Selected Papers

Annual Meetings, SAEA, Greensboro, North Carolina, February 1996

TITLE: Consumer Demand Issues and Estimation Procedures (Moderator: Sukant K. Misra, Texas Tech Univ.).

Determinants of Farmer-to-Consumer Direct Market Visitations by Type of Facility: A Logit Analysis. *Ramu Govindasamy and Rodolfo M. Nayga, Jr., Rutgers Univ.*

This study identifies several socioeconomic and demographic characteristics of individuals who have visited farmer-to-consumer direct markets in New Jersey. The analysis was performed for each type of direct marketing facility: pick-your-own farms, roadside stands, farmers' markets, and direct farm markets. Using logit analysis, results indicate that various factors affect visitation to each type of facility. Factors examined include consumer's consumption and variety of fruits and vegetables, price expectation, purpose of buying, age, sex, education, race, income, urbanization, and presence of home garden.

Whole Milk or Lower Fat Milk: A Detailed Profile of Consumer Attitudes Toward Fat Contents in Food. *Jun Zuo, Wen S. Chern, and Robert E. Jacobson, Ohio State Univ.*

The paper investigates the differences of consumer attitudes toward fats in fresh milk for different representative households defined on the bases of income, race, residential location, and family type. The percentages of purchasing either fresh whole milk or other fresh milk, computed from the BLS's consumer expenditure surveys, were used as proxies of the consumer attitudes and a linear trend model was derived to provide specific parameters measuring the changes in consumer attitudes. The estimation results show that the patterns of changes in attitude toward fat content, revealed in actual consumption of milk, differ significantly among demographic groups.

A Vector Autoregression Analysis of Corn Price Shocks on Beef and Pork in the Farm, Wholesale, and Retail Sectors. *M. Akhtar Khan and Glenn A. Helmers, Univ. of Nebr.*

A vector autoregression model is used to characterize and evaluate dynamic relationships between pork and beef supplies and prices at the farm, wholesale, and retail levels in response to a corn price shock. Results indicate a significant difference of response in terms of magnitude of response, adjustment time, and variability both in quantities and prices for pork and beef at three different levels. Further, at the retail level, beef supplies are observed to be subject to less variability than at the farm and wholesale levels. Finally, the results do not suggest a stickiness of retail prices relative to wholesale price or relative to farm-level prices.

A System Demand Analysis for Fresh Fruit: The Importance of Model Choice. *Zhikang You, Chung L. Huang, and James E. Epperson, Univ. of Ga.*

Demand elasticities at retail level for seven fresh fruits were estimated by employing several related differential demand systems and using annual U.S. data over the period 1953–93. These demand systems included the Rotterdam Model, the Almost Ideal Demand System (AIDS), the CBS system, the NBR system, and their scalar linear combinations. Nonnested hypothesis tests involving pair-wise and higher order comparisons indicated that the Rotterdam + NBR combination, which had the Rotterdam type income coefficients but incorpo-

rated both the Rotterdam and the AIDS type price coefficients, performed best.

A Sample Selection Model for Prepared Food Expenditures. *Rodolfo M. Nayga, Jr., Rutgers Univ.*

This paper explores the factors affecting household expenditures on four types of prepared food products from a sample selection model estimated using a two-step method. Results suggest that several variables affect household expenditures on various prepared food products. Factors examined are presence of children, number of earners, region, household size, seasonality, age, race, education, and income.

TITLE: Environmentally Sensitive Production Approaches and Related Adoption Issues (Moderator: Francis Epplin, Okla. State Univ.).

The Effect of Selected Pollution Control Strategies on the Cost of Production of Farm-Raised Trout. *Gayle L. Pounds-Barnett, Univ. of Mo., Carole R. Engle, and Pierre-Justin Kouka, Aquaculture Fisheries Center, Ark.*

Aquaculture is viewed by many as a small but developing agricultural industry with significant potential to degrade water quality. This paper looked at the economies of size present in commercial trout production in raceways and determined what effects alternate pollution control policies would have. Few economies of size were demonstrated at profit-maximizing trout production levels, but the large farms were able to remain relatively efficient over a wide output range. The most efficient pollution control policy based on the scenarios and policy alternatives included in this analysis was the use of restrictions on emissions.

Management Practices to Reduce Groundwater Pollution in Irrigated Areas. *Raymond J. Supalla, Saeed Ahmad, and Roger A. Selley, Univ. of Nebr.*

Alternative methods of reducing nitrate pollution of groundwater from irrigated agriculture were analyzed. Results were found to depend on the nitrate contents of the irrigation water, simulation procedures, and alternative environmental measures. Conventional single point simulations using N leached as an environmental measure yielded erroneous results.

Safety-First Income Risk and Water Quality Policies in the Southern High Plains. *John A. Lehr and Harry P. Mapp, Okla. State Univ.*

A farm-level risk programming model with stochastic net returns and a multi-attribute environmental index is used to compare the relative farm-level economic and environmental outcomes of groundwater policies. Stochastic net returns for the representative farm are generated using EPIC-PST and written into a chance constrained framework of safety-first income risk. A multi-attribute index of environmental outcomes is linked to the model. The farm plans under the policies show that expected net returns were not impacted greatly but income variance increased. The environmental results imply the actual impacts of groundwater protection policies under safety-first rules may not always be directly discernible.

Factors Affecting the Adoption of Environmental Practices by Poultry Growers. *J. Farkasova, C. Gempesaw, J. Bacon, J. Elterich, and J. Martin, Univ. of Del.*

Waste management systems for poultry operations typically include a manure storage facility, a nutrient management plan, and manure analysis. These are important farm practices which can be adopted by poultry growers in order to protect water, land, and air quality. The extent to which individual farm factors influence the adoption of these environmental practices is modeled using single-equation and simultaneous-equation logit models on data from a 1994 survey of poultry growers. The effects of some socio-demographic variables were found to be significant. Using the simultaneous equation approach, a mutual positive relationship between having a management plan and analyzing manure for nutrient was statistically proven.

Valuation of Risk from Pesticide Reduction by Agricultural Producers. *Luanne Lohr, Timothy Park, Univ. of Ga., and Leon Higley, Univ. of Nebr.*

Factors influencing acceptable levels of monetary yield loss associated with reduction in pesticide use are examined for Midwestern crop produc-

ers. Producers evaluate impacts of environmental risks that are closely linked to economic returns in farming operations and will accept lower yields (and monetary losses) in return for reductions in specific environmental risks.

TITLE: Recreation Valuation and Estimation Procedures (Moderator: John E. Reynolds, Univ. of Fla.).

Net Economic Value of Land and Water Based Recreation Activities: An Ecoregional Approach. *John Bergstrom, Gajanan Bhat, Jeff Teasley, Univ. of Ga., J. M. Bowker, and H. Ken Cordell, USDA Forest Service.*

This paper uses an ecoregional approach to estimate individual activity demand functions for land and water-based activities across ecoregions. Individual travel cost method was employed to estimate the recreation demand functions for activities such as motorboating and waterskiing, developed and primitive camping, coldwater fishing, sightseeing and pleasure driving, and big game hunting. Estimates of per trip net economic value range from $12.93 to $218.38, while per day estimates range from $4.31 to $109.19. While our ecoregional approach differs conceptually from previous work, our results appear consistent with earlier work.

