

Abstracts of Selected Papers

NAREA Annual Meetings, Halifax, Nova Scotia, June 20–23, 2004

SESSION: *Production I. Moderator: Dan Lass (University of Massachusetts).*

“Heterogeneity, Empirical Distributions, and Aggregation.” David R. Just and Barrett E. Kirwan (Cornell University).

Using a unique panel of individual farms constructed from the *U.S. Census of Agriculture*, we explore the effects of aggregation in yield estimates employing a translog production function with farm fixed effects. Findings show that unobserved factors comprise 56% of corn yield variation. Aggregating farm-level data to the county level reveals significant and disturbing differences in coefficient estimates, including sign reversals. The biases appear to be consistent with recent theoretical work. This evidence supports the proposition that vital information is lost upon aggregation, and farm-level data are required if one wishes to test farm-level theory.

“Managerial Intensity and the Adoption of Conservation Tillage.” Jorge Fernandez-Cornejo (Economic Research Service/USDA) and Alexandra Gregory (University of Missouri).

This paper analyzes the interaction of off-farm work and adoption of an agricultural technology with a low managerial intensity (managerial-saving) and estimates the impact of adopting this technology on farm household income from on-farm and off-farm sources using a nationwide farm survey of corn farmers for 2001. The technology selected is conservation tillage. Our main research question is whether or not adoption has a significant effect on the off-farm component of household income as well as on total household income. Results are compared with those of the adoption of HT soybeans, a technology with a very low managerial intensity.

“Blowing in the Wind: Impact of Spatial Drift on Producers’ Profits.” Cheryl Brown (West Virginia University) and Lori Lynch (University of Maryland).

A theoretical model of agricultural production with spatial externalities examines issues of cooperation and liability on neighboring farms. The case of genetically modified (GM) corn pollen drift is investigated using simulations to determine the relative importance of prices, costs, yield differentials, property rights, and policy options. Given low yield losses from pests and a low price premium for non-GM corn or high yield losses and high price premium, we find the loss to the non-GM-planting farm due to the impacts of pollen drift is greater than the loss to the GM-planting farm if it is restricted from planting GM corn.

“Factors Affecting the Decision to Exit Dairy Farming: A Two-Stage Regression Analysis.” Lisa A. Bragg and Timothy J. Dalton (University of Maine).

A two-stage regression model is used to analyze the factors contributing to the decision to exit from dairy farming in Maine. Demographic, opportunity cost, and efficiency variables are used to explain the decision. Results from the second-stage logit model indicate that producer age, off-farm income, production specialization, and predicted short-run profitability significantly influence producer exit. Managerial and financial factors, identified in the model’s first stage, affect profitability and hence, indirectly, industry exit. Findings from this research confirm the need for a broader focus of dairy support programs beyond the scope of price supports to reduce farm exit.

SESSION: *Consumer Behavior and GMOs. Moderator: Richard Gray (University of Saskatchewan).*

“Consumer Acceptance of Genetically Modified Foods in Korea: Factor and Cluster Analysis.” Benjamin Onyango, Ramu Govindasamy, William Hallman, Ho-Min Jang, and Venkata Puduri (Food Policy Institute, Rutgers University).

This study applies multivariate statistical and econometric tools to estimate the importance of the various factors driving Korean consumer acceptance of GM food products. The Korean public is categorized into distinct consumer segments, and the relationships between product attributes and their socioeconomic and expressed value judgments are examined. Koreans, while optimistic about benefits of GM, are also concerned about safety for humans and the environment—a major obstacle to its widespread acceptance. Results highlight the importance of credibility of private and public institutions responsible for implementation of necessary regulatory controls and safety certification of GM foods.

“Willingness to Pay for GM Foods with Bundled Health and Environmental Attributes.” Mario F. Teisl (University of Maine), Brian Roe (Ohio State University), and Mike Vayda (University of Maine).

The debate surrounding the labeling of genetically modified foods (GMFs) has largely been framed as a yes/no issue. That is, the debate and research has almost exclusively approached the issue as one where the consumer’s sole desire for information is whether GMFs are, in fact, genetically modified. However, this approach is limited because biotechnology can have multidimensional

effects on food quality. Here, we explore the benefits of labeling GMFs when the labeling directly links changes in product quality to the genetic modification. Further, we examine how these benefits differ across a nationally representative sample of U.S. consumers.

SESSION: *Resources and Environment I*. Moderator: Stephen Swallow (University of Rhode Island).

“Preliminary Assessment of Wind Energy Production in Northern New England.” Peter Girard, Gregg Caporossi, and John Halstead (University of New Hampshire).

This preliminary study captures the current state of New England wind development in terms of political and economic constraints. A focus group of wind professionals is used to identify keys to development such as: site selection, NIMBY, green purchase, required portfolio standards, and market deregulation. Additionally, we review four existing and proposed case studies in the Northeast, representing a range of production opportunities in terms of scale, location, and feasibility. Aspects unique to New England are considered in order to identify keys to moving wind development in the region forward. Policy and research opportunities are discussed.

