Abstracts of Contributed Papers: WAEA Meetings, July 8–10, 1984, San Diego, California

Farm Resource Management (John Yanagida, University of Nevada, Chairman)

"Identifying Optimal Crop-Share and Tenure Arrangements for Tenants and Landowners: A Case Study in Texas." Gregory M. Perry, M. Edward Rister and James W. Richardson (Texas A&M University)

A simulation model was used with stochastic dominance decision criteria to determine tenant's and landowner's preferences for alternative crop rotations and crop-share arrangements in the Texas Upper Gulf Coast region. Results indicated that optimal strategies for a tenant may conflict with those of the landowner. Preferred crop rotations and tenure arrangements are indicated to be interdependent considerations and affected by the tenant's and landowner's risk preferences among other factors.

"Irrigated Land Value Impacts of Rising Energy Costs in the Pacific Northwest." Jon P. Herrell and Norman K Whittlesey (Washington State University)

An asset valuation model is used to estimate land value impacts of changing pump lifts and electricity rates for mid-Columbia Basin deep well farms. Short and long run net profit effects are assessed and associated land values calculated. Results illustrate severe economic problems for high pump lift, high cost farms. Approximately 300,000 irrigated acres with pump lifts over 200 feet are in serious economic jeopardy due to the rising energy costs. Policy questions concerning regional farm failures, decreasing land values, and aquifer depletion are raised, illustrating the need for improved benefit-cost analyses on which to base political action.

"Accounting for Rainfall Variability in the Economic Evaluation of a Range Improvement." Kimberly A. Spielman (Nevada Employment Security Department), Ronald L. Shane and Thomas R. Harris (University of Nevada, Reno).

Net present values (NPV's) of a crested wheatgrass investment are calculated for a representative Elko County, Nevada, cow-calf operation using constant prices and a six percent rate of discount. Utilizing a bioeconomic simulation model, variability in rainfall over time is linked to variability in ranch net returns. Study results suggest that for agricultural firm investments which alter effects of weather on production, there may be large numerical differences in NPV's computed when weather risk is or is not accounted for in the analysis. Also, NPV is influenced by the pattern of precipitation following initial investment.

"An Application of Linear Dynamic Programming to Evaluate Long-Run Returns From Selected Irrigation Systems in the High Plains." Arthur Stoecker and Gregg Lloyd (Texas Tech University)

A two-step method of linear and discrete dynamic programming was used to determine the optimal level of investment in irrigation wells and irrigation distribution systems under alternative interest rates, crop prices, and energy costs. Three distribution systems considered: a conventional furrow system, a low-pressure central pivot system, and a very low-pressure pivot with drop emitters and furrow dikes.

The derived long term investment break-even points and short run shutdown points were sensitive not only to changes in the economic variables listed above but also to producer specific factors such as the initial groundwater supply and the present irrigation system.

Agricultural Policy (Thomas Miller, ERS USDA, Colorado State University, Chairman)

"Supply Response under PIK in California." Charles V. Moore (University of California, Davis)

In 1983, USDA accepted individual competitive bids to retire land from production. Payments were made in kind, PIK. A total of 2,362 bids were received in California. These data for cotton indicated that bids increased with farm size and water cost. For wheat and corn, bids were negatively related to farm size but positively related to water costs. Regional differences were discernible for cotton and irrigated wheat in the response to this offer. Competitive whole base bids provided a Treasury cost minimizing method of removing crop land from production as compared to the 10-30 PIK program but injects less income into the agricultural sector.

"Will USDA's Conservation Reserve Program Make Erodible Land Retirement Profitable?" Dana L. Hoag and Douglas L. Young (Washington State University)

Western Journal of Agricultural Economics, 9(2): 370–376

This paper presents a mathematical model incorporating production returns and government payments to evaluate how selected past, present, and proposed USDA conservation and commodity programs will influence incentives to retire erodible cropland. Analysis revealed that USDA's new conservation reserve program will make commodity programs reinforce rather than dilute incentives to retire erodible cropland.

Application to a southeastern Washington wheat production region revealed that the conservation reserve greatly diminished disincentives to retire erodible land, but that strengthening the program by providing farmers supplemental annual payments per retired acre, as proposed by legislation before Congress, would likely still be needed.