An Analysis of Freshwater Recreational Angler Expenditures. *Jack C. Isaacs, Yeong-Nain Chi, and E. Jane Luzar, La. State Univ.*

Freshwater recreational fishing expenditures in Louisiana were econometrically evaluated using data from responses to a survey of 9,602 recreational anglers in Louisiana. Factors hypothesized to influence the variation in angler expenditures included previous experience and skill level, socioeconomic characteristics, and income. Empirical results of the expenditure analysis reinforce the significance of income as an explanatory factor as well as factors related to the life cycle hypothesis.

Estimation of Recreational Anglers' Value of Reef Fish in the Gulf of Mexico. *Gretchen Greene, Charles Moss, Univ. of Fla., and Eric Thunberg, National Marine Fisheries Service.*

Several public policy issues in the Gulf of Mexico region involved the value of the reef-fish recreational fishery. This study estimates the economic impact of this fishery using a travel cost procedure. Demand for a recreational reef fishery is estimated as a function of travel costs and other costs paid, and of success of catch. The results indicate that a 20% reduction in the average catch reduced expenditures by $32.1 million. The fishery is estimated to generate $385.6 million in total expenditures within the state of Florida annually.

Nonlinearity Bias and Dichotomous Choice CVM: Implictions for Aggregate Benefits Estimation. *R. A. Souter and J. M. Bowker, USDA Forest Service.*

A common practice of calculating an overall mean (or median) in single-response dichotomous choice contingent valuation studies is to integrate over offer space (numerically or analytically) an estimated logit or probit function in which sample mean values for the concomitant variables are used. We demonstrate this procedure to be incorrect. Moreover, we statistically test this procedure against the correct method for nonlinear models, which is to estimate the response of interest for each member of the sample, and then average. Using data resulting in a very well-behaved logit model, we reject the hypothesis of congruence between the two means. Such a finding is an important consideration for future single-response dichotomous choice CVM studies, particularly when aggregation is of interest.

Toward a Value for Guided Rafting on Southern Rivers. *J. M. Bowker, D. B. K. English, and Jason Donovan, USDA Forest Service.*

We examine per trip consumer surplus associated with guided white-water rafting on two Southern rivers. First, we estimate household recreation demand functions based on the individual travel cost model using truncated count data regression methods and alternative price specifications. We find per trip consumer surplus values between $56 and $155, depending on modeling assumptions and river quality.

TITLE: U.S. Trade Prospects and Related Issues (Moderator: William A. Amponsah, N.C. A&T Univ.).

Evaluating the Effects of the U.S. Domestic Tobacco Content Requirement. *M. Hasyim Zaini, John C. Beghin, and A. Blake Brown, N.C. State Univ.*

Using a log-linear equilibrium displacement model, we quantify the impact of the 1994 domestic tobacco content requirement in U.S. cigarette manufacturing. We investigate effects on U.S. growers and manufacturers, and competing tobacco imports. The policy increases domestic use of U.S.-grown tobacco but induces a small negative output effect. Tobacco imports decrease substantially. The paper analyzes the economic and political-economic incentives for U.S. manufacturers to comply with the domestic content requirement. Violations penalties are punishing so that manufacturers will respect the requirement. The political collusion between U.S. growers and manufacturers reinforces compliance with the requirement.

Mexican Demand for U.S. Dairy Products. *Aysen Tanyeri-Abur and C. Parr Rosson, III, Texas A&M Univ.*

Mexico is the world's largest importer of nonfat dry milk (NFDM), and imports of cheese and fluid milk have increased rapidly in the past four years. The purpose of this study was to determine the potential demand for U.S. dairy products in Mexico using econometric techniques. Study results indicated that estimated elasticities were: −.14 for NFDM, −.47 for butter, and −.44 for cheese. Increases in imports as a result of unit income changes were 2.3% for fluid milk and 1% for cheese. The exchange rate was also an important variable in explaining import changes, varying from −.59 for fluid milk to −.05 for butter.

Modeling U.S. Wheat Export Supply Using a Profit Function Approach. *Cristobal J. de Brey, C. Parr Rosson, III, and H. Alan Love, Texas A&M Univ.*

The profit function approach, used extensively with macroeconomic data, is applied on a specific agricultural commodity. The U.S. wheat and wheat flour sectors are modeled using the translog functional form. Short-run and medium-run price and quantity elasticities are estimated. Necessary assumptions on aggregation and returns-to-scale are made and tested. For the wheat sector, production for domestic use and for export must be aggregated, whereas flour exports and flour for domestic use must be disaggregated. The constant-returns-to-scale condition is rejected for both sectors. The profit-maximization hypothesis cannot be rejected and produces reasonable elasticity estimates.

U.S. Import Demand for Catfish. *Carel Ligeon, Curtis M. Jolly, and John D. Jackson, Auburn Univ.*

The import demand of catfish was evaluated using a traditional import demand function. The effects of increased exports from NAFTA member countries were evaluated. The results show that the quantity of catfish imported will fall if the domestic price of catfish falls relative to the import price. Past imports have no effect on present imports. Doubling the levels of imports from NAFTA member countries is not a threat to the U.S. catfish industry.

Measuring the Quality of Imported Tobacco. *George C. Davis and William J. Hewitt, Univ. of Tenn.*

Domestic tobacco producers have faced increasing competition from imported tobacco since the late 1970s. Much of the debate has centered on the unknown quality of imported tobacco. The purpose of this paper is to demonstrate a method of measuring the average quality of imported tobacco. The results show that since 1977, imported tobacco has been steadily decreasing in average quality and moving towards lower quality producing countries and types of tobacco. The reasons for this decline are discussed along with the policy implications.

TITLE: Natural Resources Use Issues and Environmental Interactions (Moderator: John A. Lehr, Okla. State Univ.).

Measuring the Change in Pesticide Hazard Resulting from the Integrated Crop Management Federal Cost-Share Program. *Timothy R. Eggers, Francis M. Epplin, and Michael R. Dicks, Okla. State Univ.*

The Integrated Crop Management (ICM) program was initiated to provide Agricultural Conservation Program cost-share funds to encourage producers to reduce use of chemical pesticides. This study was conducted to determine if potential hazard from pesticide use declined on ICM fields. Data

were obtained from ICM participants regarding pre-ICM and ICM production practices. The Environmental Impact Quotient (EIQ) measure of pesticide hazard was used. Aggregate potential hazard decreased on the ICM acres in 69% of the participating states. Additional research will be required to determine if ICM practices are economically viable in the absence of cost-share funds.

Estimating Farmer Option Value from Boll Weevil Eradication. *John R. C. Robinson, Miss. State Univ., Teofilo Ozuna, Jr., and Ronald D. Lacewell, Texas A&M Univ.*

The paper shows that boll weevil eradication would generate additional ex ante benefits to farmers beyond expected surplus. These extra benefits are defined as option value. The paper presents an argument for the validity of the direct estimation of option value. The results provide empirical evidence in support of this argument.

