

Supporting Information

Purification effects on β -HCH removal and bacterial community differences of vertical-flow constructed wetlands with different vegetation plantations

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Table S1. The final removal rate of β -HCH in water with different constructed wetlands in different seasons

Season	K	C	M	Z	S
Winter	93.45%	95.88%	96.49%	95.75%	96.06%
Winter + Y	91.48%	94.76%	96.09%	93.85%	95.09%
Summer	92.98%	98.17%	97.84%	94.47%	95.23%
Summer + Y	91.88%	97.04%	96.46%	95.05%	94.58%

Y indicates that microbial inhibitors have been added. K refers to no plant, C refers to *Acorus calamus*, M refers to *Canna indica*, Z refers to *Thalia dealbata*, S refers to *Pontederia cordata*.

Table S2. The final uptake amount of β -HCH in various plants of constructed wetlands in different seasons

Season	C	M	Z	S
Winter	2.96 $\mu\text{g/kg}$	3.92 $\mu\text{g/kg}$	1.98 $\mu\text{g/kg}$	3.38 $\mu\text{g/kg}$
Winter + Y	2.87 $\mu\text{g/kg}$	3.69 $\mu\text{g/kg}$	2.02 $\mu\text{g/kg}$	3.15 $\mu\text{g/kg}$
Summer	3.96 $\mu\text{g/kg}$	4.91 $\mu\text{g/kg}$	2.55 $\mu\text{g/kg}$	3.52 $\mu\text{g/kg}$
Summer + Y	3.96 $\mu\text{g/kg}$	4.46 $\mu\text{g/kg}$	2.59 $\mu\text{g/kg}$	3.15 $\mu\text{g/kg}$

Y indicates that microbial inhibitors have been added. K refers to no plant, C refers to *Acorus calamus*, M refers to *Canna indica*, Z refers to *Thalia dealbata*, S refer to *Pontederia cordata*.

Table S3. The final content of β -HCH in the non-rhizosphere substrate of each constructed wetlands in different seasons

Season	K	C	M	Z	S
Winter	25.65 $\mu\text{g/kg}$	20.94 $\mu\text{g/kg}$	18.99 $\mu\text{g/kg}$	22.29 $\mu\text{g/kg}$	22.68 $\mu\text{g/kg}$
Winter + Y	28.68 $\mu\text{g/kg}$	22.48 $\mu\text{g/kg}$	20.24 $\mu\text{g/kg}$	23.37 $\mu\text{g/kg}$	20.71 $\mu\text{g/kg}$
Summer	23.12 $\mu\text{g/kg}$	17.81 $\mu\text{g/kg}$	16.46 $\mu\text{g/kg}$	20.01 $\mu\text{g/kg}$	21.29 $\mu\text{g/kg}$
Summer + Y	27.38 $\mu\text{g/kg}$	19.18 $\mu\text{g/kg}$	18.94 $\mu\text{g/kg}$	24.08 $\mu\text{g/kg}$	23.41 $\mu\text{g/kg}$

Y indicates that microbial inhibitors have been added. K refers to no plant, C refers to *Acorus calamus*, M refers to *Canna indica*, Z refers to *Thalia dealbata*, S refers to *Pontederia cordata*.

Table S4. The final content of β -HCH in the rhizosphere substrate of each constructed wetland in different seasons

Season	C	M	Z	S
Winter	15.12 $\mu\text{g/kg}$	16.18 $\mu\text{g/kg}$	17.56 $\mu\text{g/kg}$	16.54 $\mu\text{g/kg}$
Winter + Y	18.12 $\mu\text{g/kg}$	17.01 $\mu\text{g/kg}$	19.15 $\mu\text{g/kg}$	17.48 $\mu\text{g/kg}$
Summer	14.33 $\mu\text{g/kg}$	15.13 $\mu\text{g/kg}$	16.72 $\mu\text{g/kg}$	15.69 $\mu\text{g/kg}$
Summer + Y	16.32 $\mu\text{g/kg}$	17.89 $\mu\text{g/kg}$	18.54 $\mu\text{g/kg}$	17.66 $\mu\text{g/kg}$

Y indicates that microbial inhibitors have been added. K refers to no plant, C refers to *Acorus calamus*, M refers to *Canna indica*, Z refers to *Thalia dealbata*, S refers to *Pontederia cordata*.

