



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

NAREA Awards

Outstanding Master's Thesis Award

An Ex Ante Real Options Analysis of Automatic Milking Systems in Pennsylvania and the Northeast

Phoebe D. Engel

Pennsylvania State University

Advisor: Jeffrey Hyde

Automatic milking systems have the potential to significantly change the way milk is produced. These systems are able to prep, milk, and post-treat cows with no human intervention. However, there is a high degree of uncertainty associated with adoption of this technology. Sources of uncertainty include milk price, production response to technology change, post-adoption labor costs, and length of the system's useful life.

A real options approach was used to analyze the decision to replace an operational milking system with an automatic milking system (AMS). The real options approach is superior to capital budgeting methods because of the inherent uncertainty associated with the decision and the fact that adoption is associated with high sunk costs. By employing Monte Carlo simulation, the variance of returns from investing in one period or the next can be estimated. This provides an estimate of the variability of returns associated with adoption of this technology.

Results indicate that replacement of an operational parlor with an automatic system is optimal if the automatic system is certain to outlast the remainder of the parlor's useful life. Thus, the useful life of the automatic system is the most important source of uncertainty in this research. Other sources of uncertainty were found to be inconsequential. Other nonstochastic parameters were shown to be relatively unimportant in affecting the results. These include milking frequency in the parlor, herd size, choice of discount rate, and total maintenance cost for the parlor.

These findings suggest that many U.S. dairy farmers would benefit by replacing an operational milking system with an AMS. Farmers with newer milking systems may have to wait several years before the technology proves itself to be long-lasting. However, the results suggest that those farmers with older milking systems (perhaps those which are fully depreciated) may benefit by switching despite this uncertainty.

Master's Thesis Award of Merit

Mechanisms for Addressing Third-Party Impacts Resulting from Voluntary Water Transfers

Erin K. Mastrangelo

University of Massachusetts, Amherst

Advisor: James J. Murphy

Voluntary transfers are now regarded as a central instrument in balancing and reallocating the changing demand and supply for water in the arid regions of the world. However, until it can be demonstrated that a water market institution is capable of protecting environmental and third-party values, voluntary water

transfers will not realize their full potential as an integral part of a region's water management strategy in the 21st century.

This research uses laboratory experiments to test alternative water market institutions designed to incorporate the value of water in non-consumptive uses into

the allocation process. The analysis focuses on third parties, specifically rural communities that depend upon irrigated agriculture but are not party to the market transaction; however, the results apply to most non-consumptive uses, including environmental impacts and instream flow values.

The institutions tested include taxing mechanisms that raise revenue to compensate affected third parties and a market in which third parties actively participate. The results indicate there are some important trade-

offs in selecting a policy option. Active third-party participation in the market is likely to result in free-riding which may erode some or all of the efficiency gains, and may introduce volatility into the market. Fixed limits on water exports are likely to result in a more stable market, but the constraints on transfers will result in lower levels of social welfare. Taxing transfers and compensating third parties offers a promising balance of efficiency, equity, and market stability.

Master's Thesis Award of Merit

Hydropower Re-licensing and the Environment: An Analysis of the Timing and Total Quantity of Electricity Generation

Kyna Lynn Powers

Cornell University

Advisor: L. Duane Chapman

In less than 10 years, 220 dams representing 20% of U.S. hydropower capacity will undergo re-licensing. Throughout the duration of their original licenses, these facilities were operated with little attempt to mitigate their negative effect on fish and recreation. Following re-licensing, however, new hydropower licenses will likely contain provisions designed to increase recreational opportunities and to improve fish habitat and fish passage. Therefore, the motivation behind this work is to assess whether and to what extent there is a tradeoff between environmental improvements and hydropower production.

While most previous work on this subject has focused on large multipurpose dams that are causing significant declines in fish population, this earlier research may not apply to smaller hydropower plants. To expand our understanding of the energy/environment tradeoff, this thesis focuses on the re-licensing provisions of smaller hydraulically linked facilities. Specifically, this work examines the re-licensing provisions for 14 dams on New York's Raquette River, namely minimum flow requirements, reservoir elevation requirements, and turbine upgrades.

To assess how re-licensing will alter the timing and total quantity of hydropower production, this thesis examines hydropower production decisions before and after re-licensing. Using the dams on the Raquette River as a case study, a nonlinear model is developed to simulate the facilities' hydraulic linkages, physical

parameters, and the license-based requirements. This model simulates a typical day of production, for each of two seasons: the walleyed pike spawning season and a summer period.

