Abstracts of Selected Papers

NAREA Annual Meetings, Portsmouth, NH, June 8–10, 2003

Agriculture and the Environment I

MODERATOR: Robert Johnston (University of Connecticut)

"Enduring Impacts of Temporary Land Retirement Payments: Econometric and Simulation Analysis of the Conservation Reserve Program." Ruben N. Lubowski and Michael J. Roberts (Economic Research Service/USDA).

This study examines the determinants of land-use decisions following Conservation Reserve Program (CRP) contract expiration, using data from the National Resources Inventory (NRI). Land use is simulated after a hypothetical termination of the CRP. The results provide insights into enduring impacts of the CRP and of other potential incentive-based land-use policies.

"Factors Influencing the Acceptance of Wetland Easement Offers in North Dakota." Steve Shultz (North Dakota State University).

USFWS wetland easement payment offers to North Dakota landowners (1989–1998) are evaluated. A logistic model demonstrates that landowners exhibit rational profit-maximizing behavior when evaluating easement offers, and that the USFWS made fair and reasonable payment offers based on its ability to account for heterogeneous land values across counties.

"Economics of Agriculture and Preservation of Wetlands." Jorge D. de Prada, Farhed Shah, and Boris E. Bravo-Ureta (University of Connecticut).

Upstream as well as downstream farmers may lack incentives to pursue soil conservation needed for wetlands preservation. A dynamic model linking soil erosion with deterioration of wetlands is presented. The model is applied to data from Córdoba, Argentina. Private and social planner solutions are compared, and corrective actions are suggested.

"Equilibrium Behavior in the Conservation Easement Game." Christopher M. Anderson and Jonathan R. King (University of Rhode Island).

We develop a game-theoretic model of the private incentives induced by conservation easement programs. A laboratory experiment verifies that conservation decisions are based on private incentives, without consideration of the public goods provided. Therefore, unless land trusts are discriminating, conservation easements may not lead to optimal conservation, and may reduce social welfare.

Agricultural Trade I

MODERATOR: Robert Parsons (University of Vermont)

"Exchange Rate Volatility and U.S. Poultry Exports: Evidence from Panel Data." Yuan Yan and Titus O. Awokuse (University of Delaware).

Very little research exists on the potential impact of exchange rate volatility on agricultural trade. This paper evaluates the effects of exchange rate volatility on U.S. poultry exports using the gravity model on panel data. It was found that American poultry exports are negatively affected by exchange rate volatility.

"Impacts of Foreign Political and Institutional Instability on U.S. Agricultural Trade." Titus O. Awokuse and Conrado M. Gempesaw (University of Delaware).

Scarce research has been conducted on the potential impact of political and institutional instability on agricultural trade. This paper evaluates the effects of political instability on U.S. agricultural exports. Relative to effects of political instability measures, our results indicate that the economic variables are more significant determinants of bilateral agricultural trade.

"A Multiple-Component Analysis of U.S. Dairy Imports." Kenneth W. Bailey (The Pennsylvania State University).

This paper develops a multiple-component-based methodology to account for the impact of trade on the U.S. dairy industry. More specifically, a mass balance approach is used to account for dairy products on the basis of milk fat, protein, other solids, and moisture.

"Export Subsidies in the Doha Round: A Case Study of the United States and the European Union." Susan Leetmaa (Office of Management and Budget/USDA).

The Doha Round of agricultural trade negotiations is underway in the World Trade Organization. One of the subjects of negotiation is the treatment of export subsidies. This paper examines export subsidization by the United States and the European Union, and policy and trade implications of proposed export subsidy reforms.

Environmental Valuation: Stated Preference Approaches

MODERATOR: Mario Teisl (University of Maine)

"Improving Risk Communication for the Valuation of Environmental, Health, and Safety Risk Reductions." Tammy Barlow McDonald and Catherine Moroski (University of Massachusetts-Boston).

Perceived risk may differ significantly from scientific estimates of actual risk. Much of the general public has difficulty understanding risk information, particularly when asked to evaluate changes in risk. This research examines how to increase risk understanding through more effective communication, thereby improving estimates of the public's value for reducing specific risks.

"Hypothetical Bias: A Field Study Comparison of Cheap Talk and Certainty Calibration." Mihail Samnaliev and Thomas Stevens (University of Massachusetts).