“Two Tests of the Pollution Havens Hypothesis Applied to German Manufacturing.” Ulrich J. Wagner (Yale University) and Christopher Timmins (Duke University).

Does environmental policy impair international competitiveness of pollution-intensive industries to the extent that they relocate to countries with laxer environmental regulation, turning those countries into “pollution havens”? We test this hypothesis using panel data on the outward foreign direct investment (FDI) flows of six industries in the German manufacturing sector, accounting for several important econometric issues that are ignored in previous studies. Most importantly, externalities associated with FDI agglomeration can bias estimates away from finding pollution havens if omitted from the analysis. Including FDI stock to account for these positive spillovers requires econometric techniques to control for its endogeneity. Serial correlation in FDI flows complicates the application of these techniques. Finally, controls are needed to account for the possible correlation between unobservable attributes of FDI recipients and their environmental stringency. Accounting for these issues, we find strong support for the pollution havens hypothesis in the most pollution-intensive industries.

SESSION: *Economic Analysis of Import Issues*. Moderator: Rakhal Sarker (University of Guelph).

“Home Bias and U.S. Imports of Processed Foods.” Rigoberto A. Lopez, Emilio Pagoulatos, and Maria A. Gonzalez (University of Connecticut).

This study measures the degree of home bias in the importation of processed food products—that is, the underlying preference for domestic rather than imported food products. Relying on Armington’s model estimates, home bias measures are provided for 32 U.S. processed foods using data at the 4-digit SIC level for the 1972–92 period. Empirical results indicate that a very strong bias toward domestic products significantly limits foreign imports of the same type of foods.

SESSION: *Issues in Demand Analysis and Consumer Behavior*. Moderator: John A. L. Cranfield (University of Guelph).

“Returns to State Agricultural Promotion: A Case Study of the Jersey Fresh Program.” Ramu Govindasamy, Brian J. Schilling, Kevin P. Sullivan, and Calum G. Turvey (Food Policy Institute, Rutgers University).

The Jersey Fresh Program was established in 1984 to promote New Jersey farm products. This study examines the impact of Jersey Fresh promotion on farmer cash receipts. Results suggest that each dollar spent on the program increased revenues in New Jersey’s fruit and vegetable sector by \$31.54 in 2003. Simulation of the induced and indirect effects of the program suggests each dollar spent on Jersey Fresh promotion also results in an additional \$22.95 of gross sales in supporting industries. Comparison of these returns to the 2003 program budget indicates that the Jersey Fresh Program is better than revenue-neutral.

“Consumer Willingness to Pay for Farm-Raised Baitfish in the Northeast.” Hong Ding, John D. Pesek, John C. Bernard, and Richard Bacon (University of Delaware).

This study examined consumer willingness to pay (WTP) for farm-raised baitfish products with varying characteristics in the Northeast. A sealed-bid second-price auction was employed to collect data from 46 Chesapeake Bay anglers. While higher WTP for farm-raised and locally produced baitfish was hypothesized, no significant differences were found.

SESSION: *Issues in Biotechnology*. Moderator: Richard Schoney (University of Saskatchewan).

“Public Approval of Plant and Animal Biotechnology in Korea: An Ordered Probit Analysis.” Ramu Govindasamy, Benjamin Onyango, William Hallman, Ho-Min Jang, and Venkata Puduri (Food Policy Institute, Rutgers University).

Predictors of Korean public acceptance of the use of biotechnology to create genetically modified food products are analyzed. Specifically, this study analyzes and compares the effects of consumers’ socioeconomic characteristics and their expressed value judgments on their approval of the use of biotechnology in (a) plants,

and (b) animals. The results show that accurate anticipation of consumer expectations and demand will drive the successful placement of GM foods in the market. Additionally, GM foods labeling policy initiatives will impact acceptance, with consumers' trust and confidence in institutions associated with biotechnology being critical for wider acceptance.

SESSION: Greenhouse Gas. Moderator: James McQueen (University of Alberta).

"From Growing Crops to Growing Carbon: Some Economic Implications of a Greenhouse Gas Mitigation Activity." Mark Sperow (West Virginia University).

Carbon prices for soil carbon derived from setting aside highly erodible land (HEL) are estimated using land rental rates as the opportunity cost of land in this study. The impact on U.S. crop production, targeting options that provide the greatest soil carbon gain for least cost, and the rates of soil carbon change by geographic region are addressed. Increases in soil carbon from setting aside HEL are estimated using the Intergovernmental Panel on Climate Change soil organic carbon inventory method, the National Resources Inventory, and other data sources. Changes in U.S. crop production levels are estimated for major field crops.

