Abstracts

SELECTED PAPERS

DEMAND ANALYSIS: INTERNATIONAL (Cary Herndon, Mississippi State University)

"The Price Elasticity of Export Demand for U.S. Agricultural Products: Methods and Estimates." Walter H. Gardiner and Praveen M. Dixit, USDA.

The paper reviews recent estimates of the price elasticity of export demand for selected U.S. agricultural goods. The evidence indicates that the price elasticity of export demand for U.S. grains, soybeans, and cotton is inelastic. No such conclusive evidence is apparent for the long-run. Long-run estimates ranged from very inelastic to very elastic.

"Cotton Exports: Exploring the Relationships between Sales and Shipments." Elias T. Ayuk and Fred J. Ruppel, Texas A&M University.

The relationship between export sales and export shipments of cotton is examined. Two econometric systems are estimated, a traditional system employing shipments data and an alternative specification using sales data. Institutional structures are extremely important in cotton export analysis. The empirical evidence indicates that export sales are more sensitive to changes in economic variables than export shipments. Hence, export sales should be utilized in the estimation of important stock and export demand parameters. Sales and shipments cannot substitute for one another in econometric modeling.

"Export Demand for U.S. Soybeans." Cecil W. Davison and Carlos A. Arnade, USDA.

A six-equation econometric analysis of demand for U.S. soybean exports, 1965–83, indicated importers' income and the U.S. soybean price were major demand determinants. Average one-year price, income, and exchange rate elasticities were inelastic; −.2 to −.4, .75, and −.08 to .13, respectively.

"Analysis of Import Demand for U.S. Processed Fruits and Vegetables in Canada, Japan and the United Kingdom." Glenn C. W. Ames and Caroline Bakker-Hofland, University of Georgia.

Factors associated with the import demand of processed fruits and vegetables from the U.S. to Canada, Japan, and the United Kingdom were analyzed. Seemingly unrelated regression was used to analyze canned peaches and all vegetables combined. The coefficients of import demand elasticity were statistically significant and highly elastic as expected since imports were from a specific source. The outlook for U.S. sales to these markets, as representative of all U.S. markets for processed fruits and vegetables, appeared to depend on economic factors in the importing countries such as the real import price, exchange rates, real income, and shifts in tastes and preferences.

COMMODITY ANALYSIS: LIVESTOCK (Don Ethridge, Texas Tech University)

"Estimation of Red Meat Consumption in a Deficit Production State." Winston Dennis and Alvin Schupp, Louisiana State University.

Louisiana, like several other southeastern states, is deficit in beef and pork, heavily utilizing inshipments to fill its red meat needs. A survey of all known handlers of beef and pork in Louisiana during 1983–84 was undertaken to estimate the quantities of beef and pork inshipped and the channels employed. Inshipments were estimated by product type and season of the year. Instate slaughter was combined with the inshipments to estimate instate consumptions. The combined consumption data were then compared to U.S. and Southeast consumption estimates. Potential markets for local producers and meat packing plants were identified and quantified.

"A Statistical and Economic Analysis of the Cattle Cycle for the U.S. and the Southeast." Stephen Leong and Alvin Schupp, Louisiana State University.

The cattle cycle influences the economic health of the industry, resulting in excessive firm entry and exit. The cycle's amplitude and length have been considered unpredictable. Statistical tests of cyclic movements in marketings and inventory levels in the U.S. and the Southeast over the 1934–84 period were conducted to: ascertain the prevalence of the cycle, check for the existence of any fixed periodicities, and to estimate whether cycle activity differed between the U.S. and the Southeast. The existence of cycle activity was confirmed with no evidence of fixed periodicities. Limited area differences were found primarily in the amplitude and timing of marketings.

"Economic Analysis of Typical and Lean Beef Production." Kerry Walker and James O. Wise, University of Georgia.

There is increased consumer demand for leaner beef in the United States. The importance of larger breeds of cattle will increase with the demand for leaner beef. Enterprise budgets for cow-calf, stockering and finishing phases were adjusted to reflect the use of larger, leaner type cattle. Results indicate the use of larger cattle is advantageous in the stockering and finishing phase but not advantageous in the cow-calf phase.

"Dynamic Economic Relationships between the Purebred and Commercial Cattle Markets." Larry W. VanTassell and David A. Bessler, Texas A&M University.

Vector autoregression was utilized to investigate dynamic relationships between prices of slaughter steers, utility cows, feeder calves, and purebred bulls. Results suggest a lagged response between the price of commercial cattle and purebred bulls, with utility cow prices exhibiting the most pronounced positive effect on the price of herd sires.

"Impact of Elimination of Investment Credit on the Swine Industry—A Static Analysis." Ronald L. Plain, University of Missouri.

The pending 1986 Tax Act repeals investment credit on assets placed in service after 1985. Calculations indicate that U.S. swine producers have been receiving about $78 million annually in investment credit. The repeal of investment credit will eliminate this tax benefit but should create a downward supply response in hog numbers. Recent production data and estimates of a 1.3%–5.3% decline in production indicate that the higher hog prices which accompany the reduced supply will more than offset the value of the lost investment credit.

"The Benefits of Fescue Pasture Renewal." James E. Standaert, North Carolina State University.

Estimates of benefits to eradication of fescue fungus in pastures for beef production are highly speculative. This paper makes a careful estimation of the value of increased beef production due to pasture renewal in a cow-calf production situation. The resulting estimates are more realistic than those derived by others because increases in per acre value of beef production are adjusted by the value of additional consumption of soil nutrients and by the price discount for added weight. The results may be used by extension personnel in making renewal recommendations for fescue pastures used in cow-calf production.

CROP YIELD AND INCOME VARIABILITY (Art Stoecker, Texas Tech University)

"Development and Application of a Dynamically Adjustable Crop-Rotation Model for Multiperiod Production Decisionmaking." Chandra M. Shrestha, David L. Debertin, and Kurt R. Anschel, University of Kentucky; and Donald W. Reid, University of Georgia.

This paper develops a multiperiod crop-rotation model that incorporates features such as (a) sequencing of crops, (b) interactions among crops, and (c) dynamic adjustments in crop rotations, which were either not included or inadequately represented in earlier models. These features enhance the realism of models involving crop rotations. The model generated an optimal crop rotation plan consisting of corn/single-crop soybean and corn/double-crop wheat-soybean rotations when it was applied to Western Kentucky. The crop-rotation plan is consistent with the cropping pattern common to the study area.

"Probability Distributions of Crop Yields and Returns." Bernard V. Tew, University of Kentucky; and Donald W. Reid, University of Georgia.

The normality of gross revenue distributions is tested for three crops. The tests are not conclusive in general. However, evidence from this study and other studies indicate that, when prices and yields are interdependent and the distributions are stationary, gross revenues are likely to be normally distributed.

"County Data Versus Individual-Farm Data For Measuring Crop-Yield Variability." Siegfried H. Debrah, International Livestock Centre for Africa, Addis Ababa, Ethiopia; and Harry H. Hall, University of Kentucky.

County crop-yield data are regularly published by the Crop and Livestock Reporting Service. These data are widely used, and they are no doubt entirely adequate for many purposes. They seriously underestimate the variability in income faced by an individual farmer in choosing a cropping plan, however. This phenomenon is not due to any fundamen-

tal flaw in the data. It is due almost entirely to the fact that the reported data are means, and means are inherently less variable than raw data.

"The Economic Feasibility of No-Till Soybeans in the Blackland Prairie of Mississippi." Lynn L. Reinschmiedt, Stan R. Spurlock, and Stephen D. Brunson, II, Mississippi State University.

Yield, cost of production, and soil loss data for conventional and no-till soybeans from a four-year tillage study in the Blackland Prairie of Mississippi along with a topsoil depth-yield relationship were used in a model to determine the feasibility of adopting no-till practices. The analysis showed that soybeans produced under conventional methods is the economically preferred choice due to reduced yields and higher production costs for no-till relative to conventional soybeans. A 10 percent cost subsidy was not incentive enough to make no-till feasible except when no-till penalties were less than 10 percent.

"Use of Bounded Probability Distributions in Describing Crop Yields." Gerald Plato and Charles Hallahan, USDA.

The bounded Johnson probability distribution was examined for describing crop yields. This distribution was not rejected at the 5 percent significance level using the Shapiro-Wilk test for any of 13 yield series fitted, thus making it a promising candidate for describing crop yields. However, the normal distribution was only rejected at this significance level for three of these yield series, but the lognormal was for seven of them. The importance of yield distribution choice in evaluating the effectiveness of marketing strategies and commodity programs to modify farmers' average incomes and risks needs to be examined.

RESEARCH TOPICS: MODELING AND APPLICATIONS (Oral Capps, Texas A&M University)

"BFEVAL: A Model Using Seasonal Factors to Evaluate Quarterly Forecast Performance." John Ginzel, USDA; and John Nalivka, Oregon State University.

Applied commodity analysts are involved in an ongoing process of developing, reassessing, and monitoring forecast scenarios. Econometric models are frequently used for quarterly forecasts but analysts' judgments are usually used to assess "shocks" and evaluate forecasts while in process. An electronic spreadsheet model was developed that: draws upon the information for monthly seasonal patterns to disaggregate quarterly forecasts into monthly projections; derives beef production by aggregating monthly head slaughtered times carcass weight by classes; calculates differences between actual compared with projected slaughter weights and production by classes for monthly and quarterly intervals. The cattle/beef sector is used to illustrate the model.

"An Application of a Simulation to a Stochastic Decision Problem." Michael J. Monson, University of Missouri; and W. G. Boggess, University of Florida.

Recent attention has been directed at the application of optimal control theory to production decision problems. A real-time decision model based on crop simulation for irrigation scheduling may be better able to deal with a stochastic future input, namely rainfall. The proposed model provides an economic evaluation of an irrigation decision during the growing season. However, this evaluation is dependent on the future state of the crop. The issue of the appropriate expectation of the future for a real-time irrigation decision is explored.

"An Application of Safety-First Probability Limits in a Discrete Stochastic Farm Management Programming Model." Upton Hatch, Joseph Atwood, and James Seger, Auburn University.

