



Using native biodiversity to restore metal-polluted soil in tropical Africa: a case study in the copperbelt of Katanga (D.R. Congo)

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- Katanga: 100 y of copper mining industry







Photo by Frédéric Sohler for Lubumbashi website





« Nature-based » solution: Ecological restoration

- « Phytostabilisation »
 - To restore a plant cover
 - To prevent dispersal of pollutants by wind or erosion

« Copper hills »: a unique vegetation







« Metallophytes »:
key biological resources
for ecological restoration

- > 600 species
- 33 endemics
- High tolerance to Copper, Cobalt, ...

Ascolepis metallorum



Crotalaria cobalticola



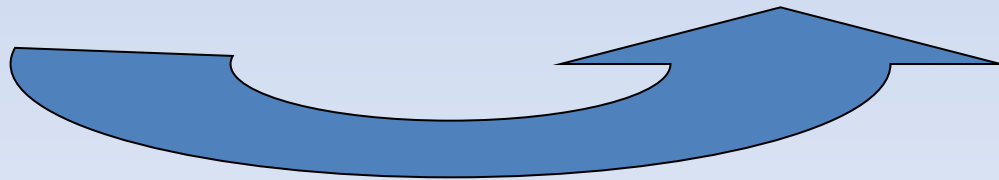
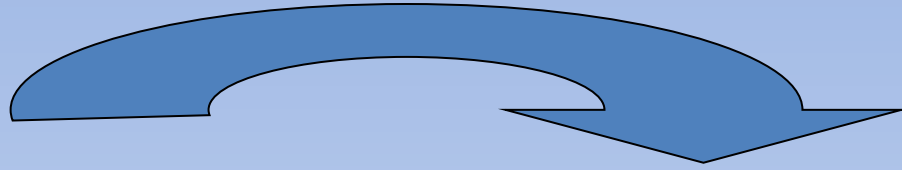
«The Copper flower », *Haumaniastrum katangense*



Projet Interuniversitaire Ciblé (CIUF-CUD)

“Appui à la création d’un DEA en biologie végétale et environnement à l’Université de Lubumbashi et remédiation des sols contaminés”

Understanding ecosystem functioning



Selecting species and genotypes

Phytostabilisation :

