Supplementary Data

Impact of Municipal Wastewater on *E. coli* Contamination and its Seasonal Change in Peri-Urban Farms of Hue City, Vietnam

Table S1. Average number of *E. coli* in the soil, vegetables, irrigation water, manure and municipal wastewater from Huong Chu (HC), Phu Mau (PM), Quang Thanh (QT) and Toa Kham (TK) communes during a year (May 2018 to April 2019).

Sample	Unit	2018								2019			
		May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Huong Chu (HC)		Dry season				Wet season				Dry season			
Soil	CFU/g	2.5×10^{1}	4.0×10^{1}	1.6×10^{1}	0.0×10^{0}	3.1×10^{1}	0.0×10^{0}	3.3×10^{0}	6.6×10^{0}	2.0×10^{0}	1.5×10^{1}	0.0×10^{0}	0.0×10^{0}
Vegetables	CFU/g	9.8×10^{0}	0.0×10^{0}	2.7×10^{1}	3.3×10^{0}	0.0×10^{0}	1.6×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}
Irrigation Water	CFU/ml	0.0×10^{0}	1.7×10^{0}	5.5×10^{1}	2.0×10^{1}	7.0×10^{0}	1.0×10^{1}	3.5×10^{1}	1.7×10^{1}	1.5×10^{1}	1.8×10^{1}	1.2×10^{1}	1.7×10^{1}
Manure	CFU/g	-	-	-	-	-	-	-	-	-	-	-	-
Phu Mau (PM)													
Soil	CFU/g	3.9×10^{1}	1.8×10^{2}	3.0×10^{0}	0.0×10^{0}	3.0×10^{0}	3.9×10^{1}	5.9×10^{1}	4.6×10^{1}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}
Vegetables	CFU/g	7.7×10^{-1}	1.4×10^{-1}	1.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	5.0×10^{0}	0.0×10^{0}	0.0×10^{0}
Irrigation Water	CFU/ml	2.9×10^{1}	1.9×10^{1}	3.0×10^{0}	1.7×10^{1}	1.4×10^{1}	3.0×10^{0}	4.0×10^{0}	5.1×10^{0}	2.4×10^{0}	3.2×10^{1}	5.1×10^{0}	4.3×10^{0}
Manure	CFU/g	-	-	-	-	-	-	-	1.7×10^{3}	-	-	-	-
Quang Thanh (QT)													
Soil	CFU/g	4.0×10^{1}	1.6×10^{1}	1.3×10^{1}	0.0×10^{0}	3.0×10^{0}	8.8×10^{1}	1.5×10^{1}	3.7×10^{1}	0.0×10^{0}	2.9×10^{2}	1.7×10^{3}	2.8×10^{2}
Vegetables	CFU/g	1.7×10^{0}	4.6×10^{-1}	1.2×10^{0}	4.2×10^{-1}	3.0×10^{-1}	0.0×10^{0}	1.3×10^{2}	3.8×10^{0}	1.0×10^{-1}	3.5×10^{-1}	1.4×10^{0}	1.2×10^{0}
Irrigation Water	CFU/ml	9.8×10^{1}	6.7×10^{0}	2.5×10^{1}	7.1×10^{0}	1.9×10^{1}	9.3×10^{0}	7.7×10^{0}	6.9×10^{0}	1.1×10^{1}	8.2×10^{0}	7.3×10^{1}	7.0×10^{1}

Manure	CFU/g	-	-	-	-	-	-	-	1.2×10^1	-	-	-	-
Toa Kham (TK)													
Wastewater	CFU/ml	-	4.0×10^4	-	-	-	-	-	1.3×10^3	-	-	-	-

Note: - = no samples

Table S2: Sequence Type (ST) and Sequence Type Complex (ST Complex) identity of *E. coli* isolates collected during the study and their reported phylogroup

