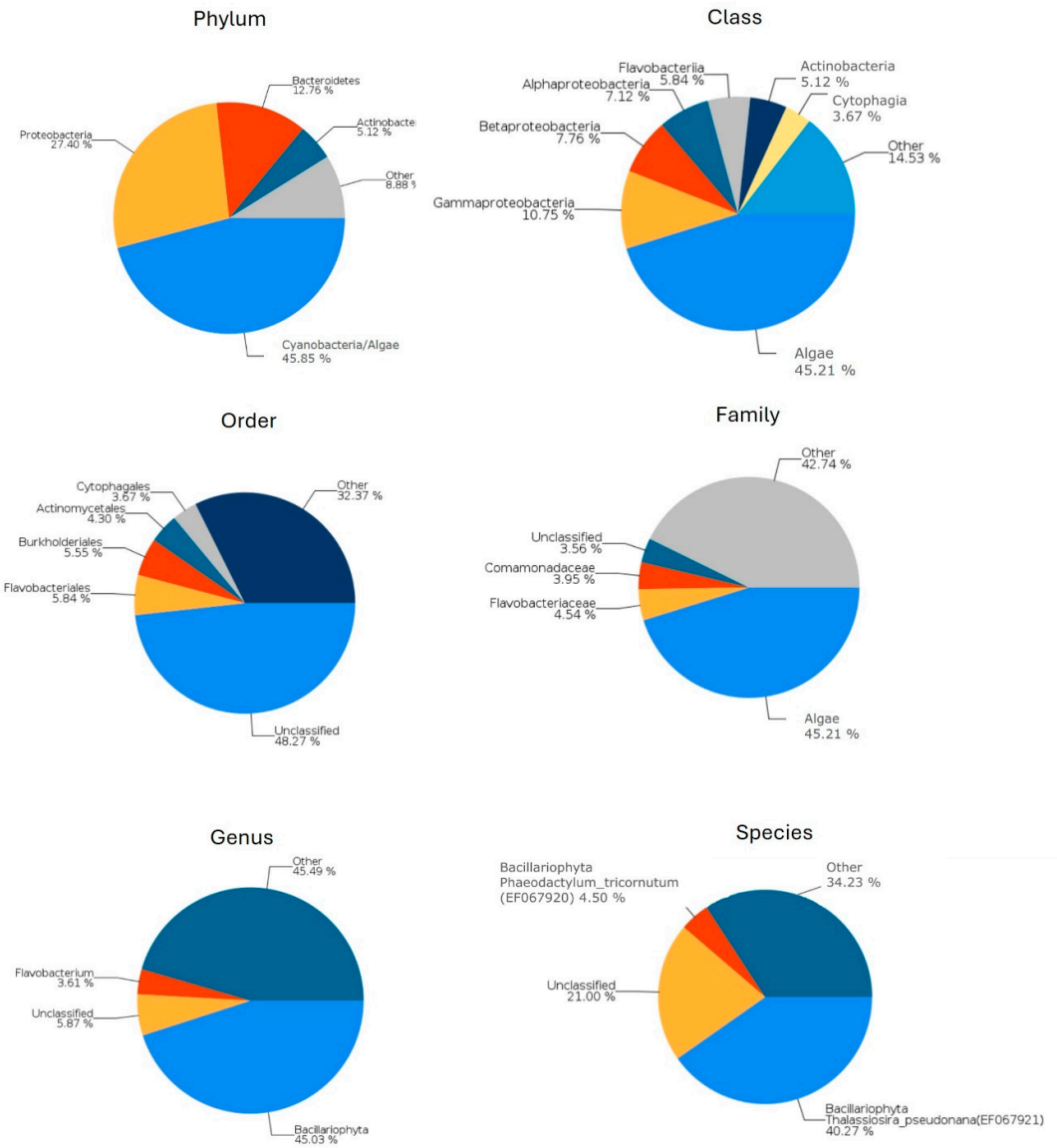


Figure S1. Main phylum, class, order, family, genus, and species classification results for water samples.

