

# Update On Slow & Controlled Release Methodology

# Methodology Update

- Resources

- Methodology Survey – IFA by Terlingen, et al
- <http://www.fertilizer.org//ItemDetail?iProductCode=9490Pdf&Category=AGRI&WebsiteKey=411e9724-4bda-422f-abfc-8152ed74f306>
- Journal of AOAC International – Open Access Special Section Fertilizer Methodology Advances
- <http://ingentaconnect.com/content/aoac/jaoac/2014/00000097/00000003>

□ Evaluation of a Soil Incubation Method to Characterize Nitrogen Release Patterns of Slow- and Controlled-Release Fertilizers

pp. 643-660(18)

**Authors:** *Medina, L. Carolina; Sartain, Jerry B.; Obreza, Thomas A.; Hall, William L.; Thiex, Nancy J.*

□ Optimization and Validation of an Accelerated Laboratory Extraction Method to Estimate Nitrogen Release Patterns of Slow- and Controlled-Release Fertilizers

pp. 661-676(16)

**Authors:** *Medina, L. Carolina; Sartain, Jerry B.; Obreza, Thomas A.; Hall, William L.; Thiex, Nancy J.*

□ Statistical Correlation of the Soil Incubation and the Accelerated Laboratory Extraction Methods to Estimate Nitrogen Release Rates of Slow- and Controlled-Release Fertilizers

pp. 677-686(10)

**Authors:** *Medina, L. Carolina; Sartain, Jerry B.; Obreza, Thomas A.; Leary, Emily; Hall, William L.; Thiex, Nancy J.*

# Review of Analytical Methods for Slow- and Controlled- Release Fertilizers

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## Optimization and Validation of an Accelerated Laboratory Extraction Method to Estimate Nitrogen Release Patterns of Slow- and Controlled-Release Fertilizers

**Authors:** Medina, L. Carolina; Sartain, Jerry B.; Obreza, Thomas A.; Hall, William L.; Thiex, Nancy J.

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### Abstract:

Several technologies have been proposed to characterize the nutrient release and availability patterns of enhanced-efficiency fertilizers (EEFs), especially slow-release fertilizers (SRFs) and controlled-release fertilizers (CRFs) during the last few decades. These technologies have been developed mainly by manufacturers and are product-specific based on the regulation and analysis of each EEF product. Despite previous efforts to characterize EEF materials, no validated method exists to assess their nutrient release patterns. However, the increased use of EEFs in specialty and nonspecialty markets requires an appropriate method to verify nutrient claims and material performance. A series of experiments were conducted to evaluate the effect of temperature, fertilizer test portion size, and extraction time on the performance of a 74 h accelerated laboratory extraction method to measure SRF

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# Ambient Soil Methodology Apparatus

