

Chapter 6

# **Policy and Management of USDA Research Programs**

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# Policy and Management of USDA Research Programs

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As the research mission in postharvest technology and marketing economics (PHTME) research becomes more varied, as new priorities vie for attention, and as funding becomes more stringent, the need arises for finding ways to strengthen leadership standards and performance at all levels. Accomplishing such goals will require a thorough and honest analysis of policy and management within the public sector PHTME research program.

This chapter focuses on the four research agencies within the U.S. Department of Agriculture (USDA) that are primarily responsible for con-

ducting or funding PHTME research: 1) the Agricultural Research Service (ARS), 2) the Economic Research Service (ERS), 3) the Agricultural Marketing Service (AMS), and 4) the Cooperative State Research Service (CSRS). Three of these four agencies report to different Assistant Secretaries in USDA. This situation makes it difficult to plan and coordinate PHTME research activities. These agencies are experiencing new challenges and may need to consider different management organizations and policies in order to maximize their research potential.

## AGRICULTURAL RESEARCH SERVICE

ARS reports to the Assistant Secretary of Science and Education within USDA. The agency's mission is to develop through basic, applied, and developmental research, new knowledge and technology which will result in an abundance of high-quality, nutritious, reasonably priced food and other agricultural products to meet domestic and world needs while maintaining natural resources and environmental quality (7).

The research of ARS encompasses animal and plant protection and production; and the use and improvement of soil, water, and air; the processing, storage, and distribution of farm products; and human nutrition. Research activities are carried out at 147 locations nationwide, in Puerto Rico, the Virgin Islands, and in 8 foreign countries. Much of this research is conducted in cooperation with State partners in the universities and SAES, other Federal agencies, and private organizations.

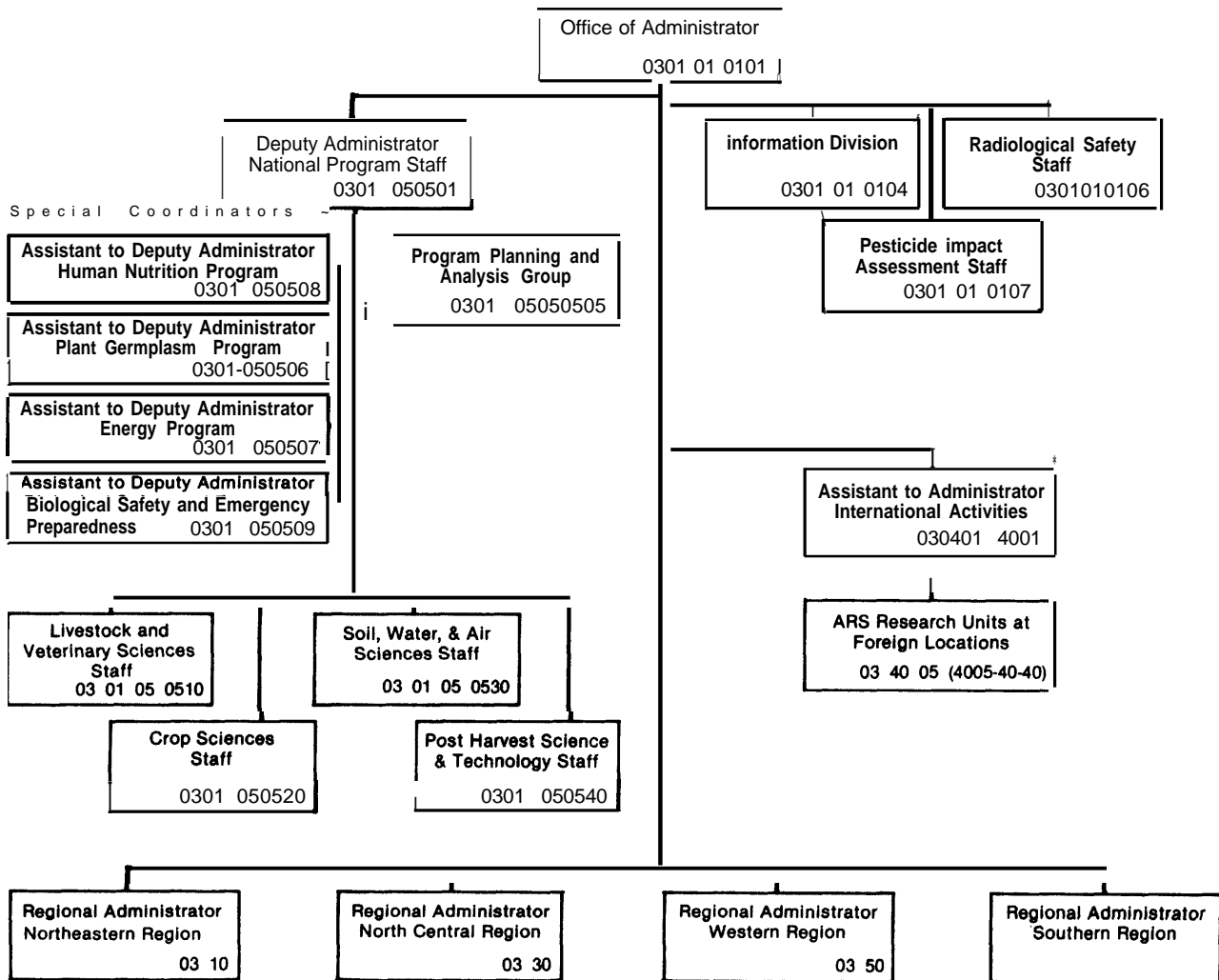
ARS was reorganized in 1972 along regional lines, ostensibly to improve collaboration and efficiency in the relationship between USDA and SAES (4). The present organizational structure of ARS is shown in figure 28. Four regional ad-

