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HISTORICAL DEVELOPMENT OF REGIONAL RESEARCH AND ADAPTATION TO INTERNATIONAL COOPERATIVE RESEARCH

Roland R. Robinson[10] and Paul L. Farris[11]

Introduction

This is an appropriate time in history to revisit regional research to determine what changes in organization and philosophy need to be addressed in meeting the problems of agriculture in the 1990's and beyond. The Research and Marketing of 1946, which provided federal funding for the establishment and support of the regional research program, was passed nearly a half century ago. Certainly, the formulators of this legislation could not anticipate the enormous changes that would occur in the world in the next half century and the adjustments required in research programs and administrative processes to meet these future conditions. Adjustments to meet new needs and increase the relevance of federal legislation is usually handled through amendments. However, the regional research program as was stated in the Research and Marketing Act of 1946, was incorporated intact in the Amended Hatch Act of 1955. Therefore, it has not undergone any careful examination to determine it's flexibility in meeting current and future problems.

The purpose of this paper is to examine in a historical context station and regional research programs as they have adjusted to changes in the agricultural industry, describe the recent shift in principles or philosophy regarding the allocation of federal agricultural research funds and the potential impact of this shift on federal support of regional research and to suggest possible adjustments in the regional program and funding mechanism to meet future needs and opportunities.

Historical Overview: Station Research Program Adjustments

Station research programs have undergone a considerable transformation since the turn of the century. The earliest programs focused almost entirely on specific agricultural problems within individual states.

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[10] Principal Agricultural Economist, Cooperative State Research Service, U.S. Department of Agriculture, Washington, D.C.

[11] Professor Emeritus, Department of Agricultural Economics, Purdue University, West Lafayette, Indiana.

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Joint Projects with USDA

The first movement toward the investigation of problems broader in scope was the initiation of joint projects conducted in cooperation with USDA. Table 1 shows total and joint projects by area of work in 1930. The cooperative research projects tended to move station agricultural economics projects from microeconomic research oriented to firm analyses in given states to macroeconomic research covering agricultural industries broader than a single state. Some of these early studies, for example, included the development and requirements of agriculture in the Northern Great Plains; irrigated farming systems in Idaho and Washington; and dairy production in New York, Pennsylvania, Vermont and Virginia (True, p. 271). The Cooperative Agreements with USDA and the regional conferences that were held involving USDA and station personnel expanded problem area scope and developed an awareness of the need for cooperative research. The regional USDA-SAES conferences and cooperative research conducted under the Cooperative Agreements had a strong influence on the eventual formalization of cooperative regional research.

Formalization of Regional Research

The passage of the Research and Marketing Act of 1946 ushered in a new era of cooperative research not only between the USDA and the stations but also among the stations. Federal funding provided by the Act was significant in the establishment of support for the formalized cooperative regional research program. The early projects focused on regional agricultural problems and participation was confined essentially to stations within specific administrative regions.

Transition to Interregional and National Dimensions

Another stage of development was the gradual transition of conventional projects with a regional focus to those with interregional or national dimensions--IR projects. This trend was facilitated under some projects by the employment or assignment of coordinators and the special grant funding of core groups. Again, agricultural problems needed to be addressed in a context broader than a single region and with resources adequate to find comprehensive answers. The first formal interregional project (IR-1) was started in 1950, only four years after the passage of the Research and Marketing Act. Since IR projects required off-the-top funding from the Regional Research Fund (RRF), the formalized IR program has not progressed very far. In 1990, only 6 IR projects were funded and the approximately $1.2 million expenditures on these projects amounted to only about 3.4 percent of the RRF (Table 2).

However, even though the formal interregional or national program did not progress very far over the years, there has been a gradual evolution from regional to national projects in the regular regional research program. Many regional projects are now national in terms of the scope of problems investigated and participation. Most regional projects in agri-

Table 1. Number and Distribution of Agricultural Economics Research Projects by Classification Category, Total and Conducted Cooperatively with the Bureau of Agricultural Economics (B.A.E.), 1930.

