

Table S1. SOC, CD, HA,FA, H, HA/FA, DH contents in the topsoil layer (0-30 cm) as influenced by crop rotation, manure application and inorganic N rate in the long-term field experiment at Grabow, Poland. Treatments with the same letter are not significantly different ( $P \leq 0.05$ ), and the comparison for mean values in crop rotation is marked with a capital letter.

The obtained results were analysed statistically by means of variance analysis (using Tukey's test) and single factor regression. Statistical calculations were performed using the program Statgraphics plus). Results are the means from 3 replications.

Crop rotatio n A	Manur e rates (t·ha <sup>-1</sup> )	Nitrogen fertilizatio n (kg·ha <sup>-1</sup> )	Soil organi c (SOC) %	Carbon solutio n (CD) %	Humic acids (HA) %	Fulvic acids (FA) %	Humin s (H) %	HA/FA the ratio	The degree of humificatio n (DH)
	0	0	0,51a	2,5b	24,9a	17,1a	55,5c	1,46b	0,76a
	0	100	0,56a	2a	25,3a	17,7a	55c	1,43b	0,78a
	0	150	0,57a	2,6b	25,4a	18,9b	53,1b	1,34a	0,83b
	Mean		0,55	2,4	25,2	17,9	54,5	1,41	0,79
	20	0	0,58b	2,3a	25,9a	17,1a	54,7c	1,51b	0,79a
	20	100	0,59b	2,3a	26,5a	17,3a	53,9bc	1,53cb	0,81ba
	20	150	0,65b	2,3a	27,2b	17,8a	52,7bc	1,53cb	0,85b
	Mean		0,61	2,3	26,5	17,4	53,4	1,52	0,82
	40	0	0,62b	2,3a	28,5b	17,8a	51,4bc	1,60c	0,90cb
	40	100	0,63b	2,3a	28,4b	19,3b	50b	1,47b	0,95c
	40	150	0,64b	2,3a	29,1b	19,8b	48,8b	1,47b	1,00c
	Mean		0,63	2,3	28,7	18,9	50,1	1,52	0,95
	Overall mean		0,6A	2,3A	26,8A	18,1A	52,7B	1,48A	0,85A
	Crop rotation B	0	0	0,73c	2,5b	30,2b	20,1b	47,2b	1,50cb
0		100	0,8d	2,6b	33c	20,6b	43,8a	1,60c	1,22e
0		150	0,8d	2,3a	32,5c	20b	45,2a	1,63dc	1,16d
Mean		0,78	2,5	31,9	20,2	45,5	1,58	1,15	
20		0	0,81d	2a	31,4bc	18,1a	48,5b	1,73d	1,02d
20		100	0,83d	2,1a	31,7bc	19,2b	47cb	1,65dc	1,08d
20		150	0,88d	2,2a	35,6d	18,2a	44a	1,96e	1,22e
Mean		0,84	2,1	32,9	18,5	46,5	1,78	1,11	
40		0	0,82d	2a	29b	19,9b	49,1b	1,46b	1,00c
40		100	0,83d	2,1a	28,8b	20,2b	48,9b	1,43b	1,00c
40		150	0,87d	2a	31,6bc	20,1b	46,3b	1,57c	1,12d
Mean		0,84	2,03	29,80	20,07	48,10	1,49	1,04	
Overall mean		0,82B	2,21A	31,53B	19,59B	46,70A	1,61B	1,10B	
LSD			0,063	0,49	1,51	1,07	1,61	0,08	0,049

Table S2. pH (KCl) contents in in the topsoil layer (0-30 cm) as influenced by crop rotation, manure application and inorganic N rate in the long-term field experiment at Grabow, Poland. Treatments with the same letter are not significantly different ( $P \leq 0.05$ ), and the comparison for mean values in crop rotation is marked with a capital letter.

The obtained results were analyzed statistically by means of variance analysis (using Tukey's test) and single factor regression. Statistical calculations were performed using the program Statgraphics plus). Results are the means from 3 replications.

Crop rotation A	Manure rates (t·ha <sup>-1</sup> )	Nitrogen fertilization (kg·ha <sup>-1</sup> )	pH
	0	0	5,6a
	0	100	5,7a
	0	150	5,6a
	Mean		5,6
	20	0	5,9b
	20	100	6,1b
	20	150	6,2b
	Mean		6,07
	40	0	6,2b
	40	100	6,0b
	40	150	6,0b
	Mean		6,07
	Overall mean		5,9B
	Crop rotation B	0	0
0		100	5,4a
0		150	5,5a
Mean		5,47	
20		0	5,6a
20		100	5,7a
20		150	5,4a
Mean		5,57	
40		0	5,7a
40		100	5,5a
40		150	5,5a
Mean		5,57	
Overall mean		5,54A	
LSD			0,25