

Supplementary Material

Adsorbing versus non-adsorbing tracers for assessing pesticide transport in arable soils

Clara Torrentó⁽¹⁾, Volker Prasuhn⁽²⁾, Ernst Spiess⁽²⁾, Violaine Ponsin⁽¹⁾, Aileen Melsbach⁽³⁾, Christina Lihl⁽³⁾, Gaétan Glauser⁽⁴⁾, Thomas B. Hofstetter⁽⁵⁾, Martin Elsner⁽³⁾ and Daniel Hunkeler⁽¹⁾

(1) Centre for Hydrogeology and Geothermics (CHYN), University of Neuchâtel, 2000 Neuchâtel, Switzerland

(2) Agroscope, Research Division, Agroecology and Environment, 8046 Zürich, Switzerland

(3) Institute of Groundwater Ecology, Helmholtz Zentrum München, 85764 Neuherberg, Germany

(4) Neuchâtel Platform of Analytical Chemistry (NPAC), University of Neuchâtel, 2000 Neuchâtel, Switzerland

(5) Eawag, Swiss Federal Institute of Aquatic Science and Technology, 8600 Dübendorf, Switzerland

Corresponding Author:

*Clara Torrentó Phone: +41 32 718 26 49; Fax: +41 32 718 26 03, e-mail: clara.torrento@unine.ch

Total number of pages (including cover): 7

Figures: 5

Tables: 1

FIGURE S1



Figure S1. Agroscope lysimeters facility used for the present experiments. Upper panel: corn growing in summer 2014. The roof covering the installation, the meteorological station and the capacitance soil moisture probes are shown. Lower panel: lysimeter weighting and leachate collection systems