A Multilevel Approach to Resource Valuation: An Analytical Application to Conjunctive Water Management. *Vijay Muralidaran and Hayri Önal, Univ. of Ill.*

Pigouvian taxes/subsidies derived from the socially optimum shadow prices of shared resources may result in serious deviations between users' response and the socially optimal resource use when the respective objectives differ structurally or parametrically. This is illustrated with regard to the management of conjunctive water use. This paper develops a dynamic bilevel optimization framework that includes the profit maximizing behavior of the farmers as an explicit constraint in maximization of the policy objective. A dynamic programming procedure is proposed to solve the reduced nonlinear dynamic mixed integer problem. The methodological approach proposed here has significant potential for resource pricing and allocation problems.

An Application of Chaos Concepts to Economy-Environment Interactions. *Seunghun Joh, Univ. of Ga.*

In environmental policy making, multidisciplinary coordination among economics, ecology, and physics is increasingly required for a comprehensive understanding of environmental problems. The author shows how ecological knowledge and chaos concepts can be applied to decide a feasible level of ecosystem situation under the conditions of utility maximization and sustainability of the ecosystem. The economy-environment cycle of interactions is analyzed with four phases. Based on this dynamic model, chaos theory concepts are introduced for optimal policy making on ecosystem management. For appropriate ecosystem situation indicators, an alternative form of indicators is presented in economic terms instead of biophysical ones.

Use of Nitrogen Stabilizers in U.S. Crop Production and Economic and Environmental Effects. *Wen-Yuan Huang and Harold Taylor, ERS, USDA.*

Analysis of 1990 to 1994 field survey data shows that the use of nitrogen stabilizers in the Cornbelt states and Nebraska has a mixed effect on the economic efficiency of nitrogen fertilizer use and also on the reduction of residual nitrogen potential for leaching. A farmer growing non-irrigated corn in the Cornbelt states has a greater chance to improve net return and reduce residual nitrogen than a farmer growing irrigated corn in Nebraska.

TITLE: Trade Prospects and Related Happenings (Moderator: Glenn C. W. Ames, Univ. of Ga.).

Demand and Competition Among Supply Sources for the Indonesian Fruit Import Market. *Sri R. M. Andayani and Daniel S. Tilley, Okla. State Univ.*

Indonesia has been a rapidly growing and competitive market for U.S. high-valued food product exports, particularly fruit. A restricted, source differentiated almost ideal demand system is estimated for apples, oranges, grapes, and other fruit in Indonesia. The Marshallian income elasticities for U.S. fruit are estimated to be between 1 and 1.2, indicating continued market growth as income in Indonesia increases. Hicksian substitution among sources and among fruits is strongly supported.

Using Section 301 Trade Threats to Open Foreign Markets: Implications for U.S. Agriculture. *Mylene Kherellah, The World Bank, and John Beghin, N.C. State Univ.*

This paper presents an analysis of factors determining trade wars and agreements under Section

301 of the U.S. Trade Act based on Crawford's theory of disagreement. A system of two probit equations is estimated using historical data on Section 301 cases. In the U.S., policymakers tend to stand firm when the foreign industries have low trade barriers, when the U.S. export share in the world market is declining, when the U.S. is less dependent on the market of the targeted country and for agricultural markets. Foreign policymakers tend to stand firm during election years, and for highly protected and unionized industries.

Environmental Content Preferences and Free Trade Areas: Some Implications for Trade and Resource Reallocation. *Adama Ekberg Coulibaly, Univ. of Mo.*

This paper suggests a conceptual framework to examine the trade and resource reallocation effects of different rules of environmental content preferences (ECP) within free trade agreement areas (FTA). The concept of ECP is introduced by means of rules with which a firm operating under perfect competition must comply. The rules include cost, price-based concepts, and quantitative restrictions. The results show that different rules governing the ECP can lead to significantly different effects on trade and resource reallocation. The case of the Japanese' direct investment abroad is provided as an illustration.

Export Demand for U.S. Orange Juice: Impacts of U.S. Export Promotion Programs. *Bernard K. Armah, Jr., and James E. Epperson, Univ. of Ga.*

Export demand for U.S. frozen concentrated orange juice (FCOJ) was estimated with special focus on the impacts of export promotion programs based on annual observations from 1984 to 1992. The study was based on exports to France, Germany, Japan, the Netherlands, and the United Kingdom. Results indicate that own-price, real exchange rate of the importing country in most cases, and trend had a negative relationship with U.S. FCOJ exports; while the price of Brazilian FCOJ exports, the real income (GNP) of the importing country, and export promotion programs were positively related to U.S. FCOJ exports.

Analysis of the U.S.-European Community Oilseeds Agreements. *Claudia D. Davis, Glenn C. W. Ames, and Lewell Gunter, Univ. of Ga.*

In 1986, the American Soybean Association filed a petition under the Trade Act of 1974, alleging that European Community oilseed subsidies nullified and impaired benefits of previous trade concessions, specifically the tariff binding of 1962. To remedy the dispute, two bilateral trade agreements were negotiated: the Blair House Agreement and the Memorandum of Understanding on Oilseeds. The impacts of these trade agreements were simulated using a three-region trade model. Results indicated that neither supply constraints nor penalties for overproduction will contribute to a recovery of U.S. soybean exports to the EC.

TITLE: Animal Waste Utilization and Other Innovative Production Approaches (Moderator: Jason L. Johnson, Texas Tech Univ.).

The Potential Role of Broiler Manure as Plant Nutrient Source for Cotton. *John R. Allison, Grant Humphries, and Harvey Witt, Univ. of Ga.*

Local and long distance transportation can supply broiler manure as an economical source of plant nutrients for hay, corn, and cotton. Analysis of the manure, soil, and crop requirements must be matched for optimum use in the prevention of excess P_2O_5 application.

An Economic Analysis of Crop Response to Poultry Litter Applications. *Mark J. Cochran, Univ. of Ark., and Ramu Govindasamy, Rutgers Univ.*

Arkansas ranks first in the nation in broiler production with over a billion broilers being produced every year. As a result, over a million tons of litter are being produced in the state. Potential for the export of litter to the delta region is explored through a three-year experimental crop response to litter applications study. Yield responses of rice, cotton, and soybeans, net returns per acre, and net present values are analyzed for each treatment. The results indicate that fresh litter is more economical than the composted litter and that the crop responses are approximately similar to fresh and composted litter treatments.

Economic Comparisons Between Traditional and Relay Production Systems: A Cotton Case Study from Southern Georgia. *C. Robert Stark,*

Jr., Sharad C. Phatak, Frederick N. Reed, Univ. of Ga., and Charles Deen, Jr., Coffee County, Ga.

The successful Georgia Boll Weevil Eradication Program reduced the number of chemical sprays required for cotton production and increased projected net returns. Georgia producers responded by increasing cotton acreage more than 225% since 1993. The reduced spray requirements permitted interest in relay production systems from vegetables which utilized beneficial insects. An on-farm test from southern Georgia suggests that relay systems may reduce dependence on direct chemical spraying, yet produce higher yields than traditional systems. Economic comparisons indicate total production costs are not significantly different between systems, but the higher yields of relay systems result in increased producer net returns.