After comparing simulated historic release decisions with generation following re-licensing, a number of results were clear. First, the independent adoption of turbine upgrades would increase total and peak electricity generation, while the adoption of minimum flow requirements alone would decrease total and peak electricity production. It should be noted that reservoir elevation requirements did not appear to have an effect in our one-day model. Second, when these requirements are implemented simultaneously, as is the case in the Raquette River Agreement, total hydropower production would actually increase during days with average inflows. Likewise, peak period production could also increase when facility operators have the discretion to use reservoir storage. When inflows are less than approximately 800–1,000 cfs and producers do not have access to reservoir storage, however, the joint implementation of minimum flow requirements and turbine upgrades could cause peak period electricity generation to decrease below historic rates. Although these findings may not be typical of larger systems, they do suggest that hydropower re-licensing which includes turbine upgrades and minimum flow requirements could result in a net electricity increase for carefully managed small hydropower systems.

Honorary Life Member Awards

This award recognizes members who have actively participated in the affairs of the Association and, while maintaining an active interest in their profession, have recently retired from the formal professional position that comprised the major reason for their involvement in the Association.

Donald J. Epp

Donald J. Epp is Professor Emeritus of Agricultural and Environmental Economics in the Department of Agricultural Economics and Rural Sociology, The Pennsylvania State University, where he has been a member of the faculty since 1967. During the academic year 1992-1993, he was a Visiting Scholar at the Resource and Environmental Economics Program, Department of Economics, North Carolina State University. He received his B.S. degree from the University of Nebraska, and his M.S. and Ph.D. degrees from Michigan State University.

Dr. Epp has focused his research on environmental and resource economics issues and has published numerous articles in professional journals and outlets aimed at the general public on the protection of agricultural land from urban expansion, the use of agricultural and forest land for the disposal of effluent from municipal sewage treatment plants, and the development of improved methods for measuring the value of the services of natural resources that do not have market prices. His work with undergraduate students

included teaching the introductory agricultural economics course, and he co-authored (with John Malone) the textbook, *Introduction to Agricultural Economics*.

Dr. Epp's Penn State colleagues greatly value his exceptional contributions to teaching and research and scholarly life in the Department of Agricultural Economics and Rural Sociology. Especially noteworthy are his student advising, for which he won awards at Penn State, and his role as a highly effective mentor of young faculty.

Don was elected President of the NAREA for the 1995-96 term. Prior service to the Association included membership on the Editorial Council of the *Journal of the Northeastern Agricultural Economics Council* from 1973-75, member of the Outstanding Masters Thesis Award Selection Committee, several turns on the Contributed Papers Selection Committee, and Local Arrangements Chair for the 1989 Annual Meeting. He was elected to a three-year term as Director of the Association in 1987. Dr. Epp previously received the Distinguished Member Award of NAREA.

Edmund F. Jansen, Jr.

Ed Jansen is Professor Emeritus in the Department of Resource Economics and Development at the University of New Hampshire. He has been a member of the New Hampshire faculty since 1969. Ed received his B.S. degree in 1960 from the University of Illinois, and his M.S. and Ph.D. degrees in 1964 and 1966 from North Carolina State University. On leave from the University of New Hampshire in 1979-80, Ed served as an agricultural economist with the Environmental Protection Agency.

While "Big Ed," as he is fondly referred to by his colleagues, has finally decided to leave the teaching and research arenas at the University of New Hampshire, he remains committed to his passion, Community Development. In fact, the University of New Hampshire's B.S. degree in Community Development was "sired" by Ed Jansen, with a little help from Silas B. Weeks. This passion was, and still is, demonstrated by Ed's continued involvement in his hometown government. Rollinsford, New Hampshire, has benefitted from four decades of Jansen rule, the last 30 or so years

in the role of Head Selectman. He has kept property taxes the lowest in the county, while maintaining a high quality school, based on test scores, and has convinced many landowners to donate conservation easements to the town. With his newfound time, he has entered into private-sector downtown redevelopment.

Undergraduate and graduate students alike have benefitted from the Rollinsford tales. Conversely, every graduate student who chose Ed Jansen for a committee member or chairman had to answer, "What's in it for Rollinsford?"

Ed predates NAREA (formed in 1984), as well as NAEC. Upon joining the University of New Hampshire faculty in 1969, he quickly became active in the New England Agricultural Economics Council. He was serving the Council as a Director when the birth of the Northeastern Agricultural Economics Council was discussed and debated. Ed attends and participates in NAREA meetings frequently. His presence in paper sessions often results in colorful and insightful comments to the presenters.

