ABSTRACTS

PAPERS PRESENTED
Annual Meeting, SAEA, Fort Worth, Texas, February, 1991

AGRICULTURAL POLICY (Moderator: *Jerry Skees, University of Kentucky*).

"The Cost Price Squeeze in Agriculture: An Application of Cointegration." *Charles B. Moss, University of Florida.*

During the mid and late 1970s, the domestic economy experienced severe inflation. During that period, some hypothesized that agricultural input prices responded more readily to inflation than did agricultural output prices, resulting in a relative deterioration in agriculture's gross margin. This study re-examines the evidence on the cost price squeeze using recent advances in time series analysis. The results indicate that if the changes in the general economy are incorporated, there is no evidence of a cost price squeeze.

"An Analysis of Factors Affecting Farmers' Participation in government Programs." *Barry K. Goodwin and Allen M. Featherstone, Kansas State University.*

This investigation considers factors affecting the participation of individual Kansas farms in government programs. A sample drawn from over 2,000 Kansas farms for eight years was used in the context of a Tobit regression to investigate the effects of various factors on the probability and expected level of participation in farm programs. The results suggest that differences in farm sizes, incomes, types, and farming practices influence participation in government programs. Small, sole-proprietor livestock operations with low debt levels receive the lowest levels of support. Conversely, large corporate crop farms receive the highest levels of government support.

"Impact of Public Action on Porcine Somatotropin (PST) to the Hog-Pork Industry." *Catherine Halbrendt and J. Richard Bacon, University of Delaware.*

The study assesses the economic consequences of the impact of states' banning the adoption of PST on the hog-pork industry. The results of the econometric model show that prices, production, and consumption decrease only if premium pricing is paid. Smaller states respond much more to the changes in the market signals caused by the banning of PST adoption, suggesting locational shifts.

"Impact of Reducing Federal Order Class I Differential on Representative Texas and New Mexico Dairy Farms." *Joe L. Outlaw, Ronald D. Knutson, Robert B. Schwart, Jr., John Holt, and James W. Richardson, Texas A & M University; Dalton H. Garis, University of Florida.*

The General Accounting Office (GAO) recommended that the USDA substantially reduce or eliminate the extent of price discrimination practiced under federal milk marketing orders. The purpose of this study was to quantify the impacts of alternative means of implementing the GAO proposal on the economic viability of Texas and New Mexico dairy farms. Five dairy farms were simulated for six years under the current dairy policy and five alternative proposals. Results of the analyses indicate that the large New Mexico dairy remains economically viable under all of the alternatives. On the other hand, federal order policy changes would accelerate the loss of equity for moderate-size Texas dairy farms.

"A Synthesis and Reconciliation of Dairy Economic Interdependencies Using an Economic Organon of the Milk Production, Pricing, and Marketing System Under Federal Milk Market Orders." *Wayne M. Gauthier and Arthur M. Heagler, Louisiana State University.*

The purpose of this paper was to combine an economic organon of a milk production, pricing, and marketing system under federal milk market orders with synthesized literature on economic interdependencies within the system. The organon was used to track a price support cut through the system. In combination with the synthesized literature, it was used to reconcile an observed contradiction between the prescription of economic theory and producer responses to a support price cut. The development of a reconciliation consistent with theory suggests that the organon has potential application to other milk production and marketing issues.

AGRICULTURAL PRODUCTION, SUSTAINABILITY, AND ENVIRONMENTAL ISSUES (Moderator: *Dave Freshwater, University of Kentucky*).

"Controlling Agricultural Nutrient Losses to the Environment: Managing the Internal Flow of Nutrients on a Dairy Farm." *Beth Lemberg, William T. McSweeny and Les E. Lanyon, Pennsylvania State University.*

The study examined the economic attractiveness of a procedure for measuring and monitoring nutrient stocks and flows on a southeastern Pennsylvania dairy farm, for the purpose of making more knowledgeable use of the nutrients that cycle through the farm. The results show that the costs associated with the nutrient management system were more than offset by the resultant savings in fertilizer expenditures, and that nutrient losses to the environment were reduced substantially.

"Barriers to Low-Input Agriculture Adoption: A Case Study of Richmond County, Virginia." *Penelope L. Diebel, Kansas State University, and Daniel B. Taylor and Sandra S. Batie, Virginia Polytechnic Institute and State University.*

A nonlinear mathematical programming model was used to evaluate the importance of perceived barriers to low-input practices for Richmond County, Virginia, through a sensitivity analysis. Penalties were placed on individual barriers until low-input practices were no longer in the optimal solution. The study found that adoption of low-input practices was sensitive to the price of organic nitrogen, and relatively insensitive to their yields, labor requirements, and variable costs. A combination of these perceived barriers, set at moderate levels, resulted in farmers' changing their practices. Individually, barriers may not prevent low-input adoption, but may interact to reduce low-input adoption.

"Market Potential for Feed Grains and Alfalfa Hay Produced on Reclaimed Phosphatic Clay in Florida." *Mohammed Rahmani and Robert L. Degner, University of Florida.*

This study examined the economic feasibility of producing corn, milo, soybeans, wheat, and alfalfa on reclaimed phosphatic clay lands in Polk County, Florida. Livestock and poultry feed requirements were estimated for several geographic zones around Polk County and compared with production estimates. These comparisons indicate a ready market for these feedstuffs. Production costs (excluding land costs) on reclaimed phosphatic clay lands were estimated and compared with recent market prices. Alfalfa and corn generated the largest net returns per acre, followed by milo, wheat and soybeans, respectively.

"An Empirical Look at the Re-Establishment of Infected Fescue Pastures." *Jeffrey L. Adkins and Larry W. VanTassell, University of Tennessee.*

A marginal replacement criterion was used to examine the optimal replacement point of fescue pastures infected with endophyte. A three percent reduction in average daily gain was generally required before it was profitable to re-establish the infected pastures. When uncertainty of the stand life was incorporated into the analysis, a four percent reduction in average daily gain was required before re-establishment should occur. The analysis did not appear to be sensitive to changes in cattle prices.

"Estimation of Optimal Forage Stocks for Winter Wheat Grazing Under Stochastic Weather Conditions." *Tommy J. Honneycutt, Texas A&M University, and James N. Trapp, Oklahoma State University.*

A forage feeding/storage submodel was added to an existing wheat pasture grazing simulation model to estimate optimal amounts of supplemental forage reserves to hold given different stocking rates and stochastic weather and hay prices. When typical stocking rates are assumed, the level of forage stocks held has no significant impact upon net returns. However, larger beginning stock levels reduce the variance of net returns. As stocking rates are increased, net returns become more sensitive to beginning forage stock levels. Stock levels adequate to eliminate hay purchases during the grazing season yield the highest and most stable net returns.

FINANCIAL PERFORMANCE, AGRIBUSINESS, AND RISK ASSESSMENT (Moderator: *Lonnie Vandeveer, Louisiana State University*).

"An Analysis of Factors Affecting the Financial Performance of Major Grain Hauling Railroads." *S. Sureshwaran and C. Stassen Thompson, Clemson University.*

Results from pooled time-series, cross-sectional analysis suggest that recession, high interest rates, and intramodal competition had negative effects and regulatory reforms had positive effects on the financial performances of major grain hauling railroads. Differential interfirm profitability rates are explained by factors specific to the firm.

"Selecting the 'Best' Prediction Model: An Application to Agricultural Cooperatives." *Alicia Rambaldi, Hector Zapata and Ralph Christy, Louisiana State University.*

The "cooperative as a firm model" is used to evaluate the financial performance of cooperatives in the Fifth Farm Credit District. A decision-oriented methodology incorporating statistical selection criteria is proposed and compared to traditional ones. In-sample (1981-1986) and out-of-sample (1988) prediction performance of the selected models are evaluated using rank transformation discriminant analysis, logit and probit. Results indicate superior out-of-sample performance for the management-oriented approach relative to models selected using statistical selection criteria alone.

"A Comparison of Returns to Assets and Equity of Agricultural ad Nonagricultural Corporate Firms." *James A. Larson and Daryll E. Ray, Oklahoma State University.*

This paper examines return and capital structure of agricultural and nonagricultural firms organized as corporations with similar size assets. Return and capital structure numbers were constructed from IRS data. Statistical testing showed that corporate agricultural firms report significantly less after-tax income, lower rates of return and higher interest costs.

"Risk-Adjusted Farm Income Enhancement by Holding Off-Farm Investments." *Eustacius N. Betubiza and David J. Leatham, Texas A&M University.*

A Discrete Stochastic Programming model was formulated to study the gains from diversification when farming operations are augmented with off-farm financial assets that are not highly correlated with returns to farming operations. We extended past research by considering the dynamics of accumulating these financial assets and the subsequent liquidity implications. We further considered tax effects and the farm's leverage and tenure position. Preliminary results show that farmers would be better off, as reflected by higher certainty equivalents, if mutual funds and CDs were added to their farm portfolios.