ministrators report directly to the Administrator of ARS and are responsible for activities in each of four geographic regions: Northeastern, North Central, Southern, and Western. The organization of ARS regional offices is shown in figure 29.

Responsibility for ARS research programs is now highly decentralized. The focal point for day-to-day management of the various national research programs assigned to specific field locations is the regional/area structure comprised of 4 regional offices, 14 area offices, and 7 major research centers. Postharvest technology research is concentrated in the 4 regional research centers, at the Richard B. Russell Research Laboratory, and in 40 smaller laboratories within the area/research center line management structure.

A national program staff assists the ARS Administrator in planning, budgeting, and management of the overall ARS research program, *but has no line authority to make decisions concerning* the allocation of resources. Previously, national program investigation leaders with line responsibility and authority could relate to an individual State or group of States and then transcend these boundaries and furnish cohesive and

Figure 28.—Organization of the Agricultural Research Service



New Chart

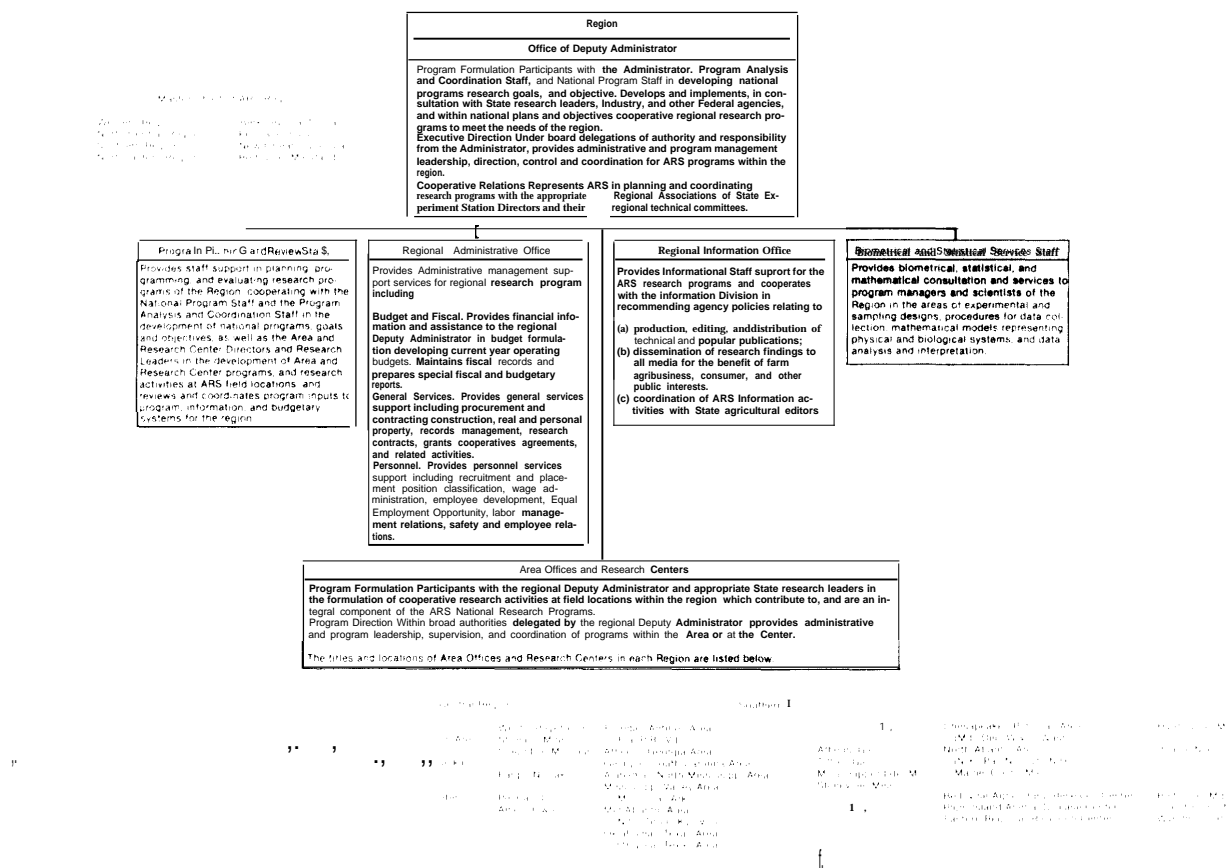
**MISSION** Development through basic, applied, and developmental research, new knowledge and technology, which will increase an abundance of high quality nutritious, reasonably priced food and other agricultural products to meet domestic and world needs while maintaining natural resources and environmental quality. This mission focuses on the development of technical information and technical products which bear directly on the needs to (1) manage and use the Nation's soil, water, air, climate resources and improve the Nation environment, (2) provide an adequate supply of agricultural products by practices that will maintain a permanent and effective agriculture, (3) improve the nutrition and well-being of the American people, (4) improve living in rural America, (5) strengthen the Nation's balance of payments, and (6) promote world peace.

