Selected Papers

Issues of Water Usage, Joel Hamilton (University of Idaho) presiding

"Cutting Nitrogen Applications for Improved Water Quality: Does the Farmer Lose?" Harry Ayer, Paul Hoyt, Bryant Gardner, Bob Roth, Tom Doerge (University of Arizona)
In light of the nitrate contamination issue, the relationship between nitrogen applied and profits was examined. Test plot data were used to estimate nitrogen-yield production functions for economic analysis. Results show why fertilizer may be overapplied, that nitrogen may be reduced 20–30% with little effect on profits, and that test plot implications are conservative when applied at the farm.

"A Case Analysis of Stream Flow Forecasts with Reference to Fertilizing Mountain Hay Meadows." James J. Jacobs and Larry J. Held (University of Wyoming)
The value of annual streamflow forecasts (issued by the Soil Conservation Service) is examined for adapting fertilizer usage in response to expected streamflow when producing mountain meadow hay. Forecasts are found to be very effective for increasing the accuracy of streamflow expectations as well as enhancing the expected value of hay production.

"Forecasting Irrigation Technology with Transition Probabilities in the Pacific Northwest." Glenn D. Schaible and C. S. Kim (USDA/ERS, Washington, DC)
A probability-constrained minimum absolute deviations model is used to estimate transition probabilities and forecast irrigation technology in the Pacific Northwest. Results show that technology adoption is relatively stable with gradual shifts to less water-using technologies. Furthermore, gravity irrigators are equally as inclined to shift to center-pivot sprinkler irrigation as to conventional sprinkler irrigation.

"Response of Pacific Northwest Irrigated Agriculture to Rising Energy Costs." Moeketsi Majoro, Linda May, and Norman K. Whittlesey (Washington State University)
Mathematical programming is used to analyze the short-run response of Pacific Northwest irrigated agriculture to rising energy prices. Elasticities of demand for electricity are estimated for various energy price changes. An array of managerial responses are explored, including changes in use of energy, water, irrigation labor, and land.

Recreation Economics, Scott C. Matulich (Washington State University) presiding

"Confidence Intervals for Welfare Estimates from Recreation Demand Models." Catherine L. Kling and Richard J. Sexton (University of California, Davis)
This paper presents an analysis of the use of bootstrap methods to discern the statistical precision of consumer welfare estimates from recreation demand models. Results suggest that a great deal of imprecision is present in estimates from typical cross-section data. Estimates of precision can be improved through imposition of inequality constraints on the demand function parameters.

"The Use of Principal Components Analysis in Recreation Demand Equations." Chih-Chien Liao, Jack E. Houston, and John C. Bergstrom (The University of Georgia)
Principal components analysis is used to construct indices which account for the effects of site quality and socioeconomic variables on outdoor recreation demand. The components provide theoretically consistent and statistically strong regressors for estimated demand functions. The use of principal components analysis may reduce multicollinearity problems common to recreation demand equations.

"Economic Incentives Versus Attitude for Promoting Waterfowl Habitat." G. C. Van Kooten (University of British Columbia) and Andrew Schmitz (University of California, Berkeley)
In order to bring waterfowl numbers to their mid-1970s level, the North American Waterfowl Management Plan attempts to employ both economic incentives and cultivation of positive attitudes to encourage farmers to preserve wetlands. In this study, the results of a pilot project are analyzed. Economic incentives, not attitudes, are found to be the most important reasons for entering into agreements to save waterfowl habitat.

International Development, Hossein Parandvash (USDA/ERS, Washington, DC) presiding

Western Journal of Agricultural Economics, 14(2): 319–327

"Optimal Feed Grain Production and Import Policies in Korea." Won W. Koo (North Dakota State University) and Yong W. Kwon (Kansas State University)
A dynamic programming model based on the Markov Decision Process was developed to optimize feed grain imports, production, and domestic prices in Korea. The results indicate that Korea should increase its carry-over stocks and feed grain imports. This would reduce domestic prices and maximize net social benefits. The long-run equilibrium price of feed grain should be equivalent to $6.55 per bushel. The optimal price is much higher than the world price but substantially lower than the actual domestic price of feed grain in Korea ($9.52 per bushel).

