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## Invited Papers

### Presidential Address

**"Graduate Programs in Agricultural Economics."** A. Gene Nelson (Texas A&M University).

Doctoral programs in agricultural economics are being impacted by budget reductions, concerns about placement, and changing student characteristics. The profession should develop a more comprehensive data base describing the Ph.D. marketplace. Individual departments should focus on the long-range planning of Ph.D. curricula emphasizing opportunities for differentiation.

### Keynote Address

**"Agricultural Economics in an Evolving Land Grant System."** Katherine Reichelderfer (Economic Research Service, USDA). Projections regarding public, political, and fiscal support for agriculture, and centralization of agricultural economics research decision making, suggest downsizing and consolidation of traditional agricultural economics research institutions. The profession can survive and thrive under these circumstances only by demonstrating its uniqueness and utilizing existing comparative advantage to broaden its constituent base.

**Session: Estimating Variability Coefficients for Agricultural Outputs, Prices, and Incomes from Historical Data.** Moderator: Harry P. Mapp (Oklahoma State University).

**"Historical Overview of Estimation of Risk Coefficients."** Wesley N. Musser (The Pennsylvania State University) and Paul L. Fackler (North Carolina State University). Variances and covariances estimated from historical data have been used to measure risk for 40 years. This paper surveys issues in this research utilizing a taxonomy of uses of the coefficients and general definitions of

risk measures. Sampling versus mean square error formulations, detrending methods, and appropriate data series are considered.

**"Kansas Wheat Yield Risk Measures and Aggregation: A Meta-Analysis Approach."** Michele C. Marra (University of Maine) and Bryan W. Schurle (Kansas State University).

A meta-analysis approach is used to investigate relationships between farm wheat yield variability and county yield variability, acres of wheat on the farm, mean wheat yield, rainfall, and detrending method. Results suggest variability is related to county variability, farm acreage, mean yield, and rainfall, and that detrending method does matter.

**Session: The Evolution of U.S.-Mexico Agricultural Trade: Conceptual Issues and Empirical Evidence.** Moderator: Linda Calvin (ERS/USDA).

**"Agricultural and Food Policies in a U.S.-Mexico Free Trade Area."** Mary Burfisher (ERS/USDA), Sherman Robinson (University of California-Berkeley), and Karen Thierfelder (ERS/USDA).

Effects of a U.S.-Mexico free trade agreement (FTA) on agriculture are analyzed using a computable general equilibrium (CGE) model, explicitly modeling agricultural and food policies, and differentiating land types. Findings suggest there is potential for Mexican farm program changes to assist agriculture's transition to a free trade environment, and that in the long term, increased capital investment will enable Mexican agriculture to benefit from free trade.

**"Agricultural Privatization in Mexico: Conceptual Issues and Potential Outcomes."** Gary D. Thompson and Paul N. Wilson (University of Arizona).

The evolving privatization of the *ejido* system in Mexico represents a challenge to the standard economic models used to analyze common property regimes. A risk-spread-

ing, safety-first model is developed, drawing on the climatological literature, to analyze the potential implications of continuing privatization efforts while recognizing that (a) approximately 75% of *ejido* lands are communal, not parcelized, lands, and (b) over 50% of Mexico's *ejido* lands are classified as arid or semiarid.

**Session: Modeling Rural-Urban Economic Interdependence. Moderator: Bruce Weber (Oregon State University).**

**"Estimating Economic Linkage Between Core and Periphery Regions: An Example from Metro Portland and Its Trade Area."** David Holland (Washington State University), Bruce Weber, and Edward Waters (Oregon State University).

During the past decade, many U.S. rural areas have lagged economically relative to urban centers, particularly in the Pacific Northwest. The research approach reviewed here is novel in that it is possible to provide reasonable estimates of economic linkage across geographic space in the face of no direct primary and only limited secondary data on these flows. The economic regions are defined in a core-periphery sense by appealing to central place theory; empirical estimates of core-periphery trade come from regional input-output accounts generated by IMPLAN.

**"Central Place Theory and Regional Input-Output."** M. H. Robison (University of Idaho).

This paper explores the bridge between central place theory and regional input-output (I-O). Common theoretical threads are reviewed and a technique is presented for constructing central place-based regional I-O models. Findings are presented from an empirical exercise in Idaho. The paper concludes by considering implications for regional economic impact assessment and economic development policy.

**"Rural-Urban Interdependence in a Computable General Equilibrium Framework."** Maureen Kilkenny (Economics Institute, University of Colorado).

A CGE model of the U.S. that distinguishes and interrelates rural and urban economic activity is constructed and used to simulate terminating farm subsidies. The impacts

depend on factor and goods market segmentation. Farm subsidies transfer income from urban to rural households. Without subsidies, rural unemployment rises and household income falls, the rural service sectors contract but manufacturing expands, and the rural cost of living declines relative to urban.

