

# Flue Gas Desulfurization By-products as Lime and Sulfur Sources for Alfalfa and Soybean

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## ABSTRACT

Flue gas desulfurization (FGD) by-products are created when coal is burned and SO<sub>2</sub> is removed from the flue gases. These FGD by-products are often alkaline and contain many nutrients including S. Agricultural application of FGD by-products is encouraged but little information is available related to plant responses and environmental impacts concerning such use. Agricultural lime (ag-lime) and several types of FGD by-products which contain either vermiculite or perlite were applied at 0, 0.5, 1.0, and 2.0 times the soil's lime requirement (LR) rate to an acidic soil (Wooster silt loam). Growth of alfalfa (*Medicago sativa* L.) was significantly increased compared to the untreated control in the second year after treatment with yields for the 1 x LR rate of FGD approximately 7-8 times greater compared to the untreated control and 30% greater than for the commercial ag-lime. Gypsum and FGD by-products were applied at 0, 14, and 60 lb S/acre to alfalfa and soybean fields. Alfalfa yield was increased 20 to 40% with S treatments compared to the untreated control, and the yields of soybean (*Glycine max* L.) were increased 5 to 10%. No soil and plant contamination problems were observed, indicating these FGD by-products can be safely applied to agricultural soils.