The Impact of Trellis Systems and Management Practices on Grape Production in Florida. *Stephen Leong and David Jones, Fla. A&M Univ.*

The effects of Single-Wire (SW) and Geneva Double Curtain (GDC) trellis systems, irrigation systems, and vineyard management practices on average yield of muscadine and bunch grapes in Florida were examined by using a multiple linear regression model. The analysis shows that the difference in average productivity between trellis systems and irrigation systems was not significant, although the GDC system with drip irrigation provided a higher yield. The average yield difference from using recommended vineyard practices was also not significant. The insignificant difference may explain why the SW system is still popular and why some growers did not follow recommended practices.

Farm-Level Costs and Environmental Benefits of Manure Management Standards in Rockingham County, Virginia. *Robert L. Parsons and James W. Pease, Va. Tech.*

Financial and environmental impacts of proposed manure management standards on representative dairy and dairy/poultry farms are simulated with EPIC and FLIPSIM. Reductions in nutrient losses are achieved under a nitrogen nutrient restriction program without any adverse impacts on crop yields or farm finances. A phosphorus nutrient restriction reduces nutrient losses without reducing crop yields, but with a loss in farm income and net worth. Smaller, more land-intensive farms have relatively more nutrient loss problems and have the most substantial impact on farm income, and costs for reducing such losses are similar across farm sizes. Dairy/poultry farms would see relatively poorer financial results than those simulated if off-farm litter costs are imposed.

TITLE: Agricultural Finance and Related Topics (Moderator: Timothy Park, Univ. of Ga.).

Financial Performance of North Carolina Tobacco Farmers: A Multinominal Logit Analysis. *Raphael O. Okafor and Donald R. McDowell, N.C. A&T State Univ.*

A multidimensional financial procedure developed by Melicar and employed by Wadsworth and Bravo-Ureta was used to classify a sample of 404 North Carolina tobacco farms according to their financial performance. Each farmer's debt-to-asset ratio, return on assets, return on equity, and equity position were calculated and categorized into four performance indexes. These indexes indicated that over 60% of the farmers were in fair financial condition. A multinominal logit analysis using these financial classifications (indexes) was used to examine selected demographic and socioeconomic variables as determinants of financial performance.

Black Plastic Mulch as an Investment Strategy for Limited Resource Farmers. *Curtis M. Jolly, Constance Ileko Mugalla, and T. Glover, Auburn Univ.*

Black plastic mulch was investigated as an investment strategy for limited resource farmers. Data collected from farmers were supplemented with information from experimental stations to develop a model to evaluate the economic and financial short-term net benefits of this technology. Capital budgeting was used to evaluate the long-term feasibility. Model results show that the technology is profitable when equipment is rented or purchased. Capital budgeting techniques demonstrated that investment in black plastic mulch is profitable in the long run, and for all age groups when prices of inputs and output are held constant, and when allowed to vary over time.

A Financial Analysis of Shrimp Farming in South Carolina: The Profitability of Native *Penaeus Setiferus* Versus Non-Indigenous *Penaeus Vannmei.* *S. Sureshwaran, Carol Greene, R. J. Rhodes, C. L. Browdy, and A. Stokes, S.C. State Univ.*

With over 1 million pounds of production and a pond-side value of almost $3 million, South Carolina is the second-largest shrimp producing state in the country. Several new farms have begun operations over the past three years, and interest in shrimp farming continues to be strong. A profit and loss analysis indicates that indigenous Atlantic white shrimp (*P. setiferus*) is less economically viable as compared to the Pacific white shrimp (*P. vannamei*). It is anticipated that regulatory exclusion of healthy non-indigenous shrimp stocks would have significant adverse impacts on the development of a marine shrimp farming industry in the region.

Impacts of Farm and Nonfarm Income on Land Values. *Allan W. Gray, Joe L. Outlaw, and Atanu Saha, Texas A&M Univ.*

This research uses a cross-section of 48 states for the time period 1951 to 1991 to estimate the overall impact of farm income and nonfarm income on U.S. farm landvalues. Based on previous research and theory, a model is developed to examine factors that are common across all farmland values in the U.S. Initial OLS and pooled cross-sectional time series techniques are employed, and tests show presence of nonspherical errors. Once correction measures are undertaken, the model is estimated again using OLS and pooled cross-sectional time series techniques. Based on tests of the assumptions in error structure, the pooled model after the data have been corrected is determined to be the better model to use for estimation. Elasticities at the mean are computed for the model under all estimation techniques. The OLS results after data correction indicated that the elasticities for farm income and nonfarm income were approximately the same. The pooled model after data correction, however, indicated that the effect of nonfarm income on farmland values is about 1.5 times that of farm income.

Financial Leverage and Competitive Behavior in the Food Retailing Industry. *Timothy Park, Univ. of Ga., and Ananda Welewita, Univ. of Nebr.*

A model of the food retailing industry examines competitive conditions and the impact of changing financial structure on input decisions. Changes in both total current liabilities and long-term debt have shifted the industry cost function and the use of inputs by the food retailers, resulting in closer monitoring of costs and higher levels of efficiency. The index of market power was stable over the 1982–91 period, indicating that higher debt levels have not contributed to increased market power.

TITLE: Price Analysis and Estimation Approaches I (Moderator: Ron Larson, N.C. State Univ.).

Temporal Aggregation Effects in Agricultural Prices: An Empirical Evidence. *Mehboob U. Ahmed, and Ashok K. Mishra, N.C. State Univ.*

This paper examines the effect of temporal aggregation in agricultural price. Theoretically, aggregation may occur due to both systematic sampling and temporal aggregation. This study uses recent time series econometric procedures to study the effect of temporal aggregation. In particular, we attempt to identify the Brewer's, Tiao's, and small sample effects. Results indicate that temporal aggregation causes a severe loss of information about the time series process and also leads to a simpler time series model that causes the autoregressive parameters to be insignificant, and moving average order to increase.

Pricing of Cotton Quality Attributes. *Don E. Ethridge, Texas Tech Univ., Changping Chen, Univ. of Ga., and M. Darren Hudson, Texas Tech Univ.*

Results of research to determine cotton prices and quality premiums and discounts paid by U.S. textile manufacturers for the 1992–95 period indicate that there are both similarities and differences in the premiums and discounts for fiber attributes based on region of origin of the cotton. The differences are most pronounced for micronaire and strength. Comparisons of the structure of premiums and discounts between the mill market in the Southwest production region and the producer market in the Southwest show differences, but the dif-

ferences between the two pricing points are not as great as USDA-reported prices suggest.

