

# Selected Papers

## Annual Meetings, SAEA, Birmingham, Alabama, February 1997

**TITLE: Production Efficiency and Modeling Approaches** (Moderator: Bryan Hubbell, Univ. of Ga.).

**Using Factor-Factor Relationships to Develop Economic Thresholds for Two Life Stages of Insect Pests Observed Simultaneously.** *Michele C. Marra, N.C. State Univ., Francis A. Drummond, and Jaime Mena-Covarrubias, Univ. of Maine.*

In many cases, two life stages are observed when scouting for insect pests. If both observed densities are below single-stage economic threshold levels, it does not necessarily mean that it is uneconomic to control them. An economic threshold density of one life stage, given the observed density of the other, can be derived using standard production function relationships and economic optimization criteria. This method is applied to the case of two larval stages of the Colorado Potato Beetle (CPB) in round-white potato production.

**Estimates of Bias and Improvements in Short-Run Programming Models for Cropping System Analysis.** *Joseph A. Atwood, Mont. State Univ., and Glenn A. Helmers, Univ. of Nebr.*

Benefits of rotational cropping involve reduced machinery-labor requirements as well as yield interactions. The latter are commonly included in crop budgets of rotations, but the former are not. Thus, using crop budgets for cropping decision analysis is largely confined to short-run analysis. In this analysis, long-run machinery-crop benefits are estimated for a grid of alternative cropping systems from a

large model, and these are imposed in short-run programming models. The purpose is to estimate biases in long-run solutions which arise from this procedure. The results demonstrate that bias is small when the grid of crop combinations is large.

**To Be or Not To Be Explicit: Parametric vs. Nonparametric Frontier Production Functions.** *Laura L. Cockerham, Agri Business Group, Allen M. Featherstone, Kans. State Univ., and Alan J. Schlegel, SW Research-Ext. Ctr.*

Estimating a frontier production function is important because it is more theoretically correct than the usual *average* production function employed in empirical work. Frontier production functions may be estimated either parametrically or nonparametrically. Both methodologies have advantages and disadvantages. Using the same production data set, production frontiers are estimated parametrically and nonparametrically, and the results are compared. Although the estimated frontiers are different, both methods reach the same optimal combination of inputs and appear to give similar relative efficiency rankings.

**A Cointegration Analysis on Farmland Prices in the Northeastern United States.** *Ananda Weliwita and Ramu Govindasamy, Rutgers Univ.*

We examine the determinants of land prices in the northeastern United States by applying the Johansen and Juselius maximum-likelihood cointegration procedure to two recent land price models. The results suggest that there is an equilibrium relationship between

real land price and real gross farm income, inflation rate, interest rate, and land area. Findings show that both real and nominal interest rates are cointegrated with land prices, supporting recent assertions that interest rate plays a more significant role in determining land prices than previously thought.

**TITLE: Trade, Development, and Sustainability** (Moderator: Shida R. Henneberry, Okla. State Univ.).

**Are Fair Trade Organizations Really Fair? A Southern African Case.** *Dave D. Weatherspoon, Fla. A&M Univ.*

The annual retail value of fair trade organizations was approximately \$500 million last year. These organizations market Third World agricultural goods and handicrafts to industrialized countries. Producer surveys were conducted in three southern African countries to determine the impact of fair trade organizations. Price data were collected from producers, wholesalers, and retailers to assess fairness. Results indicated that fair trade organizations have not significantly increased income or the standard of living in rural Southern Africa. Theoretically, this type of trade has the potential to alleviate poverty in rural sub-Saharan Africa. However, theory has not been successfully implemented.

**Impacts of Economic Development on Productivity Growth, Technology Progress, and Efficiency Change in Chinese Agriculture.** *Weining Mao and Won W. Koo, N. Dak. State Univ.*

This study applied a data envelopment analysis (DEA) approach to analyze the impacts of China's economic development on its agricultural productivity, technology, and technical efficiency during the 1984–93 period. Based on the economic development of each province, 29 provinces in China were classified into advanced-technology and low-technology categories. The Malmquist productivity growth was decomposed into technical change and efficiency change indexes. The results show that total factor productivity has

risen in most provinces for both technology categories. Technology progress was mostly attributed to Chinese agricultural productivity growth since 1984, and will remain crucial for low-technology provinces.

**Adoption and Use of Fertilizers by Farmers in Central Mali.** *Anthony Yeboah, Raphael Okafor, N.C. A&T State Univ., and Makan Fofona, Institute of Rural Economy, Republic of Mali.*

The importance of fertilizers (organic and chemical) has been known for years, but farmers in sub-Saharan Africa have been slow to adopt their use. This research identifies factors influencing farmers' adoption of fertilizers, constraints, types, and rates of application. Central Mali farmers were randomly sampled and an analysis was performed using logit models. Results suggest that farmers who are better equipped and who own livestock are more likely to apply fertilizers than those lacking equipment and livestock. Plowed fields and fields near villages are more likely to receive fertilizers. Finally, farmers with limited land and those possessing small ruminants are more likely to adopt chemical fertilizers over organic fertilizers.

**A Financial Analysis of Agricultural Cooperatives in South Africa.** *Ebenzer F. Kolajo and Neil R. Martin, Jr., Auburn Univ.*

Agricultural cooperatives in South Africa played a prominent role in financing the commercial agricultural sector. This study analyzes the financial structure of 240 major agricultural cooperatives and the resulting implications for small-scale/emerging farmers in South Africa. Three financial performance indicators were used to evaluate cooperatives' financial capacity to assist all classes of farmers. Study results show that agricultural cooperatives are experiencing financial stress. Despite the financial problems, the relevance and survival of cooperatives will depend on how well they manage the social, economic, and political changes taking place in the country.

**TITLE: Natural Resource Management Issues and Environmental Interactions** (Moderator: Donna J. Lee, Univ. of Fla.).

**Forest Resource Management in a Developing Country: A Study of Deforestation in the Philippines.** *Donna J. Lee, Univ. of Fla., and Marissa C. Garcia, Univ. of Hawaii.*

The current tenure system of publicly held forested land in the Philippines provides leaseholders with little incentive to conserve forest resources or replant trees after harvest. As a result, deforestation on public lands has continued at a rate of 23% since 1955. A dynamic model of timber production, land use, and soil erosion is specified to determine the optimal rates of timber harvest, deforestation (or afforestation), conversion to agriculture, and transition time to steady state. Optimization results are interpreted to show the potential gains to improved management of national forest resources.

**An Economic Evaluation of Even-Aged Loblolly Pine Rotation Strategies at the Stand Level.** *Charles Jacques and Arthur Stoecker, Okla. State Univ.*

The objective of this study was to find Loblolly pine rotation strategies that are robust or provide near optimal returns under a range of prices and discount rates. Robust thinning strategies for Oklahoma sites were determined using Faustmann and single rotation criteria. Optimal stand management strategies were determined for specified discount rate timber price combinations. Then robust strategies were selected with a maximin criterion. These strategies could be recommended to forest owners who are interested primarily in monetary returns from timber production.

**Environmental Satisfaction: Differences Between Farm and Rural Nonfarm Residents.** *E. Jane Luzar, Jack C. Isaacs, and Yeong-Nain Chi, La. State Univ.*

This research reports the results of a study of factors influencing differences in environmental satisfaction between farm and rural nonfarm residents of Louisiana. The analysis

uses data from a 1996 telephone survey of 512 Louisiana residents (identified as farmers and rural nonfarm residents) in a qualitative choice analysis of environmental satisfaction. To evaluate the relative significance of environmental quality in an individual's overall quality of life, three binary choice models were estimated: satisfaction with air quality, satisfaction with water quality, and community satisfaction. Empirical results suggest that while environmental quality is not the highest ranking factor in community satisfaction, it is still significant.