"Consumption Stability and the Potential Role of Food Aid in Africa." Stacey Rosen (USDA/ERS/ATAD/DEB, Washington, DC)
Africa's high consumption variation has resulted in severe food shortages and famine during drought years. Shortages have been caused by low and variable food production not supplemented by commercial imports and food aid. This paper quantifies factors determining consumption and estimates food aid needed in order to stabilize consumption.

"Agricultural Assistance to Developing Nations." Warren L. Trock (Colorado State University)
The decade of the seventies saw the emergence of the developing nations as important entities in worldwide agricultural trade. Significant to their involvement was economic growth and increased incomes, often prompted by development within their agricultural sectors. It is within the interests of U.S. agricultural producers to continue assistance to agriculture in developing nations since "future foreign markets for U.S. agriculture will be in the developing nations . . ." (G. Edward Schuh, August 1986).

Market Adjustments and Analysis, Steve Fuller (Texas A&M University) presiding

"The Dynamics of Farm and Nonfarm Price Transmissions: The Case of Cotton." Ronald A. Babula (USDA/ERS, Washington, DC) and David A. Bessler (Texas A&M University)
A vector autoregression of farm cotton, industrial, cotton fabric, and general apparel prices is estimated, along with the effects of shocks from a farm price decline. Results show how farm price declines pulsate through the cotton-related nonfarm economy and demonstrate reaction times, response durations, and patterns of the nonfarm price responses.

"The Fats and Oils Sector in the European Community: Production, Crushing, and Policy." Roelof A. Jongeneel and Hendrick Folmer (Wageningen Agricultural University, The Netherlands)
This paper presents a model of the European Community (EC) crushing sector by which the effects of EC fats and oils policy can be analyzed. In particular, attention is paid to the degree to which the crushing sector substitutes the main and dominating imported oilseed soybeans for home-based oilseeds, i.e., rapeseed and sunflower seed. It is concluded that the EC is likely to remain a large deficit area with regard to fats and oils and protein sources.

"A Short-Cut Approach to Trade Area Capture Analysis." Gary W. Smith (Washington State University), Thomas R. Harris, and Michael B. Mooney (University of Nevada, Reno)
Trade area capture analysis is widely used in helping local decision makers assess commercial sector performance. This paper demonstrates how the pull factor can be reduced to a location quotient formulation that is less complex and data intensive, that is easier to explain and understand, and that yields added information about commercial sector performance.

"Regional Adjustment Response in the U.S. Dairy Sector." Alfons Weersink and Wayne Howard (University of Guelph)
Milk production supply response at the regional level for the U.S. dairy sector is estimated through the use of dynamic dual models. Adjustment rates and elasticity measures are presented. The estimated parameter coefficients are used to simulate shifts in production resulting from price changes. A drop in milk price designed to realign market conditions is projected to be borne largely by the Corn Belt and, to a lesser extent, the western states.

Agricultural Marketing, Art Scheunemann (Washington Department of Agriculture) presiding

"An Analysis of Factors Affecting Price in Video Cattle Auctions." DeeVon Bailey and Monte C. Peterson (Utah State University)
The number of cattle priced using video auctions has increased dramatically during the past five years. A regression analysis is performed to determine the influence of lot characteristics, market information, and merchandising strategies on video auction prices. Pricing within a video auction was found to be basically the same as traditional auctions.

"CRP and Excess Grazing Capacity—Implications for the Western Livestock Industry." Robert D. Carver (University of Wyoming)
Currently, excess grazing capacity exists on public lands in the 17 western states. Additionally, over 18 million Conservation Reserve Program acres comprised primarily of grass forage will be brought back into production in the late 1990s. This paper addresses some possible implications for the western livestock industry.

"Information Asymmetries in Cherry Markets." Robert E. Rosenman and Wesley W. Wilson (Washington State University)
A test of Akerlof's lemons principle is formulated and conducted in this paper. Differences in firm behavior in the market for cherries give rise to differing quality levels. However, the cherries with the varying quality levels are sold under the same market grade resulting in the possible existence of lemons. Buyers observed the differences and paid premiums for the higher quality cherries.

"Price Variability of Feeder Cattle, Slaughter Cows, and Slaughter Bulls at South Dakota Livestock Auctions." Richard Shane and Larry Janssen (South Dakota State University)
Auction market pricing of feeder cattle and calves, slaughter cows, and slaughter bulls are examined for seven South Dakota auction locations. Pricing factors examined include auction location, time, lot size, weight, sex, and breed. Feeder cattle pricing models (R^2=.73) performed better than pricing models for slaughter cows or bulls.