A sequential decision making model was developed and data from farm-raised catfish production were used to demonstrate its use. Outcomes of sequences of decisions were traced through to end states while satisfying chance constraints on ending cash balances. Discrete choice variables were specified due to the fixed nature of pond facilities. Recourse actions specified were sale of production in excess of endogenously determined transfer levels or purchase of inputs to supplement needs of the next production stage. Production activities cannot be changed during the planning period. Only yield variability was considered. Deviations were calculated from endogenously determined target levels based on goal and probability limit.

"The Importance of Covariance with Respect to Pairwise Stochastic Dominance Choices." Craig A. Witt and Bernard V. Tew, University of Kentucky; Donald W. Reid, University of Georgia.

Because of theoretical limitations of E-V

techniques, stochastic dominance (SD) techniques have been offered in the literature as a preferred method of selecting among alternative agricultural activities. This paper provides evidence that incorrectly assuming that activity choices are pairwise mutually exclusive, as with SD criteria, can ignore important covariance factors and lead to nonoptimal portfolio choices. By contrast, E-V analysis can account for covariance in selecting optimal portfolios when activities have diversification properties.

"Bayesian Estimation of a Fertilizer Response Function." T. P. Zacharias, B. E. McManus, and W. D. Parham, Louisiana State University.

Prior and sample information are combined using Bayesian procedures to determine the response of grain sorghum yield to nitrogen fertilizer. The posterior response function is derived using informative and noninformative priors. Sampling theory results are also presented. Using linear restrictions, sampling theory estimates were not significantly different from prior information. A mean square error test revealed that informative posterior estimates yielded no improvements over sampling theory results. Computation of optimal input rates indicated the Bayesian and prior response functions were sensitive to factor/product price ratios in contrast to sampling theory results.

RESEARCH TOPICS: APPLICATION (Tom Johnson, North Carolina State University)

"Standardizing Slaughter Statistics to Identify Seasonality." John Ginzel, USDA; and John Nalivka, Oregon State University.

Seasonal factors are useful tools for developing and evaluating forecasts for beef production. However, because of variation in the monthly data due to the differences in the number of working slaughter days in a month, reported slaughter data mask the ability to identify seasonal factors. In this paper, the authors discuss the limitation of using reported data and then present techniques for adjusting the data for the determinate influences of the number of trading days. The adjusted data along with the reported data are then tested for the degree of stable seasonal patterns using the X11-ARIMA program. The adjusted data were found to be superior to the actual reported data for identifying seasonal patterns.

"A Demonstration Model of a Grain Electronic Trading System." Steven C. Turner, University of Georgia.

A demonstration model of a Grain Electronic Trading System (GETS) is designed to give traders, teachers and students, and extension specialists a more complete understanding of a computerized trading system (CTS). The data sets necessary for a CTS for grain are specified and various functions involved in grain trading are operationalized. The data sets include futures and market information, the firm's internal information, cash grain information, a directory of traders, and transportation information. The functions include data entry and management, searching for bids and offers, negotiation, documentation and communication of trader, transportation, and market information, and document transferral.

"Impact of a 500-KV Electric Transmission Line on Cost of Rice, Soybean and Cotton Production." Lucas D. Parsch and M. David Norman, University of Arkansas.

A field study was conducted to determine the direct costs incurred by rice, soybean, and cotton producers whose fields are traversed by overhead electric transmission lines. Primary data were collected on the machinery time loss working around powerline support structures, the crop area loss beneath support structures and yield loss beneath powerlines. Results indicate that the cost of time loss, which is affected by the support structure's location in the field, is less than the cost of area loss, but that the single greatest cost incurred is due to cotton yield loss beneath a 500 kv-wire.

"Use of Integrated Software to Assess the Economic Implications of Pesticide Registration Suspensions Involving Multiple Pest Classes." Walter Ferguson, Robert Seem, John Teasdale, and Julius Feldmesser, USDA.

Each year the benefits and costs of suspending the use of one or more pesticides are evaluated by the Environmental Protection Agency, the U.S. Department of Agriculture, and other government and private agencies. This paper demonstrates how a microcomputer integrated software program can provide an excellent tool for sensitivity analysis in assessments of pesticide registration suspensions to producers, consumers, industry, and society. A modified Delphi procedure is used to obtain biological data and a partial budget model is used to derive the

economic implications of seven scenarios of pesticide registration suspensions affecting six crops.

"Microcomputers in an Agricultural Economics Curriculum: A Survey." Thomas R. Harris and James R. Garrett, University of Nevada.

During the past five years, microcomputers have had a considerable impact on teaching, research, and extension programs in agricultural economics. This paper investigates the effect of microcomputers and microcomputer software on agricultural economics curriculum. A questionnaire was sent to all Departments of Agricultural Economics in the land-grant system and found that 38% offered an introductory microcomputer course and 16% offered advanced microcomputer courses. Farm and ranch management, agricultural finance, and production economics courses use the microcomputer the most as an instructional aid in their classes.

AGRICULTURAL LAND MARKETS (Greg Clary, Clemson University)

"Prices of Farmland Marketed Through Alternative Channels." William S. Whiteside and C. Stassen Thompson, Clemson University.

Studies of farmland prices have not taken into account the market channel through which the land was sold. In South Carolina 61.9 percent of farmland is sold by private treaty, 19.0 percent through real estate firms, 11.0 percent by family transfer with the remainder through auction, etc. A multiple regression model was developed to ascertain if there was a difference in prices for farmland marketed through these various channels. Prices were found to differ among market channels. Prices received for land sold by private treaty were $102.00 per acre less than land marketed through real estate firms.

"Assessing the Impact of Tax Reform on Agricultural Land Values." Clifford V. Rossi and Ronald A. Jeremias, USDA.

The focus of this paper is on the effect of Federal income tax reform on agricultural land values. The authors employ a theoretically founded bid price model for land incorporating tax treatment. Other key variables interacting with tax policy such as inflation and real required returns to affect land values are included. Current and proposed tax provisions are compared for a high and average income investor. Several extensions and variations of key assumptions are combined in the bid price model to demonstrate under different situations how land prices may change as a result of tax policies.

"Are the Opportunity Costs of Fixed Inputs Reflected in the Bid Price for Add-On Tracts?" Phillip R. Eberle, Southern Illinois University.

It has been hypothesized in the popular literature as well as in some economic texts that farmers buying add-on tracts impute a return to land of receipts less operating expenses. This suggests the questionable assumption that nonland fixed inputs have a zero opportunity cost. Evidence is found to support the contrary, i.e. that farmers do indeed account for the opportunity cost of fixed inputs in their bid prices for add-on tracts.

"A Comparison of Rural Real Estate Values and Related Factors in Georgia, the South, and the U.S." James O. Wise, University of Georgia.

Declining land values in Georgia, the South, and the U.S. reflect a deteriorating financial position of farmers. Factors relating to this decline are declining net farm incomes, cash rents, high interest rates, rising real estate debts and debt to asset ratios, an increase in farm foreclosures, a declining real per capita off-farm income (U.S. only), and a declining real per capita non-farm income. Georgia is relatively worse off by most of these measures than the South or the U.S. In general, the South is relatively better off than the U.S. average.

"Modeling Land Use Policy Adoption Decisions: A Logit Analysis of Landowner Participation in Virginia's Agricultural and Forestal District Act." E. Jane Luzar, Virginia Polytechnic Institute and State University.

This paper presents an empirical analysis of landowner land use policy participation decisions for the Virginia Agricultural and Forestal District program. The analysis is set in the context of an institutional pattern model. The conceptualization of the decision process suggests use of a qualitative choice framework. The logit specification was selected for use in the econometric analysis.

COMMODITY ANALYSIS: VEGETABLES (John Brooker, University of Tennessee)

"A Micro-Analysis of International Market Penetration for Georgia, North Carolina, and South Carolina Vegetables." G. A. Ashley and J. E. Epperson, University of Georgia.

Opportunities exist for the tri-state area of Georgia, North Carolina and South Carolina to increase its share of the world market for vegetables, given the viability of increased production. Possibilities could be found in most world regions; however, the Asian market (especially Japan) could hold the greatest promise. This analysis differentiated several factors influencing the international trade of vegetables and assessed possible impacts on the future direction of the U.S. vegetable export trade.

"Coercion and Inefficiency Unloading Produce: A Preliminary Assessment." Richard Beilock, Ronald Mahan, and George Fletcher, University of Florida.

In response to allegations of coercion and inefficiency related to unloading motor carriers, in 1980 Congress outlawed certain practices. The preliminary results of a study are reported that indicate that these practices have persisted in the produce industry and are imposing costs on the system.

"Extension Issues in New Vegetable Production Regions: Quality and Yield Impacts on Costs and Returns." Daniel S. Tilley, Constance L. Falk, and Raymond J. Schatzer, Oklahoma State University.

In new vegetable production regions, there is a need to demonstrate to farmers the impacts of variation in quality and yield on production and packing costs and returns. Communication of this information is facilitated by the use of a computer simulation model which is demonstrated using an Oklahoma case study.

"Pick-Your-Own Strawberries: A Case Study of Consumer Characteristics and Attitudes." William A. Flanders and Stephen L. Ott, University of Georgia.

Pick-your-own (PYO) fruit and vegetables have been suggested as alternative crops for farmers. However, research on the customer of PYO farms has been limited. This paper analyzes customers of a PYO strawberry farm. PYO customers were better educated, had higher incomes, and were older than the general adult population. Product freshness/quality was the most important reason for consumers harvesting their own strawberries. Price was a distant second in importance. Perceived cost savings was less than actual cost savings.

"Pecan Orchard Economics, Orchard Establishment, Development, and Management." Jose G. Pena, Texas A&M University; and Richard Trimble, University of Kentucky.

This paper examines the economic feasibility of establishing a pecan orchard as an alternative crop enterprise. Data were collected from active growers and a 50-acre model was used to identify the key economic considerations. The study includes equipment densities, production budgets, cash flow projections, and an analysis of the investment.

MODELING AND APPLICATIONS

(J. S. Shonkwiler, University of Florida)

"Contingent Market Bidding Structure and Piecewise Valuation: An Experiment." John C. Bergstrom and John R. Stoll, Texas A&M University.

Application of the contingent valuation method (CVM) for valuing nonmarket commodities may be limited by cognitive valuation process constraints. Such constraints may include limited information processing ability and limited analytical ability. Valuation process constraints may hinder respondents' ability to value nonmarket commodities in a piecewise manner. A two-step bidding procedure was developed and tested in a field experiment. The results indicate that accuracy of piecewise valuations may be increased by the two-step procedure. Thus, when valuing commodity package components by CVM, the two-step procedure is recommended.