Notably, the most prevalent phyla were the primary producers Cyanobacteria/Algae (45.85%) and Proteobacteria (27.4%), with additional phyla including Bacteroidetes (12.76%) and Actinobacteria (5.12%) (Table S1). Proteobacteria exhibited three distinct classes: Alphaproteobacteria (7.12%), Betaproteobacteria (7.76%), and Gammaproteobacteria (10.75%), while 45.21% of the total reads belonged to Algae class. Other identified classes were Actinobacteria (5.12%) and Cytophagia (3.67%). The river water sample revealed bacteria from various orders, such as Aeromonadales (2.54%), Chromatiales (2.29%), Pseudomonadales (1.65%), and Alteromonadales (1.43%), all predominantly within the Gammaproteobacteria class (Table S1). Within Betaproteobacteria, Burkholderiales accounted for 5.55% of total reads, with Rhodocyclales and Neisseriales representing only 0.97% and 0.82%, respectively (Table S1). Additionally, Alphacianobacteria primarily comprised Rhodocacterales (3.32%), Sphingomonadales (1.19%), and Rhizobiales (1.32%) (Table S1). Cytophagales (3.67%), Actinomycetales (4.30%) and Flavobacteriales (5.84%) were other orders (not belonging to the cited classes), that must be highlighted. The most abundant families identified were the

primary producers Algae/Cyanobacteria (45.21%), Flavobacteriaceae (4.54%, Bacteroidetes phylum), and Comamonadaceae (3.95%, Proteobacteria phylum). At the genus level, Bacillariophyta emerged as the most abundant (45.03%), belonging to the Cyanobacteria phylum, all of them belonging to the species Thalassiosira (40.27%).

Table S1. Water sample complete taxonomy.

Phylum	%	Class	%	Order	%	Family	%	Genus	%	Species	%
Cyanobacteria/Algae	45.85	Algae	45.21	Unclassified	45.21	*Algae*	45.21	*Bacillariophyta*	45.03	*Thalassiosira pseudonana*	40.27
										Phaeodactylum tricornutum	4.5
										Other	0.26
								Other *Algae*	0.18		
		Other	0.64								
Proteobacteria	27.40	Gammaproteobacteria	10.75	Aeromonadales	2.54	*Aeromonadaceae*	2.52	*Aeromonas*	2.48	*Unclassified*	1.73
										popofii	0.48
										Other	0.18
								Other Aeromonadaceae	0.03		
				Chromatiales	2.29	*Chromatiaceae*	2.04	*Rheinheimera*	1.90	tilapiae	0.77
										chironomii	0.50
										Mesophila	0.29
										Other	0.34
								Other Chromatiaceae	0.15		
						Ectothiorhodospiraceae	0.21	*Natrocella*	0.09	*Woeseia oceani*	0.08
										Other Natrocella	0.08
								Ectothiorhodospira	0.02	*Ectothiorhodospira variabilis*	0.02
								Thioallkalivibrio	0.02	Unclassified	0.02
										nitratireducens	0.0
										versutus	0.0
								Thiohalomonas	0.02	*nitratireducens*	0.02
										denitrificans	0.0
								Unclassidied	0.02		
								Acidiferrobacter	0.02	Unclassified	0.01
										thiooxidans	0.01
										Sulfuricaulis limícola	0.0
										Sulfurifustis variabilis	0.0
								Thiogranun	0.01	*longum*	0.01
								Other	0.01		
				Pseudomonadales	1.65	*Pseudomonadaceae*	1.30	*Cellvibrio*	0.61	fibriovorans	0.27
										gandavensis	0.14
										fulvus	0.13

										Other	0.06
								Pseudomonas	0.55	Unclassified	0.18
										peli	0.1
										protegens	0.08
										guguanensis	0.05
										Other	0.13
								Rhizobacter	0.12	*fulvus*	0.09
										Rhizobacter sp.	0.01
										Other	0.01
								Other	0.03		
				Alteromonadales	1.43	*Shewanellaceae*	0.8	*Shewanella*	0.8	Unclassified	0.31
										xiamenensis	0.19
										putrefaciens	0.13
										oneidensis	0.10
										Other	0.07
						Alteromonadaceae	0.59	*Haliea*	0.51	*mediterranea*	0.44
										salexigens	0.04
										Other	0.03
								Other Alteromonadaceae	0.07		
				Xanthomonadales	1.06	*Sinobacteraceae*	0.59	*Polibacter*	0.54	*uvarum*	0.5
										Other	0.04
								Other	0.05		
						Xanthomonadaceae	0.47	*Arenimonas*	0.20	*subflava*	0.08
										Aeromonas sp.	0.06
										daechungensis	0.03
										Unclassified	0.02
										Other	0.01
								Stenotrophomonas	0.06	maltophilia	0.04
										chelatiphaga	0.02
										Other	0.0
								Thermononas	0.05	*Thermomonas sp.*	0.05
								Lysobacter	0.05	*brunescens*	0.03
										ginsengisoli	0.01
										daejonensis	0.01
										Other	0.01
								Other	0.11		
		Betaproteobacteria	7.76	Burkholderiales	5.55	*Comamonadaceae*	3.95	*Hydrogenophaga*	1.98	Unclassified	1.17