Development Issues, Christopher McIntosh (University of Georgia) presiding

"Induced Agricultural Development in Tourism-Based Economies." Linda J. Cox, Richard L. Bowen, and James R. Hollyer (University of Hawaii)
This paper argues that increases in tourism change the structure of the agricultural sector but do not necessarily lead to its demise. Agriculture can use tourism as a vehicle for expanding existing domestic markets and developing new export markets. In addition, agricultural services, such as landscaping and agricultural-based visitor attractions, provide amenities beyond the confines of food production.

"Sources of Structural Change in U.S. Agriculture, 1972-82: Implications for Agriculture in the Western United States." Chinkook Lee, Darryl Wills, and Agapi Somwaru (USDA/ERS, Washington, DC)
A 47-sector input-output technique is used to analyze the changing nature of U.S. agriculture. The conclusion of this analysis is that most changes in agricultural sector output during 1972–82 were due to changes in the level and composition of final demands rather than to changes in technical coefficients.

"Women's Employment in Rural High Tech Manufacturing." Steven M. Smith, Anke K. Wessels (Pennsylvania State University), and David L. Barkley (University of Arizona)
(No abstract)

"Scale Economies, Agglomeration Economies and the Cumulative Causation Hypothesis: Implications for U.S. Rural Development." Bruce A. Weber and Binayak Bhadra (Oregon State University)
Growth-induced scale economies and agglomeration economies underlie a cumulative causation model that could explain the divergent growth rates of U.S. rural and urban regions in the 1980s. Given the relative specialization of rural areas in industries with weak agglomeration economies, the industrial restructuring of the U.S. economy toward strongly agglomerative sectors augurs poorly for rural economies.

Farm Management, David Lambert (University of Nevada, Reno) presiding

"The On-Ranch Retained Ownership Decision—In Periods of Relatively Low Prices Versus Relatively High Prices." Dillon M. Feuz (Colorado State University) and W. Gordon Kearl (University of Wyoming)
A linear programming model was used to depict a cattle ranch in Wyoming. On-ranch retained ownership was then analyzed. In periods of low prices, retained ownership of calves significantly increased ranch profits. Profits also were increased through on-ranch retained ownership in periods of high prices, but the differences were smaller.

"Selection and Development of the Replacement Asset: The Case of the Replacement Beef Heifer." Paul H. Gutierrez, Norman L. Dalsted, and Yvonne C. Jonk (Colorado State University)
Optimal replacement theory research in the area of breeding livestock can be faulted for not focusing on the biological and economic efficiencies of selecting and developing breeding females. This re-

search presents a methodology for assessing biological and economic efficiencies in the selection and development of the replacement beef heifer.

"The Effect of Usage on Optimal Tractor Replacement." Gregory M. Perry (Oregon State University) and Clair J. Nixon (Texas A&M University)
Numerous papers have addressed the optimal equipment replacement problem, considering such factors as economic depreciation, taxes, and inflation. This paper suggests that usage levels and repair cost patterns are of greater importance in optimal tractor replacement strategies. An improved replacement model is derived and used in the analysis.

"An Evaluation of Financial Stress Abatements for an Oklahoma Farm Situation." George B. Wallace (USDA/ERS, Washington, DC) and Harry P. Mapp (Oklahoma State University)
The performance of a financially stressed crop and livestock farm is simulated over five years using Integrated Farm Financial Statements. The analysis evaluates impacts of financial abatements, including interest rate reductions, equity infusions, equity infusion/interest rate reductions, debt reductions, and sale of assets on farm liquidity, solvency, and profitability.

Land and Resource Economics, Bart Eleveld (Oregon State University) presiding

"A Stochastic Dominance Analysis of Alternative Land Control Strategies in the Red River Valley." Cole R. Gustafson (North Dakota State University)
Farmers' preferences for alternative land control strategies are highly conditional on the terms of each arrangement in a whole-farm simulation analysis of a representative North Dakota farm. Profitability of alternative strategies and methods of financing were evaluated using the criterion of stochastic dominance.