Dry Season				Wet Season			
Isolate	**ST**	**ST Complex**	**Phylogroup**	**Isolate**	**ST**	**ST Complex**	**Reported Phylogroup**
SOL-1 HC4	939	None	**A**	MNR-1 QT1	4681	469	**B1**
SOL-1 QT2	196	None	**B1**	MNR-10 PM5	10017	None	-
SOL-1 QT3	10862	None	-	MNR-2 PM5	9872	None	-
SOL-3 QT2	196	None	**B1**	MNR-2 QT1	10012	None	-
SOL-6 PMc	3640	None	**B1**	MNR-3 PM5	641	86	D, **B1**, A
SOL-1 HC1-1	10355	None	-	MNR-3 QT1	10013	None	-
SOL-1 HC4	10356	None	-	MNR-4 PM5	10008	None	-
SOL-1 PM2	10357	None	-	MNR-4 QT1	10026	None	-
SOL-1 PMc	10677	None	-	MNR-5 PM5	10008	None	-
SOL-2 HC4	10358	None	-	MNR-5 QT1	48	10	E, **A**
SOL-2 QT2	10678	None	-	MNR-6 PM5	10014	None	-
SOL-3 HC1-1	10679	None	-	MNR-6 QT1	10012	None	-
SOL-3 HC4	10359	None	-	MNR-7 PM5	48	10	E, **A**
SOL-3 PMc	10360	None	-	MNR-7 QT1	10015	None	-
SOL-4 HC4	10362	None	-	MNR-8 PM5	10016	None	-
SOL-4 PMc	10361	None	-	MNR-8 QT1	48	10	E, **A**
VEG-1 PM1	9967	446	**B1**	MNR-9 PM5	641	86	D, **B1**, A
VEG-1 QT1	10363	None	-	MNR-9 QT1	48	10	E, **A**
VEG-1 QT4	10681	None	-	SOL-1 PM2	10018	None	-
VEG-1 QT5	10364	None	-	SOL-1 QT1	10019	None	-
VEG-11 HC5	5044	None	**B1**, A	SOL-10 PM2	1148	None	**B1**
VEG-13 HC5	10867	None	-	SOL-2 QT1	10021	None	-
VEG-14 HC5	533	40	**B1**	SOL-3 PM2	1148	None	**B1**
VEG-15 HC5	181	168	**A**	SOL-3 QT1	10020	None	-
VEG-16 HC5	10867	None	-	SOL-4 PM2	1148	None	**B1**
VEG-2 HC5	8369	None	**B1**	SOL-5 HC3	10022	None	-
VEG-2 PM1	10365	None	-	SOL-5 PM2	1148	None	**B1**
VEG-2 PM1	10863	None	-	SOL-6 PM2	1148	None	**B1**
VEG-2 QT5	10680	None	-	SOL-7 PM2	4088	None	**B1**
VEG-3 HC5	10864	None	-	IRW-1 HC	175	None	**A**
VEG-3 QT1	10866	None	-	IRW-1 PM2	10023	None	-
VEG-3 QT5	10682	None	-	IRW-1 PM3	533	40	**B1**
VEG-4 HC5	5229	101	**B1**	IRW-1 QT3+5	10024	None	-
VEG-5 HC5	10867	None	-	IRW-1 QT4	10025	None	-
VEG-5 QT1	10868	None	-	IRW-10 HC	181	168	**A**
VEG-7 HC5	542	None	**A**	IRW-10 QT3+5	10033	None	-
VEG-8 HC5	181	168	**A**	IRW-11 HC	10034	None	-
IRW-1 HC4+5	2522	None	**B1**	IRW-12 QT3+5	165	165	D, **A**
IRW-1 PM2	10687	None	-	IRW-13 QT4	711	None	**B1**
IRW-1 PM3	10366	None	-	IRW-14 QT3+5	101	101	D, **B1**, A

