

Chapter X

Issues and Options

NOTE: This chapter was largely completed in early 1981 and refers to the food and agricultural system as of that date. Draft copies were made available at that time for congressional committee staff and executive agencies. Some of the report's policy options have already been enacted. The chapter has not been revised to reflect these changes, but the options enacted or in the process of being enacted are mentioned in footnotes.

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Issues and Options

This assessment of U.S. food and agricultural research addresses the structure of the research system as it relates to meeting the national and international research needs: a) to define local, regional, and national problems on a scientific or other basis in order to assign research responsibilities, b) to identify research roles of participating agencies, c) to evaluate present methods of priority determination, and d) to assess the quality of research management, the adequacy of funding systems, and methods of fund allocation.

Six main issues were identified and investigated. The study resulted in a number of per-

inent findings for each issue. Those findings that require action by the executive branch, but that also may be of interest through oversight to Congress, are discussed in more detail in appendix A. Others led to a number of options which Congress might consider in actions it chooses to take in strengthening and improving the U.S. food and agricultural research system. The relative merits and disadvantages of the options also are presented to give guidance in choosing the most suitable options and their possible courses of action.

ISSUE: ARE CURRENT ROLES OF THE PARTICIPANTS IN THE FOOD AND AGRICULTURAL RESEARCH SYSTEM WELL-DEFINED AND APPROPRIATE?

FINDINGS

There is a role for a strong national U.S. Department of Agriculture (USDA) research program. This role has been carried out in the past by USDA in-house research and Federal funding to State agricultural experiment stations (SAES). Historically, the USDA role was associated with broad regional, national, and international activities. The role of SAES, insofar as Federal funds are concerned, has been primarily for local, State, and regional problems. These roles are becoming less distinct.

Grant funds are provided for newly identified high-priority research needs. SAES, nonland-grant universities, and others compete for these funds on the basis of their interest and ability to do Federal research. This is a desirable aspect of the total research effort.

The Committee on Food and Renewable Resources has not yet satisfactorily fulfilled its role. This is because it is a relatively new fea-

ture in a well-entrenched bureaucracy; it needs more specific, highly defined objectives; and it does not have the authority of individual agencies that might be addressing the same problems from more authoritative positions.

Under the 1977 Food and Agriculture Act, the **1890** land-grant institutions and Tuskegee Institute participate in research and receive most of their funds from Federal resources. Their academic role and functions are consistent with those of the 1862 land-grant institutions. They have pressing needs—one of the more important being improved facilities. Coordination with the rest of the system is less than adequate.

The private sector tends to view its role primarily from a profit potential. It conducts research in areas of company interest and in areas that may give it proprietary advantages. There are significant research areas of interest to the public that are not receiving nor will

receive adequate research attention if left to the private sector.

OPTION 1

Maintain present roles with clarification. This option would imply continuation of most procedures in effect.

USDA would continue in its role as lead agency in the Federal Government, including coordination of all agricultural research, extension, and teaching activities conducted or financed by Federal funds. Roles would be more clearly defined as follows.

Federal funds allocated to USDA would be primarily for problems of regional or national importance, where: a) the nature or magnitude of the problem is such that a single State or States cannot provide the resources for its solution, b) there is regional or national concern for the problems, or c) from an industrial standpoint, the risk is too high or too demanding for a single industry. USDA also would remain responsible for servicing the research needs of action agencies within USDA. USDA would remain responsible and accountable to the executive and legislative branches of Government for the administration and national coordination of such programs. USDA would leave to the States those local, State, and site-specific problems that can be handled by the SAES.

SAES, insofar as formula funds are concerned, would have primary responsibilities for State and local problems. SAES also would deal with problems of a regional, national, and international nature that are an extension of their State and local problems. But, where USDA has active regional and national programs, such programs would be developed cooperatively. SAES and other institutions (e.g., nonland-grant universities) would compete for grant funds on the basis of their ability to effectively perform needed tasks.

The 1890 land-grant institutions would continue to receive Federal funds and carry out their present role. However, coordination with the rest of the system would be improved.

The private sector would continue without special incentives or pressures to conduct the research that best fits its interests.