SESSION: Resources and Environment II. Moderator: John Halstead (University of New Hampshire).

"Modeling the Interaction of Growth and Natural Amenities in West Virginia." Yohannes G. Hailu, Alan R. Collins, and Vishakha Maskey (West Virginia University).

There is a growing concern about interactions between growth and natural amenities. Amenities may attract growth, but growth can reduce the stock of natural amenities. One emerging central issue is the estimation of the impact that natural amenities have on growth in population and employment. Using county-level data between 1991 and 1999, a simultaneous growth equilibrium model (following Carlino and Mills, 1987) was developed to capture the interaction between growth and natural amenities. This model was estimated using a heteroskedastic consistent 2SLS method. Population growth was found to be significantly higher in counties with more natural amenities, but employment growth was not related to the level of natural amenities. Understanding this relationship may be relevant for regional growth and resource management.

"Estimating Nonuse Values for Aquatic Resource Improvements: An Application of Meta-Analysis." Robert J. Johnston (University of Connecticut), Elena Y. Besedin (ABT Associates, Inc.), Richard Iovanna, Christopher Miller (U.S. Environmental

Protection Agency), Ryan F. Wardwell, and Matthew H. Ranson (ABT Associates, Inc.).

This paper describes a meta-analysis conducted to estimate relationships between nonuse components of willingness to pay for aquatic habitat improvements and a combination of resource, context, and study design attributes. Results reveal strong systematic and intuitive elements influencing WTP, including sensitivity to habitat type, region, study design, and scope in various dimensions.

"Using Risk-Based Analysis and Geographic Information Systems to Calculate Flood Damages in an Urban Watershed in Rhode Island." Kent Hardmeyer and Michael A. Spencer (Natural Resources Conservation Service/USDA).

Risk-based analysis is used to estimate average annual flood damages in an urban watershed in Rhode Island. The method accounts for the uncertainty in the three primary relationships used in computing flood damage: (a) the probability that a given flood will produce a given amount of floodwater, (b) the probability that a given amount of floodwater will reach a certain stage, and (c) the probability that a certain stage of floodwater will produce a given amount of change. GIS is then used to create a map that shows where and how often floods may occur, which can help identify priority areas for planning assistance.

"Was MtBE a Costly Mistake? The Evidence from Maine." Cecilia M. Clavet, Jonathan Rubin, and John M. Peckham (University of Maine).

MtBE, a common gasoline additive, continues to be a concern for groundwater due to its high rate of detection nationwide. We evaluate whether MtBE persists in groundwater over space and time, and whether the cost of remediating gasoline spills changed after Maine opted out of the reformulated gasoline program and reduced MtBE in gasoline from 15% to ~2%. Results indicate that MtBE in groundwater, although below federal and state standards, is still detectable in Windham, Maine, and throughout the state. In addition, the reduction of MtBE in gasoline appears not to have reduced the cost of remediation in Maine.

SESSION: Issues in Farmland Usage. Moderator: Jim Hanson (University of Maryland).

"The Revealed Importance of Federal Farmland Protection Objectives." Cynthia J. Nickerson and Charles H. Barnard (ERS/USDA, Resource Economics Division).

In this research we explore what actual funding allocations reveal about implicit choice criteria used in the Federal Farmland Protection Program. Federal desires to reduce easement management risks are found to be a significant factor explaining funding allocations, as are changes in the percentage of prime farmland and

ease costs. A proxy for farmland's amenity benefits does not help explain funding allocations. The implications of these results for program efficiency are discussed. We also analyze how robust preservation funding allocations are to choice of proxies for decision-making criteria (i.e., benefits and costs), in both a multi-criteria and single-criteria framework.

“Political Economy of Local Land Preservation Taxes in New Jersey.” Brian J. Schilling, Lucas J. Marxen, and Benjamin Onyango (Food Policy Institute, Rutgers University).

New Jersey has long been a leader in protecting farmland. In 1999, the Garden State Preservation Trust was created, establishing a stable funding source for land preservation. To meet matching funds requirements imposed by the state farmland preservation program, many municipalities have adopted dedicated taxes for land preservation in recent years. This paper develops a political economy framework to investigate factors driving adoption of taxes to support local farmland preservation. Predictors of tax adoption include the rate at which agricultural and forested land is being lost, home ownership, median household income, and state planning designation.

“Indivisibility and Divisibility in Land Development Decisions over Time and under Uncertainty.” Amit A. Batabyal (Rochester Institute of Technology).

The quasi-option value (QOV) literature is largely concerned with the analysis of two-period models of land development. We extend this literature by analyzing two scenarios in which the decision to develop land is made in a multi-period and stochastic framework. Specifically, we study the properties of the indivisible development decision when there is a time constraint on when land is to be developed. We then analyze the ways in which the divisible land development decision depends on the extent of a landowner's landholding and on the number of development opportunities awaiting this landowner.