**Environmental Management of the U.S. Aquaculture Industry: Insights from a National Survey.** *Ferdinand F. Wirth and E. Jane Luzar, La. State Univ.*

As the fastest growing segment of American agriculture, aquaculture has required increased levels of environmental regulation and enforcement activities. However, as a result of the diversity of agencies administering these regulations at the state level, the current regulatory environment is perceived by some to be a major constraint to industry development. This research explores the basis for alternative management approaches for the aquaculture industry. Special emphasis is placed on the environmental management aspects of the aquaculture industry. Results of a 1995 national survey of aquaculture environmental management shed light on the current use of incentive-based mechanisms at the state level.

**TITLE: Agribusiness and Innovative Marketing Strategies** (Moderator: R. Wes Harrison, La. State Univ.).

**Organizational Form and Agribusiness: An Introduction to the Limited Liability Company.** *Lisa Offenbach House, Miss. State Univ.*

Organizational structure is a very important decision for an agribusiness. The decision involves weighing factors including personal liability, taxes, cost, management structure, and much more. The limited liability company (LLC) has recently emerged as a new type of

organizational form that combines favorable aspects of both a partnership and a corporation. The LLC allows for partnership tax treatment with corporate limited liability. This paper provides an overview of the requirements to form an LLC, as well as a comparison of the LLC to Subchapter S corporations and partnerships.

**Lint Cleaning Stripper-Harvested Cotton for Maximizing Producer Net Returns.**

*Blake K. Bennett, Tex. Tech Univ., Sukant K. Misra, and Gary Barker, USDA-ARS.*

This analysis simulated net returns for six stripper-harvested cotton cultivars to determine the number of lint cleanings that maximizes producer net returns. The study found that net returns were consistently higher for one lint cleaning in the gin plant for all cultivars regardless of time of harvest. One lint cleaning increased net revenue by an average of \$4.54/bale, with a range of \$1.92 to \$7.35/bale, in comparison to two lint cleanings.

**Present and Future Computerization Trends in the U.S. Landscape Plant Industry.**

*Steven C. Turner and Lewell F. Gunter, Univ. of Ga.*

The U.S. landscape plant industry appears to have one of the highest rates of computerization of any agricultural sector. The purpose of this analysis was to examine computerization trends and factors affecting these trends in the U.S. landscape plant industry from 1988 through 1993, and to forecast the computerization adoption rate for 1998. This examination included the computerization of different functions, such as accounting, as well as computerization in general. The adoption rate for 1998 was estimated using the 1993 adoption rate and adjusting it by the change between 1988 and 1993.

**Public Farm Markets and Tourism: Vendor and Consumer Perspectives on Developing Linkages Toward Improved Performance.**

*Timothy A. Woods, Univ. of Ky.*

Public farm markets have increasingly attempted to shift their customer focus to include tourists. Farm market customer profiles

are constructed that examine differences between tourists and local buyers on products, services, and features that are demanded, as well as response to various kinds of promotion. Vendors and patrons from a diversity of market locations, sizes, and structures are surveyed to explore the viability of market growth strategies that emphasize tourist customers. The results suggest that there are significant differences among tourists and local customers that may have important implications for the overall growth and promotion strategies of individual markets.

**TITLE: Farm Management Practices I**

(Moderator: Michael P. Popp, Univ. of Ark.).

**Multiple-Peril Crop Insurance for Dryland versus Irrigated Production.**

*Michael P. Popp, Univ. of Ark., Melvin D. Skold, and Norman L. Dalsted, Colo. State Univ.*

This paper outlines a methodology to evaluate multiple-peril crop insurance for dryland and irrigated production. In addition to basic catastrophic insurance coverage, the Federal Crop Insurance Corporation has added more flexibility to its program. Agricultural producers, businesses, and lending institutions therefore need a tool to effectively analyze insurance purchases above and beyond the basic coverage level. Using county-level yield data from 1984 through 1994, and adjusting for different yield risk categories at the farm level, crop insurance above basic coverage is analyzed. Calculated, marginal benefit-cost ratios show that crop insurance may be more feasible for dryland than irrigated production.

**Integrated Pest Management in the Lawn Care and Landscape Maintenance Industry.**

*Bryan J. Hubbell, Wojciech Florkowski, Ron Oetting, and S. Kristine Braman, Univ. of Ga.*

Lawn care and landscape maintenance (LCLM) firms in the Atlanta metro area were surveyed to determine industry pest management practices. Factor analysis is used to determine pest management systems in the LCLM industry. Primary factors include *pre-*

ventative applications, chemical intensive management, growth regulators and traps, beneficial insects, and bio-intensive management. Independently owned and small firms tend to have lower degrees of adoption of IPM factors than corporate and large firms. Comparison of pest management factors in the LCLM industry with those in agriculture suggest that similar IPM systems exist in both industries.

**Risk-Efficient Varieties, Planting Dates, and Stocking Densities for a Wheat-Livestock Farm.** *Berhanu Balcha Yirdaw, Francis M. Epplin, Okla. State Univ., and Daniel J. Bernardo, Kans. State Univ.*

Winter wheat may be produced in the Southern Plains either as a grain-only crop, or as a dual-purpose forage and grain crop, or as a forage-only crop. The objective of this study was to determine risk-efficient combinations of varieties, planting dates, and livestock production enterprises for wheat producers who have the opportunity to produce for either forage or grain, or both. The CERES-Wheat crop simulation model was used to estimate forage and grain yields for each of 12 varieties. A farm-level Target MOTAD model was constructed, and efficient plans were identified.

**A Preliminary Evaluation of Rental Agreements Tailored for Risk Averse Participants.** *Francis McCamley and Richard K. Rudel, Univ. of Mo.*

In recent years, greater attention has been given to dual solutions of risk programming problems. However, it appears that the information associated with dual solutions is not always fully exploited. There is a tendency to report marginal values which are computed by assuming that the marginal value should be the same for all states of nature. The possibility that purchase or rental price could vary by state of nature suggests that it might be possible to tailor rental agreements to the participants' risk preferences. This paper investigates that possibility and provides some indication of the potential expected utility gains.

**Estimates of Capital-Labor Substitution**

**Derived from a Farm Firm Programming Model.** *Glenn A. Helmers, Univ. of Nebr., and Joseph A. Atwood, Mont. State Univ.*

Resource substitution elasticities are used extensively in agricultural policy analysis. Commonly, these are derived econometrically and not from a programming setting. In this study, a very detailed integer programming analysis was used to construct estimates of capital-labor substitution in Midwest cropping agriculture. The largest source of capital substitution potential was in alternative sizes of machinery. The results demonstrated degrees of substitution roughly equivalent to econometric estimates.

**TITLE: Extension Issues and Approaches** (Moderator: Phil Kenkel, Okla. State Univ.).

**Farmers in a Changing Business, Policy, and Social Environment: Implications for Extension Economics Programming.** *Henry M. Bahn, USDA-CSREES.*

This paper explores the impacts of exogenous changes on the learning tasks facing modern farmers and draws implications for the dominant extension model for teaching skills and knowledge to make management and operational decisions. The itinerant extension model of technology and information transfer is reviewed and contrasted with the learning needs of contemporary farmers in a more competitive, environmentally aware, and politically active environment. Contradictions between existing methods and emerging economic and business needs were found. An adjustment of extension economics programming is called for to minimize the conflicts that adult learners responding to inauspicious changes may face.