"An Economic Assessment of the Benefit of 180º CAPS for Orange Trees in Florida." *Richard Weldon, University of Florida.*

Risk manifests itself in several aspects of Florida citrus production. Particularly, the risk of freeze is important to citrus producers because it affects the grove over a period of years. This study investigates the economic benefit of one form of freeze protection for young citrus. The results indicate that the 180° caps are worth $.2220 to $.2527 per tree, which is less than the estimated cost of the caps.

ECONOMICS OF ADVERTISING AND PROMOTION PROGRAMS (Moderator: *Kim Jensen, University of Tennessee*).

"Advertising Food Products: Does a Supermarket Chain Coordinate Its Television, Radio, and Paper Ads?" *David B. Eastwood, Morgan D. Gray and John R. Brooker, University of Tennessee.*

Relationships among media promotions of particular products or food groups represent a neglected area of study. Very little research has been conducted with respect to the management of advertising from the supermarket's perspective. Three important media are newspaper, television and radio. Correlations among several dimensions of these media are examined for fresh meat groups. Results indicate some positive correlations within the newspaper advertising measures. Little coordination between paper and electronic media ads were found or among fresh meat food groups. Cyclical factors such as payday, week of the month, or month of the year tended to be unrelated to the advertising measures.

"Measuring the Economic Impact of an Advertising Excise Tax." *Hui-Shung Chang and Henry Kinnucan, Auburn University.*

This paper examines the impact of a change in the advertising tax on the retail price, farm output and retail-farm price ratio under the assumptions of long-run competitive equilibrium, constant returns to scale and profit-maximizing behavior. The implication is that, given the advertising elasticities found so far in empirical studies (less than 0.10), an increase in producer assessments or check-offs for the purpose of increasing demand through advertising will lead to welfare loss. Research and new product development may be better alternatives to increasing demand.

"Economic Evaluation of Beef Promotion and Information Programs." *Ronald W. Ward, University of Florida, and Chuck Lambert, National Cattlemen's Association.*

The demands for retail, box beef and live weight beef were estimated based on data through the fourth quarter of 1986 (i.e., 79:1-86:4). The demand models included the direct effect of beef supplies and the substitution effects from pork and poultry. The esti-

mates were then used to forecast beef prices for the quarters after the Beef Board's major program initiatives starting with 87:1. The Beef Board's programs have been a contributing factor significant in enhancing the demand for beef since 1987. The gains from the beef advertising, promotions and informational programs lie somewhere between 1 to 2.8 cents per pound as measured at the retail, box beef and live weight levels.

"Measures of Advertising Success and the Probability of Purchase: The Orange-Juice Example." *Jonq-Ying Lee and Gary F. Fairchild, University of Florida.*

One of the goals of advertising-effectiveness research is to establish linkages between specific advertising messages, consumers' product perceptions and the probability of their purchasing the product. The paper investigates whether advertising recalls have any impact on consumer perceptions of orange juice and estimates the relationships between consumer perception of orange juice recalls of advertising sponsors and purchases of orange juice. Results indicate that if advertising is able to positively change consumers' perceptions of orange juice, then it is likely to increase the consumption of the advertised product. However, the impact of advertising recalls on consumer perceptions of orange juice is limited.

"Incorporating Consumer Attitudes and Health in Demand Analysis: The Case of Calcium Advertising on Dairy Products." *Helen H. Jensen and T. Kesavan, Iowa State University.*

A latent variable model can be used to evaluate the effect of health and nutrition concerns on demand for dairy products. Evidence based on an attitudes tracking study and nationwide food consumption survey shows positive attitudes toward calcium to increase consumption of dairy foods and cheese.

PRICE DISCOVERY, SPACIAL, AND TEMPORAL MARKETS (Moderator: *Magid Dagher, University of Arkansas, Pine Bluff*).

"Price Discovery and Cointegration for Live Hogs." *Ted C. Schroeder and Barry Goodwin, Kansas State University.*

A dynamic regression is utilized to examine the short-run price discovery role of the live hog cash and futures markets. The longer-run stability of the live hog cash and futures price relationship is examined using cointegration. The very short-run basis for hogs is fairly stable with approximately 85 percent of yesterday's basis persisting today. Generally, little can be gained by speculating on basis from day to day. The long-term basis is generally nonstationery. Hedgers liquidating positions prior to the contract delivery month face a relatively large basis risk.

"Feedlot Placement Weight Trends and Their Implications for Computing the U.S. Feeder Steer Cash Settlement Price." *Fred C. Eilrich and James N. Trapp, Oklahoma State University.*

The current U. S. Feeder Cattle Steer Cash Settlement Price is based on a weight range of 600-800 pounds. Evidence from this study indicates that the cash settlement price weight range would be more representative for hedging cattle being placed on feed if it were changed to 700-800 pounds. The average weight of steers placed on feed was found to have an upward trend from 620 pounds in 1978 to 720 pounds in 1983. Approximately 65 percent of all steers placed on feed from 1986 through 1988 weighed in excess of 700 pounds.

"A Spatial Equilibrium Analysis of Small Scale Produce Marketing in Louisiana." *Patricia McLean-Meyinsse, Southern University.*

A constrained multiproduct optimization model was used to determine the economic potential of selected horticultural crops produced by small farmers in Louisiana. Specifically, the model determined the optimal shipments, equilibrium prices, and net revenues earned by farmers from the sale of cucumbers, green beans, strawberries, sweet corn and watermelon. The results indicated that the New Orleans Wholesale Market could absorb all the available supplies from small farmers in the study area. Average net farm income was approximately $4,000 under the base solution, but varied between $2,000 and $10,000 when price risks and increased supplies were introduced into the model.

"Price Level Regression, Autocorrelated Residuals, and Hedging Risk." *Emmett Elam, Texas Tech University.*

Hedging risk can be reduced if the information in the autocorrelated residuals from a price level regression is used in deriving the target price for a hedge. A cattle hedging simulation sowed reductions of as much as 55 percent from using the autocorrelation information.

"Selecting Marketing Strategies for Soybean Producers: An Application of Expectation Weighted Target MOTAD." *Eng. Carlos Guillermo Haeberle, Kandice H. Kahl and Charles E. Curtis, Clemson University.*

This paper tests whether a weighting technique can be used to improve the selection of marketing strategies. Cluster analysis was used to group the data for weighting. Similarity across years was determined by comparing values of variables that relate to the distribution of expected prices. Target MOTAD was used to select marketing strategies for each year from 1980 to 1989. The results indicate that income derived from using weighted and unweighted data are not significantly different. Portfolios of marketing strategies with higher levels of income and/or lower levels of income risk could not be selected by weighting data with the technique tested.

AGRIBUSINESS, MARKET STRATEGY, AND FEASIBILITY (Moderator: *Roger Hinson, Louisiana State University*).

"When and Where to Sell Fresh Produce: Observed Price and Market Variability." *Forrest E. Stegelin, University of Kentucky.*

A decision-making application and technique is presented for analyzing potential enterprises for price stability, market season pricing patterns, and price trends, and levels among potential markets, and by including cost and transportation information, potentially profitable market windows in those markets for specified enterprises can be observed. Although the situation reflects wholesale produce terminal markets for Western Kentucky farmers, such information aids the grower decision maker in determining which crops to produce and where and when to market. The methodology, although statistically naive, assists farmers who have limited experience with marketing and price risks inherent in horticultural crops production.

"Potential Market Windows for Fresh Vegetables Grown in Oklahoma." *Shida Rastegari Henneberry, Taehoon Kang and Raymond Joe Schatzer, Oklahoma State University.*

Market windows were examined in five wholesale markets for Oklahoma bell peppers, broccoli, cantaloupes, sweet potatoes and watermelons. "Market window" refers to a period of time when the prices received by producers for selected crops are greater than the production costs. The analysis is based on price-cost comparisons in major wholesale markets. Price risk associated with price variability and yield risk were incorporated into the analysis. The Denver and New Orleans wholesale markets provide excellent market windows for all five crops. The Chicago and Dallas wholesale markets show good market potential for most of the crops.

"Economic Analysis of a Central Fresh Produce Packing House as a Marketing Alternative for Delaware Producers." *A. M. Perez, USDA ERS, U. C. Toensmeyer, University of Delaware, J. Anthony, Jr., USDA AMS, and Charles E. Briggs and Patrick J. Byrne, University of Delaware.*

This study investigated the economic feasibility of a produce packing facility as a marketing alternative for producer growers. Through market window analysis, eight commodities were selected. They were divided into two groups for the establishment of two different packing facilities. A simulation model, PACKSIM, was utilized for the analysis. Additionally, the net present value of the projected net returns to the packing house investment was calculated. The results revealed that for a five-year period, 1989-1993, it was not feasible to construct a packing facility given the selling prices and cost of operations.

