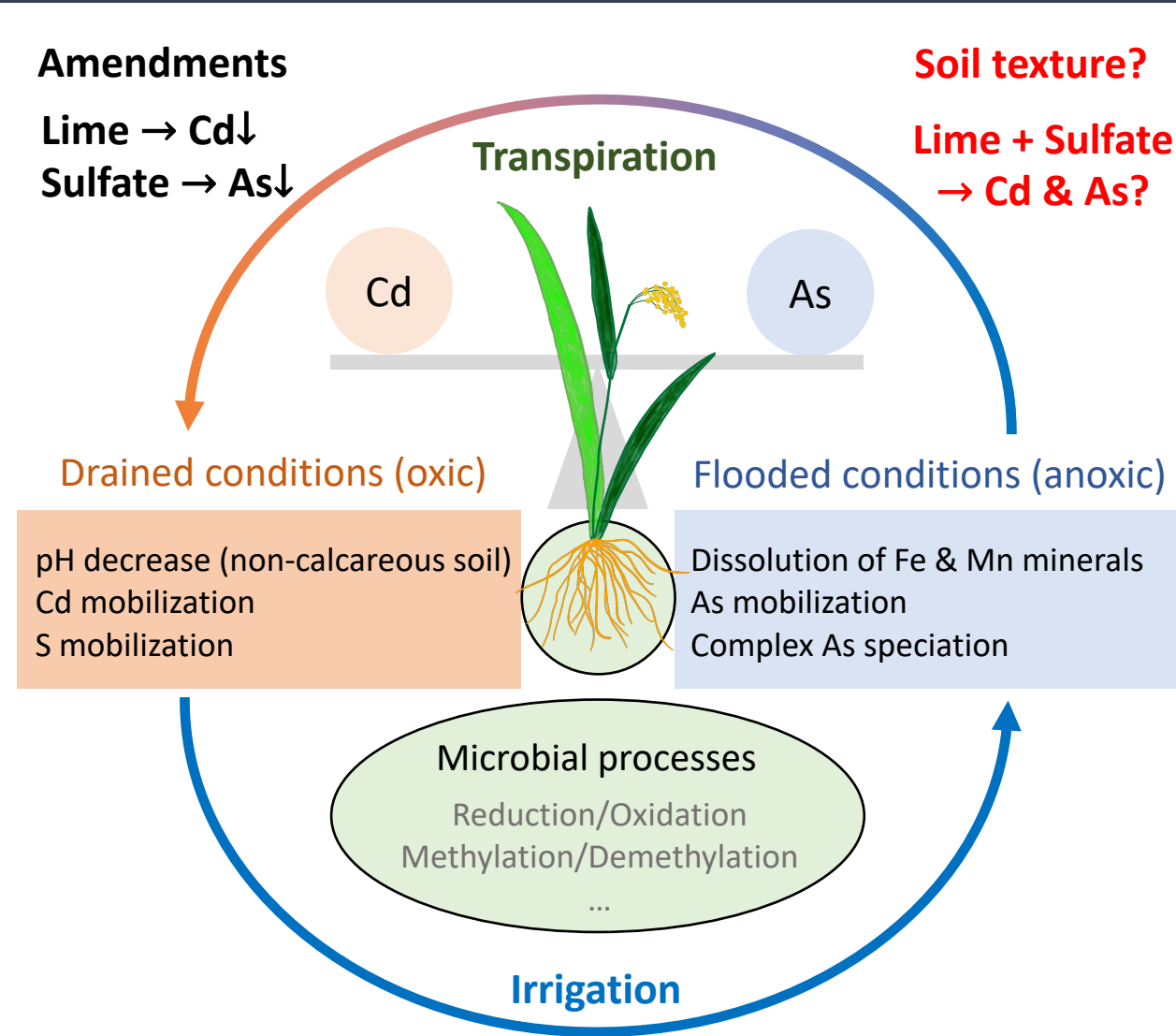


# Growing safe rice on As and Cd threatened paddies by soil management

MSc thesis with the Soil Chemistry Group



## Background:

Contamination of agricultural soils threatens food safety. In southern China, the widespread As and Cd contamination has been observed to result in elevated As and Cd concentration in rice grains which often exceed Chinese and international food safety limits. Water management strongly affects grain accumulation of both As and Cd but, unfortunately, in opposite ways. Thus, additional soil amendments are required to control plant. Liming has been shown to effectively reduce Cd transfer from soil to grain. With pot experiments, we showed that sulfate amendment to a sandy soil significantly decreased the accumulation of inorganic As in rice grain under intermittent flooding but not under continuous flooding. Since soil texture influences the transpiration via the soil matrix potential, we expect a pronounced impact of soil texture on soil aeration which controls the redox cycling of Fe, S, Mn, As and Cd, and consequently also the effectiveness of sulfate amendments. To verify if a combination of liming and sulfate amendment is suitable for safe rice production on soils with different texture, experiments with combined treatments and differently textured soils are required.

## The MSc thesis project:

- Objectives:**
- elucidate the interactions between lime and sulfate amendments on grain Cd and inorganic As accumulation for a sandy soil with intermittent flooding
  - understand the effect of soil texture on the effectiveness of sulfate amendment on intermittently flooded soils

**Approach:** Designing and conducting pot experiments, performing chemical analyses of soil, porewater and plant samples with our assistance

**Timing:** Start in January/February 2021

Interested in understanding As and Cd in rice? Contact us!

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