Economic Analysis of Research and Promotion

Proceedings from the symposium sponsored by NC-208 and NEC-63

New Orleans, Louisiana
March 21-22, 1997

Edited by:
Jennifer L. Ferrero
Cynda R. Clary
Timothy J. Richards

Sponsored by and published with the support of:
The Research Committee on Commodity Promotion (NEC-63)
and
The National Institute for Commodity Promotion Research and Evaluation (NICPRE)

Economic Analysis of Research and Promotion

Proceedings from the symposium
sponsored by NC-208 and NEC-63

New Orleans, Louisiana
March 21-22, 1997

Edited by:

Jennifer L. Ferrero
Cynda R. Clary
Timothy J. Richards

Sponsored by and published with the support of:
The Research Committee on Commodity Promotion (NEC-63) and
The National Institute for Commodity Promotion Research and Evaluation
(NICPRE)

ISBN 0-9649003-4-3

Table of Contents

Preface: Economic Analysis of Research and Promotion

Growers of agricultural commodities are facing pressures similar to corporate America in improving their economic competitiveness. Increasing trade due to lower tariff and non-tariff barriers, technology that allows more efficient arbitrage in international markets, and free flow of key production resources, including labor, are all factors forcing firms in both sectors to seek new ways to add value. However, agricultural producers in many industries face additional pressures as they wean themselves from decades of government support. Just as corporate America initially responded to the call of global competitiveness by "re-engineering" and rethinking production processes in order to cut costs, agricultural producers look to a continued flow of new products and processes from the agricultural research and development (R&D) community. Genetic engineering, for example, appears to hold great promise for advances in agricultural production. Cost-cutting can only go so far, however, before whole industries become catabolic and lose sight of why they are in business.

More recently, firms have begun to realize that "topline growth" through demand-expansion and value-added methods is a preferable, and sometimes complementary, way to maintain competitiveness and grow their businesses at the same time. Commodity promotion has been shown again and again to be successful in expanding demand, but is particularly effective when used in a complementary fashion with focused R&D programs to develop new products, create and expand markets for these products, and in the continuing search for new processes to produce them at the lowest cost possible. On March 21 -22, 1997, the Research Committees on Commodity Promotion (NEC-63) and Agricultural Research and Development (NC-208) met in New Orleans, LA to explore the interplay between these two activities and to analyze the institutional environment in which they are conducted.

The conference was organized into three sessions. Session one provided analyses of two aspects of the analytical framework within which the benefits of agricultural R&D were assessed. Session two consisted of two empirical studies of the economic effects of research and promotion--the first at the level of a specific commodity, and the second at a sectoral, general equilibrium level. The third session presented three perspectives on the effects of institutional funding arrangements for agricultural research and promotion on what gets done, how it gets done, and who does it. The conference concluded with a roundtable discussion designed to look forward and assess what new institutional environments mean for the operation of these programs in the future.

In the first session, two papers considered the incentives for innovation created by public funding and private markets, and looked at some welfare implications that follow. The first paper (not included in this volume), presented by Jason Christian, provides a thorough historical overview of the institutional aspects of financing agricultural research and development in the U.S. By analyzing the incentives inherent in these institutional arrangements, the authors arrive at several recommendations for financing agricultural R&D amidst a new economic and political environment. For one,

they argue formulas for determining (and allocating) funding levels need to recognize the fact that these allocations are endogenous to the system and that funding at the federal level can be used to induce state and private participation.

The second paper was presented by Giancarlo Moschini. Dr. Moschini's paper considers the effect of vertical market linkages typical of agriculture and their effect on the distribution of welfare gains from research and development. Specifically, if cost-saving innovations are produced by agricultural input suppliers, then intellectual property rights (IPR) allow these suppliers to price their innovations as monopolists. As a result, consumers will not benefit from an innovation from an existing monopoly unless the innovation is "drastic." Further, conventional measures of the benefits from research and development are likely overstated to the extent that innovations are sold in imperfectly competitive input markets.

The second session consisted of two empirical studies concerning the returns to promotion and research. The first looks at returns to Canadian hog and pork producers in a model of the continental meat market, while the second consists of a macro view of efficiency and distribution in agricultural research in the U.S. The first paper, by Daniel Sellen, Ellen Goddard and Stephen Duff, estimates the return to producers' investments in both research and promotion in the Canadian hog and pork industry. Although their focus is on returns to Canadian producers, they develop a model of the entire North American hog and pork markets in order to capture the indirect effect of U.S. research and promotion on Canadian prices, and hence, the benefits of conducting either by Canadian producers. Their results show that there are substantial returns to Canadian investments in hog research, but smaller returns to investments in generic promotion. Single-period shocks to U.S. promotion, however, cause Canadian producer surplus to rise nearly as much as with research. This result contains a somewhat provocative implication for "optimal" Canadian promotion policy --to subsidize U.S. promotion.

