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ABSTRACTS

PAPERS PRESENTED

Annual Meeting, SAEA, Tulsa, Oklahoma, February, 1993.

COMMODITY SECTOR ANALYSIS

(Presiding: *George Davis, University of Tennessee*).

"Interfiber Competition in Textile Mills Over Time." *Ping Zhang, Stanley M. Fletcher, University of Georgia, Don Etheridge, Texas Tech University.*

Cotton and man-made fiber competition in textile mills between 1961-1990 was examined using a time-varying parameter regression model. Results indicate that cotton's share response to changes in the price of cotton and man-made fiber vary over time. Changes in textile technology and consumer's preference have a significant impact on cotton's share of total fiber use.

"Cointegration and Causality Tests in the Cocoa Market." *Harjanto Djunaidi, B. Wade Brorsen, Daniel S. Tilley, Oklahoma State University.*

Augmented Dickey-Fuller (ADF) test is used to determine the existence of unit roots of cocoa spot prices and cocoa futures prices. Dickey-Fuller, ADF, Durbin-Watson, and an augmented restricted vector autoregression tests were used to determine whether daily cocoa cash and futures prices are cointegrated. Three of the four tests showed that these two price series are cointegrated. The direction of causality test in a vector-autoregressive error correction model. A feed back relationship was found.

"Dynamic Price Behavior in Wheat Markets." *Mark Waller, Texas A&M University, H. O. Zapata, Louisiana State University, B. Kanjilal, Louisiana State University.*

This study investigates the dynamics of price transmission between wheat prices in the Houston port area, a major export region for hard red winter wheat, and interior markets in Texas and Kansas City. Johansen's ML estimation approach is used to test for cointegrating relationships and to estimate error correction models

used to disaggregate long-run comovement from short-term price changes. The results indicate that all Texas markets, except one furthest from the Houston port, respond to changes in port area prices. The response to disequilibrium in price relationships is much higher for the inner markets relative to the port.

"The Value of Segmenting the Milk Market Into bST-Produced and Non-bST-Produced Milk." *Loren W. Tauer, Cornell University.*

This paper discusses the value to milk producers and consumers of segmenting the milk market into bST-produced milk and non-bST-produced milk markets, vs. losing milk consumption from consumers who will not consume bST-produced milk. Results indicate that both bST-using producers and non-bST-using producers benefit from a segmented market. Even if market loss does not occur, segmenting the market benefits all producers. Non-bST consuming consumers benefit from availability of non-bST milk, but consumers who are indifferent to the use of bST pay slightly higher milk price in a segmented market.

PORK PRODUCTION (Presiding: *Dennis DePietre, University of Missouri*).

"The Impact of Alternatives Pricing Models on Producer Profits and Slaughter Weights for Three Genotypes of Barrows and Gilts." *Michael A. Boland, Paul V. Preckel and Allan P. Schinckel, Purdue University.*

Three hog genotypes are simulated to determine how producer profits, economically optimal slaughter weights, and carcass component weights change under three pricing models. Live weight pricing pays more for the fatter barrows whereas component (separate payments for fat, lean, and byproducts) models pay more for the leaner gilts. It appears that there may be economic incentives associated with split sex feeding and with tailoring feeding programs to individual genotypes.

"Determinants of Finishing Hog Profitability."

Debra L. Hansen and Timothy A. Powell, University of Nebraska-Lincoln.

Coefficients of separate determination were estimated using Iowa and Nebraska data for 1988, 1989, and 1990. Three factors accounted for the majority of variation in profits for the years investigated. These three factors, market hog price, feed cost and feeder pig cost have significant ramifications for hog finishing operations.

"Factors Affecting Pork Production Costs."

George F. Patrick, Michael A. Boland and James K. Binkley, Purdue University.

Production expenses per hundredweight, excluding labor, are estimated as a function of corn price, pigs per farrowing crate, feed efficiency, number of breeding stock, and pigs per sow per year using OLS and GLS, accounting for producer-specific errors. Signs are as hypothesized, except for pigs per crate per year, and elasticities are computed for significant variables. Implications of the analysis are presented.

"A Nonparametric Test of Scope Economies in Pork Production."

Timothy A. Powell, Azzedine M. Azzam and Debra L. Hansen, University of Nebraska-Lincoln.

A nonparametric method was used to test the scope economies in pork production. Midwest swine enterprise data was used to construct matched operations of feeder pig plus finish and farrow-to-finish enterprises for three years, 1989, 1990, and 1991. Based on results from the Wilcoxon Paired Difference Signed Rank Test, scope economies in pork production were not found.

"Economic Incentives for PST Adoption by Midwest Hog Producers."

James W. Richardson and David P. Anderson, Texas A&M University, Derrell S. Peel, Oklahoma State University and Mike Phillips, Food Assessment Program, Office of Technology Assessment.

A whole-farm simulation model is used to analyze the impacts of PST adoption on

representative hog farms in Missouri and Indiana. Farmers who do not adopt experience lower average annual net cash farm incomes than adopters. Lower feed prices and/or an average PST/feed response decrease the incentive to adopt. Payment of a 5 percent carcass merit premium (CMP) and/or higher grain prices greatly increase the economic incentive to adopt.

INTERNATIONAL TRADE AND POLICY

(Presiding: *Larry D. Sanders, Oklahoma State University.*)

"International Competitiveness of Canadian Fresh Vegetables: A Case Study of Tomato and Potato Markets."

Dennis Featherstone and Ihn H. Uhm, Canadian International Trade Tribunal.

Porter's (1990) theory of international competitiveness links four sets of qualitative forces into a "diamond" to explain competitiveness. For two of Canada's major vegetable crops, potatoes and tomatoes, a quantification of these forces is used in a multiple regression analysis to explain the variation in form different measures of competitiveness factors explain a substantial portion of the variation in the four competitiveness indicators.

"A Shrinking Window of Trade for Corn Gluten Feed: Implications for U.S. Crop and Livestock Production."

Mark Peters and W. Terry Disney, ERS/ATAD/WHB/NAS

A window of trade has existed in the market for corn gluten feed (CGF) between the U.S. and the E.C. because E.C. livestock farmers have been willing to pay more for CGF than U.S. livestock farmers. This window of trade may soon close or compress because of the removal of distortions to E.C. grain prices and because of increased U.S. production of ethanol. Model results indicate that a closed or compressed window of trade for corn gluten feed (CGF) has substantial economic consequences for U.S. crop and livestock producers and ethanol producers.

"Potential Influence of a NAFTA on the Southern Beef Cattle Sector." *W. Terry Disney, ERS/ATAD/WHB/NAS*

Most economic analysis that has been done in anticipation of a North American Free Trade Agreement has assumed that Mexican and U.S. feeder cattle are homogeneous. This analysis shows that assumptions that researchers make about the characteristics of feeder cattle imported from Mexico are crucial in determining the impact of Mexican feeder cattle imports on southern U.S. beef cattle production. A comparative static nonlinear spatial equilibrium model of U.S. livestock and crop production is used to analyze the influence that a NAFTA would have on southern beef farm incomes under four different scenarios for beef and cattle trade with Mexico.

"A Structural Accounting of U.S. Bilateral Trade." *Thomas L. Vollrath, USDA/ERS, Markets and Competition Branch.*

Using information contained in merchandise trade records, the author calculates measures of bilateral trade intensity to determine how well the United States competes in specific import markets and how much the United States depends on individual foreign suppliers. Derivative statistics include measures of overall-special-nation bias and commodity bias, the latter embodying the complementary influence of U.S. and partner trade based on the composition of their trade with the world. These various index are used to diagnose the structure of U.S. bilateral trade using an adjusted U.N. trade database.