**Measuring Program Impacts: An Evaluation of an Extension Farm Management Program in Tennessee.** *Delton C. Gerloff, Univ. of Tenn.*

Extension educators and administrators are being asked to measure program impacts. Program justification, professional advancement, and evaluation are all reasons to take the im-

pact-measuring function seriously. There are two components to measuring impacts: collection of data, and reporting the data. Guidelines on either element are scarce. This study uses an evaluation model developed by Bennett and Rockwell to measure impacts of an extension program. The model is then evaluated in its ability to report impacts adequately.

**Tillage System Effects on Net Returns from Doublecrop Triticale-Soybean.** *C.R. Stark, Jr., Univ. of Ark., C.C. Dowler, A.W. Johnson, USDA-ARS, and S.H. Baker, Univ. of Ga.*

A study of irrigated doublecrop triticale-soybean production compared net returns among tillage systems in the Georgia Coastal Plain. Conventional deep turn, no-till, and row-till tillage systems were tested over four years for a two-year rowcrop rotation. Net returns to land calculated from recorded yields and Georgia average market prices over primary marketing periods showed triticale-soybean doublecropping to be unprofitable over all treatments. Price and yield sensitivity tests adjusting yields and market prices for triticale and soybean found a triticale-soybean doublecrop combination is potentially profitable if yield and market price increases can be attained in field-scale production without additional input costs.

**Evaluation of Factors Impacting the Value of South Texas Stocker and Feeder Cattle: Economic Interpretation of an Extension Program.** *Lawrence L. Falconer, John Ford, and Joe Outlaw, Tex. A&M Univ.*

Interpretation of extension program benefits to legislators and clarification of other decision values have led to calls for greater economic analysis of program impacts. This paper is an effort designed to provide economic analysis of program interpretation purposes to decision makers and producers. The loss estimates developed in this study are sizable, with annual losses to producers expected to be in excess of \$600,000, representing an economic impact of over \$1.5 million to the area. These results will support decisions on the allocation of public resources as well as firm-level decision making by producers.

**TITLE: Innovative Teaching Methods** (Moderator: Timothy A. Woods, Univ. of Ky.).

**Agricultural Policy Agendas: What's Important to Students?** *Josef M. Broder, Univ. of Ga.*

Values that students place on contemporary agricultural policies are examined for three agricultural economics classes. Pre- and post-class rankings of values are presented by student background and major. This study demonstrates that students from all majors and backgrounds place a high priority on food safety and environmental issues; preserving the family farm is not a high priority of any of the student groups surveyed; students have not fully embraced the importance of internationalizing agriculture; and students from diverse backgrounds and majors have similar policy agendas that do not change dramatically while the students are enrolled in an economics course.

**An Empirical Examination of the Measurement and Effects of Computer-Assisted Instruction in Economics.** *S. Sureshwaran, S.C. State Univ., and Patricia Frazier, Norfolk State Univ.*

Previous experiments on the effects of computer-assisted instruction on student performance in economics examinations have produced inconclusive results. This study investigates the causal attributes of student performance in an economics examination in the context of an educational production function. A description of a microcomputer software, which is designed to supplement an undergraduate survey course in economics, is also included. Results suggest that ability, effort, and computer-assisted instruction are important inputs in the educational production function for economics.

**Development and Use of an Experiential Agribusiness Simulator: Experiences in Working with an Agribusiness Firm.** *Kurt M. Guidry and James N. Trapp, Okla. State Univ.*

A working relationship was formed be-

tween Excel Corporation and Oklahoma State University to develop a meat packing plant management (MPPM) simulator. Excel supported the simulator's development financially, but more critically, the corporation provided access to industry personnel with knowledge and data of the industry's operational structure. The simulator was developed to give practical experience to students and young managers in the application of agribusiness management and marketing principles. Participants are required to apply management and marketing techniques in the procurement of cattle and the fabrication and sale of meat products.

**Continuous Improvement in Teaching Introductory Agricultural Economics.** *Fred C. White, Josef M. Broder, and Glenn C.W. Ames, Univ. of Ga.*

The process of improving classroom instruction through total quality management (TQM) is examined for microeconomic principles instruction at the University of Georgia. A TQM conceptual framework for improving instruction is described, guiding principles for implementing TQM are discussed, and the effects of TQM principles are assessed. Data from student evaluations of teaching and alumni surveys were used to examine TQM effects. The study found that the application of TQM to microeconomic principles instruction was associated with an increase in *Excellent* ratings and a decrease in the variation in student ratings. These findings are consistent with those expected from TQM.

**TITLE: Agricultural Prices and Economic Analysis** (Moderator: Greg Traxler, Auburn Univ.).

**Minnesota-Wisconsin Milk Price Drives Cheese Price: Some Empirical Evidence.** *Jayantha R. Perera, Joe L. Outlaw, and Ronald D. Knutson, Tex. A&M Univ.*

There is a strong belief in the dairy industry that the Minnesota-Wisconsin (M-W) milk price series has become an unreliable indicator and/or mover of classified milk prices under

federal milk marketing orders. This paper investigates the criticism of M-W milk price series using monthly time-series data from January 1970 through March 1996. An error correction model was formulated to capture short-run and long-run relationships. The estimated model revealed the existence of a cointegration vector. In the short run, both the cheese and nonfat dry milk prices indicated positive and significant impacts on the M-W milk price. The cointegration vector revealed the M-W milk price drives the cheese price in the long run.

**An Analysis of the Effect of Corn Prices on Feeder Cattle Prices.** *John D. Anderson and James N. Trapp, Okla. State Univ.*

This study develops the concept of a corn price multiplier which quantifies the effect of a change in corn price on feeder cattle price. Estimation of the multiplier is accomplished using a partial adjustment model of feeder calf prices that directly incorporates elements of break-even budget analysis. Because it includes technical parameters related to cattle feeding, this model provides information on how changes in these factors affect the relationship between corn and feeder calf prices. This information will provide insight into the degree to which cattle producers can offset the effect of high grain prices by altering feeding programs.

**A Theoretical Derivation of Seasonal Price Patterns for Beef Carcasses by Quality and Yield Grade.** *Michelle Beshear and James N. Trapp, Okla. State Univ.*

As fed cattle are increasingly being sold on a carcass basis, the seasonal patterns of beef carcass prices are needed to help producers make informed marketing and production decisions. Five years of publicly reported data on boxed beef cuts are used to determine theoretical seasonal indices for cattle carcasses by yield and quality grade. Additionally, the spreads between the prices for various yield and quality grade carcasses are examined for seasonal patterns.

**Determinants of Purebred Bull Prices at Al-**

**Alabama Bull Test Sales.** *Tom E. Anton, Greg Traxler, J. Walter Prevatt, and Lisa A. Kriese, Auburn Univ.*

The market for beef has been in a steady decline. Rising feed costs and competition have caused many producers to flood the market by dumping their inventories in an effort to get out and minimize their losses. The prices paid for breeding stock are affected by the changing market as well. Data were taken from four bull test sales in Alabama to determine what characteristics are important when purchasing or selling a bull. As expected, we found that growth characteristics are important, but the breed of the animal and where it was sold are also important. Additionally, there is evidence that sales have followed the same downward trend as the market over the past few years.

**Price Spread Dynamics in Meat Markets: The Case of Beef and Pork.** *M. Akhtar Khan, Glenn A. Helmers, and Dennis M. Conley, Univ. of Nebr.*

Prices for beef and pork and price margins resulting from corn price shocks are estimated using vector autoregression analysis. Results depict a significant difference or response in terms of magnitude, adjustment time, and variability both in prices and price spreads. Further, price margins exhibit a relative inflexibility compared to prices.