Classification Category	Agricultural Economics Research Projects			
	Total		Cooperative with B.A.E.	
	Number	%	Number	%
Farm Management	151	32.6	42	40.0
General	44	9.5	13	12.4
Enterprise	84	18.1	22	21.0
Types of Farming	15	3.2	7	6.7
Miscellaneous	8	1.7	0	0
Cost of Production	51	11.0	11	10.5
Marketing	145	31.3	28	26.7
Prices	20	4.3	2	1.9
Agricultural Statistics	12	2.6	1	1.0
Farm Income	2	.4	0	
Cooperation	9	1.9	2	1.9
Agricultural Finance	6	1.3	0	0
Farm Taxation	18	3.9	7	6.7
Land Economics	31	6.7	10	9.5
Trade Areas	6	1.3	0	0
Farm Labor	4	.9	0	0
Miscellaneous	8	1.7	2	1.9
TOTAL	463	100.0	105	100.0

Source: Classified List of Projects of the Agricultural Experiment Stations, 1930, compiled in the Office of the Experiment Stations, USDA, Washington, D.C. Miscellaneous Publication No. 89, November, 1930, pp. 10-25.

Table 2. Allotments of the Regional Research Fund, Hatch Act, as Amended August 11, 1955, to Cooperative Regional Projects of the State Agricultural Experiment Stations

Fiscal Year 1990, Ending September 30, 1990

Summary

North Central Region		$10,371,780
Northeastern Region		6,694,272
Southern Region		9,355,199
Western Region		7,784,667
Subtotal		**$34,405,918**
IR-1,	Potato Introduction	114,990
IR-2,	Virus-Free Tree Fruit Clones	209,244
IR-4,	Clearances of Chemicals and Biologics for Minor or Special Uses	347,424
IR-5,	Current Research Information System	204,400
IR-6,	National and Regional Analysis, Evaluation, Planning, and financing of Agri. Research	197,400
IR-7,	Chemistry and Atmospheric Deposition	90,555
Subtotal		**$1,194,013**
GRAND TOTAL		**$35,599,931**

SOURCE: Regional Research Office, CSRS.

cultural economics, for example, have participants from outside the originating region. This nationalization trend represents another significant transition in the evolution of regional research. The conduct of national research under conventional regional projects makes it difficult administratively to justify the need for IR projects with off-the-top funding. Very few IR projects have a comparative advantage or uniqueness to justify their special support out of the RRF.

Emergence of International Cooperative Research

While several regional projects now deal with international problems they do not have formal participation and resource commitments from foreign cooperators. The regional projects in agricultural economics dealing with international trade are examples. While these projects are not truly international in terms of the above criteria, they have increased the awareness of the need and opportunities for international cooperative research and have provided the leadership and contacts to move regional research in that direction.

The regional research program appears to be entering a new stage of evolution, which we will refer to as International Cooperative Research (ICR). This stage involves a problem that is global in scope or with international dimensions and multi-country participation. The precedence has already been established for this type of cooperative research within the regional research program. Several regional projects are under way with participants from foreign countries. One is formally organized and has four Canadian participants. Formalization refers to work and resource commitments on the part of foreign participants built into the regional project outline. Although other projects have participants from Japan, Australia, Canada and New Zealand, the role of the foreign cooperators is informal since no research responsibilities or resource commitments contributing to the completion of the project are included in the project outline.

Several efforts are currently under way to initiate and fund what is considered formalized ICR projects (meeting the criteria of international problem scope and work and resources commitments on the part of both foreign and U.S. participants). If these pioneer efforts are successful, the regional research program will take on a new dimension and offer enormous and exciting challenges and opportunities heretofore unavailable. Visionary and effective administrative and research leadership will be required to make ICR a reality. Other initiatives are currently underway at the national level to obtain federal support for ICR outside the context of the regional research program.