A field test of cheap talk and certainty calibration in contingent valuation of public lands indicated that cheap talk does not reduce hypothetical bias. Certainty calibration reduces bias by about half and decreases the variance of willingness-to-pay estimates. Respondents who rejected the bid were more certain in their answers than respondents who accepted the bid. Certainty levels were correlated with attitudes about user fees.

"Empirical Evidence on Option Price: State-Dependent Preferences, Ex Post and Ex Ante Elicitation, and Objective versus Subjective Probabilities." Robert W. (Chip) Paterson (Industrial Economics, Inc., Maine) and Kevin J. Boyle (University of Maine).

Option prices are estimated for a reduction in uncertainty. Findings show that preferences are linear and are not state dependent. We also find that ex ante and ex post estimates of option price are statistically equivalent. While objective and subjective probabilities differed substantially, both measures performed equally well in explaining responses and provide similar estimates of option price.

"Total Economic Valuation of Stream Restoration Using Internet and Mail Surveys." Alan R. Collins, Randy Rosenberger, and Jerald Fletcher (West Virginia University).

Government agencies lack information on the economic value of stream restoration. To fill this void, stream use and non-use values are estimated using multi-attribute, choice experiments examining both partial and full restoration. This research was conducted on a degraded stream in West Virginia.

Rural and International Development

MODERATOR: Todd Gabe (University of Maine)

"The Ownership and Accumulation of Cattle in the Amazonian Frontier: Implications for Household Deforestation Levels." Jill L. Caviglia-Harris (Salisbury University), Virginia H. Dale (Oak Ridge National Laboratory), and Marcos A. Pedlowski (Universidade Estadual de Norte Fluminense).

This paper uses panel data to investigate the relationship between evolving property rights, deforestation, and cattle ownership. Using a simultaneous system of equations, we find that wealthier households own more cattle and deforest at greater rates, while others, more focused on crops, devote a smaller number of resources to deforestation.

"A Survey Analysis of Participation in a Community Forest Management in Nepal." Vishakha Maskey and Tesfa G. Gebremedhin (West Virginia University).

An ordered probit model was used to determine the benefits from community forests in Nepal as a function of participation. Survey data on socioeconomic characteristics were used in the model. The empirical results indicate that age, gender, household income, and literacy have a significant effect on the participation of community forest management.

"Is PAYT for Solid Waste Management a Fiscally Wise Municipal Policy?" Shanna Hallas-Burt, John Halstead, Ju-Chin Huang, and Elizabeth Bedard (University of New Hampshire).

This study analyzes how municipal-level unit pricing for solid waste affects waste generation and cost to New Hampshire communities. Cross-sectional regression anal-

ysis is used to test whether the change in municipal waste generation is significant in communities with PAYT, and whether this change affects cost to the community. A logit analysis is used to test for the significance of predictor variables for PAYT in NH communities.

"The Estimation of Tourism Demand in Vermont." Rong Guo and Chyi-lyi (Kathleen) Liang (University of Vermont).

This paper reports on an ongoing tourism study in Vermont based on a national survey for domestic pleasure travelers only. Preliminary results show the demographic information for Vermont visitors, as well as the relationship between expenditures and income. Also, income appears to have a significant and positive impact on tourists' total travel expenditures.

Agricultural Production I

MODERATOR: Kenneth W. Bailey (The Pennsylvania State University)

"Financial Performance, Conservation, and Farm Diversity in the Northeast." Carmen L. Sandretto, Ashok K. Mishra, and Robert A. Hoppe (Economic Research Service/USDA).

Farms in the Northeast vary widely in size and other characteristics, ranging from very small retirement and residential farms to large operations with gross sales of millions of dollars. Farms differ in their goals, strategies to meet these goals, the use and control of their resources, and the economic results from their farm and off-farm activities. A farm classification system is necessary for analysis because of this diversity. This study employs the farm typology developed by the USDA's Economic Research Service (ERS) to examine financial performance, conservation, and other issues that influence the success of family farm operations and their role in the rural economy of the Northeast.

"Challenge for Extension: Developing Outreach Programs for a Stratified Dairy Industry." Robert Parsons (University of Vermont).