"Analyzing Dairy Price Support Policies Via Optimal Control." Robert B. Wharton (Louisiana State University) and Ronald C. Mittelhammer (Washington State University)

This paper presents an approach to dairy policy planning which can contribute to more efficient implementation of the provisions of the price support program and can suggest tradeoffs among policy objectives that are defensible based on policy performance. This is done in a control theory framework by minimizing a quadratic objective function subject to an estimated econometric model of the dairy industry. In an intertemporal planning context, the approach addresses CCC buying and selling activities in support of milk prices in terms of both the achievement of support prices and adherence to a federal budget constraint on price support operations.

"An Analysis of Rail Branch Line Abandonment Decisions in Western Canada." John Spriggs and G. C. Van Kooten (University of Saskatchewan)

In this paper, factors affecting the Canadian Transportation Commission's decisions to abandon certain rail branch lines in western Canada are examined. A conceptual model of the welfare effects of branch line abandonment is presented. It is argued, via this model, that the wealthier agricultural producers are more likely to have branch lines in their vicinity retained since they are better able to put pressure on the Commission through the public hearing process. Empirical results from a qualitative response model indicate that this is indeed the case.

"Private Rangeland Improvement in the Great Plains: An Analysis of Investment Needs in 1985 and 1990." Giles T. Rafsnider and Melvin D. Skold (Colorado State University)

Econometric projections of beef cow numbers and private rangeland conversion to cropland were made. These drove a mathematical programming analysis estimating minimum investments in improvements which will satisfy range forage grazing requirements, assuming constant 1980 dollars and technology. Annual cost by 1985 was $27.6 million rising to $44.5 in 1990. Distributing improvements to meet conservation and other policy goals increase costs by 15 and 13 percent, respectively. Revenue streams based on 1980 private rangeland grazing fees would more than support all investment levels. Range improvement appears to be both necessary and a cost effective way of supplying forage.

Price Forecasting and Discovery (Neilson C. Conklin, Colorado State University, Chairman)

"An Evaluation of the Rice Outlook and Situation *Price Forecasts." Emmett W. Elam (University of Arkansas)*

The *Rice Outlook and Situation* (ROS) forecasts were compared to the forecasts of a univariate Box-Jenkins (BJ) model. On balance, the ROS forecasts had lower mean-square and mean absolute forecast errors than the BJ model forecasts. Both sets of forecasts were discovered to be unbiased and neither showed any tendency to under (over) estimate high prices and over (under) estimate low prices. Furthermore, based on the concept of conditional efficiency as developed by Granger and Newbold, the BJ forecasts were found not to add any information that might improve forecast accuracy beyond what was already incorporated in the ROS forecasts.

"Alfalfa Hay Price and Attribute Relationships from a Computer-Assisted Market." Clement E. Ward (Oklahoma State University)

HAYMARKET, a computer-assisted marketing system for alfalfa hay, was started in Oklahoma in 1983. Hay is described to buyers according to objective and subjective attributes. An econometric model was estimated to determine variables preferred by buyers. Buyers paid more for higher quality hay (higher protein). They preferred bale types that reduced freight costs. Buyers were interested in color despite a clear relationship to feeding quality. Variables not significant were sale lot size, maturity, foreign matter, and cutting. HAYMARKET appears to be a step toward marketing alfalfa hay on the basis of hay quality, as was originally intended.

"A Comparison of Techniques for Forecasting Seasonal Price Patterns." Martin Blake, Mohammed Hussain and Tom Clevenger (New Mexico State University)

This paper presents four different techniques which are commonly used to forecast seasonal price patterns and compares their performance using monthly U.S. hay price data for 1955 through 1982. The four techniques 1) Box-Jenkins Techniques, 2) use of

dummy variables, 3) use of simple autoregressive relationships to roll price forward or backward from some starting price level and 4) use of price mapping equations which identify the relationship of each monthly price to the season average price. The price mapping techniques performed the best with the simple autoregressive models a close second using the U.S. monthly hay price data.

"A Comparison of Price Quotations and Market Prices in the West Texas Cotton Market." Don E. Ethridge (Texas Tech University) and Kenneth H. Mathews (North Carolina State University)

A sample of producer market prices for cotton in the West Texas market in 1980–81 and 1981–82 was compared to the Daily Spot Cotton Quotations (DSCQ) to determine the accuracy of DSCQ as indicators of producer prices. From the 42,000 observed pairs of prices and analyses of price differences and discount patterns, the DSCQ prices were found to be reliable indicators of producer market prices for the commonly traded quality groups during the part of marketing season of greatest producer sales. However, their accuracy diminished with deviation from those conditions.