"A Method for Determining Whether an Enterprise Mixture is a Target MOTAD Mixture." James B. Kliebenstein, Iowa State University; and Francis McCamley, University of Missouri.

Tauer and Watts, Held and Helmers compared regular and Target MOTAD solutions. This paper anticipates the possibility that others will attempt to compare Target MOTAD mixtures with mixtures obtained in a variety of ways. A method which may facilitate such comparisons is presented and illustrated using problem data from Watts, Held and Helmers. Limitations and possible extensions are also discussed.

"Bid and Sell Prices for Assets: An Application of Vector Sensitivity Analysis in Linear Programming." Joseph Atwood and

Keith McCurdy, Auburn University.

This paper presents a method whereby vector sensitivity techniques can be used to determine bid or sell prices for assets. The technique allows the endogenous computation of opportunity costs in a linear programming systems setting. The method requires only that the decision maker know the vector of shadow prices and the structure of the original column vector. Two or more of the column coefficients as well as the objective function can be linearly dependent. An example is presented which demonstrates the consistency of the method with more conventional capital budgeting techniques.

"A Discrete Stochastic Linear Programming Model to Estimate Optimal Burning Schedules for Improvement of Macartney Rose-Infested-Rangeland." L. Garoian, J. R. Conner, and C. J. Scifres, Texas A&M University.

Macartney rose is a range management problem on 500,000 acres of rangeland in Texas. Roller chopping followed by burning is an effective method of improving infested rangeland. Uncertainty associated with implementing effective burns adversely affects economic feasibility. Discrete stochastic linear programming is used to determine optimal burning schedules.

"Whooping Crane Values and Use of Dichotomous Choice Forms of Contingent Valuation." J. Michael Bowker and John R. Stoll, Texas A&M University.

A dichotomous choice form of contingent valuation is used to quantify individual economic surplus associated with preservation of the whooping crane resource. Specific issues and limitations of the empirical approach are discussed. The present paper expands in several ways upon previous work in this area of research. Our methodological and empirical results are relevant to a number of current issues in the literature.

AQUACULTURE AND OTHER TOPICS (Leroy Davis, Southern University)

"Estimating Demand Relationships for Catfish: A Disaggregated Analysis with Implications for the Off-Flavor Problem." Scott Sindelar, Henry Kinnucan, and Upton Hatch, Auburn University.

Off-flavor in catfish restricts farm marketings 9 to 33% depending on the season. Whether this imposed supply restriction reduces or enhances aggregate industry revenues depends on the elasticity of demand for catfish. Data relating to six individual processing plants representing 80% of the industry were used to estimate a derived demand function for catfish. Results suggest an elastic demand at the farm level, a result not inconsistent with other empirical analyses. By implication, a technology that would reduce or eliminate the off-flavor problem would not only reduce production costs, but would raise producer incomes. These twin effects imply a strong private sector incentive for seeking a solution to the problem.

"The Economics Associated with Crawfish Production from Louisiana's Atchafalaya Basin." Lynn E. Dellenbarger and Timothy M. Clarke, Louisiana State University.

Lagniappe is defined as a little something extra for free. To the Atchafalaya Basin fishermen crawfish represent lagniappe. However, there are costs associated with it. Unpredictable water levels for the Atchafalaya River resulting from man's efforts to prevent flooding in south Louisiana lead to an unstable market for Louisiana's annual crawfish production. Empirical models presented show that yields from the Basin can be predicted on a monthly basis using beginning of the month water levels and bi-monthly changes in water levels. Using data from the National Marine Fisheries Service, monthly input demand functions are estimated for crawfish processors.

"A Regional Price Response Analysis of the U.S. Shrimping Industry." Amelia Nieto and Jack E. Houston, University of Georgia.

Variations in U.S. shrimp landings by species, size, and region result in uncertain ex-vessel prices for industry participants. A regional analysis of shrimp prices using SUR estimators of interactive markets found significantly varying responses to landings, substitution effects by size and species, and net imports and consumer income impacts on average ex-vessel prices.

"Agricultural Economics Research and the Experiment Station System." David L. Debertin and Garnett L. Bradford, University of Kentucky.

This paper examines the role of agricultural economics research within the system of land-grant universities. A comparison is made of research in the social and biological sciences.

Suggestions are made for enhancing the role of social scientists within experiment stations.

"Profits and Risks Associated with Using Crimson Clover as a Nitrogen Fertilizer Substitute in Grain Sorghum Production." Stephen L. Ott and William L. Hargrove, University of Georgia.

In the Southeast crimson clover planted as a fall cover crop has the ability to replace nitrogen fertilizer. There are risks associated with using crimson clover such as winter kill. Using stochastic dominance theory, the profits and risks of using crimson clover as a nitrogen substitute in no-till grain sorghum were compared against those of no cover crop and a rye crop using nitrogen fertilizer.Crimson clover was found to be inferior to using no cover crop but superior to a rye cover crop.

"Impact Assessment of Biotechnological-Based Inputs on Nitrogen Fertilizer Demand." Catherine Halbrendt, Farmland Industries, Inc.; and Melvin Blase, University of Missouri.

Advances in biotechnology will develop inputs substituting for the usage of nitrogen fertilizer in corn production. This study assesses the impact of such innovations using an econometric model. The model was developed to accommodate assessment of different rates of substitution to the present nitrogen fertilizer application rate per acre. Results of the study show that 25, 33 and 50 percent reductions in the present rate will reduce the quantity of synthetic nitrogen fertilizer by 18, 25 and 36 percent, respectively. No doubt, the reduction in demand will further accentuate the current over-capacity problem of the nitrogen fertilizer industry.

AGRICULTURAL FINANCE ISSUES (Jim Johnson, USDA)

"A Test of the Capital Asset Pricing Model (CAPM) in an Agricultural Investment Market." Jill M. Wade, Bernard V. Tew, and Craig L. Infanger, University of Kentucky; and Donald Reid, University of Georgia.

This paper reports on an application of the Sharpe and Linter CAPM model in an agricultural investment market, the dairy termination bidding in 1986. The purpose of this research is to reexamine several of the previous tests of CAPM and provide a new test in an agricultural investment market. One of the primary weaknesses of earlier applications is the inability to identify a market portfolio. A relatively closed market of agricultural productive opportunities was identified for this test. Contrary to earlier research results, this application partially confirmed the empirical relevance of CAPM.

"Commercial Bank Characteristics in Non-Metropolitan Texas Counties: Implications for Rural Funds Availability." Douglas C. Duncan and Michael Woods, Texas A&M University.

Increasing numbers of rural bank failures are causing concern over rural credit availability. Bank structural change and industry deregulation buttress those fears. Utilizing the Ross/Green classification system for identifying agricultural counties, this paper identifies specific characteristics of banks of different county and structural types which are statistically significantly different. Further, estimates are made of the ratio of local uses to local sources of funds by different bank types. Information identified should assist policymakers in identifying and targeting policy alternatives affecting rural credit availability through rural banks.

"Financial Restructuring Requirements of U.S. Commercial Farms." Damona G. Doye, Oklahoma State University; and Robert W. Jolly, Iowa State University.

Financial stress in the farm sector has provided the impetus for transition in agriculture, ranging from changed farm management practices to revised agricultural lending procedures. The purpose of this paper was to develop a model which used microeconomic data to simulate financial restructuring in the agricultural sector. Using cash flow criterion, estimates are made of the shifts in farm asset holdings needed to achieve some degree of financial stability. National restructuring requirements are large, even with optimistic assumptions about farm and off-farm incomes, interest rates, and asset market resiliency.

"An Analysis of Factors that Affect the Quality of Federal Land Bank Loans." William E. Hardy, Jr., Auburn University; Stanley R. Spurlock, Mississippi State University; Donnie R. Parrish, Alabama Cooperative Extension Service; and Lee A. Benoist, Farm Credit Bank of Jackson.

Financial conditions existing in agriculture are placing severe pressure on lenders as well as borrowers. Data from both good and foreclosed Federal Land Bank loans were analyzed to determine the most important characteristics leading to the failure of some loans. The analysis was completed by comparing

means through t-tests and the development of a discriminant model. The ratio of total debt service to total income, the debt to asset ratio, the ratio of total loan amount to appraised value, and the ratio of acres in security to acres owned were determined to be the most important discriminating variables.

"An Operating Loan Subsidy Program." David Freshwater, University of Manitoba; and Gregory Hanson, USDA.

This paper examines the impact of an operating loan subsidy program as an alternative means of providing financial assistance to farmers. It addresses some of the conceptual issues underlying credit subsidies and examines the beneficiaries of a subsidy and government costs using the FCRS data developed by USDA.

WATER RESOURCES AND IRRIGATION ISSUES (James Hite, Clemson University)

"Development of Surface Water Resources to Support Irrigated Specialty Crop Production in the Southeast United States." Jeffrey F. Dale, Raymond J. Schatzer, and James R. Nelson, Oklahoma State University.

This study analyzes the task of providing sufficient water for irrigation on specialty crops, and the profitability of such production. A separable programming model was used to determine the optimal product mix, net returns, ending cash flow, operating capital, and labor requirements for various situations. Estimates were made for two specialty crop production scenarios: 1) individual producers; and 2) irrigation districts. A triple crop combination of spinach, cucumbers, and broccoli comprised the optimal product mix. Producers belonging to irrigation districts and irrigating from multi-member water collection structures can experience larger ending cash flows and net returns. Results also indicate lower costs for sprinkler irrigation than for furrow irrigation and larger rather than smaller collection structures (whether facilities serve individual producers or multi-member districts).

"Multiple Optimal Controls of Groundwater Pumping for Irrigation in the High Plains of Texas." C. S. Kim, John J. Hanchar, and William M. Crosswhite, USDA; and Michael Nieswiadomy, North Texas State University.

A multiple optimal control approach is utilized to examine the merits of regulating groundwater pumping in the Texas High Plains. Present values of net revenues are calculated under optimal control and no control alternatives. A slightly greater present value of net revenues and substantially lower water use and pumping costs were associated with optimal control. However, maximum management costs that would retain optimal control's advantage in relative profitability were less than what could be realistically expected. Therefore, management of groundwater pumping in the area of the Texas High Plains examined appears to be uneconomical.