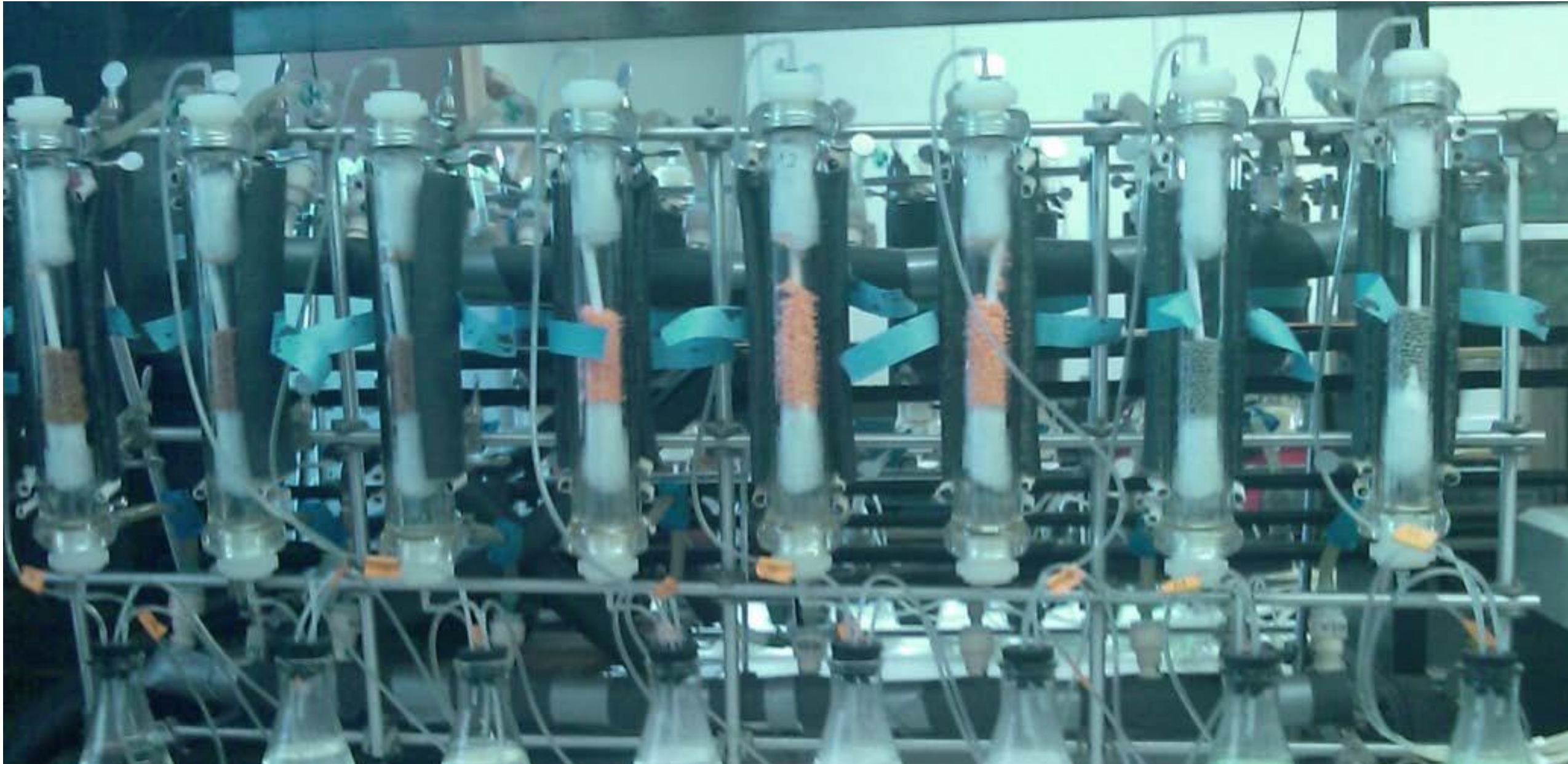


# Accelerated Extraction Sequence

**Table 1. Sequence of extraction times & temperatures for the accelerated laboratory extraction method**

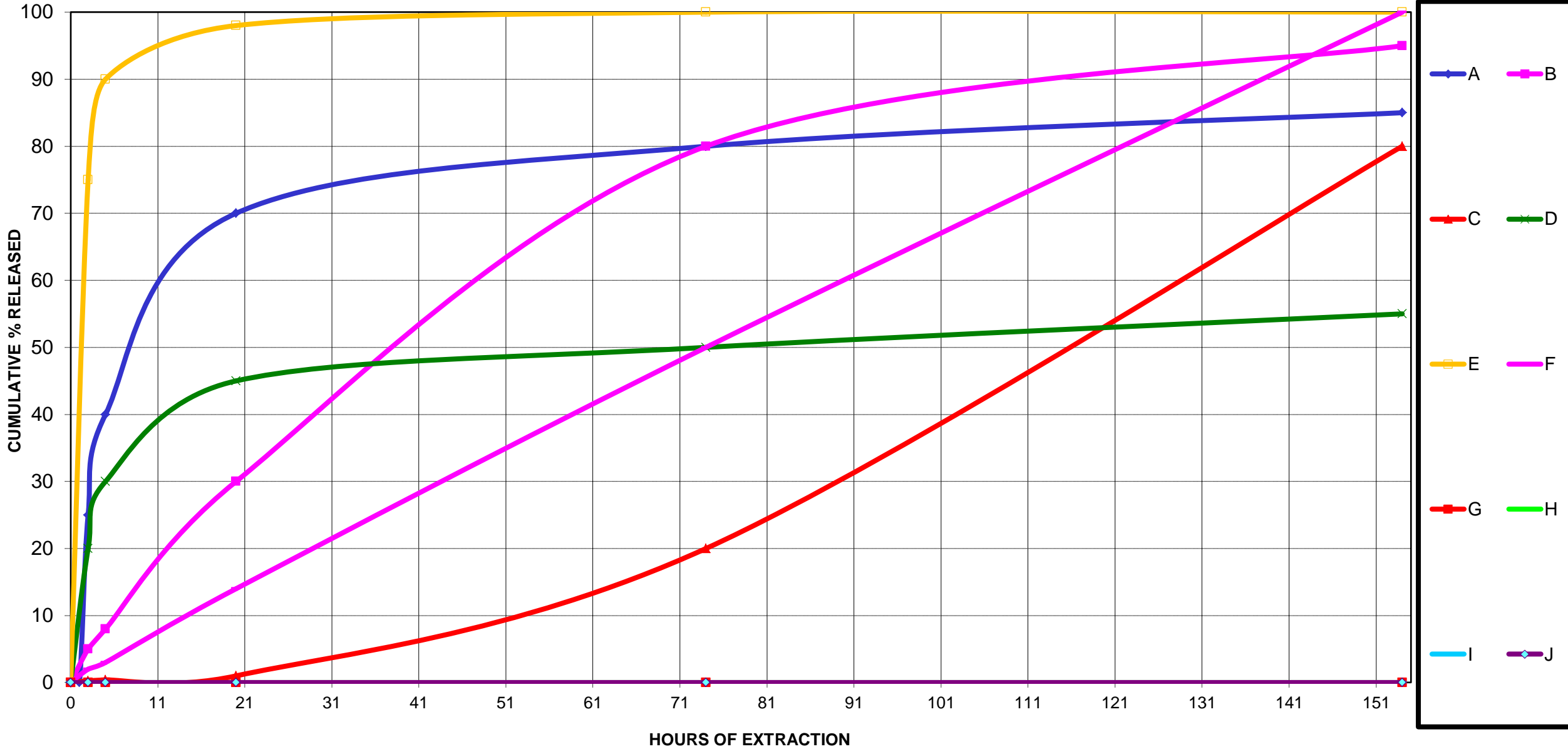
Extraction No.	Extraction time, hr	Temperature, °C
1	2	25
2	2	50
3	20	55
4	50	60
5	94	60

# Accelerated Laboratory Method Apparatus





# % EXAMPLE RELEASE PLOT WITH FIVE EXTRACTIONS





# More Information

- For more information or to participate in validation of the AOAC methods contact –

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