George Frisvold and Stephen Vogel's paper, on the other hand, does not consider the value of the outputs resulting from the R&D and promotion processes, but rather the effects of alternative methods of financing these programs. Specifically, they adopt more of a macro perspective by using a computable general equilibrium model of the U.S. economy to simulate the effects of moving from general taxation to a commodity checkoff scheme as a source of R&D funding. They show that such a move is likely to generate welfare benefits of some $0.15 for every revenue dollar. While passage of the FAIR Act will not change the substance of their conclusions, the incidence of a commodity tax is critically dependent upon the conduct of farm policy.

The third session concerned the effect of competitive bidding and other institutional arrangements for research funding on research agendas, the amount of funds available, and the process of obtaining funding. These studies adopt both a broad, conceptual approach to research funding, and discuss models and cases

demonstrating the points that they make. The first paper in this session, by Julian Alston and Philip Pardey, looks at the state and trends in global agricultural R&D. The authors cite evolving agricultural technologies, consumer attitudes toward food, taxpayer attitudes toward farms, and increasingly competitive and consumer-oriented food markets as necessitating government and industry officials to rethink the role of publicly-funded agricultural R&D. In making these points, the authors point out that in the U.S. and Japan, the two largest sources of privately-funded agricultural R&D, private funding now exceeds public. Moreover, while agricultural research in developing countries continues to attract much public and academic interest, it only accounts for a very small share of global spending for R&D from public coffers (1.8 percent).

In the second paper, Sharon Till of the Grains Research and Development Corporation (GRDC), describes the Australian experience in designing and implementing new funding arrangements for agricultural R&D. The GRDC, one of several research and development corporations (RDCs), operates on the basis of producer levies which are then matched on a 50 percent basis by the federal government, up to a cap of 0.5 percent of the total value of production, and provided that the government's share not exceed the producer's. The author maintains that this arrangement manages to minimize problems typical of agricultural R&D--namely the free-rider problem, the public good aspect of R&D, its capital intensity, and the inherently risky nature of R&D outcomes. As evidence of the GRDC's success, examples of both product and process innovations are given, as well as documentation of the sensitivity given to the broader social role of agricultural research.

Frances Cassidy presented the third paper in the session, which consists of a transcript of a speech by the Hon. John Kerin. Based on his years of experience within the Australian agricultural research, Dr. Kerin discusses the role of the Commonwealth Scientific Industrial Research Organization (CSIRO), in fostering agricultural research through its own activities and through its association with the RDCs discussed by Sharon Till. He sees changes to the CSIRO arising from several fundamental challenges to its mandate brought forth in public debate over government's role in agricultural research. These challenges include: a requirement by the public that research generate immediate, marketable results; a general opinion that agricultural R&D should decline with agriculture's share of GDP; a fear that basic research is likely to be duplicated by private industry without public help; a concern with "asset fixity" in agricultural research as assets become bound to their bureaucracies; problems with administering and coordinating agricultural research; the myth that private research is being "crowded out" by publicly-funded research; the need to produce innovations that potential users (agricultural producers) will adopt and benefit from; and the continuing need to justify research on the basis of fundamental public-good arguments. At the bottom line, the author maintains that the case for publicly-funded agricultural research in Australia remains strong as "...returns to research for each dollar expended in our pasture industries average up to 250 percent, for livestock 138 percent, and even for CSIRO's

work in entomology 23 percent."

The conference concluded on Friday afternoon with a roundtable discussion titled "What have we learned and where do we go from here?" The discussion was moderated by John Miranowski, and participants included each of the speakers from the third session in addition to M. Martin of the University of Minnesota, Lynn Macias of the California Department of Food and Agriculture, and M. Stammer of the United Dairy Industry Association. Although the participants brought different perspectives on the agricultural research issue, their discussion highlighted the continuing and emerging challenges facing the agricultural research establishment in its need to remain relevant to both their public and private constituents.

The editors of this volume would like to extend profuse thanks to Linda Morehouse at Cornell University for her valuable assistance, as well as to the contributing authors for their careful and diligent work in preparing their manuscripts and abstracts for submission.

--Tim Richards, September 12, 1997