Abstracts of Selected Papers

The Food Industry
Moderator: Sanjib Bhuyan

The Impacts of Market Concentration in the Food Industries. Carmen Liron-Espana, Azzendine Azzam and Rigoberto A. Lopez (University of Connecticut)
This study assesses the impacts of changes in concentration on the performance of food industries by computing the price and cost impacts of concentration throughout the U.S. food manufacturing industries. Between 1972 and 1992, 36 of 44 U.S. food industries at the 4-digit SIC level have experienced rises in market concentration. Most studies on food industries only consider price effects and conclude that rises in concentration lead to higher prices and thus a social welfare loss. This study shows that rises in concentration can lead to welfare improvement in industries in which economies of size are important.

An Analysis of Technical Progress and Efficiency in U.S. Food Industries. Ferdaus Hossain and Sanjib Bhuyan
Using Data Envelope Analysis, total factor productivity (TFP) is estimated along with technical change and efficiency components for 48 U.S. food manufacturing industries for 1960–94 at the 4-digit SIC level. Over the study period, labor use declined and output increase came from increased use of capital, energy and materials. Results show that across all industries and over the entire period, annual productivity growth rate was 1.1%, which was lower than those observed for U.S. agricultural and manufacturing sectors. Efficiency gains and losses were mutually offsetting and efficiency change had little on overall TFP growth, and technological progress was the main contributor to productivity improvement.

Food Processing in New Hampshire: Who, Where, How Big, and So What? Alberto B. Manalo, Douglas E. Morris and Michael S. Garrepy (The University of New Hampshire).
Food processing in New Hampshire has seen many new entrants lately, often in specialized niche markets. Since many are small startups, they are invisible in Census statistics. Our survey found the median sales to be $10,000 with 83% using direct marketing, 12% having a business plan, and 16% maintaining a web site. Nearly half of the firms deal with maple syrup and products. A logit model was used to estimate the probability of sales exceeding $10,000. Advertising and promotion expenses, age of operator, and employment status of owner all had significant coefficients at the 0.10 level or better.

Consumer Preferences for Ecolabeled Seafood in the U.S. and Norway: A Comparison. Holger Donath, Cathy R. Wessells, Robert J. Johnston and Frank Asche
Ecolabeling, or certification of products with regard to specific environmental standards, provides otherwise unobservable information about a product or production method. This paper examines preferences for ecolabeled seafood in the U.S. and Norway, based on a contingent choice survey of seafood consumers. Model results provide insight into factors that may contribute to successful implementation of ecolabels. Results indicate that consumers in both countries prefer ecolabeled seafood. Preferences are found to differ across countries, species and demographics. Consumer choices are also influenced by price, trust in the certification agency, and tendencies toward environmental purchasing behavior.

World Agricultural Trade
Moderator: Dale Colyer

Price Convergence in World Commodity Markets. James O. Bukenya, and Walter C. Labys (West Virginia University).
This paper examines the degree to which commodity prices have converged on world commodity markets over the last several decades using six commodities: coffee, cotton, wheat, lead, copper and tin; and for the following origins: Germany, UK, U.S., Canada, Uganda, Sudan, Egypt, Brazil, Colombia, Argentina, Australia and France. Our results indicate that correlation coefficients themselves are not capable of detecting the convergence that has taken place and we propose an alternative measure. Our methodology also includes regres-

sion, cointegration and impulse function analysis. The empirical results however, do not support the convergence hypothesis, but rather a pattern of fluctuating coherence. Several factors that can help to explain this behavior include commodity market conditions and international business cycle fluctuations.

Econometric Analysis of U.S. Turkey Exports. Dale Colyer (West Virginia University).
U.S. exports of turkey meat during 1970–95 are analyzed using a monthly structural time series econometric model that has trend and seasonal components. The level

for the trend component is significant and stochastic, with a growth rate of 7.28% at the end of the period. The seasonal component is highly significant but fixed, i.e., did not change during the study period. The real whole-sale turkey price lagged one month, the real poultry trade weighted exchange rate, and turkey production lagged three months were significant explanatory variables. The model performed well in forecasting monthly production during the 1996–98 period.

