Science Societies

Nitrogen release from organic fertilizers Is variable but predictable

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Amendments were mixed with soil, adjusted to optimum moisture, and incubated in plastic cups for 1, 3, 6, and 12 weeks.

Crops need a sufficient supply of nitrogen at each stage of growth to achieve optimum yields. However, nitrogen in excess of crop demand risks being lost to the environment and becoming a pollutant. Therefore, nitrogen needs to be available at just the right time and in the right quantities for crop growth. Synchronizing plant-available nitrogen with crop demand is especially challenging for organic growers, whose fertility sources need to be microbially processed before the nitrogen is available to the plant. Additionally, they rely on many types of amendments. New commercial organic fertilizer formulations are continually coming on the market, and little information exists about their nitrogen release properties.

New research in the *Journal of Environmental Quality* measures nitrogen release from a wide variety of organic amendments over 12 weeks. Across all amendment types, the amount of plant-available nitrogen after 84 days of incubation was strongly predicted by the carbon-to-nitrogen ratio. The amendments fell into four categories: yard-trimmings composts (< 5% of total nitrogen available, released over months), poultry manure composts (15 to 30%, within weeks), granular formulations (35 to 55%, within weeks to days), and quick-release products (60 to 90%, within days). The results of the study provide organic growers with up-to-date data to inform nitrogen management decisions.

Dig Deeper

Lazicki, P., Geisseler, D., & Lloyd, M. (2020). Nitrogen mineralization from organic amendments is variable but predictable. *Journal of Environmental Quality*, *49*. **https://doi.org/10.1002/jeq2.20030**

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