"The Feasibility of a Multiline Frozen Vegetable Plant in Northwest Texas." *Bob Davis, Southwest Texas University, and Don Smith, Quadsupport Group, Lubbock, Texas.*

The 1980s were a period of financial hardship for the nation's farmers. Although a majority appear intent on remaining in business regardless, many are seeking new crops or markets to increase revenues. This study's objective was to determine the feasibility and farm impact of a frozen vegetable plant in Northwest Texas by using market window analysis, personal interviews, market segmentation, budgeting, economic engineering and linear programming procedures. It was concluded that it is feasible to construct, operate and supply such a plant, but the potential development impacts were minor, representing a 2.5 percent increase in harvested vegetable acreage.

"The Effects of Market Requirements and Quality Factors on Market Potential of Muscadines in Supermarkets in Florida." *Stephen Leong, Florida A&M University.*

The study investigates the market potential for muscadines as fresh fruit in supermarkets in Florida by determining the willingness of supermarket managers to purchase them. Most supermarket managers

prefer to deal with growers who have large quantities of fruits and are prepared to store-deliver them frequently. Quality factors such as cleanliness, uniform fruit size and sweetness also influence the willingness of supermarket managers to purchase muscadines. Estimated probabilities from two linearized logit models show that muscadines have a good market potential as fresh fruit in supermarkets.

RISK AND FARM MANAGEMENT (Moderator: *Luke Parsch, University of Arkansas*).

"Reduction of Yield and Income Risk Under Alternative Crop Insurance and Disaster Assistance Plans." *G. L. Carriker, J. R. Williams and G. A. Barnaby, Kansas State University, and J. R. Black, Michigan State University.*

This study compares the effectiveness of five crop insurance/disaster assistance plans: an individual farm yield insurance plan similar to the current FCIC multiperil program; two area yield insurance plans; a farm yield disaster assistance plan; and an area yield disaster assistance plan. These methods are examined for reduction in yield and gross income variability with and without participation in the government deficiency payment programs using farm-level yield data from dryland wheat and dryland corn farms in Kansas. Although individual farm yield insurance is complex, suffers from moral hazard and adverse selection, and is likely to be the most expensive to administer, it provides more yield and gross income risk reduction than any of the alternative insurance/disaster assistance plans.

"The Usefulness of Subjective Data in the Analysis of Yield Risk." *Jean C. Buzby and Jerry R. Skees, University of Kentucky, and Jim Pease, Virginia Polytechnic Institute.*

Considerable literature on risk modeling for decision makers has emerged in the last several years. Risk modeling exercises often use aggregate yield data to develop statistics on probability distributions despite the clear case for use of farm level data. In most cases, long series of farm level data are not available. This study provides evidence that elicited subjective yields can be used in lieu of farm level data. Since such data can be obtained at relatively low cost, the procedures presented in this study should serve as a model for considering farm level risk modeling.

"Risk Analysis of Nitrogen Fertilization for Corn and Soybeans: Incentives for Lower Use." *Jeffery R. Williams, Kansas State University, Larry D. Maddux and Phil L. Barnes, Kansas River Valley Experiment Field, Topeka, Kansas, and Colin Rowell, Farm Management Association, Eureka, Kansas.*

Yields, net returns and risk are evaluated for irrigated corn and soybean cropping sequences under four nitrogen fertilization rates. The results suggest that the average rate of nitrogen application on corn in Kansas (153 pounds per acre) is somewhat excessive. Although fertilizers are perceived to be risk-reducing, the results of this study point to a conclusion that the more risk averse a producer is the less likely heavier levels of fertilizer are preferred. Incentives for encouraging reduced nitrogen fertilizer use are also estimated.

"Incorporating Options-Based Expected Price Distributions in Risk Programming Models." *Stephen A. Ford, Beth Pride Blythe and Thomas H. Spreen, University of Florida.*

The use of options-based expected price distributions in risk programming models is explored and compared to specifications which use historical prices. Risk efficient crop mixes resulting from each method are compared. Results indicate that the use of historic data is as efficient as any other method of incorporating risk through distributions of returns.

"The Integration of Production, Investment and Liquidity Management Activities for Risk Modeling." *Michael R. Langemeier, Kansas State University, and George F. Patrick, Purdue University.*

An empirical model coordinating production, investment and liquidity management activities is developed for three farm types. The certainty equivalent of ending equity for the diversified crop and hog farm is substantially higher than that of the specialized farms. The diversified farm also copes with downside risk more readily.

AGRICULTURAL FINANCE, CAPITAL STRUCTURE, AND FINANCIAL DECISIONS (Moderator: *Ross Love, Oklahoma State University*).

"An Empirical Analysis of Optimal Capital Structure Decisions by Farm Firms." *Bruce L. Ahrendsen, University of Arkansas.*

This study is an empirical test of the currently popular unconstrained expected utility maximization model of farm capital structure. The theoretical

model is extended to include taxes, depreciation and returns to scale. An econometric model is estimated using farm-level data on 152 North Carolina dairy farms from 1976 through 1986. The empirical results imply that constant returns to scale and constant absolute risk aversion are inappropriate assumptions of the capital structure model presented in the agriculture finance literature, at least for this sample of dairy farmers.

"Relationships Between Farm Financial Characteristics and FCS Bank Financial Performance." *Charles B. Dodson, Texas Tech University.*

An examination of relationships between the financial characteristics of FCS farm operator debt and FCS bank financial statistics was undertaken using results from the Farm Cost and Returns Survey and FCS bank financial reports. The results indicated that FCS banks which held poorer quality farm operator debt tended to have higher levels of nonaccrual loans, loan losses, operating expenses, and loans restructured.

"Misery in Agriculture." *J. S. Shonkwiler and C. B. Moss, University of Florida.*

This study develops a multidimensional measure of financial stress in agriculture using confirmatory factor analysis. By examining the common variation in indicators of financial stress, the study is able to compare the level of financial stress in the 1980s with that of the 1930s.

"The Term Structure of Interest Rates and Net Present Value." *Richard Weldon and Charles Moss, University of Florida.*

Net present value traditionally assumes a discount rate that is nonstochastic and constant. This paper draws on the theory of the term structure of the interest rate to derive a means of estimating forward stochastic discount rates. An example highlights the difference between the stochastic and nonstochastic discount rate in computing net present value.

"The Systematic Risk of Farm Credit Bonds: An Event Study Analysis." *Michael A. Singer, Texas A&M University.*

The systematic risk of a portfolio of Farm Credit System (FCS) bonds is examined during 1985 in relation to the impact of three important events. Also examined is the response of a portfolio of other federally-sponsored agency securities to the FCS-related events. The results indicate that the systematic risk of FCS bonds did increase relative to the other agency portfolios, but evidence of a "spillover" effect from the FCS to the other agency portfolios is mixed.

DEMAND ANALYSIS (Moderator: *Tesfa Gebremedhin, West Virginia University*).

" A Disaggregate Analysis of Meat Products: An Application Using the Almost Ideal Demand System and Scanner Data." *Rodolfo M. Nayga, Jr., and Oral Capps, Jr., Texas A&M University.*

Using weekly scanner data, a demand system approach based on the AIDS model is employed to investigate the demand for 21 meat products. This system analysis, using the theoretical frameworks of Basmann as well as that of Baye, Jansen and Lee, also incorporates advertising effects. Uncompensated and compensated own and cross-price elasticities, own and cross-advertising elasticities, and expenditure elasticities are generally in accord with expectations from theory. This study documents the utility of scanner data in food demand analysis.

"The Impact of Technical Change on Fiber Demands." *Shangnan Shui, John C. Beghin and Michael Wohlgenant, North Carolina State University.*

Using time-series data, this study estimates a linear logit model of cost shares of input use in U. S. textile production, which incorporates the impact of technical change on the derived demand for natural (cotton, wool) and manmade (polyester, rayon) fibers. Technical change has decreased natural fiber use in U.S. textile mills in favor of manmade fiber consumption.

"Consumer Preferences for Certified Pesticides Residue Free Fresh Produce and Willingness to Pay for Testing and Certification." *Sukant K. Misra and Chung L. Huang, University of Georgia, and Stephen L. Ott, USDA ERS.*

The study analyzes consumer preferences for testing and certification of fresh produce and their willingness to pay more for certified pesticides residue free (PRF) fresh produce by using household survey data. An ordered probit model was estimated econometrically to investigate impacts o various exogenous variables on the probability of consumers' willingness to pay one price premium over a number of alternative price premiums. The results indicate that consumers' willingness to pay differs with respect to a number of factors. The study concludes that most of the consumers recommend testing and

certification, but oppose large price markups for certified PRF fresh produce.