Tsung-Chao Lee

An internationally renowned professor of econometrics, Tsung-Chao (“T.C.”) Lee has been a member of the faculty in the Department of Agricultural and Resource Economics at the University of Connecticut since 1967—except during 1976–1977, when he spent a sabbatical leave at the University of Georgia, and during January–August 1989, when he served as a visiting professor at the National Taiwan University, supported by the National Science Council in Taipei. Officially “retired” in June 2003, Dr. Lee’s current title is “Professor Emeritus,” although he is still involved in part-time teaching at the University of Connecticut.

Dr. Lee received his M.S. and Ph.D. from the University of Illinois at Urbana-Champaign in 1965 and 1967, respectively, and his B.S. from National Taiwan University in 1958. He also spent a summer in 1966 in the Economics Department of the University of Wisconsin at Madison under the CIC Traveling Scholar Program for the Big Ten and the University of Chicago. T.C. Lee was the recipient of an M.S. Thesis Award from AFEA in 1965, and a Teaching Award from the University of Connecticut in 1997. He served on the M.S. Thesis Award Committee for the AAEA during 1972–74, as well as for the NAREA in 2003.

Tsung-Chao, or “T.C.,” also responds to the alias

“Ray,” as he is called by earlier acquaintances and long-time friends. In many publications, his name often appears as “T.C.” Lee, such as his book *Estimating the Parameters of the Markov Probability Model from Aggregate Time Series Data* (North-Holland, 1970). This book had been translated into Russian before the second revised English edition was published in 1977. Dr. Lee has co-authored textbooks in the Wiley Series of Statistics, *The Theory and Practice of Econometrics* in 1980 (revised in 1985), and also *The Introduction to the Theory and Practice of Econometrics* in 1983 (revised in 1988). The latter textbook is extensively used in many universities worldwide by students in economics, agricultural and resource economics, and business schools, and has been translated into traditional Chinese in Taiwan and simplified Chinese in China.

One of T.C. Lee’s major contributions to the literature is the positive use of the spatial equilibrium model both in estimation of parameters and in comparative and dynamic analysis. His research has been published in many professional journals, including *JFE*, *AJAE*, *JNAEC*, *ARER*, *JASA*, *Management Science*, and *Metroeconomica*. He has also served as a referee for these journals. Dr. Lee’s biography has appeared in many *Who’s Who* references.

Distinguished Member Award

This award recognizes members who have made continuous and outstanding contributions to the Association, the region, and the profession. The award recognizes members for significant recent professional achievement in the context of an overall meritorious record. Recipients must be members in good standing and receive nomination from three other members. A recipient can receive the award more than once, based on recent achievements.

Stephen K. Swallow

Stephen K. Swallow is a professor in the Department of Environmental and Natural Resource Economics, University of Rhode Island, where he began in 1988. He received his Ph.D. and M.S. from Duke University, studying resource economics, and his B.S. from Cornell University, studying wildlife ecology. Professor Swallow’s research interests include resource dynamics, forest management, environmental valuation methods, land use policy and conservation, and the integration of economics in conservation biology and ecosystem management.

His publications have appeared in the *Agricultural and Resource Economics Review* (*ARER*), *Journal of Environmental Economics and Management* (*JEEM*), *American Journal of Agricultural Economics*, *Land Economics*, *Southern Economic Journal* (*SEJ*), *Water Resources Research*, *Marine Resource Economics*, and several interdisciplinary journals. Professor Swallow’s

favorite publications include “Economic Issues in Ecosystem Management: An Introduction and Overview” (in the *ARER*), which challenges economists to approach numerous topics from a perspective that may make for more effective and better-received contributions to improve society’s resource policies. His “Resource Capital Theory and Ecosystem Economics: Developing Non-renewable Habitats of Heterogeneous Quality” (in *SEJ*), modifies the conventional wisdom in understanding the implications pursuing least-cost resources first. With David Wear, his “Spatial Interactions in Multiple-Use Forestry and Substitution and Wealth Effects for the Single Stand” (in *JEEM*) expands research integrating ecological models with economic factors in forest management. With Robert Johnston and Thomas Weaver, his “Estimating Willingness to Pay and Resource Tradeoffs with Different Payment Mechanisms ...” (in *JEEM*) illustrates the

role of public trust in government on the measurement of non-market values and raises new challenging concerns in evaluating strengths and weaknesses of stated-preference valuation. With Roger Sedjo, his “Eco-Labeling Consequences in General Equilibrium” and “Voluntary Eco-Labeling and the Price Premium” (in *Land Economics*) challenge the presumption that market mechanisms identifying environmental attributes of goods necessarily will improve the global environment and will not harm profitability of firms.

