Abstracts of Selected Papers

"An Analysis of the Effects of Field Operation Management on New York Dairy Farms." Dale Johnson (University of Maryland) and Robert Milligan (Cornell University)

This study examines the economic effects of crop field operation management on dairy farm businesses. Crop rotation and field operation schedules under efficient and inefficient field operation management scenarios for various representative farms are analyzed through the use of budgeting and linear programming. The effects on crop yields and quality, the feeding program, milk production levels, purchased feed expenses, crop expenses, and crop sales are determined. The resulting effects on profitability are measured. Inefficient crop management is shown to decrease profits from $1,400 to $21,700 depending on the inefficient scenario. Critical time periods and field operations are also analyzed through the use of shadow prices. Finally, the value of increasing the field capacity of machinery is determined.

"Economic Efficiency of Targeting Agricultural Nonpoint Pollution Controls." Parveen Setia and Richard Magleby (U.S. Department of Agriculture)

This paper presents estimates of the potential economic efficiency which could have been gained in a pilot study watershed from targeting agricultural nonpoint pollution control to areas contributing the most to that pollution. Results indicate that highly targeted approach could have more than doubled the economic efficiency of the control program in the pilot watershed. The estimates are based on an application of hydrologic and economic models to the Highland Silver Lake, Illinois, project of the Rural Clean Water Program.

"Rail Regulatory Reform and Changing Interregional Competitiveness in the Feed Grain Industry." Glenn C. Schmeltz and David R. Lee (Cornell University).

The interregional competitive effects of transportation deregulation are important in the Northeastern U.S. given the dependence of animal production agriculture in that region on imported feeds, generally shipped by rail. This study involves estimation of an interregional competition model of the Eastern U.S. feed industry and allied animal production sectors. Key components of the model include regional feed demand and supply equations, storage requirements and transportation costs. Rail freight rates are estimated using published tariff and Carload Waybill sample rates, and the effects of rate changes on feed quantities, shipments and prices are simulated over the 1980–1985 period for corn and soybean meal. The results show that feed prices and costs have generally decreased—in many cases, substantially—as a result of deregulation, compared to levels that would have prevailed in its absence. Feed purchasers in the Northeastern U.S. are estimated to have benefitted proportionarely more from deregulation than those in the Southeast, to an extent reversing pre-deregulation trends.

"Optimal Returns and Risk Avoidance For a Small Part-Time Forage Livestock Farm." Ian Hardie, Li-Shu Ou-Yang, Dale Johnson and Billy Lessley (University of Maryland)

This paper analyzes the trade-off between expected net return and the variance in net return over time for a representative limited resource forage-livestock farm. Optimum equilibrium farm enterprise plans are also developed using several risk programming models of the farm. Results of the analysis indicate that maximum expected annual returns over variable costs for the 85 acre part-time farm is $10,900. Optimum plans indicate a diversity of outputs, including beef, lamb, corn, and hay. All feed is produced on-farm. Decreasing risk of revenue change decreases expected net returns only slightly, while increasing the minimum likely net return in a bad year significantly. Avoidance of low net returns is accomplished by substituting stockers for lambs in the output mix. Land and labor during calving are the most limiting resources, but acquisition of additional acreage is clearly justified only if high quality cropland can be obtained.

"Potential Impacts of bovine Somatotropin on the U.S. Dairy Sector." Harry M. Kaiser and Loren W. Tauer (Cornell University)

The annual market impacts of bovine Somatotropin on the U.S. dairy sector are simulated under four dairy policy scenarios for 1988 through 2000. The scenarios include: freezing the support price at its predicted 1990 level ($10.60) for 1990 through 2000, adjusting the support price annually to keep annual government purchases of dairy products between 2.5 and 5 billion pounds, using annual cow removals to maintain support program purchases under 5 billion pounds, and utilizing a combination of support price changes and annual cow removals. Annual equilibrium values for supply, demand, and prices are generated for the farm sector and fluid and manufactured dairy product retail markets. Estimates of government purchases of dairy products and government costs for each year are reported. The results suggest that a combination of support price changes and cow removals is the most attractive policy scenario in terms of government costs and producer profits.

