ARE Faculty Profile

PROFESSOR Richard Howitt, a native of England, came to Davis in 1970 to earn both his M.S. and Ph.D. degrees in Agricultural Economics. Before that he worked as a farm management consultant in western Australia. He has been on the ARE faculty since 1975, maintaining an active research and teaching program.

Dr. Howitt's fields of interest include resource economics, environmental economics, and quantitative methods. The focus of his current research interests includes:

- **Disaggregated economic modeling methods.** Dr. Howitt is developing reconstruction and calibration methods based on maximum entropy estimators to model the economic structure of farming and other economic uses of land and resources from disaggregated data on land area, yield, and crop selection. In short, instead of using economic survey data to infer the use of resources, Dr. Howitt is using physical data to infer the underlying economic functions facing the manager. The reasons for this approach are (1) environmental analysis must be done on a disaggregated level to be meaningful, and (2) remote sensing methods can supply physical data at a fraction of the cost of economic surveys.
- **Market mechanisms to allocate resources and achieve environmental goals.** His research focuses on water use and associated water and air pollutants from agriculture. This is implemented with the design of electronic water markets, and testing of institutions for theoretical properties, using an experimental economics laboratory.
- **Empirical dynamic stochastic methods.** These approaches can be used to analyze the switch in investments and changes in institutions subject to dynamic stochastic inputs and irreversible costs or decisions.

In addition to Dr. Howitt's research and teaching responsibilities, he serves on a number of boards and commissions on the state and federal level. Currently he is serving on committees that are drafting water transfer legislation, reviewing Bay-Delta economic models, and establishing electronic water markets in the San Joaquin valley. These research projects are part of a larger change in California's water system.

Water is California's most limiting resource and it impinges on life in the state in many ways. Agricultural production, which uses the majority of the developed water supplies in the state, is affected through the timing and availability of irrigation water supplies and drainage problems. Industrial and urban development in the state is heavily restricted by water availability and reliability since most of the development is occurring in water-short parts of the state. The impact of water on environmental conditions and the quality of life in residential areas is a new and rapidly growing demand. These competing pressures for different uses of water are in the process of forcing a change in the way in which this resource is developed and managed. Essentially, the water system in the state is moving from one which satisfied new demands by new supply development, to one which can manage and reallocate the existing developed water supply in a way that accounts for California's variable and capricious climate that swings from drought to flood conditions in rapid cycles. These new conditions require a water industry that more resembles the energy sectors where price signals enable production to be shifted and reallocated as industries, technologies, and demands change.

Richard E. Howitt

In his spare time Dr. Howitt is a regular lunchtime runner from the UC Davis gym, has a small hobby farm with sheep and horses, and has an interest in the restoration of classic cars. He is also an associate editor of *California Agriculture*.

Professor Howitt has an extensive list of publications and several economic models posted on his Web page, which can be accessed at http://www.agecon.ucdavis.edu/Faculty/Dick.H/Howitt.html