										taeniospiralis	0.43
										caeni	0.30
										Other	0.08
								Limnohabitans	0.64	*plantktonicus*	0.39
										parvus	0.14
										australis	0.08
										Other	0.04
								Rhodoferax	0.5	Unclassified	0.25
										ferrireducens	0.11
										saidenbachensis	0.08
										antarticus	0.05
										Other	0.0
								Other	0.82		
						Burkholderiales incertae sedis	0.62	*Rubrivirax*	0.13	Other	0.0
										gelatinosus	0.12
								Aquabacterium	0.13	*commune*	0.07
										citratiphilum	0.03
										fontiphilum	0.02
										Other	0.02
								Mitsuaria	0.08	chitosanitabida	0.08
								Inhella	0.05	*inkyongensis*	0.05
										fonticola	0.01
								Paucibacter	0.05	*toxinivorans*	0.05
								Leptothrix	0.05	*discophora*	0.04
										mobilis	0.01
								Sphaerotilus	0.04	*montanus*	0.02
										natans	0.01
										Other	0.0
								Other	0.09		
						Other	0.98				
				Rhodocyclales	0.97	*Rhodocyclaceae*	0.97	*Dechloromonas*	0.35	Unclassified	0.33
										Other	0.02
								Unclassified	0.18		
								Sulfuritalea	0.07	*hydrogenovorans*	0.07
								Sulfurisoma	0.05	*sedimicola*	0.05
								Thaurea	0.06	*aromatica*	0.01
										Unclassified	0.03

										mechernichensis	0.01
										Other	0.01
								Other	0.27		
				Neisseriales	0.82	*Neisseriaceae*	0.82	*Deefgea*	0.22	*chitinilytica*	0.20
										rivuli	0.02
										Other	0.0
								Chitinibacter	0.21	*suncheonensis*	0.19
										Other	0.02
								Vogesella	0.13	Unclassified	0.10
										indigofera	0.02
										oryzae	0.01
										Other	0.0
								Vitreoscilla	0.08	*duriensis*	0.06
										filiformis	0.02
								Chromobacterium	0.05	*haemolyticum*	0.02
										subtsugae	0.01
										Unclassified	0.01
										aquaticum	0.01
										Other	0.0
								Formivibrio	0.03	*citricus*	0.03
								Other	0.1		
		Alphaproteobacteria	7.12	Rhodobacterales	3.32	*Rhodobacteraceae*	3.32	*Pseudorhodobacter*	1.46	*collinsensis*	1.36
										Other	0.1
								Tabrizicola	0.41	*aquatica*	0.41
								Gemnobacter	0.36	*tilapiae*	0.20
										Unclassified	0.08
										lanyuensis	0.05
										Other	0.03
								Citreicella	0.25	Unclassified	0.25
								Rhodobacter	0.18	*blasticus*	0.14
										azotoformans	0.02
										Other	0.02
				Sphingomonadales	1.19	*Shingomonadaceae*	0.99	*Sphingorhabdus*	0.64	*wooponensis*	0.53
										Unclassified	0.07
										Other	0.04
								Shpingopyxis	0.11	*Sphingoxyxis sp.*	0.07
										Unclassified	0.03

										Other	0.01
								Novosphingobium	0.10	*Novosphingobium sp.*	0.04
										ginsenosidimutans	0.01
										subterraneum	0.01
										Unclassified	0.01
										Other	0.03
								Sphingomonas	0.07	Unclassified	0.04
										fonticola	0.01
										Other	0.02
								Other	0.08		
						Erythrobacteraceae	0.20	*Porphyrobacter*	0.12	sanguineus	0.11
										Unclassified	0.01
										Other	0.01
								Altererybacter	0.05	*dongtanensis*	0.03
										Unclassified	0.01
										indicus	0.01
										Other	0.01
								Erythrobacter	0.02	Unclassified	0.02
										aquimaris	0.0
						Other	0.0				
				Rhizobiales	1.32	*Rhizobiaceae*	0.37	*Rhizobium*	0.36	Unclassified	0.05
										kunmingense	0.05
										rosettiformans	0.03
										Other	0.09
								Other	0.01		
						Hyphomicrobiaceae	0.38	*Hypomicrobium*	0.12	vulgare	0.07
										Unclassified	0.03
										sulfonivorans	0.02
										Other	0.0
								Devosia	0.10	Unclassified	0.06
										insulae	0.02
										Other	0.01
								Filomicrobium	0.04	*insigne*	0.04
										Other	0.0
								Pedomicrobium	0.03	Unclassified	0.02
										manganicum	0.01
								Other	0.08		