"Modeling the Taste Change in Meat Demand: An Application of a Latent Structural Mimic Model." *Xiaoming Gao and Scott Shonkwiler, University of Florida.*

Tastes or preference comprise an unobservable latent variable in utility and demand functions. This latent variable can be estimated by using its indicator and cause variables in a structural equations model. Empirical results show that preference changes have been a significant factor explaining both declining beef and increasing poultry per capita consumptions.

"Determinants of Cash Fed Cattle Prices: Does Quality Matter." *Rodney Jones, Ted Schroeder, James Mintert and Frank Brazle, Kansas State University.*

This paper explores the extent to which fed cattle were being priced based "on the average" during a three-month period in southwestern Kansas. Transaction prices were significantly affected by the percentage of cattle expected to grade choice, number of head, brands, the packer-buyer, the feedyard, the day-of-the-week the cattle were sold, distance from the feedyard to the buying packer and the number of bids per pen. Asking prices were most significantly affected by the day-of-the-week and the number of bids. Overall, few quality factors had strong price impacts.

QUANTITATIVE METHODS (Moderator: *Anne Mims, Auburn University*).

"Specification Tests in Risk Premium Analysis." *Hector O. Zapata, Louisiana State University, and T. Randall Fortenbery, North Carolina State University.*

Considerable effort has focused on measuring the existence of risk premiums in futures markets using the capital asset pricing model (CAPM). Model specification tests are applied to the CAPM to empirically evaluate departures from normality, of both returns and residuals from the estimated model, heteroscedasticity, both unconditional and conditional, and autocorrelation. Implications for the estimation of systematic risk and alternative specifications of the model are provided. Daily data for corn and soybeans for the 1978-1989 period are used; 22 investment horizons are studied.

"Using Scale Data to Measure Attitudes in Applied Research: Practical and Statistical Questions." *Patricia E. Norris and Stephen R. Koontz, Oklahoma State University.*

Increasingly, researchers are incorporating measures of attitudes and beliefs into economic decision models. These measures come from surveys asking respondents to indicate their strength of preference or belief using a predetermined scale. Despite the opportunity to improve analyses by including such data, questions are raised as to the interpretation of results and their statistical validity. Measurement of attitudes relays only an ordering of preferences or beliefs, while statistical methods relied upon by social scientists require that the units of measure have meaning. The statistical methods are scale dependent; the researcher's choice of scale will likely influence results of the statistical analysis.

" Can We Take the Collinearity Out of Demand Systems: A Look at a Collinearity-Resistant, Operationally Linear, Almost Ideal Demand System (C-ROLAIDS). " *John Schmitz, Texas A & M University.*

Highly collinear price relationships are a common problem in the study of consumer demand, particularly with the complete demand systems approach. In this paper, a modification to an AIDS model is given to circumvent such collinearity problems. An application of this modification is presented using disaggregate dairy products. Results from the LA/AIDS specification are then compared to results from this specification.

"Farm Commodity Price Response to Supply Shock: A Comparison of Alternative Structural Model Specifications." *Dean T. Chen and Gerard S. Dharmaratne, Texas A&M University.*

Alternative specifications of price determination in a structural model are examined. Price and demand responses of a nonlinear simultaneous wheat model to exogenous shock is evaluated by two different numerical solution methods for four alternative price specifications: Gauss-Seidel for a price-dependent (price-explicit) model and Newton (Newton-Ralphson) for three quantity-dependent (price-implicit) models. Significantly different effects of the 1988 drought on wheat price and related supply and demand variables are found. Price impacts are considerably higher for quantity-dependent specifications than for the price-dependent specification; they are invariant among quantity-dependent, price-implicit models.

"Functional Form Selection and Dual Profit Functions for U. S. Agriculture." *Fermin S. Ornelas, C. Richard Shumway and Teofilo Ozuna, Texas A&M University.*

A quadratic Box-Cox methodology is developed for choice of flexible functional form that includes correct computation of variance estimates. The empirical viability of the procedure is investigated by specifying a dual profit function for U.S. agriculture from 1948 to 1979. Likelihood ratio tests are utilized to discriminate among the generalized Leontief, normalized quadratic, translog and square-rooted quadratic functional forms. Statistical results indicate that the square-rooted quadratic is the preferred choice of functional form for these data, followed by the normalized quadratic.

NATURAL RESOURCE MANAGEMENT

(Moderator: *Josef Broder, University of Georgia*).

"Estimating Commercial Fishing Revenue Losses Under Harvest Restrictions: The Case of the Florida Red Drum." *Eric Thumberg, University of Florida.*

The red drum (Sciaenops ocellatus) was effectively removed from Florida's nearshore commercial fishery in January, 1989. Fishing revenue losses may be mitigated through redirection of effort from the restricted species to other unrestricted species. A revenue function is specified for two time periods over which two different harvest regulations for red drum were effective. The empirical results indicate that fishermen were able to compensate for lost revenue due to the harvest restrictions although the ability to do so differed by gear and regional considerations.

" Valuing Deer Hunting on a Louisiana Wildlife Management Area: A Travel Cost Analysis. " *E. Jane Luzar and James E. Hotvedt, Louisiana State University.*

The travel cost method was employed to determine the net economic value of deer hunting on a Louisiana Wildlife Management Area. Using primary data from a survey of 2,000 deer hunters, a visitation function was used to estimate total consumer surplus and per trip consumer surplus. Estimates ranged from $392,297 to $1,336,040 for total consumer surplus while per trip ranged from $19.69 to $66.92.

"Estimated On-Site Effects of Land Degradation in Australia." *Bengt Hyberg, CED ERS, Nigel Hall, ABARE, and Ian McCormick, CED ERS.*

This paper relates Australian farmers' perceptions of land degradation on their farms to the level of output. The paper shows that the existence of perceived land degradation is related to lower levels of output on average but also that there is substantial variation in the impact of land degradation on output in different years. The paper also presents estimates of the total effects of land degradation in terms of lost farm output.

"Measuring Leadership Perceptions of Recreation and Tourism Development in Rural Communities." *Steven A. Henning, Louisiana State University.*

An analysis of a survey of leadership perceptions and attitudes toward recreation and tourism development in a rural Louisiana parish is presented. Survey respondents perceived some potential for conflict in use of the natural hunting and fishing habitat, but generally indicated that a positive response toward visitors could be expected from local residents. Respondents also indicated that the financial burden of tourism promotion should be shared equally by the public and private sectors. However, only a third of the respondents perceived that a majority of local residents would support local funding of a promotion agency.

"Distributional Impacts of Land-Use Restrictions." *Michael R. Dicks and Ian McCormick, Oklahoma State University.*

The most recent data (1987) on U.S. agricultural commodity program participation indicate considerable inequity in required benefits and costs of the various programs and policies. Rural economies dependent on agriculture and certain crop producers shouldered most of the costs associated with these programs and received few offsetting benefits. Future implementation of the numerous commodity programs could achieve greater equity through integrated analysis of the various programs on regional economies.

WORLD TRADE (Moderator: *Catherine Halbrendt, University of Delaware).*

"Bulk Oilseed or High Value Snack Food: Peanuts in the European Community." *Terri L. Raney, USDA ERS ATAD, and Kim L. Jensen, University of Tennessee.*

The purpose of this study was to examine the demand for peanuts in the E. C., and how changing consumption patterns may have impacted the share of peanuts imported from the U.S. While higher

quality peanuts are used for food, lower quality peanuts are used for crushing. Results of this study tend to suggest that as the E. C. consumes a larger proportion of its peanut imports as food, the share allocated to U.S. peanuts increases.

"Estimation of Armington Trade Models." *Kent Lanclos and John G. Lee, Purdue University, and Hector O. Zapata, Louisiana State University.*

Armington-based trade models have been applied to several agricultural commodities. The purpose of this study was to utilize model specification tests to determine the appropriate estimation technique for a corresponding U.S. rice trade model. Due to the presence of contemporaneous correlation, SUR was determined to be a more efficient estimation relative to OLS. In addition, data transformation was necessary to correct for serial correlation within the time series for each region.

"Japanese Beef Import Quota Allocations: Politics or Economics?" *Brad C. Gehrke and Maury E. Bredahl, University of Missouri-Columbia.*

The United States has increased its share of the Japanese import beef market since 1979. Several recent studies have concluded that this increase was the result of political manipulation of import quota allocations. This implies that the United States could be expected to lose market share after liberalization. The factors used to support this conclusion do not necessarily prove political manipulation. This study demonstrates that the LIPC, acting as a monopsonistic import beef buyer and a monopolistic import beef seller, has allocated quota amounts between grain-fed and grass-fed beef to maximize rent or returns to the domestic livestock industry.

"Europe 1992: The Effects of Changes in Animal Health Regulations on Trade Flows of Live Cattle." *Kenneth W. Forsythe, Jr., and Maury E. Bredahl, University of Missouri-Columbia.*

The 1991 unification of the European Community (EC) may allow freer internal EC trade but restrict third-country imports. The EC's foot-and-mouth disease (FMD) program is a potential vehicle for these restrictions. A trade policy model is constructed to simulate the impacts of this program. An Armington approach is used to differentiate between sources of cattle which are free of FMD and those which are not. It is found that the FMD legislation is likely to result in a net increase in internal EC trade of live cattle and a net decrease in third-country imports of live cattle.