IRW-1 QT1	10869	None	-	IRW-14 QT4	40	40	**B1**
IRW-1 QT2	10683	None	-	IRW-16 QT3+5	394	394	E or clade I, **D**, A
IRW-1 QT2	161	None	**A**	IRW-19 QT3+5	4577	None	**B1**
IRW-1 QT3	10367	None	-	IRW-2 HC	7366	None	**A**
IRW-1 QT4	409	None	B1 and **A**	IRW-2 PM2	10027	None	-
IRW-10 HC4+5	10880	None	-	IRW-2 QT2	401	None	**A**
IRW-11 HC4+5	10878	None	-	IRW-2 QT4	10028	None	-
IRW-12 HC4+5	10881	None	-	IRW-20 QT3+5	155	155	**B1**, A
IRW-13 HC4+5	3106	155	-	IRW-3 PM2	10027	None	-
IRW-14 HC4+5	1727	446	**B1**	IRW-3 PM3	93	168	E, D, **A**
IRW-17 HC4+5	10882	None	-	IRW-3 QT2	6836	165	**A**
IRW-18 HC4+5	10879	None	-	IRW-3 QT4	10029	None	-
IRW-19 HC4+5	58	155	**B1**,A	IRW-4 HC	10030	None	-
IRW-2 HC1	1656	None	**B1**, A	IRW-4 PM2	1056	None	**B1**
IRW-2 PM2	10688	None	-	IRW-5 HC	155	155	**B1**, A
IRW-2 PM3	202	None	**A**	IRW-5 PM2	1056	None	**B1**
IRW-2 QT1	10870	None	-	IRW-5 QT4	10031	None	-
IRW-2 QT2	161	None	**A**	IRW-6 PM2	10027	None	-
IRW-2 QT3	10684	None	-	IRW-6 QT3+5	196	None	**B1**
IRW-3 PM2	10688	None	-	IRW-6 QT4	6856	10	**A**
IRW-3 QT1	10865	None	-	IRW-7 HC	181	168	**A**
IRW-3 QT2	161	None	**A**	IRW-7 PM2	10027	None	-
IRW-3 QT3	10368	None	-	IRW-7 QT4	10032	None	-
IRW-4 PM2	10685	None	-	IRW-8 HC	181	168	**A**
IRW-4 QT1	10871	None	-	IRW-8 PM2	10027	None	-
IRW-4 QT3	10369	None	-	IRW-8 QT3+5	10033	None	-
IRW-5 HC4+5	10872	None	-	IRW-9 PM2	6109	None	**B1**
IRW-5 PM2	10689	None	-	IRW-9 QT4	5229	101	**B1**
IRW-5 QT1	10873	None	-	MWW-1	205	205	**B1**
IRW-5 QT3	10370	None	-	MWW-10	10037	None	-
IRW-6 HC4+5	10874	None	-	MWW-12	48	10	E, **A**
IRW-6 QT1	10865	None	-	MWW-13	10038	None	-
IRW-6 QT3	10371	None	-	MWW-15	200	40	**B1**
IRW-7 HC4+5	10875	None	-	MWW-16	3202	None	**A**
IRW-7 QT3	10372	None	-	MWW-18	3240	None	-
IRW-8 HC4+5	10876	None	-	MWW-20	1139	None	**A**
IRW-9 HC4+5	10877	None	-	MWW-21	746	10	**A**
MWW-1 TK	10686	None	-	MWW-22	10039	None	-
MWW-10 TK	10	10	E or clade I, C, **A**	MWW-23	10040	None	-
MWW-11 TK	409	None	B1 and **A**	MWW-27	3856	None	**A**
MWW-12 TK	10	10	E or clade I, C, **A**	MWW-28	218	10	E, **A**
MWW-13 TK	641	86	D, **B1**, A	MWW-29	10041	None	-
MWW-14 TK	10379	None	-	MWW-3	130	31	**E**
MWW-15 TK	218	10	E, **A**	MWW-4	10035	None	-
MWW-2 TK	10	10	E or clade I, C, **A**	MWW-6	95	95	**B2**, B1

MWW-3 TK	10375	None	-	MWW-7	10036	None	-
MWW-4 TK	3489	10	**A**	MWW-9	93	168	E, D, **A**
MWW-5 TK	10691	None	-				
MWW-6 TK	10376	None	-				
MWW-9 TK	93	168	E, D, **A**				