Food Access and Differential Demand for Food in Brazil. M.S. Deepak, Shahla Shapouri (ERS, USDA), and James L. Seale, Jr. (University of Florida).
In the context of Brazil's increasing openness to world trade, this paper examines differences in food demand across regions and income groups in urban Brazil. A demand system for seven food groups is estimated separately for 11 metropolitan regions and then both nationally and for three income groups. Average regional income elasticities approximate national elasticities reasonably well, Engel's law is not in evidence across regions, and poorer regions are not necessarily more price-responsive in staple markets than richer regions. All goods are necessities in all regions and for all income

groups, and income elasticities are lowest for staples and highest for fruits and vegetables and for food away from home. Engel's law does hold across income groups, and price elasticities by income group do not clearly support the case for price subsidies.

The United States as a Dominant Producer in the Corn and Soybean Markets: Policy Implications. Christine Bolling, Agapi Somwaru, and Jamie Kruse (USDA, ERS).
Early studies by Carter (1994), McCalla and others (1988) suggested that the international grain market should be viewed as an oligopoly of exporting nations. In the corn and soybean markets, the United States plays a dominant role. Thailand and Argentina were smaller competitors in the international corn market, and Argentina and Brazil played a similar role in the soybean market. Through the 1990's, these countries emerged with a growing market share. These outcomes could be demonstrated by the industrial organization model of a dominant firm in an oligopoly. We also apply the Gaskins model to demonstrate how erosion of the market share is affected by different price policies and product demand.

Agricultural Production and Productivity
Moderator: Joshua M. Duke

Farm Level Effects of Generically Engineered Soybeans in Delaware. John C. Bernard and Chumbo Fan (University of Delaware).
Soybeans genetically engineered (GE) to resist the Roundup brand herbicide first became available to farmers in 1996. This study reports the results of a survey of Delaware farmers on the impacts of these soybeans. Adoption has followed the traditional pattern of beginning gradually, increasing, and then leveling off. Weed control costs for GE soybeans were significantly lower than for other soybeans while yields were significantly higher. The number of farmers segregating their soybeans was increasing, although they were uncertain of the costs involved. Farmers not planting GE soybeans were most concerned with seed costs, consumer acceptance, and food safety.

Analysis of Decision-Making for Sheep Producers in West Virginia: Implications for the U.S. Industry. Doolarie Singh, Dennis Smith, Marlon Knights and Paul E. Lewis (West Virginia University).
Factors influencing management decisions and risk attitudes are evaluated using data from a survey of 420 sheep producers in West Virginia. Specific management decisions and producers' risk attitudes were modeled as a function of industry factors and producers' socioeconomic and farm characteristics. Subjective factors and profitability motives were found to affect management decisions whereas education levels influenced producers risk attitudes. The survey result suggest that efforts to

halt the industry decline must focus on increasing producers' profitability in the short run and alleviating producers' perceived sources of risk in the long run. These results have implications for research, extension and policy formulation.

Production Choices under Environmental Pressure: An Application to U.S. Hog Farming. Scott A. Malcolm, Joshua M. Duke and Sandeep Gulati (University of Delaware).
The majority of hog production is carried out on large farms far from residential areas. However, there remain thousands of smaller farms located in areas that are becoming increasingly residential. This proximity has the potential to create conflicts between farmers and their neighbors. Farmers reducing the environmental offense to neighbors can minimize the threat of nuisance suits. Improvement in the environmental quality of a farm can be accomplished by changing operating practices or by investing in technologies that result in cleaner operations. This paper addresses the underlying economic question: 'How will a profit maximizing farmer respond to environmental pressures?'