Transition in Principles in the Allocation of Federal Agricultural Research Funds

Before presenting a specific proposal for ICR organization and funding, we believe it may be useful to review the evolution of the philosophy of agricultural research funding. In his book entitled Equality And Efficiency: The Big Tradeoff, Arthur Okun set forth concepts that are useful in explaining the split personality of the agricultural research establishment and the resulting changes in funding mechanisms. These changes have significant implications for the future federal support of the regional research program. The following statement captures the concepts:

> "Contemporary American society has the look of a split-level structure. Its political and social institutions distribute rights and privileges universally and proclaim the equality of all its citizens. Yet economic institutions, with efficiency as their guiding principle, create disparities among citizens in living standards and material welfare. This mixture of equal rights and unequal economic status breeds tensions between the political principles of democracy and economic principles of capitalism"

Equality was the original dominant philosophy in the allocation of federal funds to support agricultural research at the SAES. Under the original Hatch Act, passed in 1887, each station received an equal share ($15,000) of federal funds. Under the Adams Act (1906), the stations also received equal additional shares of federal funds. The total federal funds received by each station annually was $30,000, consisting of $15,000 from Hatch and $15,000 from Adams. With the passage of the Purnell Act (1925), each station received increasing increments of federal funds over a period of five years until an annual allotment of $60,000 was reached. This was in addition to the $30,000 received under earlier Acts which made a total of $90,000.

The Bankhead-Jones Act (1935) introduced two new concepts that influenced the amount of funds available to each station for agricultural research. One was the "matching requirement" and the other was the "formula method" for the distribution of federal funds. The matching requirement applied to Bankhead-Jones funds and not to allotments under earlier Acts, which did not require matching. The allocation formula distributed federal funds to stations on the basis of the relative size of the respective state's rural population (farm and non-farm combined). Therefore, each station received two components of federal funds, an equal share and a proportionate share. Both reflected allocations based on equal and proportionate needs for research. The equal share principle we will refer to as equality and the proportionate share principle as equity.

The method for the allocating of federal funds to Experiment Stations was further revised under the Amended Bankhead-Jones Act and the Agricultural Marketing Act of 1946. For new appropriations in any given year each station received an equal share and a proportionate share based on relative sizes of farm and rural population in the respective state. Farm and rural populations were equally weighted in the formula. Also, not more

than 25 percent of funds appropriated in any given year was to be used for cooperative regional research and at least 20 percent for marketing research. This was the first time that federal funds were targeted for specific research uses.

The formula provision was further revised under the Amended Hatch Act; however, the principles of equality and equity were retained. For example, 20 percent of each year's appropriations were to be divided equally among the stations (equality principle); 26 percent according to the relative share of the nation's rural population residing in the respective State and 26 percent according to the relative share of farm population (equity principle). The remainder was for marketing, regional research and federal administration. The matching requirement applied to the above funds and the marketing and regional research provisions remained the same as set forth under the Research and Marketing Act. Funds were therefore awarded on the basis of needs as reflected in equal or proportionate rights to shares while the efficiency principle of awards according to deeds or perceived performance as achieved through a competitive process was excluded in the allocation of federal funds.

The equality and equity principles were carried through into two other major pieces of federal legislation. Under the McIntire-Stennis Cooperative Forestry legislation, funds are allocated to institutions on the basis of acreage for forestland and value of forestry harvest in the respective states. The Evans-Allen Act, which provides federal support for research conducted at the 1890 institutions, is a combination of the equality and equity principles. First, these institutions receive a total amount of funds that are not less than 15 percent of the amount of funds appropriated under the Hatch Act. This amount is then distributed proportionally among the institutions on the basis of the Hatch formula or relative size of rural and farm populations in the respective states.