Table S5. The influence of seasons on the bacterial diversity index of constructed wetlands

Samples Name	OTU	Shannon	Chao1	Ace	Goods coverage
Winter	3129	9.160	3589	3573	0.985
Summer	3272	9.342	4021	4080	0.987

Table S6. The bacterial community at phylum level varied among different stages of CWs during summer

Taxonomy	<i>Proteobacteria</i>	<i>Firmicutes</i>	<i>Acidobacteria</i>	<i>Chloroflexi</i>	<i>Actinobacteria</i>	<i>Rokubacteria</i>	<i>Bacteroidetes</i>	<i>Planctomycetes</i>	<i>Verrucomicrobia</i>	<i>Gemmatimonadetes</i>	Others
K1	40.12%	0.30%	14.97%	11.91%	4.60%	5.50%	5.60%	2.40%	3.56%	2.30%	8.73%
K15	49.26%	1.41%	11.44%	11.65%	2.93%	5.20%	3.22%	1.78%	2.65%	1.97%	8.50%
K35	43.70%	1.49%	15.06%	10.96%	3.59%	4.54%	4.26%	2.67%	1.05%	2.26%	10.41%
K60	46.07%	8.43%	9.92%	9.36%	9.54%	2.97%	2.14%	3.04%	2.59%	0.99%	4.95%
C1	43.74%	0.49%	14.68%	10.63%	5.21%	5.18%	4.65%	3.02%	2.28%	2.38%	7.74%
C15	42.58%	0.26%	11.54%	13.76%	3.76%	7.18%	3.52%	3.42%	2.26%	1.67%	10.06%
C35	46.06%	0.28%	12.00%	10.36%	4.69%	7.37%	3.47%	3.24%	1.65%	2.08%	8.80%
C60	40.89%	8.39%	8.70%	12.92%	11.29%	3.35%	2.52%	4.47%	1.77%	1.09%	4.60%
M1	41.82%	0.27%	8.78%	12.90%	3.72%	7.52%	5.93%	3.21%	2.49%	1.21%	12.14%
M15	65.24%	1.45%	5.16%	6.39%	1.60%	3.42%	5.68%	1.62%	1.11%	1.02%	7.31%
M35	41.79%	0.85%	10.25%	14.61%	3.03%	6.46%	4.94%	1.84%	2.91%	1.48%	11.84%
M60	36.26%	16.35%	7.73%	13.48%	7.26%	4.87%	2.06%	3.08%	2.26%	0.75%	5.91%
Z1	35.44%	0.84%	13.83%	14.23%	1.62%	7.43%	4.59%	2.69%	2.53%	2.49%	14.32%
Z15	45.37%	1.57%	11.95%	11.33%	2.93%	6.46%	3.08%	2.48%	1.57%	2.53%	10.75%
Z35	41.67%	1.00%	12.44%	11.66%	1.93%	7.18%	3.26%	2.14%	2.26%	2.82%	13.64%
Z60	37.21%	11.19%	9.74%	12.44%	10.35%	4.66%	3.23%	3.50%	1.60%	0.86%	5.22%
S1	75.87%	4.00%	1.18%	2.31%	3.40%	0.94%	6.03%	0.61%	0.38%	0.34%	4.94%
S15	48.06%	0.34%	10.28%	12.97%	3.44%	9.22%	2.17%	2.33%	0.53%	2.16%	8.49%
S35	48.81%	0.34%	8.31%	13.50%	3.26%	8.76%	2.63%	2.63%	1.76%	1.40%	8.60%
S60	36.61%	14.25%	10.47%	12.96%	6.31%	3.45%	3.09%	2.65%	1.72%	1.66%	6.82%

Presented in the table are the top 10 species from the CWs bacterial community of each group at the phylum level, with the rest represented by others. **K** refers to no plant, **C** refers to *Acorus calamus*, **M** refers to *Canna indica*, **Z** refers to *Thalia dealbata*, **S** refers to *Pontederia cordata*. The numbers after **K**, **C**, **M**, **Z** and **S** indicate how many days the CWs had running.