SOURCE United States Department of Agriculture Agricultural Research Service, 1982

coordinating services and functions on a nationwide scale. The reassignment of these individuals to national program staff positions *without* line authority, however, has diminished the national perspective and national technical leadership in the agency's postharvest technology and other research efforts.

Postharvest technology research is represented at the level of the national program staff by a separate staff component on postharvest science and technology (now called commodity conversion and delivery), but is not similarly represented at the regional and area level. Regional administrators most likely would not possess the technical

Figure 29.—Organization of ARS Regional Offices



SOURCE: U.S. Department of Agriculture, Agricultural Research Service, 1982

expertise needed to make judgments on the technical components of their varied research portfolio, which may include postharvest technology, livestock and veterinary sciences, crop sciences, and soil, water, and air sciences.

A positive aspect of the present regional organization of ARS is that it provides an environment for interdisciplinary research. This is true as long as a national research focus, as opposed to a local one, exists. However, maintaining a national focus is difficult with the present organiza-

tional structure, and there is nothing to prevent the national program staff from being organized along interdisciplinary lines.

ARS regions have little relevance to regional PHTME research problems. These areas correspond to SAES regional areas, which encompass specific States, and were selected to improve coordination with SAES. However, regional research problems generally do not follow State lines. Furthermore, different regional research problems may involve different clusters of States. ARS

scientists at the regional centers and 40 field locations do not have the opportunity to work directly with national program leaders in finding the best way for their efforts to become effective and useful parts of the national and regional efforts. Thus, the current focus is on State and local problems. Because the present organization is subject to pressure by local groups that want research on

practical problems, the present organization also makes it difficult to emphasize basic research (4). \*

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\*In February 1983, ARS announced the results of an internal review of the agency. ARS developed a long-range plan for research and an accompanying implementation plan. The plan includes an increase in PHTME research effort. In addition, the national program staff has been reorganized in an effort to reduce the high administrative overhead. However, little, if any, change was made in the national program staff's responsibilities.

## ECONOMIC RESEARCH SERVICE

ERS reports to the Assistant Secretary for Economics and conducts marketing economics research relating to production and marketing of farm commodities. ERS research includes evaluations of the organization and performance of major commodity subsectors, costs and returns to farmers and marketers, situation and outlook, commodity projections, price spreads, and analysis of U.S. farm commodity programs, and international markets. ERS marketing economics research projects deal mostly with broad questions about relationships among prices and quantities. These projects are aimed at helping public policymakers and others make informed decisions about marketing policies (8).

Marketing economics research is fragmented within ERS. Domestic marketing economics research is largely concentrated in the nine branches of the National Economics Division, which are shown in figure 30. The greatest part of the division's work in this area is conducted by the three National Economics Division branches dealing with various stages of the food system (inputs and finance, farm sector economics, and food economics). In addition, each of the division's three commodity branches (animal products, crops, and fruits, vegetables, and sweeteners) conducts some vertical subsector marketing economics research. Of the three functional specialty branches (economic indicators, agricultural history, and food and agricultural policy), the economic indicators branch has the greatest responsibility for marketing economics research; it conducts research on the marketing bill, marketing spreads, and related topics.

International marketing economics research is conducted by all the branches of the International Economics Division of ERS. These branches are organized geographically. The research they conduct generally is aimed at identifying trends in food demand in foreign countries and drawing implications for export markets in those countries.

