

Published in Soil Sci Soc Am J 57:1533-1536 (1993)
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Potential Errors in Measuring Nitrogen Content of Soils Low in Nitrogen

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ABSTRACT

Samples of sandy soils of low N content were analyzed using a variety of procedures to assess N levels and sources of variation and bias. We assessed subsampling of collected soil, sample preparation by grinding, and two methods for measuring nitrogen. Micro-Kjeldahl and CHN combustion procedures differed in accuracy and precision; the micro-Kjeldahl method generally provided greater precision and accuracy across a variety of soil sample types. The greatest potential error was due to a particle-size bias in removal of small subsamples (30–200 mg) required for each method. To eliminate this error, we recommend either pulverization of large samples to at least 0.5 mm before subsampling, or separation of soils into three or more homogenous particle-size classes prior to chemical analysis.

Received for publication February 4, 1993.