Community and Human Resource Development. (Dean Schreiner, Oklahoma State University, Chairman)

"The Demand for Graduate Education: Nationally and at Oregon State University." Ahmad S. Khan (Universidade Federal do Ceara) and Richard S. Johnston (Oregon State University)

Empirical analysis supports the hypothesis that graduate education is an investment good. At the national level the ratio of the number of actual to the number of potential enrollees is negatively related to the unemployment rate for technical and professional workers and positively related to real family income levels, although evidence with respect to the latter is mixed. An empirical analysis at the local level, using cross sectional and time series data for Oregon State University, reveals substantial differences across disciplines and indicates that tuition levels are negatively related to the number of new enrollees, although the demand is tuition (price) inelastic. Entrance requirements (minimum grade point averages) and potential monetary gains are positively related to new enrollments. Thus, the effects of entrance requirements as a proxy for quality may be overwhelming their role as rationers of demand.

"The Estimation of Off-Farm Labor Supply Functions in Saskatchewan." S. J. Gibney, W. H. Furtan and G. C. Van Kooten (University of Saskatchewan)

In Saskatchewan there has been a large increase in both the number of operators who reported off-farm work and the average number of days of off-farm work reported. In this paper, wage rate equations are estimated for those operators and farm wives who worked off the farm. Since the estimated wage equations are used to forecast shadow wage rates for those who did not work off the farm, a Heckman procedure is employed to test for sample selectivity bias. Subsequent estimates of the labor supply elasticity for a cross-section of farm operators suggest that the supply of off-farm labor is very responsive to the shadow wage rate, especially for women.

"Economic Implications of Applying Effluent for Irrigation in the Texas High Plains." Raymond F. Victurine, H. L. Goodwin and Ronald D. Lacewell (Texas A&M University)

Growing rural communities face pressure to provide services to their populations. Wastewater treatment represents one of the many services in which communities must invest. The choice of an appropriate treatment facility represents a major decision and hinges on such factors as technical feasibility, cost and treatment effectiveness so that there is compliance with the water quality standards embodied in the Clean Water Act.

This study focuses on one particular treatment method, that of applying sewage effluent to land for purposes of agricultural production. The study area selected is the Southern High Plains region of Texas. Several scenarios involving two farm sizes, two storage capacities, irrigation with varying amounts of effluent and irrigation under a combined effluent and groundwater regime were established and net returns maximized for each. The net returns from irrigating with effluent were compared to those of dryland and groundwater irrigated farms to derive net benefits from effluent use. The results demonstrated increases in net returns of up to 200% using only effluent over a dryland scenario and up to 78% over one for groundwater irrigation. When net returns for scenarios using a mixture of both effluent and groundwater are compared to dryland and groundwater irrigated farms, the respective increases in returns are 170% and 65%.

"Estimation of the Municipal Demand for Water in Kuwait: Methodological Issues and Empirical Results." Mohammad H. Al-Qunaibet and Richard S. Johnston (Oregon State University)

This study utilized, for the first time, a demand function derived from the Stone-Geary utility function, thereby permitting an estimate of the expected minimum amount of water necessary for daily needs (called "the domestic baseline water use level"). Using monthly data from Kuwait, this demand function gave greater price elasticity estimates but smaller income elasticity estimates than those of other countries. It was estimated that the domestic baseline water use level in Kuwait is about 25 gallons per capita per

day (gpcd) which is somewhat close to the U.S. estimate (64 gpcd) if one takes into consideration the price differentials and water use habits in the two countries.

"Economic Implications of Rural Wastewater Treatment Alternatives." H. L. Goodwin, Jr., Raymond Victurine and Ronald D. Lacewell (Texas A&M University)

Growing rural communities face pressure to provide various services, among them wastewater treatment, to their populations. Choice of an appropriate treatment facility represents a major decision hinging on technical feasibility, cost and treatment effectiveness in order to comply with water quality standards of the Clean Water Act. The focus of the study involves an analysis of investment, capital and annual costs of sewage treatment plants. Average per capita sewage flow rates are determined for communities of less than 10,000 inhabitants throughout Texas. Determination of the flow rates, which range between 65 and 78 gallons per person per day, is important for plant design and irrigation planning. Both capital and annual costs for several types of treatment plants are considered. The analysis reveals that sewage systems demonstrate economies of size across capital, operation and maintenance costs. The study is intended as an aid in selecting appropriate wastewater treatment facilities for rural communities and should be of primary interest to rural decisionmakers and rural development professionals.