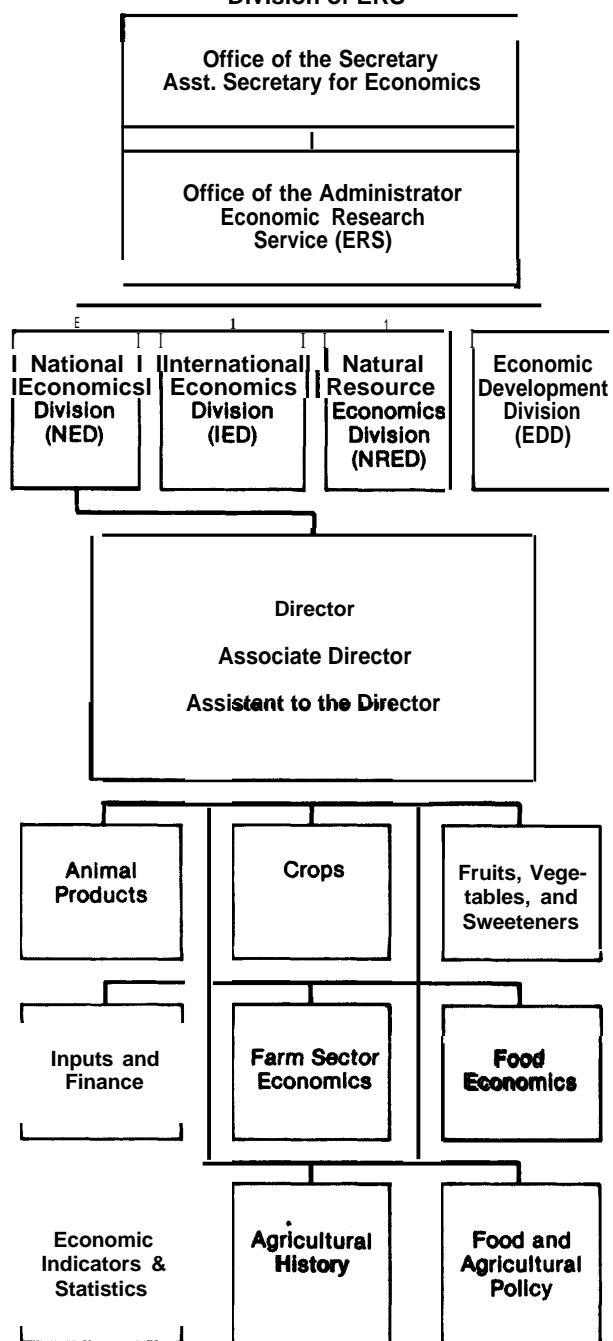
Prior to 1973, marketing economics research in ERS was an identifiable and prominent research activity, as noted in appendix D. Since then, the level of support for marketing research has decreased, and the level of research also has decreased. The level of real funding for marketing economics declined from fiscal year 1970 to fiscal year 1980, and the number of scientist-years\* devoted to marketing economics research in ERS dropped from 119 to 76 (8).

Changes in the content of the marketing economics research program were significant. Research on new products, merchandising, and promotion, including direct cooperation with the utilization/postharvest technology laboratories of ARS, was substantially reduced. Studies of plant efficiency and interregional competition, which had been a major component of the research in the 1950's and early 1960's, almost disappeared in the 1970's. Subsector studies received major resources in the late 1960's and early 1970's, especially the hog-pork subsector effort. Studies of market organization and structure received major emphasis. In the 1970's, added emphasis was put on studies of regulatory impacts, as the

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\*A scientist-year is the equivalent of one scientist working full time for 1 year.

**Figure 30.—Organization of the National Economics Division of ERS**



SOURCE: U.S. Department of Agriculture, Economic Research Service, 1982.

effects of regulation attracted much more public attention and regulation proliferated (8).

In addition to being fragmented within ERS, marketing economics research is also fragmented between ERS and SAES. There is little communication between ERS and SAES concerning the role of each on research in general, or on marketing economics research in particular. As discussed in the 1981 OTA report on the U.S. food and agricultural research system (4), ERS in 1979 convened a national committee of agricultural economics department chairmen and researchers to discuss mutual problems and interests. One issue raised was a perceived misunderstanding about similarities and differences in the role of ERS and university departments of agricultural economics. This lack of understanding was viewed as a barrier to improving the linkages and communication between ERS and universities. A number of stereotypical descriptions indicated the differing perceptions of the group: 1) ERS works on national problems, and universities work on local and regional problems; 2) universities work on micro problems and ERS on macro problems; 3) universities should conduct basic and methodological research, and ERS should conduct applied research; and 4) ERS serves national policy-maker clientele, and universities serve farmers and State policymakers.

It is clear that the agricultural economics profession is not in agreement on what the roles are or should be for ERS and the universities. Recently, ERS stated that its role is to concentrate on questions of national concern, leaving the regional and particularly local impacts to the universities (8). However, little unanimity of thought exists on this by the universities, and there is no coordinating mechanism to put it into practice.

During the long existence of the Bureau of Agricultural Economics (1922 to 1953) and since 1961, agricultural economics research, including marketing economics research, has been a separate research component in USDA. (Between the two

periods, most of the economics research was integrated into ARS and AMS. ) University departments of agricultural economics also are organized separately from other disciplines. One result from this type of organization has been some isolation from the rest of the agricultural research community. In PHTME research, this is especially the case between food scientists and agricultural economists.

The discovery of new knowledge does not come as easily and in such small disciplinary packages as it once did. Modern agricultural research is mission-oriented and interdisciplinary, involving the commitment of large expenditures over time.