						Rhodobiaceae	0.21	*Rhodoviaceae*	0.16	*oligomobilis*	0.14
										appendicifer	0.02
										Other	0.02
								Anderseniella	0.01	*baltica*	0.01
								Unclassified	0.02		
								Parvibaculum	0.01	*marinus*	0.01
								Other	0.0		
						Rhizobiales incertae sedis	0.10	*Alsobacter*	0.05	*metallidurans*	0.05
								Phreatobacter	0.03	*Alpha proteobacterium*	0.03
								Vasilyevaea	0.01	Unclassified	0.0
										mishustinii	0.0
								Other	0.01		
						Phyllobacteriaceae	0.09	*Aquamicrobium*	0.03	*defluvii*	0.03
										Unclassified	0.0
								Nitratireductor	0.01	*soli*	0.01
								Hoeflea	0.02	*marina*	0.01
										halophila	0.0
										aestuarii	0.0
										cellulosilytica	0.0
								Unclassified	0.02		
								Phillobacterium	0.0	Unclassified	0.0
								Other	0.0		
						Other	0.18				
				Rhodospirillales	0.64	*Rhodospirillaceae*	0.49	*Magnetovibrio*	0.12	*blakemorei*	0.12
								Azospirillum	0.10	*irakense*	0.07
										Unclassified	0.02
										thiophillum	0.01
										azospirillum	0.01
								Novispirillum	0.08	*Unclassified*	0.07
										Other	0.01
								Pelagibius	0.03	*litoralis*	0.03
										Other	0.0
								Aestuariispira	0.03	Rhodospirillaceae bacterium	0.03
								Other	0.13		
						Acetobacteriaceae	0.11	*Roseomonas*	0.09	*Unclassified*	0.03
										lacus	0.02

										riguiloci		0.02
										Other		0.02
								Stella	0.01	*vacuolata*		0.01
										Unclassified		0.00
								Nguyenibacter	0.01	*intestini*		0.01
								Other	0.01			
				Other	0.65							
		Other Proteobacteria	1.17									
Bacteroidetes	12.76	Flavobacteriia	5.84	Flavobacteriales	5.84	*Flavobactariaceae*	4.54	*Flavobacterium*	3.61	Unclassified		2.16
										Other		1.45
								Polaribacter	0.54	*gangjinensis*		0.54
								Other	0.38			
						Cryomorphaceae	1.30	*Brumimicrobium*	0.66	*mesophilum*		0.61
										Other		0.05
								Fluviicola	0.47	*taffensis*		0.45
										Other		0.01
								Salinirepens	0.07	*amaniensis*		0.07
								Other	0.11			
						Other	0.0					
		Cytophagia	3.67	Cytophagales	3.67	*Cytophagaceae*	2.97	*Arcicella*	1.82	Unclassified		1.81
										Other		0.01
								Fluviimonas	0.54	*pallidilutea*		0.54
								Pseudarcicella	0.22	*Aceicella sp.*		0.22
								Other	0.39			
						Unclassified	0.32	*Ohtaekwangia*	0.10	*koreensis*		0.09
										Other		0.0
								Unclassified	0.16			
								Chryseolinea	0.07	Sphingobacteria bacterium		0.07
						Cyclobacteriaceae	0.22	*Algoriphagus*	0.18	*shivajiensis*		0.08
										aquaductus		0.04
										Unclassified		0.04
										Other		0.02
								Fontibacter	0.01	*Unclassified*		0.01
								Other	0.02			
						Other	0.15					
		Shingobacteriia	1.95	Shingobacteriales	1.95	*Saprospiraceae*	0.86	*Haliscomenobacter*	0.31	*hydrossis*		0.31
								Lewinella	0.24	Unclassified		0.21