A Case Study of Retail Milk Price Correspondence: A Time Series Approach. *Jayantha R. Perera, Joe L. Outlaw, and Ron Knutson, Texas A&M Univ.*

This paper is an attempt to apply a time series approach to study retail milk price correspondence in Houston and Bryan/College Station supermarkets in Texas. This study addresses the widespread perception among producers that decreases in producer prices are not reflected in retail prices. The modeling followed the strategy outlined by Hsiao. The Akaike's information criterion was used to determine the length of the distributed lag. The information on current milk prices of supermarkets does not seem to flow from one market to another in Houston. In Bryan/College Station, considerable interdependencies in price determination were noted. The cooperative milk prices do not play a significant role in both cities' supermarket milk pricing decisions.

An Analysis of the U.S. Retail Markets for Farm-Raised Catfish: A Multinomial Logit Approach. *Surajudeen O. Olowolayemo, Tuskegee Univ., and Pierre-Justin Kouka, Univ. of Ark.*

A multinomial logit analysis was used to identify current and potential retail grocery markets for farm-raised catfish. Regional probabilities and marginal impacts were calculated for various store sizes and consumers' income scenarios. Pacific, East North Central, and West South Central regions were identified as potential markets. Stores currently selling catfish in the East South Central U.S. were identified as having the highest probability of continuing to sell catfish.

Fine-Tuning Marketing Research by Producer Groups. *Ron Larson, N.C. State Univ.*

The high cost of marketing research projects may limit the number completed by agricultural producer groups and reduce their enthusiasm for the research. By using regional sales indices, marketeers can locate areas that may be excellent candidates for regional promotions and can identify promotion partners that could enhance the productivity of their marketing spending. By narrowing the search, the research costs can be reduced and more producer group funds can be devoted to generating incremental sales.

TITLE: Teaching and Extension Issues and Approaches (Moderator: Larry Sanders, Okla. State Univ.).

A Systems Approach for Teaching Policy Analysis. *Fred C. White, Univ. of Ga.*

The paper describes an innovative instructional technique which was developed for courses dealing with the economic analysis of public policies. The interactive learning system integrates team building, intra-team cooperation, inter-team negotiation, and economic simulation. The system provides continual feedback to students on their economic understanding and decision-making processes. It helps improve students' decision-making skills and increase their understanding of the economic consequences of public policies.

Teaching Rural Development Economics to Agribusiness Students at the Baccalaureate Level: The Common Ground Between Two Areas of Study. *David W. Hughes, La. State Univ.*

Linkages between agribusiness and rural development economics relevant to undergraduate education are examined. A graduate/senior-level course in rural development economics helps reenforce understanding of the agribusiness system and some basic principles of agribusiness management. The paper discusses relevant course objectives and efforts at enhancing student understanding of the socioeconomic environment in which agribusiness firms operate. An emphasis is placed on the evolution of agribusiness. The sector is used to introduce students to value added and to input-output models. The discussion then moves to examining how the managerial abilities of students are enhanced through location theory concepts.

Implementing Internships in Agribusiness Curricula. *R. Wes Harrison and P. Lynn Kennedy, La. State Univ.*

Internship programs complement classroom instruction in preparing students for careers in the agribusiness industry. For experiential learning to be an integral part of agribusiness management training, the student, industry, and educational institu-

tion must each play a role in the design and implementation of the internship program. This paper presents a framework for developing and implementing an internship program that emphasizes the interrelationships among agribusiness students, industry, and educators.

Quicken: New Life for Farm Financial Recordkeeping Programs. *Damona G. Doye, Okla. State Univ.*

Farm financial recordkeeping, though generally recognized as important, is a distasteful chore for many farmers. Despite educators' admirable efforts, no hand-kept record book or software package earned widespread acceptance, and the number of requests for educational programs focusing on farm financial records dwindled. In 1992, a decision was made to evaluate Quicken, a commercial software package for personal financial recordkeeping, as a tool for farm financial recordkeeping. The purposes of this paper are to summarize the Oklahoma experience in using Quicken to teach financial recordkeeping and provide ideas on how to conduct "hands on" computer workshops successfully.

Sources and Usefulness of Information Services for North Carolina Commercial Farmers. *William A. Amponsah, N.C. A&T State Univ.*

The use of professional providers of information services is documented in this study. The study is based on a survey conducted in 1991, as part of a regional project on North Carolina, and about 14 other states. The results revealed that commercial farmers' use of professional services, such as tax preparers and extension agents, were positively influenced by farm size, age, and education level.

TITLE: Econometric Estimation and Modeling Approaches (Moderator: Changping Chen, Univ. of Ga.).

A Structural State-Level Econometric Model. *D. Batkova, C. Gempesaw, and J. G. Elterich, Univ. of Del.*

The Nerlove partial adjustment model is used to estimate coefficients and elasticities of agricultural supply response in Delaware using data for the period 1950–90. Lagged input and output price ratios constitute proxies for real price expectations. Effects of exogenous variables, such as research and extension expenditures and weather variables in crop production, are examined. Results indicate that poultry producers adjust to changing conditions almost instantaneously, while producers of other livestock commodities and producers of field crop commodities react with a lag. Agricultural supply appears less responsive to changes in state agricultural research expenditure stocks than to national research expenditure stocks.

A Nonparametric Analysis of Output Technical Efficiency for Irrigated Agriculture in Punjab (Pakistan). *Haq N. Shah and Allen M. Featherstone, Kans. State Univ.*

A nonparametric analysis of Farrell, pure technical, and scale efficiencies was conducted for a sample of farms from the Punjab province of Pakistan. The results indicate that, on average, 39.59% of potential output was lost due to Farrell inefficiency, 30.18% due to pure technical inefficiency, and 7.33% due to scale inefficiency. Most of the farmers were scale inefficient, mainly due to holdings being too small. Farmers with different farm sizes and educational levels did not exhibit significant differences in pure technical efficiency; however, these factors had significant influence on scale efficiency.

A Geometric Estimator for Modeling Observed Insecticide Application Frequencies. *Bryan J. Hubbell, Univ. of Ga.*

The number of insecticide applications made by an apple grower to control an insect infestation is modeled as a geometric random variable. Frequency of application is thus dependent on the probability of reaching a target population threshold with a given application. Results suggest that western apple growers have the highest and mid-Atlantic growers the lowest probability of success in controlling an infestation with a given application. Growers are not responsive to either insecticide costs or costs of application, supporting findings from previous demand analyses.

Spatial Modeling of Household Dependence on Fuelwood. *Rodolfo V. Tanjuakio, and John Mackenzie, Univ. of Del.*

This study analyzes both economic and locational factors affecting the use of wood as primary residential heating fuel in Delaware. It estimates an economic model of fuelwood dependence which explicitly accounts for spatial variation in fuelwood availability. Results indicate that the incidence of fuelwood use is influenced both by the uneven spatial distribution of forest resource and by apparent household imitation behaviors. More generally, it provides a concise illustration of the econometric effects, treatment, and interpretation of spatial autocorrelation processes.

Nonparametric Testing for Curvature Conditions. *Jian C. Ma, Univ. of Mo.*

Violation of the curvature conditions that are implied by economic theory is often encountered in estimating flexible functional forms in applied economic analysis. This problem has not gone unnoticed. Different efforts have been made to impose curvature conditions either locally or globally to the functional forms. But this may lead to inconsistent estimation. This paper proposes and empirically tests a nonparametric method of testing curvature conditions. The average Hessian and nonparametric estimate of it are introduced. One simulation example and one empirical example are used to demonstrate how the nonparametric method can be used to test curvature conditions.