"Impact of Irrigation Potential on Agricultural Production in the Lower Mississippi Region." Stephen A. Henning, Louisiana State University.

The Lower Mississippi Region has long been considered an area of abundant ground and surface water. However, in the past, agricultural demand for irrigation water has been limited primarily to rice production. This study applies a multi-period mathematical linear programming model to project supplemental agricultural water use in one area of the region. The results of the study indicate economic potential for expanding supplemental irrigation to row crops and aquaculture. This potential for a dramatic increase in supplemental agricultural water use indicates the need for further research in crop-water relationships, interactions with fertilizer, and impacts on the environment.

"Economic Feasibility of Irrigation from Riparian Water Sources." Darrell Bosch, Daniel Taylor, and Blake Ross, Virginia Polytechnic Institute and State University.

An empirical procedure is developed for estimating the feasibility of irrigation investments which use water from riparian sources. The method takes into account the uncertainty of the crop's response to irrigation as well as output price uncertainty. The weighted average cost of capital for the firm is calculated and used to discount future costs and returns of the investment to be positive for pumping distances of two miles or more on both water-holding capacity soils investigated.

"Estimating the Value of Irrigation Water in Maryland: An Econometric Approach." Scott Simons, Virgil Norton, and Ted McConnell, University of Maryland.

Rapid increases in agricultural and residential water use in Maryland are affecting groundwater quality and availability. There is increasing interest in estimating future water

use. Seemingly Unrelated Regression analysis was used to estimate county corn supply functions. Variables included monthly rainfall and temperatures. The period of analysis was 1950–1982. Monthly marginal value product functions were derived by county and used with marginal water cost to calculate optimal irrigation quantities. Net revenue per acre for optimal quantities were derived and compared to annualized fixed irrigation costs. Results indicate that continued rapid expansion of irrigation is not likely at current corn prices.

RESEARCH ISSUES: METHODOLOGY (Ramon Lopez, University of Maryland)

"A LOGIT Model of Factors Influencing Land Use Change." Susan Phillips, Rodney Clouser, and Timothy Taylor, University of Florida.

A LOGIT model was estimated that identified factors which were determinants of land use change. Variables included in the model were market price, assessed value, distance to economic activity centers, distance to incorporated townships, soil suitability for production, distance to roads, soil limitations for development, and availability of utilities. Many of these factors were significant in explaining land use change according to the model. Only when factors influencing change are identified will public officials be able to enact policies that are effective and efficient as they attempt to solve land use problems.

"Probit Analysis of Market Participants' Attitudes Toward Selected Market Alternatives for U.S. Shelled Peanuts." J. E. Epperson, M. H. So, D. H. Carley, and S. M. Fletcher, University of Georgia.

This paper analyzed factors affecting marketing participants' attitudes toward selected market alternatives for U.S. shelled peanuts using a "mirror-image" survey design and multivariate probit analysis. Agreement or disagreement among shellers, among processors, and between shellers and processors was ascertained via matching patterns of "mirror-image" variable relationships.

"Alternative Measures for Testing Linear Discriminant Functions." Robert B. Wharton, Louisiana State University.

Linear discriminant analysis (LDA) is a popular binary choice technique for evaluating debt and bankruptcy problems. The technique is not, however, as popular as logit and probit for investigating many other problem settings. This may be due to discriminant analysis assumptions and the nature of a particular problem, but the lack of readily identifiable fit measures may also contribute to this reluctance. This paper describes two statistics that can be calculated to enhance LDA evaluation. One statistic has a similar interpretation as a t-ratio and the other statistic gives an overall measure of performance much like an R^2.

"An Alternative Procedure for Computing the Tobit Estimator." Hsiang-tai Cheng, Chung L. Huang, and Robert Rauniker, University of Georgia.

Because of the nonlinearity of the normal equations for the Tobit model, Tobit estimates are generally computed by iterative procedures. A simple two-stage procedure which uses probit analysis in the first stage of estimation, then computes the parameter estimates directly for the Tobit model is proposed. Monte Carlo evidence indicates that the performance of this procedure closely follows Newton's iterative method for computing the Tobit estimators.

"Estimating Empirical Cumulative Distribution Functions Using Hyperbolic Trigonometric Transformations." Kenneth W. Paxton and John F. Denison, Louisiana State University.

This paper uses hyperbolic trigonometric transformations in a procedure to estimate cumulative distribution functions. The procedure is applied to data on days suitable for fieldwork using 38 annual observations. The procedure permits the calculation of probabilities associated with achieving a given number of days suitable for fieldwork during a specific time frame. Results of the procedure used here are compared to results obtained by assuming a normal distribution rather than the gamma distribution. This comparison suggests the possibility of considerable specification error if the incorrect distribution is assumed in developing model coefficients.

"Analysis of Interdependent Attitudes of Producers Toward Peanut Market Alternatives—An Application of Multivariate Probit Joint Estimation." T. T. Fu, J. E. Epperson, J. V. Terza, and S. M. Fletcher, University of Georgia.

The purpose of this study was to ascertain producers' attitudes toward selected market alternatives for farmers' stock peanuts.

Because of attitudinal interdependency between market alternatives, a multivariate probit joint estimation model was developed in order to determine the feasibility of further market development. Differences in coefficient estimates and gains in efficiency in standard errors were demonstrated by comparing results from single and joint estimation models. From profile and marginal probability analyses it was found that the more entrepreneurial producers favored innovative markets while other producers tended to favor traditional markets.

COMMODITY ANALYSIS: FRUITS AND VEGETABLES (Ed Estes, North Carolina State University)

"The Impact of Cancelling Lead Arsenate on the Florida Fresh Grapefruit Industry." Gary F. Fairchild and Jonq-Ying Lee, University of Florida.

This study used an intertemporal allocation model to study the economic impact of cancelling lead arsenate as an acidity-reducing growth regulator on the Florida grapefruit industry. The results show that the average projected loss in annual revenue to growers of fresh Florida white and pink seedless grapefruit would be approximately $4.5 million based on an analysis of the 1971–72 through 1984–85 seasons.

"Impact of Risk Preferences on Citrus Planting Density Decisions." Paul W. Teague and John G. Lee, Texas A&M University.

This study presents estimates of net return distributions under alternative discount rates and weather conditions for eight different citrus spacing schemes. Stochastic dominance with respect to a function is utilized to rank each density pattern for different risk aversion intervals. Solutions from the model indicate that a shift from the tranditional lower density plantings to a higher density is justified economically based on expected net returns. However, as producers become increasingly risk averse, the general preference is a shift to the lower planting densities.

"Stock Effects and Seasonality in the FCOJ Futures Basis." William M. Malick, Texas A&M University; and Ronald W. Ward, University of Florida.

Basis theory deals with the importance of stocks linking futures and cash prices. For the frozen concentrated orange juice (FCOJ) futures market, the effect of stocks on the basis varies seasonally. A constant period from maturity model (CPM) is used to measure seasonality in the FCOJ basis. Five CPM models are estimated accounting for stock effects, freeze bias, and seasonality. The models are then related to the potential for hedging in this futures market.

"Apple Prices and Storage Techniques." Walter N. Thurman, North Carolina State University.

Seasonally harvested storable commodities, such as apples, have seasonal price patterns which reflect demand, the size of harvests, and the costs of storage. Recent years have seen advances in the technology of apple storage which have lowered the costs and improved the quality of storage. A dynamic model is developed which describes the effect that these technological advances have on seasonal price patterns.

"Factors Affecting Fresh Potato Price in Selected Terminal Markets." H. L. Goodwin, Jr., and Stephen W. Fuller, Texas A&M University.

Pooled cross-sectional and time series data were utilized to estimate terminal market price for fresh potatoes. Results of an autocorrelated regression procedure indicated that potato type, package type, terminal market, and week of marketing were significant quality variables in price estimation. These results suggest that growers and grower/shippers can have a measure of control over price through cultivar selection, cultural practices, planting and harvest schedules, and packaging and shipment destination of their potatoes.

PRODUCTION ECONOMICS (Garnett Bradford, University of Kentucky)

"DIFFUSOR: An Event-Based Simulator of Technological Diffusion Demonstrating the Effect of Government Programs." Loyd D. Teigen, USDA.

A simulation model representing the process of technological diffusion within an industry in equilibrium illustrates the linkage between technological advance and the changing structure of the industry. It shows how prices and profits at both the firm- and industry-level respond to the introduction of a new technology. Distinct stages of the diffusion process are identified. The effect of government programs on the performance of the industry, including the rate of technological adoption, is demonstrated. The model

permits controlled experimentation in which production technology or government programs can vary, holding all other relevant factors constant.

"Measuring Returns to Scale in the Long-Run." Spiro E. Stefanou, Pennsylvania State University.

The long-run elasticity of scale is developed for the firm facing adjustment costs and that seeks to minimize the discounted flow of costs. The results indicate that once one allows for adjustment costs and defines the long-run function as a stock concept, the point of constant returns to scale is to the left of short-run minimum average cost.

"A Comparison of Flexible Functional Forms in Production Analysis." John Baffes and Utpal Vasavada, University of Georgia.

Empirical results obtained by an analyst may depend on prior choice of functional form. Three alternative parametric specifications of the cost function are considered. These are generalized Leontief, translog, and normalized quadratic functions. Performance of these functional forms are evaluated by Allen elasticities of substitution, demand elasticities, biases in technical change, and some theory-based hypotheses. All three forms yielded mixed results for all the above specified indicators. Together, empirical results reinforce the need for model specification searches.

"The Risk-Return Trade-Off in 1976–1980, 1981–1985, and 1976–1985: A Target MOTAD Analysis." Robert O. Burton, Jr., and Mario F. Crisostomo, Kansas State University.

Using data from two five-year time periods and one ten-year time period, a Target MOTAD model is used to estimate risk-return frontiers associated with sorghum, wheat, and soybean production in southeastern Kansas. Results illustrate the importance of lower income years in a data series. Target MOTAD may provide misleading information for future planning if the data series used produces model results which are too optimistic or too pessimistic compared to the planning period.

"A Nonparametric Alternative to Parametric Approach for Estimation of Elasticities of Substitution in Agricultural Production." Aroon Lawanprasert and David L. Debertin, University of Kentucky.

Agricultural production analysis often involves the estimation of elasticities of substitution. This paper illustrates that elasticities of substitution between input pairs can be estimated without making any assumptions concerning the functional form of the underlying production technology. The model is a computationally feasible approach.