Pros

This option provides Congress and the executive branch with one Federal agency, USDA, to hold responsible and accountable for the coordination of all Federal agricultural research funds, and within USDA, Agricultural Research (AR), which is responsible and accountable for broad regional, national, and international research programs. It provides a mechanism (when properly managed and organized) to carry out programs of immediate concern to Congress and the executive branch and to respond quickly to their mandates. It also provides a mechanism whereby Federal funds can go directly (through formula funding) to the SAES and the 1890 land-grant institutions. This helps maintain their research base and makes available the extensive resources of these institutions for problems of national concern—for direct use through grant funding and through cooperative efforts with AR. Further, through grant and contract funding, other interested research institutions can contribute to the national goals and needs of U.S. agricultural research.

The private sector is encouraged to continue its research efforts in those areas of most importance to the specific firms in accordance with the competitive and free enterprise system of this country,

Cons

This option continues to perpetuate the concern on the part of SAES of too much direction and coordination of research conducted with Federal funds. Non-USDA research institutions may feel that USDA is attempting to dictate their research programs to them. It also continues to foster greater difficulties in coordination of regional research funded through Federal sources than might otherwise occur if earmarking of formula funds by Congress for high-priority areas of

research were implemented. It perpetuates the problem of lack of strict accountability to Congress or USDA regarding the types of research problems which are to be funded. In addition, it perpetuates the lack of objectivity or clear rationale reflected by the Office of Management and Budget (OMB), the Office of Science and Technology Policy (OSTP), and others as a basis for choosing the research areas for funding. The decisionmaking process for agricultural research would remain unclear to the outside critics concerned with agricultural research.

OPTION 2

Eliminate the in-house USDA role. Provide increased funding to SAES to conduct most publicly supported research.

Pros

The SAES have large and capable research facilities and staff. They are well-acquainted with local and State problems and can effectively conduct research on these problems. Most regional and national problems are made up of local and State problems and if these are solved at the State level, eventually all such regional and national problems will be solved. Federal funds to the States provide more freedom to the individual researchers, and research can best be carried out in an atmosphere free of constraints.

This decentralization reduces the problem of bottlenecks in the articulation of local and State research needs and the flow of communication from the clientele to the researcher by not having to pass through high levels of administration in Washington, then back down to the researchers themselves.

Cons

This option provides no mechanism for an agency or individual to be responsible for the identification of specific national or regional research needs, methods of attack, and assurance that given programs could be carried out. It provides for no agency with direct accountability. It provides no mechanism for immediate and quick response to issues,

problems, and programs of immediate concern to Congress. It provides no direct support linkage to the research needs of USDA and other Federal action agencies.

When funds are in short supply, priorities must be set and funds allocated to the high-priority items. Researchers have to direct their interests and efforts to the high-priority items and the availability of funds. The important national research issues are not solved by a large number of researchers working "on" a problem, but by a few concentrating their efforts on the more important aspects of the problem and by coordinating and using in a planned approach all interested efforts relating to the specific problem in question. It is doubtful that an individual State or group of States is capable of supporting and conducting research of major national interest problems involving, for example, marketing, transportation, watersheds, and Federal regulations.

OPTION 3

Eliminate the in-house USDA research role. Use present in-house funds, special grants, and competitive grant funds for contract research to carry out important USDA research programs.

All in-house USDA research funds and USDA contract and grant funds except formula funds would be placed in one agency to be used for contracting important USDA research programs, a system similar to that used by the U.S. Agency for International Development (AID). USDA laboratories and field locations, including Beltsville, could be organized into centers for contract purposes. Federal positions, except those required for contracting purposes, at such locations would be eliminated. A fairly large overall USDA management and contracting staff with training in appropriate technical aspects of agriculture would be required. Ownership of field and laboratory facilities could be retained by the Government.

Pros

This would eliminate many Federal positions in USDA and would ease the personnel

ceiling problem considerably, Coordination might be improved in cases where SAES or State universities received contracts to carry out USDA programs. It might make the closing of some low-priority Federal facilities easier. USDA's ability to shift program emphasis when desired might be improved, It could provide special funds for additional short-term contracts on high-priority areas. Land-grant university research programs and those of the SAES receiving research contracts probably would be strengthened by the influx of new research funds.

