

Article title	Synergism of Sulfur Availability and Agronomic Nitrogen Use Efficiency
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Abstract	<p>Nutrient management strategies that exploit nutrient elements' synergistic interaction to enhance nitrogen use efficiency (NUE) are needed for economic and environmental reasons. A field study was carried out during the 2020–2022 growing seasons at six locations in three countries: two each in the USA, Ghana, and Mali using three sulfur (S) sources with different bioavailability levels (micronized elemental sulfur, untreated elemental sulfur, and ammonium sulfate); applied at five S application rates: site-specific recommended S rate (SR), 25%, 50%, 75%, and 125% of SR; and a single N application rate (site-specific recommended N rate) to comprehensively investigate the influence of S availability on NUE. Specific objectives were to evaluate the impact of S availability on corn (<i>Zea mays</i> L.) yield, N uptake, and NUE. Regardless of the S source and experimental site, the aboveground S and N uptake were strongly and positively correlated ($r > 0.88$). Increases in apparent N recovery efficiency and agronomic NUE occurred with corresponding increases in S application rate, irrespective of the site and S source. The combined data showed that the agronomic efficiency of applied N fertilizer sources could be enhanced significantly by increasing S availability in soils. With the rising N fertilizer costs in recent times, N losses from the applied fertilizer are a drain on farmers' income, and of environmental concern. Thus, increasing NUE is a needed strategy to safeguard against excessive N application, increase farm profits, and minimize N losses to the environment that could disrupt the ecosystem function.</p>
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