										Other	0.03
								Portibacter	0.18	*lacus*	0.18
								Phaeodactylibacter	0.06	Unclassified	0.05
										Other	0.0
								Other	0.01		
						Chitinophagaceae	0.86	*Sediminibacterium*	0.33	*salmoneum*	0.21
										Unclassified	0.07
										Sediminibacterium sp.	0.04
										Other	0.01
								Unclassified	0.27		
								Chitinophaga	0.07	*sancti*	0.04
										Unclassified	0.01
										jiangningensis	0.01
										Other	0.01
								Parasegetibacter	0.05	*Parasegetibacter sp.*	0.05
								Other	0.13		
						Shingobacteriaceae	0.22	*Pedobacter*	0.10	*terricola*	0.03
										alpinus	0.02
										Unclassified	0.02
										glucosidilyticus	0.01
										Other	0.02
								Solitalea	0.04	*canadensis*	0.04
										Unclassified	0.01
								Mucilaginibacter	0.03	*sabulilitoris*	0.01
										litoreus	0.01
										Unclassified	0.0
										Mucilaginibacter sp.	0.0
										Other	0.0
								Unclassified	0.03		
								Parapedobacter	0.01	*soli*	0.01
								Other	0.0		
						Other	0.01				
		Bacteroidia	1.03	Bacteroidales	1.03	*Bacteroidaceae*	0.34	*Bacteroides*	0.34	*plebeius*	0.12
										coprocola	0.08
										caecigallinarum	0.06
										Other	0.08
								Other	0.0		

						Prolixibacteraceae	0.19	*Mariniphaga*	0.14	*sediminis*	0.09
										Unclassified	0.03
										Roseimarinus sediminis	0.02
										Other	0.0
								Unclassified	0.05		
								Other	0.01		
						Porphyromonadaceae	0.20	*Barnesiella*	0.05	*intestinale*	0.04
										intestinihominis	0.01
								Dysgonomonas	0.05	*alginatilytica*	0.03
										Unclassified	0.02
										Other	0.01
								Paludibacter	0.02	*propionicigenes*	0.02
								Parabacterioides	0.02	*johnsonii*	0.01
										gordonii	0.01
										merdae	0.0
										Other	0.0
								Acetobacteroides	0.01	*Acetobacteroides bacterium*	0.01
								Petrimonas	0.01	*sulfuriphila*	0.01
								Butyricimonas	0.01	*massiliensis*	0.01
								Other	0.02		
						Rikenellaceae	0.13	*Alistipes*	0.09	Unclassified	0.03
										indistinctus	0.02
										senegalensis	0.02
										ihumii	0.01
										Other	0.01
								Mucinivorans	0.04	*hirudinis*	0.04
								Other	0.01		
						Other	0.16				
		Other	0.27								
Actinobacteria	5.12	Actinobacteria	5.12	Actinomycetales	4.30						
				Other	0.82						
Other	13.32										

Table S2. AWCD of water and soil samples for the 5 groups of metabolites as a function of time (h) for the control group and the different doses of eugenol.