"Integrating Low-Input Sustainable Agriculture, Conventional, and Intensive Cereal Management Production Practices into Farm Specific MEY Production Plans." Harlan Hughes and Frayne Olson (North Dakota State University)
North Dakota farmers are looking to research and extension for information on Maximizing Economic Yields (MEY). Under current government programs, our MEY simulator suggests that the profit-maximizing production system changes with the level of available operating capital. Unlimited operating capital favors intensive farming systems while limited operating capital favors low-input sustainable farming systems.

"Farmer Economic Evaluation of Sustainable Agriculture in South Dakota." Donald C. Taylor and Thomas L. Dobbs (South Dakota State University)
The collective judgment of 32 seasoned veterans of sustainable agriculture in South Dakota is that yields are lower, but profits higher, with sustainable rather than conventional farming practices. That these farmers have continued to follow sustainable practices for an average of 14 years each is additional evidence for the longer-term economic sustainability of low chemical input farming.

Agricultural Marketing, Larry Summers (USDA/ERS, Washington, DC) presiding

"Determining Futures 'Hedging Reserve' Capital Requirements." Steven C. Blank (University of California, Davis)
A model for determining funding requirements for uninterrupted operation as a hedger is presented. Hedging marking-to-market requirements are reduced as cash market liquidity increases and basis risk is reduced. Yet, trading limitations hedgers face raise funding requirements. Therefore, some hedgers' funding requirements are higher than those of speculators in the same market.

"The Impact of the Loan Rate on Futures Trading Volume." Scott Chambers (New Mexico State University), Colin Carter (University of California, Davis), and Marvin Hayenga (Iowa State University)
This paper explores the interaction of the government-established loan rate and the volume of futures trading. A theoretical model of producer, processor, and speculator decisions regarding futures trading is presented and evaluated under the presence of a government-established loan program. While it was expected that a price floor would reduce the level of futures trading volume due to the uncertainty of the speculative response, the theoretical development shows that the overall effect is indeterminate. The empirical section, however, demonstrates that a government price support reduced futures trading volume.

"Feeder Cattle Options and Futures: A Comparison of Marketing Tools for Stocker Operations." Stewart Kregg McCollum, Robert D. Carver, Dale J. Menkhaus (University of Wyoming)
The overall objective of this study is to provide price risk-reducing marketing strategies. Using standard

mean variance analysis as a primary performance criterion for 39 different marketing alternatives, the marketing strategies which performed best over the 12-year test period were futures strategies and option fence strategies.

"Basis Behavior at Missouri Corn Markets Before and After Removal of Trading Limits on Nearby Futures Contracts." Francis McCamley and Richard K. Rudel (University of Missouri, Columbia)
Soon after the Chicago Board of Trade removed trading limits for nearby agricultural commodity contracts, there was concern that the behavior of bases relevant for Missouri grain producers had changed. That conjecture was explored by comparing corn basis behavior during April through November of 1988 with corn basis behavior during 1979 through 1987.

Economic Issues, Paul Turek (South Carolina State College) presiding

"Agricultural Bank Performance under Alternative Risk Aversion and Deposit Feedback Scenarios: A Simulation." Douglas G. Duncan (USDA/ERS/ARED, Washington, DC)
A deterministic, recursive commercial bank simulation model is used to evaluate performance indicators under increasing risk aversion, varied deposit feedback allocation, and noninterest operating cost reduction. More risk-averse banks are shown to make relatively fewer loans and deposit feedback impacts funds' costs. Cost control is critical to increased profitability.

"Modeling the Timing of Business Firm Exits." Peter Garrod and Walter Miklius (University of Hawaii)
Previous theoretical studies of the timing of business exits have employed two different approaches—sequential decision-making models or models based on gambler's ruin. Both approaches are evaluated. Simple models of the exit process are developed showing that both types of models are capable of generating the observed patterns of firm mortality. Reasonableness of the assumptions and the importance of key variables in the two models are tested using a case study of restaurant exits. Gambler's ruin models provide a realistic descriptive model of the environment in which a large portion of the industry operates and of the decision process and may, therefore, provide a potentially useful approach for modeling the exit process in other industries dominated by small firms.