Cons

This would eliminate the largest agricultural research organization in the United States under one management system. AID, which did and does operate in this manner, has never been able to attract sufficient competent technical staff. Thus, USDA would probably find it difficult to maintain a highly competent staff capable of planning broad regional and national programs, Since conduct of agricultural research on these programs is the principal purpose of the Federal in-house program, this function would be mostly lost. Costs of conducting such research programs probably would increase, because contractors, whether from State agencies or the private sector, would require a certain level of profit. It would be disruptive to all affected Federal research scientists, because they would have to become research contract managers to stay in USDA, or lose their Federal retirement and other benefits if they became contractors themselves or if they resigned. Many, if not most, scientists probably would seek employment elsewhere, and it probably would be difficult to hire competent staff. It would be very disruptive to the present research programs, and it would make planning and coordination with SAES more difficult, except where the SAES or State university was the contractor.

OPTION 4

Reduce the role of SAES in regional, national, and international research from the Federal standpoint by eliminating all for-

mula funds, leaving grants as their source of Federal funds.

Pros

This would help eliminate the criticism that formula funds are given to SAES without sufficient accountability and Federal management, It might help to remove some of the competition between SAES and USDA over budgets. It would increase the probability that Federal funds going to SAES and other institutions would go to those most capable of performing good research, if done on a competitive basis. It would make it easier to be sure the funds were spent on problems deemed by the Federal granting agency to be of high priority at the time of the grant.

Cons

This would tend to eliminate or drastically reduce the partnership between USDA and SAES and have some negative effect on coordination and cooperation. Many SAES could not maintain their research base without the present formula funding.

Unlike research in many other fields, much agricultural research is site specific, simply because it is so closely related to the problems of a specific area. There must be facilities and professional staff available for such research, none of which can be assembled or dissipated on short notice. Biological research must be long term and continuous to be effective. SAES are best equipped to manage this research, and formula funding provides a continuous and secure source of funds for this activity. In addition, overhead costs on grant funds are high; there are no overhead charges on formula funds. Therefore, from the Federal standpoint, less money is actually spent on research under grant funds than under formula funds.

It would draw resources (scientists) to one institution (receiving the funds) from other institutions. It would intensify competition for an available pool of scientists and the total social product could be decreased, It would also weaken the positive interrelation be-

tween fundamental knowledge creation and applied technologies or processes that exist in SAES. In addition, it could weaken the synergistic relationship among research, extension, and teaching. This would also decrease the capacity and initiative of some land-grant universities to develop young agricultural scientists who have regional and national orientation.

OPTION 5

Increase the role of the private sector through incentives to conduct more research of concern to the public.

Pros

The private sector now conducts research for the agricultural industry on the basis of business investment. It has the capability to conduct more research and probably would if it were profitable to do so. By providing direct grants, tax deductions, or other incentives, the private sector might be induced to increase its efforts in agricultural research. Since most businesses are profit oriented, the research would be directed more to practical business needs and hence might be of more immediate economic value than some long-term basic research efforts.

Cons

The very nature of the private sector requires it to be concerned with self-interest and self-preservation. While increased incentives might be helpful in some areas, it would be a mistake to assume any amount of incentives would assure adequate research on all issues of public concern and priority needs. Many public research needs in agriculture, if solved, would be counterproductive to some agribusiness firms—probably those that would be the most capable of working on such problems. Industry is not interested in conducting research on nonproprietary products. Research conducted by USDA and SAES maintains competition and is in the public interest. Research in the private sector, while frequently having many public benefits, can help to decrease competition among firms comprising the food and agricultural sector and can have adverse effects on the public in the absence of adequate public research.

There is danger of research inquiry focused on narrowly defined issues that are of proprietary interest to the business firms conducting the research. Most of the benefits would tend to be focused on business-related activities of the firm and affiliated firms, with much less attention directed to benefits to consumers and the general public.

ISSUE: ARE CHANGES NEEDED IN THE INTERNAL ORGANIZATIONAL STRUCTURE OF USDA TO EFFECTIVELY CONDUCT RESEARCH?

FINDINGS

Through early 1981, the Director of the Science and Education Administration (SEA) did not give adequate attention to policy and coordinating functions. Operational details of SEA interfere with effective management at the administrator's level.

The national program staff (NPS) has insufficient authority and responsibility to provide effective leadership to regional and national

research programs. A change in responsibility would be conducive to improved staff capability.

Rationale for establishing AR regions along the same boundaries as SAES regions is managerial and has been beneficial for this purpose. This rationale does not conform to types of farming or to regional or national issues, and as AR is organized, is detrimental to the development of broad regional and national programs.

