Nanosilver alters maize plant environment and growth

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Abstract

Nanotechnology has enabled numerous advances in communications, medicine, energy, and agriculture. But as the proliferation of nanomaterials ramps up, unintended consequences are becoming increasingly visible. A recent study examined the effects of silver nanoparticles on soils supporting the growth of maize. Findings revealed a 30% decrease in the relative abundance of members of the archaea community, which are important for nitrogen cycling in soil, vital for plant growth. Nanosilver also increased the abundance of certain possibly phytopathogenic fungi, possibly by eliminating bacteria that normally keep these harmful fungi in check. Finally, increased root growth seems unsustainable because it is probably caused by these stress factors, and not by beneficial effects. While this study was limited to relatively small, pot experiments, the findings suggest that the microbiome is an essential inclusion for studying the long-term effects of nanomaterials on the environment.