**Session: Consumer Response to Perceived Chemical Residues: Willingness-to-Pay and Price Differentials. Moderator: John Schmitz (University of Wyoming).**

**"Consumer Valuation of Reduction in Perceived Levels of Chemical Residues in Food: A Microeconomic Perspective."** Robert D. Weaver (The Pennsylvania State University).

The microeconomics of willingness-to-pay (WTP) is presented for reductions in undesirable food borne effects (UFBEs), e.g., chemical residues, natural pathogens, and saturated fats. Results indicate cost of illness, averting expenditure, and disutility of illness are components of WTP. Availability of alternative goods free of UFBEs renders UFBE exposure endogenous and WTP discontinuous in the UFBE parameter.

**"Observed Price Differentials as a Measure of Consumer Demand for Organic Produce."** Gary D. Thompson (University of Arizona) and Neilson C. Conklin (Arizona State University).

Hedonic price equations are estimated using in-store data for perishable food items: organic and conventional fresh fruits and vegetables. Retail price premia for organic produce range from 20 to nearly 70% of conventional (i.e., nonorganic) prices. Sensory defects such as bruises, rot, and insect damage had little effect on retail prices of organic and conventional produce. The Box-Cox specification of the hedonic price equations employs corrections for heteroskedasticity.

**"Marketing Fresh Organic Produce in Colorado Supermarkets."** Ed Sparling, John McKenzie, and Karen Wilken (Colorado State University).

Consumer willingness to pay premia for five organic commodities was estimated non-parametrically from 1,015 consumer responses. Premia range was 0-90%. Con-

sumer opinions regarding relative qualities of organic vs. conventional produce and results of inspectors' grading organic-conventional pairs are reported for supermarkets from the same geographical area.

**Session: Water Management and Conservation in Western Irrigated Agriculture. Moderator: Dale F. Heerman (Agricultural Research Service/USDA).**

**"ARS's Current Irrigation Research." Dale A. Bucks (Agricultural Research Service/USDA).**

ARS's irrigation and drainage research program emphasizes the "development of innovative and improved water management systems and practices to achieve effective and efficient use of water resources." Three approach elements have been identified for irrigation and drainage research: (a) development of technology for increasing water use efficiency of irrigated crops and range plants; (b) development of methods for increasing, conserving, and managing water supplies available for agriculture, for improving water quality, and for protecting cropland from flood damage; and (c) improvement of technology for storing and distributing water supplies efficiently and for improving irrigation, drainage, and salinity control systems and practices.

**"Modeling Fixed Allocatable Resources in a Primal Optimization (Programming) Multiproduct Technology Framework." Glenn D. Schaible (ERS/RTD, Water Branch/USDA).**

This paper develops a primal multiproduct technology model of irrigated and dryland crop production for western states. The model uses a restricted profit function approach consisting of a multiproduct profit function incorporating quadratic yield and total cost functions, subject to allocatable fixed land and water resource constraints, and normalization constraints.

**"Water and Land as Quantity-Rationed Inputs in Central California: Empirical Tests and Water Policy Implications." Michael R. Moore (ERS/USDA) and Ariel Dinar (University of California-Davis).**

For two inputs, water and land, a variable input model is compared to a fixed input

model using nonnested hypothesis tests. Results support the fixed input model for water, but cannot reject either model for land. That surface water is a quantity-rationed input addresses an important policy issue, recontracting for Central Valley Project water supply.

**"The Role of Irrigation in Salmon Population Recovery in the Pacific Northwest: The Impact of Changes in Irrigation Efficiency." W. Marshall Frasier, Norman K. Whittlesey (Washington State University), and Joel R. Hamilton (University of Idaho).**

Ririgated agriculture in the upper Snake River basin is characterized by low technical efficiency. A simulation model was used to evaluate the potential for enhancing stream flow for salmon migration by increasing irrigation efficiency in this region. Results indicate possible gains in spring period flows but increased variability in total annual flows.

**"The Role of Irrigation in Salmon Population Recovery in the Pacific Northwest: Prospects for a Contingent Water Market." Joel R. Hamilton (University of Idaho) and Norman K. Whittlesey (Washington State University).**

This paper examines the feasibility of a contingent water market to augment Columbia/Snake River flows and enhance the survival of endangered salmon stocks. This market would allow irrigation to retain the water in most years, but divert water to fish/hydro-power use in dry years. Estimated hydro-power benefits of such a market exceed the costs to irrigation, suggesting that the purchase of market water to augment fish flows could be funded from power revenues.

**"Impacts of Drought and Policy Options on Colorado River Basin Irrigators." James F. Booker, Ari M. Michelsen (University of Wyoming), and Robert A. Young (Colorado State University).**

Despite four years storage in Colorado River basin reservoirs, severe and sustained drought could impose small, long-term reductions in lower basin deliveries and short-term but acute reductions in upper basin use. Interstate consumptive use markets would have little additional impact on agricultural users beyond that experienced under evolving within-state markets.