An Econometric Assessment of the Productivity Consequences of Low-Input Farming. Yir-Hueih Luh (National Tsing Hua University).
This study intends to examine the possible impacts of the sustainable farming system on the growth of productiv-

ity. Specifically, emphasis is placed upon disentangling the effect of overusing chemicals and that of the market determinants. The use of chemical inputs consistent with expected utility maximization is used to establish an overusing index. The overusing index is later incorpo-

rated into the dual cost function to examine the productivity consequences of overusing chemical. Simulation analyses of various policy scenarios suggest the positive impact of low-input farming on the growth of total factor productivity of the rice industry.

Environmental Issues and Management
Moderator: C.S. Kim

The Economics of Weed Management for Lima Bean Production Enterprises. Symon G. Muya, Conrado M. Gempesaw II, Sujatha Sankula and Mark J. VanGessel (University of Delaware).
This study examines the economics of weed management for lima bean enterprises in Delaware. An econometric modeling technique is specified to meet the objectives of the model using three stage least squares regression method. For the whole farm analysis, the Mississippi State Budget Generator (MSBG) software program was utilized to quantify the costs and returns of a lima bean farm. Results indicate that marketable yield was improved by 28% in 15-inch rows despite the herbicide rates used compared with 30-inch rows.

Estimating Wildlife Inflicted Crop Damage Using Self-Selected, Truncated Data. Jonathan Yoder (Oklahoma State University).
Wildlife imposes costs on agricultural landowners in the form of damage to crops, livestock, and other property. Farmer surveys are often performed to generate estimates of aggregate damage, but this method is costly. An alternative is to use damage data generated as a byproduct of state wildlife agency compensation programs, but the data suffer from selectivity bias because they represent only farmers who submit claims. This paper develops an econometric model to account for selectivity bias and applies it to field-level data from Wisconsin. The model allows consistent estimation of aggregate damage based on these relatively inexpensive data.

An Econometric Model of IPM: The Case of Strawberry Producers. Sharon Jans and Jorge Fernando-Cornejo (USDA, ERS).
The impact of adopting integrated pest management (IPM) techniques is examined for strawberry producers in nine states accounting for most of the U.S. production. The method accounts for self-selectivity, simultaneity, and the yield and pesticide demand equations are theoretically consistent with a restricted profit function. Biological pest management and pesticide-efficiency techniques have increasing effects on yields and farm profits, while cultural techniques tend to reduce them. In addition, biological techniques tend to reduce the use of chemical insecticides, but this effect is relatively small.

Climate Change, Agriculture, and Water Quality in the Chesapeake Bay Region. David Abler, James Shortle and Jeffrey Carmichael (The Pennsylvania State University).
This paper analyzes the potential impacts of climate change on agriculture and water quality in the Chesapeake Bay Region, taking into account economic responses by farmers to climate change. We construct a simulation model of corn production and nitrogen loadings in six watersheds within the Bay region. Our results indicate that economic responses by farmers to climate change do matter, in the sense that they have major impacts on the directions and magnitudes of environmental externalities due to climate change. Our results also indicate that environmental impacts are highly dependent on the climate and future baseline scenarios used.

Quantitative Methods
Moderator: Darren Frechette

A Hotelling-Faustmann Explanation of the Structure of Christmas Tree Prices. Tomislav Vukina, Christiana E. Hilmer (North Carolina State University), and Dean Leuck (Montana State University).
Rigorous empirical testing of the basic Hotelling economic model of optimal natural resource pricing has proven to be difficult. The source of the difficulty has been the unavailability of micro-level data on either

prices or extraction-harvest rates for in situ resource stocks. In this paper we examine the relationship between a tree price and a tree age (height) using a Hotelling-Faustmann type model of optimal plantation management, which accounts for the possibility of replanting and biological growth. To test the model's predictions, we use data on Christmas tree prices in North Carolina collected in December 1997. Our estimates

show that, in general, the differences in the prices of adjacent age cohorts reflect a competitive equilibrium in the capital market thus confirming the Hotelling-Faustmann paradigm.

