Science Societies

Spent coffee grounds in sustainable agriculture

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Composting spent coffee grounds that were used in the 70-day incubation. Photo by Amanda Birnbaum.

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Diverting SCG from landfills into agricultural use repurposes this organic waste into something valuable and provides an opportunity for growers to reduce the use of synthetic fertilizers. However, their effectiveness may depend on proper management and time for mineralization.

A recent study published in the *Soil Science Society of America Journal* assesses the practical limitations of using SCG, such as nitrogen immobilization. In a laboratory incubation experiment, researchers compared nitrogen mineralization of composted and non-composted SCG to commonly used synthetic and organic N fertilizers: urea

and Milorganite. Composted and non-composted SCG exhibited nitrogen immobilization over the initial 100 days; however, they showed potential as a long-term nitrogen source with microbial respiration indicating active decomposition. Combining SCG with a soluble nitrogen source during application could accelerate its degradation and provide immediate benefits.

These findings highlight strategic management as key to optimizing the role of SCG as a nitrogen fertilizer. Ultimately, SCG are a sustainable fertilizer with soil health benefits that will recycle nutrients and reduce landfill waste.

Dig deeper

Birnbaum, A. L., Howe, J., Earp, R., Burke, J., Wherley, B., & Dhingra, A. (2025). Mineralization potential of spent coffee grounds and other nutrient sources. *Soil Science Society of America Journal, 89*, e70007. https://doi.org/10.1002/saj2.70007