AGRICULTURAL FINANCE (Presiding: *David Neff, University of Arkansas*)

"Investment Potential of Cattle Feeding." *Charles Dodson, USDA/ERS, Emmett Elam, Texas Tech University.*

This research shows the benefits of including cattle feeding in a diversified portfolio including stocks, bonds, short-term debt instruments, and a commodity index. A mean-variance approach

is used to determine the efficient frontier for investment portfolios including cattle feeding and excluding cattle feeding. The results indicate that the inclusion of cattle feeding is found to increase the risk efficiency of the investment portfolio.

"Financial Performance of U.S. Farms by Farm Credit District for 1980, 1985, and 1990." *Sean Chance and Richard Weldon, University of Florida and Ken Erickson, USDA/ERS/ARED.*

This paper examines the financial performance of U.S. farms, by Farm Credit System Districts for 1980, 1985, and 1990. Key financial performance measures for equity, profit, profitability, leverage and liquidity are estimated for farms in 1980 at the beginning of the "farm crisis", in 1985 at its peak, and in 1990 after the recovery to gain insights into the relationship between the structural changes in Farm Credit System and the financial conditions of the agriculture in each district.

"Explaining Inter-Bank Variation in Loan Pricing Using an Incidentally Truncated Regression Model." *Bruce L. Dixon and Bruce L. Ahrendsen, University of Arkansas.*

The phenomenon of varying interest rates offered by different banks in response to an identical loan request is investigated. Thirty-four commercial bank lenders in western Arkansas responded to four hypothetical agricultural loan requests. Observations on interest rates could only be obtained from lenders willing to make the loan. Hence the model explaining interest rate variation must be estimated as an incidentally truncated model. Results show interest rates rise with the loan-to-deposit ratio and if the bank is an agricultural bank. Greater density of banks in a county results in lower rates. Incidental truncation is statistically significant

"Missouri Farm Bankruptcies, 1981-1989." *S. F. Matthews, N. G. Kalaitzandonakes and M. J. Monson, University of Missouri-Columbia.*

This study investigates the personal and farm financial characteristics of Missouri farmers who filed for bankruptcy protection during 1981-89.

CONSUMER DEMAND AND MARKETING (Presiding: *Richard L. Kilmer, University of Florida*).

"Food Away From Home Expenditures: The Situation Revisited." *Oral Williams, Patrick Byrne, Vernon Lansford, Oral Capps, Jr., Texas A&M University.*

This paper identifies and assesses selected demographic factors in determining total expenditures for food away from home. Findings were based on information gathered from the 1987-88 National Food Consumption Survey, administered by the USDA. The Tobit procedure with a correction for degrading heteroscedasticity was the employed methodology. Special attention was given to deriving elasticities associated with income and household size, as well as the decomposition of effects due to present FAFH consumers and new entrants. FAFH expenditures are shown to have become more income inelastic over time, while less inelastic with respect to household size.

"Consumer Attitudes Toward the Safety of Farm-Raised Fish Products and Seafood Inspection." *J. R. Bacon, C. M. Gempesaw, II and U. C. Toensmeyer, University of Delaware.*

A logit procedure was used to assess the factors that influence consumers' attitudes toward fresh fish and seafood. Data were collected from a mailed consumer survey. The EATMORE model indicated that increased consumption of seafood can be achieved through targeting the higher income consumer. The FEELSAFE model revealed that consumers would feel safer eating fresh farm-raised fish is branded products that include nutritional information on their labels were developed. The INDGOV and FARMRASE models showed that consumers with at least some college favored government inspection and placed less value on the farm-raised attribute in their buying decisions, respectively.

"U.S. Consumer Demand for Alcoholic Beverages: Cross Section Estimation of Demographic and Economic Effects." *X. M. Goa, Eric J. Wailes and Gail L. Cramer, University of Arkansas.*

This paper discusses the specification and estimation of a two stage budgeting consumer demand for alcoholic beverages using recent USDA household food consumption survey data. The upper level first stage budgeting is modeled via a double-hurdle model, where consumer decisions on whether to buy alcoholic beverage and how much to buy are defined separately. The lower level allocates alcohol expenditure via a conditional synthetic demand system for beer, spirits and wine. A level version synthetic system is constructed via a normalized linear combination of level Rotterdam, DBS, and an AIDS equivalent mode. The prices, calculated by dividing value by quantities, are quality adjusted and selected biases are corrected. The results show that some household characteristic variables, as well as economic variables, have significant impacts on consumer demand for alcoholic beverages.

"Supermarket Advertising Impacts on Fresh Beef Demand in a Metropolitan Market." *David B. Eastwood, Morgan D. Gray and John R. Brooker, Agricultural Experiment Station, The University of Tennessee.*

This paper describes a study of fresh beef advertising and consumption. Interrelationships among alternative measures of promotions were examined, and their effects on sales of ground roast, and steak were estimated. Supermarket scan data comprised the weekly sales and price information. Advertising data were gathered and merged with the scan data. Descriptive statistics were evaluated, and demand equations estimated. Results suggested the advertising was fairly independent. The pattern of estimated coefficients indicated significant own-price and advertising effects and few cross effects. Seasonal patterns differed by cut.

"What Effect Does Personal Income, Excise Tax and Advertising Expenditure Have on Wine Consumption in Florida?" *Stephen Leong, Florida A&M University.*

Many states including Florida often used sales and excise tax to raise revenues on the assumption that demand for alcoholic beverages is inelastic. The excise tax for all categories of wines in Florida was raised in 1987/8, making it the highest in the nation. Results of an econometric model show that per capital personal income and advertising expenditure have a positive impact on the consumption of table wines, sparkling wines, dessert wines and vermouths while excise tax has a negative impact on their consumption. The increase in excise tax for alcoholic beverages in 1987/8 reduced wine consumption substantially.

WATER USE AND QUALITY (Presiding: *Patricia Norris, Oklahoma State University.*)

"Methodology and Assumptions in Irrigation Strategy Studies: A Comparison of Two Approaches." *Kelly J. Bryant, James W. Mjeld and Ronald D. Lacewell, Texas A&M University.*

Many studies have developed optimal irrigation strategies using either a soil-water threshold approach of a dynamic programming (DP) approach. The threshold approach usually assumes a constant soil-water threshold throughout the season to trigger irrigation. The DP approach usually limits the initiation of an irrigation to day one of each decision stage. This study used both approaches to develop irrigation strategies for corn and sorghum on the Texas High Plains. A crop simulation model was used to simulate 25 years of net returns from irrigation using the different irrigation strategies. Results showed that average net returns were not significantly ($p=0.05$) different for the two approaches. There apparently is no loss in average net returns caused by assuming a constant soil-water threshold, but there may be some error on the less water intensive crop caused by limiting the starting dates or irrigations. The Threshold strategy second degree dominated the DP strategy on both crops which may be the result of limiting irrigation starting dates, or assuming profit maximization in the DP model.

"Dynamically Efficient Rates of Ground Water Use: An Application to the Texas High Plains." *Edwardo Segarra and Yinjie Feng, Texas Tech University.*

Texas High Plains producers are expected to adjust their crop pattern, irrigation systems, and production practices as ground water tables decline and irrigation cost increases. This study provides insight into the efficient path of the adjustment process and implications associated with this process. It was found that the efficient crop pattern is related to the ground water supply condition. The declines in the proportion of higher water requirement crops is fast with high pumping lift and this saturated thickness. Declines in saturated thickness appear to have greater impact on crop pattern and irrigated acreage, than do increases in pumping lift.