The Economic Threshold with a Stochastic Pest Population: A Real Options Approach. Jean-Daniel Saphores (Université Laval).

Using real options, this paper formulates an optimal stopping model for applying pest control measures when the density of a pest population varies randomly. A delay between successive pesticide applications is introduced to analyze the farmer's expected marginal cost of reentry. This model is applied to the control of a foliar pest of apples via a pesticide, and solved numerically. A sensitivity analysis shows that the pest density that should trigger pesticide use can vary significantly with the pest density volatility. Incorporating pest randomness into

simple decision rules may thus help better manage the chemicals applied to soils and crops.

Testing Parametric Restrictions in Systems under Non-Stationarity Using Bootstrapping Techniques. J. Stephen Clark and K. Gary Grant (Nova Scotia Agricultural College).

This study tests symmetry and homogeneity restrictions on a system of factor demand equations for Canadian agriculture under the assumption that the variables are integrated processes and the demands represent cointegrating relationships. It is well known that test statistics derived from such systems are not distributed normally even asymptotically and will severely understate the true critical values of test statistics. Bootstrapping techniques are employed to generate the true distribution of the F-statistic. The calculated F-statistic is not rejected using the proper critical values but would have been strongly rejected using standard critical values.

Farmland Preservation
Moderator: Dennis Wichelns

Understanding Public Demand for Farmland Preservation: Theory and Empirical Evidence from Connecticut. Jeremy Foltz, Bruce A. Larson, and Marilyn Altobello (University of Connecticut).

This work models the demand for farm land preservation recognizing how different types of rural lands can provide utility to non-landowners. It then provides evidence on public demand for farmland preservation programs using econometric estimates from a recent state-wide survey of Connecticut residents. Unlike previous studies, these data are collected at the individual level for a hypothetical referendum based on the state's proposed funding of its farmland preservation program. The results demonstrate the importance of distinguishing between different types of demand for farmland preservation.

tion, the demand for small rural estates may generate consumptive use values that increase the cost to farmers of purchasing or renting some of the parcels on which the development rights have been sold. Furthermore, the conversion of PDR parcels to non-farm estates may reduce the flow of public goods that have motivated citizens to approve and pay for the PDR programs. We examine changes in land use after the sale of development rights on farms in Rhode Island to determine if commercial farming operations have been replaced with non-farm estates. Results suggest that while changes have occurred in the crops and livestock produced on Rhode Island farms, over time, most of the farms on which development rights were sold during 1985 through 1999 remain viable commercial farms in the year 2000.

Examining Changes in Land Use after the Sale of Development Rights on Farms in Rhode Island. Dennis Wichelns and Megumi Nakao (University of Rhode Island).

Purchasable development rights (PDR) programs have been used for many years to preserve farmland and maintain agricultural activities in many northeastern states. Those programs are generally considered to provide permanent protection of farmland from development pressure because development rights are separated from participating farms in perpetuity. However, the reduction in market value of farms participating in PDR programs may reduce the ability of farmers to obtain loans for annual operating expenses and to make long-term investments in their land and equipment. In addi-

Farmer Participation in Agricultural-District and PDR Programs in Delaware. Joshua M. Duke, Xiaoxuan Chen, and John Mackenzie (University of Delaware).

To what extent are farmers willing to participate in farmland retention programs? An empirical analysis of programs in New Castle County, Delaware, shows that differential tax assessment is the most popular. The data suggest that those farmers choosing to participate in agricultural districting are from smaller farms and wealthier areas. However, those farmers in agricultural districts who then sell their development rights are from the largest of the agricultural district farms. Participation is also more likely for farmers in Census-block groups with older populations.

Environmental Issues
Moderator: P. Joan Poor

Toward an Optimal Pollution Tax: The Implications of Nonseparability with Preexisting Tax Distortions. LeRoy Hansen (USDA, ERS).
The model developed here provides a more comprehensive assessment of the secondary impacts of environmental taxes. Thus the model can provide a more comprehensive assessment of more complex scenarios. In applying the model, the commonly-applied assumption that utility is separable between environmental amenities and market commodities is relaxed. Based on central estimates of relevant economic parameters, results show that the optimal environmental tax is over 17% higher than without separability, or 74% of marginal environmental damages.