FIGURE S2

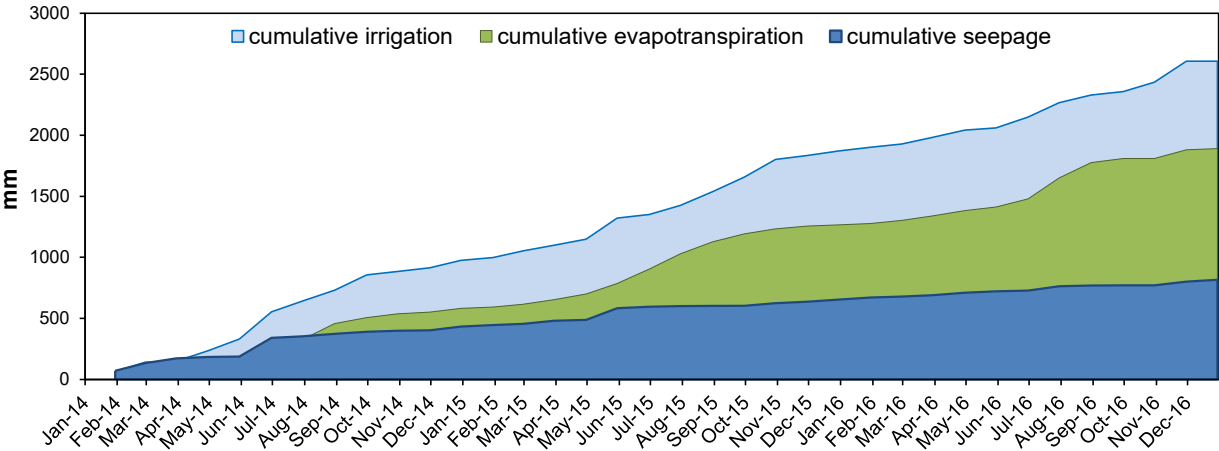
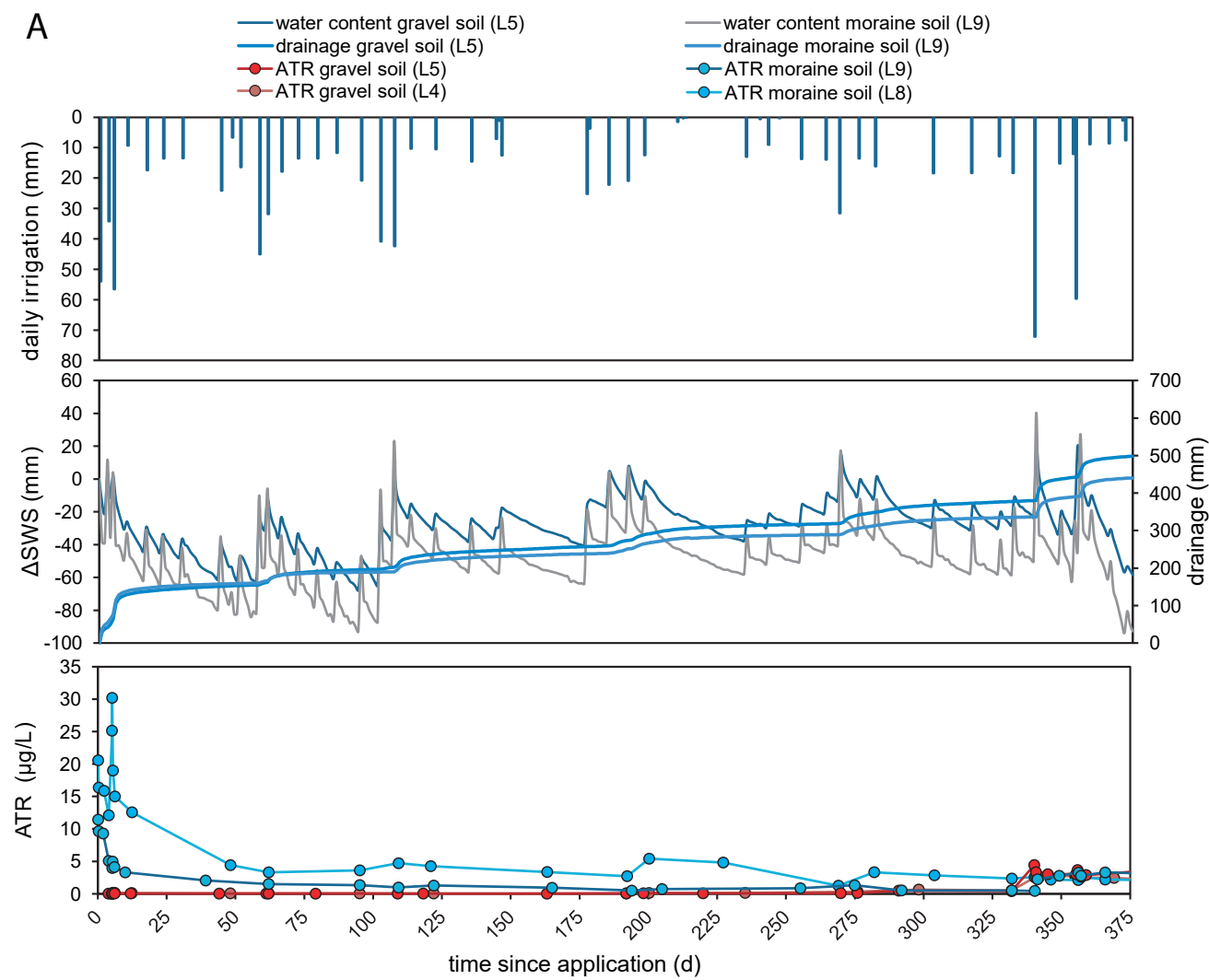