"Estimating Nitrogen Percolation Relationship: An Application of Tobit Analysis." *Mark Teague and Daniel J. Bernardo, Oklahoma State University.*

Regression analysis is used to complement a simulation model by synthesizing a large amount of data into concise results. The crop growth/chemical fate simulation model EPIC-PST was used to estimate annual nitrogen percolation quantities under irrigated wheat and corn production for various soil types, irrigation systems, and management practices. Tobit analysis gained information from this data such as the effect of selected variables (e.g. irrigation level and nitrogen applied) on the expected value and probability of nitrogen percolation. The tobit results can be used to make field recommendations and policy prescriptions based on EPIC-PST output.

"A Multi-objective Dynamic Programming Model for Evaluation of Agricultural Management Systems in Richmond County, Virginia." *Minkang Zhu, Daniel B. Taylor and Subhash C. Sarin, Virginia Polytechnic Institute and State University.*

A multi-objective dynamic programming model, coupled with the CREAMS simulation model, was developed to empirically evaluate the economic and environmental impacts of 14

agricultural management systems in Richmond County, Virginia. The results of the model suggest an improvement in economic and environmental benefits can be achieved through use of a mixture of legume and non-legume cover crops in Richmond County. The results also indicate there is no possibility of achieving a 40 percent reduction of nitrogen loading required as by Chesapeake Bay Agreement by employing any of the 14 agricultural management systems analyzed in this study.

CONSERVATION POLICY AND PROGRAMS (Presiding: *Mike Dicks, Oklahoma State University.*

"A Policy Analysis of Extending CRP Contracts." *Kevin Smith, Oklahoma State University and Mike Monson, University of Missouri-Columbia.*

The economic consequences of CRP land returning to base-acre crop production are compared to an extension of all contracts, assuming the extension occurs before initial contracts expire. CRP cropland and the economic consequences of a "most-likely" post-CRP option with an extended-CRP option are calculated. Extending the CRP may increase crop prices, net returns per acre and net farm income, and decrease participation in government programs and net CCC outlays.

"Recropping Rates of Conservation Reverse Program Acreage." *Carl O. Garrison, B. Wade Brorsen, Brian D. Adam, Mike Dicks, Oklahoma State University.*

The rate of CRP land returning to crop production when contracts begin to expire has been the topic of many recent discussion. Soil and Water Conservation Society Survey results indicate that 41.9 percent of CRP participants plan to return CRP acres to production. Further analysis by Osborn

showed that 52.7 percent of CRP acres would return to production.

Chi-square and means tests on the population and sample indicated that a response bias existed in the survey. We correct the survey for response bias and unequal probability sampling. We use a Tobit model to predict more accurately acres returning to crop production.

"Small-Farm Involvement in the Conservation Reserve Program: A Study of Northeast Louisiana." *Patricia E. McLean-Meynsse and Jianguo Hui, Southern University and A&M University, Randolph Joseph, Jr., Soil Conservation Service.*

The study examines the level of awareness and willingness by small-scale farmers in northeastern Louisiana to participate in the Conservation Reserve Program (CRP). A logit model was used to estimate awareness and willingness. Results show that age and race influenced small-scale farmers levels of awareness. Several factors including payment per acre, age, education, and farm class statistically influenced small-scale farmers willingness to participate in the CRP.

"An Analysis of Potential Conservation Effort of CRP Participants in the State of Missouri: A Latent Variable Approach." *N. G. Kalaitzandonakes and M. J. Monson, University of Missouri.*

This study investigates the influences of economic and personal factors on the intended conservation effort of a sample of CRP participants in the state of Missouri after their CRP contracts have expired. A random sample of Missouri CRP participants is surveyed with respect to their planned land use and intended conservation practices when CRP land is brought back to production. Subsequently, the potential conservation effort of the surveyed group is formally modeled as a function of their conservation attitudes and other personal and economic factors.

RURAL AND COMMUNITY DEVELOPMENT (Presiding: *Tom Johnson, Virginia Polytechnic Institute and State University.*

"Fundamental Economic Structure and Central Place Theory in the Construction of Hybrid Regional Input-Output Models." *David W. Hughes and Leo H. Guedry, Louisiana State University.*

Research in regional impact analysis has recently increased due to the advent of ready made modeling systems. Hybrid input-output models are built by verifying ready made models with other data sources. Jensen suggests that the service sectors of hybrid models represent the Fundamental Economic Structure (FES) that does not change between regions and requires little verification. In view of Central Place theory, reliance on the FES may lead to an overestimation of service sector activity for rural communities and an underestimation of the same for a central place. Research assessing the assumptions underlying FES would indicate its usefulness.

"Economic and Fiscal Impacts of a Retirement and Recreation Community: A Case Study of Tellico Village, Loudon County, Tennessee." *Paul B. Siegel, Frank Leuthold and Doug Rugh, University of Tennessee.*

There has been a proliferation of planned residential developments called recreation/retirement communities (RRC) in the South. RRC's have been touted as a way for rural communities to develop their economies. For local governments, fiscal benefits and costs associated with a RRC may be significant. Hence, information on both economic and fiscal impacts is needed. This paper analyzes economic and fiscal impacts of Tellico Village on Loudon County, Tennessee. It is found that, in relative terms, fiscal impacts of the RRC far outweigh economic impacts from the perspective of the local governments.

"Local Taxes Effect on Manufacturing Location." *Daniel V. Rainey and Kevin T. McNamara, Purdue University.*

This study examines the impact of local tax differentials on the location of manufacturing firms in Indiana. The study improves upon previous sub-state location/growth studies in constructing a tax measure that better reflects the tax burden firms will face. The results of the study indicate firms tend to avoid communities that have relatively high property tax rates. These findings suggest that tax relief incentives can be a very important component of a community's industrial recruitment program.

"The Impact of Socio-Economic Factors on Infant Mortality and Morbidity in West Virginia: A Cross-Sectional Comparison of Counties." *Ann McKnight Brown, Tesfa G. Gebremedhin, Cindy Lee Martinex and Virgil J. Norton, West Virginia University.*

To measure the relative importance of socio-economic characteristics that influence a woman's ability to seek prenatal care and the associated impact on the rates of low-birth-weights and neonatal mortality, cross-sectional regression analysis were used to compare the variations in these rates across counties in West Virginia. Only the 1988-89 data set was complete for statistical analysis. From the regression results, births to teenage mothers is consistently a key indicator of inadequate prenatal health care. A reduction in these births would lead to a drop in the rates of low-birth-weights.

LIVESTOCK MARKETING (Presiding: *Clem Ward, Oklahoma State University.*

"Imputing Values for Directly or Contractually Transferred Feeder Pigs." *Roger A. Dahlgran, University of Arizona, Dennis D. Pietre, University of Missouri-Columbia.*

This study addresses the problem of price determination for feeder pigs that are not transferred

through public auction markets. A pricing model is derived from a profit function. The profit function is estimated using accounting data obtained from a commercial hog record-keeping, management and consulting firm in the upper midwest. Parameter estimates are used to estimate implicit prices for contractually transferred feeder pigs. The model and methodology are validated by comparing imputed values against prices actually paid in an active feeder pig market. We conclude that the methodology is valid and can provide helpful guidelines in pricing non-marketed feeder pigs.