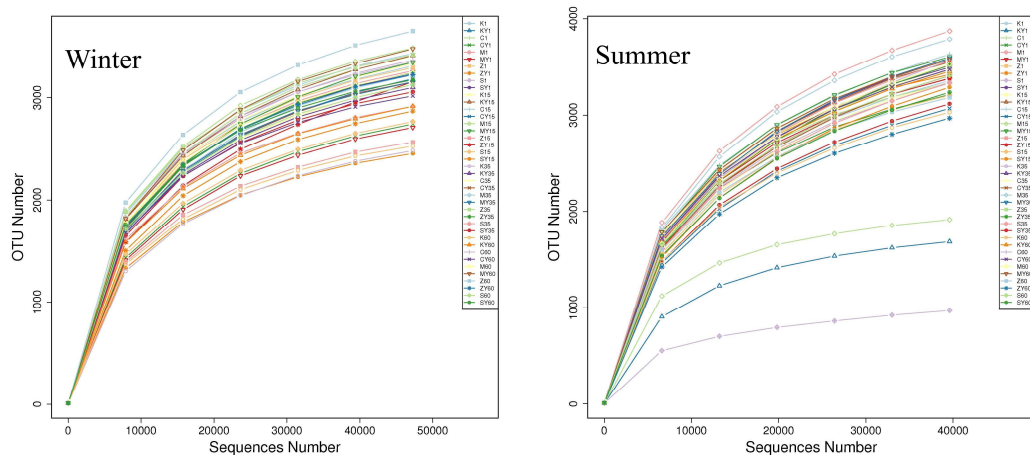


Figure. S1 Rarefaction analyses of multiple samples for winter and summer

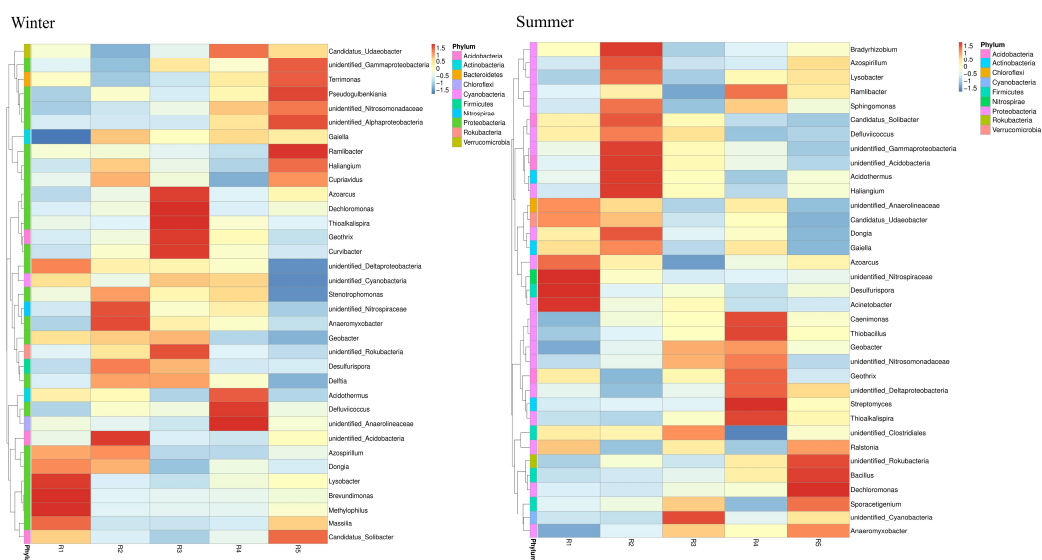


Figure. S2 Clustering heatmap at the genus level of each CWs for winter and summer, the darker the color indicates the higher abundance of that species in the component. R1 refers to no plant, R2 refers to *Acorus calamus*, R3 refers to *Canna indica*, R4 refers to *Thalia dealbata*, R5 refers to *Pontederia cordata*.