Dr. Day, born and raised on a farm in Iowa, has his Bachelor's and Master's degrees from Iowa State University and his Ph.D. from the University of Minnesota. He was an Assistant Professor at the University of Wisconsin from 1950-55 and an Agricultural Economist with the USDA at the University of Minnesota from 1955-62, where he was also an Associate Professor. From 1962 to 1967 he served in several administrative positions in Washington, D.C. in the Economics Research Service and in the Office of the Secretary of Agriculture. In 1967 he returned to the academic world as Professor at Pennsylvania State University.

Dr. Day was Head of the Department of Agricultural Economics and Rural Sociology at Pennsylvania State University from 1969 to 1975, at the time of the formation of the Council. In his capacity as administrator and as a committed professional he was a key agent in the expansion and successful development and transformation of the New England Council to the Northeastern Agricultural Economics Council. He actively supported and nurtured its development from within and encouraged other departments to participate in its program. During the formative years of the Council he was also on the Executive Board of the American Agricultural Economics Association and served as the key liaison person between the national and this regional association. In 1972 he was a strong supporter of a Council decision to schedule its future annual meetings in sequence at 14 locations throughout the region, a very important and successful decision followed systematically to date.

One of the reasons the Northeastern Agricultural Economics Council has grown and developed is because a group of its members have continuously supported the concept and kept its regional character alive. As department chairman at Pennsylvania State University at the time of expansion, Lee gave encouragement to his faculty colleagues to join and prepare papers. He was instrumental in developing a committee structure, building interest in the Journal and getting faculty to send manuscripts for review. He has been a regular contributor to annual meeting programs. From the beginning he has put regional interests first in making this venture successful.

As Director of the Northeast Center for Rural Development, he has continued to work with all the States in the region and has sought to serve the needs of social scientists interested in agricultural and rural problems across state lines. The mission of the Center has been supportive of work throughout the region and indirectly of Council interests. He was one of the strong supporters of encouraging the Council to invite rural sociologists to participate in annual meetings and become active in Council programs.

Professionally, Lee Day has been an effective researcher and an enthusiastic leader of regional research efforts. As Director of the Northeast Regional Center for Rural Development he has been a diligent supporter and promoter of regional education programs and workshops, has helped develop new teaching materials and programs, has encouraged joint research efforts and regional research projects, and has been a focal point for communication throughout the region on the topic of Rural Development.

Dr. Lee M. Day has demonstrated that rare combination of service to the Northeastern Agricultural Economics Council and to his profession for which the Council bestows the Distinguished Member Award. He has made important contributions to agricultural economics and rural development in this region as an administrator, policy analyst and professional agricultural economist. In addition, he has rendered years of dedicated service to the affairs of the NAEC.
An approach is developed to analyze public policy in a framework consistent with established economic principles of efficient resource allocation. A mixed-integer programming model is developed to assess the economic impact of adopting a water quality management policy that recognizes seasonal changes in the assimilative capacity of a watercourse. The general formulation of the seasonal water quality management problem consists of minimizing total annual abatement costs, subject to a set of water quality, institutional, and treatment process feasibility constraints.

The model is used on Spring Creek, Centre County, Pennsylvania. Wastewater treatment costs are calculated using engineering cost estimates for conventional inplant and land treatment processes. Water quality constraints are developed using a steady-state stream model that evaluates complex sources and sinks of oxygen in the stream including carbonaceous BOD, nitrogenous BOD, atmospheric reaeration, plant respiration and photosynthesis.

Results indicate that total abatement costs will be reduced through the implementation of a seasonal water quality management policy. However, potential cost savings are not likely to exceed the additional costs of implementing and monitoring such a policy unless advanced levels of wastewater treatment are required in the summer months to maintain desired levels of water quality. Results also suggest that chemical-physical processes, such as two-state lime addition with filtration, are a cost effective means of providing high quality effluent in small treatment facilities.

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**Outstanding Master's Thesis Award of Merit**

**Northeastern Agricultural Economics Council**

**Least-Cost Machinery Combinations for Use in Field Crop Operations on Connecticut Dairy Farms**

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Adviser: Dr. George Ecker

**Abstract**

Thirty-three farms were surveyed to obtain information pertaining to herd size, acreage in corn and grass crops, field preparation and planting dates, equipment inventories, machinery performance and use of custom services. Nine custom operators were surveyed to obtain information on field operations performed, acreage served, rates charged and equipment used.

Representative farms of 58, 90, 161 and 276 milking head were established from survey data. Machinery combinations composed of tractors and implements of varying sizes were constructed. To be considered feasible, combinations were required to complete the field operations within time constraints imposed by climatic and biological factors.

For all four representative sized farms, the least cost machinery combination utilizes the offset disc harrow for primary and secondary tillage, rather than the conventional moldboard plowing and disc harrowing sequence of operations. Least cost combinations do not necessarily utilize the smallest feasible sized implements for a given operation.

Field operations on the smallest-sized representative farm can be performed at the lowest cost by hiring custom services, rather than by owning the required machinery. Savings of $1,177 - $1,470 can be achieved.

Leasing of tractors is most feasible for farms which require a reasonably large number of use hours grouped at the same time of year.

Large economies of size were found. Annual machinery costs per acre of cropland were $125, $102, $104, and $83 for four representative farms.
It was hypothesized that labor force participation of residents of rural communities was dependent on geographic access to employment opportunities as well as the more traditional socio-economic variables.

To develop a measure for the concept of geographic access to employment (GAE), a primary database was secured containing employment status, occupation, income, demographic, and travel to work information for employed and unemployed women residing in a rural county in New Jersey.

Regression models developed to estimate the relationship between labor availability and the socio-economic characteristics of a population revealed that the potential labor supply of a geographic area was dependent on: wages, age, marital status, number of children and additional household income.

Geographic access to employment opportunities, a measure reflecting the relative strengths of the supply of and the demand for labor between geographic areas, taking into account the disutility of the journey to work, was significant in explaining the actual labor force participation behavior of women in a geographic area. The elasticity of GAE with respect to employment for nonprofessional females was .839, and for professionals was .617. Thus, job participation by members of the nonprofessional labor force was more sensitive to employment accessibility than their professional counterparts.

GAE explained much of the divergence between those women who wanted to work and those who were actually working. Thus, its inclusion in analyses of labor force participation of rural women yields less biased parameter estimates.

The profitability of slaughter steer production was analyzed for several resource situations representative of State regions. These representative farms include large dairy operations and small dairy operations on land of varying quality, and cash grain farms with good quality soils. Three alternative beef enterprises were considered on each representative farm. Three types of feeding systems were also analyzed.

In all but one situation, dairy beef and traditional beef production as a supplemental enterprise to dairy operations or cash grain operations increases operator labor and management income. The exception is traditional beef steers fed a high-forage ration on the large dairy farms.

Beef feeding as the only use of land on small dairy farms was, in most cases, more profitable than milk or cash crop production. The high-forage system is unprofitable. The scale of the operation increases substantially when beef feedlots are established using a two-phase or high-concentrate feeding system.

On all representative farms, the labor and management income increases more (1) when dairy steers are fed rather than traditional beef steers, (2) when a high-concentrate feeding system is used rather than either a two-phase or high-forage feeding system, and (3) when a ration with a 100 percent corn silage forage base is used rather than rations with a mixed forage base or a 100 percent hay crop silage forage base.

The study assumes a high management level and abstracts from the additional risk in a beef operation and the absence of adequate marketing, slaughter and packing facilities.