

# The Use of Endophytes as a Means for Climate Change Mitigation and Adaptation in Agroecosystems



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## How much the current agroecosystems contribute to climate change?

- ▶ Resource intensive agricultural practices: Chemical fertilizers + extensive irrigation
- ▶ Contributed to increase of green house gases about 13.5%
- ▶ Need alternative methods to mitigate climate change impacts

## What are endophytes (E)?

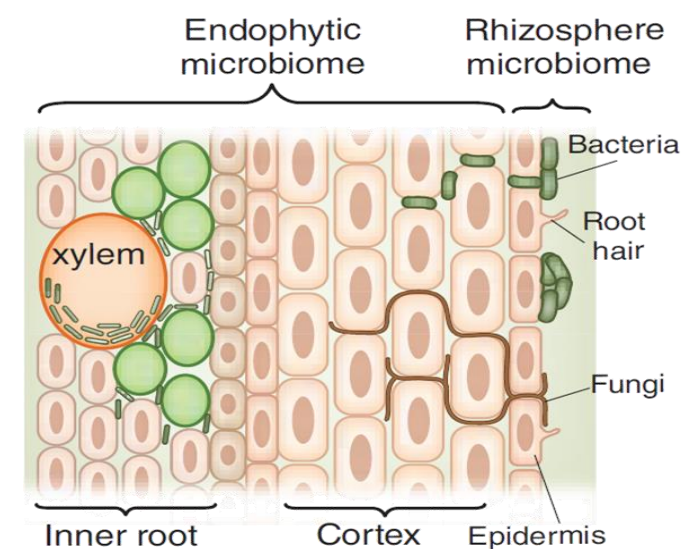
- ▶ "Endo": Within + "Phyte": Plant
- ▶ Bacterial or fungal symbionts that live inside a plant for at least part of its life without causing apparent diseases

## How do they help plants?

- ▶ Produce phytohormones, i.e. auxins
- ▶ Fix nitrogen from the atmospheric air
- ▶ Confer stress tolerance
- ▶ Potential alternatives to chemical fertilizers

## What I am going to find out?

- ▶ The exact mechanism of plant-endophyte symbiosis under the ambient (AMB) and elevated (ELE) CO<sub>2</sub> condition
- ▶ Cost-benefit analysis of the symbiosis in terms of carbon and nitrogen metabolism of host plants



Hirsch and Mauchline, 2012, Nature Biotechnol



Photo by S. Cho



Photo by S. Kandel