"Issues of Chapter 12 Bankruptcy Legislation: Analysis of Chapter 12 Bankruptcies in South Dakota." Burton Pflueger (South Dakota State University), Mark Goodenow (Southwest State University, Minnesota), Larry Janssen (South Dakota State University)
Telephone interviews were conducted with South Dakota attorneys and extension farm management specialists. Major areas of agreement and disagreement on the effectiveness of Chapter 12 bankruptcies are discussed. Discussion points include asset valuations, timeliness of assistance provided and reorganization process, and suggestions for improvement of the Chapter 12 bankruptcy process.

"The Influence of Selected Product and Demographic Characteristics on Beef Purchasing Patterns." Robert L. Pingetzer, Dale J. Menkhaus, Glen D. Whipple, and Ray A. Field (University of Wyoming)
Purchasing patterns for beef roasts and steaks are related to selected product and demographic characteristics using a logit analysis. Results suggest that health factors are important in the buying patterns for roasts and steaks. However, purchasing patterns are not always consistent with expressed concerns regarding these factors.

International Trade, Frank Dooley (North Dakota State University) presiding

"Dairy Policy of Pacific Traders: Potential for Conflict with the United States." Don Blayney (USDA/ERS, Washington, DC)
A large proportion of U.S. agricultural trade flows to Pacific areas. Agricultural policy adjustments create conflict among Pacific traders of dairy products. Dairy policies of four major actors in Pacific dairy trade are reviewed, and their implications for U.S. entry into the international dairy market are presented.

"An Economic Analysis of the Impact of Removing U.S. Import Quotas on Sugar." Steven A. Neff (USDA/ERS, Washington, DC)
Many GATT members object to the 1955 waiver granted exclusively to the U.S. Under its authority, the U.S. maintains import quotas on sugar. This paper uses a multicommodity comparative statics simulation framework to evaluate three alternative policies, finding an equivalent tariff more feasible than deficiency payments or a free market.

"The Impact of Lamb Imports on U.S. Sheep Products Markets." Glen D. Whipple, Dale J. Menk-

haus, and John P. Hewlett (University of Wyoming)
Theoretical and empirical models of the U.S. sheep industry are developed. The empirical model is simulated to determine the impact of lamb imports on U.S. lamb and wool markets. The model indicates that U.S. sheep producers' breeding flocks, lamb and wool outputs, and revenue are modestly reduced by lamb imports.

Range Economics, John R. Ellis (Washington State University) presiding

"Multiple Use of Public Rangeland: An Evaluation of Antelope and Stocker Cattle." Chris T. Bastian, James J. Jacobs, and Larry J. Held (University of Wyoming)
Biological data and linear programming were used to estimate a production possibilities frontier for antelope and stocker cattle on Wyoming's Red Desert. The wide range of marginal rates of substitution (−.094 to −11.167) suggest benefits from cattle and antelope must be extremely different before "multiple use" is not optimal.

"An Incentive-Based Wild Horse Management System on Public Rangeland." Ray G. Huffaker (University of Tennessee), B. Delworth Gardner (Brigham Young University), and James E. Wilen (University of California, Davis)
The objective is to theoretically analyze a mechanism for controlling wild horse and livestock densities on public rangelands. The mechanism incorporates key ecological and economic parameters and is designed to be consistent with public interests in the protection of wild horses, the multiple-use and sustained-yield management of rangeland vegetation, and the prevention of economic harm to the western livestock industry.

"Theoretical and Empirical Advantages of Truncated Count Data Estimators for Analysis of Deer Hunting in California." John B. Loomis and Michael Creel (University of California, Davis)
Truncated Poisson and truncated negative binomial count data models, as well as standard count data models, OLS, nonlinear normal, and truncated nonlinear normal MLE were used to estimate demand for deer hunting in California. A large sample (N = 2,223) allowed random segmenting of the data into specification, estimation, and out-of-sample prediction portions. The new estimators are found to be more appropriate for estimating and predicting demand and social benefits than the alternative estimators based on a variety of criteria.

"Grazing Impacts to Forage Production and the Rangeland Stocking Rate Decision." L. Allen Torell, William W. Riggs (New Mexico State University), E. Bruce Godfrey, and Kenneth S. Lyon (Utah State University)
Traditional economic stocking rate models have not examined impacts of current grazing decisions on future forage production, impacts that have always been considered important to range managers. This paper develops a dynamic economic model to investigate the importance of these impacts. Results indicate that animal performance falls as stocking rates are increased, which drives the economic stocking rate decision. Intertemporal forage production impacts are of minimal importance when the range is stocked at economically optimal levels.