**TITLE: Consumer Demand Issues and Estimation Procedures** (Moderator: Greg Pompelli, Univ. of Tenn.).

**Consumer Demand for Pecans: Comparing Sample Selection and Two-Part Demand Models.** *Timothy Park and Wojciech Florowski, Univ. of Ga.*

A consistent demand model linking the decision to purchase pecans and the amount of pecans purchased was specified. The sample selection model for pecan purchases is preferred to the two-part model. Marketing outlets are critical factors in providing consumers with convenient sources to purchase pecans. Consumers' problems with excess shells, ran-

idity, small size, color, and flavor were not factors constraining purchases. Repeat purchasers of pecans identified positive factors influencing consumption, and these positive experiences had a significant impact on pecan purchases.

**A Conjoint Analysis of Food Products Made from Undersized Southern Crawfish.** *Aylin Ozayan, R. Wes Harrison, and Samuel P. Meyers, La. State Univ.*

Conjoint analysis is used to examine customer preferences for alternative food products derived from minced-meat crawfish products in the Gulf South region of the United States. Focus group interviews indicated that minced-meat crawfish could be marketed as a seafood base for use as a flavor enhancing starter for soups, chowders, and sauces, or as an ingredient for seafood stuffings. Results from the conjoint analysis show that crawfish minced products must be fresh products with a hearty crawfish flavor, and they must be priced at 30 to 70% of the cost of fresh tail meat to be successful.

**A Conjoint Analysis of the Market for Ostrich Meat in the South Central United States.** *Gary Taylor, State Univ. of N.Y., Alvin Schupp, Jeffrey M. Gillespie, and Ferdinand Wirth, La. State Univ.*

Conjoint analysis is used to determine the most preferred ostrich meat product for the retail and restaurant sectors, as well as the relative importance of attributes considered in the decision of whether to purchase ostrich meat. Results indicate that the most preferred product is a branded, six-ounce portion ostrich steak at the lowest possible price. Price is the most important factor determining retail managers' decisions as to which product is the most acceptable, while product form is the most important factor for the restaurant manager.

**Demand Elasticities for Fresh Vegetables in the United States.** *Zhikang You, Chung L. Huang, and James E. Epperson, Univ. of Ga.*

Demand elasticities at the retail level for eight major fresh vegetables in the United



States were estimated with the Almost Ideal Demand System using annual data over the period 1960–93. Results show that demand responses to changes in own prices were generally inelastic, and most fresh vegetables had neutral demand relationships. Furthermore, the study suggests demands for carrots, cucumbers, lettuce, peppers, and onions were highly elastic with respect to changes in expenditures on fresh vegetables. Conversely, expenditure elasticities for celery and tomatoes were found to be inelastic, while the expenditure elasticity for cabbage was negative but statistically insignificant.

**Edible Peanut Domestic Demand: A Coefficient Variation Modeling Approach.** *Stanley M. Fletcher, Changping Chen, and Ping Zhang, Univ. of Ga.*

Continued decline in peanut consumption since 1990 raises concerns about the U.S. peanut industry. This study analyzes domestic demand for peanuts used for food using both OLS regression and coefficient variation econometric models. Results indicate that the coefficient variation model performed better than the OLS model in capturing the demand relationship of edible peanuts. Edible peanut domestic demand is affected by prices of peanuts, disposable income, and the prices of substitutes for peanuts. Furthermore, the price elasticities of demand for edible peanuts varied with peanut products.

**TITLE: Agricultural Finance and Related Topics** (Moderator: Michael E. Wetzstein, Univ. of Ga.).

**Investment Hurdle Rates: The Case of Georgia Peach Growers.** *T. Jeffrey Price, Michael E. Wetzstein, and Mark W. Rieger, Univ. of Ga.*

Recent advancements in investment theory under uncertainty suggest the conventional theory of comparing benefits to costs of new technologies is biased. New technologies may not be adopted by growers unless the present value of expected returns exceeds the investment cost by a hurdle rate which is subject to

the level of uncertainty associated with the use of the technology. As an application, hurdle rates are derived for peach production in a dynamic programming framework by incorporating the value of the option to invest into the adoption and abandonment rules. The results illustrate that failure to consider irreversibility, flexible timing, and uncertainty characteristics can result in flawed adoption recommendations and revenue loss.

**Examining the Robustness of Hedonic Pricing: The Case of Farmland Pricing.** *Patrick T. Berends and Allen M. Featherstone, Kans. State Univ.*

Hedonic price analysis is commonly used for farmland. However, only to the degree to which hedonic analysis can predict out of sample will it be useful. This study evaluates the accuracy with which hedonic price models can predict farmland prices out of sample. This is accomplished using both econometrics and neural networks. Results indicate that hedonic pricing for farmland is a robust and appropriate method for real estate valuation. Both empirical techniques provided similar results regarding predicted prices and elasticities. The fact that two different techniques provide the same conclusions illustrates the soundness of hedonic pricing and demonstrates the strength of methodology over empirical technique.

**An Evaluation of Kansas Farmland Use-Value Appraisal: A Hedonic Pricing Approach.** *Pooran Lall, Allen M. Featherstone, and Karsten Teske, Kans. State Univ.*

This study identified and quantified the impacts of factors that significantly affect Kansas farmland values. The results show that the most important factors influencing farmland value are the returns to land, the urban/rural nature, the presence/absence of structures on the land, sale parcel size, the type of access road, the mode of sale, the quantity and distribution of rainfall received, the topography of the land, and district of the land. Lands accessible via gravel and paved roads returned a premium; those accessible via earth roads, alleyways, and railways were sold at a discount. Seller-financed sales returned a premium.

Family sales, forced sales, and closed sales returned a discount.

**Development of Regression Models to Predict Soybean Futures Prices as a Function of Lagged Commodity Futures Prices.** *Timothy A. Roberts, Carl R. Dillon, and Bruce L. Dixon, Univ. of Ark.*

A set of single-equation VARs to predict soybean futures prices as a function of lagged commodity futures prices is estimated using alternative estimation approaches. Using daily closing prices, OLS equations were developed, then tested and corrected for violations of classical linear regression assumptions of the model. Results suggest that, given multicollinearity and nonnormality in error terms, economists should consider alternatives such as ridge regression and least absolute error (LAE) estimation to OLS in certain situations.

**TITLE: Econometric Estimation and Modeling Approaches I** (Moderator: Chung L. Huang, Univ. of Ga.).

**Pushing the Envelope: Applying Frontier Production Techniques to the Metaproduction Function.** *Randal Kinoshita, Univ. of Ga.*

Total factor productivity (TFP), productive efficiency, and technical change in the agricultural sector of 92 countries from 1961 through 1990 are estimated using two different frontier production techniques: stochastic production frontier function and data envelopment analysis (DEA). The model for this production frontier is a revised form of Hayami and Ruttan's concept of the metaproduction function that allows for exogenous technical change.

**The Effects of Exchange-Rate Volatility on U.S. Agricultural Exports: Cointegration and Error Correction Approach.** *Samarendu Mohanty, Darnell B. Smith, and William H. Meyers, Iowa State Univ.*

This paper examines the effects of exchange rate volatility on U.S. agricultural exports using an error correction representation.

Before specifying the model, the time-series properties of variables are examined. Cointegration results suggest that export volume and its determinants are first difference stationary and cointegrated, justifying the appropriateness of using an error correction model. The results suggest that exchange rate variability may not have significant impact on agricultural trade volumes for all five countries except Japan. However, negative signs on the exchange rate risk coefficients may imply adverse relationships with agricultural trade volumes.