"The System-Wide Approach to Import Allocations: The Cases of Japanese Import Demand for Citrus Juices and United Kingdom Import Demand for Fresh Applies." *James L. Seale, Jr., Jonq-Ying Lee and Pattana Aviphant, University of Florida.*

The system-wide approach is used to develop an import allocation model based on blockwise dependence. The import demand system is parameterized using the absolute version of the Rotterdam model. Two empirical examples are given to illustrate the approach.

MANAGEMENT SYSTEMS, ENVIRONMENTAL QUALITY, AND POLICY (Moderator: *Steven Henning, Louisiana State University).*

"Impact of Risk on Alternative Management Systems to Improve Environmental Quality." *Parveen Setia, USDA ERS.*

Alternative management systems provide one way to prevent or reduce non-point-source pollution. However, the economic risk associated with changing to alternative management system(s) that are beneficial for the environment, along with other factors, hinder their adoption. Results show that profit maximizing strategies, irrespective of risk, generally result in significantly high pollutant loadings to the environment. Knowledge of the effects of farmers' risk preferences and the estimates on willingness-to-pay can be helpful in designing voluntary adoption program(s) to reduce adverse effects of agriculture on environmental quality.

"Are Biorational Insecticides Rational? A Control Theoretic Analysis of an Integrated Pest Management System." *Richard F. Kazmierczak, Jr., and George W. Norton, Virginia Polytech University.*

This study examines the potential effects of biorational insecticide use on the operation of complex integrated pest management systems by developing and analyzing a control theoretic model. If mandated use of biorational insecticides inadvertently eliminates important biological controls, long-run aggregate environmental damage from previously minor chemical usage may be larger than the damage incurred by using only synthetic insecticides within the context of an integrated control system. Thus, the long-run desirability of biorational insecticides is shown to depend on the specific dynamics of a

system's pest complex and not merely on their apparent benign origin.

"Economic Feasibility of Agricultural Management Systems for Reducing Sedimentation in a Water Supply Lake." *Tony Prato, University of Missouri-Columbia.*

The economic feasibility of using alternative management strategies to reduce sedimentation in the water supply reservoir for Sedalia, Missouri is evaluated. Changes in net returns to land and management, and sediment reduction benefits are estimated for 18 resource management systems using enterprise budgets, the Agricultural Nonpoint Source Pollution (AGNPS) model, and daily rainfall. Most of the management systems that reduce sediment delivery to the lake are not likely to be adopted by farmers because they reduce net returns to land and management relative to current systems. They are also socially inefficient.

"An Analysis of Policy Options for Complying with Alternative Farming Practices to Reduce Excessive Nitrogen Use." *Wen-yuan Huang, USDA ERS, Rhonda M. Lantin, University of Maryland, and Michael Duffy, Iowa State University.*

Crop rotations are effective farming practices to reduce excessive nitrogen use in corn production. Costs of rotation compliance under the current farm program, no farm program, fertilizer tax, corn sale tax, and limiting fertilizer use scenarios are estimated. Analyses identify two efficient policy options: rotation compliance (RC) under the current farm program and crop rotations with limiting fertilizer use compliance (FC) under the current farm program. The RC option would have the least cost to farmers to reduce excessive nitrogen use. However, the FC option would have the least cost in achieving "zero" excessive nitrogen fertilizer use.

"Agroforestry: A New Policy Initiative." *David A. Redhage, Melvin Blase, and Mike Monson, University of Missouri-Columbia.*

The House and Senate versions of the 1990 Agriculture Bill contain agroforestry alleycropping as an option under the Conservation Reserve Program. Agroforestry combines crops and trees on the same land. Alleycropping is the practice of planting rows of trees bordered on each side by a narrow strip of groundcover, alternating with wider strips of row crops or grain. The agroforestry option allows landowners to grow crops on CRP land in return for a reduced government rental payment and a five-year contract extension. This option maintains the original goals of CRP and protects the soil over a longer timespan.

LIVESTOCK AND ANIMAL PRODUCT MARKETING (Moderator: *Robert Nelson, Auburn University*).

"Fed Cattle Contracting Perceptions by Cattle Feeders." *Clement E. Ward, Oklahoma State University.*

Forward contracting of fed cattle increased during the 1980s. A survey of 3,700 cattle feeders in 13 states was conducted to determine the extent of forward contracting and cattle feeders' perceptions of contracting benefits, impacts and policy needs. Data from over 500 completed questionnaires indicated that 12.7 percent of fed cattle marketed by respondents in 1988 was forward contracted to buyers. Perceptions by feeders differed according to feedlot characteristics (location, size, and type) and contracting experience. Feeders contracting fed cattle were less critical of forward contracting's impacts and more optimistic about benefits to cattle feeders and the industry.

"Electronic Markets and Feeder Cattle Price Differentials." *Nancy S. Dykes, Steven C. Turner, and John McKissick, University of Georgia.*

Recent research has identified cattle and market characteristics that influence feeder cattle prices. An analysis of three Georgia feeder cattle teleauctions from 1976 to 1988 revealed that delivery conditions and health treatments can also influence price. In addition, market conditions were separated into external and internal factors. Price determination models explained about 90 percent of the price variation.

"Analysis of the Link Between Aggregate Livestock Production and Corn Feed Use." *Gary M. Adams and D. Scott Brown, University of Missouri.*

This paper develops a theoretically sound link between aggregate livestock production and corn feed use. A method for computing a series for quantity of aggregate livestock production is also pesented. The calculation of the series incorporates changes in feed efficiency and productivity that have occurred over time. Calculating aggregate production in this manner allows the researcher to analyze the changing effects of the livestock industry on corn feed use.

" Choice of Proprietary or Cooperative Milk Handler and the Role of Farm Characteristics: A Comparison of Tennessee and Other Southern States. " *Kim Jensen, University of Tennessee.*

The objective of this study is to compare dairy farmers' reasons for selecting cooperative or proprietary buyers in Tennessee and other Southern states. Cooperative members cited service and an assured market more often, while higher price and lower deductions were cited by nonmembers. Farmers indicating price as a reason had larger farms, were less diversified, and more indebted. Those who selected service had more experience and were less indebted than those who did not. Tennessee cooperative members were less likely to select price of lowest deductions, and more likely to select an assured market than were members from other states.

"A Comparison of Pricing Structures at Video and Traditional Cattle Auctions." *DeeVon Bailey, Utah State University, and Monte C. Petersen, Texas A&M University.*

The number of cattle sold through video auctions has increased dramatically during the past five years. This study examines structural differences between a group of traditional auctions and the nations' largest satellite video cattle auction. A regression analysis determined that the influence of lot characteristics, market information, and merchandising strategies on cattle prices was similar in both types of auctions. However, the optimal lot size is larger at video auctions than at traditional auctions. Merchandising strategies, unique to video auctions, were also found to have a significant influence on prices.

"A Comparison of Three Formulas for Pricing Feeder Pigs and a Test of the Perceived Productivity of Pigs Sold Through Commingled Auctions." *Kelly Zering, North Carolina State University.*

A pricing formula including prices of major inputs is found to dominate other simpler formulas by several empirical and other criteria. Empirical analysis of six years of feeder pig data suggests that pigs sold through commingled auctions are perceived to be of inferior productive capacity. A need for alternative marketing systems for feeder pigs is identified.

TRADE AND ECONOMIC DEVELOPMENT (Moderator: *Evelyn Spears, Michigan Department of Agriculture*).

"Estimating LDC Agricultural Supply Response." *Stephen L. Haley, Louisiana State University.*

This paper examines the relationship between measures of agricultural production and aggregate resource and technological constraints faced by both LDCs and more developed countries. Results indicate that human resources are the most important determinant of agricultural production, with capital availability and land resources generally playing lesser roles. Calculated supply elasticities imply that agricultural production is sensitive to changes in the (real) opportunity cost of available resources over the long term. Results imply that price distortions have likely had large effects on worldwide agricultural resource use and production. The welfare costs associated with the distortions have likely been high as well.

"Exchange Rate Policy Impacts on Producers of Tradeable Goods: Sheep Meat and Wool in Peru." *Corinne Valdivia and Maury E. Bredahl, University of Missouri-Columbia.*

Sheep meat and wool by the nature of their production are joint products of sheep producers in Peru. Food and industrial policies there have been geared to protect both the native industry and the urban population, and have resulted in cheap food imports at an overvalued exchange rate. Tax credits and subsidies to exporters of textiles have offset the overvalued exchange rate. A multimarket model of the industry simulates these exchange rate policies. A move toward an equilibrium exchange rate, or eliminating the subsidized exchange rate for sheep meat imports and for textile exporters, benefits sheep producers, reduces government expenditures, and increases revenue from textile exports. Consumers' purchases of imported lamb decline and domestic supply replaces some of the displaced imports.

