

植物保护

## 植物的硅吸收及其对病虫害的防御作用<sup>\*</sup>

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**摘要** 硅是地壳中含量最丰富的元素之一, 但是绝大部分不能被植物直接吸收利用。土壤有效硅含量受多种环境因素的影响, 然而在植物吸收硅后土壤仍能保持土壤溶液中硅浓度在一恒定水平。硅主要以二氧化硅胶

( $\text{SiO}_2 \cdot n\text{H}_2\text{O}$ ) 的无机物形态存在于植物表皮细胞和细胞壁上。植物体内硅的含量在不同物种间差异很大。植物主要以单硅酸形式吸收硅, 不同植物吸硅的能力不同。水稻具有主动吸硅能力, 大多数植物以被动形态吸收硅。施用硅肥能提高植物对病虫害的抗性, 从而降低病虫害的发生。

**关键词** [硅](#); [植物吸收](#); [病虫害](#); [防御](#)

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## Silicon Uptake by Plants and Its Effects on Pests and Diseases Resistance

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### Abstract

Silicon is the one of most abundant elements in the earth's crust, but it can't be directly taken up by plants. Although many of environment factors affect concentration of available silicon in soil, the soil keeps the concentration of silicon in soil solution to a constant level even after it was taken up by plants. Silicon mainly deposits in the cuticular cells and cell wall of plant in the form of  $\text{SiO}_2 \cdot n\text{H}_2\text{O}$ . Silicon content in plants varies greatly with plant species. Plants take up silicon mainly in the form of mono-silicic acid. The ability of silicon absorption varies obviously with plant species. Rice can uptake silicon actively and most of other plants mainly uptake silicon passitively. The application of silicon fertilizer can improve the plants resistance to disease and pest infection and decrease the infection of diseases and pests.

**Key words** [silicon](#); [uptake of plants](#); [diseases and pests](#); [prevention](#)

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