.40	1.37 ± 0.80
Para-Hydroxybenzoic acid	FP	0.28 ± 0.06	0.18 ± 0.04	0.95 ± 0.49	0.73 ± 0.63	0.43 ± 0.14
	SP	0.32 ± 0.10	1.24 ± 1.12	0.26 ± 0.05	0.77 ± 0.64	0.59 ± 0.13
	BP	1.08 ± 0.47	2.01 ± 1.23	n.d.	2.12 ± 0.82	2.14 ± 0.67

^aNOFERT, no fertilizers; BIODYN, biodynamic; BIOORG, bioorganic; CONFYM, mineral fertilizers plus farmyard manure; CONMIN, using mineral fertilizer. Wheat was harvested in Switzerland as part of the DOC long-term field trial. Free phenolics = FP; soluble conjugated phenolics = SP and bound phenolics = BP; Coumaric acid and caffeic acid were in the free and soluble fractions not detectable (n.d.= not detectable).