

Article title	Calibration of Solvita CO ₂ Burst System for Reducing Nitrogen Pollution in Agronomic Systems
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Abstract	<p>Over application of nitrogen (N) fertilizer causes reduced fertilizer use efficiency, and possible drinking water contamination and eutrophication of affected waterways. Nitrogen fertilizer is often over applied because standard soil tests do not include a well-calibrated soil-test for N. This is partly because it is challenging to account for the N soil microorganisms will mineralize during the growing season. Quantification of potentially mineralizable soil nitrogen by multiweek incubations is time consuming and often not possible for large scale commercial labs. CO₂ base trap titrations and analysis with gas chromatography are also tedious and not suitable for high volume use. The Solvita Field CO₂ Test provides an alternative that only requires a 24-hour incubation period, with evolved CO₂ directly correlated to the quantity of N mineralized. The objective of this project was to conduct incubation experiments on soils gathered from Alabama fields under a variety of management strategies (including high crop residue) and to compare N mineralization from that predicted via the initial Solvita test. Samples were collected from four crop rotation systems for initial testing, with soils sampled from the 0-15cm layer for: 1) conventional tillage corn with complete N-P-K fertilization, 2) no tillage turfgrass with minimal fertilization, 3) conservation tillage cotton with and complete N-P-K fertilization, and 3) conservation tillage cotton with rye cover and complete N-P-K fertilization. Initial analysis have not indicated a strong correlation between the three traditional measurement methods and the Solvita test data.</p>
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