There is little evidence of the need for area director positions in AR.

Cooperative Research (CR) conducts Hatch-supported project reviews. These are less than in-depth examinations. As a part of the process, onsite reviews are held, but at no specific intervals and with no required follow-up except as would be done locally.

CR lacks authority in dealing with the States. It operates as though it were under the supervision of SAES directors rather than the administrator of SEA.

CR administers the competitive research grants programs. Its major clientele, SAES, compete for these grants. There is criticism of this arrangement.

Human Nutrition (HN) has not accomplished the intent of the Food and Agriculture Act of 1977 with respect to human nutrition research. USDA established human nutrition research as a mission, but it did not establish human nutrition as a separate budget item. Nor has it properly funded and staffed the six research institutes to conduct meaningful research.

Through early 1981, in the Economics and Statistics Service (ESS), concern existed that the combination of the statistical unit with the economics research unit had caused confusion for the public between the statistical unit's information and the projections and forecasts of the economics research unit. A small proportion of the economic research budget is allocated to research and there is very little cooperative effort with AR.

SEA Organizational Structure

OPTION 1

Operate as a policy and coordinating office.*

SEA would no longer have an operating function. The administrators of the respective agencies would be responsible for the operating functions of their agencies. For example, budgets and other management functions

*USDA has begun putting this option into effect.

would be prepared within each of the agencies and coordinated at the SEA level.

Pros

The administrators of AR, CR, HN, and Extension could operate more efficiently if SEA were strictly a policy and coordinating office rather than an operating office, thus delaying decisions that can easily and more effectively be made by the administrators, and often second-guessing them. The director of SEA would have more time to carry out the policy and coordinating responsibilities of the office. These are not given enough attention and this may be one of the reasons research has not done well financially in recent years. This option would be helpful in removing the criticism of the administrators and SAES of the time involved and limited results produced from the SEA budget process. It would reduce staff requirements of SEA and shorten decisionmaking time for the administrators.

Cons

Removing the operating responsibilities of SEA and placing full operating responsibilities with the administrators would strengthen each of the respective administrators, but might make coordination and planning at the SEA level more difficult.

OPTION 2

Establish an Assistant Secretary for Research, Extension, and Higher Education with a Deputy Assistant Secretary who would coordinate agencies comprising SEA. The position of Director of SEA would not be retained.**

In recent years, research has become increasingly less important in USDA as evidenced in the budget and structure of the Secretary's office. Most studies of U.S. agricultural research have recommended that the present functions of SEA be headed by an assistant secretary.

**The presently drafted Agriculture and Food Act of 1981 authorizes a USDA Assistant Secretary for Research, Extension, and Higher Education.

Pros

This option would give research increased prominence in USDA and in the eyes of OMB and Congress. The office would have a larger role in forming overall policy and would give agricultural research a higher level of recognition. Further, it would have additional advantages as discussed in option 1. The role of knowledge creation and application in contributing to overall national policy and welfare would be strengthened within USDA.

The cost, both in terms of funds and social product or welfare forgone, always goes up as the number of individuals involved in coordination, planning, etc., is increased. Creating an assistant secretary could reduce somewhat the marginal social costs relative to current operations.

Cons

USDA has a limited number of assistant secretary positions. Since USDA in the recent past has not rated research and the other functions of SEA at a high level, it would not like to see one of the present authorized assistant secretary positions mandated for these functions. This option would require the removal of an assistant secretary position from another function unless Congress authorized an additional one.

Agricultural Research

OPTION 1

Within AR, transfer line authority including the responsibility and accountability for planning and coordination of research, and resource allocation for regional and national research, from regional administrators to NPS staff. (Discussed in app. A.)

OPTION 2

Same as above, but consider a change in the number and/or location of regions to provide more efficient management and eliminate the offices of area directors. (Discussed in app. A.)

Cooperative Research

OPTION 1

Strengthen authority in managing Federal funds to the States.

The authority of CR would need to be increased to enable it to administer Federal funds more effectively. CR would exercise more rigorous authority in approval and disapproval of proposed projects under formula funding and for reviews of such projects to be continued, reduced, or discontinued than it does today,

Pros

With increased authority, CR could represent the SAES in a more meaningful way within USDA concerning budgets, research priorities, formula v. grant funds, etc. It would increase their effectiveness in the review of research projects funded by Hatch or grant funds, as well as in their periodic reviews at the individual SAES. Such reviews would tend to increase the contributions of these projects and programs to agricultural research in general. This plan would help to eliminate criticism by OMB and others that these funds are not well-managed.