FIGURE S4



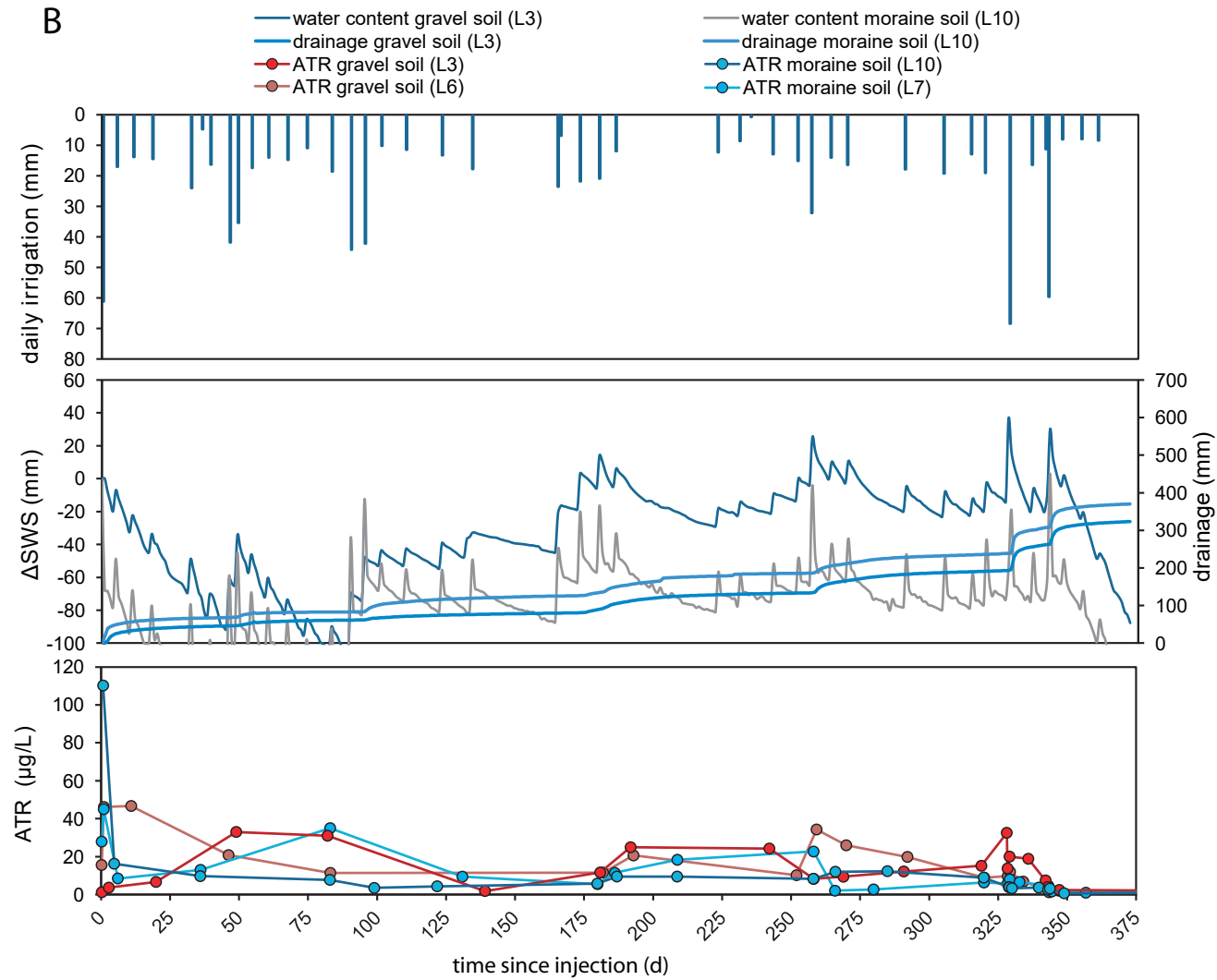


Figure S4. Daily irrigation, cumulative drainage, changes in soil water storage and ATR concentration during the first 375 days after application/injection. A) Surface application in gravel (L4 and L5) and moraine soil (L8 and L9). B) Depth injection in gravel (L3 and L6) and moraine soil (L7 and L10)

