



## Niche differentiation of arbuscular mycorrhizal fungi associated with the pioneer plant *Pueraria phaseoloides*

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## **Problem statement and objective**

- In Ghana, gold mining caused a huge loss of agricultural lands.
- Urgent actions are needed to mitigate such ecosystem degradations.
- Pioneer plants such as Pueraria phaseoloides (Kudzu) are suitable candidates for ecological restoration.
- Besides, arbuscular mycorrhizal fungi (AMF) play an important role in improving plant performance under biotic and abiotic stress.
- Only few information is available to what extent pioneer plants select specific AMF groups to take advantage in proliferating on degraded lands.
- > The objective was to investigate the genetic diversity and structure of AMF communities between rhizosphere soil and the root endosphere of Pueraria phaseolides.

## **Materials and Methods**

Samples of P. phaseoloides were taken from two locations in the Ashanti region (Ghana). We then separated roots and rhizosphere samples. DNA extraction was done and sequencing was carried out on the Illumina MiSeq platform using AMF specific primers.





higher (p<0.05) than in the root at both locations.

## **Conclusions and outlook**



- Plant compartment exerts, independent of the microbiome source (i.e. soil), a strong effect on microbial consortia shift.
- Two highly abundant keystone species associated with *P. phaseoloides* were Rhizophagus in roots and Acaulospora in rhizosphere soil.
- > The findings provided first insights into the complex and compartment-driven plant-AMF interaction, as displayed with the pioneer plant P. phaseoloides. Future management of mining degraded lands should consider AMF.

abundant in roots (keystone species).



Former degraded mining site colonized by P. phaseoloides

https://www.bmbf-client.de/en/projects/mercury-amf

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