Selection of a candidate species

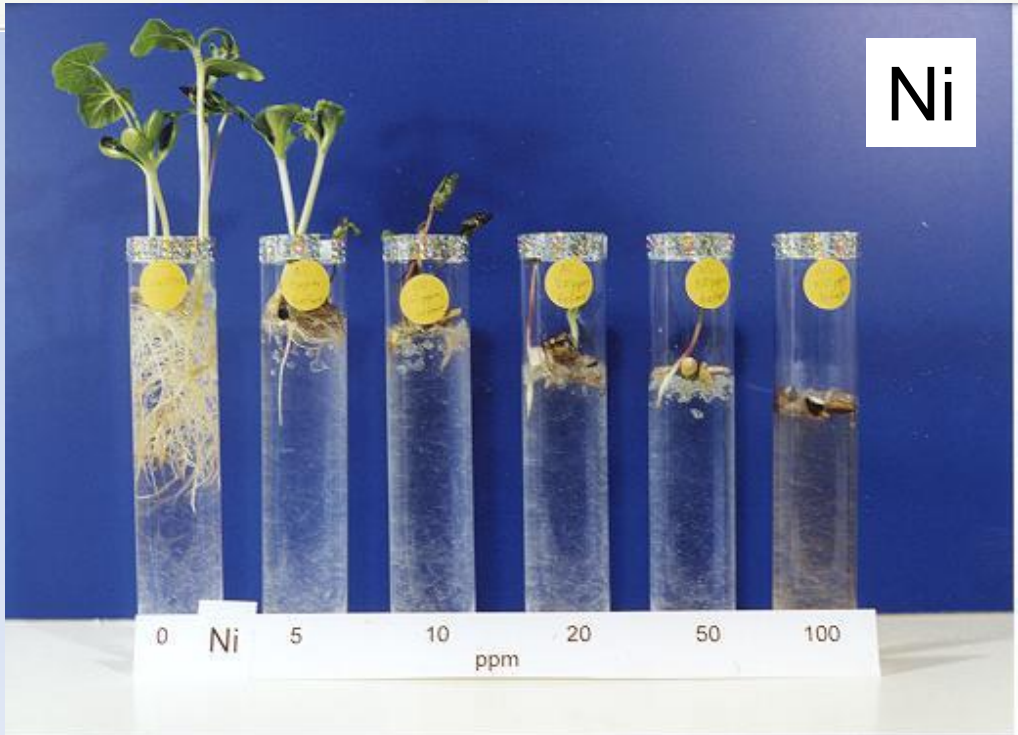
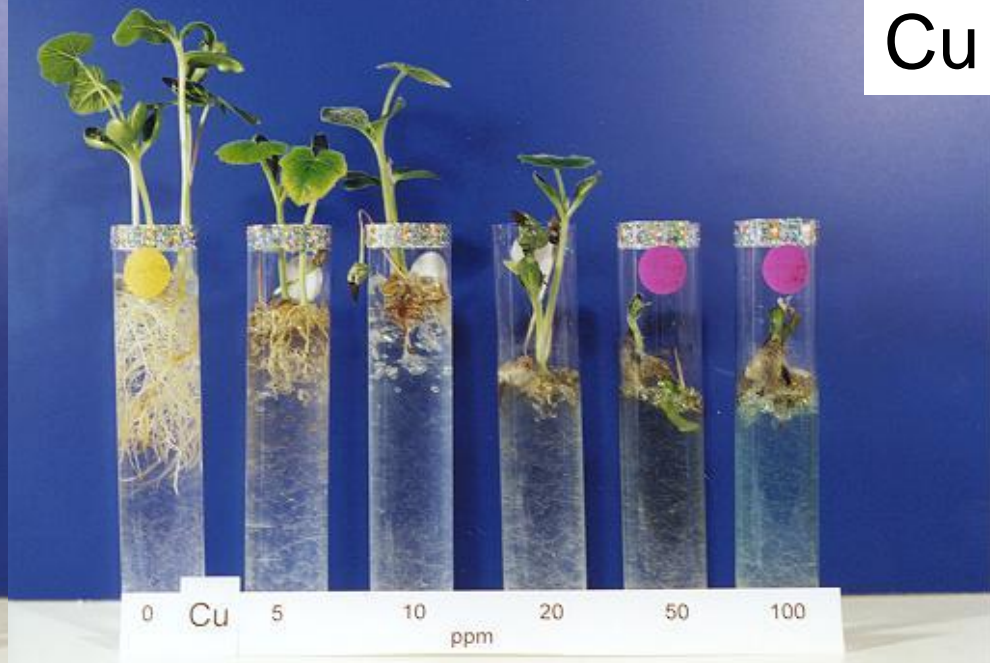
- Metal-tolerant
- Perennial
- Rapidly growing
- Mat-forming
- Easy to multiply
- ...



 **UNILU**
Jardin botanique expérimental de la faculté
des Sciences Agronomiques
Projet REAPOLU CUD / CUIF
Flora du cuivre Katanga
pièces
es vulnérables
abilisation



CROTALARIA
PESCHIANA
E) 4 SITES À L'EST
DE L'ARC CUPRIFÈRE
FABACEAE



... and the winner is:
Microchloa altera “Toothbrush grass”



Ex situ trials





The first *in situ* trials : 2009

















References

- NGOY SHUTCHA M., KAMENGWA KISSI C., FAUCON M.-P., COLINET C., MAHY G., NGONGO LUHEMBWE M., VISSER M. & MEERTS P., 2015. Three years of phytostabilisation experiment of bare acidic soil extremely contaminated by copper smelting using plant biodiversity of metal-rich soils in tropical Africa (Katanga, DR Congo). **Ecological Engineering** 82: 81-90.

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