	WATER					SOIL				
	[Eugenol] (mg/L)									
T (h)	**0**	**0.1**	**10**	**100**	**1000**	**0**	**0.1**	**10**	**100**	**1000**
	Polymers									
0	0.05	0.04	0.05	0.06	0.03	0.00	0.01	0.00	0.01	0.00
24	0.05	0.04	0.11	0.05	0.04	0.05	0.05	0.05	0.04	0.00
48	0.26	0.34	0.34	0.19	0.03	0.69	0.78	0.70	0.67	0.06
72	0.54	0.67	0.64	0.42	0.07	1.29	1.28	1.15	1.10	0.07
96	0.83	0.94	0.84	0.62	0.08	1.78	1.78	1.76	1.51	0.07
120	1.12	1.14	1.03	0.82	0.11	2.09	2.02	2.18	1.70	0.09
144	1.25	1.28	1.13	0.94	0.16	2.18	2.05	2.30	1.78	0.09
168	1.32	1.37	1.20	1.00	0.16	2.23	2.04	2.32	1.90	0.10
	Carbohydrates									
0	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
24	0.03	0.01	0.06	0.01	0.02	0.04	0.03	0.02	0.02	0.01
48	0.46	0.35	0.53	0.32	0.02	0.76	0.88	0.85	0.58	0.01
72	0.75	0.62	0.83	0.64	0.01	1.29	1.31	1.33	0.90	0.00
96	0.94	0.79	0.98	0.88	0.01	1.48	1.37	1.56	1.08	0.01
120	1.04	0.88	1.10	1.02	0.01	1.71	1.44	1.57	1.16	0.01
144	1.12	0.93	1.13	1.06	0.02	1.75	1.46	1.61	1.18	0.01
168	1.16	0.95	1.15	1.06	0.03	1.82	1.51	1.62	1.20	0.01
	Carboxylic and acetic acids									
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
24	0.02	0.01	0.03	0.01	0.02	0.04	0.03	0.03	0.01	0.01
48	0.16	0.18	0.22	0.13	0.02	0.62	0.66	0.61	0.60	0.01
72	0.43	0.53	0.51	0.42	0.02	1.08	1.06	0.94	0.96	0.00
96	0.56	0.68	0.69	0.56	0.02	1.31	1.21	1.21	1.14	0.01
120	0.70	0.77	0.78	0.66	0.03	1.44	1.25	1.32	1.24	0.01
144	0.80	0.83	0.84	0.71	0.04	1.45	1.26	1.34	1.26	0.02
168	0.83	0.90	0.89	0.75	0.05	1.50	1.27	1.31	1.26	0.02
	Amino acids									
0	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
24	0.02	0.00	0.03	0.00	0.01	0.04	0.04	0.03	0.02	0.00
48	0.19	0.16	0.20	0.06	0.02	0.50	0.49	0.56	0.47	0.00
72	0.48	0.40	0.38	0.23	0.02	0.87	0.80	0.98	0.88	0.00
96	0.69	0.64	0.55	0.38	0.02	1.14	1.09	1.26	1.20	0.00
120	0.90	0.89	0.76	0.55	0.05	1.37	1.20	1.32	1.30	0.02
144	1.05	1.07	0.89	0.62	0.07	1.44	1.31	1.43	1.32	0.05
168	1.13	1.22	0.97	0.70	0.09	1.61	1.44	1.51	1.34	0.09
	Amines/amides									
0	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
24	0.01	0.00	0.02	0.00	0.04	0.03	0.03	0.03	0.01	0.01
48	0.05	0.07	0.12	0.03	0.04	1.05	0.76	0.82	0.56	0.01
72	0.36	0.33	0.30	0.30	0.03	1.55	1.16	1.33	1.09	0.00
96	0.65	0.47	0.41	0.61	0.04	1.72	1.38	1.56	1.37	0.00
120	0.83	0.56	0.47	0.67	0.05	1.89	1.43	1.60	1.50	0.00
144	0.91	0.63	0.47	0.70	0.06	1.80	1.38	1.58	1.54	0.00
168	0.92	0.72	0.47	0.68	0.07	1.72	1.35	1.53	1.53	0.00