TITLE: Potpourri (Moderator: Ramu Govindasamy, Rutgers Univ.).

Yemenis in the United States and Their Contribution to Home Country Development. *Abdulkudos Almarwani, Ntam Baharanyi, Arthur Siaway, and Jianbang Gan, Tuskegee Univ.*

Emigrants' remittance is one of the main components of the national income in Yemen. A survey of elements of Yemeni emigrants to the United States was conducted to study the impact of socioeconomic factors on financial remittances. Age, place of birth, and savings had a significant impact on remittance. Regression coefficients were 11.6, –183.6, and 0.69, respectively. The logit model showed that age, place of birth, parents' residence, spouse's residence, length of stay in the United States, education, and income had a significant impact on the likelihood of sending money for home country development through remittances to family members. Logit coefficients were 0.05, –1.16, –0.12, 0.19, –0.04, –0.14, and –0.0002, respectively.

Effects of Monetary Policy During Hyperinflation Period on Yugoslavia's Agribusiness Sector. *Dragan Miljkovic, Motsamai Mochabelele, Viju Ipe, and Aleksandar Bekric, Univ. of Ill.*

Yugoslavia's recent hyperinflation has been initiated by some external shocks as well as inadequate macroeconomics (especially monetary) policies. It is found that there exists unidirectional causality from the employment level in the state-owned agribusiness sector to the growth rate of money supply. Growth rate of money supply affects demand for livestock and milk by processing and wholesale state-owned industry, while no such relationship is determined for grain. Agricultural producers are facing bottlenecks in the cases of livestock and milk because they depend exclusively on shrinking state sector demand. Initial high investment cost discourages the private sector from entry into the industry. Small-scale private sectors in low-cost grain processing and storing emerged as an answer to shrinking state sector demand.

Economics of Alternative Production Systems for Wheat and Lentils in Jordan. *Amer S. Jabarin and Francis M. Epplin, Okla. State Univ.*

This study was conducted to determine if wheat and lentil production systems using commercial fertilizer and increased levels of mechanization are economically viable alternatives to traditional Jordanian systems. Interviews were conducted to obtain data. Maximum likelihood methods were used to estimate response functions and enterprise budgeting methods were used to conduct economic analysis. Wheat grain, wheat straw, lentil seeds, and lentil hay are all economically important products in the region. Production systems that do not preserve the value of the wheat straw and lentil hay are not likely to be economically competitive.

Economics of Intensifying Catfish Production Using Water Circulation or Filtration. *Pierre-Justin Kouka, and Carole R. Engle, Univ. of Ark.*

A linear programming model was developed to evaluate the economics of intensifying fish produc-

tion through water circulation or filtration. Results should help provide recommendations to fish farmers on cost-effective technologies to intensify production without adverse impact on water quality. At high stocking densities, expected benefits outweighed increased costs, and water circulation was selected to reduce the burden of heavy environmental regulations. However, at low catfish stocking densities, farmers would choose not to adopt any of the technologies because of the minimal impact of fishpond water to environmental safety.

Assessing the Economic Costs of Pesticide-Free Cucumbers. *Godfrey C. Ejimakor, N.C. A&T State Univ.*

The economic costs of reducing the use of pesticides in cucumber production in the United States were estimated by using demand, supply, and partial elasticity of production coefficients. Estimated increases in producer surplus exceeded the decrease in consumer surplus, resulting in a net gain in welfare.

TITLE: Agricultural Commodity Programs and Agricultural Research Funding Prospects (Moderator: Joyce E. Allen, Univ. of Ill.).

Base Acre Returns Under Alternative Rice Program Payment Options for Southwest Louisiana Rice Farms. *Michael E. Salassi, Hector O. Zapata, and G. Grant Giesler, La. State Univ.*

This study analyzed the impact of alternative levels of reduction in rice program payments on base acre returns of tenant operators producing rice in southwest Louisiana. Alternative program payment options evaluated in the study included decreases in deficiency payments through reductions in target price and payment acreage. Base acre returns were simulated over a six-year period using a model which incorporated multivariate normal random prices as well as recent changes in the calculation of rice deficiency payments. Reductions in program payments were found to significantly reduce returns above total specified costs given current yield and price levels.

A Post Mortem of the U.S. Honey Program. *Mary K. Muth, Walter N. Thurman, and Ching-Ta Chuang, N.C. State Univ.*

During the 1980s, honey forfeited by producers under a non-recourse loan program and donated to consumers offset market sales by more than three quarters of a pound per donated pound. Higher prices to producers increased annual production by 18 million pounds at a per donated pound taxpayer expense of $100 million. We demonstrate that it is impossible to determine the direction of welfare effects from a honey subsidy. Gains in markets with externalities may be entirely offset by losses in markets for pollination and beekeeping services. Much of our analysis can be used to describe the possible effects of a new duty on honey imports.

Agricultural Research Funding: A Regional Analysis. *Dale Colyer, Virgil Norton, and Larry Davis-Swing, Univ. of Nebr.*

The traditional and highly productive state-federal cooperative support for university research is under pressure. CSRS formula funds have been the federal base for this partnership, but are being replaced by a competitive system no longer tied to numbers of farms, rural population, or agricultural experiment stations. The shift in philosophy of agricultural research support has changed the distribution of funds among regions, and concentrated competitive grant funds among a small number of large universities. Agricultural economics departments have seen diminished Hatch funding relative to other disciplines and must be creative in finding ways to tap into nontraditional sources of funds.

Participant Priorities for a Limited CRP Contract Extension. *Deacue Fields and Mike Monson, Univ. of Mo.*

Budgetary concerns may limit the scope or extensions of the Conservation Reserve Program. Participant priorities in selecting land for a possible extension of a portion of existing contracts in four counties in Missouri emphasize soil erosion control. A chi-square analysis indicated that age and distance of residence from CRP acreage did not influence the priority placed on any environmental factors. Dependency was found for education, percentage of acreage returning to cropland, and willingness to participate at a lower payment rate. Allowing participants to select acres for limited extension may prioritize environmental benefits, as will reduced payment rates per acre.

Attitudes and Economic Rents: A Property Rights Perspective on Wildlife Farming and Regulatory Policy. *Ferdinand F. Wirth and E. Jane Luzar, La. State Univ.*

Recognizing the many controversies surrounding regulation and management of wildlife farming, this study focuses on the role attitudes and economic rents play in determining wildlife farming regulatory policy. In particular, the role of attitudes and economic rents in establishing values for wildlife and regulatory regimes is addressed. A hypothesis regarding regulation and valuation of wildlife species based on perceived, intrinsic species' value is developed using a biological framework which incorporates anthropomorphism. The study uses Louisiana as a case study due to its interest in wildlife farming and regulatory administrative structure.

TITLE: Production Efficiency and New Production Approaches (Moderator: Vijay Muralidaran, Univ. of Ill.).