**A Reexamination of Supply Response in the Northeastern Fresh Tomato Market: Evidence from Cointegration and Error Correction Analysis.** *Ananda Weliwita and Ramu Govindasamy, Rutgers Univ.*

This paper reexamines the supply response in the northeastern fresh tomato market during the post-World War II period by employing a cointegration and error correction technique. In particular, we examine whether there has been a long-run equilibrium relationship between northeastern fresh tomato production and a set of price and nonprice factors that influence it. Our findings suggest that wage rate, imports from competing regions, and urban pressure have had significant negative impacts on northeastern tomato production during the 1949–94 period. Our results also indicate that price incentives have not been sufficient enough for northeastern producers to secure a bigger share in the northeastern fresh tomato market.

**Modeling Benefits Transfer in the North Carolina Red Drum Fishery.** *Peter W. Schuhmann, Univ. of Richmond.*

A methodology for the biological and economic analysis of commercial-recreational fishery allocation regulations is developed. Interactive dynamics of stock growth and harvest effort are modeled as a system of differential equations. Effects of simulated commercial harvest restrictions on stock growth and recreational catch and effort are measured. Welfare gains to recreational anglers from the simulated improvements in

catch are measured using a random utility model of site selection. The net benefits from commercial sector harvest reduction policies are derived by comparing gains to recreational anglers with losses incurred by the commercial sector.

**Dynamic Modeling of the Import Demand for Coffee.** *Mario A. Piedra and Hector O. Zapata, La. State Univ.*

A two-stage utility maximization framework, given an importer's preference ordering, was used to model the effects of changes in economic activity on coffee import demand. The equilibrium model was estimated in log form. The econometric procedures were based on recent developments in cointegration analysis. All the series, except import demand for the Netherlands, were found to have one unit root. One cointegration vector was found for the U.S. and Germany, suggesting long-run causality from prices and GNP on coffee imports. The speed of adjustment to the long-run equilibrium was faster for import demand than that for prices and GNP.

**TITLE: Potpourri** (Moderator: Barry Barnett, Miss. State Univ.).

**Analysis of Excess Capacity in U.S. Corn Production.** *Kevin P. Smith, Univ. of Mo., and Michael R. Dicks, Okla. State Univ.*

Excess capacity is measured for corn by developing econometric models to estimate yield, cropland available, domestic demand, and export demand. Excess capacity is defined as the ability to produce in excess of demand at an acceptable price. Our measure of excess capacity is compared with previous measures, and short-run projections for excess capacity in the corn crop are provided. Overall, the magnitude of excess capacity in the production of corn was high in the 1950s and 1980s, but low in the 1960s and 1970s. Since 1988, large swings in excess capacity levels have been experienced.

**Value-Based Marketing for Fed Cattle: A Discussion of the Issues.** *Scott W. Fausti, S. Dak. State Univ., Dillon M. Feuz, Univ. of*

*Nebr., and John J. Wagner, Continental Grain.*

The development of a value-based marketing system (VBMS) for fed cattle has been alluded to as a possible solution for the relative decline in beef demand. However, the price discovery literature suggests that any new marketing system which increases the price variability without substantially increasing the average return will meet resistance from producers. A comparative analysis of VBMS to the current cash marketing system is reported. The results indicate that marketing animals through the VBMS increases the mean and variance of revenue as compared to the current cash marketing system. The evidence suggests that a new VBMS will have limited success supplanting the current cash marketing system.

**Price Dynamics in the Edible Nut Markets.** *Yue Lai and Wojciech J. Florkowski, Univ. of Ga.*

This study investigates the dynamic price relationships among edible nuts using the direct Granger causality approach. Prices of two grades of almonds, Brazil nuts, cashews, pecans, peanuts, and walnuts are analyzed. The results show that walnuts are the dominant nuts in price influence. Almonds are independent from influence by other nuts. Little causal relationships exist between grades of the same nut. Price relationships between nuts are related to their price differences.

**Use of Treadmill Theory in the Assessment of the Effects of Size and Type on Paid and Unpaid Labor on Kentucky Farms.** *Jeanne M. Reeves, Miss. State Univ.*

In today's changing agricultural structure, farmers must combine paid and unpaid labor and capital so as not to exceed their financial resources. Factor intensity analysis was conducted on a panel of Kentucky farms, separated by size and type, from 1974-92. Small farms report the lowest contribution from unpaid labor, followed by medium farms and then large farms, with no variation by commodity. This finding challenges our assump-

tions about a family farm; i.e., by definition, the largest contribution from unpaid labor should be on medium size farms. The results render little support for treadmill theory and the marginalization of family farms.

**TITLE: Agricultural Marketing**  
(Moderator: Patricia E. McLean-Meyinsse, Southern Univ.).

**An Analysis of Attitudes Toward Consumption of, or Likely Consumption of Goat Meat in Louisiana and Southeast Texas.** *Patricia E. McLean-Meyinsse, Zanetta L. Nixon-Augustine, and Jianguo Hui, Southern Univ.*

This study examines attitudes toward, consumption of, and likely consumption of goat meat between Louisiana and southeast Texas residents. Results from the ordered probit models used to make this determination suggest that men, non-Catholics, and non-Caucasians have a more positive attitude toward goat meat than their corresponding counterparts. These respondents, southeast Texas residents, and those aged 42 years and above have either eaten goat meat or are receptive to trying it. In general, the more positive the respondents are about goat meat, the greater the likelihood that they have eaten or are willing to eat the meat.

**Factors that Affect the Probability that a Food Retailer Sells a Specialty Food Product: Hybrid Striped Bass.** *Kandice H. Kahl and Minsup Shim, Clemson Univ.*

Survey data from grocery retailers are analyzed to determine if sellers of hybrid striped bass have different socioeconomic and demographic characteristics than non-sellers. The results indicate that sellers are more likely to be chain stores, have larger seafood sales per customer, and have upper-income clientele. Probit and logit analyses indicate that the probability that a retailer is a seller of hybrid striped bass increases as the firm sells more aquaculture products. The probability also increases if the retailer is a chain store whose average seafood sales per customer exceed \$10, and whose annual seafood sales per store exceed \$100,000.

**Determinants of Consumers' Use of Nutritional Labels: An Exploratory Study of Label Use While Food Shopping and Label Use at Home.** *Rodolfo M. Nayga, Jr., Daria Lipinski, and Nitin Savur, Rutgers Univ.*

The development of consumer nutrition education programs could be aided by information on the characteristics of individuals using nutrition labels. Food choices are influenced by use of labels both while shopping as well as use of labels while at home preparing meals. Using data obtained from a survey of consumers, three models are developed to represent label use while food shopping, label use while preparing food at home, and comparison of nutrients for different brands of the same foods. Results indicate that socioeconomic, demographic, and health/nutrition related factors have varying effects on the three models.

**An Empirical Analysis of Out-of-State Wholesale Product Sales by U.S. Nurseries.** *Randall E. Cleland, Steven C. Turner, and Forest Stegelin, Univ. of Ga.*

A primary objective of this study was to identify important factors that influence the use of out-of-state markets by U.S. nurseries. These out-of-state markets were separated into mass merchandisers, garden centers, other retailers, landscapers, and re-wholesalers. A separate Tobit model was developed for each sector to test the significance of the hypothesized factors. An important finding was that factors that influence out-of-state sales are different depending on the sector of the sales. Factors which are consistently significant are acreage (positive), containerization (negative), trade show attendance (positive), direct retail sales (negative), trade journal advertising (positive), and the western region of the U.S. (negative).