"Impacts of Cattle Imports From Mexico on Feeder Steer Prices." *Laura Cockerham, Derrell S. Peel, Oklahoma State University.*

Monthly feeder cattle price flexibilities are estimated to measure the impact of Mexican cattle imported into the U.S. on feeder cattle prices. Results confirm the negative impact of imported cattle on feeder prices impacts at mean prices and import levels. However, at peak monthly import levels, negative feed price impacts are much more substantial.

"Effect of Risk Aversion and Biased Expectations on Feeder Cattle Prices." *B. Wade Brorsen and Jung-Hee Lee, Oklahoma State University.*

This paper determines the effects of cattle feeders' risk aversion and biased expectations on feeder cattle prices using pen data of feedlots in the Texas Panhandle. The result of this study supports the hypothesis that producers have biased expectations in that they overreact to the most recent information. In addition, this study found that higher feed cattle price risk results in lower feeder cattle price.

"Valuing Lamb Carcass Based on Cutability: A Linear Programming Approach." *Rodney Jones and Daniel B. Taylor, Virginia Polytechnic Institute and State University.*

The current lamb carcass pricing system rewards fat rather than lean, yet consumer preference favors lean meat products. A linear programming model is developed to determine end use value differences among yield grades of lamb

carcasses. Old and new yield grading formulas result in 8.5 versus 5.6 cent differences between yield grades, respectively.

NUTRIENT MANAGEMENT (Presiding: *Sandra Monson, University of Missouri.*)

"An Economic Comparison of Composted Manure and Commercial Nitrogen Under Imperfect Information." *Patrick T. Berends, Penelopr L. Diebel, Jeffery R. Williams, Kansas State University, Alan J. Schlegel, Tribune Unit, Southwest Kansas Branch Experiment Station.*

The economic feasibility of using composted manure on irrigated grain sorghum is evaluated using net return budgeting and production function analysis. Although the use of compost is technically feasible, the economic analysis indicates compost does not comprise a large percentage of the nitrogen source in the profit maximizing combination of commercial fertilizer and compost.

"Optimal Farm-Level Use and Value of Broiler Litter." *Feng Xu and Tony Prato, University of Missouri.*

An optimization model is used to determine optimal choice of fertilizer and litter cleanout schedule, to estimate the value of broiler litter, and to evaluate the potential economic effects of land application rates based on different nutrient requirements for a representative broiler farm in Missouri. Results indicate that litter is an inexpensive substitute for commercial fertilizer. Since the model determines litter application rates based on crop nutrient needs, the risk of water contamination would be minimal.

"Potential Farm Financial Impacts of Limiting Manure Applications to Crops: Evidence from Virginia." *Darrell J. Bosch and James W. Pease, Virginia Polytechnic Institute and State University.*

To prevent overapplication of nutrients and protect water quality, policies may be instituted that limit manure applications to cropland. Representative dairy farm models with and without poultry enterprises were developed to estimate the

financial impacts of limiting manure application amounts to crop nutrient requirements. Nitrogen restrictions alone did not greatly affect returns on dairy farms without poultry, but reduced returns on farms with poultry by five to fifty percent. Limiting manure applications to crop phosphorus requirements reduced net returns by 90 to 179 percent.

"A Theoretical Assessment on a Farmer's Decision Concerning the Timing of Nitrogen Fertilizer Application." *Wen-yuan Huang, Noel Uri and LeRoy Hansen, USDA/Economic Research Service.*

This paper is concerned on farmer's decision on the timing of nitrogen fertilizer application. The theoretical results confirms the belief that a risk averse farmer would allocate more nitrogen fertilizer before planting and less nitrogen fertilizer after planting than would a risk neutral farmer. The results also show that as a farmer's perceived probability of not being able to apply nitrogen fertilizer after planting increases, the difference in nitrogen application rates between two seasons by a risk averse and by a risk neutral farmer becomes insignificant regardless of the level of risk aversion.

AGRICULTURAL POLICY (Presiding: *Penny Diebel, Kansas State University.*)

"The Impacts of the 1990 Farm Bill on the Maximum Bid Price for Farmland on Representative Central U.S. Grain Farms." *David P. Anderson and James W. Richardson, Texas A&M University.*

Maximum bid prices for farmland are simulated for four Central U.S. grain farms under the 1985 farm bill and 1990 farm bill. The results indicate that the provisions of the 1990 farm bill may significantly reduce maximum bid prices for farmland. The results suggest decreases in maximum bid prices for farmland of 54 percent in North Dakota, 24 percent in Iowa, 10 percent in Missouri, and 7 percent in the Texas Northern High Plains.

"Impact of Planting Flexibility Provisions in the 1990 Farm Bill on Optimal Crop Mix and Farm Revenues." *Ming-Che Chien and David J. Leatham, Texas A&M University.*

The 1990 Farm Bill provides program participants more planting flexibility and farmers have an opportunity to increase profits by producing more profitable crops. However, gains from added planting flexibility provisions on crop selection decisions, farm profitability and farm risk. Results show that representative farms in the High Plains, Texas are at least as well off under the current program but the representative farms in the Coastal Bend, Texas are worse off.

"Estimation of Harvested Wheat Acreage." *Kevin N. Mills and Michael R. Dicks, Oklahoma State University.*

A functional form for planted acreage is generally used to determine national supply responses. This method is inappropriate for estimating regional supply responses. A functional form for harvested acreage must be considered to determine a regional supply function for a commodity. This paper presents a model that was designed to estimate harvested acreage at a regional level. The model explains the difference between harvested and planted wheat acreage in Oklahoma and examines the impacts of government programs on harvested acreage.

"Regional Impacts of Alternative Milk Inventory Management Programs." *William KA. Schiek, Purdue University and Emerson M. Bab, Jr., University of Florida.*

The impacts of alternative milk inventory management programs on regional milk production, prices, and producer revenues were examined using a simulation model of the U.S. dairy industry. Results suggest that quota-type programs alter the regional distribution of producer income relative to that which would obtain under the current policy.

NONMARKET VALUATIONS, ITQ's
(Presiding: *Eric Thunberg, University of Florida.*

"Discrete/Continuous Contingent Valuation of Private Hunting Access in Kansas." *Barry K. Goodwin, Lisa A. Offenbach, Ted T. Cable and Philip S. Cook.*

Halstead *et al.* (1991) recently discussed the use of Tobit analysis to evaluate open-ended contingent valuation surveys with zero bids. This paper generalizes their analysis to evaluate the willingness to pay of 568 Kansas hunters for private hunting access. Declining real budgets for public wildlife activity provisions and limited hunting opportunities for non-landowners have increasingly led to the consideration of user access fees to supply hunting opportunities. The empirical techniques applied in this paper allow a distinction between the use/non-use rule implied by zero bids and the process generating the continuous bids of the sub-sample of users.

"Modified Count Data Models for Travel Cost Analysis." *Teofilo Ozuna, Jr. and Irma A. Gomex, Texas A&M University.*

Modified count data models are used to estimate recreation demand decisions subject to corner solution outcomes. These models are more flexible than the familiar count models and they represent the discrete regression analogue of continuous sample selection models. The models are applied to an empirical study to examine their effects on parameter variability, model selection, and consumer surplus. The results indicate that the various count models provide different parameter estimates as well as substantial differences in consumer surplus estimates. Additionally, the geometric hurdle model was found to be the most appropriate model for the case studied.

