



School of Environment and Natural Resources

Beneficial Uses For Coal Combustion By-products

OARDC/OSU researchers have taken the lead in a national interdisciplinary program to gain public and regulatory acceptance of by-product gypsum in agriculture and to document the economic returns related to its use.

■ SITUATION

Coal-fired power plants produce 51% of our national needs for electricity. In 2006, approximately 125 million tons of coal combustion products were generated in the United States. Of this total, approximately 12.1 million tons consisted of flue gas desulfurization (FGD) gypsum that was primarily used in making wallboard and cement. Many new sulfur scrubbers are now being deployed at coal-fired power plants, so the construction market is saturated, and new uses are being sought for the combustion by-products. Gypsum has a long history of use in agriculture as a fertilizer for plant nutrition, a soil amendment for treating problems associated with subsurface acidity, and a soil conditioner for improving water infiltration and soil aeration.



■ RESPONSE

Researchers at OARDC/OSU have been nationally recognized for developing applications for coal combustion by-products, including FGD gypsum. In 2007, a national research network for land application of by-product and re-cycled gypsum was developed at sites located in Alabama, Arkansas, Indiana, Ohio, New Mexico, and North Dakota with leadership provided by OARDC/OSU scientists.

■ IMPACT

In March 2008, the USEPA and USDA published a joint statement supporting "the use of FGD gypsum in appropriate soil and hydrogeologic conditions as an effective method of soil conservation and industrial material recycling." The market for gypsum delivered to the field in Ohio is as high as \$25/ton. Estimates are that 5.8 million acres in Ohio could benefit from gypsum applications, especially if combined with no-tillage management systems. Even if only half this land area is treated with gypsum at 1 ton/acre, the economic activity generated annually in Ohio would be more than \$70 million. This estimate does not capture the potential benefits of reduced fertilizer inputs, increased crop yields, and environmental benefits such as cleaner surface waters.

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