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# **Evaluation of Agricultural Research**

**Proceedings of a Workshop Sponsored by NC-148  
Minneapolis, Minnesota May 12-13, 1980**

Agricultural Experiment Station Miscellaneous Publication  
No. 8

EVALUATION OF AGRICULTURAL RESEARCH

Proceedings of a Symposium Sponsored by NC-148

(Analysis of Returns to Agricultural and Related Research in the North Central Region)

Minneapolis, May 12-13, 1980

Agricultural Experiment Station

University of Minnesota

April, 1981

## PREFACE

This publication reports the proceedings of a symposium held in Minneapolis, May 12-13, 1980. The symposium was organized by the Technical Committee of North Central Regional Project NC-148, Analysis of Returns to Agricultural and Related Research in the North Central Region. Since its inception in 1978, this Regional Project has provided a forum for discussing issues of research evaluation and productivity with participation open to individuals from other regions of the U.S.

The subject matter of Regional Project NC-148 is a continuation of earlier interests which resulted in a symposium held in Minneapolis on February 23-25, 1969. The proceedings of the 1969 symposium were reported in Resource Allocation in Agricultural Research, edited by Walter L. Fishel and published by the University of Minnesota Press in 1971. A subsequent symposium, held at Airlie House in January 1975, had the broader international arena of agricultural research and research systems as its focus. The proceedings of the Airlie House symposium were reported in Resource Allocation and Productivity in National and International Agricultural Research, edited by Thomas M. Arndt, Dana G. Dalrymple and Vernon W. Ruttan and published by the University of Minnesota Press in 1976. A third major symposium was held at the University of Idaho in May, 1978. The proceedings of this symposium, which emphasized appraisal of productivity of extension as well as research, was published in March 1980 in Research and Extension Productivity in Agriculture, edited by A. A. Araji and published by the Idaho State Agricultural Experiment Station.

Issues concerned with the evaluation of agricultural research and agricultural productivity have also been discussed in numerous sections of regional, national and international conferences. For example, in 1978 the topic of evaluation of agricultural research and extension was discussed at the summer meetings of the American Agricultural Economics Association in Blacksburg, Virginia. The February 1978 meeting of the AAAS held in Washington, D.C. addressed the topic of agricultural research productivity as did a conference sponsored by the Ford Foundation in New York City in February 1979 and the Conference of the International Association of

Agricultural Economists held in Banff, Alberta in September 1979. In addition, a number of papers have been published dealing with this and related topics in the American Journal of Agricultural Economics and in other publications. Finally, since 1979, discussions and research on agricultural research evaluation have been conducted under the auspices of IR-6, an interregional project on agricultural research planning, evaluation and analysis. Several papers presented at this symposium were developed under the auspices of IR-6. Thus, this proceedings reports work which drew on a decade or more of discussion of research productivity in agriculture.

The purposes of the 1980 Minneapolis symposium were to once again address the need for evaluation of agricultural research, to assess the research underway on this topic and to project additional needs in terms of methodology and subject matter coverage. Methodology particularly was an avowed focus of the conference, although the planning committee encouraged the reporting of empirical findings as well. Because some of the authors report research in progress, several of the papers are of a preliminary nature.

The proceedings which follow are organized under five general headings: (1) a challenge to the symposium in terms of requirements for evaluation information, (2) a comprehensive review of past methodology, (3) issues related to the productivity and transferability of agricultural research, (4) issues and analyses pertaining to research management and funding; and (5) expansion of evaluative methodologies and needed applications. It was the intent of the symposium both to report work on research evaluation and to subject it to constructive evaluation in terms of research needs and available methodologies. Thus, a number of the papers are cast in the context of methodology evaluation. The final paper by Rausser, et al, in fact presents a critical review of much of the previous work on research evaluation and suggests moving toward a sequential process of evaluation which requires evaluative input from the time of determining which research topics are to be addressed, who the research will impact and who should provide the research funding.

The symposium committee and the NC-148 Technical Committee greatly appreciate the financial assistance of the Farm Foundation, the USDA Economics and Statistics Service and the Minnesota Agricultural Experiment Station in making possible both the conference and this proceedings issue. We also appreciate the contribution of all who participated in the symposium and the cooperation of authors in preparing their papers for this proceedings. Special thanks are due to Sam Brungardt for his editing and publication management services, to Nancy VanHemert for her efforts in organizing and helping to manage the manuscript typing project and to Cindy Smith and Nan Bruns for typing and proofing the many manuscripts.

The Symposium Planning and Editorial Committee

George W. Norton  
Walter L. Fishel  
Arnold A. Paulsen  
W. Burt Sundquist

This volume is dedicated to

DONALD R. KALDOR

who was a member of NC-148 from its beginning to his death on October 9, 1978.

Dr. Kaldor was active professionally from 1966 until his death in developing procedures for evaluating the future impacts of alternative agricultural research investments. Don was very interested in ex ante evaluation of research in spite of its difficulty because he believed such evaluation was critical in formulating more valuable long range agricultural research programs.

In 1966 Don Kaldor was asked by the Iowa Agricultural Experiment Station to advise on research program planning. In 1968 Iowa State undertook a comprehensive long range agricultural research program planning effort using procedures designed by Don Kaldor. This research evaluation effort involved 20 interdisciplinary panels of scientists who proposed and ranked research alternatives called "information packages." The cost of each research alternative was estimated and the set ranked by resource efficiency in contributing to Iowa and U.S. economic growth.

During the 6 years he worked as a consultant and researcher with USDA's Cooperative State Research Service, Don Kaldor assisted with several state experiment station program planning efforts and participated in regional and national research program planning efforts. Don Kaldor brought a public policy framework to agricultural research program evaluation and planning. His professional involvement spanned 12 years from the first comprehensive inventory and classification of agricultural research in the 1966 Long Range Study to the 1977 farm bill which created the Joint Council on Food and Agricultural Sciences.

Part of the range of Don Kaldor's interests and contributions to ex ante agricultural research evaluation is evidenced by three papers in this volume by three of his students--one by Joe Murphy on constructing an index of the cost of doing agricultural research, another by Janelle Ramsdale describing the individual decisionmaking of agricultural scientists and a third by John Strauss on goal structure for agricultural research program planning.

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