SESSION: *Regional Economics*. Moderator: Timothy Dalton (University of Maine).

“Do Cruise Ship Passengers Return to Bar Harbor for Future Visits?” Colleen Lynch, Todd Gabe, and James McConnon (University of Maine).

This paper examines the factors that affect a cruise ship passenger's likelihood of returning to Bar Harbor. The distance between a passenger's town of residence and Bar Harbor decreases the probability of a return visit, while the number of past visits to Bar Harbor and time spent in port increase this probability.

“Business Growth in Small Maine Cities and Towns.” Todd M. Gabe (University of Maine).

This paper examines the effects of local industry agglomeration on establishment growth in a large sample

of Maine businesses. Our results indicate that local industry agglomeration encourages employment growth in towns with 2,500 to 9,999 residents, but that agglomeration does not affect growth in cities with 10,000 or more residents.

“The Economic Impact and Importance of Micro-Businesses to the New England Economy.” Sibel Atasoy, James McConnon, and Todd Gabe (University of Maine).

This paper explores the impact and importance of micro-businesses to the New England economy in terms of employment, output, and value added, and examines the important demographic, spatial, and policy variables that influence the incidence and importance of micro-businesses across New England. The importance of micro-businesses across sectors is also examined.

SESSION: *Issues in Water and Aquaculture*. Moderator: Jim Murphy (University of Massachusetts).

“Threshold Effects and Water Quality Trading: Ecological Improvement in an Optimal Control Framework.” Jerald J. Fletcher and Xiaobing Zhao (West Virginia University).

Current water quality management approaches neglect threshold effects. This paper explores implications of threshold effects for water quality management in the context of water quality trading programs. A spatial-temporal optimal control model is used to determine socially optimal allocations of treatment investment in acid mine drainage impaired streams in West Virginia. Results of the analysis show that the effect of trading varies depending on the antecedent ecological conditions. Additive threshold effects favor upstream trading but do not preclude other possibilities. Initial water quality conditions relative to critical ecological values are significant determinants of socially optimal trades.

“Contingent Behavior of Charter Fishing Participants on the Chesapeake Bay: Welfare Estimates Associated with Water Quality Improvements.” P. Joan Poor and Matthew Breece (St. Mary's College of Maryland).

Water quality in the Chesapeake Bay has deteriorated over recent years. Historically, fishing has contributed to the region's local economy in terms of commercial and recreational harvests. We use a contingent behavior model to estimate welfare measures for charter fishing participants regarding a hypothetical improvement in water quality. Using a truncated Poisson count model, we find that charter fishers not only contribute to the local market economy, they also place positive non-market value on preserving the Bay's water quality. Estimated per trip individual consumer surplus is \$242, and the average individual consumer surplus value for an improvement in water quality is \$92.

SESSION: *Resources and Environment III.*
Moderator: Kevin Boyle (University of Maine).

“Exploring the Role of Public Awareness in Managing Hemlock Woolly Adelgid.” Brenna Byrne, Kathleen P. Bell (University of Maine), and Thomas P. Holmes (U.S. Forest Service, Southern Research Station).

This paper explores the role of public awareness in managing the invasive forest insect, hemlock woolly adelgid (HWA). The single greatest threat to eastern hemlock resources in the United States, HWA is spreading rapidly across residential and forested landscapes. As forest managers strive to minimize the current and potential future impacts, understanding the role of public awareness in private household control decisions may help in assessing risk and prioritizing control efforts. Economic analysis of household-level survey data reveals the relationships between household characteristics and public awareness of HWA and the extent to which public awareness affects household control decisions.

“Agricultural and Residential Nuisances: Evidence on Bilateral Cost Shifting.” Joshua M. Duke and Sean E. O’Neill (University of Delaware).

Agricultural-residential conflict drivers are examined from the perspectives of producer and resident cost receivers. Survey data reveal residents are most frequently concerned with chemical uses on neighboring farms. Producers most frequently reported trespass and vandalism. Probit estimates explain costs received by both types of parties. Producer-received harm increases with farm acres and lawsuit risk. Resident-received harm increases with farm proximity and household members, but decreases when residents prefer living in agricultural areas. Interestingly, producers are more likely to report harm when they have good relations with neighboring residents, while residents are less likely to report harm under the same circumstances.

SESSION: *Issues in Rural Economics.* Moderator: Jared Carlberg (University of Manitoba).

“The Integration of Rurality, Space, Migration, and Income in the U.S.” Derek Brewin (University of Manitoba), Martin Shields, and Stephan Goetz (Pennsylvania State University).