"Empirical Disparities Between WTP and WTA: A Property Rights Perspective." *E. Jane Luzar and Christopher E. Gan, Louisiana State University.*

While a number of established factors can contribute to the observed disparities between WTP and WTA values, the role of property rights for

certain kinds of resources bears closer examination. In cases of public goods which require regular payments to maintain a given level of the resource and which offer improved accessibility through additional payments, WTA may be an inappropriate valuation metric. This paper presents an empirical illustration of the property rights perspective for the case of accessing wildlife resources. Empirical results suggest that evaluation of the property rights perspective for some cases of public goods provides additional explanation for observed disparities between WTP and WTA.

"A General Equilibrium Welfare Analysis of North Atlantic Swordfish Quotas." *E. Lee Bouchele, III, Eric M. Thunberg, Charles M. Adams and James L. Seale, Jr., University of Florida.*

A general equilibrium model of swordfish demand is presented from which consumer welfare losses are estimated. The analysis focuses on consumer welfare losses that are attributable to domestic and international efforts to reduce the amount of swordfish caught from North Atlantic stocks. Actual quotas are simulated by reducing domestic landings and imports from North Atlantic stocks to induce a potential short run price increase and subsequent changes in consumer surplus. Consumer surplus losses were estimated to be \$4.6 million annually. The results show that welfare analysis using partial equilibrium demand functions may understate consumer welfare losses.

ENVIRONMENTAL POLICY ISSUES
(Presiding: *Natamulyango Baharenji, Tuskegee University.*

"Economic Growth vs. Environmental Quality: A State-Level Analysis for 1988-90." *Stephan J. Goetz and Richard C. Ready, University of Kentucky, Brad Stone, Lexington, Kentucky.*

A Barro-type growth model is estimated to examine state-level per capita income change. After controlling for investment capacity, initial income, education level, job mix by sector and environmental policy, we find that states with better environmental conditions had significantly higher per capita personal income growth rates during the

period 1988-90. A possible explanation is offered and caveats are discussed.

"Efficiency in the Insecticide Regulatory Process: A Comparison of Static, Myopic, and Dynamic Decision Making." *Richard J. Kazmierczak, Louisiana State University and George W. Norton, Virginia Polytechnic Institute and State University.*

Using an optimizable bioeconomic model, the relative efficiency of static, myopic, and dynamic insecticide regulatory decisions are examined when there is a potential for the development of pest resistance. Compared to dynamic decision making, static approaches were generally severely sub-optimal in terms of potential economic surplus losses. While myopic solutions were near-optimal for planning horizons of less than 10 years, they diverged sharply from optimality for longer horizons. Taken together, the results suggest the need for revised regulatory procedures.

"Excess Nitrogen, Environmental Policy and Farm-Level Profitability on Corn/Livestock Farms." *Richard Nehring and Agapi Somwaru, Economic Research Service, USDA.*

This study investigates the impact of various agricultural chemical policies on profitability of production in corn/livestock farming, focusing on efficient use of nitrogen. The research calculates excess nitrogen at a rate of 400 percent per pound. A multi-input, multi-output nonparametric production efficiency frontier model was specified for a sample of 128 corn farms. The results indicate that uniform excess nitrogen levying would result in a greater decrease in excess nitrogen loadings on medium farms compared to large farms, while the nitrogen tax results in no difference in excess nitrogen loadings by size. Both the nitrogen tax and excess nitrogen levy would result in corn yield losses on medium farms, but virtually no change in yields on large farms.

INTERNATIONAL TRADE (Presiding: *George C. Davis, University of Tennessee.*)

"The Consumption and Importation of Soybeans in Japan with Emphasis on the Market Assessment for the U.S. Soybean Industry." *Ying-Nan Lin and Akira Kondoh, Mississippi State University.*

An econometric model, including thirty-nine equations, was developed to investigate the Japanese food and non-food consumption of soybeans, the competitiveness of U.S. soybeans on the Japanese market, and the potential of expanding U.S. soybean exports to Japan. Various expenditure elasticities were estimated. The estimated elasticities indicate that U.S. soybeans would be more capable of competing for Japanese consumer expenditures as Japanese poultry and swine industries expanded or the price of fish meal increased. However, the food usage of soybeans was insensitive to a change in real household income in Japan in both the short and long runs.

"The Demand for U.S. Hardwood Lumber in Japan." *George David and Kim Jensen, University of Tennessee.*

This study uses an indirect production (index) function within a two-stage budgeting procedure to analyze import demand for lumber by Japan. This approach allows tests for the sufficient conditions for two-stage budgeting and for weak separability between tropical and temperate lumber sources. The sufficient conditions for two-stage budgeting could not be rejected. The elasticity estimates without weak separability imposed suggest that overall tropical and temperate lumbers are complements, but that tropical lumbers are substitutes and temperate lumbers are substitutes. The test for weak separability between tropical and temperate lumber sources indicated weak separability could not be rejected.

"Deriving the Export Demand Elasticities from the Utility Function: The Case of the West Bank and Gaza Strip Agricultural Exports." *Mahmoud El-Jafari, University of Illinois at Urbana-Champaign.*

The purpose of this paper is to investigate empirically and responsiveness of the demand for agricultural exports in the West Bank and Gaza Strip, using annual time series data for the period 1970-1990. Traditionally, the export demand equations can be derived simply by applying duality theory on the gross national production function or profit function. In this study, the export demand equations will be derived from the utility function of the importing country. It is assumed that the objective of the importing country is to maximize the utility from consumption of imported goods. However, utility maximization is subjected to several constraints such as total expenditures on farm imports, import-export policies, non-tariff trade barriers, gross national product, exchange rates and farm exports. In this study, the model specified, and estimated is called the linear import expenditure system (LIES).

"Noneconomic Distortions in International Agricultural Trade: The Case of Palm Oil in the U.S." *Jamal B. Othman and Jack E. Houston, The University of Georgia.*

A U.S. import demand model for palm oil empirically addresses the objectives of ascertaining whether significant shifts in U.S. consumption patterns for palm oil followed an American Soybean Association "fatty" tropical oils promotion campaign and whether factors such as income and exchange rates significantly affected the decline of U.S. palm oil imports after the campaign. Evidence suggests that structural change in the U.S. import demand for palm oil followed commencement of the campaign, including significant changes in palm oil own-price and income responsiveness. Exchange rates did not contribute to declining U.S. palm oil imports.

TECHNOLOGY, EFFICIENCY
(Presiding: *Elizabeth Dunn, University of Missouri.*

"A Different Approach to Measuring Technological Change." *Anderson Reynolds, Southwestern Bell, Ziaming Gao, University of Arkansas.*

The study demonstrates a method of obtaining consistent estimates of technological change. Theil's differential input demand system was extended into a Multiple Cause, Multiple (MIMIC) indicator structural latent variable model which explicitly accounts for the fact that technological progress is not directly observed and therefore is invariably measured with error.

"The Components of Farm-Level Productivity Growth in Missouri Crop Production." *Q. Yuan and N. G. Kalaitzandonakes, University of Missouri*

This study investigates the components of output growth in Missouri crop production over the period 1976 to 1990. Technical progress and technical efficiency were found to jointly contribute 75 percent of the annual output growth. The residual 25 percent is accounted for by increases in input use. Slightly increasing returns to scale were identified in Missouri crop production but their contribution to productivity growth was found to be rather minor. Technical change was the major source of productivity growth, accounting for almost two thirds of the TFP growth. Improvements in technical efficiency were also found to be significant contributing one third of the TFP growth in Missouri crop production.