**TITLE: Farm Management Practices II**  
(Moderator: Michael Dicks, Okla. State Univ.).

**Post-CRP Land Use in Southwest Kansas.** *Michael R. Langemeier and Leslie R. Krehbiel, Kans. State Univ.*

The objectives of this study were to ex-

amine the feasibility of several production options available to CRP contract holders in southwest Kansas and to determine minimum contract renewal rates for different land classes. An empirical risk model was developed for the representative contract holder in southwest Kansas. Optimal production strategies include the wheat-sorghum-fallow rotation and season-long grazing of steers. Minimum renewal rates range from \$20 for land class IV and moderate risk aversion to \$38 for land class II and risk neutrality.

**A Multi-Output Efficiency Analysis of Kansas Farms.** *Mark K. Cotton, Michael R. Langemeier, and Allen M. Featherstone, Kans. State Univ.*

A sample of Kansas farms was used to examine efficiency differences among farms. Linear programs were used to estimate technical, allocative, scale, economic, and overall efficiency values. Mean values for technical, allocative, scale, economic, and overall efficiencies were 0.91, 0.76, 0.90, 0.69, and 0.61, respectively. Overall efficiency was significantly related to age of operator, total acres operated, specialization, and farm type. Dryland wheat and mixed-crop farms tended to be less efficient than mixed-crop/livestock farms, while livestock and dryland soybean farms tended to be more efficient.

**A Comparison of Productivity Measures for Georgia Agriculture.** *Archie Flanders and Fred C. White, Univ. of Ga.*

The Bennet-Bowley productivity index is both superlative and aggregable. However, other popular productivity indexes, such as the Tornqvist index, are not aggregable. This paper applies both the Tornqvist and Bennet-Bowley productivity indexes to a common data set for Georgia agriculture. The period of analysis is 1951–94. The results indicate important differences between the two approaches to measuring productivity growth. The Tornqvist index exhibited several wide swings in productivity that were not sustained. The Bennet-Bowley index exhibited stable growth, and demonstrated a higher growth rate than the Tornqvist index.

**Nonparametric Efficiency Analysis of Kansas Wheat Production.** *Michael J. Yoder, Michael R. Langemeier, and Fredrick D. DeLano, Kans. State Univ.*

Wheat enterprise data from Kansas were used to examine technical, allocative, and scale efficiency. A separate analysis was conducted for wheat-fallow and continuous wheat production. On average, the wheat-fallow farms were 83% technically efficient, 72% allocatively efficient, and 87% scale efficient. The continuous wheat farms were 86% technically efficient, 68% allocatively efficient, and 88% scale efficient. Farms that were overall efficient tended to be larger and received less of their income from government payments.

**A Nonparametric Efficiency Analysis for a Sample of Kansas Swine Operations.** *Bill Rowland, Bryan Schurle, Michael Langemeier, and Allen Featherstone, Kans. State Univ.*

This study evaluates the economic competitiveness of a sample of Kansas swine operations by estimating relative firm efficiency using nonparametric mathematical programming techniques. Measures of overall, technical, allocative, scale, and economic efficiency for farrow-to-finish swine operations are then compared to farm and cost characteristics to identify sources of inefficiency. Results indicate that overall efficient farms produce a high quantity of pork per litter, produce a portion of their own feed grains, and generate a large portion of their income from swine and other livestock enterprises. Input cost Tobit models suggest that feed cost represents the strongest link to overall efficiency.

**TITLE: Recreation Valuation and Environmental Models** (Moderator: Donna J. Lee, Univ. of Fla.).

**The Cost of Climate Change on Land Loss in Developed Coastal Areas in Florida.** *Jose Rodrigues and Dustin Bellone, Univ. of Fla.*

Global warming, the result of the emission of greenhouse gases into the atmosphere

(which stems from the burning of fossil fuels), has generated much controversy in regard to what impact it will have on sea level rise. Some theorists believe the increase in mean global temperature has started the melting of the polar ice caps, prompting thermal expansion of our oceans. As a result, the rising sea level is putting our coastal areas at greatest risk for destruction. Land loss values up to 2100 AD were obtained by a combination of the Lee-Roumasset temperature model and a study performed by the U.S. Department of Energy focusing on sea level rise estimates.

**Watershed-Scale Economic and Environmental Tradeoffs Incorporating Yield Uncertainty and Environmental Risk.** *Zeyuan Qiu, Tony Prato, and Michael Kaylen, Univ. of Mo.*

This paper evaluates the economic and environmental tradeoffs at watershed scale by incorporating both economic and environmental uncertainties in agricultural production. The Target MOTAD model is modified by imposing a chance-constrained objective function to capture the yield uncertainty caused by random allocation of farming system to soil types and by introducing environmental targets to incorporate environmental risk due to random storm events. This framework is used to determine the tradeoff frontier between watershed net return and sediment yield and nitrogen concentration in runoff in the Goodwater Creek watershed of Missouri. The frontier is significantly affected by risk preference.

**Benefits Transfer and Count Data Travel Cost Models: An Application and Test with Whitewater Rafting.** *J.M. Bowker, Donald B.K. English, USDA Forest Service, and John C. Bergstrom, Univ. of Ga.*

We use an individual travel cost framework and a random sample of users at five geographically dispersed whitewater rivers to model trip demand and calculate consumer surplus. Demand at each river is first estimated using conventional count data models. We then pool data across subsets of four rivers and test the extrapolative ability of each benefits transfer function differentiated by length of

trip and Wild and Scenic designation. We statistically test consumer surplus estimates derived individually and through the benefits transfer function for remaining river. These out-of-sample tests indicate the need for caution in extrapolating benefits transfers. However, within-sample tests and estimation yield considerably more promising results.

**A Travel Cost Analysis of Nonconsumptive Wildlife Recreation in the Southeastern United States.** *William Zawacki, Allan Martsinko, Clemson Univ., and J.M. Bowker, USDA Forest Service.*

We use data from the 1991 U.S. Fish and Wildlife Survey to estimate demand and net economic surplus for nonconsumptive wildlife recreation across 10 southeastern states. We employ the individual travel cost method and a negative binomial estimator pooled across states to derive our trip demand model. Per trip consumer surplus estimates range from a high of \$206 in Florida to a low of \$33 in Mississippi. These estimates fall within the range of estimates reported in the literature for nonconsumptive wildlife demand using both travel cost and contingent valuation methods. Considering alternate mixes of modeling assumptions, aggregated surplus values for the region vary from \$2 billion to \$8.5 billion per year.

**Maximizing Tourist Revenue, Minimizing Tourists: Visitor Spending and Length of Stay in the Florida Keys.** *Donald B.K. English, USDA Forest Service, and Warren Kriesel, Univ. of Ga.*

The purpose of this paper is to examine the spending patterns of visitors to the Florida Keys. In particular, we investigate the effect of increased length of stay on (1) total spending per person per trip in and around the Florida Keys, and (2) per person per day expenditures. Expenditures for lodging, food, activities, travel, and other items are evaluated. From these comparisons, we identify situations in which incentives for encouraging visitors to stay longer are likely to be most effective in increasing economic activity.

**TITLE: Economic and Rural Development Issues** (Moderator: David Hughes, Miss. State Univ.).

**A Comparison of Social Capital in Rural and Urban Settings.** *David L. Debertin, Univ. of Ky.*

This paper presents an analysis of the formation and structure of social capital based on observations comparing the formation and manifestations of social capital in urban versus rural areas. This is not an empirical study employing quantitative methods, but instead a "case study" approach is outlined. It is the author's contention that a fruitful perspective may combine two rather distinct approaches appearing in the social capital literature from sociology and economics. This may be the most meaningful way of analyzing why social capital is important to both rural and urban communities as a vehicle for economic growth.