An Hedonic Analysis of the Effects of Lake Water Clarity on New Hampshire Lakefront Properties. Julie P. Gibbs, John M. Halstead (University of New Hampshire), and Kevin P. Boyle (University of Maine).
Policy makers often face the problem of evaluating water quality affects a region's economic well-being. Using water clarity as a proxy for eutrophication levels (as lakes becomes inundated with nutrients, water clarity decreases markedly), analysis was performed on sales data collected over a six year period. Results indicated that water clarity had a significant effect on prices paid for residential properties. Effects of a one meter change in clarity on property value were also estimated. Thus, policy makers have access to information which provides part of the cost of water quality degradation as measured by changes in water clarity.

The Value of Open Space Provided by the Great Meadows National Wildlife Refuge: A Hedonic Property Value. Colin Clark, P. Joan Poor and Kevin J. Boyle (University of Maine).
National Wildlife Refuges provide value to the public in terms of open-space, as well as habitat for various types of fauna and flora. Yet little is actually known about this value. This study develops a hedonic property-value model which investigates the implicit value that people, who own property in towns adjacent to the Great Meadows National Wildlife Refuge (GM-NWR), place on this type of open space.
Our results indicate that residential property values decline by approximately $5,185 per mile as the distance from the Great Meadows Refuge increases. Our results support the intuition of refuge managers, by providing evidence that wildlife refuges can have a positive not negative impact on the adjacent local jurisdictions, by positively impacting local government finances.

Agricultural Finance and Management
Moderator: Chyi-Lyi (Kathleen) Liang

The Farm-Level Financial Impact of Phosphorus-Reducing Feed Reformulation Strategies on Vermont Dairy Farms. Alyssa Dodd, Charles Nicholson, and Catherine Halbrendt (The University of Vermont).
To reduce phosphorus reaching surface waters, it has been proposed that farmers reformulate feed rations to reduce the amount of P imported onto the farm. This strategy is identified as a "win-win" situation for farmers, reducing feed costs and ultimately P-runoff. The goal of this paper is to review current P supplementation for three different sizes of Vermont dairy farms and to quantify the farm-level financial impact of implementing new feeding strategies. Results suggest there is a need for feed reformulation to reach current recommendations and this strategy may lead to lower feed costs for farms using custom feed mixes.

Why Farmers Quit: A County-Level Analysis. Stephan J. Geotz (The Pennsylvania State University), and David Debertin (University of Kentucky).
We identify exogenous factors associated with the loss of farm proprietorships at the U.S. county-level between 1987 and 1997. Particular emphasis is placed on the role of off-farm employment and transactions costs associated with moving permanently off the farm. Our results suggest that off-farm employment and the level of government program payments to farmers both reduce the odds that a county loses farm proprietors on balance, but higher levels of these variables lead to an accelerated loss of farmers once counties start losing farm proprietors.

Projecting Long-Term Financial Performance of Vermont Apple Orchards: FLIPSIM Analysis. Yue Han, Chyi-Lyi (Kathleen) Liang, M. Elena Garcia, and Lorraine P. Berkett (The University of Vermont).
Vermont apple growers sell their produce using two marketing strategies: wholesale and retail. This article presents a study to examine the current financial situation for Vermont apple growers dealing with wholesale and wholesale/retail mixed marketing strategies. Further discussion provides a sensitivity analysis relating to changes in costs, prices and yields impact on long-term profitability for two representative apple orchards. Results indicate that variations in yields, prices and costs all have larger influences on the profitability of the wholesale apple orchard comparing to the retain apple orchard. The increase in yields or prices has more effect on the profitability than the reduction of costs does for both of the two representative orchards.