RESEARCH TOPICS: POTPOURRI

(Joyce Allen, USDA)

"Effect of Railroad Deregulation on Export Grain Transportation Rate Structures: The Case of the South and Central Plains." Stephen Fuller and David Bessler, Texas A&M University; Michael Wohlgenant, North Carolina State University; and James McDonald, USDA.

The purpose of this study is to measure the effect of railroad deregulation on export grain rates which link the south and central plains with port locations. A covariance model is developed for purposes of carrying out the analysis. Results indicate deregulation has resulted in a substantial decline in export rail rates. The reason for the unexpected outcome lies in those sections of the Staggers Act that modified railroads' price-making institutions. The Act removed the cartel-like aspects of railroads pricing, thus facilitating interrailroad competition and the subsequent decline in rates.

"Industrial Location vs. Industrial Growth: Is There a Difference?" Kim Spielman Harris, Southern Illinois University; and Thomas R. Harris, University of Nevada.

Rural industrialization studies often do not provide decision makers with consistent recommendations for promoting economic development/diversification. Contradictions in previous studies may be explained by recent work which identifies plant location as a separate process from plant growth. The objective of this paper is to determine whether new manufacturing firm employment patterns (location) differ among population intervals in Nevada from surviving firms' expanding employment patterns (growth).

"Evaluating Food Plans and Poverty Thresholds." James R. Blaylock, USDA.

A general framework is developed for defining poverty thresholds based on the minimum income or food expenditures that enables a household to purchase food supplies that are evaluated by individuals in society as barely adequate. The methodology is used to examine the household size adjustment factors used in establishing the Food Stamp Program allotment levels.

"Integrated Pest Management Components in a Multi-Crop Economic Evaluation." G. Scott Smith, Michael E. Wetzstein, and G. Keith Douce, University of Georgia.

Considering integrated pest management (IPM) in terms of a set of technology components allows an investigation of various IPM components and how they relate to the total IPM package. Employing restricted and unrestricted least squares in this investigation indicates the unique impact individual IPM components exert on net returns. A Stein-rule estimator is also employed in assessing the magnitude of the influence IPM exerts on net returns.

"Forestry Analyses System for Small Woodlot Holdings." John R. Allison and Harvey J. Witt, University of Georgia.

A three tier muiltiperiod system of analyses using growth models, sub-enterprise optimizing, and overall optimizing models was developed for economic analyses of small woodlots. The system was developed to replace large multiperiod linear models and to be executed on microcomputers.

"The Use of Food Expenditure Quality in Estimating Age-Sex Equivalent Scales." David W. Price and Kiran Sharma, Washington State University.

Age-sex equivalent scales for food have important applications in demand analysis as well as in food policy. The estimation of age-sex equivalent scales has been hampered by the identification problem. That is, an income scale is needed to estimate a scale for food and in turn a scale for food is needed to estimate an income scale. To overcome this problem, an index of food expenditure quality was used instead of income to estimate scales for food. The model specification allows for scale economies due to household size.

RISK AND UNCERTAINTY: EMPIRICAL ANALYSES (David Bessler, Texas A&M University)

"Efficiency Criteria and Risk Aversion: An Empirical Evaluation." Michael E. Wetzstein, University of Georgia; Philip I. Szmedra, USDA; and David M. Edwards, Texas A&M University.

A conceptual link among mean-variance, stochastic dominance, mean-risk, and Gini mean difference is established for determining risk efficient decision sets. The theoretical relations among the various efficiency criteria are then empirically demonstrated with a soybean and wheat double crop simulation model. Empirical results for employing extended Gini mean difference and extended mean-absolute Gini are encouraging for risk analysis.

"The Economic Threshold Under Risk: A Case Study of Soybean Production." Philip Szmedra, USDA; Michael E. Wetzstein and Ronald W. McClendon, University of Georgia.

A multi-species biophysical soybean plant growth simulation model is employed to model alternative risk related theories explaining producer control actions and IPM participation rates. Results indicate that a control strategy utilizing non-contemporaneous production system information proved superior in terms of risk efficiency to a regime following extension economic threshold recommendations. Thus, the perception of the economic threshold paradigm as central to economic efficiency and superior to alternative strategies as reported in previous IPM studies is questioned.

"Modeling Livestock Farms and Ranches Under Uncertainty by Simulation." Paul H. Gutierrez, Colorado State University; Daniel J. Bernardo and Odell L. Walker, Oklahoma State University.

Farm firm simulators such as FLIPSIM are more effective for including production and economic variability in crop farms than in cattle farms and ranches. This paper suggests and demonstrates procedures for making input price, pasture yield, amount of supplemental feeding, weaning percent, and selling weight stochastic in simulation models. The results obtained are more useful for analysis of farm and ranch survivability, and profitability and managerial alternatives.

"Reduced Risk Crop Rotations for Fresh Vegetable Production in the Sand Mountain and Tennessee Valley Regions of Alabama." Michael E. Zwingli, William E. Hardy, Jr., and John L. Adrian, Jr., Auburn University.

Feasibility of 13 vegetable crops was evaluated using spring, summer, and fall rotations with consideration being given to profit potential and incurred risks from price related income variability. A target MOTAD model was constructed so that crop rotations were permitted and restricted within given bounds. Rotations for Atlanta, Baltimore, and Cincinnati wholesale markets were highly stable both across markets and relative to crop mixes as target and acceptable negative de-

viations were varied. Spring and fall broccoli and turnip greens and late spring-summer yellow and zucchini squash were dominant crops in the triple crop rotations in the Atlanta and Cincinnati markets.

"Toward a Method for Identifying GSD Efficient Mixtures of Risky Atlernatives." Francis McCamley, University of Missouri; and James B. Kliebenstein, Iowa State University.

Necessary conditions for generalized stochastic dominance (GSD) efficiency of mixtures of risky alternatives are presented. Two linear programming problems which are equivalent to these conditions are stated and related to GSD algorithms commonly used to rank discrete alternatives. A simple example is used to illustrate the applications of the conditions.

INTERNATIONAL TRADE ISSUES (Nicole Ballenger, USDA)

"The Effects of Selected EC Trade Liberalization Policies on EC Producers, the EC Budget, and World Markets." Dale J. Leuck, USDA.

Measures of trade protection, known as PSEs, are calculated for nine important EC commodities and used to assess which commodity programs the EC might liberalize in response to the current round of Multilateral Trade Negotiations. PSEs are compared to other measures of protection and found to be satisfactory for use by policymakers as indicative of the magnitude of protection given to particular commodities. Analysis indicates that it would be difficult for the EC to substantially liberalize trade in commodities important to the United States without significantly reducing incomes to EC producers of those commodities.

"Factors Affecting Australian Farmers' Potential Participation in Crop and Area Rainfall Insurance." George F. Patrick, Purdue University.

Crop and area rainfall insurance programs were developed and premiums estimated for wheat. Of the 60 farmers interviewed, one quarter or less would be willing to pay the full insurance costs. Discriminant analysis indicated expected yields and legume crop production influenced potential participation in both insurance programs. The insurance use index, risk attitude, debt, yield variability, and land use were major factors in crop insurance participation. Percent of land fallowed, education, and age influenced participation in area rainfall insurance. Implementation of crop insurance programs face considerable difficulties, especially if producers are convinced *ad hoc* government drought assistance programs will continue.

"Impacts of the European Community's Agricultural Policy Changes on U.S. Trade with the EEC." Luyaku L. Nsimpasi and Michael R. Reed, University of Kentucky; and Lynn W. Robbins, New Mexico State University.

The European Economic Community (EEC) markets for feed grains and livestock are analyzed using an econometric model. An equation for soybean meal equivalent imports from the U.S. was also included in the model. The estimated model was used to obtain import quantities from the U.S. for corn, barley, wheat, and soybean meal equivalent under free world prices. EEC imports from the U.S. of corn, barley, and wheat increased under the world prices scenario. However, soybean meal equivalent imports dropped drastically under this scenario.

"European Community Enlargement: Impact on U.S. Soybean Exports to the EC." Tassos Haniotis and Glenn C. W. Ames, University of Georgia.

An Armington type model differentiating products by origin is used to analyze the impact of the European Community enlargement on U.S. soybean exports to the enlarged EC. The analysis indicates that U.S. soybean exports will only slow their rate of decrease after Spain and Portugal abolish their import tariffs. The impact of a tax on oilseed crushing in the EC will accentuate the rate of decrease of U.S. exports. Major U.S. competitors exhibit an increasing trend in their exports to the enlarged Community even after a tax on oilseed crushing is imposed. The decrease in total EC soybean imports after the imposition of such a tax will be minimal.

"Conceptual Issues on the Competitiveness of U.S. Agriculture." James A. Langley, USDA.

The purpose of this paper is to outline a conceptual framework for the investigation of U.S. agricultural competitiveness in world markets. The ultimate objective is to identify and determine the relative importance of, and interrelationships between, factors affecting the competitive position of U.S. agricultural products. Emphasis in this paper is on how

changes in those factors affect the competitive position of the United States from a conceptual perspective.

TOPICS IN AGRICULTURAL POLICY (Ron Knutson, Texas A&M University)

"Revisiting the Quota Debate: The Impact of Mandatory Wheat Production Controls on Producer Net Income." Anthony Kerber and Jeffrey Beaulieu, Southern Illinois University.

During July 1986 USDA conducted a poll concerning mandatory wheat production controls. This analysis compares the impact of such controls relative to the current program, as announced for the 1987 crop year, on the net income generated from wheat sales. Results indicate that quotas would reduce income to a greater extent the lower are farm production costs, the greater base yields, and the greater the required acreage reduction. A breakeven analysis indicates the required acreage reductions or adjustments in target prices that would make a quota program attractive from a net income perspective for farms with different yields and costs.

"Distributional Effects of Farm Commodity Programs: The Case of Rice." William W. Lin, USDA.

This study estimates price and income effects of the 1984–86 rice programs. The 1984 and 1985 rice programs, on average, cost U.S. consumers, taxpayers, and society more than the net gains to producers by $220 million a year. Dead-weight loss of the 1986 rice program is estimated to be even higher—$340 million, an increase of over 50 percent within a year.

"Substitution Effects between Public and Private Stocks of Grain." Joseph W. Glauber and Linwood Hoffman, USDA.