Cons

The original Hatch Act makes the directors of the SAES responsible and accountable for the Hatch funds they receive. It is doubtful that all SAES directors would agree to a stronger CR without legislation changing the agency's organic act. An effort to do this without the support of the SAES would be disruptive to the research effort.

OPTION 2

Establish formula funds as block grants and eliminate the CR office; establish a secretariat for handling block grants.

The directors of the SAES have the responsibility and accountability for the Hatch funds they receive. At best, CR is a general coordinating office with little or no real

authority. This option would eliminate CR and set up a secretariat to perform the task necessary to transmit the formula funds as block grants.

Pros

This option would save time, funds, and personnel positions of SAES and USDA, since the present reports, reviews, and planning with CR would not be required. It would have little or no adverse effect on research programs.

Cons

This option would tend to increase the criticisms that formula funds receive little or no meaningful review by USDA. The present reviews are desired and thought to be helpful by a number of SAES, but this benefit would be lost. CR staff provides services to the States other than project reviews, such as training for SAES directors, that would be eliminated.

OPTION 3

For options 1 and 2 above, remove administration of all competitive grants from CR or secretariat staff and establish an office for this function that would report directly to the Assistant Secretary of Research, or Director of Science and Education.

Pros

The competitive grants would be administered by an agency or office that would have no vested interest in who receives the grants. Any office that has a vested interest and administers such grants is subject to criticism, whether warranted or not. This option would give more objectivity to the competitive grants program. While this would mean an extra office reporting to the Assistant Secretary or Director of SEA, there would be a comparable reduction in authority and workload in CR.

Cons

It would require establishing an additional office.

Human Nutrition

Interagency Options

The OTA report *Nutrition Research Alternatives* discussed earlier dealt with interagency issues in nutrition research. The options on interagency cooperation stated in that report are still pertinent. The following option is added:

OPTION

Adopt a uniform accounting system for nutrition research expenditures for Federal agencies engaged in nutrition research.

This system would differentiate between those projects whose primary goal was human nutrition and those in which human nutrition was of secondary interest. A standard definition of human nutrition research would be followed.

Pros

This system would give Congress a mechanism whereby it could reasonably compare nutrition research efforts at USDA and the Department of Health and Human Services (DHHS). At present, this cannot be done because of the retrospective approach to the nutrition-research budget taken by DHHS and the large number of research projects done by the National Institutes of Health (NIH) in which nutrition is of secondary interest.

This system would eliminate double reporting of research funds which frequently occurs in an area such as nutrition because of the interdisciplinary nature of the field and its interactions with diseases, as well as growth and aging.

This system would differentiate between research actually carried out in humans and

that which merely may have applicability to humans.

Cons

Unless Congress can articulate a satisfactory accounting method that will clarify the research efforts of USDA and DHHS, it will be left to the individual agencies to determine.

Intra-Agency Options

OPTION 1

Maintain present management structure within USDA with clarifications in budget and staffing. [Discussed in app. A.]

OPTION 2

Remove HN from SEA and place it under the Assistant Secretary for Consumer Affairs. (Discussed in app. A.)

OPTION 3

Dispense with the HN center as an administrative and planning entity, and disperse human-nutrition research within AR, with each of the centers under the authority of the director for that region. (Discussed in app. A.)

OPTION 4

Dispense with HN as an administrative and planning entity, disperse the clinical and laboratory components within AR

under the authority of the regional directors, and place the survey and statistical research information services under the Assistant Secretary for Food and Consumer Services.* (Discussed in app. A.)

OPTION 5

For options 1 and 2 above, determine if all regional HN research centers are needed, and if not, which ones best serve the public interest. Available funds for HN would be allocated to the needed centers. (Discussed in app. A.)

Economics and Statistics Service (ESS)

OPTION 1

Reinstate each ESS component to separate agency status reporting to the Assistant Secretary or Director for Economics. (Discussed in app. A.)**

OPTION 2

Reinstate each ESS component to separate agency status with the Statistical Reporting Service (SRS) reporting to the Assistant Secretary or Director for Economics and the Economics Research Service (ERS) reporting to SEA. (Discussed in app. A.)