Yet USDA and land-grant universities with some exceptions are not organized to perform this kind of research (3).

There is little communication and cooperative research work between ERS economists and ARS scientists. In fact, with the exception of some ad hoc groups that meet sporadically, no coordinating mechanism for planning and conducting interdisciplinary research exists between ARS and ERS (4). Within PHTME research, closer coordination and collaboration of marketing economics research in the National Economics Division and the postharvest technology national program of ARS are warranted.

## AGRICULTURAL MARKETING SERVICE

AMS, which was established by the Secretary of Agriculture on April 2, 1972, under the authority of the Reorganization Plan No. 2 of 1953, reports to the Assistant Secretary for Marketing and Transportation Services. AMS is an action agency that is responsible for providing services related to consumer protection, agricultural marketing and distribution, and regulatory programs as authorized by law.

AMS administers a market news service that provides information to producers, processors, distributors, and others on supplies, demand, prices, movement, location, quality, condition, and other market data on farm products in specific markets and marketing areas. It also administers several regulatory programs in the areas of standardization, grading, and inspection. At least 95 percent of the AMS budget in the 1980's has been allocated to distributing market news to the agricultural community and to inspection, grading of agricultural products, and other regulatory activities. Other ARS activities include market protection and promotion, wholesale market development, and market supervision and assistance. In the 1980's, less than 2 percent of AMS funds has been devoted to market development,

physical distribution of food and other farm products; for research designed to improve the handling of all agricultural products as they move from farm to consumers; and for increasing marketing efficiency by developing improved operating methods, facilities, and equipment for processing, handling, and distributing dairy, poultry, and meat products\* (6).

AMS research is aimed toward improving the efficiency of the marketing sector for agricultural products by improving the physical flow, improving productivity, and minimizing rising marketing costs. AMS research tends to be applied research of an economic/engineering nature that involves the application of new technology to marketing problems to demonstrate the potential savings.

To test and evaluate the application of technology to an industrywide problem, ARS often works with individual firms; typically, such firms lack the resources, skills, and funds to do their own research. At the conclusion of the evaluation, the results are publicized for the benefit of

In addition to its other responsibilities, AMS currently has responsibility for the conduct of studies of the facilities and methods used in the

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● From 1964 until 1979, AMS did not have a research program. In 1979, selected marketing research functions were transferred back to AMS from ARS. These included the animal research, marketing operations research, and food distribution research laboratories, which were a part of the Agricultural Marketing Research Institute of ARS. For more information on the history of the development of AMS research, see app. D.



all firms in the industry. When an improved method that is adopted by a firm results in costs savings, competition causes other firms to adopt the new technology rapidly.

AMS marketing research is conducted by the Marketing Research Branch of the Market Research and Development Division (see figs. 31 and 32). The Marketing Research Branch has three groups: 1) the animal products group, 2) the food distribution facilities group, and 3) the marketing system group. The animal products group conducts studies of marketing facilities and methods used in the assembly, processing, and distribution of meat animal, dairy, and poultry products. The food distribution facilities group is oriented toward analyzing needs and providing technical assistance for improvements in wholesale food marketing facilities in metropolitan areas and, similarly, for assembly market facilities for fruits, vegetables, and other crops. The marketing systems group conducts research on methods of receipt, storage, loading, shipping, packaging, palletizing, inventory control, delivery wholesaling, and retailing of agricultural products. Emphasis is placed on analysis of new or alternative methods of handling food products under existing or proposed operating conditions, such as firm size and location, to improve the efficiency of marketing.