Risk and Uncertainty (Paul Wilson, University of Arizona, Chairman)

"Measuring Technical Efficiency Under Stochastic Production: An Application to Dairy Production." John M. Antle (University of California, Davis)

This paper shows that the output distribution moments can be used to measure technical efficiency under stochastic production and that the moments can be ordered according to the derivatives of the utility function for a broad class of utility functions. Applying the moment-based approach to California dairy production, it was found that scheduled veterinary services and management quality both affect technical efficiency, with management increasing in importance relative to veterinary services as risk aversion increases. Emergency veterinary services were found not to have a significant effect on technical efficiency.

"Determining Optimal Burning Schedules for Improvements of Macartney Rose-Infested-Rangeland Under Certainty and Uncertainty." L. Garoian, J. R. Conner and C. J. Scifres (Texas A&M University)

Macartney rose is a range management problem on approximately 500,000 acres of highly productive rangeland in southeast Texas. Roller chopping followed by prescribed burning is an economically effective treatment However, there is a relatively high degree of risk associated with implementation of an effective burn.

A methodology is developed to account for this uncertainty in a linear programming model designed to select optimal burning schedules. Model results indicate that consideration of uncertainty substantially affects net returns and optimal burning schedules. Low probabilities of successful burns produce low net returns and optimal burning schedules with frequent burning. Higher probabilities result in higher returns and less frequent burning.

"An Alternative Method For Computing Stochastically Efficient Mixtures of Risky Alternatives." Francis McCamley and James B. Kliebenstein (University of Missouri-Columbia)

Tauer's Target MOTAD model can be used to compute stochastically efficient mixtures of risky alternatives. The paper presents an alternative method which is more consistent with accepted views of the relationship between income and marginal utility. Unique solutions belong to the set of third degree stochastic dominance efficient mixtures. The method is illustrated using example data from Anderson, Dillon and Hardaker. For their example, the method in this paper yields less diverse crop mixtures than Target MOTAD does.

"Imposing Safety-First Constraints on a MOTAD Frontier." Joseph Atwood, Myles J. Watts, Larry J. Held and Glenn A. Helmers (University of Nebraska)

Various forms of safety-first behavior are discussed. A confidence interval approach is used with assumptions of normality to partition expected income-standard error space into acceptable and nonacceptable safety-first regions. MOTAD solutions are then mapped into expected income-standard error space. Selection of MOTAD solutions which satisfy various safety-first criteria is then explained. Example farm MOTAD solutions are presented as well as a demonstration of the impacts of various safety-first criteria. Finally, note is made of the fact that with nonnormality a similar procedure could be accomplished with Chebychev's inequality although the results will be much more conservative.

Agricultural Marketing and Financial Management (Jim Jones, University of Idaho, Chairman)

"Panama Canal: How Critical is This Transportation Artery for U.S. Grain Exports?" Stephen Fuller (Texas A&M University), Larry Makus (Oklahoma State University) and William Gallimore (U.S. Department of Agriculture)

Some believe Panama Canal toll rates will increase dramatically as Panama's sovereignty over the Canal

becomes complete at the end of this century. This paper focuses on the ability of Panama Canal management to extract additional toll revenues from U.S. grain traversing the Canal and the impact of increased toll rates on export grain flows. Analyses show toll rates established by a revenue-maximizing Canal management would exceed historical and current rates. A monopolizing Canal operator would have moderately increased Pacific port exports in the mid-1970's, whereas, in the 1979–82 period, Pacific port flows would have exceeded historical levels.

"A Long Hedge Strategy for Spring Stocker Purchase in the Northern Plains." David A. Jenkins, John A. Dole, III and James S. St. Clair (University of Wyoming)

An anticipatory hedge is proposed to be used in connection with a spring purchase stocker operation in the Northern Plains. A spring futures contract is purchased during the first week in January, in anticipation of the purchase of actual stocker steers during the last week in April, the futures contract being liquidated concurrently with the cash purchase. Both the CME feeder cattle contract and live cattle contracts are tested, with and without the use of a stop-loss order. Optimum procedures resulted in hedging gains in 10 of the past 13 years, and 15 of the past 20 years.

"Demand for Farm Tractor Horsepower in the United States." Donald F. Scott, Won W. Koo and Carter D. Anderson (North Dakota State University)

Demand for farm tractor horsepower in the United States is estimated using a partial adjustment model. Time period analyzed is 1964 to 1980. Separate demand functions are estimated for large and overall horsepower categories and aggregate purchases. Significant variables include deflated tractor price in current and lagged terms, deflated interest rate, and horsepower lagged one year. Results are very good statistically and generally conform to economic theory. Interest rate is highly inelastic and very similar in value across models; elasticity of price varies considerably with the larger horsepower model significantly less elastic than the small horsepower model.