Extension programs are challenged to meet the demands of agriculture while addressing public concerns over the loss of small farms. Responses to a mail survey of Vermont dairy farmers indicate a growing segmented industry: large confinement, low-input grazing, and more traditional operations. For success, the segmented sector requires different programming approaches with special innovative emphasis for small farms.

"Technology Adoption and Off-farm Employment: The Case of Herbicide-Tolerant Soybeans." Jorge Fernandez-Cornejo and Chad Hendricks (Economic Research Service, USDA).

This paper examines the hypothesis that farmers may be adopting herbicide-tolerant crops because of the simplicity and flexibility of weed control, freeing management time. A multivariate probit econometric model is developed and estimated to analyze the interaction of off-farm work and adoption using nationwide survey data.

"Farm Income Stabilization and Crop Diversity Conservation: What Can We Learn from the European CAP?" Salvatore Di Falco (University of York, United Kingdom).

Crop genetic diversity plays an important role in supporting productivity and stability of agroecosystems. Recent studies based on LDC found that risk hedging, market integration, and transaction costs are key variables in determining the level of biodiversity. This paper focuses on the impact of agricultural policies on diversity. It provides a theoretical and empirical explanation to document how stabilizing income packages in the EU may have led to a diversity loss pattern in a Vavilov megadiversity area.

Food Marketing and Consumer Preferences

MODERATOR: Cheryl Brown (University of West Virginia)

"Health Foods of the Future: Is the American Consumer Ready?" Brian J. Schilling (Food Policy Institute, New Brunswick, NJ).

U.S. nutrition product sales reached $53 billion in 2001. Annual market growth of 7–8% is supported by changing demographics, increasing understanding of diet-disease relationships, and changing attitudes toward personal health. Advances in food biotechnology raise the potential for creating genetically modified functional foods. Market receptivity for such products remains unclear.

"The Role of Product Benefits and Perceived Risks in Consumer Acceptance of Genetically Modified Foods." Benjamin Onyango, Ferdaus Hossain, and Brian Schilling (Rutgers University).

A discrete choice model is estimated to examine the relationship between consumer acceptance of bioengineered foods and their economic, demographic, and value attributes. This study explores how product benefits and perceived risks of bioengineered foods affect consumer choices. We also examine how consumer acceptance of GM foods varies across product types.

"An Evaluation of Producer Satisfaction with Returns from Farmers' Market-Related Activity." Ramu Govindasamy and Adesoji Adelaja (Rutgers University).

Over 61% of farmers who sell agricultural products through farmers' markets are satisfied with the returns.

Producers who are 50 years of age or older and those who retail at least 70% of the dollar value of their products are more likely to be satisfied with their profit margin.

"A Conjoint Analysis of Consumer Willingness to Pay for Chicken Produced with Different Attributes." John C. Bernard, Xiqian Pan, and John D. Pesek (University of Delaware).

This study estimated consumer willingness to pay (WTP) for seven chicken attributes: price, irradiation, antibiotics, free range, branded, GM fed, and GM. A conjoint analysis was conducted using a mail survey. Higher WTP for GM-free fed, free range, and antibiotic-free, and lower WTP for GM chicken were hypothesized.

Valuation and Economic Impact of Land Use

MODERATOR: Randy Rosenberger (West Virginia University)

"Valuation and Economic Impact of Connecticut's Horse Industry." Anita Chaudhry, Jenifer Nadeau, Farhed Shah, Tsoung-Chao Lee, and Emilio Pagoulatos (University of Connecticut).

Results of the first comprehensive study of Connecticut's horse industry are presented and analyzed. Survey data from horse owners, businesses, and service providers are used to characterize the industry, estimate its size, and assess its economic impact. Market as well as nonmarket values of horses are estimated and analyzed econometrically.

"Parcel-Level GIS Data and Measurement Error: Are We Producing Biased and Inconsistent Estimates?" Lori Lynch and Shawn Bucholtz (University of Maryland).

Economists access micro-level spatially explicit data which is often identified by the parcel centroid rather than by parcel boundaries to estimate hedonic equations. Sales data from Montgomery County, Maryland, with both centroid and parcel boundaries information are used to determine if biased or inefficient parameter estimates result from the land use data measurement error this limitation may cause.

"Does Intensive Agriculture Depress Property Values? Results and Implications for Berks County, Pennsylvania." Charles W. Abdalla and Richard C. Ready (The Pennsylvania State University).