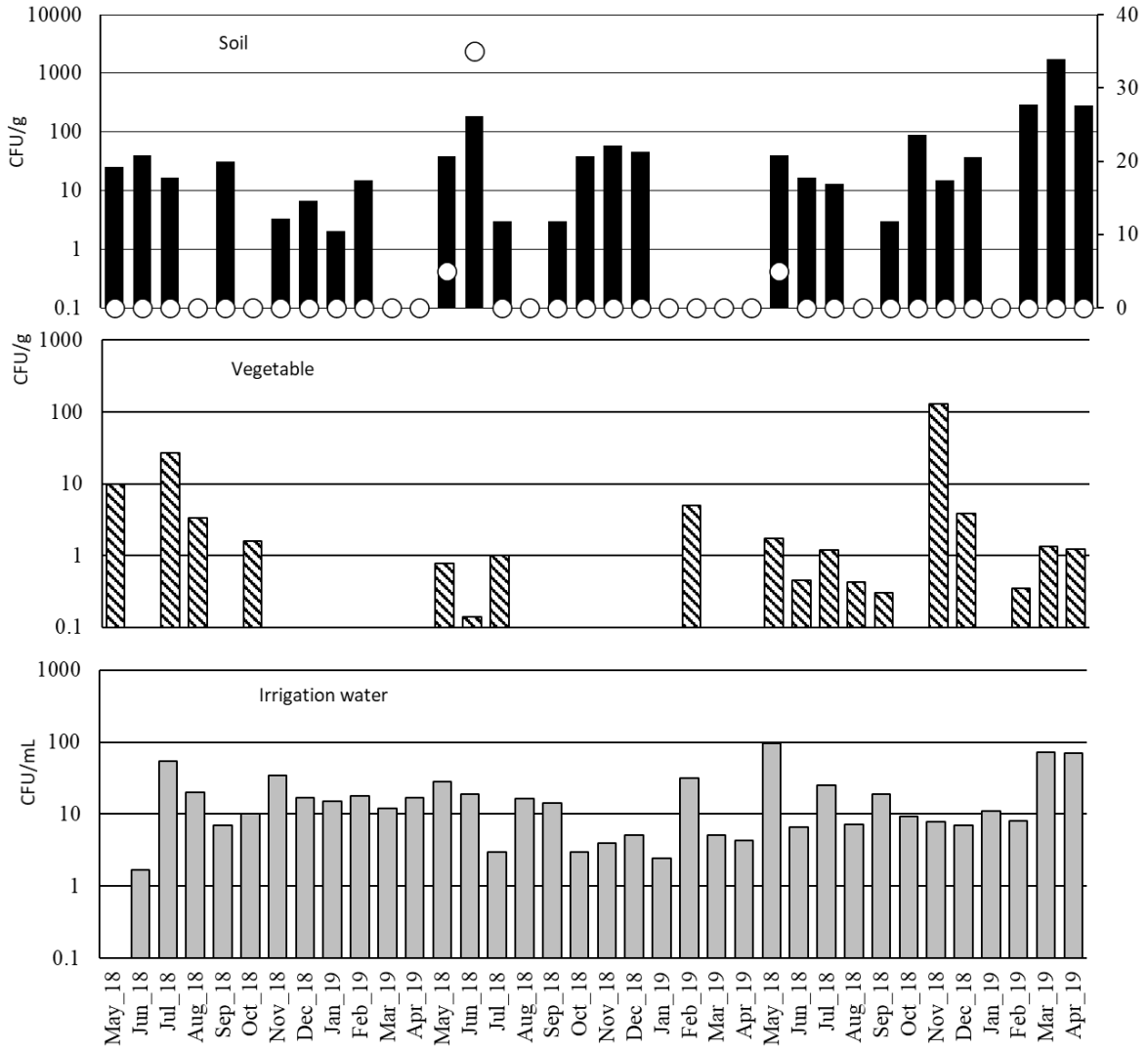

Figure S1. *E.coli* loads in soil, vegetable and irrigation water from all the sites throughout the sampling season. The open circles are for soil control samples plotted on the secondary axis