Research Approaches, David Price (Washington State University) presiding

"Rational Expectations without Equilibrium: The Case of Rice Production in Taiwan." Chung-Huang Huang (National Tsing Hua University, Taiwan)
No unanimous testing results about the rational expectations hypothesis (REH) have been achieved. Previous empirical conclusions from testing REH failed to include the following factors: (*a*) functional forms of production and the structure of adjustment cost term, (*b*) ways of specifying the laws of motion for exogenous variables, (*c*) the market equilibrium condition, and (*d*) assumptions of farming goals. This paper used five models, each displaying a different structure of these factors. The model with the market equilibrium constraint resulted in the worst fit. The excess supply of rice in Taiwan in the past few years was explained.

"Perversion of Risk Aversion: An Application to Farm Planning and Intertemporal Resource Allocation." John G. Lee (Louisiana State University) and Ronald D. Lacewell (Texas A&M University)
Simulated crop yields and prices were combined to provide input into a whole-farm recursive quadratic programming model to assess optimal temporal crop mix and rate of groundwater extraction on the Texas Southern High Plains. Risk-averse preferences in crop mix selection resulted in reduced cumulative groundwater extraction but an increase in the intertemporal variability of net present values relative to the risk-neutral scenario.

"Analysis and Comparison of Alternative Estimations of Crop Yield Probability Distributions." Gerald Toland, Jr., Brian H. Schmeising (South Dakota State University), and J. Roy Black (Michigan State University)

Crop yield probability distributions (CYPDs) were estimated using elicitations, crop yield capacity functions (CYCFs) and historical frequencies. Corrected ordinary least squares were practical and inexpensive for deriving CYPDs from CYCFs. County-level CYCF-derived CYPDs were determined to be superior to historical-frequency CYPDs to approximate means of elicited farm-level CYPDs.

Water Issues, Ali Emami (Oregon State University), presiding

"Reform of Water Institutions and Rent Creation: The Hawaii Case." Richard L. Bowen, James E. T. Moncur, and Richard L. Pollock (University of Hawaii)
Hawaii is faced with a basic choice of institutions for the allocation of groundwater rights—a choice between private ownership/market transfers and public ownership/government allocation. A model is developed to estimate rent creation over time. The model results estimate that privatization would allow several large landowners in Oahu, Hawaii, to recoup at least $100 million in rents, with no commensurate "rent creation" effort. Given the questionable nature of this large wealth transfer, privatization without compensation is rejected in favor of a more tailored institutional response to increasing water scarcity.

"Sizing Multipurpose Reservoirs: A Methodological Approach and Application." George Oamek (CH2M Hill, Sacramento, CA) and Larry Schluntz (Bureau of Reclamation, Denver, CO)
The Bureau of Reclamation's shifting emphasis from a construction oriented to a water management agency has initiated the development of analytical tools for estimating marginal benefits of alternative reservoir sizes. This analysis presents a portion of the methodological approach for estimating marginal benefits and applies it to a case study.

"Economic Efficiency of Erosion and Water Pollution Control in an Agricultural Watershed." Tony Prato (University of Idaho and University of Missouri, Columbia) and Hongqi Shi (Washington State University)
This paper compares the social economic efficiency of erosion control and surface water pollution control (riparian) strategies in reducing erosion and water pollution in an agricultural watershed. The erosion control strategies generate less total erosion and water pollution but are less efficient and equitable than the riparian strategy.

Programming Issues, Jim Kliebenstein (Iowa State University) presiding

"Characteristics of Microcomputer Usage and Determinants of Microcomputer Success in Agribusinesses." Gregory A. Baker (Santa Clara University)
Characteristics of microcomputer usage and determinants of successful computerization in agribusinesses were assessed. Results indicate that the agribusiness manager can influence system success by becoming personally involved in system development. Organizational and managerial characteristics did not influence microcomputer success, although they were related to the agribusiness' decision to adopt microcomputers.

"A Practical Way to Obtain Near-Optimal Solutions (NOS) in Linear Programming." Alejandro Galetto, Hisham El-Osta, and Glenn A. Helmers (University of Nebraska)
Two methods, Hop, Skip, and Jump and Random Generation, are applied to a crop-livestock enterprise in Argentina to obtain a set of suboptimal solutions. They show a potential for diversification with many solutions undominated, in the sense of first-degree stochastic dominance, by the LP optimal solution.