Substitution effects between public and private quarterly stocks of grain were estimated for wheat, corn, and sorghum, 1973–85. Results indicate that government stocks have had a small or negligible effect upon enhancement of total carryover stocks of grain. The substitution effects between public and private stocks of grain ranged from .694 bushels for wheat to .886 bushels for corn.

"An Empirical Analysis of Selected Domestic Farm Policy Programs on the U.S. Livestock Sector and Consumers of Meats." Robert E. Young, II, Jon A. Brandt, Shamsul Alam, and Abner W. Womack, University of Missouri.

Using an econometric model of the major livestock and crop commodities of the U.S., the effects of three alternative domestic farm policy programs on the livestock sector are examined. A baseline scenario continues the current farm program through 1991. Alternatively, the marketing loan and paid diversion programs which reflect wide farm policy differences are examined. The results suggest substantial differences in livestock production and price paths. The market loan option allows crop prices to drop substantially, sending strong signals to the livestock sector. The paid diversion scenario results in a revenue neutral livestock situation (relative to the baseline).

"Farm Operator Characteristics: Implications for Policy." Charles D. Lambert, Paul L. Kelley, and Barry L. Flinchbaugh, Kansas State University.

Use of a single measure, annual gross sales, to define the alleged emerging bimodal structure of U.S. agriculture has serious limitations and implications for: (1) targeting public policy interventions, (2) the structure of research and extension programs at Land Grant Universities, (3) public administrative agencies, (4) farm organizations and (5) farm operators. The authors conclude that multidimensional specification of current and emerging farm structures is essential to determine impacts of public and private programs targeted at the farm operator level. This conclusion was the result of analyzing relationships of nine economic and demographic factors to annual gross sales for a sample of Kansas farm operators.

FINANCIAL STRESS (Ivery Clifton, University of Georgia)

"Farm Operator Financial Distress in 1984–85: Indicators from the Farm Costs and Returns Survey." Diane Bertelsen, USDA.

Data from USDA's Farm Costs and Returns Survey were used to derive debt-to-asset ratios and simulate farms differentiated by type, location, and size. Nationwide the proportion of financially stressed commercial farms remained between 5.5 and 6 percent. Cotton-rice producers, or those in the Southern Plains, or with gross production from $40,000 to $250,000 had the highest incidence of distress. Although fewer operations

had negative cash flow during 1985, more of them were also technically insolvent. Eliminating CCC loans from debt ratio calculations did not alter results of the analysis.

"An Estimate of Debt at Risk in the South." Greg Hanson and Jim Johnson, USDA; and Dave Freshwater, University of Manitoba.

Debt-at-risk is explored in four southern regions and compared to the Cornbelt. Analysis is based on the debt service ratio and debt-to-asset ratio applied to the Farm Costs and Returns Survey of the USDA. Debt-at-risk was estimated to be in the $5 to $10 billion range for the U.S. The southern regions experienced higher levels of debt-at-risk per commercial farmer, and lower debt serviceability than in the Cornbelt.

"Socioeconomic Factors Associated with the Incidence of Farm Operator Debt in the Southern U.S." Mitchell J. Morehart, USDA.

Weighted logistic regression is employed to examine socioeconomic factors associated with the incidence of debt. Findings suggest that size, age of operator, household size, efficiency, profitability, receipt of government payments, and education substantially impact the probability of holding debt. Furthermore, farm operators located in the South differed significantly from operators located in other regions with regard to the effects of government payments, off-farm income, size of operation, profitability, and labor intensity on the occurrence of debt.

"Long-Run Financial Effects of the 1986 Drought on South Carolina Tobacco, Corn, and Soybean Farms." Eddie H. Kaiser, Clemson University.

The financial consequences of a reduction of crop sales as a result of the drought of 1986 were evaluated. The financial performance of a representative South Carolina farm with three different debt-to-asset ratios (20%, 40% and 70%) was simulated over the next four years under four different possible losses due to the drought (0%, 20%, 40% and 60% reduction in crop sales). Then the financial performance of the representative farm with the three different debt-to-asset ratios using a low interest disaster loan in 1986 was projected over the next four years.

"The Critical Nature of Actuarially Sound Crop Insurance for Financially Stressed Farms." Perry J. Nutt and Jerry R. Skees, University of Kentucky.

Procedures for evaluating farm level risk with and without crop insurance are developed in the paper. These procedures are used to validate a Monte Carlo model using theory of insurance. The model was used to evaluate the effects of purchasing crop insurance within different yield risk environments, given various rate structures. Results clearly demonstrate that crop insurance can aid financially stressed farmers if loss/cost ratios (rates) approximate actuarial soundness. However, when these ratios are not actuarially sound, purchasing crop insurance can be detrimental.

"Analysis of Repayment Ability for Agricultural Loans in Virginia Using a Qualitative Choice Model." G. W. Warmann, W. N. Park, and D. M. Kohl, Virginia Polytechnic Institute and State University.

Using data from commercial banks, PCA's, and FmHA throughout Virginia, a Probit model is developed to determine repayment ability of a borrower. Significant factors were: percent equity, current debt level, cash flow, cash expense-cash receipt ratio, number of credit lines, diversification, credit source, and level of gross farm income.

LIVESTOCK MARKETING ISSUES (Dan Tilley, Oklahoma State University)

"Vector Autoregression Forecasting Models: A Suggestion and Evaluation Using Hog Market Data." Michael S. Kaylen, University of Missouri.

This paper proposes a new method for constructing vector autoregression forecasting models. The method differs from earlier approaches in that it allows for the exclusion of intermediate lags. For comparative purposes, six models of the U.S. live hog markets are developed. In addition to two models which use the procedure suggested in this paper, four other vector autoregressions are developed: an unrestricted model, a Tiao-Box type model, and two Bayesian vector autoregressions. Out-of-sample forecasts are evaluated for all six models using forecasting horizons of one through eight quarters. The results indicate the approach suggested in this paper has merit.

"Hedging Risk for Beef Cattle Using Price Change and Price Level Regression." Emmett W. Elam, University of Arkansas.

Hedging risk with Ederington's price

change regression procedure was compared with hedging risk from a price level regression using beef cattle as an example. For hedges held for four weeks or less, price change regression had the lowest hedging risk; whereas, for hedges held for more than four weeks, price level regression had the lowest hedging risk.

"Hedging Risk with Cash Settlement Feeder Cattle Futures." Emmett Elam, University of Arkansas.

Beginning with the September 1986 contract, feeder cattle futures will be settled based on cash settlement, rather than physical delivery which has been used since feeder cattle futures began trading in 1971. It is estimated that hedging risk will be reduced with the new cash settlement contract as much as 66 percent for 600–700 pound Arkansas steer hedges and as much as 44 percent for 600–700 pound Arkansas heifer hedges. For Arkansas steers and heifers weighing less than 600 pounds, hedging risk is estimated to be less with the cash settlement contract for September, October and November hedges; but not generally for March, April and May hedges.

"Regional Basis Variation: Parameter Efficiency, Elasticity Estimation, and Seemingly Unrelated Regression." Jeffrey Beaulieu and Roy Hibbard, Southern Illinois University.

The seasonal variation in regional Illinois corn basis patterns is examined using two techniques: multiple regression and Seemingly Unrelated Regressions. An examination of parameter estimates, significance levels, and elasticity coefficients indicates that conclusions concerning regional basis variation are dependent upon recognizing that the individual regional equations are related. This relationship stems from the correlation between the residuals of the estimated individual equations.

"Structural Change in Beef and Pork Demand: A Flexible Functional Form Approach." James Mintert, Kansas State University; Curtis Braschler and Paul Speckman, University of Missouri.

The existence of a structural change in pork and beef demand is examined via estimation of flexible functional form price dependent single equation models for pork and beef. The most likely time frame for a structural break to have occurred is identified using a switching regression model and Chow tests are conducted to determine if structural changes took place. It appears that a structural change has taken place in beef demand characterized by increased beef price responsiveness to changes in beef, pork, and broiler quantities, as well as income. Changes in pork demand appear to be limited to beef's declining importance as a substitute for pork.

TOPICS IN AGRICULTURAL POLICY (Milton Ericksen, USDA)

"The Market for Flue-Cured Tobacco Production Rights." Coleman W. Dangerfield, University of Georgia; and C. Stassen Thompson, Clemson University.

The No Net Cost Tobacco Act of 1982 permitted the buying and selling of flue-cured tobacco quota. Buyers and sellers of quota were surveyed to ascertain factors affecting bid and asking prices. Most of the buyers of quota were large tobacco producers; whereas most of the sellers did not produce tobacco. Price-dependent buyer and seller equations were fitted with survey data and estimated using Zellener's SURE procedure. Results indicated that uncertainty about continuation of the tobacco program affected prices paid by buyers. The forced sale provision of the act for nonrisk-sharing quota owners affected prices accepted by quota sellers.

"A Study of the Recent History and a Projection of Budget Costs of the 'New' Tobacco Program." Daniel A. Sumner, North Carolina State University.

This paper reviews the recent history of budget outlays for the "no net cost" tobacco program. It discusses implications of the 1986 Tobacco Reform Act. The paper provides projections of potential federal budget inflows and outflows for flue-cured and burley tobacco for 1986 through 1995. It discusss implications of the 1986 "buyout" of stocks for future farm program expectations.

"Mandatory Production Controls and Asset Values: A Case Study of Burley Tobacco Quotas." Jerry R. Skees, Valerie L. Vantreese, and Michael R. Reed, University of Kentucky.

Mandatory production controls will very likely be the next major policy attempt to revive the U.S. agriculture. This paper tracks the value of burley tobacco quota through a period of policy uncertainty and demonstrates that values tend to follow political uncertainties. The methods used are unique in use of parcel characteristics and use of capitalization

theory.

"Cotton Acreage and Farm Program Participation Under Selected Farm Program Provisions: An Integer Programming Approach." Anne Mims, Patricia A. Duffy, and William Hardy, Auburn University.

A representative Alabama farm is modeled with a multi-year integer program to evaluate the effects of alternative farm program provisions on cotton acreage and farm program participation. Results indicate that an acreage reduction provision of more than 35% of the base will discourage program participation on farms of this type. Strict enforcement of the payment limitation provision also results in decreased participation. The anticipated difference between target price and market price was also important in determining the incentive to stay within the program or to expand the base.

"The Effect of Agricultural Loan Subsidies on Mississippi Cotton/Soybean Farms." Michael E. Salassi, USDA.