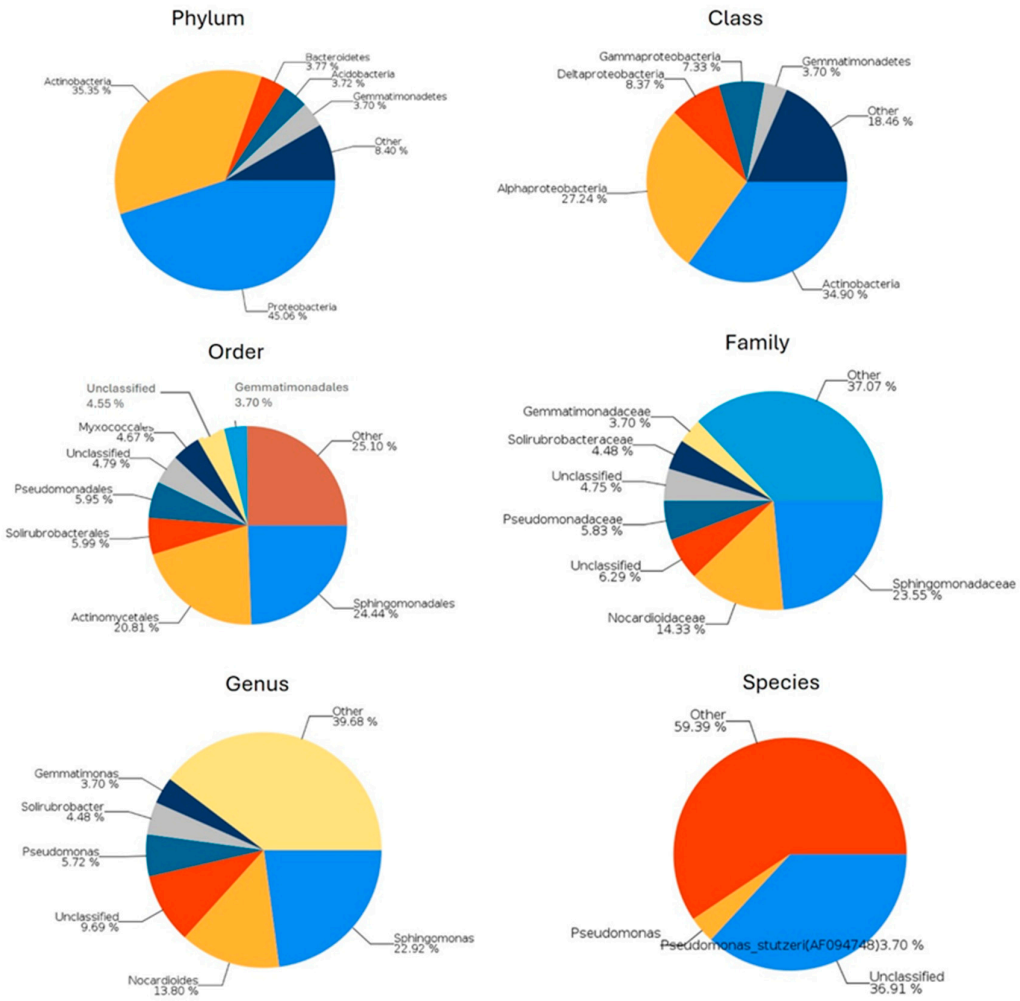


Figure S2. Main phylum, class, order, family, genus, and species classification results for soil samples.

Figure S2 (and Table S3) illustrates the prevalence of taxa across various taxonomic levels within the soil samples. Predominantly, the phyla Actinobacteria (35.35%) and Proteobacteria (45.06%) were observed, with a lesser presence of Bacteroidetes (3.77%), Acidobacteria (3.72%) and Gemmatimonadetes (3.70%). Within Actinobacteria, only the class Actinobacteria (34.90%) was identified, while Proteobacteria exhibited three prominent classes: Alphaproteobacteria (27.24%), Deltaproteobacteria (8.37%) and Gammaproteobacteria (7.33%). Notably, diverse orders were detected within the class Actinobacteria, such as Actinomycetales (20.81%), Solirubrobacterales (5.99%), Acidimicrobiales (2.89%), Gaillales (2.07%) (Table S3). In the Alphaproteobacteria class, Sphingomonadales accounted for 24.44% of total reads (Table S3). Within Deltaproteobacteria and Gammaproteobacteria classes, Myxococcales (4.67%) and Pseudomonadales (5.95%) were the most abundant orders, respectively (Table S3). The most prevalent families identified were Sphingomonadaceae (23.55%, Proteobateria phylum) and Nocardioidaceae (14.33%, Actinobacteria phylum). At the genus level, Nocardiodes (13.88%) and Sphingomonas (22.92%) emerged as the most abundant representatives within the Actinobacteria and Proteobacteria phyla, respectively. Table S3 provides more specific information about the taxonomic classification of soil microorganisms.

Table S3. Soil sample complete taxonomy.

Phylum	%	Class	%	Order	%	Family	%	Genus	%	Species	%
Proteobacteria	45.06	Alphaproteobacteria	27.24	Sphingomonadales	24.44	*Sphingomonadaceae*	23.55	*Sphingomonas*	22.92	Unclassified	10.38
										Other	12.54
								Other	0.63		
						Other	0.89				
				Other	2.79						
		Deltaproteobacteria	8.37	Myxococcales	4.67	*Vulgatibacteraceae*	3.42	*Vulgatibacter*	3.42	*incomptus*	3.42
						Myxococcaceae	0.44	*Aggregicoccus*	0.37	*edonensis*	0.37
								Angiococcus	0.04	Unclassified	0.04
								Other	0.02		
						Cystobacteraceae	0.44	*Anaeromyxobacter*	0.25	*dehalogenans*	0.25
								Stigmatella	0.16	Unclassified	0.16
								Cystobacter	0.03	*gracillis*	0.02
										violaceus	0.01
										gephyra	0.0
										Other	0.0
								Other	0.0		
				Desulfuromonadales	1.92	*Geobacteraceae*	1.86	Geobacter	1.86	Unclassified	1.85
										Other	0.01
								Other	0.01		
						Other	0.06				
				Bdellovibrionales	0.72	*Bacteriovoracaceae*	0.67	Peredibacter	0.67	Starrii	0.67
								Other	0.0		
						Bdellovibrionaceae	0.05	*Bdellovibrio*	0.05	*exovorus*	0.04
										bacteriovorus	0.01
										Other	0.0
				Desulfovibrionales	0.56	*Desulfovibrionaceae*	0.54	*Desulfovibrio*	0.54	Unclassified	0.53
										Other	0.0
								Other	0.0		
						Other	0.02				
				Other	0.5						
		Ganmaproteobacteria	7.33	Pseudomonadales	5.95	*Pseudomonadaceae*	5.83	*Pseudomonas*	5.72	*stutzeri*	3.70
										pseudoalcaligenes	0.96
										Unclassified	0.81
										Other	0.26