"Designing Expert Systems for Effective Delivery of Extension Programming." Russell Gum (University of Arizona) and Steven C. Blank (University of California, Davis)
Expert Systems offer potential to be important additions to the current methods used to deliver extension programming to clients. This paper discusses the design of such systems from the viewpoint of learning theory and cost effectiveness.

"Activity Specification and Input Risk Aversion in Risk Programming Models." Gary Thompson (University of Arizona)
Specification of extraneous activities in linear programming models may be confounded with specification of fewer activities and input supply covariances in quadratic programming models. Specification searches among alternative linear and quadratic programming models are developed using validation techniques.

Conservation Reserve Program, Howard Thomas (USDA/Soil Conservation Service, Washington, DC) presiding

"Targeting Highly Erodible Cropland for Retirement: A Program to Supplement the Conservation Reserve Program." John R. Ellis, Jerome Chvilicek (Washington State University), and R. Dennis Roe (Whitman County Soil Conservation Service)
Mixed-integer and separable programming techniques were used to determine the minimum acceptable payment rate required to grass out all class 6e cropland within an eastern Washington watershed. A five-year contract with establishment cost shared and incentive payments over three years were examined. Expectations concerning availability of CRP and the yield of subsequent cropped acreage after the five-year period were found to be major determinants of acceptable payment rates.

"The Conservation Reserve Program: Determinants of Participation in the Northwestern States." Olaf Kula (USDA/ERS, Washington, DC)
This study reports the results of a logistic regression using ASCS records of Conservation Reserve Program (CRP)-eligible producers in Oregon, Washington, and Idaho. Farms with higher gross sales, owner-operated farms, and the most highly erosive lands were the least likely to be enrolled in the CRP. A dummy variable for state was highly significant.

"Economic Impact of the Conservation Reserve Program in North Dakota." Timothy L. Mortensen, F. Larry Leistritz, Jay A. Leitch, Randal C. Coon, and Brenda L. Ekstrom (North Dakota State University)
Short-run economic impacts of the Conservation Reserve Program (CRP) in North Dakota are estimated using an input-output model together with results from a statewide survey of CRP participants. Total business activity was reduced .5% at the state level and .9% for the most affected region, and employment was reduced by about 2,400 jobs statewide.

International Trade, Patricia Lindsey (Oregon State University) presiding

"Reexamining the Importance of Exchange Rate to U.S. Farm Exports." Mary E. Burfisher (USDA/ERS, Washington, DC)
(No abstract)

"Quality Changes and the Volume of Trade." Bruno Larue and James Rude (University of Guelph)
This paper addresses the question of how the volume of trade is affected by perceived changes in quality. A simple general equilibrium trade model for a "small" importing country is developed with a Lancaster type utility function which depends on the characteristics of goods. Given a fixed quality trade-off between the foreign and domestic product, the price elasticity of import demand determines if the volume of imports will increase when the quality of the imported product is upgraded. Imports will increase (decrease) if the import elasticity is greater (less) than one.

"An Analysis of the Japanese Demand for Beef and Some Implications of the 1988 U.S.-Japanese Beef Agreement." Biing-Hwan Lin (University of Idaho), Hiroshi Mori (Senshu University, Japan), William D. Gorman (New Mexico State University), and Neil R. Rimbey (University of Idaho)
Results of an analysis of the Japanese demand for beef and the profitability of producing longer-fed beef for the Japanese market suggest that the 1988 beef trade agreement between the U.S. and Japan may provide the U.S. beef industry with an opportunity to penetrate the high-valued market niche in Japan.

"Quality and Price Competition in the International Wheat Market." William W. Wilson and Rebecca Grosz-Heilman (North Dakota State University)
The Input Characteristic Model is developed to analyze the role of price and quality in exporter wheat competition. The model was applied to the United Kingdom wheat market which produces flour with domestically produced wheat and imported hard wheats. Results were used to identify critical quality parameters as well as the impact of relative prices on import demand.