" Trade Implications of Eastern European Liberalization for Developing Countries. " *Mark D. Wenner, USDA ERS.*

Using a static global trade simulation model that covers 22 agricultural commodities, the trade impacts of economic reform and liberalization in Poland and Yugoslavia on developing country blocs are projected. The results indicate that Poland and Yugoslavia emerge as large livestock exporters capturing market share at the expense of Latin America.

Asia becomes an even larger importer of meat and dairy products while the results are negligible for the Middle East and Africa. The analysis is timely given the concerns about foreign aid and trade diversion away from developing nations to East Europe.

" Crop Expansion in Brazil's Amazon: An Economic Analysis. " *Catherine Halbrendt, University of Delaware, Emily McClain, Clemson University, and Jennifer Sherbourne, University of Missouri.*

Agriculture is a major force behind tropical deforestation worldwide. Governmental policies to expand agricultural production in Brazil have received criticism for accelerating rain forest loss, especially since past increases in output have primarily resulted from area expansion. This study uses a two-stage estimation approach to examine factors which influence agricultural expansion for nine crops in Brazil's Amazon. Results suggest that government subsidies were less important to agricultural area expansion than were population changes due to migration policy.

"A Supply Side Model for the Current Chinese Agricultural Economy." *Shihua Pan, Satheesh V. Aradhyula, and Stanley R. Johnson, Iowa State University.*

The current Chinese agricultural sector is a mixed system characterized by the presence of planned and free markets. Procurement prices and quotas, in addition to the free market prices, affect farm decisions in the current Chinese agriculture. The present study exploits the theory of duality and incorporates the two policy variables, procurement prices and state quotas, into a farm supply model for the Chinese economy. A quadratic variable profit function is used with implied output supply and input demand equations for four crop and three livestock sectors. The estimated model implies plausible elasticities for the Chinese agricultural sector.

PUBLIC POLICIES AFFECTING AGRICULTURE AND CONSUMERS (Moderator: *Alfred Parks, Prairie View A&M University*).

"Financing Agricultural Extension Service in a Federal System of Government: A Public Finance Approach to Some Emerging Policy Issues." *David Schweikhardt, Mississippi State University.*

The Cooperative Extension Service faces important policy issues regarding the appropriate methods of financing extension activities. These issues are examined by combining public finance theory with the existing pattern of extension spending. The results of this research suggest: (1) the federal government can promote optimal extension investment by providing matching grants to the states; (2) states in the Great Plains and Western regions tend to pay a higher proportion of the cost of extension than do states in other regions; and (3) greater reliance on user fees would shift a greater share of the cost of extension onto local users, perhaps worsening the underinvestment problem.

"Public Perceptions of Food Safety." *Abdelmoneim H. Elnagheeb and Jeffery L. Jordan, Georgia Experiment Station.*

The results of a 1986 nationwide survey concerning public perceptions of agriculture are presented. Specifically, the paper reports on those questions having to do with food safety, nutrition, taste, and freshness, as well as the use of antibiotics in animal feed. An ordered probit model is used to analyze the socioeconomic factors that influenced the perceptions of respondents from the Southern region. While most respondents found food to be safer, more nutritious, and fresher than in previous times, most did not think food was better tasting. A majority were concerned about the health effects of antibiotics in animal feed.

"An Evaluation of the Administration's Disaster Assistance Program." *James D. Hourigan, Jerry R. Skees, and Barry J. Barnett, University of Kentucky.*

This study examines the administration's proposal for a standing disaster assistance program. By evaluating the frequency and severity of loss for five major crops over the period 1980-1988, the research provides cost estimates and an indication of the regions of the country that would benefit. A number of concerns are raised with the proposal.

"Evaluating the Benefits of Farm Legislation to Consumers: The Case of the 1988 Drought." *Jon A. Brandt and Kenneth W. Bailey, University of Missouri, and Patrick Westhoff, Iowa State University.*

The impact of U.S. farm program spending on the U.S. livestock sector and consumer food prices is evaluated before and after the 1988 drought using a comprehensive model of the U.S. agricultural sector. A farm policy option was constructed to reflect a reduced-stock policy. This option reduced government corn stocks to zero by 1987/1988 and total stocks to 2.3 billion bushels prior to the drought. It saved taxpayers about $15 billion compared to the observed level of spending associated with the Food

Security Act of 1985. However, consumers are projected to spend almost $40 billion more following the drought in higher food (particularly meat) costs because of the dramatic shock lower stocks would have on the livestock sector.

"Measuring the Farm Costs and Environmental Tradeoffs of LISA." *Dana L. Hoag, Mike Doherty, and Frtiz Roka, North Carolina State University.*

LISA has recently become a popular term, but it does not readily lend itself for study since it is not precisely defined. Four environmental indices, soil erosion, excess nitrogen, pesticide leaching and pesticide runoff, were computed for conventional and LISA systems in the Piedmont region of North Carolina. The effects of constraining these variables were measured on ne returns and on each other. Tradeoffs in environmental objectives were observed. Constraining excess nitrogen yielded the least reduction in environmental damage per dollar loss in net returns, and constraining soil erosion or runoff yielded the most.

PRODUCTION ECONOMICS AND FARM MANAGEMENT (Moderator: *Edward Rister, Texas A&M University).*

"Economics of Space Allocation for Grower-Finisher Hogs." *Timothy A. Powell and Michael C. Brumm, University of Nebraska-Lincoln.*

The economics of animal space allocation for grower-finisher hogs in a confinement facility with partial slats were examined. Pig performance and density sensitive cost curves were compared to revenue curves to obtain net barn revenue. Additional crowding over that previously recommended may be warranted based on model assumptions. The pig performance penalty is more than offset by spreading the fixed costs over greater output.

"The Economics of Baitfish Production: A Case Study of a Alternative Aquacultural Crop." *Gayle Pounds and Carole Engle, University of Arkansas-Pine Bluff, and Larry Dorman, University of Arkansas Cooperative Extension Service.*

An effective way to increase profitability of baitfish farming, the third largest dollar aquaculture industry in the United States, is to increase yields. Although baitfish production using five-acre ponds is less feasible than production with 20-acre ponds, increased yields would allow profitable production with the smaller ponds. Interest charges on pond construction and water supply, feed cost, depreciation expense, pumping costs, and pond maintenance cost were the most significant annual costs for all scenarios (160-, 320-, or 640-acre farms with 5- or 20-acre ponds). Long-term investment needs were high and returns on investment were low at current prices and yields.

"A Stochastic Dominance Analysis of Crop Insurance Coverage for Northeast Mississippi Soybean Farmers." *Kenneth H. Foshee and Stan R. Spurlock, Mississippi State University.*

This study examines federal crop insurance options for soybean producers when subjective probabilities for price, yield, and variable cost are represented by triangular distributions. Second degree stochastic dominance analysis determined that altering the low and high values for the yield distribution caused the risk-efficient set to change. The option not to purchase insurance was usually in the efficient set. Given the possibility of very low yields, the 75 percent yield coverage options were risk-efficient. As the low-end point values were increased, the 50 percent yield coverage options entered the risk-efficient set, but were then replaced by the 65 percent yield coverage options.

"A Comparison of Mean-Variance and Target MOTAD Corn Hedging Strategies." *Richard K. Rudel and Francis McCamley, University of Missouri-Columbia.*

For 10 simple hedging situations, the corn hedging strategies produced by the mean-variance criterion were compared with those produced by three versions of the mean-target absolute deviations criterion. When neither the cash nor futures positions were constrained, the hedging ratios associated with the mean-target absolute deviations criterion were generally much larger than those associated with the mean-variance criterion. The effects of imposing restrictions on the cash and futures positions were also examined.

"A Comparison of Candidate Probability Distributions for Historical Yield Distributions." *Phil L. Kenkel, Oklahoma State University, and Jean C. Buzby and Jerry R. Skees, University of Kentucky.*

There is little agreement as to which common theoretical distribution provides the best representation of actual farm level yield data; the presence of trends due to technological changes and interfarm variation in yields all complicate the selection of an appropriate distribution form. This paper explores the appropriateness of seven candidate distributions in fitting historical data. The study attempts to iden-

tify a common distributional form which provides the most reasonable representation for farm level yields.

"Stocker Cattle Simulation and Integrated Budgeting System." *Lawrence Falconer, Don Keeling, and James McGrann, Texas A&M University.*

This paper describes a simulation and integrated budgeting system focusing on: (1) projected forage availability by pasture; (2) projected nutrient requirements for budgeted classes of cattle; (3) projected monthly gross margin and net cash flow for separate lots of cattle; (4) retained ownership of cattle and generation of monthly gross margin and net cash flows for separate lots; (5) projected monthly gross margin and net cash flows for cattle in ranches or feedyards; (6) projected cattle inventory valuation for budgeted production scenarios. Results from changes in initial assumptions automatically flow through the system, facilitating the budgeting of alternative scenarios.