**Multi-jurisdiction Cooperation in Municipal Solid Waste Management.** *Kelly H. Tiller and William M. Park, Univ. of Tenn.*

As traditional methods of municipal solid waste management (MSWM) become increasingly expensive due to increased regulation, many local governments are considering cooperation as a waste management strategy. A theoretical model of cooperation is developed in which cooperation decisions are made as part of a dynamic cooperation process where individual units use their own characteristics and characteristics of potential cooperating partners to assess the impacts of cooperation on operational costs (characterized by economies of scale), transactions costs, autonomy risk, political risk, service level, and fiscal constraints.

**Issues in Rural Health: Concerns, Determinants, and Preventive Activities.** *Donald R. McDowell and Raphael Okafor, N.C. A&T State Univ.*

Scientific evidence increasingly suggests that poor health has contributed to the increase in mortality, disability, and medical costs. As

such, there is much interest in preventing or reducing their occurrence. Current health-related problems are estimated to cost society \$250 billion each year in medical costs and loss of productivity. This study presents the findings of a rural health survey administered to 416 rural North Carolinians from 67 counties during the summer of 1995. The study examines the current health concerns of the respondents and assesses the magnitude of importance and direction of influence that selected social and demographic variables exert on an individual's involvement in various preventive health activities.

**Education as an Investment for Economic Development in West Virginia: An Empirical Analysis.** *David Fekete, Tesfa G. Gebremedhin, and Kerry S. Odell, W. Va. Univ.*

A three-step least squares regression method was applied to address the impact of investment in education on economic development. A combination of time-series and cross-section data from 1983 through 1993 was used in the models. Economic variables used in the empirical work exhibit effects in the hypothesized direction. The study confirms that increased investments in elementary and secondary education permit improvements in the educational attainment. The empirical results are consistent with the theory of human capital formation, which states that investment in education increases the quality of human resources, and thereby influences economic development.

**Efficiency Analysis of Rural Hospitals in the Great Plains: A Nonparametric Approach.** *Bhaskar Toodi, Allen M. Featherstone, and Ronald C. Young, Kans. State Univ.*

A nonparametric approach is used to estimate technical, allocative, scale, and overall efficiency measures for 638 Great Plains, 111 Kansas, and 527 rest of the Great Plains hospitals. Technical inefficiency accounts for much of the overall inefficiency among rural hospitals. Kansas hospitals' overall efficiency is relatively lower than that of the Great Plains. About 72.6% Great Plains hospitals exhibited decreasing returns to scale. Proprie-

tary, not-for-profit hospitals with a higher number of bed days, Medicare and Medicaid discharges, and lower inpatient days were more efficient.

**TITLE: Ag Policy: The FAIR Act and Related Issues** (Moderator: Cary W. "Bill" Herndon, Jr., Miss. State Univ.).

**Agricultural Economics Research in the Post-FAIR Act Market Environment.** *Henry M. Bahn, USDA-CSREES.*

Passage of the Federal Agriculture Improvement and Reform Act of 1996 and a number of emerging domestic and international market-related issues present the agricultural economics profession with opportunities to adjust its research priorities regarding risk management, decision making, and marketing. This paper provides a broad overview of some emerging research needs from several perspectives: the reduction or elimination of price-distorting government interventions, the changing risk and decision environment facing the ultimate recipients of agricultural economics research, the increasingly competitive nature of federal research funding, and the future influence of the Government Performance Review Act.

**The FAIR Act: Economic Implications for the U.S. Peanut Industry.** *Changping Chen and Stanley Fletcher, Univ. of Ga.*

This study analyzed the potential economic impacts of peanut program reform due to the FAIR Act on the U.S. peanut industry. Results indicate that the economic impacts of the new program, coupled with GATT and NAFTA, on the southern economy are profound in both short and long terms. Changes in the program could decrease peanut producers' farm income substantially, eliminate government financial costs, and transfer program benefits back to peanut consumers. Increasing imports of foreign peanuts under the new program would transfer peanut program benefits to domestic importers and foreign peanut exporters.

**What Constitutes a Large Livestock Operation Under the EQIP Provisions of the**

**FAIR Act of 1996?** *Lee A. Christensen and David Banker, USDA-ERS.*

Under provisions of the 1996 Federal Agricultural Improvement and Reform Act, Environmental Quality Incentives Program (EQIP), approximately \$650 million was authorized to address environmental and natural resource issues associated with livestock production over the next seven years. The Secretary of Agriculture has the responsibility to define a "large confined livestock operation," thus defining firms ineligible for EQIP cost share funds for constructing waste management facilities. This paper examines alternative ways of defining a large operation.

**Cotton Supply Response to Market Signals: The Case of Flex Acres.** *Brian Willcott and Gary Adams, Univ. of Mo.*

Given the new direction of farm policy, farmers are now less constrained in making their planting decisions. This paper shows how cotton acreage responded to market signals in allocating flex acres. By examining the five years of data that exist, researchers will begin to understand how producers may react when planting for market prices and not for government subsidies. The estimated elasticities are much higher than those found in other studies.

**TITLE: Resource Use Implications** (Moderator: Lee Meyer, Univ. of Ky.).

**Elasticity of Demand for Nitrogen: Implications for Environmental Policy.** *Raymond J. Supalla and M. Akhtar Khan, Univ. of Nebr.*

The own-price elasticity of demand for nitrogen was estimated for the state of Nebraska using time series data for the years 1968 to 1993. Nitrogen price elasticity at a mean price level was found to be  $-0.17$ , which is much lower than previous studies had found and too low to make nitrogen taxes a practical and useful policy for reducing nitrate pollution of groundwater. The decline in elasticity is believed to reflect increased environmental awareness and improved management, resulting in less use of "insurance" nitrogen, and



thus less opportunity and incentive to respond to price changes.

**The Economic Implications of Feedlot Manure Utilization in Predominant Cropping Practices of the Texas High Plains.** *Jason L. Johnson and Eduardo Segarra, Tex. Tech Univ.*

Environmental regulations and rising fertilizer costs have made livestock waste management issues important to cattle feedlots, farmers, and consumers. These problems are evident in the Texas High Plains (THP), an area where vast numbers of cattle are fed alongside a declining farm base. The objective of this research was to determine efficient feedlot manure utilization that would protect the environment and benefit feedlots and crop producers. Results indicate that manure utilization contributes over \$23 million in additional returns to crop producers, but the exhaustion of all manure produced in the THP would reduce returns by \$4 million when compared to a return-maximizing strategy.

**Will Farmers Use Safer Pesticides?** *Nicole N. Owens, Scott M. Swinton, and Eileen O. van Ravenswaay, Mich. State Univ.*

Virtually all technology adoption studies are conducted *ex post*, yet policy makers often need to assess the likely level of adoption before the technology is introduced. This study uses data from a contingent valuation survey of Michigan corn growers to assess what factors would influence the adoption of two safer corn herbicides, one that is not carcinogenic and one that does not leach. Results indicate that price, risk perception, and sources of pest control information are all important. This suggests that public policies designed to change perceptions and improve information dissemination may encourage voluntary use of more environmentally friendly technologies.

**Quality-Adjusted Quantity Indices for Pesticides: State-Level Estimates for the Corn Belt and Southern Plains.** *Richard Nehring, USDA-ERS, and Arthur Grube, EPA.*

Quality-adjusted quantity indices for pesticides are calculated for several major states

for 1960–93. We regressed the share-weighted prices of pesticides on pesticide application rates, LD50, a proxy for toxicity, and several environmental variables representing persistence of the pesticide in the environment. The results indicate a gap between the adjusted quantity series and the unadjusted series, and provide a measure of the economic contribution of quality improvements to production.