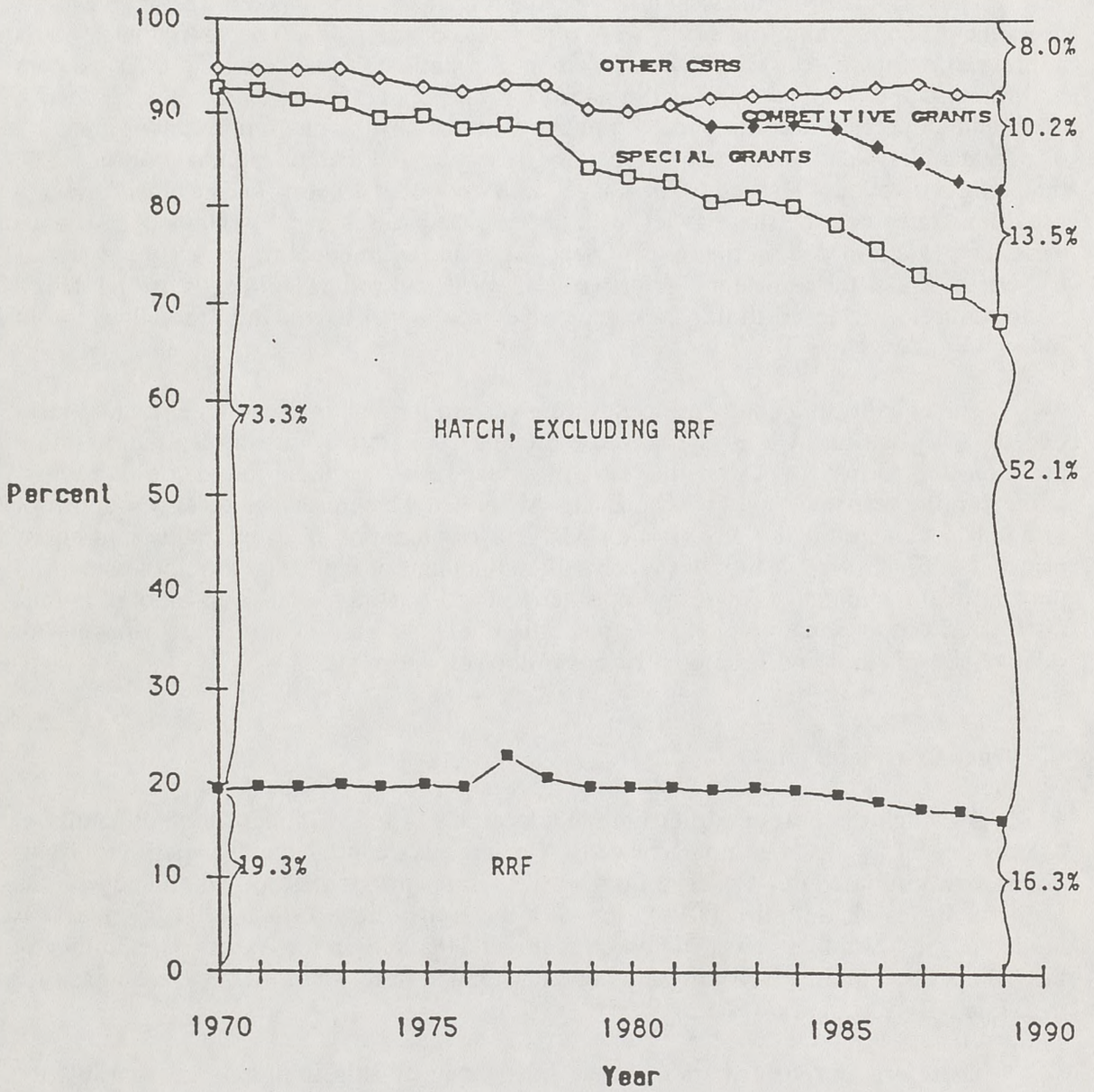
Efficiency Considerations

Although there were earlier limited allocations of federal funds on an efficiency or competitive basis, this was not achieved on a large scale until the Competitive Grants program was initiated in 1978. The Competitive Grants program is now combined with the National Research Initiative (NRI). In 1991 the Competitive Grants-NRI program was funded at the $73 million level compared to about $162 million for Hatch. The funding of the Competitive Grants-NRI program has grown much faster than the federal support for the Hatch/RRF program (Figure 1).