"Determinants of Technical Inefficiency in the Tunisian Oliver Production." *Lokman Zaibet, University of Missouri.*

This study estimated the effects of farm size, multiple parcel holding and type of ownership on technical inefficiency of Tunisian oliver farmers. Production function along with the first-order conditions for profit maximization were used to estimate technical efficiency. Results show that large farms are more efficient than medium and small farms. Technical efficiency decreased with the number of parcels by farm, and the private ownership has significant positive effects on technical efficiency.

"Technology and Marginal Costs in Multioutput Firms: Kentucky Crop Farms." *Marcos Gallacher, University of Kentucky.*

Most efforts directed at measuring economic efficiency deal either with cost minimization or with profit maximization in a single output framework. This paper deals with production costs and technology in farms producing three outputs: grain crops, tobacco and livestock. The main purpose was to (a) present a discussion on some issues related to efficiency appraisal in a multiple-output framework and (b) analyze the impact of selected variables on marginal costs of production of grains, tobacco and livestock. A sample of nearly 200 Kentucky farms was analyzed. The most important conclusions are that technology choice as defined by the land/family labor and land/capital ratio influences marginal costs. It was found, moreover, that marginal costs of grain and livestock are independent of tobacco output. The use of multiple-output cost functions appears to be an interesting tool for the study of farm-level resource allocation.

QUANTITATIVE AND RESEARCH METHODS (Presiding: *Joy Clark, Auburn University - Montgomery.*)

"The Demand and Supply of U.S. Catfish: Simultaneous Approach." *Muhammad Mustafa, South Carolina State University.*

A simultaneous-equation model of the demand and supply of catfish in the United States is estimated using monthly data from January 1980 through December 1991. When a simultaneous model is used, estimates of parameters differ from the OLS estimates. The estimated parameters indicated that the demand for and supply of catfish is price elastic and catfish is a normal good, which is in sharp contrast with some previous findings but consistent with some others.

"Bank Risk Classification and Optimal Regulatory Choice." *James X. Wang, Texas Institute for Applied Environmental Research, Jay S. Cogins, University of Wisconsin, Joseph Atwood, Montana State University, Ann L. Adair, Agricultural Economist and Amy Pagano, Texas Institute for Applied Environmental Research.*

A theory of bank regulation is formed in this study by choosing an optimal classification scheme so as to minimize specific costs with assumed fixed regulatory instruments and relative costs.

This study develops a multinomial ordered logit model which exploits the dynamic nature of cross-sectional and time-series data to classify banks into a larger number of categories.

The predicted probabilities of bank failure can be used to classify banks into high or low risk categories which could be utilized by regulators to minimize the costs of regulation and bank failure.

"A MIP Sugarcane Farm Simulation." *Arthur M. Heagler, Hector O. Zapata and Jason L. Johnson, Louisiana State University.*

A mixed integer programming (MIP) model was used to simulate production practices in sugarcane production and generate information about indicators of performance and resource utilization. The analysis has been expanded to evaluate the efficiency of nontraditional production techniques such as succession planting and a third ration crop. The model specifies equations for labor and tool time suitable for fieldwork, land utilization, shop and overhead, selling activities, and off-farm employment. An illustration is provided which identifies labor and non-land capital requirements, and economic indicators that measure production efficiency and financial performance. Promising applications for future research are highlighted.

"Conjoint Analysis of Consumer Preferences and Evaluations of Chinese Sausages." *Chung L. Huang, University of Georgia, Joe Fu, Academia Sinica.*

A conjoint experiment was designed to survey and analyze 200 Taiwanese housewives for their evaluations of various Chinese sausage attributes. Individual part-worth functions based on respondents' preference ranking data were estimated by OLS procedure. Subsequently, the Ward's method of cluster analysis was employed to form four distinct market segments. A multinomial logit model was then estimated to identify important socioeconomic variables that differentiate the market segments. The study assesses the relative importance of the selected product attributes and draws implications concerning what attributes are most desirable and what potential trade-offs among attributes are acceptable to the consumers.

"A Mean-Separated Target Deviations Risk Model." *Tae-Hoon Kang, Harry P. Mapp and Brian D. Adam, Oklahoma State University.*

A mean-risk model, Expected value-Separated Target Deviations (E-SD) is developed. E-SD is a criterion which orders risky choices for decision makers whose monotonically increasing utility function lies within specified ranges. The risk measure is below-target deviations minus above-target deviations, each term weighted by the decision maker's risk attitude. The E-SD model is congruent with von Neumann-Morgenstern expected utility theory and with first degree stochastic dominance. The E-SD criterion is used to evaluate alternative marketing strategies.

AGRIBUSINESS (Presiding: *Charles Moss, University of Florida.*)

"Estimation of the Pecan Supply Function Embodying Investment and Harvesting Decisions." *Abdelmoneim H. Elnagheeb and Wojciech J. Florkowski, University of Georgia.*

Estimation of the perennial crop supply function encountered difficulties because of the gestation lag and limited data availability. Separating the investment decision in trees from the harvesting decision allowed for the estimation of

future supply circumventing the lack of data on the number of trees. The modified perennial crop supply model was applied to the pecan sector in the United States. Results suggest that recent high prices strongly impacted the plantings but that the available land might have limited plantings. The biennial bearing cycle was present but its impact was small.

"Consumer Behavior Towards Selected U.S. Southern Food Products in Four European Countries." *Leila S. Lueschen and Michael Reek, University of Kentucky.*

This paper reports results from a Western European Study of Health conducted in Belgium, France, Germany and the Netherlands in 1990-91. Part of this study investigates the eating habits of the European consumer. The data set for this analysis comprised 29 items of respondents' eating habits, and their healthiness of selected food products; and (2) regression analysis to analyze the effect of socio-demographic variables on eating habits and perceptions concerning the health value for the product. Implications of this study for the European Single Market in 1992 are also examined.

"An Extension Product for Agribusiness Supply Firms: Estimating Livestock Feed Demand." *Phil Kenkel and Derrell S. Peel, Oklahoma State University.*

Market share analysis is a crucial and continuing problem for agribusiness supply firms. This paper presents a method for estimating trade area demand for a major farm supply product: livestock feed sales. The demand estimates which are based on livestock inventories in Grain Consuming Animal Unit indices demonstrate a close correlation with county-level feed sales. This model represents an important agribusiness extension product since it provides agribusiness clientele with needed and relevant information on a timely basis. A report based on this model was enthusiastically received by agribusiness managers.

"Measuring Competitiveness in Agriculture."

Bruce Bjornson and Nicholas Kalaitzandonakes, University of Missouri.

This paper advocates value added per unit of input as an appropriate measure of competitiveness for both the agricultural commodity production and processed food sectors. The paper evaluates this measure in terms of its theoretical consistency and relevance, and its empirical feasibility.

COMMODITY MARKETING (Presiding:

Dan McLemore, University of Tennessee).

"Efficiency of Commodity Futures Markets and Interest Rates: The Case for Wheat."

Mark Denbaly, Economic Research Service.

The unbiasedness hypothesis for the futures prices of a storable commodity is tested as a joint outcome of uncovered and covered interest arbitrage and of efficient futures market speculation. Similar test specifications and null hypotheses emerge from both approaches. However, when two parity conditions do not hold, the equation to test for unbiasedness may be misspecified. For the wheat market, uncovered and covered arbitrage appear not to hold. It is shown that the traditional tests of the unbiasedness tests indicate that although the futures wheat price is able to explain the movements in future cash price of wheat, the futures price is a biased predictor of the future spot price.

"Regional Hay Markets: Empirical Estimation and Policy Implications."

Jun Zhang and Michael R. Dicks, Oklahoma State University.