The Unavailability of Bank Credit in the Northeast. Charles Dodson (USDA,FSA).
Northeastern agricultural producers are more reliant on FSA direct credit programs than other regions of the U.S. In many countries over one third of all indebted farms receive FSA direct loans compared to about 15% in all regions. This reliance on FSA credit programs sug-

gests an inavailability of credit from banks. Commercial banks may avoid lending to farming because agriculture represents a very small share of the total economic activity in most northeast counties. Also, northeastern agricultural producers appear to be more vulnerable to productions risks, possibly discouraging banks from providing credit to agriculture.

Community Development and Impacts
Moderator: Martin Redfern

Prioritizing Community Economic Development Targets with the CBM Model: The Case of Vermont. Yi Zheng, Yeong-Tzay Su, Catherine Halbrendt, and Chyi-Lyi (Kathleen) Liang (The University of Vermont).
The Community-Business Matching model identifies potential industries for sustainable economic development by matching business profiles with community assets and goals. It incorporates community members' preferences for the economic, environmental, and social impacts of development using the Analytical Hierarchy Process. This paper is to evaluate four methods of arriving at community aggregate weights on economic development goals, which are crucial parameters for the CBM model. The most appropriate method is then used with the model to prioritize economic development targets for a rural Vermont community.

A Comprehensive Analysis of Determinants of the Swine Industry's Expansion in Pennsylvania. Shengkun Wang and Charles W. Abdalla (The Pennsylvania State University).
There has been an on-going debate about the reasons behind the recent growth of swine industry outside traditionally strong livestock production areas. A time-series and cross-sectional analysis of hog industry in Pennsylvania counties during 1988–1997 studied four categories of potential determinants. After taking into account the multicollinearity and endogeneity of some independent variables, land use control in public policy category, business climate variables rural population density and agricultural income share, and economic variable hog price were found to be significantly influential in explaining hog production growth. Manure management ordinance and proximity to suppliers were not found to be important factors.

An Estimation of the Number of New In-Migrating Retirees Required to Offset a Hypothetical Decrease in Poultry Production and Processing. Brittney Cioni (Colorado State University), Martin Redfern, Jennie Popp, and Wayne Miller (University of Arkansas).
An IMPLAN model was used to estimate the number of in-migrating retirees needed in northwest Arkansas to offset a hypothetical cut in the area's poultry industry that might stem from imposition of more stringent environmental requirements. Area retirees' local purchases had been estimated previously. A 20% cut in the industry would result in significant reductions in employment and value added. This could be made up by the in-migration of 15,430 retiree households; this number is large by historical standards, but possibly attainable with an increased marketing effort.

Interdependence of Agriculture and Tourism in Vermont: Buying Vermont Food Products. Nancy Wood, Catherine Halbrendt, Kathleen Liang and Qingbin Wang (University of Vermont).
This study addresses the importance of the farm landscape as part of the scenery that attracts tourists to Vermont, and relationships to demand for Vermont food products. Tourists were surveyed at an interstate Welcome Center during February 2000. Findings indicate that 84% of respondents value the agricultural landscape, 76% often buy Vermont dairy or other food products, and 58.5% would be less likely to visit if there were very few farms. Using logistic regression we found the significant likelihood that the tourists who buy Vermont food products are middle income, from New England, and visit several times a year during different seasons.

Food Promotion and International Agriculture
Moderator: Stephen M. Smith

The Role of Promotion Programs for U.S. Poultry Exports. Abdus Shahid, and Conrado M. Gempesaw II (University of Delaware).
This study examines the effectiveness of direct versus indirect promotion programs for U.S. poultry exports for eight countries. A comparative static simulation frame-

work is specified for this purpose. The elasticities needed for the simulation model are estimated using seemingly unrelated regression and time-varying parameter regression techniques. Results from this study indicate that price subsidy is more effective in raising exports of U.S. poultry.