Therefore, in recent years there has been a radical shift in principles regarding the allocation of federal funds to support agricultural research. That shift is from equality and equity principles to the principle of efficiency or perceived performance in the research process. Both principles have their proponents.

Figure 1

Percent of CSRS Funds Allocated to Major Programs 1970-1989



SOURCE: CRIS data provided by John R. Myers; CSRS

The efficiency principle, in theory, would put funds in places where the funds would generate the largest research payoffs. But in practice, the issue is not clear cut. While the allocation of federal funds to institutions on the basis of equality or equity principles is politically driven, the forces driving the allocation of federal funds on the efficiency principle are unclear. Theoretically, these should be market forces or effects of factors representing market forces on the political process. Neither seem to be significantly involved in the shift from the formula method to the competitive method for awarding federal research funds.

Nevertheless, based on federal funding trends, the proponents of the efficiency principle are gaining ground in terms of federal funding compared to the proponents of equality or equity principles. It is bothersome to many that federal support for regional research is withering at this time in history, even though state support is increasing, when the program, after nearly fifty years, has developed the administrative and research capacity to provide the critical leadership needed to open up cooperative research on a global basis. We see no other program that has the experience, capacity and leadership to carry out this mission as effectively.

Strategies for the Funding of ICR

The suggestions made in this section are based on historical precedence. (This proposal is also made in a paper prepared for the XXI International Association of Agricultural Economists Conference in Tokyo, Japan, August, 1991) An early competitive grants program administered by the CSRS (at the time the State Experiment Station Division, or SESD) was the 204(b) program of the Research and Marketing Act of 1946. A special appropriation established under this section of the Act was used to support marketing research projects on a competitive basis to be conducted by the stations. The funds could be used to support other cooperative marketing activities conducted by agencies of state governments. The program was funded at the $500,000 level but appropriations were discontinued in 1964. As a separate line item in the budget, 204(b) funding did not compete with Hatch marketing or regional research program funding. The evaluation and selection of marketing research proposals were carried out by SESD in cooperation with the Experiment Station Marketing Research Advisory Committee (ESMRAC). The funding of proposals was through cooperative agreements between the stations and SESD. The management and funding processes were similar to the ones currently used by the CSRS Cooperative Grants Office.

Our suggestion is that the regional research program (Section 3(c)3 of the Hatch Act) be amended to include an ICR component, separately funded but a part of the regional research program. This amendment would bring back the 204(b) concept but make the program a part of the regional research program. Therefore, while the federal funding of the regional research program would be on the basis of equity principles, the funding of the ICR would be on the basis of competitive principles. As a part of the regional research program, the ICR would be managed in the traditional partnership basis under the C/9-

CSRS administrative structure. We are further suggesting that the ICR program be non-matching, the same as competitive grants, and earmarked for agribusiness research or research that contributes to improving the competitive position of U.S. agriculture and agribusiness in global markets.

Concluding Statement

Cooperative regional research has evolved through several stages over a long period of time. An important trend has been the move toward problems national in scope and participation by scientists from states and agencies outside the regions administering the projects. The next evolutionary phase is beginning, with increasing numbers of foreign scientists joining regional projects on a formal or informal basis or making contacts with U.S. scientists involved in regional projects.

The recommendation proposed in this paper is for an international cooperative research program (ICR) supported with federal funds and administered as a component of the existing regional research program. The proposal builds on historical precedence, follows a well established procedure and meets current and emerging realities. It would increase the relative amount of federal support for cooperative research, give much needed visibility to ICR at the national level, fit in with the shift from equality to competitive principles in the support of federally funded research projects, utilize an existing cost-effective administrative structure and respond to the growing interest in international research collaboration. The proposal is consistent with the long recognized need for a major shift in program emphasis as articulated by the GAO and several other reports. The recommended program represents an effective approach to generating new knowledge and technology beneficial to all participants and needed by U.S. agriculture to help meet emerging competitive challenges in the global marketplace.

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