

研究报告

## 芦竹修复镉汞污染湿地的研究

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### 摘要

以湿土盆栽方法研究了芦竹在Cd和Hg污染模拟湿地中的富集能力及其在植株中的分布.结果表明, 芦竹在101 mg·kg<sup>-1</sup> Hg污染环境中生长8个月后, 对Hg的富集量是根系>茎>叶片, 植物地上部分对Hg富集量为200±20 mg·kg<sup>-1</sup> DW; 而在115 mg·kg<sup>-1</sup> Cd污染环境中生长8个月后, 其对Cd的富集量是叶片>根系>茎, 芦竹叶片对Cd的富集量在160±26 mg·kg<sup>-1</sup> DW. 重金属在芦竹各器官内的含量随种植时间的延长而增加, 8个月生长期富集量比4个月生长期富集量高30%~50%. 芦竹生物富集系数(Bio-concentration factor BCF)随土壤中重金属含量增加而减小. 在污染土壤中, 芦竹叶、茎对Hg的BCF为1.9和2.1、对Cd为1.5和0.3; 在未受污染的空白对照湿土中(含Hg 6.8 mg·kg<sup>-1</sup>, Cd 8.5 mg·kg<sup>-1</sup>), 芦竹叶、茎对Hg的BCF为6.8和12.2, 对Cd为7.0和2.7, 表明芦竹具有生物量大、根系发达、适应性强等特点, 对Cd、Hg有较大富集量和较好的耐受性.

关键词 [芦竹](#); [植物修复](#); [湿地](#); [生物富集](#)

分类号

## Phytoremediation of mercury and cadmium polluted wetland by *Arundo donax*

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### Abstract

With a pot culture of simulated mercury (Hg) and cadmium (Cd) polluted wetland, this paper studied the capability of *Arundo donax* in accumulating these heavy metals, and their distribution in the plant. The results showed that after grown in a 101 mg·kg<sup>-1</sup> Hg polluted wetland for 8 months, the Hg-concentrating capability of *Arundo donax* was in order of root > stem > leaf, and the Hg concentration in its aboveground parts was 200±20 mg·kg<sup>-1</sup> (DW); while in the case of 115 mg·kg<sup>-1</sup> Cd pollution, the Cd-concentrating capability was in order of leaf > root > stem, and the Cd concentration in leaf was 160±26 mg·kg<sup>-1</sup> (DW). The heavy metals concentration in *Arundo donax* organs increased with its growth time, being 30%~50% higher for 8 months than for 4 months. The BCF (Bio-concentration factor) decreased with increasing heavy metals concentration. In polluted wetland, the BCFs of Hg by the leaf and stem were 1.9 and 2.1, and those of Cd were 1.5 and 0.3, respectively; while in unpolluted wetland, the concentration of Hg and Cd was 6.8 and 8.5 mg·kg<sup>-1</sup>, the BCFs of Hg by the leaf and stem were 6.8 and 12.2, and those of Cd were 7.0 and 2.7, respectively. It was indicated that *Arundo donax* not only had the characters of large biomass, exuberant root, and good adaptability, but also exhibited high tolerance and concentrating capability to Cd and Hg.

**Key words** [Arundo donax](#) [Phytoremediation](#) [Wetland](#) [Bio-concentration](#)

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