QUANTITATIVE METHODS (APPLICATIONS) (Moderator: *Stephen R. Koontz, Oklahoma State University*).

"Quasi-Separability: A Differential Demand System Approach." *M. G. Brown and J. Y. Lee, University of Florida.*

A differential demand system for quasi-separability is developed, following the approach used by Theil et al, in developing the Working-PI time series model. The Slutsky coefficients vary with commodity budget shares, and intergroup substitution depends on group compensated price effects.

"Seasonality in Applied Demand Analysis: An Approach Using Polynomial Approximations." *Oral Capps, Jr., and Johannes Adrianus Lambregts, Texas A&M University.*

An alternative approach to modeling seasonality in demand relationships was described, and an empirical comparison was made between this approach and the traditional approach of using intercept and slope shifter variables. In the empirical comparison in this analysis, modest differences in monthly intercept terms and monthly own-price elasticities were evident. However, in the polynomial approximation model only 16 parameters were estimated, while in the traditional intercept/slope shifter model, 32 parameters were estimated. Consequently, the polynomial approximation approach may be more practical than the traditional dummy variable approach in obtaining estimates of seasonally-varying parameters.

"Sequential Modeling of Cattle Buying and Selling Strategies in the Southern Plains." *Piung Zhang, Eduardo Segarra and Don Ethridge, Texas Tech University.*

A procedure using a discrete stochastic sequential programming (DSSP) model for incorporating risks associated with cattle prices and forage yields was developed for maximizing net ranch income in the Southern Plains of Texas. The results showed that individual ranchers could increase expected net ranch income and reduce risk by including some nontraditional buying/selling strategies in their ranch operations.

"Chemical Use and Profitability in the Corn Belt and Delta: And Implications for Policy." *Richard F. Nehring and Agapi Somwaru, USDA ERS.*

Following Fare et al., a nonparametric frontier technology is formed from farm level data in the Corn Belt and the Delta in 1985 and profit efficiency rankings are derived. The results suggest that some medium and high input users of fertilizer and chemicals, particularly among corn farmers, are overutilizing fertilizer and chemicals and may not be profit maximizers. The results do not suggest overuse of chemicals by cotton farmers.

"Farm Adjustments: A Qualitative Model for the Analysis of Panel Data." *Huoging Wu, Jerry R. Skees and Louis Swanson, University of Kentucky.*

This study presents a statistical framework for modeling farm change using panel data analysis. It models the correlation pattern of a farmer's value toward farming over time. This paper considers a general model for T periods and I individuals under an assumed error process that is first-order autoregressive and is incorporated into an ordered probit analysis. An empirical study application uses Kentucky Farm Survey Data, 1986-1988. The empirical results identify the important variables in farmer decision-making processes in regarding farm adjustments.

RURAL AND COMMUNITY ECONOMICS

(Moderator: *Etaferahu Takele, University of California, Riverside).*

"State Rural Development Initiatives." *Stacey M. Douglass, Ronald D. Knutson and Dennis U. Fisher, Texas A&M University, and Horace E. Hudson, University of Georgia.*

The purpose of this study was to determine the extent and effectiveness of southern rural development policy initiatives. Sixteen southern states were surveyed and their perceptions of their state rural development policies evaluated. Results of the survey indicate that while there have been a number of commissions and special studies authorized, there is a general absence of policies that are explicitly targeted to rural areas.

"Testing for Speculative Bubbles in Farmland Markets." *Abebayehu Tegene and Fred Kuchler, USDA ERS.*

Tests to determine whether farmland prices are determined by market fundamentals—discounted returns from the most productive land use—or whether self-fulfilling rumors about potential farmland price movements result in actual price movements are conducted. The tests are stationarity and cointegration tests relating farmland prices to rents. The tests are carried out using data from three farm production regions: the Corn Belt, the Northern Plains and the Lake states. In each region, we find little evidence to reject the hypothesis that market fundamentals determine farmland prices.

"Estimation of Commercial Sector Activity: An Application of Tobit Procedures." *Thomas R. Harris, University of Nevada.*

With emphasis on a broader economic development approach, procedures to help rural economic development practitioners assess their local commercial sector performance are needed. The trade area analysis tools of trade area capture and pull factors have been used to judge a community's current and potential commercial sector activity. However, these trade area procedures are deficient in helping rural economic development practitioners target rural commercial sector development programs. This paper investigates the use of tobit regression procedures to further analyze a rural commercial sector and help target rural commercial sector development programs.

"On Estimating the Regional Economic Development Impacts of Extension Programming." *David W. Marcouiller, Daryll E. Ray, Dean E Schreiner and David K. Lewis, Oklahoma State University.*

The regional economic development impacts of forestry extension programming focused on nonindustrial private forest (NIPF) productivity are examined. A population of NIPF landowners is used as potential extension clientele within an aggregated timber products sector for Southeastern Oklahoma. Empirical post-meeting survey data is used to estimate sector change. Micro-IMPLAN is used to develop the regional aggregated input-output data base. Supply-side methodology is used to assess the forward linkages of exogenous sector change on aggregated sector employment.

"Rabbit Production as an Alternative Enterprise for Small-Scale Rural Residence." *Tesfa G. Gebremedhin, West Virginia University.*

Potential rabbit producers lack information about investment requirements and production and marketing costs. The objective of this study was to determine the most profitable operation of small-scale rabbit production by estimating the costs and returns of two selected rabbit production systems. A comparison of net present values, payback periods and financial feasibility analysis were the methods used. Despite difference in the level of net income generated, a cash surplus attributed to land, family labor and management for the two alternative investment systems occurred at the end of the third year. Thus, rabbit enterprises may provide economic opportunities for farm families.

PRODUCTIVITY, COMPARATIVE ADVANTAGE, AND AGRICULTURAL PRODUCTION

(Moderator: *Greg Traxler, Auburn University*).

"Measuring and Explaining the Decline in U.S. Cotton Productivity Growth." *Stephen C. Cooke, University of Idaho, and Burt Sundquist, University of Minnesota.*

Tornquist input quantity indexes derived from USDA/SRS/FEDS survey data along with yield data are used to derive total and partial factor productivity measures across time and region for a sample of representative U.S. cotton enterprises. Total factor productivity for U.S. cotton increased only .2 percent per year between 1974 and 1982 compared to a much higher post World War II growth rate of about 5 percent. Partial productivity measures revealed that yield growth was about .6 percent per year, while total input use grew about .4 percent per year. Among

the input categories, capital and labor requirements decreased about 1 percent per year, and materials use increased by about 1.5 percent. Cotton enterprises in selected regions in Alabama and Mississippi gained, and those in the Texas High Plains lost competitive advantage relative to enterprises in the California region.

"A Note on Measuring Comparative Advantage." *A. M. Heagler, H. O. Zapata, B. K. Kanjilal, B. McManus and D. Lavergne, Louisiana State University.*

Information on cost of production and gross returns (output, output prices and government payments) are used in implementing a proposed methodology for evaluating comparative advantage. The comparative statistics of the problem reveal that the resulting economic indicator can be interpreted in terms of the elasticity of demand and the elasticity of cost. The methodology is implemented using state aggregated data in a stochastic setting which permits random input and output prices and random yields. Probabilistic measures are obtained to assess the impact of government policies through direct payments.

"Cropping Systems Effects on Cotton Profitability in the Texas Southern High Plains: A Stochastic Dominance Analysis." *E. Segarra, J. W. Keeling and J. R. Abernathy, Texas Tech University.*

Stochastic dominance with respect to a function is used to rank irrigated and dryland cotton cropping systems for the Texas Southern High Plains. Results indicate that under irrigation some of the cropping systems are superior to conventional cotton practices. Also, under dryland it was found that all of the cotton cropping systems analyzed were found to be superior o conventional cotton practices. Thus, the cotton cropping systems analyzed seem to be a viable alternative to current cotton production practices in the area.

"An Intraseasonal Irrigation Decision Aid." *Kelly J. Bryant, Ronald D. Lacewell and James W. Mjelde, Texas A&M University.*

Allocation of irrigation water across a growing season and among competing crops is a major problem in irrigated agriculture. This study determined the expected contribution of irrigation to net returns for each of 15 potential irrigation time periods during the growing season for corn and sorghum on the Texas High Plains. Biosimulation was used to model water to yield relationships, and dynamic programming was used to maximize expected returns to irrigation. The result was a tool to aid farmers with irrigation water allocation decisions. Water had a greater value to corn than to sorghum in all time periods if soil water and crop conditions were the same for both crops. As the sorghum field became drier than the corn field, irrigation profitability switched to sorghum.