Economic Evaluation of Applying a Harvest-Aid Followed by a Once-Over Harvest for Cotton in West Tennessee. *James A. Larson, Robert M. Hayes, Roland K. Roberts, Owen C. Gwathmey, and Delton C. Gerloff, Univ. of Tenn.*

Information is limited on the tradeoffs of applying a harvest-aid followed by a once-over harvest compared with a twice-over harvest for picker cotton. Factors that influence this decision are: responses of first-harvest yield and quality to the harvest-aid, variation in base and quality prices, substitution of harvest-aid for second-harvest costs, and weather-related losses between harvests. Partial budgeting and break-even analysis were used to evaluate each element. Results show that the Dropp-Prep combination has the greatest potential—exceeding twice-over net revenue up to $0.68/lb. Break-even prices for the other harvest-aids were much lower.

Minimizing Cotton Cleaning Cost. *Blake K. Bennett and Sukant K. Misra, Texas Tech Univ.*

By employing survey, regression, and simulation techniques, this research identifies the least-cost cotton cleaning configurations across the harvesting, ginning, and textile mill stages. Given the standard textile mill technology, the least-cost cleaning configurations were found to include the use of a field cleaner in the harvesting stage and one lint cleaning in the ginning stage, regardless of the quality of yarn that is desired. It was determined that if the recommended cleaning configurations are employed, the cotton industry could save between $0.53 to $1.03 per bale of cotton depending on the desired yarn quality.

Optimum Crop and Irrigation Decisions Under Uncertainty in Water Availability. *M. Tariq Javed, Glenn A. Helmers, Maurice Baker, Univ. of Nebr., and Joseph A. Atwood, Mont. State Univ.*

Surface water irrigation is derived from impoundments increasingly occurring in a framework of multiple demands. These demands include recreation, flood prevention, and remaining stream flows interests. The latter often involve environmental concerns relating to remaining stream flow levels. This analysis examines crop selection and irrigation application decisions under a setting of uncertain water supplies. Discrete stochastic programming was employed to analyze sequential decision making using historical stream flow data. Marginal values for irrigation water removed from use to support other water-based activities were also estimated in the analysis.

Data Envelope Analysis of Efficiency in Farrow-to-Finish Hog Operations. *Muhammad Zulfiqar Ahmed, Glenn A. Helmers, and Intarapapong Walaiporn, Univ. of Nebr.*

Data Envelopment Analysis (DEA), a nonparametric method, is used to construct efficient production frontiers and to assess the efficiency of each of 58 individual farrow-to-finish swine producers. Peer groups for individual producers are identified. Scale efficiency and local returns to scale are derived to investigate the relationship between scale efficiency and size of operation. The study finds that (*a*) there is no significant relationship between size and scale efficiency; (*b*) on average, scale inefficiency results in 6% excess use of inputs; and (*c*) about one-half of the swine producers are scale-inefficient because of decreasing returns to scale.

Cost of Producing and Delivering Switchgrass Biomass to an Ethanol Conversion Facility. *Francis M. Epplin, Okla. State Univ.*

Three important public policy problems—dependence upon imported oil, environmental degradation, and the cost of cropland diversion—may be addressed by using cropland to produce biomass for conversion to liquid fuels. This study was conducted to determine the cost of producing and transporting switchgrass biomass to an ethanol conversion facility. Enterprise budgeting was used to estimate the cost of establishing, maintaining, and harvesting switchgrass. The cost to deliver a dry ton of switchgrass biomass to a conversion facility was estimated to be $35.57. Approximately 18% of the cost is for establishment, 28% for land, 24% for harvesting, and 30% for loading and transportation.

TITLE: Agricultural Price Analysis and Related Issues II (Moderator: Bryan Hubbell, Univ. of Ga.).

Market Structure and Price Variation in Feeder Cattle Markets: Strategic Marketing Alternatives for Feeder Cattle Suppliers. *Michael Popp, Stephen P. Davies, and Bruce B. Bainbridge, Colo. State Univ.*

This paper examines the effects of oligopsony and structural change on feeder cattle price variation. Short-run feeder cattle price risk may be a critical factor for both long-run capacity adjustment and short-run marketing decisions for feeder cattle suppliers and feedlots. Results suggest that market power is cyclical and that growth in feedlot and cow-calf operation size has added to price variability. A profitable marketing alternative for feeder cattle suppliers may be to retain ownership through the feeding process when seasonal or cyclical excess supplies of feeder cattle exist. Feeding to heavier placement weights is another option.

Terminal Market Windows for Mississippi Small Farm Producers of Sweet Potatoes. *Dovi Alipoe, Roddric L. Bell, and Sara K. Stallings, Alcorn State Univ.*

The overall objective of this study was to identify the seasonal profitability and risk associated with Mississippi sweet potatoes in seven terminal markets in the U.S. Analysis of historical weekly price data extending for a period of ten years revealed through the market window technique and generalized stochastic dominance the following results: (*a*) profit margins for Mississippi small farm producers are highest in New Orleans, Detroit, and Chicago from the 25th week through the 33rd week of the calendar year; (*b*) pairwise generalized stochastic dominance ranked the New Orleans and Chicago markets as the preferred marketing strategies.

Mean Reversion in Cotton Futures Prices. *Emmett Elam, Texas Tech Univ., Changping Chen, Univ. of Ga., and Don E. Ethridge, Texas Tech Univ.*

This study found that when the planting time price of December cotton futures was high relative to the long-term average, the harvest price would tend to be lower, and vice versa. This process is called mean reversion. Hedging/speculation strategies, devised to take advantage of mean reversion, showed significant returns in a 14-year simulation.

Explaining Prices of Race-Bred Yearling Quarter Horses Produced by Quarter Horse Sires and Dams. *Notie H. Lansford, Jr., Donald Topliff, David Freeman, and Odell Walker, Okla. State Univ.*

Yearling quarter horse prices are dependent upon a combination of genetic, phenotypic, and other characteristics. Quantifiable genetic and macroeconomic variables for 5,295 sales from 1982–92 are used in a hedonic price model. Marginal values and discrete incremental prices are determined for 26 characteristics, 23 significant. The model's good fit implies it may be helpful for maximizing breeder returns. Three cases are presented for illustration. Overall, buyers pay substantial premiums if the yearling's first dam or sire was a champion and if the sire or first dam previously produced a champion. The results compare favorably with and corroborate previous work.

Forecasting Feeder Cattle Placements and Fed Cattle Marketing: A Time Series Approach. *Jayantha R. Perera, Joe L. Outlaw, David P. Ernstes, Texas A&M Univ., and David P. Anderson, Livestock Marketing Information Center.*

Time series models for the number of feeder cattle placed in feedlots (NPF) and fed cattle mar-

keting (FCM) in the United States were developed using monthly time series data from May 1974 to December 1992. Five cointegration vectors were found in the six-variable model. An error correction model (ECM) and dynamic OLS models for NPF and FCM were developed. Using these models, NPF and FCM were forecasted for the period of January 1993 to November 1994. Performance of ECM and dynamic OLS models was compared with actual observed values and outperformed the OLS forecasted values in NPF. The ECM forecasted values followed the observed values in FCM, but comparison with OLS was inconclusive.