								Other	0.11		
						Other		0.12			
				Xanthomonadales	0.54	*Xanthomonadaceae*	0.53	*Stenotrophomonas*	0.38	*maltophilia*	0.26
										Unclassified	0.08
										rhizophila	0.04
										Other	0.01
								Luteimonas	0.05	*Lysobacter panaciterrae*	0.05
										Other	0.0
								Lysobacter	0.05	Unclassified	0.02
										lycopersici	0.01
										dokdonensis	0.01
										bugurensis	0.01
										soli	0.01
										Other	0.01
								Other	0.05		
						Other	0.01				
				Other	0.84						
		Other	2.12								
Actinobacteria	35.35	Actinobacteria	34.90	Actinomycetales	20.81	*Nocardioidaceae*	14.33	*Nocardioides*	13.80	Unclassified	3.34
										islandensis	3.25
										tritolerans	1.26
										mesophilus	1.26
										aestuarii	1.23
										Other	3.45
								Other	0.53		
						Micrococcaceae	0.94	*Arthrobacter*	0.90	Unclassified	0.78
										Other	0.12
								Other	*0.04*		
						Geodermatophilaceae	1.31	*Modestobacter*	0.60	*lapidis*	*0.36*
										Unclassified	0.22
										Other	0.02
								Geodermatophilus	*0.46*	*siccatus*	*0.35*
										nigrescens	*0.04*
										Other	*0.07*
								Blastococcus	*0.22*	*agregatus*	*0.12*

										jejuensis	*0.06*
										endophyticus	*0.03*
										Other	*0.01*
								Other	*0.03*		
						Other	4.23				
				Solirubrobacterales	5.99	*Solirubrobacteraceae*	4.48	*Solirubrobacter*	4.48	*gingenosidimutans*	2.0
										Solirubrobacter sp.	1.95
										Unclassified	0.49
										Other	0.04
						Conexibacteraceae	1.18	*Conexibacter*	1.18	Unclassified	0.81
										arvalis	0.28
										Other	0.09
						Other	0.33				
				Acidimicrobiales	2.89	*Acidimicrobineae incertae sedis*	1.39	*Aciditerrimonas*	1.39	*ferrireducens*	1.39
						Lamiaceae	0.75	*Aquihabitans*	0.66	*Aciditerrimonas sp.*	0.66
								Lamia	0.08	majanohamensis	0.08
								Other	0.0		
						Acidimicrobiaceae	0.67	*Ilumatobacter*	0.53	*fluminis*	0.51
										Other	0.02
								Ferrithrix	0.13	*thermotolerans*	0.13
								Other	0.01		
						Other	0.08				
				Gaiellales	2.07	*Gaiellaceae*	2.07	*Gaiella*	2.07	*occulta*	2.07
				Other	3.15						
		Other	0.45								
Other bacteria	19.06										

Table S4. Physico-chemical parameters of water and soil samples.

River		**Soil**	
Parameter	Value	Parameter	Value
Conductivity (mS/cm)	2,320.0	Clay content (%)	12.3
Total suspended solids (mg/L)	5.0	Sand content (%)	51.5
Organic matter (mg/L)	3.0	Silt content (%)	37.1
Total dissolved solids(mg/L)	1,590.1	K (mg/L)	110.2
Carbonates (mg/L)	0.0	P Olsen (mg/Kg)	10.2
Bicarbonates (mg/L)	248.9	Ca meq 100	23.6
Fluorides (mg/L)	0.09	$EC_{1:5}$ (dS/m)	0.6
Chlorides (mg/L)	477.0	Total nitrogen (%)	0.1
Nitrites (mg/L)	0.0	$CaCO_3$ (%)	42.5
Bromides (mg/L)	0.5	pH	8.1
Nitrates (mg/L)	14.6		
Phosphates (mg/L)	0.0		
Sulphates (mg/L)	356.5		
Total alkalinity (mg/L)	287.4		
Total organic carbon (mg/L)	2.89		
Total nitrogen (mg/L)	3.8		
pH	7.8		