Table S1 Experimental design of intercropping patterns

|  |  |  |
| --- | --- | --- |
| Planting patterns | Symbolic | Plant number |
| *P.* *vittata* monoculture | PM | 4 |
| *S.* *alfredii* monoculture | SM | 4 |
| *H.* *spectabile* monoculture | HM | 4 |
| *P.* *vittata*/*S.* *alfredii* | PS | 2+2 |
| *P.* *vittata*/*H.* *spectabile* | PH | 2+2 |

Table S2 The bacterial α-diversity indices in rhizosphere soil of the monoculture and intercropping treatments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Treatments | Coverage | ACE | Chao 1 | Shannon |
| PM | 0.9820±0.0015 | 3898±28a | 3898±46a | 6.24±0.07b |
| SM | 0.9820±0.0014 | 3801±118b | 3848±143b | 6.21±0.09b |
| HM | 0.9814±0.0017 | 3586±82c | 3562±107c | 6.15±0.11c |
| PS | 0.9800±0.0020 | 3860±52ab | 3856±61ab | 6.40±0.16a |
| PH | 0.9803±0.0010 | 3870±140ab | 3895±130a | 6.45±0.11a |

Different letters within the same column indicate significant differences (*P* < 0.05) between the intercropping treatment and corresponding monoculture. Values are shown as means ± SD (n=4).

(a)

(c)

(b)

Fig. S1 The Venn diagram showing the numbers of unique and common OTUs in rhizosphere soils under different treatments.

**Graphical** **abstract：**



**Highlights:**

1. As and Cd phytoextraction by intercropping hyperaccumulators/accumulator was investigated.

2. Intercropping *P*. *vittata* with *S. alfredii* acquired the maximum As and Cd accumulation.

3. Soil microbial community diversity was improved by intercropping and important for heavy metal uptake.