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Gypsum is a reliable source of sulfur for soybean production

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Soybean field plots at the Davis Purdue Ag Center in Farmland, IN, where gypsum and cover crops were implemented. Photo by Brenda Hofmann, USDA-ARS National Soil Erosion Research Laboratory.

Soybeans (*Glycine max*) are a crucial global protein source, making their nutritional enhancement essential for agriculture and food production. Sulfur improves the quality of soybeans by increasing sulfur-containing amino acids, and the total content of sulfur in seeds may serve as a proxy for amino acid levels. However, optimizing sulfur availability through sustainable management remains underexplored.

A recent study in *Agricultural & Environmental Letters* investigated whether integrating cover crops and flue-gas desulfurization gypsum—a by-product of coal combustion—could enhance soybean nutrition. Conducted across three locations in the United States over five years, the experiment assessed the effects of cereal rye cover crops and gypsum application on soybean element composition. Results revealed that gypsum consistently increased sulfur levels in soybeans at all sites, regardless of cover crop usage. However, the effects on other nutrients varied by location, based on soil type and climatic conditions.

These results suggest that gypsum is a reliable source of sulfur for soybean production, enhancing its nutritional profile and marketability. While cover crops influenced nutrient availability, their impact was more site-specific. This study highlights the potential of conservation practices to improve soybean quality, offering a sustainable strategy for farmers seeking to optimize soil health and crop nutrition.

Dig deeper

Gonzalez, J. M., Dick, W. A., Watts, D. B., Islam, K. R., Fausey, N. R., Batte, M. T., Flanagan, D. C., VanToai, T. T., Reeder, R. C., & Shedekar, V. S. (2025). Impact of gypsum applications and cover crop on soybean (*Glycine max*) elemental

composition. *Agricultural & Environmental Letters, 10,* e70008.

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