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Lead accumulation and tolerance of Moso bamboo (*Phyllostachys pubescens*) seedings: application of phytoremediation

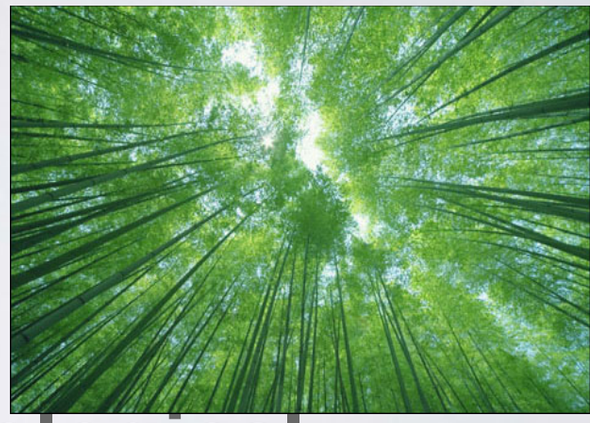
Key words:
Moso bamboo, Pb, Phytoremediation,
Scanning electron microscopy,
Transmission electron microscopy



Research Summary

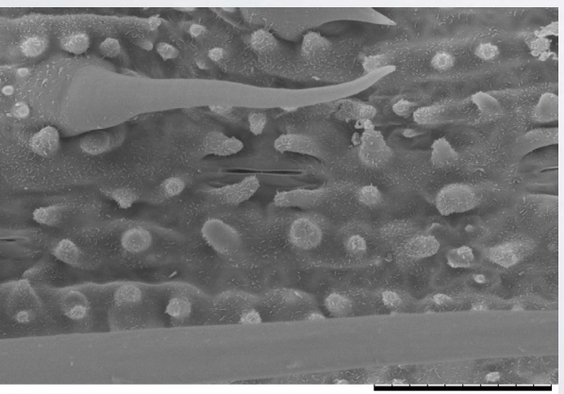
This review mainly focused on Moso bamboo seedlings tolerance and accumulation of lead:

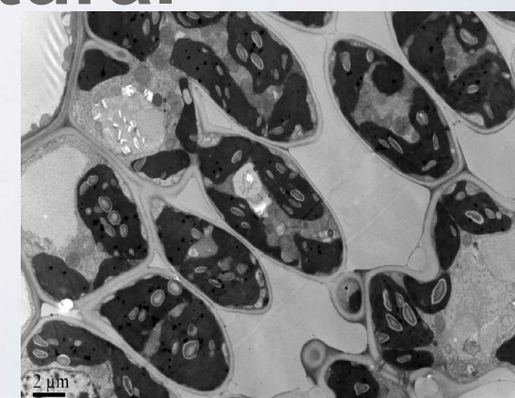




Moso bamboo produces biomass of 121.14 t/hm^2 (Wu et al., 2002).

- **investigate the growth and physiological responses**
- **investigate the uptake and accumulation of Pb in different plant tissues**
- **study the effect of Pb on ultrastructural characteristics of Moso bamboo**

