

# A Decade of Research on the Economics of Variable-Rate Input Application

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**212B Morgan Hall**



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Farmers traditionally apply inputs on fields with technologies designed for uniform rate application (URT). Agricultural fields are highly variable in the soil properties that determine yield response to production inputs. Newer precision farming technologies enable farmers to understand the changing plant-growth environment across a field, estimate input requirements for relatively homogeneous management zones, and apply inputs at variable rates across a field (VRT). Two important benefits claimed of precision farming include increased profits to farmers and reduced environmental harm resulting from more precise placement of inputs.

This seminar provides an overview of economic research at the University of Tennessee assessing VRT versus URT. Research begun in 1996 has evolved from evaluating the VRT versus URT decision for a single input applied to fields with two management zones, to evaluating this decision under risky situations for fields with multiple management zones, to current research evaluating VRT versus URT decisions for multiple inputs applied to fields with multiple management zones.

## About Dr. Roberts ...

Dr. Roberts received his Ph.D. in agricultural economics from Iowa State University in 1979. He received his BS and MS degrees in economics from Utah State University. Dr. Roberts was an Assistant Professor at the University of Hawaii before arriving at the University of Tennessee in 1984. He has taught courses in production economics, international agricultural development, operations research, statistical methods, supply analysis, research methodology, microeconomics, farm management, and trade.

His training is in the area of agricultural production economics and his research has concentrated on interdisciplinary efforts to evaluate new and emerging technologies, management practices, and crops to help farmers make decisions to improve their incomes while protecting the environment. Research efforts have included issues surrounding genetically engineered crops, conservation tillage, winter cover crops, optimal fertilizer use, foliar application of fertilizers, treatment of mastitis in dairy cows, and precision farming among others.