



# The active effect of *Rhizophagus irregularis* inoculants on maize endophytic bacteria community.

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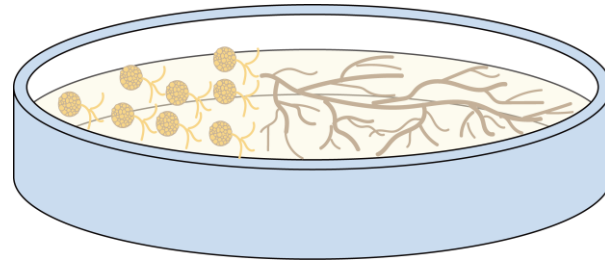
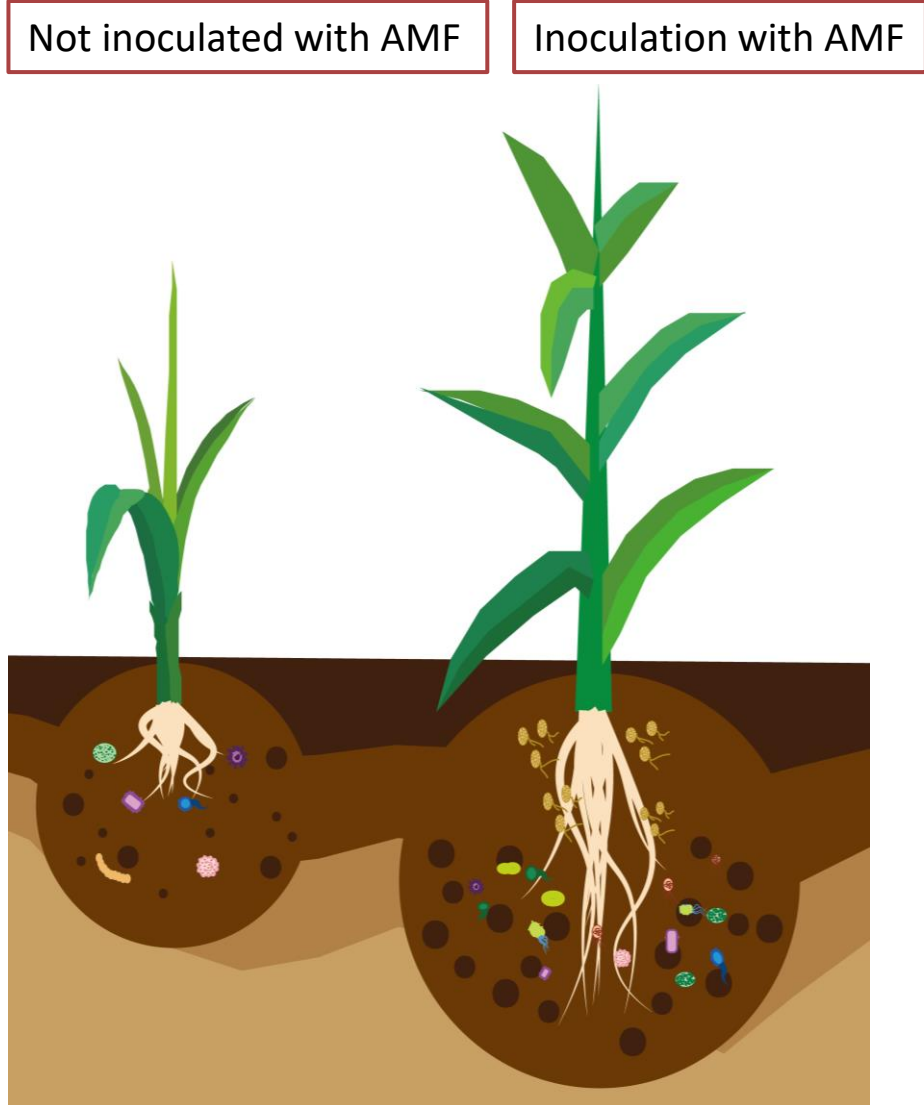
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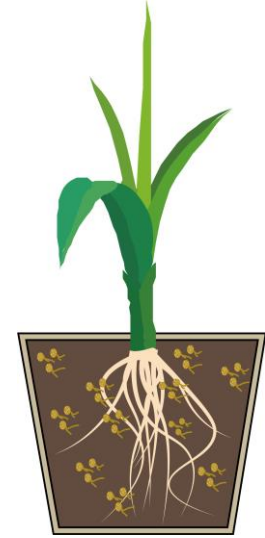
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# Introduction



AMF in *in vitro* dual culture system



AMF in pot culture

- ❑ Few studies investigating the effects of inoculation with AMF from *in vitro* dual culture systems.
- ❑ Little has been reported on the effects of AMF inoculum from *in vitro* dual culture systems on maize growth and its endophytic microbial community.