TITLE: Farm-Level Decison Making and Related Issues (Moderator: C. Robert Stark, Univ. of Ga.).

Farm Ownership and Participation in Off-farm Employment. *Edmund M. Tavernier and Tugrul T. Temel, Rutgers Univ.*

This study examines the impacts of farm ownership and specialization on the propensity to participate in off-farm employment. A labor supply model, which incorporates variables on farm ownership and operators' time investment in farming (i.e., specialization), is developed for household members who face options of having a waged job and a self-employed job. Results based on data from New Jersey, Wisconsin, and Kansas indicate that (*a*) part-owner operators younger than the average age of 55 have the highest probability of participating in off-farm activities, and (*b*) specialization reduces off-farm labor supply.

An Analysis of the Labor/Capital Mix on Kentucky Farms. *Jeanne M. Reeves and D. Bart Peters, Univ. of Ky.*

Because agriculture is continually moving toward a dual structure, the capital/labor ratio continues to be a significant concern for today's farmers. Farmers must combine a mixture of labor and capital that does not exceed their financial resources. The study group was a panel of Kentucky farms from 1974–92, separated by size and type. In order to ascertain if trends occur in the utilization of labor and capital, factor intensity analysis was employed. The results show that labor costs and capital costs are both increasing. However, labor productivity is not increasing. One implication is that the rate at which family farms are decreasing in Kentucky may lag behind the national average.

Risk and Input Application in Share Tenancy: An Illustration in a Multi-Crop Situation. *Krishna P. Paudel and Neil R. Martin, Jr., Auburn Univ.*

Behavior of a share tenant with agreeable contractual output and input share ratios was analyzed in risk neutral, risk averse, and risk seeking situations. A risk averse share tenant would choose to apply the same amount of fertilizer input as a risk neutral share tenant. However, a quasi-risk seeking (or regret minimizing) share tenant would choose a higher dose of fertilizer as required income and associated risk were reduced, indicating that he/she might apply a similar amount of fertilizer as would a risk neutral landowner.

Implications of Sustainable Agricultural Practices for Irrigated Cotton Production in the High Plains of Texas. *Jason L. Johnson and Eduardo Segarra, Texas Tech Univ.*

The retention of soil productivity is a genuine facet of sustainable agriculture and an essential issue for producers and land owners. The objective of this study was to evaluate the sensitivity of nitrogen fertilizer optimal decision rules and net returns for irrigated cotton production in the High Plains of Texas when included provisions required maintenance of soil productivity. Results indicate that as the desired level of soil productivity maintenance increased, additional nitrogen applications were required, net present value of returns was reduced, and the annual payment required to offset these economic losses increased across a series of nine production scenarios.

Farm-Level Evaluation of the Fertilization of Sorghum/Millet Association in Central Mali. *Anthony K. Yeboah, N.C. A&T State Univ., and Haoua Sissoko, Institut d'Economie Rural.*

Soil infertility (phosphate deficiency) is a constraint faced by cereal producers in Central Mali. Sorghum/millet association is widely practiced, but farmers use very little fertility-improving tech-

nique. On-farm trials were carried out in Lominta in 1990–91, and the plots were monitored in 1991–92 for residual effect. PNT and ammonium phosphate were compared to farmers' practice of no fertilization. Analysis of the cumulative two-year results showed that PNT application is more profitable than ammonium phosphate. It is also less risky and has lower initial cost of investment, making it attractive to about 35% of the farmers.

TITLE: Foreign Agricultural Sector Issues and Current Trade Happenings (Moderator: George C. Davis, Univ. of Tenn.).

The Cost-Price Squeeze in the Greek Agricultural Sector. *Efstratios Loizou, Mediterranean Agronomic Institute of Chania, Konstadinos Mattas, Aristotle Univ. of Thessaloniki, and Angelos Pagoulatos, Univ. of Ky.*

The possible existence of a cost-price squeeze in the Greek agricultural sector is examined employing integration and cointegration analysis. A Johansen cointegration test between prices paid and prices received by farmers supports the presence of cost-price squeeze, since non-cointegration between the two price indices cannot be rejected. In other words, prices paid by farmers respond more than prices received by farmers during inflationary periods, and hence affect their parity ratio. Next, multivariate cointegration tests indicated that forces outside agriculture can explain the non-cointegration between farm input and output prices. These forces are monetary-macro variables through the country's macroeconomic policy, such as money supply, the general price level, and the domestic product.

Trade Effects of Economic Integration: The Case of Central and Eastern Europe. *Garrett P. Sonnier and P. Lynn Kennedy, La. State Univ.*

Impacts of integrating three CEE countries (Poland, Hungary, and the Czech and Slovak Federal Republic (CSFR)) into the European Union are predicted using a trade simulation model. The research specifically analyzes markets for beef, pork, and poultry. Particular emphasis is placed on the impact of European integration combined with Uruguay Round agricultural agreement on the CEE, European Union, United States, and rest-of-world markets.

Consumer Demand for Fruits and Vegetables in Urban China: Implications for International Trade. *Qingbin Wang and Catherine Halbrendt, Univ. of Del.*

With significant changes in food consumption patterns and trade policy, China has played an increasing role in the world fruit and vegetable markets. This study analyzes consumer demand for fruits and vegetables in urban China using household survey data and derives implications for international trade. Estimation results of a demand system indicate that demand is relatively income elastic for fresh and dried fruits as compared with vegetables and melons. China is likely to remain as a major fruit and vegetable exporter, but is also expected to increase its imports of selected fruit and vegetable products in the coming decade.

Impact of Export Market Instability on the Economy of Cameroon. *Gerard E. Essono, Ntam Baharanyi, and Robert Zabawa, Tuskegee Univ.*

This study estimates the impact of export instability on the economy of Cameroon for the period 1962–90. All indexes estimated for Cameroon for the period 1962–90, and for different sub-periods in between, ranged from the lowest of 11.32 for 1962–90 to the highest of 15.83 for 1975–90. A model also estimates the induced effect of export instability on economic growth through a series of intermediate induced effects. A regression coefficient of 0.408 between revenue instability and expenditure instability indicated the most significant effect. The weakest relationship was found between expenditure instability and the domestic investment to GDP ratio, with a regression coefficient of 0.000535.

Redistribution and Cap Efficiency in Greek Cotton Industry. *Giannis Karagiannis, Univ. of Saskatchewan, Stelios Katranidis, and Kostas Velentzas, Univ. of Macedonia.*

Deficiency payment and co-responsibility levy in the seed cotton market operate as a complementary relationship when budget cost and policy efficiency are considered. During the period 1980–91, policy efficiency in Greece, i.e., deadweight loss

per unit of producers' surplus change, was found on average to be 6.6 or 12%, depending on the functional specification of seed cotton supply. Greek seed cotton farmers became better off under the CAP deficiency payment program, but their gain in terms of producers' surplus has been declining since the implementation of a co-responsibility levy. There were no welfare effects on ginned cotton producers except a sale increase as their supply was found to be price inelastic.