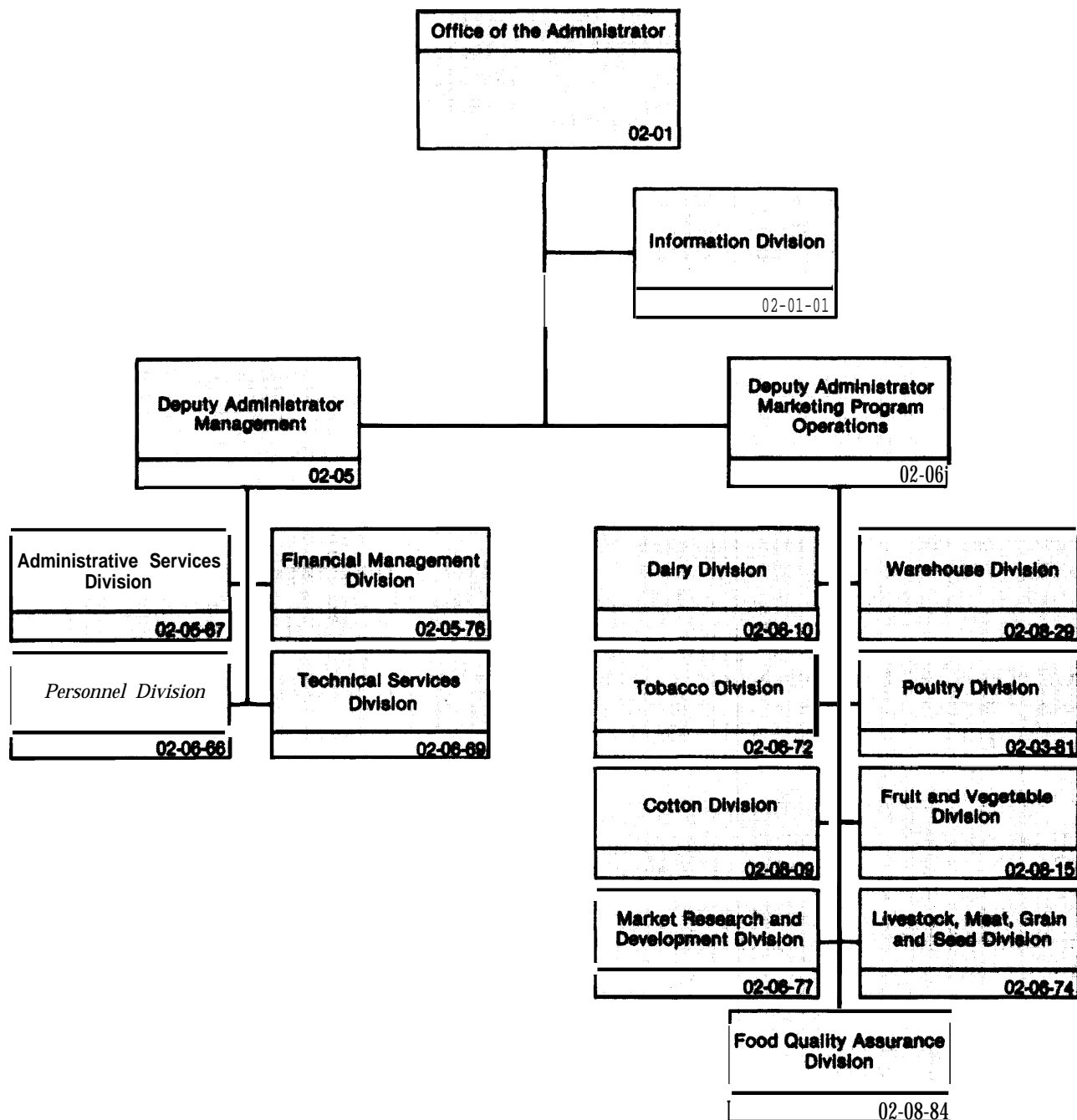
The research activities of the marketing research branch of AMS represent only one aspect of PHTME research, the physical handling of products at the wholesale level in the marketing chain. Although many AMS marketing research activities would benefit from an interdisciplinary approach, the present organization of USDA is not conducive to interdisciplinary research efforts. Other research that would complement and support AMS research is scattered among other USDA agencies, primarily ARS and ERS, and in many ARS field locations. Little coordination ex-

ists between AMS and the other agencies involved in this research (6).

Another concern is the placement of a research division in an action agency such as AMS. Historically, such placement has not provided a favorable environment for research. It usually results in: 1) administrators who are inexperienced and unfamiliar with research and problems unique to research organizations and, thus, less sensitive to their needs; 2) research directed to short-term applied problems at the expense of equally important, longer term basic research; 3) research tending to be less respected by scientific peers because the agency is oriented to action and less concerned with research; and 4) research that can easily be politicized so that research goals and directions shift with each change in administration (1). The above concerns have some validity. The administration's 1983 and 1984 budget proposal recommended the AMS research program be discontinued.

Serious consideration should be given to consolidating the present research functions of AMS with other major PHTME research efforts. As noted earlier, over 95 percent of the AMS budget is for providing market news and implementing regulatory activities. It seems that if there is a research component to this agency, the research it conducts might more appropriately be focused on the agency's major mission. This would include, for example, research to evaluate the benefits and costs of regulations proposed by AMS and the effect of such regulations on the postharvest and marketing sector and other sectors of the U.S. economy. Research on the effects of AMS regulations would provide AMS with an information base that it could use to improve, modify, or eliminate regulations to the benefit of society. ERS states that a part of its mission is to conduct this research for action agencies such as AMS. However, little ERS research is conducted in this area (8).