State Sponsored Marketing Programs: An Evaluation of Retailer Response to the Jersey Fresh Program. Ramu Govindasamy (Rutgers University).
Jersey Fresh is one of the nation's leading examples of a state-sponsored agricultural marketing program. This study empirically evaluates the effectiveness of the Jersey Fresh program in terms of the impact the promotional logos have on produce retailers, and their willingness to patronize the program using a logit framework. Retailers who believe that consumers were highly aware of Jersey Fresh were found more likely to have been using the Jersey Fresh logos. Retailers who used other logos to identify their fresh produce were found more likely to use Jersey Fresh logos in the future.

Urban Market Potential of Traditional Andean Foods. Stephen M. Smith (The Pennsylvania State University), and Carolina Trivelli (Institute of Peruvian Studies).
Traditional, or minor, food crops play an important role in the farming practices, diets and economics of small and peasant farmers, but have received little attention in agricultural development efforts. If the benefits of new technology are to reach more people, a wider range of crops must be included in research and development efforts. To realize this potential benefit, a market (especially an urban market), for these commodities will be necessary. Based on a survey of 1,346 housewives in Lima and five provincial cities, this paper examines the factors related to urban household consumption of five traditional foods in Peru.

The Structure of Government Intervention in African Agriculture. Rigoberto A. Lopez and Ibrahima Hathie (University of Connecticut).
This article examines the detriments of various rates of agricultural subsidies (output, input, exchange rate distortions, and aggregate) using commodity-level data from eight African countries in the 1980s. Econometric results indicate that structural adjustment policies were more effective in reforming exchange rate distortions than in liberalizing commodity markets. Output policies are determined within the national context while input subsidies are more responsive to commodity-specific conditions. Furthermore, agricultural subsidies were strongly influenced by the degree of urbanization and by the number of people per unit of arable land in a manner consistent with cheap food policy strategies.

Dairy in the Northeast
Moderator: Jeremy Folz

The Adoption of rbST on Connecticut Dairy Farms. Jeremy Foltz and Hsiu-Hui Chang (University of Connecticut).
This work estimates probit and tobit models of the adoption of rbST on Connecticut dairy farms and then endogenizes that adoption in estimates of cow productivity and farm profit rates. The work improves on the current literature by allowing the rbST decision to be contingent on and/or correlated with other technology adoptions decisions. The results show that larger farms with more productivity technologies, and with younger, more educated farmers are more likely to adopt rbST. While rbST is shown to significantly increase milk production there is no evidence it increases profits on a per cow basis.

Is Labeling by Fat Content Effective? Structural Analysis of New York Milk Consumption. Takeshi Ueda and Darren L. Frechette (The Pennsylvania State University).
Consumption of lowfat and skim milk has substantially increased over the past decade. This paper investigates whether the change is due to either a price or income effect or a more fundamental preference change in milk demand. Parametric and nonparametric approaches are applied for a comprehensive analysis of structural change in milk consumption in New York State. The nonparametric approach first finds an evidence of structural change and provides a potential break point. In the following parametric analysis, a non-nested model selection criterion is used to choose the best demand system model. The likelihood ratio test then confirms the existence of the structural change using a Kalman filter specification. The implication is that consumer preferences for milk have changed, based on milk fat content labels, and that additional labeling initiatives may cause further changes in milk consumption.

Milk Quality and Safety: Problems and Opportunities. Qingbin Wang (University of Vermont).
This study investigates consumer concerns about milk quality and safety and examines consumer valuation of and willingness to pay for high quality milk. Results based on a Vermont survey of 400 respondents suggest that many consumers are willing to pay more for high quality milk and there is a strong public support for improving the federal quality and safety standards for milk. Although it is a challenge for the dairy industry to improve milk quality and safety, it is expected to enhance the industry's competitiveness and bring about opportunities in the domestic and international markets.