Analysis of residential property values in Berks County, Pennsylvania, demonstrated that proximity to several locally undesirable land uses, including animal and mushroom production operations, depresses house prices. This finding is significant and has implications for stakeholders to issues concerning intensive agriculture and state and local public policy decisions in Pennsylvania.

"The Evolution of Rural Amenity Values in Growing Communities: Modeling the Impact of In-Migration and Residence Duration." Robert J. Johnston (University of Connecticut) and Christopher M. Anderson (University of Rhode Island).

This paper examines correspondence among residence duration, households' rural amenity values, population growth, and changes in regional amenity values. Data are drawn from a conjoint survey of Rhode Island residents, addressing development and conservation proposals. Simulation of population-driven changes in regional mean WTP illustrates the potential impacts of population growth on mean rural amenity values.

Natural Resources Modeling

MODERATOR: Erin Baker (University of Massachusetts, Amherst)

"Endogenous Governance in a Metapopulation." Guillermo E. Herrera (Bowdoin College).

A bioeconomic metapopulation model with stochastic dynamics is used to investigate relative performance of governance systems (central versus local). Imperfect

stock assessment, incomplete compliance based on a Lucas Island formulation, costly enforcement, and spatial externalities contribute to outcomes. Applications to Gulf of Maine resources and management alternatives are discussed.

"Optimal Resource Allocation for Invasive Species Management in the Presence of Endogenous Risks of Invasion." Ram Ranjan, Liz Marshall, and James Shortle (The Pennsylvania State University).

This paper designs an optimal management policy for resources that face the threat of alien species invasion. Optimal allocation of resources to prevention and mitigation is considered in an intertemporal cost-benefit maximization framework, when risks of invasion and their impacts could be endogenized. While the problem is posed in the context of management of threatened renewable resources, the results are fairly generalizable to all kinds of resources.

"Reservoir Sedimentation and Soil Conservation Under Uncertainty." Maneechit Pattanapanchai and Farhed Shah (University of Connecticut).

Soil erosion causes sedimentation of dams and lowers their net present value. Upstream conservation practices may reduce erosion. A model is developed to determine the optimal timing of such measures. Application to data from the Three Gorges Dam project shows the benefits of timely action and suitable policy intervention.

"Risk-Efficient Aquaculture Technology Choice for Cold-Water Finfish in the Northeast." Timothy J. Dalton and Kate Waning (University of Maine).

This study uses bioeconomic simulation techniques to conduct an ex ante assessment of an alternative cold-water aquaculture species: haddock (*Melanogrammus aeglefinus*). Large-scale traditional production techniques dominate all other alternatives despite being more risky. Results indicate a 78% probability that haddock juveniles can be produced below US$1.75.

Agriculture and the Environment II

MODERATOR: Charles Abdalla (The Pennsylvania State University)

"Is Conservation Possible? Implications of an Organizational Analysis of the Relation Between Agricultural Interests and the State." Scott Steele (Berea College).

The agricultural enterprise is examined from an organizational perspective, highlighting problems with the tendency to treat agricultural firms like classical textbook firms. The relationship between the state and agricultural firms is characterized by elements that are typical of partnerships. Given the multifunctional nature of agriculture, this organizational design may have some conservation-enhancing advantages.

"Corn Farming Systems in 1996 and 2001: Choices Made and Implications for the Environment." Lee A. Christensen and Tim Payne (Economic Research Service/USDA).

Corn, a major component of national farm income, is also a significant user of cropland and agricultural chemicals. Analysis of choices by corn producers among soil and nutrient management practices shows the impacts of farm and operator socioeconomic characteristics on farm profitability and the environment at the regional and national levels.

"Structural Characteristics of Western Irrigated Agriculture: Implications for USDA Water Conservation and Small-Farm Policy Goals." Glenn D. Schaible and Carmen L. Sandretto (Economic Research Service/USDA).

Using 1998 Farm and Ranch Irrigation Survey (FRIS) data, this paper examines the structural characteristics of irrigated agriculture in the West. Special attention is given to examining the degree of existing water-conserving/higher-efficient irrigation occurring throughout the West across four farm-size classes, and its implications for USDA resource conservation and small-farm policy goals.