"Constrained Optimum Equity Accumulation and Rates of Financing in Banks for Cooperative Loans." Ismail Ahmad (Universiti Pertanian, Majlayrin), Ken D. Duft and Ron C. Mittelhammer (Washington State University)

Districts Banks for Cooperatives provide 60–70 percent of the debt capital used by U.S. agricultural cooperatives. Newly acquired eligibility of certain borrowers has prompted many cooperative lenders to implement new equity capital programs. These changes have been shown to impact borrower effective interest rates. This paper outlines the use of a multiperiod linear program model which selects that equity capital program which maximizes net benefits to borrowers, while maintaining a specific lender equity position. Second, the paper describes the means by which the true financing rate associated with the optimim equity capital program is determined.

Farm Management and Production (Glenn Helmers, University of Nebraska, Chairman)

"An Alternative Approach to the Evaluation of Goal Hierarchies Among Farmers." Keith A. Hayward, G. C. Van Kooten and Richard A. Schoney (University of Saskatchewan)

In this paper, preliminary results of a study of the goal orderings for a sample of Saskatchewan farmers who participate in the Province's FARMLAB Program are presented. We use the method of non-binary paired comparisons which allows the respondent to indicate a degree of preference between two alternative goal statements, thereby providing more information than in the binary case. From survey data, ratio-scale scores are constructed for eight goal statements and these are regressed on a set of farm enterprise and household characteristics, and a psychological measure of motivation. The empirical results indicate that goodness-of-fit measures are better than those obtained by other researchers because a measure of psychological motivation is included as an explanatory variable for goal orderings.

"Analysis of Selected Marketing Strategies: A Whole-Farm Simulation Approach." DeeVon Baily and James W. Richardson (Texas A&M University)

A detailed whole-farm simulation model capable of simulating stochastic daily cash and futures prices was used to evaluate alternative marketing strategies for a Texas High Plains cotton farm over a 10-year planning horizon. Stochastic dominance with respect to a function was used to rank the alternative marketing strategies for risk averse, risk neutral and risk loving producers.

"Mathematical Programming Model for Examining Machinery Asset Replacement." John R. Allison and John J. Hanchar (Georgia Agricultural Experiment Station)

A linear programming polyperiod model is used to examine the simultaneous aspects of the farm machinery replacement policy for several pieces of farm equipment, which could be chosen from a set of feasible alternatives, are made in conjunction with other investment and production decisions, so that profits accruing to the farm enterprise are maximized over time. Results indicate that the farm planning situation, especially the expected gross income stream, affect the optimal replacement decision.

"Factors Influencing the Measurement of Farm Income for the U.S. and by Type of Farm." Sandra Suddendorf (Economic Research Service)

USDA farm income concepts and supporting data cause a misinterpretation and, perhaps, understatement of the income benefits received by farm operators from farming. Income adjustments concerning farm-business related income and interest paid are analyzed for the United States and by type of farm.

Methodology (Steve Buccola, Oregon State University, Chairman)

"Evidence on Heteroscedasticity Using Tobit Estimator." Chung L. Huang, Robert Raunikar, and Holly L. Tyan (University of Georgia)

This study presents the empirical results of estimating a heteroscedastic Tobit model. Household consumption data of whole broiler meat in the Western region of the U.S. obtained from the 1977–78 USDA Nationwide Food Consumption Survey were used to illustrate the effects of heteroscedasticity rejected the hypothesis of constant error variance. Consequently, when heteroscedasticity is ignored, both the income effect and elasticity suggest that income is more likely to affect the probability of consuming whole broiler meat than the quantity consumed.

"Mitigating the Effects of Truncation Bias in Estimating Recreational Demand Equations." James A. Duffield, Anthony L. Joseph and Philip I. Szmedra (University of Georgia)

Ordinary least squares may produce inconsistent estimates for recreation demand when the study sample is truncated. Until recently, computational difficulties have forced most researchers to ignore the problems of truncation bias. This study uses a truncated sample collected from Georgia's Coastal boating industry to illustrate a Tobit model which provides consistent estimates for recreational demand.