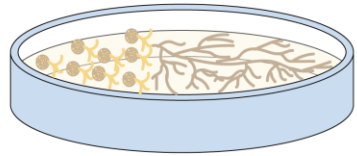
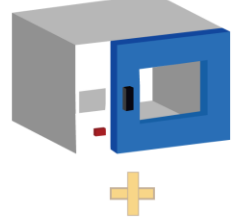
# Highlights

- ❑ Arbuscular mycorrhizal fungi (AMF) inoculants play an important role in influencing maize growth and endophytic bacterial community diversity.
- ❑ AMF inoculant carrying medium significantly promotes maize growth.
- ❑ AMF inoculants carrying medium significantly increased the abundance of beneficial bacteria.

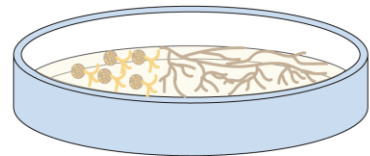


# AMF inoculant significantly promotes maize growth

(A) Oven drying at 30 degrees Celsius



Dried



Artificially dried MSR medium

AMF spores



Potted maize



AD

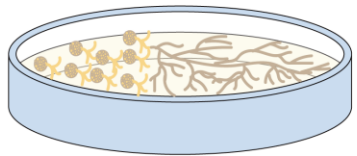


AMF spores with medium

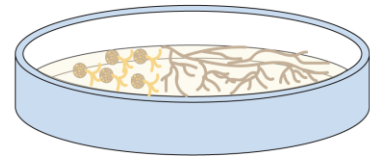


ADM

Natural drying at 25 degrees Celsius



Dried



Naturally dried MSR medium

AMF spores



ND



AMF spores with medium



NDM

AD, artificially dried.

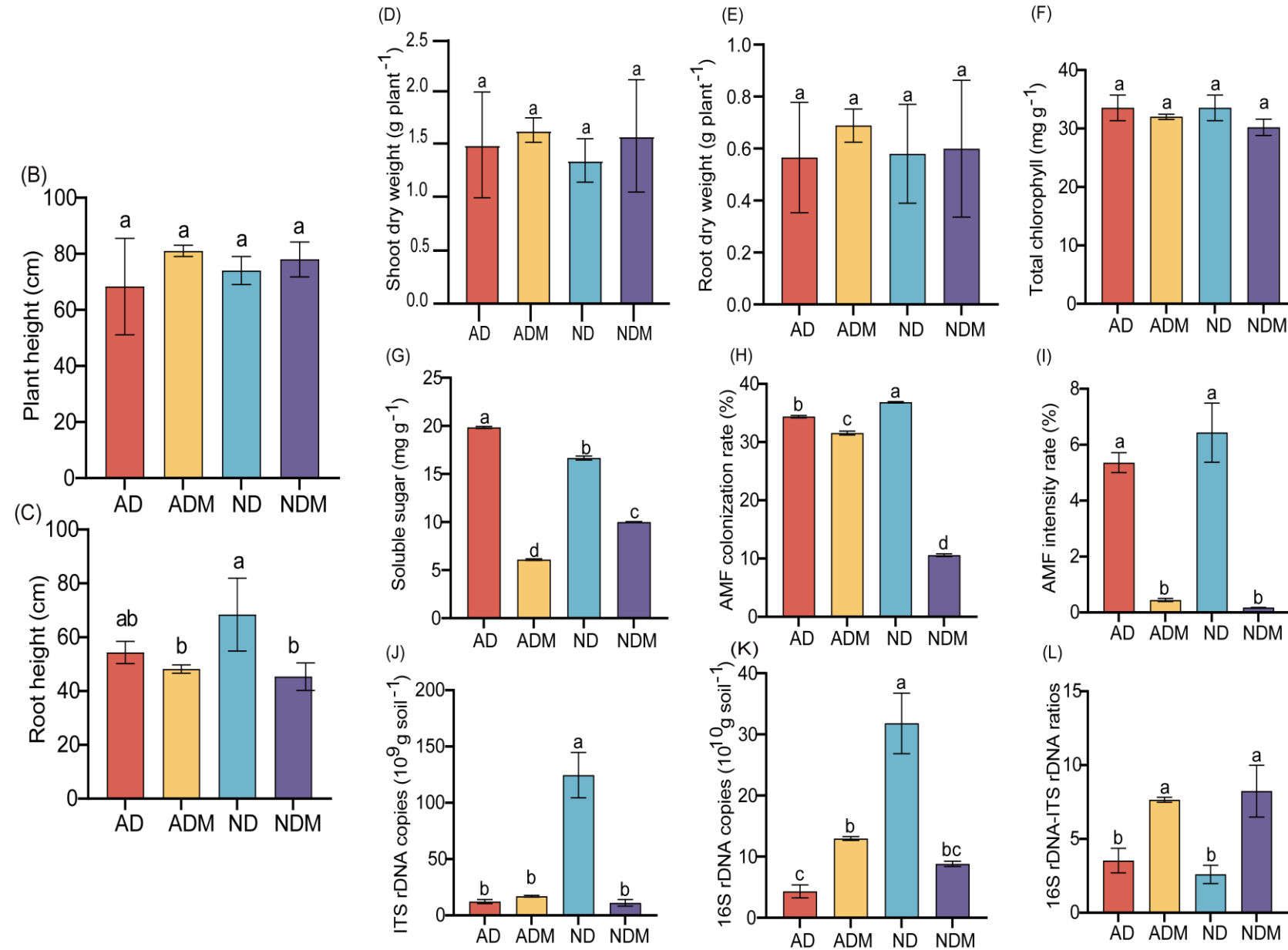
ND, naturally dried.