When examining economic growth in rural America, it is theoretically important to consider the changes of various factors affecting workers. Within a simultaneous framework, this paper examines the interaction between changes in: the labor pool (through a switching migration function), income levels, human capital, and employment rates. Looking at county-level data for the United States, this paper finds clear interactions between human capital and migration, as well as evidence for conditional convergence in incomes and human capital. Rich counties saw slower income growth, and those with high starting education levels saw slower growth in human capital.

SESSION: *Research and Development.* Moderator: Dan Lass (University of Massachusetts).

“Social Benefits and Economic Impacts of Cooperative Research to New England Fishing Communities.” Joshua Wiersma, Douglas E. Morris, and Robert A. Robertson (University of New Hampshire).

Commercial fishermen participating in cooperative research receive both economic and non-economic benefits. The results of a detailed questionnaire showed that these non-economic benefits could be quantified and qualified relative to the economic benefits. The economic impacts of cooperative research were measured using the economic input-output modeling software IMPLAN. The \$7,200,000 invested in cooperative research generated \$12,674,735 total economic benefits and \$16,131,481 in non-economic benefits.

SESSION: *Issues in Conservation.* Moderator: Christopher Anderson (University of Rhode Island).

“A Multilevel Model of Open Space Conservation Using Satellite Imagery.” Richard Iovanna (U.S. Environmental Protection Agency) and Colin Vance (German Aerospace Center).

This paper advances an empirical model assessing how, over both time and space, land use on Mexico’s agricultural frontier responds to changing economic and ecological conditions. Further, it explores the implications for parameter estimates and their standard errors of ignoring the hierarchical structure of the data. Results suggest that multi-level models both alleviate issues associated with the error structures inherent to spatial data and are well-suited for policy simulation.

“Convergent Validity of Conjoint Estimates of Values for Farmland Conservation Easements.” Semra Ozdemir, Kevin J. Boyle, and Anna A. Alberini (University of Maine).

The application of conjoint analysis to the estimation of Hicksian surplus is relatively recent. There are a number of issues and concerns about the design of these surveys that warrant investigation in order to assess the validity and credibility of welfare estimates. Three of these issues are investigated in this paper: (a) the placement of the monetary stimulus in the sequence of attributes, (b) the number of alternatives respondents are asked to consider, and (c) the inclusion, versus exclusion, of a status quo alternative. Finally, a review of published conjoint studies indicates that some studies have included a status quo alternative, while others have not. We investigate how the exclusion/inclusion of a status quo alternative affected the coefficient estimates. The application is a study of Maine residents’ preferences for a farmland conservation-easement program.

SESSION: *Economics of Meat Demand.* Moderator: Jean-Philippe Gervais (Université Laval).

“Mercury Warnings and the Consumption of Fish.” Jay P. Shimshack (Tufts University), Michael B. Ward (University of California-Santa Barbara), and Timothy K. M. Beatty (University of British Columbia).

This paper explores whether people reduced their fish consumption in response to advisories warning them about the dangers of methyl-mercury. Results indicate that, in aggregate, they did not. More detailed analyses find no detected response among household types specifically targeted by the advisories. Even particularly health conscious consumers failed to respond to the warnings. Our results suggest that only highly educated households specifically targeted by advisory language reduced fish consumption. These results support an information dissemination problem, and cost-benefit implications follow. We conclude by comparing the welfare implications of the current policy to natural alternatives.

SESSION: *Issues in Trade.* Moderator: Nathalie Lavoie (University of Massachusetts).

“International Trade and Biological Invasions: A Queuing Theoretic Analysis of the Prevention Problem.” Amit A. Batabyal (Rochester Institute of Technology).

We apply the methods of queuing theory to analyze the problem of preventing a biological invasion from a long-run perspective. First, we characterize two simple regulatory regimes as two different kinds of queues. Second, we show how to pose a publicly owned port manager’s decision problem as an optimization problem using queuing theoretic techniques. Third, we compare and contrast the optimality conditions emanating from our analysis of the M/M/I/U and the M/M/I/I inspection regimes. The paper concludes with a discussion of possible extensions to our basic models.

“An Empirical Analysis of the Determinants of Social Issues in International Trade Negotiations.” Edmund M. Tavernier and Calum Turvey (Rutgers University).

This paper uses survey data to examine the determinants of social issues in international trade negotiations. Logistic regression results indicate a decreased likelihood for the inclusion of social issues in international trade negotiations across farm sizes. In particular, the results suggest that agricultural producers with annual gross sales including government payments between \$500,000 and \$999,000 are 40% less likely to want labor laws, environmental impacts, and food safety standards to be included as part of international trade negotiations.

SESSION: *Economic Analysis of Manure Issues I.* Moderator: Kathy Baylis (University of British Columbia).

“The Potential for Creating Markets for Manure: Basin-wide Management in the Chesapeake Bay Region.” Doug Parker (University of Maryland).

