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# How silicon fertilizer improves nitrogen and phosphorus nutrient availability in paddy soil?

**Key words:** **Silicon; Paddy soil; Nitrogen and phosphorus nutrient availability; Microbial community structure**

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# *Research Summary*

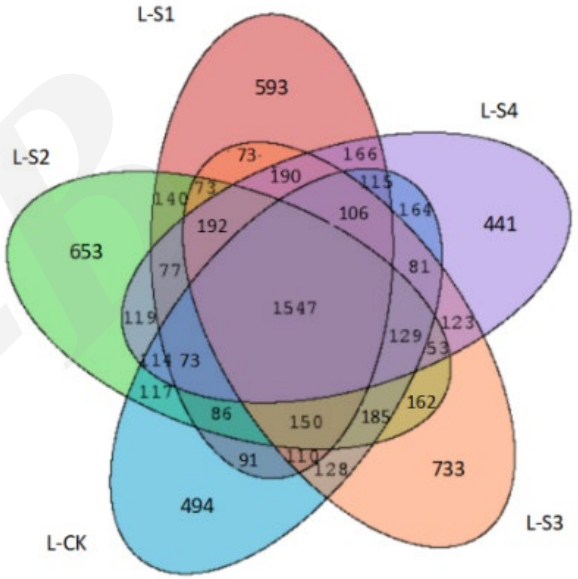
**This paper mainly focused on the relationship between the effect of silicon on mineralization of nitrogen and phosphorus and the effect of silicon on soil microorganism :**



- **Silicon fertilizer can promote mineralization of nitrogen and phosphorus fertilizer in paddy soil**
- **Silicon fertilizer can improve soil microbial population and community structure by silicon fertilizer in paddy soil**
- **Mineralization of nitrogen and phosphorus fertilizer is closely related tosoil microbial population and community structure**

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# *Innovation points*




● **Show** that adding appropriate amount of silicon could effectively improve the availability of nitrogen and phosphorus in paddy soil.

● **Show** that the core ecological mechanism of Si fertilizer improving soil nutrient mineralization is that the addition of appropriate amount of silicon nutrient can significantly increase the soil microbial activity, the number of ammonifying bacteria and phosphate solubilizing bacteria, the activities of urease and phosphatase, and the microbial community population related to N and P nutrient cycle.

Figure 4

# *Innovation points*

**A series of comprehensive tables were generated to summarize the latest knowledge about Si promoting soil nutrient mineralization.**

**Table 1 | Basic physicochemical properties of the used soil.**

**Table 2 | Effects of different dosages of Si on mineralization of N and P nutrient in paddy soil.**

**Table 3 | Effects of different Si dosage on soil microbial activity in paddy soil.**

**Table 4 | Effects of different Si dosage on the number of functional microorganisms of N and P nutrient metabolism in paddy soil.**

**Table 5 | Effects of different dosages of Si on important N and P nutrient metabolic enzyme activities in paddy soil.**

**Table 6 | OTU statistics of soil samples under different applications of Si in paddy soil.**

**Table 7 | Alpha diversity statistics of soil samples under different applications of Si in paddy soil.**

**Table 8 | Correlation analysis between microbial indicators and nutrient mineralization indicators in paddy soil.**