* USDA has put this option into effect.

**USDA has put this option into effect.

ISSUE: IS THE PRIORITY-SETTING SYSTEM FOR FOOD AND AGRICULTURAL RESEARCH WORKING?

FINDINGS

To adequately determine research priorities, explicitly stated goals for food and agriculture are required. There are no well-defined food and agricultural goals for the research community to use in determining priorities.

There is concern whether the functions assigned to the Joint Council on Food and Agricultural Science (JC) are attainable. It has

had major problems in attempting to satisfy these functions and as a result has had limited impact. Its effectiveness is limited by a lack of consensus among its members on its role, perception of USDA dominance, and overorganization.

Functions assigned to the National Agricultural Research and Extension Users Advisory Board (UAB) are more attainable than those for the JC. Impact of UAB on research priorities is unclear. It cannot represent all

users of research, and those not represented are critical of UAB's performance. UAB, like the JC, lacks its own operating funds and is dependent on USDA for its resources. Its membership includes research performers as well as users.

There is lack of a satisfactory long-term process for evaluating existing research activities, potential research opportunities, and development of a new set of research priorities. Long-term research planning covering a period of 4 years or more can be accomplished by an intensive, comprehensive study involving research administrators, scientists, and users.

Food and Agricultural Goals

OPTION 1

Maintain present system of no goals.

Pros

Establishing goals for food and agriculture is complex and time consuming. Not setting goals saves much time and expense of elected officials. Congressional action frequently represents the thinking of the most articulate groups. This may or may not represent the best action for a given sector.

Cons

With no goals set by society, the research community must assume some goals in order to prepare a research agenda. The research community cannot agree on what these goals should be, and this results in continuing confusion over the research agenda. The research community will continue to be criticized for its lack of direction. Further, since Congress provides the funds for research, it should set the broad long-term goals and expect the research community to respond to them.

OPTION 2

Congress and/or the executive branch set goals for food and agriculture.

Pros

This would give clear direction to the research community on what the research agenda should be. Public funds would be spent on research needed to meet goals established by society through its elected officials. Congress and the executive branch must deal with conflicting goals all the time, consequently they are in the best position to do this. Since Congress provides the funds for research, it should set the broad goals and expect the research community to respond to them.

Cons

Setting goals in food and agriculture is complex and time consuming.

Research Agenda

OPTION 1

Prepare a national research agenda at specific intervals using scientists, administrators, users, and consumers under the auspices of USDA. *

Such a study would: a) evaluate what is being done, existing priorities, and needed research opportunities, and b) develop a new set of research priorities and recommendations.

The study would use methodologies pioneered by the National Academy of Sciences' World Food and Nutrition Study and the OTA studies on nutrition research alternatives and emerging food marketing technologies for priority determination.

It would be conducted every 4 years with a final report delivery date of December 1 of the year of each Presidential election. The timing would coincide with both the installment of an administration and the enactment of the farm bill.

*The presently drafted Agriculture and Food Act of 1981 mandates USDA to conduct a long-range planning study for food and agricultural research.

Such a planning system would not be institutionalized in terms of the individuals involved. A cross section of scientists, research administrators, users, and consumers would be included. The staff conducting the study would be very small, consisting of a director, deputy director and a few assistants. The bulk of the work would be conducted through the various work groups of participants. This ad hoc feature is viewed as being critical to success in long-range infusion of new ideas.

Short-range planning would be done regularly by each research entity in conjunction with budget preparation. To bridge the gap between priorities and budget, research units would give special attention to how the proposed budget fits into the achievement of the goals established by the priorities identified in the long-range plan. Flexibility would exist for individual research units to emphasize those designated priorities that fit most closely their agricultural situation. This system is not meant to be a national priority setting for SAES, since they are primarily responsible for State and local issues. But it is a system for national priority setting for broad regional and national issues.

Using the concept of long-term priority establishment and short-term budget planning, the JC and UAB would modify their responsibilities to place emphasis on: 1) supervising the planning process, 2) providing a forum for communication, and 3) providing interim evaluation of planning goals. Specifically, they would assist in identifying and recruiting scientists, administrators, users, and consumers to be part of the long-range planning process. They would be the focal point in monitoring and evaluating the extent to which the research system is meeting the objectives specified in the long-range plan. They would also provide an interim evaluation of priorities in light of conditions in agriculture.