Using data on county and watershed nutrient imbalances, this paper assesses the potential for manure transport and marketing. Market potential depends upon manure type, location of animal and crop producers, crop nutrient needs, restrictions on nutrient application through regulatory nutrient management requirements, and alternative uses for animal manures. Market structure is also examined. High individual transactions costs, along with potentially modest individual gains, imply that creating a market for manure may be difficult. High search costs, along with constraints in the timing of manure supplies and crop needs, suggest that manure brokering services may dominate in a manure market.

“Implications of Riparian Buffer Provisions on the Cost of Land Applying Manure in the Chesapeake Bay Watershed.” Shawn Bucholtz, Marcel Aillery, and Noel Gollehon (Economic Research Service/USDA).

Improved management of land-applied manure is an important element of recent federal regulations and guidelines to protect water quality. Restrictions on applied manure per acre will increase costs of manure transport where land for manure spreading is limited. This paper examines the potential increase in manure management costs with expansion of riparian buffers in the Chesapeake Bay watershed. Findings indicate that while additional costs are small at a basin scale—less than 1.5%—local impacts may be more significant. Full assessment of the costs and distributional impacts of federal water-quality initiatives should consider potential interactions across alternative policy instruments.

SESSION: *Land Economics.* Moderator: Kelly Giraud (University of New Hampshire).

“Land Use Determination in a Growing West Virginia County: The Effects of Suburban Encroachment.” Julie B. Svetlik, Michael P. Strager, and Timothy T. Phipps (West Virginia University).

Counties in the Eastern Panhandle region of West Virginia are currently experiencing high rates of growth and conversion of agricultural land to residential development. In this paper, the authors use a two-step approach to identify undeveloped land that is under threat of conversion to residential use in Hampshire County, WV. A spatial hedonic model of undeveloped land prices is estimated and used in a land conversion model to predict the land parcels which are most likely to be developed. For both of the above models, spatial

lag and spatial error models are investigated, as well as alternative structures for the spatial weights matrices.

SESSION: *Product Quality and Variety*. Moderator: Julie Caswell (University of Massachusetts).

“When Is Fruit Bundling Fruitless? Sorting, Bundling, and Disposal when Quality Information Is Asymmetric.” Peyton Ferrier and Russell Lamb (North Carolina State University).

Consumers often sort goods that vary in quality but are sold at one price. By sorting, consumers lower the expected quality of remaining goods while creating no new benefits. To discourage sorting, sellers bundle goods rather than offering them for individual sale. Sellers allow sorting, however, to control the distribution of qualities across consumers, a process introduced as quality discrimination. When marginal consumers are more likely to sort and receive higher quality goods, sellers can raise the price charged to all consumers. Alternatively, sorting is also allowed when sellers discard the worst goods after sorting occurs to increase expected quality.

“Variety Seeking and Habit Formation in Consumer Purchases of Salted Snacks.” Eliza M. Mojduszka and Kristen Fantuzzi (Rutgers University).

In recent years, awareness of the health impacts of diet has increased, and the implementation of the Nutrition Labeling and Education Act (NLEA) has made it easier for consumers to obtain information. In addition, consumers claim that nutrition is an important factor in their purchasing decisions (stated preferences). However, sales of nutritionally improved versions of foods are low and often declining (revealed preferences). In this paper, we develop new methods that allow for unified analyses of the revealed and stated preference data, estimation of positive (habit persistence) or negative (variety seeking) state-dependence effects, and heterogeneity in the state-dependence of the stated and revealed preferences.

“Market Effects of Product Variety in the Frozen Meals Category.” Eliza M. Mojduszka, Rachel M. Everett, and Kristen Fantuzzi (Rutgers University).

Nutritional product differentiation became important especially after the implementation of the Nutrition Labeling and Education Act (NLEA) in 1994. However, to date, there have been no empirical studies of the welfare effects of food product differentiation and innovation based on nutrition. In this paper, we estimate a random coefficient, discrete choice demand model and use the estimates to calculate the effects of entry and exit on welfare, market power, and prices in the frozen meals category. We specify consumer preferences as functions of product and consumer characteristics, and model explicitly nutritional characteristics of food products. We find that eliminating a nutritionally differenti-

ated frozen meal product or a brand leads to moderate price changes and to substantial welfare losses.

SESSION: *Climate Change*. Moderator: Joshua Duke (University of Delaware).

“Designing Wetland Conservation Under Climate Change.” Jiayi Li, Elizabeth Marshall, James Shortle, and Carl Hershner (Pennsylvania State University).

A methodology for evaluating public wetlands conservation investments that considers climate change is developed and applied to Virginia’s Elizabeth River watershed. A revised cellular automata (CA) model is applied to construct the development vulnerability index and to project future land use based on three land development scenarios: compact, dispersed, and nodal scenario. Discrete stochastic sequential programming (DSSP) is used to model a parcel-based discrete-time decision process. Because of the existence of uncertainty and irreversible decisions, value of information (VOI) is calculated. Results show that compact scenario is the most favorable of the three scenarios in terms of minimizing expected costs of wetland conservation.