Economic Implications of Federal Order Reform on the Northeast. Ken Bailey and Jim Dunn (The Pennsylvania State University).
The purpose of this study was to analyze the major components of federal order reform (change in class price

formulas, Class I differentials, and elimination of the dairy price support program) and its impact on farm milk prices and sales. A regional economic model was used for the analysis. In particular, this study compared changes in regional farm milk prices and sales under the

Secretary's final rule and under Congress' final plan for federal order reform. This study shows farm prices are much more sensitive to changes in dairy commodities and elimination of the price support program than the old system.

Resource Issues and Impacts
Moderator: Qingshui Zhou

Information Gaps and Policy Making. Manjula V. Guru (The Kerr Center).
Policy and regulatory decisions about the use of chemicals in food production and processing are unavoidable today. The scientific and economic information upon which these decisions are based is limited, and the available data on pesticide use does not cover a broad enough range of crops and growing regions. Many people have stakes in the benefits or costs associated with the use of chemicals and therefore the need for well informed policy decisions cannot be undermined. The objective of this paper is to examine the major problems associated with developing an aggregate welfare model to sustainably aid pesticide policy decisions.

Economic Growth, Natural Resources, and Time Elasticity. Qingshui Zhou, Tim Phipps, and Dale Colyer (West Virginia University).
The scarcity trend of natural resources in a broad sense is investigated. Natural resources are distinguished from capital and labor inputs in a production function and technological progress that affects economic growth. For this, an aggregate scarcity measure, time elasticity, is derived in the framework of a neoclassical growth model. The time elasticity is hypothesized to be zero. Preliminary results from 70 countries over the period of 1970–90 shows that, for most countries, the null hypothesis cannot be rejected (alpha $<.05$). The conclusion is that time elasticity does not signal a growing plenitude of resources as indicated by price data.

Organized Symposia

Controlling Pollution from Animal Feeding Operations
Organizer: Gregory Poe
Animal agriculture is presently at the forefront of federal, state, and local agricultural environmental policy. At the federal and state levels, agriculture is regarded as the largest remaining source of water quality impairments as defined by the Clean Water Act: individual states attribute 49% of their nonpoint source pollution problems to agriculture, and 70% of the nation's impaired river miles are impacted by agricultural runoff and erosion. Recognition of the agricultural pollution problem, and in particular animal agricultural pollution, underlies much of the Administration's strategy evident in the President's Clean Water Action Plan, and has led to policies and referenda in individual states to regulate manure management on, usually large, livestock farms. Water quality issues as well as odors have driven local zoning restrictions, lawsuits, and moratoria against agriculture in several areas.
This symposium provided a forum for open discussion about livestock waste issues within and across various specializations within NAREA, including farm management specialists, policy analysts, and environmental and community economists.

The Future of the Daily Industry in the Northeast
Organized by Mark Stephenson, Ken Bailey, and Charles Nicholson
Over the past 10 years (1989–1998) the Northeast has lost more than 13,000 dairy producers—a decline of

nearly 35%. While all other regions of the country have experienced a loss of farm numbers, the offset of increasing farm size of the remaining producers has led to increasing milk production in many areas. As a region, the Northeast has experienced a dwindling share of the U.S. market over the same ten year time period. This symposium examined: Trends in Northeast milk production, structural change in the Northeast dairy industry, agronomic resources available to Northeast milk production, regional comparative advantage in milk production and dairy product processing, regional milk pricing, the Northeast Dairy Compact, state milk pricing (Maine, Pennsylvania, etc.), special interest milk pricing (environmental, tourist, etc.), regional comparisons of costs of production, and new technologies which impact future milk production decisions.

Long Term Factors Affecting South American Agricultural Supply
Organizer: Christine Bolling
The international markets for corn and soybeans shifted remarkably during the 1990s, mostly as a result of large increases in production in Argentina and Brazil. This symposium demonstrates the changes in production in South America, the economic reasons for these production increases as viewed from a partial equilibrium model and secondly from the viewpoint of industrial organization model where the international corn and soybean markets are viewed as oligopolies with the United States as the dominant country exporter.