The impact of a proposed agricultural loan subsidy program was evaluated for a Mississippi cotton/soybean farm under alternative levels of assumed initial debt using whole-farm simulation. Features of the loan restructuring plan included a three-year interest rate subsidy program along with a conditional loan principal reduction program.

COMMODITY ANALYSIS: DAIRY

(Hal Harris, Clemson University)

"Costs and Returns of Producing Milk, 1975–1984." Carolyn P. Betts, USDA.

The Economic Research Service revised its cost-of-production estimating procedures and changed the costs-and-returns budget formats in order to incorporate new concepts and methodologies. The standardized estimates are now more useful for making milk costs-and-returns comparisons over time and across regions.

"An Impact Analysis of the Dairy Herd Buyout Program on the U.S. Feeder Cattle Industry." Touba Begingar, International Livestock Development Center, Ethiopia; and Barry W. Bobst, University of Kentucky.

Dairy production decisions are considered to be determined outside the beef cattle industry. However, through its effects on non-fed cattle marketings, a dairy herd buyout program affects both feeder and slaughter cattle prices in the U.S. feeder cattle industry. An impact analysis of a year-long buyout program indicates relatively severe first quarter price effects. However, by the second quarter price flexibilities show lessened relative price impacts, even though prices continue to decline in absolute terms. Within two years, reduced beef cattle numbers lead to higher prices than would have occurred without the buyout program.

"Raw Milk Prices Based on Dairy Product Characteristics in the Texas Market." Robert D. Yonkers and Robert B. Schwart, Jr., Texas A&M University.

Trends in dairy product consumption raise questions about whether the current raw milk pricing scheme used in Federal Marketing Orders sends the correct price signal to raw milk producers. This study employed a mathematical programming approach to apply dual relationships to the linear problem of blending raw milk characteristics as a means of assigning monetary values to those characteristics. Results indicate that current pricing undervalues butterfat relative to solids-not-fat in all three utilization classes of milk. Applying characteristic values to raw milk of varying butterfat and solids-not-fat composition to determine raw milk prices is discussed.

"Propensity to Produce Milk: A Concept and Its Potential Usefulness." Richard F. Fallert, USDA.

The concept of the economic analysis tool "propensity to produce milk" is presented and explained. Its potential usefulness for evaluating the changing location of milk production and for assisting in industry decision-making and policy analysis is demonstrated.

"An Analysis of Louisiana Milk Diversion Program Participants and Non-Participants." Wayne M. Gauthier, Robert B. Wharton, and Steve S. Kelly, Louisiana State University.

The Milk Diversion Program created by the Dairy and Tobacco Adjustment Act of 1983 was not as successful as anticipated. This may be due to the perceived short run nature of the policy as well as the simple economic incentives involved with the program. Linear discriminant analysis was used to evaluate program participants and non-participants. Results suggest that variables such as experience, acres, education, and numbers of cows and heifers may be evaluated within a family/farm life cycle hypothesis. Though significant group differences did not exist for

predictive evaluation, different results would be expected from the Milk Termination Program.

MACROECONOMIC POLICY ISSUES AND FARM STRUCTURE (Tom Hady, USDA)

"Sectoral Analysis Using a Simple General Equilibrium Model." Stephen Leong, Louisiana State University.

Sectoral analysis using a simple general equlibrium model allows the agricultural and nonagricultural sectors to be evaluated simultaneously as they are impacted upon by the determinant variables. An empirical application of the technique provides useful indicators that help to determine the nature and direction of the adjustment process.

"Effects of Monetary Changes on the Price Level and Output in the U.S. Agricultural Sector." Peter J. Saunders and DeeVon Baily, Utah State University.

The U.S. agricultural sector is often subjected to external shocks, such as changes in the money supply. Changes in the money supply may have important impact on agricultural output and prices. Theoretically, the question of causality in the money-income relationship (as applicable to the U.S. agricultural sector) as well as the issue of effects of monetary changes on the two components of nominal farm product (prices and real farm product) are of crucial importance. This study empirically investigates these two issues. The study finds that the impact of monetary changes operates primarily through the price level changes at both the retail and the farm level.

"Unexpected Inflation and Agricultural Markets." Herbert Gilbert and Suchada V. Langley, USDA.

The paper investigates the assumption of differential speeds of price adjustment between the farm and nonfarm sectors. Results show that there are differential speeds of price adjustment not only *between* sectors, as other economists have pointed out, but also *within* the farm sector as well. The heterogeneous nature of agricultural production is one of the main reasons.

"Entry, Exit, and the Age Distribution of Commercial Farmers, 1974–82." Matthew G. Smith, USDA.

A procedure to conduct age cohort analysis of irregularly-spaced census data is developed and applied to estimate rates of operator entry and exit on commercial farms in 1974–78 and 1978–82. Implications of 1978–82 entry and exit rates for U.S. and regional commercial farm numbers and financial structure are explored. Entries of young farm operators declined by nearly half in 1978–82 compared with 1974–78; combined with the continued aging and retirement of existing operators, this suggests relatively sharp declines in the number of commercial farms in the near term.

"Advertising and Product Standards: Information or Barriers to Entry?" James A. Zellner, USDA.

A model testing the interrelationships between advertising intensity, industry concentration, and profitability for 4-digit food industries was estimated using three-stage least squares. Results were consistent with the "advertising is information" paradigm but did not support the structure-performance paradigm which views advertising as an entry barrier. The study utilized newly developed information on the relative importance of standards of identity for the food industries. The inclusion of the food standards variables made no difference to the conclusions vis-a-vis the advertising-information paradigm, but provided useful insight on the effect of standards on structural variables in the food system.

RESEARCH TOPICS (Carl Wright, South Carolina State University)

"An Analysis of Peanut Farmers' Acceptance of Marketing Alternatives for Farmers' Stock Peanuts Using the Multiple Binary Choice Model." D. H. Carley, S. M. Fletcher, and P.K. Kwakyi, University of Georgia.

Changes in price support policies for peanuts have caused peanut farmers to become market conscious. Tie-in forward contracts between farmers and buyers are common. However, other marketing alternatives may need to be developed. A random sample of 530 peanut farmers in seven states evaluated cash marketing, one-on-one contracting, centralized contracting, futures exchanges, computerized marketing, cooperatives, and market orders. A multiple binary choice model was used to identify factors that affect acceptance of alternatives. Moving from a government to no government scenario, farmers were less favorable toward cash and one-on-one contracting and more favorable

toward computerized marketing, futures exchanges, and cooperatives.

"Discriminating Rational Expectations Models with Non-Nested Hypothesis Testing: Implications to the Beef Industry." Satheesh V. Aradhyula and Stanley R. Johnson, Iowa State University.

Three models of the U.S. beef industry are estimated using different hypotheses about the industry structure. All three models are estimated using the rational expectations assumption. Joint tests of the rational expectations hypothesis and model specification are conducted using Gallant and Jorgenson's chi square tests. The model with a three-year production lag was clearly rejected. Non-nested hypothesis tests indicated that the model with a one-year production lag dominates the model with a two-year production lag.

"A Risk-Efficiency Analysis of Preharvest Soybean Marketing Strategies in Louisiana Using Forward and Futures Contracts." D. A. Zaunbrecher, T. P. Zacharias, H. D. Traylor, and B. E. McManus, Louisiana State University.

Stochastic dominance is used to analyze forward and futures contracts as preharvest soybean marketing alternatives. The effects of location, percentage of the crop contracted, and date of contract are examined. Results indicate that both forward and futures prices perform better than cash sales at harvest although cash sales cannot be eliminated under first degree stochastic dominance. In general, forward and futures price distributions had higher means, lower variances, and higher minimum values relative to cash sale at harvest. Only minor differences were observed in the efficient sets across locations.

"Effects of Imports and Exports of Meat on the U.S. Beef, Pork, and Poultry Industries: Empirical Analysis and Implications." Jon A. Brandt, Robert E. Young, Shamsul Alam, and Abner Womak, University of Missouri.

In recent years, the U.S. had increased net importation of live animals and meat products. With the use of an econometric model of the U.S. livestock industry, three alternative meat trade flow scenarios are examined over the period 1986–1991. The first assumes a continuation of current (1985) imports and exports of livestock and meat products. The second imposes substantial increases in imports and reductions in exports. The third reverses these flows of products. Production, consumption, and price on the beef, pork and chicken industries at farm and retail levels from these shifts are reported.

"An Analysis of Sticky Prices." J. S. Shonkwiler and T. G. Taylor, University of Florida.

Rosett's model of friction is used to analyze FOB prices of FCOJ. Considerable price ridigity or "stickiness" is observed.

INTERNATIONAL DEVELOPMENT ISSUES (Lon Cesal, USDA)

"A Comparative Analysis of Growth Rates in Food Production Using Calorie Weights: Asia, Africa, and Latin America." W. R. M. P. Jayawardana and Robert B. Wharton, Louisiana State University.

A productivity index is used to evaluate food production growth for selected countries in Asia, Africa and Latin America. Constant food calorie weights are used instead of relative price weights. Domestic price data are typically unavailable and the calorie weights may be more meaningful from a developmental perspective. Consistent with historical observations, the analysis pointed out that growth in Asia and Latin America has been through yield enhancement and that growth in Africa is still tied to area expansion. Results suggest a productivity index weighted by calories can be effectively used to measure rates of agricultural growth in developing countries.

"Output and Input Subsidy Policy Options in Bangladesh." Richard R. Nehring, USDA.

A normalized restricted profit function is used to estimate profit and factor demand functions from farm-level cross sectional data for the food grain and jute crops in Bangladesh. The estimated elasticities are used to evaluate price support and fertilizer subsidy programs in terms of their costs to the government, foreign exchange effects, and producer surplus for the foodgrain and jute sectors. The results indicate that the recent changes in pricing policies emphasizing price supports and phasing out fertilizer subsidies are a step in the right direction, particularly if minimizing the combined foreign exchange and budgetary expenditures of Bangladesh and donor nations is the key objective.

"The Debt Impact on Soybean Import Demand—The Case of Middle-Income De-

veloping Countries." Stanley M. Fletcher and Tzongyun Katy Wu, University of Georgia.