SESSION: *Economic Analysis of Manure Issues II*. Moderator: Doug Morris (University of New Hampshire).

“Profitability of On-Farm Composted Dairy Manure.” James D. Leiby, Justin K. Jamison, and Anne M. Grant (University of Maine).

Profitability for both bulk and bagged composted cow manure is examined. Only sawdust, urea, and cow manure are considered as feed stocks. If sawdust is purchased at current market prices, it may comprise 80% of total costs, and would make bulk composting unprofitable for all farm sizes. If sawdust currently is used as bedding or freely available, the bulk operation may be profitable. Bagged compost, on the other hand, appears to provide profitable opportunities under most scenarios. Economies-of-size for bagging operations offer opportunities for cooperatives.

“Measuring the Impacts of Urbanization on the Competitiveness and Production of Excess Nutrients of Dairy Farms in the Midwest and Northeast.” Lee Christensen, Richard Nehring, Eric O’Donoghue, and Carmen Sandretto (Economic Research Service/USDA).

Dairy farms located in urban-influenced areas face additional competitive pressures. Trends in excess nitrogen and phosphorus from 1996 through 2002 were tracked, and measures of economic performance for Midwest and Northeast dairy farms were examined. First, a link was established between costs of production and rural versus urban-influenced location. Second, the relationship was investigated between the expansion of

Animal Feeding Operations by level of urban influence and excess nutrients from commercial fertilizer and manure sources. Third, structural change was linked to production of livestock manure. Fourth, technical efficiency measures were used to compare the relative performance of dairy producers in rural and urban-influenced areas.

SESSION: *Issues in Marketing*. Moderator: Bill Kerr (University of Saskatchewan).

“The Market Value of Counter-Cyclical Payments: Corn in the Northeast.” David Skully and Gerald Plato (Economic Research Service/USDA).

The counter-cyclical payments (CCP) of the 2002 Farm Act are put-option spreads on U.S. marketing-year average prices. This paper estimates the value of these spreads. It also calculates the hedge efficiency of corn CCPs; this value is low in the Northeast because much corn acreage is cut for silage.

“Dynamic Relationships Among U.S. Soybean-Based Markets: Applying a Bernanke Structural Time-Series Model with Directed Acyclic Graphs” Ronald A. Babula (U.S. International Trade Commission), David A. Bessler (Texas A&M University), Agapi Somwaru (Economic Research Service/USDA), and John G. Reeder (U.S. International Trade Commission).

Recent advances in machine learning are used to provide a structural ordering on contemporaneous innovations on a vector autoregression model fit to monthly data on three U.S. soy-based markets: soybeans, soy meal, and soy oil. Analyses of the impulse response functions and forecast error variance decompositions provide estimates of market elasticity parameters that drive these markets, and policy-relevant information on how these markets perform and interact. These dynamic relationships are used to characterize effects that may arise on the three U.S. soy-based markets from the recent discovery of bovine spongiform encephalopathy (BSE) or “mad cow” disease within the United States.

“Asymmetric Price Relationships in the U.S. Beef, Pork, and Broiler Industries.” Ryan T. Sirolli, John C. Bernard, and Titus Awokuse (University of Delaware).

This paper analyzed potential price asymmetries among farm, wholesale, and retail levels of the U.S. beef, pork, and broiler industries. Lag length, direction of causality, and asymmetric price relationships were empirically determined. Results were compared across industries to determine if there were differences in price transmission between increasingly integrated markets.

SESSION: *Demand Analysis, Health and Nutrition*. Moderator: John A. L. Cranfield (University of Guelph).

“Race, Health Awareness, and Food Consumption: An Analysis of Food-Away-from-Home Behavior by Minorities.” Calvert Pert and Sanjib Bhuyan (Rutgers University).

Food consumption habits and their impact on health is an ongoing concern, particularly as it is associated with food-away-from-home (FAFH) behavior. Noting a lack of research focusing on minorities, this study seeks to develop an understanding of African-Americans’ FAFH behavior in terms of their food and outlet choices, and the impact of health awareness and other factors on such choices.

SESSION: *Forestry Economics*. Moderator: Jim Shortle (Pennsylvania State University).

“Integrating Spatial Analysis in Evaluating the Benefits and Costs of Possible Street Trees in Morgantown, West Virginia.” Vishakha Maskey and Timothy T. Phipps (West Virginia University).

Street trees, despite their trans-boundary environmental and aesthetic benefits, require considerable costs for planting and maintenance. This study uses a GIS spatial analysis and a cash-flow analysis to facilitate street tree planting decisions for Morgantown, West Virginia. The multi-criteria analysis derives the site suitability for trees in the Morgantown streets, followed by the cash-flow analysis of future planting in one of the moderately suitable streets. The net benefits were net present value of \$20,491.32, internal rate of return of 12%, and benefit-cost ratio of 2.25:1. Therefore, an urban forest policy to increase street planting along suitable Morgantown streets appears to be economically feasible.