Figure 31.—Organization of the Agricultural Marketing Service

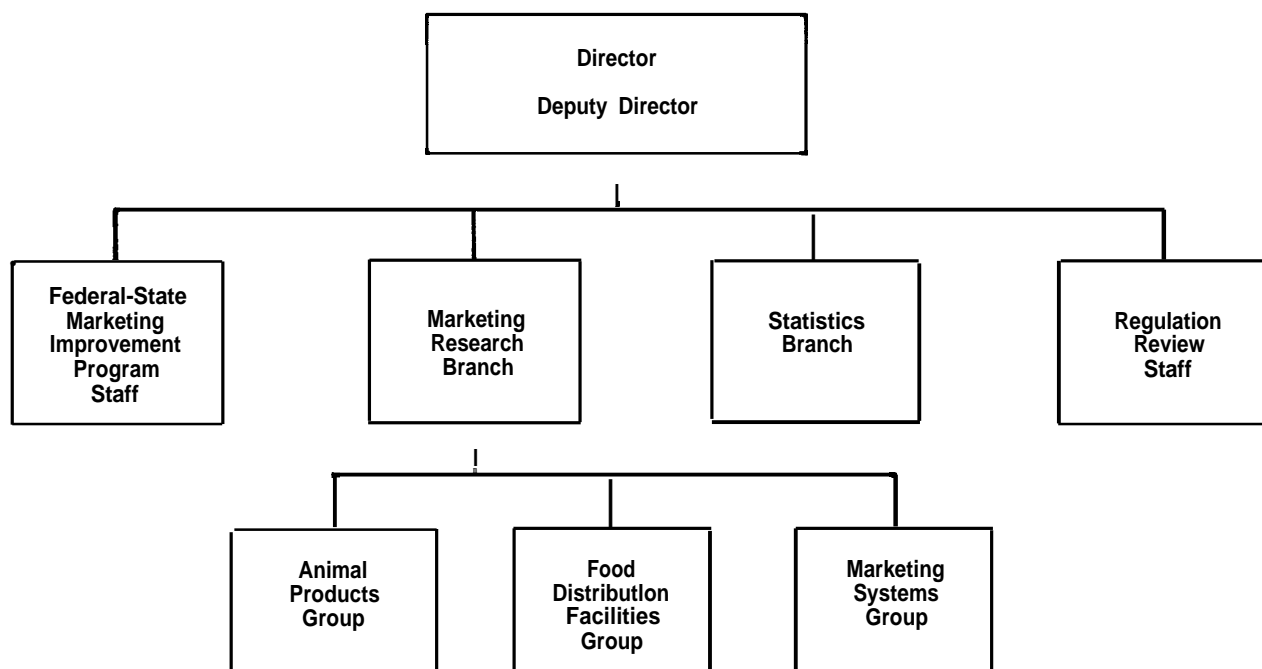


The mission of the Agricultural Marketing Service is to provide marketing services such as grading and inspection, market news, marketing agreements and orders, and related programs for various agricultural commodities, including cotton, milk, fruits and vegetables, grain, livestock, poultry, tobacco and related products to administer a program designed to license and bond public warehousemen storing agricultural products and weighers and samplers of such products; and to administer a said regulatory program.

Supersedes AMS Chart dated July 9, 1979.

SOURCE: U.S. Department of Agriculture, Agricultural Marketing Service, 1982.

Figure 32.—Organization of the Market Research and Development Division of AMS



SOURCE: U. S. Department of Agriculture, Agriculture Marketing Service, 1982.

## COOPERATIVE STATE RESEARCH SERVICE\*

CSRS is responsible for administering Federal funds that go to States for PHTME and all other agricultural research. Traditionally CSRS has developed a close working relationship with SAES, the schools of forestry, and the 1890 Colleges and Tuskegee Institute. Many of the staff were former scientists at these universities. The Administrator is a member of the Experiment Station Committee on Organization and Policy and meets regularly with it on research matters of interest to the States and USDA.

In coordinating research among the States and between the States and USDA, CSRS staff represent the States. This representation involves budgets, research priorities, formula v. grant funds, coordination, and in fact most problems the SAES have.

\*This is an abbreviated discussion of CSRS that pertains to PHTME Research. For a more detailed discussion, see ref. 4.

## Reviews of Research

### Desk Reviews

All research proposals to be financed in whole or in part from Hatch Act funds are reviewed by CSRS scientific staff. By mutual consent between CSRS and the SAES directors, all State-supported projects are also sent to CSRS. Thus, the CSRS staff is knowledgeable of all activities at the State level. To review the hundreds of projects in the PHTME research area, however, there were only two food scientists and one marketing economist on the CSRS staff in 1982.

The CSRS desk project review process sometimes is not productive. Most SAES directors submit good outlines; some do not. Some CSRS staff members make excellent contributions to the outline; others do not (2). Under the present administration, attempts are being made to have this function performed at the State level.

## Onsite Reviews

CSRS also conducts onsite reviews of research programs in progress. Onsite reviews are conducted as part of CSRS' responsibility for coordinating research sponsored by Hatch Act grant funds, but by mutual consent between CSRS and SAES directors these reviews extend to all SAES research, regardless of the source of funds.

The purpose of CSRS onsite reviews is to serve the needs of the institution or group that requested the review. Onsite reviews are conducted every 3 to 5 years and generally cover broad subject areas such as food science and agricultural economics research. Such reviews legally are not required, but most SAES personnel believe they are beneficial (2). If no request is forthcoming for a review of an area of work within 3 to 4 years, CSRS may suggest that a review be undertaken.