A regional hay demand model is developed and a pooled cross sectional and time series technique with two stage least squares estimation are used. The own price elasticity of hay demand is found to be inelastic (-.351). Ex post and stochastic ex ante simulations are conducted. Dynamic elasticities of cattle inventory with respect to 10 percent change in corn price are calculated. With 10 percent decrease in corn price, regional hay demand is expected to increase by .16 percent in the short run and .75 percent increase in the long run resulted from increased cattle inventory in the southern plains.

"Transactions Methods Among Wholesale Ornamental Nurseries: Which Are Important?"

Roger Hinson, Louisiana State university, Steve Turner, University of Georgia and John Brooker, University of Tennessee.

In a competitiveness economic environment, the changing ownership of goods is a critical event. For ornamental nurseries, various sales transactions methods are used, including trade shows, telephone, in person, and mail order sales. Identification of firm characteristics that have significant influence on method selected could assist in analysis of marketing efficiency, and help individual producers identify more effective transactions methods.

"Simultaneous Determination of Growing Season Futures Positions for Corn and Soybean Producers -- A Target MOTAD Analysis."

Francis McCamley and Richard K. Rudel, University of Missouri-Columbia.

Target MOTAD is used to simultaneously estimate growing season futures contract positions for corn and soybean producers at two locations. These estimates are compared to futures contract positions which are independently estimated for each crop. Two target levels are employed. The effect of restricting positions to whole contracts is also considered. The estimated futures contract positions which are obtained from the Target MOTAD model are compared with futures contract positions which are previously estimated using the E-V criterion.

"Historical Differences Among Agricultural Commodities in Trend and Variability of Reals Prices."

Richard Heifner and Randal Kinoshita, University of Georgia.

Trends and variabilities of real prices are compared for 37 agricultural commodities by decade from 1951 to 1990, and from 1901 to 1950 where data are available. Similar comparisons are made for yields and revenues per acre where data permit. The most rapid declines in real prices have been for broilers and hogs and for the major field crops. Price variability is relatively similar among commodities with certain exceptions, but has changed over time for some commodities.

**EXTENSION TEACHING,
PROFESSIONAL AFFAIRS** (Presiding:
Richard Weldon, University of Florida).

"Is Computer Assisted Instruction an Input in the Educational Production Function for Economics?" *S. Sureshwaran, South Carolina State University.*

Previous experiments on the effects of Computer Assisted Instruction on student performance in economics examinations have produced inconclusive results. In this study, an experiment is reported which examines the casual attributions of student performance in an economics examination in the context of an educational production function. A description of a microcomputer software which is designed to supplement a one-semester, undergraduate course in Survey of Economics is also included. Results suggest that ability, effort, and Computer Assisted Instruction are important inputs in the educational production function for economics.

"Graduate Student Authorship in Selected Agricultural Economics/Agribusiness Journal During 1980." *Steven C. Turner and Bin Huang, University of Georgia.*

An examination of the AJAE, SJAE, WJAE, and Agribusiness was performed to investigate the graduate student publishing rates (authorship and senior authorship) by institutional affiliation. Results indicate that Georgia, Texas A & M, Florida, University of California/Berkeley and Davis, Oregon State, Purdue, Minnesota, and Illinois had higher rates of graduate student authorship.

"Estimated Costs, Returns, and Environmental Impacts from Participation in the Integrated Farm Management Program Option on a Representative West Tennessee Row-Crop Operation." *Nancy L. Graham and Larry A. Johnson, University of Tennessee.*

The purpose of this study is to first develop a representative farm and then compare economic and environmental outcomes under a variety of scenarios including IFMPO under both conventional and sustainable systems. The analysis suggests that

IFMPO attains a level of environmental improvement consistent with more sustainable systems incorporating minimum tillage techniques, crop rotations and cover crops. It may also lower potential pesticides leaching since lower levels of chemicals would be used on the resource conserving crops that the traditional row-crops. Income, however, would be reduced more with IFMPO than any other strategy.

SIMULATION, FARM MANAGEMENT
(Presiding: *Mark Cochran, University of Arkansas*).

"Efficacy of Cultural Practices for Maintaining Wheat Yields in Cheat Infested Fields." *Francis M. Epplin, Thomas F. Peeper and John B. Solie, Oklahoma State University.*

Moldboard plowing is the traditional practice for controlling cheat in continuously cropped wheat fields in the southern plains. The objective of the research was to determine if two alternative cultural practices, changes in row spacing and seeding rate, are effective for maintaining wheat yields in cheat infested fields. Estimated generalized least squares was used to estimate wheat response to alternative seeding rates and row spacing over a range of cheat infestation levels. Seeding rate should be increased in fields which are heavily infested with cheat. However, neither of the two cultural practices are solutions to the cheat problem.

"A Simulation Case Study of the Economic Value of Information in Insect Control." *James A. Larson, ERS/USDA, Harry P. Mapp and Miles A. Karner, Oklahoma State University.*

This paper examines the value of using insect and crop information to formulate an insecticide application strategy for irrigated cotton in Oklahoma. A daily time-step cotton crop and insect modeling approach is used to simulate four strategies: take no action, spray at predetermined calendar dates, count insects and spray at predetermined threshold (Extension economic threshold), or a dynamic economic threshold. The dynamic economic threshold is the profit and utility

maximizing strategy. By contrast, the calendar date strategy produces the highest mean yield. Extension education and monitoring programs for irrigated cotton insect control are of potential value to producers.

"Matching Cattle Breeding Systems to Markets, Resources, and Objectives." *Randall D. Little, Mississippi State University, Odell L. Walker, David S. Buchanan and Keith S. Lusby, Oklahoma State University.*

Cattle producers at all levels face a diverse offering of breed and cross-breeds when in the market for bulls, replacement females, stockers, and feeders. The number of breed imports and a changing market structure have increased the complexity and importance of these managerial choices over past years. This study determined economic characteristics of ten crossbreeding systems involving different selection suited to the resources available, the end product to be marketed, and preferences concerning the level and variability of returns forthcoming.

"Use of Simulation and Asset Replacement Theory to Evaluate Thinning Strategies in Forest Plantations." *David W. Marcoullier, Harry P. Mapp and Arthur L. Stoecker, Oklahoma State University.*

Simulation and asset replacement theory is used to identify optimal thinning strategies within a restrictive framework for mid-south Gulf Coastal Plains loblolly pine plantations. Growth and yield simulation is accomplished using a mid-south U.S. prediction system. Present value is calculated using current prices and asset replacement principles for an infinite series of rotations. Conclusions include a reaffirmation that intermediate stand treatments dramatically improve the asset replacement value of timber stands. The highest asset replacement value of a 25 year rotation site index 60 stand occurs when thinned at age 10 to 60 percent stocking and at age 20 to 60 percent stocking.

TRADE POLICY (Presiding: *Shannon Hamm, Economic Research Service*).

"Assessing the Economic Impact of Sugar Policy Reform in the United States and European Community." *Stephen L. Haley, USDA/ERS, Deborah A. Vivien and Celia A. Sigua, Louisiana State University.*

A 20 percent reduction in the EC intervention price implies about a 23 percent reduction in production. The United States loses about the same percentage of its production when it reduces its support by a similar amount. Particularly hard hit are the high cost producing states of Hawaii and Texas. Under tariffication and the same support reductions, the EC becomes roughly self-sufficient in sugar. The U.S. producer price adjusts to a level close to the base, 22 to 23 cents/lb. Significant supply reductions still take place in Hawaii and Texas to allow the price to rise to that level over the long term.