FIGURE S5

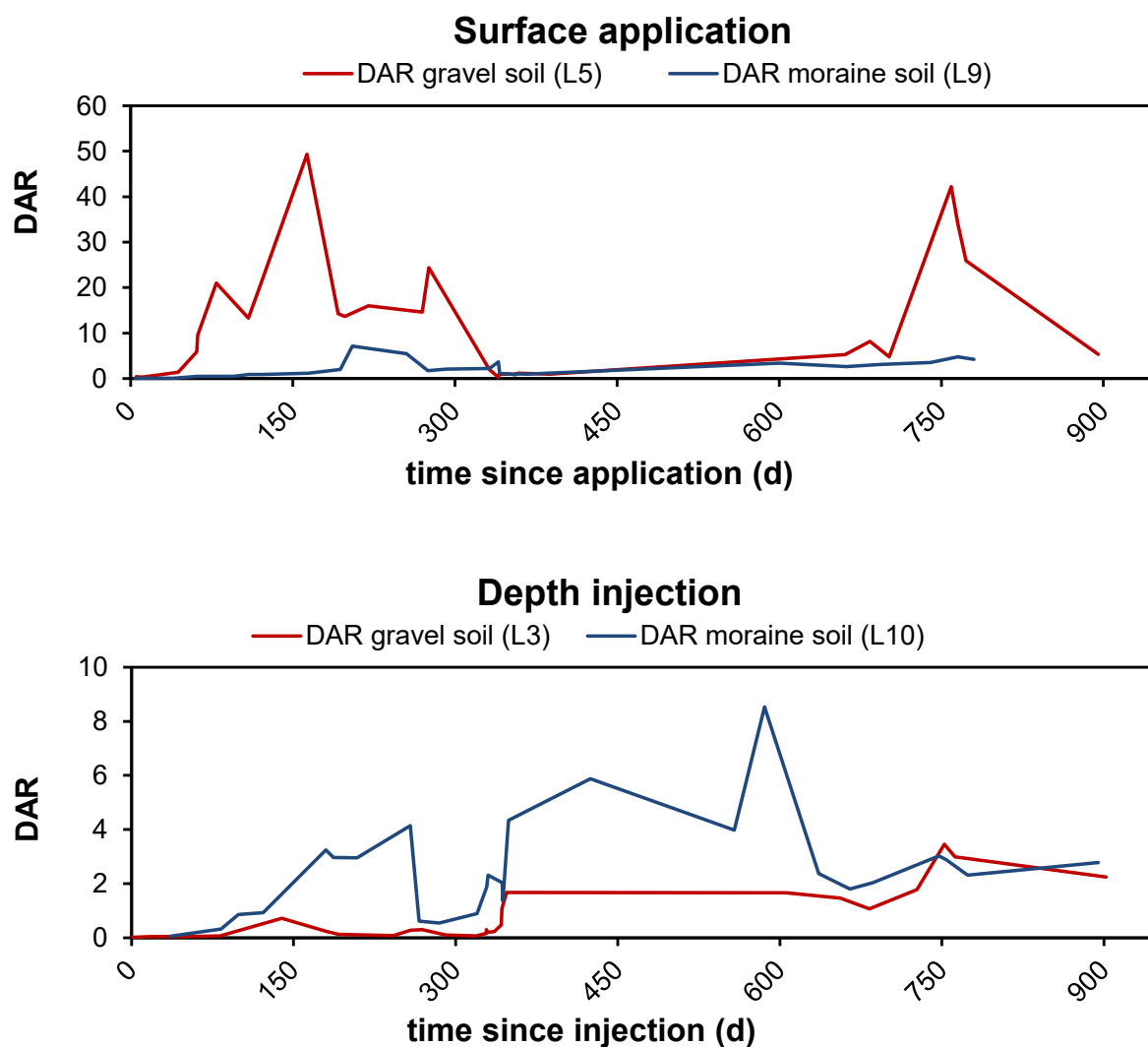


Figure S5. DEA-to-ATR molar ratio (DAR) in the drainage water after surface application (upper panel) and depth injection (lower panel). Note that the y-scale is different for the two panels

TABLE S1

Table S1. Average monthly sums of the water-balance components from the two soil types during 2014, 2015 and 2016

Month	2014								2015								2016							
	gravel				moraine				gravel				moraine				gravel				moraine			
	I	D	Δ SWS	ET	I	D	Δ SWS	ET	I	D	Δ SWS	ET	I	D	Δ SWS	ET	I	D	Δ SWS	ET	I	D	Δ SWS	ET
Jan	60	70	-3	0	61	70	-4	0	23	10	1	12	22	10	1	11	28	18	1	9	29	12	5	11
Feb	73	61	12	1	74	62	14	2	58	19	20	20	59	19	17	23	26	9	0	17	26	5	3	17
Mar	7	39	-61	29	7	38	-66	36	47	30	-13	30	48	29	-12	30	50	13	8	29	50	10	6	33
Apr	86	13	9	64	86	10	7	69	49	8	-1	42	51	7	-2	45	55	23	-3	36	55	20	-5	40
May	109	7	50	52	105	7	54	44	169	109	-11	71	165	111	-12	66	17	12	-22	27	17	11	-20	26
Jun	188	135	-41	95	196	143	-38	91	28	12	-103	119	27	9	-108	126	86	8	16	62	87	7	22	58
Jul	87	12	13	62	88	10	17	61	74	4	-56	126	74	1	-64	137	115	40	-91	167	110	36	-93	168
Aug	91	20	-60	131	91	16	-52	127	109	1	11	97	108	0	8	100	59	4	-69	124	57	1	-79	135
Sep	122	18	56	48	125	26	54	45	113	0	50	63	113	0	45	68	27	1	-7	34	27	0	-13	40
Oct	32	7	-3	28	32	11	-6	27	140	18	90	32	140	0	92	47	73	0	108	0	73	0	108	0
Nov	29	4	13	12	29	6	9	14	31	9	1	21	31	2	7	23	157	16	74	66	152	8	70	74
Dec	60	39	-2	23	56	43	-6	19	36	20	7	9	35	9	17	10	0	13	-23	10	0	3	-14	11
Total	943	425	-18	544	951	441	-18	537	877	240	-5	642	873	197	-10	686	694	156	-9	582	681	113	-9	613