ADM, artificially dried with medium.

NDM, naturally dried with medium.



# AMF inoculant significantly promotes maize growth

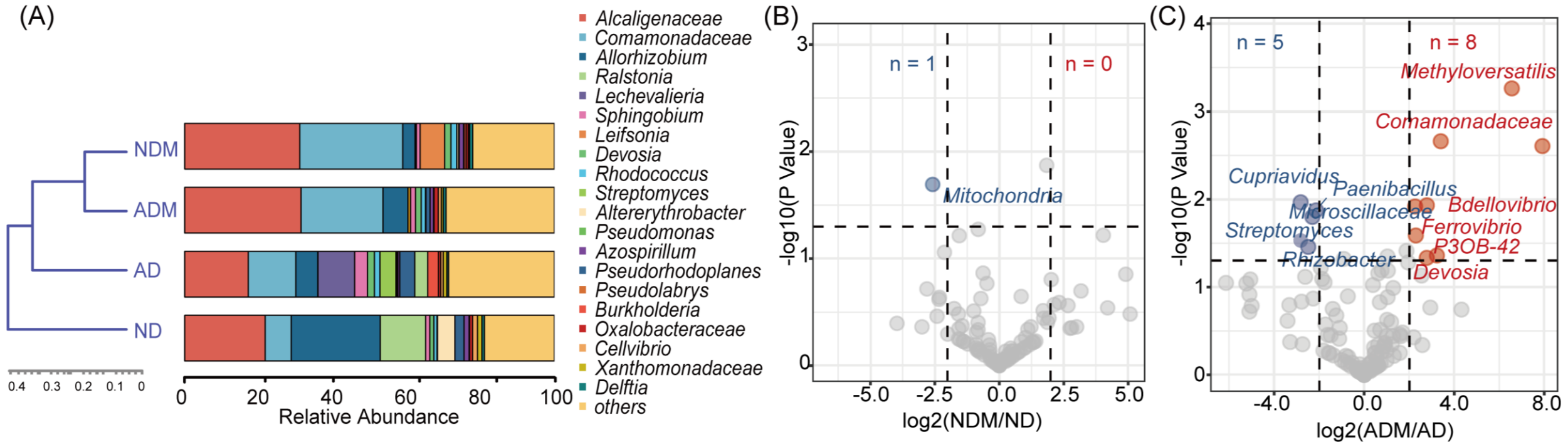


Inoculation with AMF significantly promoted maize growth, including plant height, root length, chlorophyll content, fresh weight and dry weight of maize.

Inoculation with AMF spores alone increased the infestation rate and intensity of AMF.

The endophytic microbial community in the maize root system was also significantly increased, especially the bacterial community.

# AMF inoculants significantly increase the abundance of beneficial bacteria



- ❑ The addition of AMF inoculants carrying the medium significantly increased the abundance of *Alcaligenaceae* and *Comamonadaceae*.
- ❑ The abundance of *Mitochondria* was lower in the natural air-drying treatment carrying culture media compared to the natural air-drying treatment inoculated with AMF spores alone.
- ❑ *Comamonadaceae* with *Methyloversatilis* became the dominant bacteria in the artificial air-drying treatment carrying medium.





# Summary

- ❑ The treatments co-inoculated with MSR medium were more effective in promoting maize plant height and dry weight.
- ❑ Inoculants co-inoculated with MSR medium could positively affect maize growth by significantly increasing the abundance of beneficial endophytic bacteria populations.
- ❑ The specific response of the fungal community and the effectiveness of this inoculant for practical application in field environments still need to be further explored and verified.
- ❑ Website: <https://www.bioincloud.tech/>


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