SESSION: *Agribusiness, Policy Analysis, and Supply Chains*. Moderator: Maury Bredahl (University of Guelph).

“Participation of Agribusiness Firms in the Political Process: Seeking Rent and Quid Pro Quo!” Sanjib Bhuyan and Alberto Rodriguez (Rutgers University).

Agribusiness firms participate in the political process through campaign contributions, lobbying, and similar rent-seeking activities. Using a sample of 56 firms in the agribusiness sector, this study examines political participation of agribusiness firms in the United States, and identifies factors that influence such participation.

“The Economics of Implementing Traceability in Beef Supply Chains: Trends in Major Producing and Trading Countries.” Diogo Souza-Monteiro and Julie A. Caswell (University of Massachusetts).

Countries have implemented traceability systems, especially after discovery of BSE in cattle, in order to quickly identify hazard sources. We compare the economic impacts of mandatory and voluntary systems in the European Union, Japan, Australia, Brazil, Argentina,

Canada, and the United States in terms of the systems' breadth, depth, and precision.

SESSION: *Exchange Rates and Trade.* Moderator: Emilio Pagoulatos (University of Connecticut).

“Pricing-to-Market Using Disaggregated Data: Evidence from Canadian Wheat Exports.” Nathalie Lavoie and Sirisha Naidu (University of Massachusetts).

The pricing-to-market (PTM) approach has been used widely in the recent empirical trade literature to test for price discrimination across international markets. Most PTM studies use export unit values as price. Unit values often aggregate products employed for very different uses. This study examines the extent to which PTM results are affected by the aggregation of differentiated products. Using two levels of aggregation of unit values obtained from a public source and two levels of aggregation of a unique disaggregated data set of Canadian wheat exports, we indeed find that aggregation leads to different conclusions.

SESSION: *Mad Cow Disease: Issues and Implications.* Moderator: Mike Trant (Statistics Canada).

“Sanity Prevailing in Mad Cow Case.” Brian J. Schilling, William K. Hallman, and Calum G. Turvey (Rutgers University).

In December 2003, the first U.S. case of mad cow disease was discovered. A national survey assessed impacts of this discovery on consumer confidence in the beef supply and beef consumption. Expectations of future cases of the disease were also examined. Among those aware of the case, about 1 in 5 reported lower confidence in the beef supply. Similarly, 15% of Americans reduced their beef consumption due to the mad cow case, while another 5% *stopped* eating beef. Most Americans, despite retaining confidence in the safety of domestic beef supplies, expect further mad cow cases to be found.

SESSION: *Efficiency and Its Measurement.* Moderator: John A. L. Cranfield (University of Guelph).

“Technical Efficiency of Vietnamese Rice Farms Under Economic Reforms.” Anh T. Tu, Wallace E.

Huffman, and Adam Z. Chen (Iowa State University).

This study examines econometrically the stochastic production frontier and technical efficiency of rice farms in Vietnam using data from 1992/93 and 1997/98. The results support a translog production frontier. The marginal products of land, labor, and fertilizer are positive and the latter two compare favorably with their opportunity costs. Also, the elasticity of output with respect to the land input is largest followed by the fertilizer-manure output elasticity. The mean technical efficiency is 76%, which is quite high but also provides some opportunity for raising output without additional resource. This paper suggests some ways to improve the efficiency of paddy cultivation in Vietnam.

SESSION: *Organic and Functional Foods.* Moderator: Jill Hobbs (University of Saskatchewan).

“Organic Food Marketing: The Effect of Message Framing, Trust, and Prior Knowledge.” Katie Gifford and John C. Bernard (University of Delaware).

A consumer survey and Tobit analysis were used to determine the effect of message framing and other factors on self-reported organic food purchase likelihood. Negative framing, which emphasizes the possible negative consequences of conventional agricultural techniques, led to a “boomerang effect” that resulted in lowered purchase likelihood of organic food by consumers with high trust in food safety. Positive framing, which focuses instead on possible benefits of consuming organic food, has more influence on the decision to purchase organic. Other significant factors included perceived risk from pesticides and genetically modified foods, trust in food safety, and knowledge about organic methods.

“Consumer Willingness to Pay for rBST-Free and Organic Milk: A Multinomial Logit Approach Using Scanner Data.” Daria J. Bernard and Alan D. Mathios (Cornell University).

Supermarket scanner data were used to measure consumer willingness to pay for rBST-free and organic milk. The partial log odds ratio was estimated with units sold modeled as a function of milk attributes and store average shopper club card demographics. Willingness to pay was then derived from these results.