**Potential Economic and Environmental Returns to Variable Rate Application of Nitrogen.** *Saeed Ahmad and Raymond J. Supalla, Univ. of Nebr.*

The economics and environmental potential of variable rate technology (VRAT) was evaluated for sprinkler irrigated corn in Central Nebraska. Ten management systems ranging from typical conventional to a VRAT optimum were simulated for hypothetical field conditions using the EPIC model. The results suggest that VRAT can produce significant economic and environmental improvements when compared to typical practices. But when VRAT was compared to the best conventional practices, there were no significant differences. Further investigation of different field situations is needed before drawing definitive conclusions.

**TITLE: Trade and Marketing** (Moderator: P. Lynn Kennedy, La. State Univ.).

**Agricultural Impacts of European Integration in a Post-Uruguay Round Environment: The Influence of Exchange Rate Fluctuations.** *Cemal Atici and P. Lynn Kennedy, La. State Univ.*

Agricultural trade among the European Union (EU), Turkey, and the United States is modeled using a non-cooperative game theoretic framework. The research estimates and utilizes a political preference function to analyze the effects of European integration on the game solution among the three countries. Special emphasis is placed on the effects of currency exchange rate fluctuations. Results show that the optimal strategies of the U.S. and EU involve policy reform, while Turkey's best in-

terest involves remaining independent of the EU.

**Determinants of Use of Government Export Promotion Programs by Agribusiness Firms in North Carolina.** *William A. Amponsah and Kofi Adu-Nyako, N.C. A&T State Univ.*

U.S. agriculture's export dependence, led by high-value products, continues to rise. Because of competition for markets, the USDA has been admonished to devote more attention to export promotion, especially at the state level. This paper determines that greater emphasis on export promotion programs is likely to yield results in getting current exporters to expand their activities. The study seems to indicate that while high export sales per se is not a good indicator for the use of export promotion programs, positive opinions about export promotion and a firm's growth are good predictors for use of export promotion programs.

**Sustainable Growth in World Rice Production: Implications for U.S. Producers.** *Dale J. Leuck, USDA-ERS.*

Emerging resource and environmental constraints may limit the growth in world rice production below projected needs by the year 2025. These constraints and elimination of U.S. deficiency payments may boost world rice prices by 30 to 52% above 1992-94 base levels. However, such world price level would be between 80 and 94% of the 1992-94 U.S. incentive price which includes all government payments. The limited impact of these constraints on world rice prices underscores the need for continued reforms elsewhere in world rice markets if U.S. rice farmers are not to be harmed by elimination of the deficiency payments. The analysis does suggest that trade liberalization may not need to be universal or total, however.

**Comparison of Selected U.S. Bulk and Non-Bulk Agricultural Exports Performance.** *Emmanuel N. Onunkwo, S.C. State Univ.*

This study compares the performance of selected U.S. bulk and non-bulk agricultural

exports. The bulk exports are wheat, corn, soybeans, and sorghum, and the non-bulk exports are beef and veal, pork, turkeys (fr., froz.), baby chicks, chicken meats (fr., froz.), variety meats, and cattle and calves live. The grain crops represent a sizable component of U.S. agricultural exports, but have exhibited marked differences in performance compared to non-bulk agricultural exports and nonagricultural exports. Non-bulk agricultural exports, on the other hand, represent an increasingly important component of U.S. agricultural exports.

**TITLE: Econometric Estimation and Modeling Approaches II** (Moderator: Lisa Offenbach House, Miss. State Univ.).

**Integration of Geographical Information Systems Based on Spatial Analysis in Recreational Demand Analysis.** *Gajanan Bhat and John C. Bergstrom, Univ. of Ga.*

This study examines the use of an object-oriented GIS framework to generate and analyze spatial data in recreation demand analysis. Several forms of GIS analysis are introduced and explanations are provided to describe how they can be utilized in recreational demand analysis. An application of GIS to calculate journey distance and duration is illustrated with a case study of camping activities in Cherokee National Forest, North Carolina. The recreation demand models using these travel distance and duration data are then compared with models using respondents' stated values and models using distance data obtained from ZIPFIP software.

**Bayesian Inference for Structural Shift: The Case of Red Meat Demand.** *Ibrahima Yague, Steven C. Turner, and Jack E. Houston, Univ. of Ga.*

This study compares the Bayesian testing procedure for structural change with the Chow test. We found that the Bayesian test performs better than the Chow test. The results indicate that there is a gain in efficiency when some economic prior information is incorporated into the model. Finally, we identify the factors

that are responsible for changes in red meat demand.

**Policy Variables in Acreage Response Models: Another Look at Vintage Specifications.** *Duncan M. Chembezi and Annette P. Coward, Ala. A&M Univ.*

Various quantitative techniques to incorporate risk and policy variables into supply-response models have been developed over the years. This study highlights some of the important contributions that have been made in order to isolate remaining problem areas. Specifically, this study examines the significance of risk and policy variables in acreage decisions. Five alternative model specifications are estimated using alternative policy variable definitions. The models are then compared in terms of their plausibility and appropriateness for policy analysis.

**Enhancing the Study of Agricultural Commodity Markets Through an Integration of Classical Economics and Marketing, Hermeneutical Economics, and Ontological Design Concepts.** *Wayne M. Gauthier, La. State Univ.*

A 1964 conceptualization of a market as a set of linkages between physical transformation activities and a social system offers a paradigm for studying agricultural commodity markets using classical economic and marketing concepts. The integration of hermeneutical economics and ontological design concepts enhances the paradigm by explicitly tying characteristics of the human participants to practices and transactions responsible for evolutionary market developments. Speculation as to how the enhanced paradigm of a market can be used is a necessary step in establishing a role for hermeneutical economics and ontological design in a program of applied economics research.

**TITLE: International Trade: NAFTA Case Studies** (Moderator: Albert J. Allen, Miss. State Univ.).

**The Impact of Expanding NAFTA in the Western Hemisphere on World Soybean**

**Markets.** *Sunggul Sinaga and Albert J. Allen, Miss. State Univ.*

A spatial equilibrium model was constructed to analyze the impact of reduction of import tariffs by the members of regional integration agreements (RIAs) in the Western Hemisphere on world soybean markets. One of the most recent RIAs in the Western Hemisphere (NAFTA) was expanded to include selected countries in this region. The implementation of NAFTA provisions in this region increased world soybean imports. The results also reveal that trade creations existed in the Western Hemisphere. With NAFTA provisions, soybean export volumes for the U.S. as well as other exporting countries were also increased.

**NAFTA's Impact on U.S. Farm Labor.** *Lewell F. Gunter, Univ. of Ga.*

This paper uses a partial equilibrium, three commodity, three country trade model to analyze impacts of NAFTA on U.S. farm labor. Simulation results are reported for three scenarios which include the removal of U.S.-Mexico agricultural trade barriers, the devaluation of the peso, and an increase in investment in Mexican agricultural production.

**A Farm-Level Comparison of Milk Production in Mexico and the United States.** *John Miller, Tex. A&M Univ.*

Mexico has become a major market for U.S. milk. The purpose of this research was to assess the economic viability of milk production in Mexico. With a broader knowledge of the factors affecting milk production in Mexico, the ability to predict future production would be improved. Furthermore, a better understanding of the factors effecting the economic viability of Mexican dairy farms will provide insights for future policy decisions and marketing strategies that can benefit the dairy industries of both countries. Knowing the long-run prospects for increased Mexican milk production and the overall competitiveness of Mexico's dairy economy is an essential element for determining the longer-term potential for expanding U.S. exports.