"An Examination of Manure Transport Patterns in the Chesapeake Bay Watershed to Meet Nutrient Standards for Land Application." Marcel Aillery, Noel Gollehon, and Jean Agapoff (Economic Research Service/USDA).

A modeling framework addresses manure management within the Chesapeake Bay watershed. Policy focus is on manure land-application at agronomic rates, as proposed under the EPA/USDA Unified Strategy. Regional transport patterns are tracked via manure imports and exports by county, and directional flows from primary manure-surplus counties within the basin.

Agricultural Production II Plus Graduate Education

MODERATOR: Eliza Mojduszka (Rutgers University)

"Impact of Drought on Perishable Food Supply in New Jersey." Edouard K. Mafoua, Benjamin Onyango, and Edmund Tavernier (Rutgers University).

This study uses the Nerlovian framework and the dual approach to analyze the impact of drought on the supply response for fruits and vegetables in New Jersey. These

crops are analyzed individually and separately to gain individual commodity insights. The supply response model incorporates input cost, price of the competing fruits or vegetables, and weather.

"The Impact of Electricity Deregulation on the New Jersey Food Industry." Jebaraj Asirvatham and Calum G. Turvey (Rutgers University).

The impact of energy deregulation on the New Jersey food industry is investigated. The economics of deregulation is reviewed, and demand elasticities for electrical energy facing the food industry are estimated. Low elasticity estimates suggest higher prices when demand approaches grid capacity, or if investment in new capacity is reduced in the long run.

"Impact of the Bioterrorism Act of 2002 on the New Jersey Food Industry." Benjamin Onyango and Calum Turvey (Rutgers University).

This study examines the impact of the 2002 Bioterror-

ism Act on the New Jersey food industry by evaluating the industry's preparedness for and compliance with the legislation. The study also enumerates potential business hardships. The analysis provides policy makers with insights on the legislation's effectiveness and efficiency while contributing to the bioterrorism regulation literature.

"Relevance Revisited: How Faculty and Graduate Students View Their Graduate Programs." John M. Halstead, Douglas E. Morris (University of New Hampshire), and Dan Lass (University of Massachusetts).

This paper reports on surveys of graduate programs at two northeastern universities. We examine usefulness of specific courses, how training influenced job searches and performance, how students' priorities jibed with those of faculty, and how responses differ across institutions and programs. Job search times, salary levels, and general satisfaction are also considered.

Survey Methodology

Moderator: Tammy Barlow McDonald (University of Massachusetts, Boston)

"Contrasting 'Mail vs. Internet' Responses Obtained from Identical Psychographic and Demographic Questions About the Perceived Value of Several Shopping Efficiency Enhancements in Grocery Stores." Lyndon E. Goodridge (University of New Hampshire).

Using two popular survey vehicles, several homogeneous consumer groups were identified as having strong preferences for specific focus-group-generated retail food distribution "efficiency enhancements." Differences in the results obtained via Internet (versus mail survey) offer important clues about the efficacy of using online surveys to determine the impact of psychographic and demographic variables on the demand for various retail food distribution options.

"Incentive Effects on Response Rates, Data Quality, and Survey Administration Costs." Mario F. Teisl (University of Maine), Brian Roe (Ohio State University), and Mike Vayda (University of Maine).

It is increasingly difficult to obtain high response rates to mail surveys. We test the effects of different incentives and find significant differences in response rates and per-observation costs. No differences are found in individuals' stated preferences, but significant differences are observed in socioeconomic characteristics, leading to differences in WTP estimates.

"A Comparison of a Standard Mail Survey versus an Internet Option for a Self-Administered Survey: A

Test Using Citizen Viewpoints on Sprawl." Ling Liu, Thomas W. Ilvento (University of Delaware), and Frank L. Farmer (University of Arkansas).

This study empirically examines the impact of implementation method within self-administered survey research. Specifically, this paper compares response rates, response bias, and cost implications in offering a standard mail survey implementation protocol versus the addition of an Internet response option to this protocol. The research questions include: Given an Internet option, will people use it? Does an Internet option increase response rate? Does an Internet option reduce mail survey costs? and Does offering an Internet option affect data quality? These questions are tested in a survey designed to examine Delaware citizens' viewpoints on sprawl, "Livable Delaware," and opinions on growth. "Livable Delaware" is a current initiative of the Delaware State government.