"Christmas Tree Buying Behavior: Natural vs. Artificial." Cathy Hamlett, Robert Herrmann, and Rex Warland (Pennsylvania State University)
Artificial Christmas trees have gained an increasing market share, causing concern to natural Christmas tree producers in the Northeast region. Primary data was used to test a hypothesized sequential probit model of buyer characteristics. The model predicted the probability of buying a Christmas tree, then if a buy decision was made, the probability of purchasing a natural tree. The people who are likely to buy trees are Christian, practice other secular Christmas rituals, have children, and spend Christmas at home. Those who buy natural trees are younger whites, having a higher income, and live in a single-family dwelling.

"Modeling China's Wheat Economy via 3SLS and Stochastic Coefficients." Catherine Halbrendt, John Mackenzie, Conrado Gempesaw, and Agnes Perez (University of Delaware)
The impacts of the Post-Mao regime's policies of economic liberalization on the People's Republic of China's wheat economy are assessed. 3SLS and stochastic coefficients models are developed to contrast the relationships between domestic wheat production, imports and urban and rural consumption, in the Maoist and Post-Mao periods. The stochastic coefficients model is shown to perform at least as well as the 3SLS model. Both models confirm that decentralized management and increased fertilizer use in the Post-Mao period have generated dramatic gains in wheat production. A growing responsiveness of imports and both urban and rural consumption sectors to relative prices and purchasing power is demonstrated.

"Evaluating Surface- and Groundwater Contamination Potentials in the Northeastern United States." Bradley M. Crowder and Wen-Yuan Huang (ERS, USDA)
A comprehensive database is used to address surface- and groundwater contamination by determining where contamination potentials exist. We determined which parts of the Northeast have the greatest potential for water-quality degradation, and assessed the implications for protecting groundwater quality. The Economic Research Service's Groundwater Database (ERSGWD) provides a consistent framework for investigating agricultural contamination of water. Boundaries of analysis range from soils to national scales. Data on soils, crop production, land use, erosion, and groundwater contamination potential are drawn from a variety of sources. Many variables can be analyzed as they affect farm profits and water quality.

"Manure Testing as a Nutrient Management Practice: A Logit Analysis of Rockingham County, Virginia Dairy Farms." John M. Halstead (University of New Hampshire), Randall A. Kramer, and Sandra S. Batie (Virginia Polytechnic Institute and State University)
Recent evidence indicates that many farmers apply two to three times as much nitrogen fertilizer as their crops require. One of the reasons for these high applications of nitrogen is a lack of consideration of the nutrient values of animal manure applied to cropland. Logit analysis of Rockingham County dairy farmers revealed that farmers' age, use of soil testing services, adjustments of commercial nitrogen applications to reflect manure contributions, farm size, and whether or not the farm had storage facilities in place were the most important factors in determining whether a farmer would use a manure testing service (as a means of promoting improved nutrient management practices) if one were provided. Small farm owners were less likely to adopt manure testing than large farm owners.

"A Policy for New Hampshire's Land Use Change Tax: An Internal Rate of Return Analysis." D. E. Morris (University of New Hampshire)
One aspect of New Hampshire's Current Use Program, the land use change tax (LUC), is evaluated and policy implications are discussed. Results reported in this paper show that parcels are paying more than their fair share of property taxes when they are removed from the program and pay the 10 percent LUC tax. Based on the experience in nine NH towns, taxpayers are receiving approximately a 50 percent return on their investment in open space.

"Commodity Specification and the Framing of Contingent-Valuation Questions." Kevin J. Boyle (University of Maine)
Contingent-valuation comprises a process of information transfer. A researcher, through a survey instrument, conveys information about the item being valued and respondents, in turn, provide information about the value they place on this item. This paper focuses on an examination of the description of the item being valued. The conclusion is that gross changes in a minimal description can significantly alter value statements and small refinements in a specific description do not alter estimated means. Noticeable effects may still occur with respect to estimated variances and the proportion of the sample not bidding a positive amount of money.

"Test-Retest Reliability of Contingent Valuation Methods." Wesley N. Musser, Keith A. Lampi, Lynn M. Musser, and Frederick W. Obermiller (The Pennsylvania State University and Oregon State University)
Test-retest reliability concerns intertemporal stability of measurement instruments and is a fundamental concept in psychology. This paper considers test-retest reliability of contingent valuation methods. The relationship of this concept to methodological problems in contingent valuation is considered with special attention to methods and applications most likely to be reliable. Test-retest reliability of contingent valuation methods is then evaluated for an application to cross-country skiing. Both open-ended and closed-ended contingent valuation methods were demonstrated to be reliable. However, the values from the two measures were different, indicating need for further research.