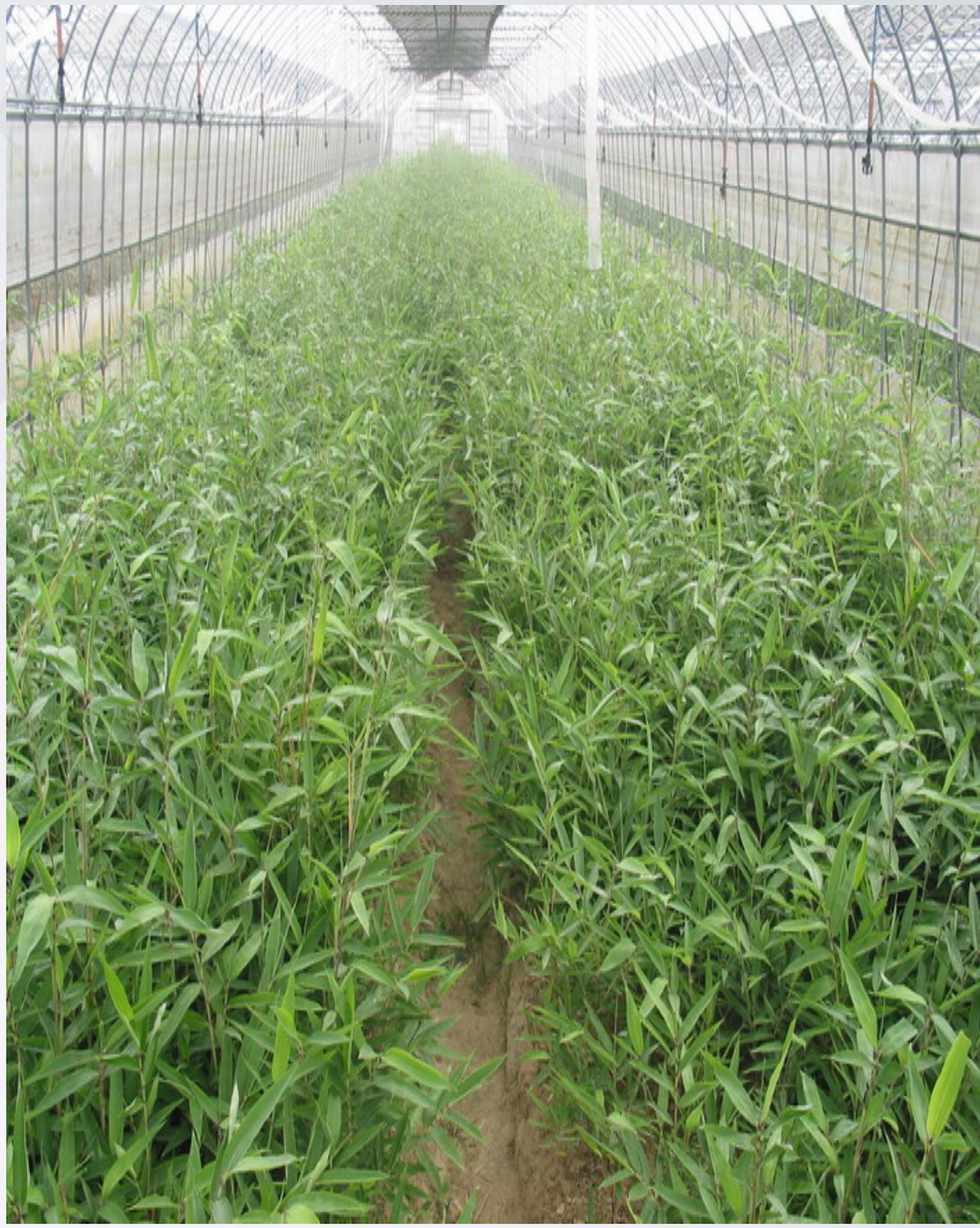




Uptake lead into Moso bamboo

Details in Lead accumulation and tolerance are discussed under following sections:

- The dry weight of Moso bamboo
- The lead content of various parts
- root morphology
- Absorption, accumulation and translocation
- ultrastructural analysis



Perspectives and Research Priorities

Research results:

- Pb concentrations in leaves, stems and roots reached the maximum of 148.8, 482.2 and 4282.8 mg/kg, respectively
- The root morphology no significant difference with CK before 400μmol/L Pb treatment
- Pb caused decreased stomatal opening, formation of abundant inclusions in roots and just a few inclusions in stems
- Pb caused abnormally shaped chloroplasts, disappearance of endoplasmic reticulum, shrinkage of nucleus and nucleolus

Although ultrastructural analysis revealed some internal damage, however, even the plants exposed to 400 μmol/L Pb survived and no visual Pb toxicity symptoms such as necrosis and chlorosis were observed in these plants. Moso bamboo growing round the year with a high rate of primary production (58.7t/ha dry weight). It is suggested that use of Moso bamboo as an experimental material provides a new perspective for remediation of heavy metal contaminated soil owing to its high metal tolerance and greater biomass.