"Using Remote Sensing Data to Verify Survey Data, Estimate Response Bias, and Improve on Deforestation Modeling: An Application for Households in Rondônia, Brazil." Jill L. Caviglia-Harris and Daniel W. Harris (Salisbury University).

This research merges satellite and survey data of deforestation to determine the degree of error of reported levels. The reported survey data are found to be reliable when verified against satellite images of the same lots. Moreover, findings indicate that the use of satellite images and GIS can improve estimations.

Agricultural Trade II

MODERATOR: Titus O. Awokuse (University of Delaware)

"A Spatial Equilibrium Analysis of the Effects of Free Trade in Potatoes Between the United States and Canada." Tsoung-Chao Lee and Jamima Devasena (University of Connecticut).

The study investigates the impact of potato trade liberalization on farm prices and consumer welfare across the United States and Canada over the period 1980–1999. The Lee and Seaver spatial equilibrium model is used to study the effect of tariff reductions on prices and quantities shipped, produced, and consumed in each region.

"Economic Integration and International Dairy Markets." Kenneth W. Bailey and James Dunn (The Pennsylvania State University).

The proposed expansion of the European Union may have substantial impacts on world markets for dairy products. Dairy trade is substantially distorted by the subsidized EU exports. A spatial equilibrium model of international dairy markets examines the effect of EU expansion on EU and other dairy markets.

"Implications of Russia Introducing Poultry Import Quotas for U.S. and Global Poultry Markets." John Dunmore and Stefan Osborne (Economic Research Service/USDA).

The imposition of a quota on poultry imports by Russia would reduce U.S. chicken leg quarter prices and export quantities. The outcome for U.S. poultry export revenues depends on the allocation of quota rents. The longer-term implication of the Russian poultry import quota will be an expansion of Russian poultry production.

Land Use Change and Farmland Loss

MODERATOR: Tom Ilvento (University of Delaware)

"The Causes of Farmland Loss in Mid-Atlantic States." Jiayi Li and Richard Ready (The Pennsylvania State University).

This paper examines the causes of farmland loss in six Mid-Atlantic states. One of the innovations of this study is that all variables are measured only for the non-urban parts of each county. The results suggest agricultural investment and non-urban population density are dominant drivers of farmland loss.

"Land Preservation Decisions Under Uncertainty: A Stochastic Linear Programming Approach." Scott A. Malcolm, Joshua Duke (University of Delaware), and Lori Lynch (University of Maryland).

Uncertainty in future land value, agricultural rents, and other factors influence farmers' decisions to sell or preserve land in the present. This paper uses stochastic linear programming to model and analyze the effect of such future uncertainties on farmers' decisions and land preservation policies.

"Land Use Change Taxes: The Changing Relation to Abated Property Taxes." Douglas E. Morris and Cynthia L. Belowski (University of New Hampshire).

The land use change tax payable to New Hampshire towns when property is removed from the Current Use Assessment Program was compared to the abated taxes for 10 towns over the 1980–2000 tax years. Internal rates of return were calculated for the 1,290 parcels.

Firm Behavior: Rural Development and Environmental Implications

MODERATOR: John Halstead (University of New Hampshire)

"R&D as Greenhouse Insurance." Erin Baker (University of Massachusetts), Leon Clarke (Lawrence Livermore National Laboratory), and John Weyant (Stanford University).

Can research and development into low-carbon technologies be considered a hedge against catastrophic damages resulting from climate change? We combine technology models that relate R&D to the cost of reducing emissions with a stochastic programming version of the DICE integrated assessment model to analyze when investment in R&D will increase in uncertainty.

"An Environmental Conscious Firm in a Dynamic Framework." Irene Margaret Xiarchos and Timothy Phipps (West Virginia University).

This paper analyzes the behavior of a firm that is subject to its environmental image in a dynamic optimization framework. The firm's environmental practices become an internal firm-initiated decision. The environmental reputation established by the firm influences the demand for its product and the price it can obtain.

"Industry Clusters, Business Location, and Industry Entry in Maine." Todd M. Gabe (University of Maine).

We investigate the effects of industry agglomeration on the location and entry decisions of 3,422 establishments which opened in Maine between 1996 and 1999. Results show that two indicators of clusters (location quotients and number of establishments per city-industry) have a positive effect on business location and industry entry.