"A Forecasting Model for Food and Other Expenditures." Kuo S. Huang (U.S. Department of Agriculture)
An econometric model consisting of an inverse demand system and a set of lagged supply response relationships for major categories of U.S. personal consumption expenditures is formulated. The model is capable of sequentially forecasting per capita personal consumption expenditures and their expenditure shares in the long run.

"Determinants of Household Solid Waste Generation: A Household Garbage Analysis." Donald J. Epp and Paul C. Mauger (The Pennsylvannia State University)
This study examined household characteristics which are related to solid waste generation in order to suggest policies which would reduce the pressures on increasingly scarce landfill space. Attitudes, behaviors and characteristics of a sample of households in the State College, PA, area were related to the amount and composition of their household solid waste. The food buyer having formal education beyond high school graduation; weekly food expenditure; an index of environmental attitude; a self-sufficiency factor including whether the family composts waste materials at home, the number of fruits and vegetables processed at home, and the frequency with which meat is included in the family meals; an energy-consciousness factor including the number and frequency of use of electrical appliances, recycling of wastes, and the frequency with which meat is included in the family meals; the use of soda purchased in plastic bottles; and the number of cats in the household were found to be statistically significant variables in equations explaining the variation in the weight of household garbage. The results support programs to enhance general environmental awareness along with opportunities to reuse and recycle waste materials as a method of reducing materials presented for disposal. Several significant variables appear to be proxies for more complex relationships which indicate that simple regulations against certain practices may not be successful in reducing household garbage.

"Post Emergence Herbicide Decisions for Round White Potatoes." Michele C. Marra, Thomas D. Gould and Gregory A. Porter (University of Maine)
A threshold model is developed including multiple pest effects on the quality and yield of the cash crop as well as control period length uncertainty. Modeling of additional harvest effects due to weeds also is included. Applied to post emergence control of weeds in round white, tablestock potatoes, the threshold density increases with an increase in the herbicide price or a decrease in herbicide efficacy or crop price. Changes in the proportion of total weed count of each weed species also are shown to affect the threshold density. Spraying period uncertainty causes the threshold density to decrease by 25%.

"Offsite Water Quality Benefits from Buffer Strips." Marc O. Ribaudo (Economic Research Service, USDA)
Vegetative buffer strips along streams appear to be an effective control practice for reducing agricultural nonpoint source pollution. Buffer strips are being encouraged in the Conservation Reserve Program to enhance the water quality impacts of the program. The installation of 2.8 million acres of buffers were estimated to generate annual water quality benefits of $196 million. Benefits included reduced siltation of navigation channels and reservoirs, reduced water use and treatment costs, improved recreation opportunities, and reduced flooding. Per-acre benefits averaged $67.7. In comparison, per-acre benefits from removing upland cropland from production averaged $10.4.

"An Analysis of Household Expenditures on Nursery Products in the United States." Wayne M. Gineo and S. Were Omamo (University of Connecticut)
This paper identifies the determinants of household expenditures on nursery products and specifies their impact on consumer purchases of these goods in the United States. Household income, the number of single family home construction starts, education level attained and age composition of the population were found to influence household expenditures. The economic variables of income and construction starts appear to be key factors in assessing short term growth of nursery product purchases. To maintain a competitive edge, industry participants should carefully monitor these variables and adjust their production and marketing plans to meet changing market conditions.

"An Empirical Analysis of Financial Performance on New England Dairy Farms." James J. Wadworth, Boris E. Bravo-Ureta, and Wayne M. Gineo (University of Connecticut)
This paper uses a procedure developed by Melichar to classify 124 New England Dairy farms according to their financial performance. Logit regression is then used to estimate a model that seeks to explain the variation in observed financial performance. It was determined that 80 percent of the farms in the sample were in good

financial standing in 1984. The results of the logit regression suggest that production per cow, expenditures per cow, milk price, non-milk sources of farm income, farm size, farm location, and whether or not an operator had made recent investments in land are statistically significant determinants of financial performance. Moreover, a simulation exercise indicated that output per cow has the largest impact on financial performance.

"Controlling Agricultural Externalities: Economic Implications of Environmental Policy." Stephen R. Crutchfield (USDA/ERS)

Agricultural production in the United States has an off-farm environmental impact. This paper examines the impact of agricultural externalities on U.S. water resources. Also discussed are policy options for controlling agricultural contamination, issues relevant to these policy options, and an agenda for further economic research.