Farm Programs and Policies, Gene Nelson (Oregon State University) presiding

"Government Intervention in Agriculture: A Regulatory Approach." David W. Skully (USDA/ERS/ATAD, Washington, DC)
This paper employs the economic theory of regulation to explain the pro-consumer bias of food and agricultural policy in LDCs and its pro-producer bias in industrialized economies. In contrast to endogenous tariff empirical research which uses Nominal and Effective Rates of Protection for observations, this paper uses producer subsidy equivalents and consumer subsidy equivalents developed by the U.S. Department of Agriculture and OECD.

"Buffer Fund Price Stabilization under Rational Expectations." John Spriggs (University of Saskatch-

ewan) and G. C. Van Kooten (University of British Columbia)
Monte Carlo simulation of a commodity stabilization program is used to demonstrate that when agricultural producers exhibit rational expectations it is no longer clear that price stabilization provides unequivocal benefits to producers or consumers. It depends on the structure of the model and the particular stabilization rule used.

"The Demand for Pesticide Use: The Effect of Farm Programs." Philip Szmedra and Craig Osteen USDA/ERS, Washington, DC)
A simultaneous equation econometric model was used to explain factors affecting the demand for agricultural pesticide use. Results indicated that federal farm program participation stipulating land set-aside directly affected pesticide use and that the acreage effects of withdrawing land from production outweighed the input substitution effects of pesticides for land. Environmental protection efforts are, therefore, enhanced by maintaining land set-aside and retirement programs as stipulations for enrollment in commodity programs.

"Farmer and Taxpayer Cost Effectiveness of the 1985 Conservation Provisions." Douglas L. Young (Washington State University), David J. Walker (University of Idaho), and Paul L. Kanjo (former Washington State University student)
A mixed-integer programming model estimated annual cost per ton (t) of soil conserved to satisfy conservation compliance on a southeastern Washington county with wide variation in land productivity. Given a uniform county-wide Conservation Reserve Program bid cap, compliance costs by subregion ranged from −$1.81/t to $1.50/t for farmers and from $2.79/t to $.84/t for the government.

Agricultural Adjustments, Clayton Ogg (U.S. Environmental Protection Office, Washington, D.C.) presiding

"Selecting Risk-Efficient Crop Insurance Alternatives for Northeast Kansas Corn/Soybean Farms." Jayson K. Harper, Jeffery R. Williams, and G. Art Barnaby (Kansas State University)
Concerns about the drought of 1988 continuing into 1989 have led to increased interest in the use of crop insurance to mitigate the effects of low yields on farm income. This paper analyzes the selection of crop insurance yield guarantee levels and indemnity prices based on risk preferences for corn/soybean farmers in northeastern Kansas. Using stochastic dominance with respect to a function analysis, it was determined that for other than the most risk-preferring producers, some level of crop insurance is contained in the preferred set of strategies. For the most risk-averse producers, the highest yield guarantee level and indemnity price election are preferred.

"The Emergence of Structural Adjustments in Response to Economic Policy Reforms: New Zealand Agriculture in 1989." Warren E. Johnston (University of California, Davis) and Ron A. Sandrey (Lincoln College, New Zealand)
In 1984 the New Zealand government removed direct and indirect governmental assistance to agriculture as part of a general industries policy relating to competition, taxation, marketing, and risk bearing. The change has had severe repercussions. Adjustment processes have been frustrated by adverse climatic events, as well as slower than anticipated changes in key macroeconomic variables—continuing high interest and exchange rates. Total farm debt has increased by nearly two and a half fold since 1980. Over the same period, gross agricultural production increased by only 70%. Agriculture's contribution to Gross Domestic Product (GDP) increased more slowly, and its relative share of GDP has fallen from 10.8% to 5.9%. Land values have fallen substantially in response to more market related prices in the pastoral sector.

"The Relative Riskiness of Fixed Versus Flexible Crop Rotations in the Brown Soil Zone of Southwestern Saskatchewan." W. P. Weisensel, R. A. Schoney (University of Saskatchewan), and G. C. Van Kooten (University of British Columbia)
A Monte Carlo simulation model of net returns to fixed and flexible cropping strategies for the brown soil zone of Saskatchewan is used to value information incorporated in a flexible cropping strategy. Further, the relative riskiness of each of the strategies is evaluated using stochastic dominance. Flex-cropping based on available soil mosture at seeding time is the most profitable risk-efficient cropping strategy. However, the value of measuring available soil mosture in the spring depends crucially on the level of confidence the decision maker has in these measurements.