"Comparing Regulated and Unregulated Motor Carrier Rate Structures: The Problem of Heteroscedasticity." Larry Makus (Oklahoma State University) and Stephen Fuller (Texas A&M University)

The trend toward reducing economic regulation of transportation at the federal and state level continues to generate concern about impacts on transportation rates. Thus, much transportation research has focused on comparing transportation rates for regulated and unregulated carriers. This paper identifies a potential problem in using traditional statistical tests when comparing regulated and unregulated transportation rate structures. Two alternative testing procedures are suggested and applied to regulated and unregulated motor carrier rate data for six agricultural commodities. Results of the analyses are used to compare performance of the alternative testing procedures.

"Using Auxiliary Constraints to Dominate Restricted Lest Squares Estimators Under Quadratic Risk." Ron C. Mittelhammer (Washington State University)

This paper presents an estimator that under the standard assumption of the General Linear Model, including normality of disturbances, can be designed to dominate the Restricted Least Squares estimator in quadratic risk under very general conditions. The domination is achieved for any choice of symmetric positive definite weighting matrix used in defining the quadratic risk function, regardless of the correctness of the constraints used to define the restricted least squares estimator. The general problem conditions under which risk domination is achieved are identified. An illustration of the technique is provided.

Water Economics (Richard Adams, Oregon State University, Chairman)

"A Supply-Demand Analysis of Irrigation Water Use in the Texas Rice Belt." John R. Ellis, Ronald C. Griffin, and Rod F. Ziemer (Texas A&M University)

Three-stage least squares methodology is employed to estimate a system of supply and demand equations for irrigation water use in rice production for the Texas Gulf Coast region. Survey results from sixteen of the larger water supply firms in the area provided the necessary market data. Model specification allowed testing of possible structural changes due to the pricing scheme employed (volumetric vs. flat rate per acre irrigated) as well as providing other useful information of potential use in policy formulation or extension use. Estimation results indicate the importance of price in determining water use and also signal significant structural changes in supply and demand accompanying the use of volumetric pricing.

"Projected Water Demand and Price Elasticities for the Ouachita River Basin." Mike Tessaro, Larry Childress, Mark Cochran and Rob Raskin (University of Arkansas)

This paper reviews the recent increases in irrigation in the state of Arkansas and projects agricultural water demand in the Ouachita River basin for the year 1990. Demand is projected for two scenarios—one with no adoption of water conservation practices and the other with complete adoption. Price elasticities are derived for rice, soybeans, cotton and total cropland. Most demands are relatively very elastic with the exception of rice, especially when no conserva-

tion practices are adopted. On the lands highly suited to rice production, rice is the dominant crop regardless of water costs. The high elasticities show that rainfed dryland production is very competitive except on a relatively small acreage highly suited to rice production. At low water costs, soybean irrigation could expand significantly.

"Planning for Wildlife Enhancement in Federal Irrigation Projects." Jeffrey E. Hanson and Scott C. Matulich (Washington State University)

A bioeconomic planning effort aimed at enhancing potential environmental changes resulting from irrigation development in the East High region of the Columbia Basin Project, Washington, is presented. A cost effectiveness framework is employed to develop a frontier of least cost wildlife enhancement plans compatible with anticipated irrigation impacts. Planning is advocated so as to convert short-run positive spillovers of irrigation development into long-term, sustained social benefits. Contributions of environmental enhancement planning to the decision making process are discussed. Planning is advocated as an equally important, but often overlooked, mandate of federal mitigation legislation.

"Distributional Welfare Implications of Water Subsidy." Linda S. Calvin, William E. Foster, Grace M. Johns and Patricia Rottschaefer (University of California)

The distributional welfare implications of a subsidy on irrigation water for California rice producers are analyzed. A more general equilibrium approach than that used in previous studies is taken to determine the effects of subsidy on consumers, subsidized producers, and unsubsidized producers. The two important policy conclusions of the results are: 1) unsubsidized producers bear part of the cost of a subsidy through lower prices, and 2) consumers (taxpayers) may gain by sponsoring increased production through a selective subsidy.

"Salinity Regulation and Irrigation Development: Welfare and Conservation Implications." Douglas R. Franklin and James J. Jacobs (University of Wyoming)

The impacts of increased agricultural and energy development in Wyoming's Green River Drainage were analyzed to determine the possible "cost" to the state to meet an EPA imposed salinity regulation. The analysis incorporates a damage cost charged to "producers" for increased salinity in the river basin based on return flow, consumptive use and water conservation management strategies. The results indicated, as do other studies, that salinity is a major constraint for development of Colorado River Basin water.