A soybean import demand model was developed for the middle-income developing countries (MIC). The major factors investigated were the debt and exchange rate impacts. The exchange rate was not significant in influencing the MIC import decision function. Furthermore, debt or debt service was not significant in influencing soybean imports but rather the ability to pay was. However, prior to 1982, a country's ability to pay was not crucial, but when the debt problem arose this ability to pay became relevant in a MIC country's capability of importing. This information will aid policy makers in light of the current farm situation.

"Impacts of New Agricultural Technologies in Two Regions of Peru." Edward B. Walters and George W. Norton, Virginia Polytechnic Institute and State University.

Impacts of new agricultural technologies are evaluated for two regions in Peru. Changes in production, crop mix, input demand, the level and variability of income, and credit requirements are assessed and the implications for price and credit policies examined. A linear programming model is used to simulate the effects of new technologies under alternative risk and policy scenarios. Results indicate that new technologies impact significantly on income, crop mix, and labor demand in each region, and that the availability of credit has a greater effect than the interest rate on technology adoption.

"Cooperative Buying Groups in Thailand—Results of a Social Experiment." A. Lee Meyer and Craig L. Infanger, University of Kentucky.

As part of the Northeast Rainfed Agricultural Development Project, a social experiment was developed to learn more about village-level buying groups (cooperatives). A secondary objective was to develop an improved process for the Cooperatives Promotion Department (CPD) to use in designing and implementing its activities. Buying groups were started, following preliminary studies which generated initial hypotheses. It was found that an outside source of initial capital was not a requirement. However, good leadership, small groups, close proximity of members, and outside support are important. The overall learning process performed well and should be institutionalized into the CPD.

AGRICULTURAL MARKETING ISSUES (Tom Foster, National Fertilizer Development Center)

"Portfolio Hedging of Soybean Meal in European Feed Grain Markets." Jack E. Houston, Glenn C. W. Ames, and Robert B. Burney, University of Georgia.

Correlations between Rotterdam soybean meal cash prices and U.S. soybean meal futures prices indicate that opportunities exist for portfolio hedging European feed and meal on U.S. futures and options markets. Multivariate autoregression analysis was used on soybean meal futures prices to investigate and select optimal futures contracts for hedging European soybean meal inventories.

"A Comparison of Minimum-Variance Hedge Ratios for Grains Using Commodity Options and Futures Contracts." Larry A. Johnson, University of Tennessee; and David E. Kenyon, Virginia Polytechnic Institute and State University.

Commodity options add a new dimension to grain farmers' marketing alternatives. The purpose of this study was to determine optimum hedge levels using both commodity options and futures contracts and then compare the hedging tools given various crops, farm location, and yield prediction. Commodity options are superior to futures contracts as a hedging tool for early season hedges. This was particularly true for crops with highly variable and uncertain yields. The results also indicate that commodity options are a viable alternative for reducing long-run income variation.

"The Variability of Intraday Price Changes of Soybean Futures Contracts—1984 Results." Steve Dinehart, James V. Jordan, and William E. Seale, Commodity Futures Trading Commission; and David E. Kenyon, Virginia Polytechnic Institute and State University.

The variance of price changes of soybean futures is thirty to forty percent higher early and late in the trading day than during the middle of the day. This pattern appears to be related to the discontinuous nature of the market which forces differential rates of information absorption.

"Options as a Short Hedging Alternative for Cotton Producers." Lawrence A. Lippke and Thomas L. Sporleder, Texas A&M University.

The performance of options as a short hedg-

ing alternative for cotton producers is evaluated with a whole farm simulation model using stochastic dominance criteria. Short hedging strategies using options are identified and evaluated based upon profitability and firm survivability under several leverage and yield variability scenarios. Results indicate that for the 1975–1984 crop seasons, puts purchased at-the-money were preferred to all other strategies evaluated, regardless of leverage or yield variability.

"An Analysis of Determinants of the South Carolina Corn Basis." Kandice H. Kahl, Clemson University.

A reduced form equation for the basis is derived from specified structural equations. An empirical model consistent with the theory is estimated for the South Carolina real corn basis. The results indicate that the basis is positively related to the number of grain-consuming animal units in the state and the percent of U.S. corn stocks held by the government. The basis is negatively related to South Carolina corn stocks, U.S. corn stocks, and storage costs. However, no significant relationship was detected between the basis and the measure of expected profitability from feeding livestock.

"Optimal Flows of Sweeteners in the United States." M. Dagher and M. Debatisse, University of Maryland.

Optimal flows of high fructose corn syrup and refined sugar in the United States were determined for the period 1980–1984. The analyses were conducted under two scenarios. Scenario 1 involved the status quo for the period. Scenario 2, on the other hand, involved simulating various likely conditions. The results indicate the flow patterns that would have minimized total transfer cost for the entire country. The findings also lay the foundation from which to generate additional research —i.e., derive theoretical prices, conduct margin studies, etc.

PRODUCTION RESPONSE (James Richardson, Texas A&M University)

"An Econometric Model of Oat Regional Supply Response." Jackie Todd and Robert E. Young, II, University of Missouri.

The proportion of oat harvested acreage to planted acreage has varied greatly in the 1980s, making planted acreage a poor determinant of oat supply. To estimate oat supply, regional harvested acreage equations are estimated as functions of lagged regional acreage, expected net revenue from oats and the regional substitute crop, the effective paid diversion rate, and rainfall.

"Regional Cotton Acreage Response." Patricia A. Duffy, Auburn University; James W. Richardson, Texas A&M University; and Michael K. Wohlgenant, North Carolina State University.

An econometric model of cotton acreage response was estimated for four distinct production regions in the United States. This work builds on previous work in the area of supply response under government farm programs and provides up-to-date regionalized estimates of own-price elasticity of cotton acreage supply. The own-price variable used in this study is a weighted combination of expected market price and government policy variables. Results indicate regional similarity in response to own price but differences with respect to the prices of alternative enterprises. Differences in regional response to paid diversion are also indicated.

"The Impact of Double-Cropping Wheat and Soybeans: An Acreage Response Model for the Southeast Central Region." Tzongyun Katy Wu and Stanley M. Fletcher, University of Georgia.

The impacts of double-cropping wheat and soybeans on the southeast central region's corn, soybean and wheat acreages were investigated. In addition, the impacts of government programs on acreages were examined. Result indicate that the economic impact of double cropping on acreage is significant. Furthermore, price support and diversion payment programs have not been very effective on crop acreages.

"Winter Wheat Yield Response: Policy Implications and Projections." Mark S. Ash and William Lin, USDA.

The most important factors contributing to the upward trend in winter wheat yields are improvements in technology and production practices, adoption of high-yielding semidwarf varieties, and increased fertilizer application. Deviations from normal weather conditions (soil moisture, precipitation, and temperature) caused variability around the upward trend in yields. A 10 percent reduction in acreage would raise wheat yields by 4 percent and reduce production 6 percent in the Northern Plains. The low and high yield surrounding the 1986 trend yield would lie between 36 and 42 bushels an acre 90 percent

of the time.

"The Responsiveness of U.S. Corn and Soybean Acreages to Conditional Price Expectations." Kamil H. Shideed, Fred C. White, and Stephen J. Brannen, University of Georgia.

Naive and adaptive schemes have been used as proxies for price expectations in previous studies on supply response. Other literature contains mixed formulas of futures, support, and lagged prices as alternative formations for price expectations. This study used conditional expected price, and combines both market and support prices into one measure of price expectation which simultaneously defines their total effect on supply response.

RESOURCE CONSERVATION ISSUES (Katherine Reichelderfer, USDA)

"An Evaluation of a Conservation Reserve Bid Approach for Retiring Highly Eroding Cropland in West Tennessee." William M. Park and Robert J. Menard, University of Tennessee.

The 1982 NRI revealed that 39.2% of the erosion in Tennessee is associated with the 19.6% of cropland designated as Class IV, VI, and VII. In this study the distribution of this cropland within field operating units is investigated. Farmers were surveyed regarding participation in a hypothetical program similar to the Conservation Reserve Program where landowners submit bids for annual rental payments to convert highly eroding cropland to a conserving use. Cost effectiveness of such a program was evaluated. Factors associated with variation in landowners' bid levels were identified.

"Efficient Analysis of Adopting Soil Conservation Practices for Soybean Production in Mississippi." Yasmin R. Mustafa, University of Georgia; and Lynn L. Reinschmiedt, Mississippi State University.

Net present values for conventional and no-till systems of soybean production in north Mississippi were calculated over five planning horizons, given specified levels of soybean price, yield penalties, topsoil depth, and interest rate. Application of first degree and second degree stochastic dominance analysis shows that conventional system dominates the no-till (conservation) system over all planning horizons. Such results support the risk averse behavior of farmers since they prefer the practice with a stable income stream which is also highly erosive. This indicates that subsidies are required to make conservation systems economically attractive.

"Implications of Alternative Groundwater Management Strategies on Recreation and Tourism: A Case Study." Teofilo Ozuna, Jr., Lonnie L. Jones, John G. Lee, and Ronald D. Lacewell, Texas A&M University.

A regional input-output model was used in conjunction with estimated direct expenditures, employment, and income to estimate the economic impacts associated with recreation and tourism at Comal and San Marcos Springs in Texas. An ex-ante evaluation was made of certain potential impacts on recreation and tourism of regional water management policies for the Edwards Aquifer which affects the Springs. The results for any adopted water policy alternative appears to be: (1) a partial sacrifice of existing property rights, (2) negative economic impacts on certain water users, and (3) increased per unit cost of water.

"Values and Water Institutions." Gary D. Lynne and Michael E. Wilson, University of Florida.

Water institutions develop in response to changing technological conditions, but at any given point in time reflect the weights on a subset of the human value system. Another theory of institutional change, then, is that such change occurs due to conflict in basic values among the participating parties. Also, to determine the most appropriate institutional arrangement there must be an understanding of what human values are important.

"Analyzing Erosion Control Practices Under Uncertainty: A Computerized System." Parveen P. Setia, USDA; and Gary V. Johnson, University of Illinois.

A micro-computer system is presented for analyzing the selected Best Management Practices (BMPs) to control soil loss under the conditions of uncertainty. Farm level annual net returns per acre, variability in net returns, soil loss, and variability in soil loss for each BMP are calculated for the short-run (1 year) and the long-run (maximum of 50 years) periods. Two decision criteria, namely EUM and SF, were incorporated to compare the effect of an individual's risk attitudes on the adoption of soil conservation measures.