"Farm Labor Supply and Demand Elasticities Revisited." *James A. Duffield, USDA ERS.*

Revised elasticity estimates helped measure the impacts of the Immigration Reform and Control Act of 1986 (IRCA) on the farm labor market. If labor supply is restricted, results suggest that the real wage rate will not rise significantly. IRCA is unlikely to have much economic effect in the near future because it takes time for labor market participants to adjust to changing economic conditions.

"MILAW: A Computer Program to Assist Farm Labor Law Compliance in Virginia." *David Wooddall-Gainey and Jeffrey Alwang, Virginia Polytechnic Institute and State University.*

MILAW is a hypertext-based microcomputer data base of federal and state regulations and laws affecting agricultural employers, particularly those with migrant and/or seasonal workers. The program wa designed to facilitate access to and retrieval of the regulations through a user-friendly interface. Approximately 15 sets of regulations are contained in MILAW ranging from the Immigration Reform Control Act (IRCA) and Migrant and Seasonal Workers Protection Act (MSPA) to federal and state taxes. MILAW has been delivered to approximately 170 extension and Virginia Employment Commission field offices.

MARKET ORGANIZATION, TECHNOLOGY, AND DEMAND ANALYSIS (Moderator: *Gary Fairchild, University of Florida*).

"A Structural Model of the Spring Onion Market in Texas." *S. W. Fuller, O. Capps, H. Bello, and C. Shafer, Texas A&M University.*

A structural model of the spring onion economy in Texas is developed. Spring onion prices in Texas are influenced by own-shipments, shipments from storage stocks, and variety. A decline in the U.S. real tariff and a weakening of the real exchange rate (peso/dollar) encouraged onion imports from Mexico during the study period. However, this impact was offset by the imposition of quality standards in

1980. Study period results did not support the recent contention of Texas producers that onion imports from Mexico are unfavorably affecting prices received.

"The Demand for Hot Dogs: An Application of Scan Data and Multimedia Advertising." *Kent L. Wolfe, University of Tennessee.*

Previous studies have used aggregated food groups to measure the effect of promotional activities on supermarket sales. This paper contributes to the literature by focusing on a narrow food group (beef hot dogs) and by incorporating multimedia advertising effects. It is the first paper to combine the effects of several promotion strategies in a single empirical demand model using scan data. Substitute and complementary goods are significant determinants. The Fourth of July holiday and associated television and radio advertising also have impacts on demand.

"At-Home Catfish Consumption in the United States: A Logit Analysis." *Danilo C. Israel, Kandice H. Kahl and Robert S. Pomeroy, Clemson University.*

A dichotomous logit analysis was conducted to measure the effects of relative price perceptions and selected household socioeconomic and demographic characteristics on the probability of at-home catfish consumption in the United States. Data from the 1988 Southern Regional Aquaculture Center Consumer Survey were used. Perceptions about the price of catfish relative to other fish, household income, household race and region were important determinants of the probability of at-home catfish consumption. The probability of at-home catfish consumption was highest among middle income households, black households, and households in the central regions.

"A New Look at Cattle Cycles and Herd Dynamics." *Derrell S. Peel, Oklahoma State University.*

Declining cattle herd inventories in the U.S. since 1975 have been characterized by different dynamics than were previous stocks. Placements and herd disappearance have been used to identify possible reasons for altered her dynamics and the implications for modeling herd inventories. In addition, data on heifer placements and cow slaughter are used to characterize the impacts of cyclical placement and culling patterns on the average age of cow herd.

"Dairy Policy, bST Adoption and the Impacts on the Dairy and Beef Industry." *D. Scott Brown, Jon A. Brandt, and Kenneth W. Baily, University of Missouri-Columbia.*

This empirical analysis simulates through econometric models of the beef and dairy industries the effects of bST adoption on dairy and beef under different dairy policy scenarios. Limiting milk production through buyout slaughter (DBO) is expensive and causes large and immediate shocks to the beef sector. Modifications to the current farm bill are less expensive to taxpayers but reduce dairy revenues sharply.

IMPACTS OF TRADE AND IMMIGRATION POLICIES ON SOUTHERN AGRICULTURE

(Moderator: *David Schweikhardt, Mississippi State University*).

"U.S. Overseas Market Promotion: An Overview of Non-price Programs and Expenditures." *Tommy Eshleman and Shilda R. Henneberry, Oklahoma State University.*

This study gives an overview of the U.S. government non-price subsidy export promotion-programs. FAS data on the Cooperator and Targeted Export Assistance (TEA) programs were analyzed to identify how program expenditures have been allocated among activities, commodities, and regions. Analysis shows that while a significant portion of the TEA funds have been spent in highly developed countries, the emphasis of the Cooperator program has not been definite. Traditional commodities received 55 percent of total Cooperator funds and horticultural products received 53 percent of the TEA allocations during the 1986-1988 period.

"U.S. GATT Proposals: Potential Impact on U.S. Peanut Farmers." *Stanley M. Fletcher and Dale H. Carley, University of Georgia.*

Specific proposals offered by the United States in the GATT negotiations will impact economically on U.S. peanut farmers. Traditional forms of price support and production quotas would be phased out and the non-tariff import quota on peanuts would be converted to tariffs. The gross income to peanut farmers under tariffication was projected to decrease from about $1.1 billion in 1990/1991 to $743 million by 2000/2001. If the current peanut program is continued for 10 years under similar provisions as now exist, gross income would increase to a projected $1.7 billion by 2000/2001.

"Multilateral Trade Liberalization and the 1990 Farm Bill: Impacts on U.S. and Southern Agriculture." *Amy L. Angel and Parr Rasson III, Texas A&M University.*

Steps toward multilateral trade liberalization and lower farm program support levels promise major impacts upon U.S. agriculture as a whole and also on the South, where many trade-sensitive commodities are produced. This study uses a mathematical programming model to estimate these effects, analyzing production, trade, and welfare for major commodities. Results vary from commodity to commodity, but generally the producers of less protected products fare better than those of more highly subsidized commodities. Few distinct differences were found between results for the South and the United States as a whole in terms of direction or magnitude of changes.

"Estimated Impact of Immigration Reform on Selected Labor Intensive Crops." *Lewell Gunter and Chris Jarrett, University of Georgia, and Jim Duffield, USDA ERS.*

An important concern in the passage of the Immigration Reform and Control Act of 1986 (IRCA) was its impact on labor intensive agriculture. It is difficult to estimate the impact of IRCA on farm labor supply due to the lack of data on illegal workers in agriculture and uncertainty about the effectiveness of the IRCA. This research addresses the impact question by examining the sensitivity of production of four labor intensive crops (fresh tomatoes, grapes, apples and oranges) to various shifts in labor supply.

POSTERS PRESENTED

Annual Meeting, SAEA, Fort Worth, Texas, February, 1991

"Nursery Crop Insurance: Perceived Need and Awareness." *S. O. Osawani and S. P. Singh, Tennessee State University.*

The importance of nursery products in Tennessee's agricultural sector has increased tremendously. Cash receipts from marketing of nursery and greenhouse products in Tennessee were ranked fourth among sales of all agricultural products in 1989. In any business including nursery, effective risk management is very important. Crop insurance policies provide an avenue for an effective risk management. The current Nursery Crop Insurance Policy (89-56) does not, however, cover any nursery crops grown in the field. A survey was conducted in Tennessee to examine the need, awareness and potential of field grown nursery crops for multiperil insurance by nurserymen.

"Analyzing the Effectiveness of the 1985 Tobacco Improvement Act." *William M. Snell, Orlando D. Chambers, and Perry J. Nutt, University of Kentucky.*

This poster analyzed the effectiveness of the 1985 Tobacco Improvement Act in strengthening U.S. flue-cured and burley tobacco economies. The poster outlined the major changes in the production control and price support programs for U.S. flue-cured and burley tobaccos and discussed their impacts on U.S. tobacco quotas, price supports, international price competitiveness, loan stocks, exports, imports, and grower returns. In addition, the poster presented survey results of industry perceptions of the revised tobacco program along with opinions regarding various policy modifications to the 1985 Tobacco Improvement Act.

"Changing Competition in the World Soybean Market: A Comparative Analysis." *Amy Angel and C. Parr Eoaaon, Texas A&M University, and Charles E. Curtis, Jr., Clemson University.*

The decline in U.S. exports and production of soybeans has sparked controversy among casual observers and analysts alike. Relative competitiveness is the best measure to study the market competition due to pervasive government intervention and difficulty associated with measuring comparative advantage. A break-even yield analysis of production and marketing costs and export taxes is conducted for soybeans in Argentina and Brazil. Results are compared to a similar analysis of the Midwest United States, the Delta, and the Southeast. The comparison reveals that for full season soybean production and marketing, the United States and Brazil are at a competitive disadvantage. Under double-cropping soybeans and wheat, the Southeast and Argentina are the most competitive regions.