# Auburn University-Led Research Shows SoilBuilder™ Can Reduce $N_2O$ Emissions Associated with Nitrogen Fertilizer Applications

Data from collaboration among Auburn University, USDA-ARS, and Agricen Sciences published in *Journal of Environmental Quality*

**PILOT POINT, TX – March 21, 2013 – Agricen Sciences**, an applied sciences research company leading the development of novel microbial and biochemical solutions for plant nutrition and health, announced today the publication of data showing that SoilBuilder reduces nitrous oxide ($N_2O$) emissions associated with nitrogen (N) fertilizer applications. The research, which was led by Auburn University scientists in collaboration with the USDA-Agricultural Research Service (ARS) and Agricen Sciences, was published in the March edition of the *Journal of Environmental Quality.* SoilBuilder, a biochemical fertilizer catalyst formulated for use with liquid fertilizer and broadcast applications, is manufactured by Agricen Sciences' sister company, Agricen.

The study, "Microbial-Based Inoculants Impact Nitrous Oxide Emissions from an Incubated Soil Medium Containing Urea Fertilizers," investigated how microbial-based inoculants affect $N_2O$ emissions in the presence of N fertilizers under controlled conditions. It is one of the first studies to evaluate the use of microbial-based inoculants for the purpose of reducing $N_2O$ emissions from soil combined with common agricultural N fertilizers. The microbial-based treatments investigated were SoilBuilder, a metabolite extract of SoilBuilder (SoilBuilder filtered; without microbial cells), and a mixture of four strains of plant growth-promoting *Bacillus* species. Experiments included two different N fertilizer treatments (urea and UAN 32%) and an unfertilized control. Emissions of $N_2O$ were determined from soil incubations and analyzed with gas chromatography.

After 29 days of incubation, cumulative $N_2O$ emissions were reduced 80% by SoilBuilder and 44% by the SoilBuilder extract in soils fertilized with UAN. Treatment with *Bacillus* species significantly reduced $N_2O$ production on Days 1 and 2 of the incubation in soils fertilized with UAN. In the unfertilized treatment, cumulative emissions of $N_2O$ were significantly reduced 92% by the SoilBuilder metabolite. Microbial-based treatments did not reduce $N_2O$ emissions associated with urea application. Overall, the results demonstrated that microbial-based inoculants can reduce $N_2O$ emissions associated with N fertilizer application, and this response varies with the type of microbial-based inoculant and fertilizer.

**Citation:** Calvo P, Watts DB, Ames RN, Kloepper JW, Torbert HA. Microbial-Based Inoculants Impact Nitrous Oxide Emissions from an Incubated Soil Medium Containing Urea Fertilizers. *J Environ Qual.* 2013. doi: 10.2134/jeq2012.0300.

## About Agricen Sciences

Agricen Sciences is an applied sciences research company leading the development of novel microbial and biochemical solutions for plant nutrition and health. The company's cutting-edge research programs on soil-plant systems are yielding new insights for crop nutrition, soil science and nutrient management. By applying this knowledge, Agricen Sciences is developing innovative solutions to address the sustainability and production challenges facing modern agriculture. For more information, please visit **www.agricensciences.com**.