"Potential North American Free Trade Impacts on the U.S. Meat Industry." *C. Parr Rosson, III, Amy Engel and Ernest E. Davis, Texas A&M University, Eduardo Segarra, Texas Tech University.*

Empirical analyses of North American Free Trade impacts on U.S. meat exports, using import demand elasticities, indicate that with moderate increases in income and similar decreases in price, Mexico could be expected to significantly expand meat imports. Under NAFTA, Mexican beef imports can be expected to increase by 69 thousand metric tons (tmt), while pork and poultry could expand by 32 tmt and 36 tmt, respectively. These projected increases would make Mexico the second largest market for U.S. beef, behind Japan, and the leading market for U.S. pork and poultry.

"Quadratic Programming Analysis for Selected Fresh Vegetables." *Mwana Mawampanga and Mary A. Marchant, University of Kentucky.*

A spatial equilibrium model estimates the trade patterns of selected vegetable crops between Mexico and the U.S. under a NAFTA agreement.

Implications are drawn in terms of net price, the volume of imports and exports and the direction of trade between regions. Empirical evidence refutes the presumption that lifting trade barriers with Mexico will benefit all U.S. consumers and hurt all farmers competing with Mexico. Real effects to specific consumers and producers are mixed.

"Qualitative Restrictions to Trade: The Effect of the European Community Hormone Ban on the United States Exports of Edible Offals." *Lisa A. Offenbach and Barry K. Goodwin, Kansas State University.*

The European Community's ban on hormone use in livestock production in January, 1989 caused U.S. exports of edible offals to the EC to decrease dramatically. Examination of a partial equilibrium framework suggested that to keep total U.S. offal exports from falling, existing markets needed to be expanded. A market share analysis on U.S. offal exports was performed to see if this was the case. The empirical analysis showed that the EC policy significantly decreased U.S. offal exports to the EC, but it also significantly increased exports to Asia and Latin America.

DEVELOPMENT POLICY, SUPPLY RESPONSE, PRODUCTIVITY (Presiding: *Parr Rosson, Texas A&M University*).

"Myopic Agricultural Policies in Developing Countries: Implications for Maize Production in Zimbabwe." *Ebenezer F. Kolajo, University of the North, South Africa.*

This paper examines the effect of piecemeal agricultural policies in Zimbabwe from 1980 to 1989 with a particular reference to maize. The price policy regimes in Zimbabwe during the 1980s distorted maize producer incentives and imbedded subsidies that were questionable on an equitable ground. The policy myopia discouraged the large-scale commercial farmers from maize production and committed the task of supplying the country's staple food in the hands of drought-prone, limited-resource communal area farmers, thereby risking the country's potential for food security. Thus, the government prepared the stage for the

current food crisis, so the drought merely aggravated the effect of short-sighted policies. Given a carefully drawn policy structure, Zimbabwe has the capacity to feed its people and minimize the effect of drought on the food distribution system.

"Structural Adjustment and African Agriculture: Supply Response to Exchange Rate and Price Movements." *Russell L. Lamb and W. Graeme Donovan, The World Bank, African Technical Division, Technical Department.*

Lending for structural adjustment has become increasingly significant in Africa over the past decade. This paper explores the impact of exchange rate adjustment and price movements on agricultural production in Africa and on the relative production of food and export crops utilizing newly published data from the World Bank. The major result is that exchange rate appreciation significantly reduces the supply of food crops and may greatly increase export crop production by acting through the price system.

"Agricultural Response Functions for Limited Resource Farmers in Sub-Saharan Africa." *Pierre-Justin Kouka and Curtis M. Jolly, Auburn University, Julio Henao, International Fertilizer Development Center.*

The Von-Liebig, Cobb-Douglas and a quadratic function were evaluated, using Generalized Least Square technique and Ghana-Mali data, for determining the models which were most likely to overestimate input use. Model fit varied for crops and soil type. The Von-Liebig functional form produced the most conservative yield estimates while the Cobb-Douglas was most likely to overestimate yield and hence input use.

"The Impact of Technical Change on the Production Risk of Modern Wheat Varieties." *Jose Falck and Greg Traxler, Auburn University, Ivan Ortiz-Monasterio, International Maize and Wheat Improvement Center.*

A Just-Pope model was used to examine the effect of technical change on the grain yield and yield variability of wheat. A three-halves

specification was used to estimate nitrogen, variety and interaction effects. Yield potential increased significantly from 1950 to 1980, but then levelled off. Yield variability increased from 1950 to 1969, but decreased between 1969 and 1986. The results suggest that a tradeoff exists between developing varieties with higher yield potential and varieties that are less risky.

"An Analysis of Production Efficiency in Guatemalan Land Redistribution Programs." *Elizabeth G. Dunn, University of Missouri and Jean-Paul Chavas, University of Wisconsin.*

The allocation of land and labor is analyzed for two Guatemalan land reform programs. These

market-based land redistribution programs rely on group institutions to influence the productivity and efficiency of individual households. The relationships between group institutions and family-level technical efficiency are analyzed by a two-stage method. First, nonparametric techniques are used to determine efficiency indices. The second stage involves maximum likelihood estimation of a Tobit model. The results indicate that land titles, sanctions, expulsions, farm size, education, and technician turnover are all statistically related to technical efficiency. These results lead to several useful policy recommendations.

POSTERS PRESENTED

Annual Meeting, SAEA, Tulsa, Oklahoma, February, 1993

"The Economics of Cleaning Wheat." *Brian D. Adam, Kim Anderson, Phil Kenkel and Carl Garrison, Oklahoma State University.*

Buyer complaints about poor quality U.S. wheat have led to proposals to enforce minimum dockage levels for exports. Economic-engineering estimates for cleaning winter wheat to 0.35% dockage indicate that, under ideal conditions, a minimum price premium of one-half cent per bushel is necessary for cleaning to be profitable. Deviations from ideal conditions, such as reduced capacity utilization and presence of difficult-to-remove kinds of dockage, increase this estimate substantially. Value of wheat lost in cleaning is a significant cost that has been previously overlooked.

"GIS: An Economically-Efficient Approach to Use Waiver Determination." *Feng Xu, Chris Fulcher, Tony Prato and Lois Lenker, University of Missouri.*

This study proposes use of GIS technology in determining use waivers for chemicals being monitored in Public Water Supply Systems (PWSSs) as outlined under Phase II of the Safe Drinking Water Act. A GIS is both economically efficient and technically feasible. As presented in this study, a GIS was employed to determine dioxin use waivers for PWSSs in Missouri. Both analytical and empirical results strongly support the

appropriateness of using a GIS, and it is recommended that other states begin making efforts to employ this latest technology, at least in the case of dioxin monitoring.

"Government Program Impact on Price and Income." *Kim Anderson, Brian Adam and Roger Sahs, Oklahoma State University.*

Research indicates that, unless producers can predict wheat prices or have access to someone who can, profit will be maximized by selling wheat during harvest rather than with any other single cash marketing strategy. Deficiency payments have increased the average wheat price received about 50 cents per bushel. Producers who participate in the government and are not limited by the \$50,000 payment limitation have about one-half the income risk as risk faced by producers who do not participate in the government program. For wheat producers participating in the government program, yield risk is the major income risk factor.

"PROFALF: Profitability of Alfalfa Software." *Clement E. Ward, Jarernsri Limsupavanich, Alan Stark, Gerrit Cuperus, Gordon Johnson, Ray Huhnke, Jim Stritzke and Richard Berberet, Oklahoma State University.*

PROFALF incorporates detailed information about alfalfa production for a given