Onsite review teams include experts from universities, USDA, and the private sector. At the close of their review, these teams give an oral and written report to the scientists, department head, and the SAES director. Acceptance of recommendations concerning programs for the future—onsite reviews deal only briefly with the past—is an option that is left with the client institution.

## Administration of Grants

CSRS also administers a research grants program that uses the competitive process in the selection of grantees. These programs are:

1. competitive research grants program to support basic research in the food and agricultural sciences,
2. special research grants program to support research deemed by Congress and USDA to be of particular importance to the Nation,
3. alcohols and industrial hydrocarbons program, and
4. native latex research program.

A concern raised in the OTA report *An Assessment of the United States Food and Agricultural Research System* was whether CSRS was the appropriate agency to administer the Competitive Research Grants program. All U.S. research institutions and scientists that have expertise and

capabilities are supposed to be (and should be) considered equally as possible grantees. Having CSRS, whose main function and purpose is so closely tied to the SAES (which receives a large share of the grants), administer these grants gave reason for concern.

A conclusion from the OTA report was that the Competitive Grants program be removed from CSRS and possibly placed under the direct control of the Assistant Secretary for Science and Education. The present administration has placed the program under the Assistant Secretary for Science and Education, but for budgetary purposes the program remains with CSRS.

## Regional Research

The Hatch Act provides that up to 25 percent of the funds may be used for regional research to "stimulate and facilitate interstate cooperation on research of a regional and national character both among SAES and the United States Department of Agriculture" (5). Much of PHTME research has been supported by these funds.

The regional projects carried out under the SAES basically involve a group of scientists from different SAES working on a problem of importance to more than one State. The funds for regional projects which CSRS allocates give these scientists an opportunity to get together and exchange information and to coordinate their efforts. Generally, however, there is no one who is charged with responsibility of allocating resources (personnel and funds) to any given area of activity, there is no one who is held accountable, and there is no assurance that all aspects of the needed research will be covered. \* Nevertheless, these regional funds have been extremely useful. Not only do they benefit the work that is important to each of the cooperating States, but they usually result in a greater and more coordinated effort than there would have been without such funds.

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● One exception to this is NC117, a regional project in PHTME research on the Organization and Performance of the U.S. Food Production and Distribution System. It has a full-time executive director with authority to allocate resources and who is accountable. It is a model other regional research projects could emulate.

## CONCLUSIONS

Currently, public sector PHTME research is fragmented among and within several Federal agencies and SAES. ARS, ERS, and AMS each reports to a different Assistant Secretary within USDA: ARS reports to the Assistant Secretary of Science and Education; ERS reports to the Assistant Secretary for Economics; and AMS reports to the Assistant Secretary for Marketing and Transportation Services. This situation makes it difficult to coordinate public PHTME research ef-

forts, so that problems of national or regional importance are adequately and efficiently addressed.

Through all the numerous USDA organizational changes described in appendix D, PHTME research has been combined with, separated from, and recombined with production and other kinds of research. The frequency of change within the past decade has made it difficult to sustain an effective PHTME research program in the public sector.

## PRINCIPAL FINDINGS

- PHTME research is scattered throughout USDA. Most of the research is conducted in three separate agencies-ARS, ERS, and AMS. The fact that each of these agencies reports to a different Assistant Secretary inhibits the coordination of the public PHTME research efforts.
- ARS conducts most of USDA's postharvest technology research. Since 1972, ARS has been organized along regional lines, with ARS regional offices in regions corresponding to the SAES regions. While this arrangement is conducive to interdisciplinary research efforts, the boundaries of ARS regions bear little or no relationship to postharvest technology research problems, because such problems generally do not follow State lines. Furthermore, the reassignment of national program investigation leaders to national program staff positions in ARS with no line authority has diminished the national perspective and national technical leadership in the agency's postharvest technology research efforts.
- ERS conducts most of USDA's marketing economics research. Since 1973, marketing economics research has been fragmented within ERS and has not been an organizationally identifiable research activity. This arrangement has resulted in a loss of financial support for marketing economics research and has impeded cooperation with ARS laboratories and university departments of agricultural economics.
- AMS is primarily an action agency that provides market news services and implements regulatory activities, such as grading and inspection. AMS research activities represent only one aspect of PHTME research-namely, the physical handling of products at the wholesale level in the marketing chain. Little coordination exists between AMS and agencies involved in other related PHTME research. Furthermore, the placement of a research division in an action agency such as AMS does not provide a favorable environment for research.
- CSRS is responsible for administering Federal funds that go to States for PHTME and other agricultural research. CSRS desk reviews of research proposals have been less than in-depth examinations, and acceptance of recommendations from onsite reviews of research in progress is an option left to the client institution.
- SAES and the land-grant universities are organized by disciplinary areas, and this organization may inhibit interdisciplinary PHTME research activities involving food scientists and agricultural economists.

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