Stephen Swallow has served NAREA as a Director

(1995–1998), President-Elect, President, and Past President (2001–2004), and he initiated the creation of NAREA’s Award for Outstanding Public Service Through Economics. As President-Elect, he initiated NAREA’s topics-focused workshop series in 2002. Professor Swallow has served other associations, including as Associate Editor of *The Wildlife Society Bulletin* (1991–1993) and of *JEEM* (1994–1996). In 1999, he received the Research Scientist of the Year Award from the College of the Environment and Life Sciences at the University of Rhode Island.

NAREA Award for Outstanding Public Service Through Economics

This award was created to recognize and encourage contributions to the general public welfare. The intent is to recognize that agricultural, environmental, consumer, resource, or community development economics can be applied to solve important problems affecting the quality of life of the general public, and that such contributions may come outside the traditional, sometimes narrowly defined, contributions to research, teaching, or extension. The award may be given to anyone, including noneconomists and nonmembers of NAREA.

Adesoji O. Adelaja

Soji Adelaja is Professor of Agricultural, Food, and Resource Economics, and Emeritus Executive Dean of Agriculture and Natural Resources and Dean of Cook College at Rutgers University. In January 2004, he will assume the position of the John A. Hannah Distinguished Professor of Land Policy and Director of Research for the Victor Institute at Michigan State University.

Dr. Adelaja received his B.S. degree in agricultural mechanization from the Pennsylvania State University in 1978. He then received dual master’s degrees in agricultural economics and in economics from West Virginia University in 1980 and 1982, respectively. His 1985 Ph.D. in economics also came from West Virginia.

Dr. Adelaja joined the Rutgers faculty in 1986 as an assistant professor in the Department of Agricultural Economics and Marketing. He went on to serve as associate professor, undergraduate program director, professor, and department chair between 1986 and 1999. A visionary, he has been instrumental in the creation and management of numerous centers and programs that helped shape the ability of land grant institutions to serve the public. He is the founder and director of the Agricultural Policy Research Group, the Ecopolicy Center, the Food Policy Institute, and the Food Innovation Research and Extension Center at Rutgers University. In 1999, he assumed the position of Dean of Research for Cook College and Director of the New Jersey Agricultural Experiment Station. In 2002, he was appointed as the Executive Dean of Agriculture and Natural Resources, Executive Director of the New Jersey Agricultural Experiment Station, Director of Rutgers Cooperative

Extension, and Dean of Cook College.

Dr. Adelaja is an eclectic scholar whose research programs span a variety of areas. He is best known for his work in Agricultural Policy at the Urban Fringe, Land Use Policy, economic Development of the Food Industry, and Emerging Issues in the Food Industry. By leading numerous programmatic teams, he has directed faculty expertise toward pressing issues facing industry and government. A committed land grant scholar, his work has shaped public policy toward agriculture and other land-based industries at the urban fringe. The origin or research basis for many New Jersey programs can be traced to his research, including New Jersey’s \$40 million Agricultural Economic Recovery and Development Initiative, Horse Park at Stone Tavern, Right to Farm Legislation, Farmland Preservation Program, and Millennium Viability Initiative. Dr. Adelaja sits on the boards of numerous organizations, has served on various state commissions, advisory committees, and task forces, and served as Special Policy Advisor to the Secretary of Agriculture.

Dr. Adelaja has received numerous recognitions for his work and impact, including the Rutgers Presidential Award for Distinguished Public Service, the Outstanding Alumni Award from Penn State’s College of Agriculture, the Person of the Year Award from the National Prepared Foods Association, various excellence awards in research, outreach, and teaching, New Jersey Governor’s Recognition for Outstanding Contributions to New Jersey, and the State of New Jersey General Assembly’s Citation for Outstanding Scholarship and Exceptional Service.

Journal Article of the Year for 2002

**Watershed Nutrient Trading Under
Asymmetric Information**

(*ARER* Vol. 31, No. 2, October 2002: 221–232)

Robert C. Johansson

This study evaluates first- and second-best trading policies for regulating watershed phosphorus under asymmetric information. The trading policies are differentiated on the degree to which regulators observe point and nonpoint source abatement efforts. The efficiency losses attributable to these informational asymmetries and those of the second-best policies can be

measured in social welfare, and provide regulators the shadow value of foregoing first-best measures. Given representative monitoring costs from national water monitoring programs, it is shown that under asymmetric information, the chosen second-best trading policies outperform first-best policies by 11% in the control of watershed nutrient pollution.