The whole process would be conducted on a continuous rolling basis that generates reports of past accomplishments, support for budget hearings, and periodic reports on longer term priority needs of budget planning and authorization.

Pros

Priorities established in the long-range study would serve as the basis for authorization and budget hearings with Congress and give a sense of direction to the total research effort. Hearings would reflect accomplishments and changes in the orientation that result from the planning process.

The modifications of responsibilities for the JC and UAB would permit a more simplified structure, particularly for the JC, than is currently anticipated. Also, the number of meetings required would be substantially reduced.

Coordinating the study under the auspices of USDA would be in keeping with the lead agency responsibilities for food and agricultural research given to USDA by Congress.

Cons

Because the study is coordinated under the auspices of USDA, other participants in the research system may feel it is a USDA study.

OPTION 2

Prepare a national research agenda at specific intervals using scientists, administrators, users, and consumers under the auspices of NAS.

This would be the same concept as discussed in the previous option. The only change is that it would be coordinated under the auspices of NAS rather than USDA.

Pros

NAS would be considered an unbiased and thus more objective party than USDA by some of the participants in the research system.

Cons

Historically, NAS has resisted the use of lesser known scientists, nonscientists, users of research, and the public in conducting such studies. The success of this effort depends to a large extent on the participation of these groups. NAS expertise is more oriented to basic rather than mission-oriented re-

search. Also, having NAS responsible for such a study would weaken USDA's leader-

ship role in research, which is contrary to recent legislation.

ISSUE: HOW SHOULD FEDERAL FUNDS BE ALLOCATED FOR IN-HOUSE USE AND FORMULA DISTRIBUTION?

FINDINGS

Formula funds are necessary for maintaining a strong SAES in the pluralistic food and agricultural research system.

Distribution of Federal funds for in-house funds, formula funds, and special grants has remained relatively constant over the last 65 years.

OPTION 1

Maintain present method for distribution of in-house and formula funds.

The distribution of Federal funds to SAES and USDA would continue to be determined by negotiation between the two parties and the relevant appropriations subcommittees.

Pros

Since historically the distribution of Federal funds for in-house and formula funds has remained relatively constant and has seemed to work well, there is little need for change.

Cons

Much time and energy are spent by many individuals and organizations in vying for these funds. Their efforts could be better spent in conducting research.

The friction created by this process unnecessarily interferes with the needed close relationship between SAES and USDA.

OPTION 2

Set Federal funds for formula funding and special grants at a fixed percentage based on historical precedents.

SAES would receive a specific percentage of the total Federal funds for research. The percentage to be derived is not meant to be a minimum or maximum. It would be a fixed amount that is determined by Congress based on performance and historical precedent. This would be based on the total of formula funds, special grants, and AR in-house funds. The base would not include competitive research grants and capital investments.

Pros

A fixed percentage would end the vying for funds by SAES and USDA at the expense of each other and would reduce the time and effort involved. It would allow these two major research institutions to work more closely together toward their common goals and present to Congress a more unified approach to solving our important food and agricultural problems. It would eliminate the most important cause of friction between USDA and SAES, which at times adversely affects the whole system.

Cons

In the budget process, individual budgets should be authorized on their merit and not as a percentage. Budgets set as a percentage of total funds introduce the likelihood of a lack of rigor in responsibility and accountability of expenditures.

ISSUE: WHAT SHOULD THE SOURCE OF FUNDING BE FOR U.S. AGRICULTURAL RESEARCH, AND ARE PRESENT LEVELS ADEQUATE?

FINDINGS

USDA expenditures for research are the lowest among major Federal agencies that conduct research. In 1978, USDA's share of Federal expenditures for research was 1.5 percent of total expenditures.

Constant dollar agricultural research expenditures of USDA in-house research increased only 1 percent between 1966 and 1979, while those in SAES increased 40 percent.

State appropriations are the major source of research funding at the SAES, and in constant dollars increased 57 percent from 1966 to 1979. Federal Hatch funds account for 20 percent of SAES funding, and in constant terms have increased on the average only 1.5 percent a year from 1966 to 1979, or 20 percent for this time period.

The justification of public funding of food and agricultural research is based on benefits well in excess of costs. Issues of equity, because of the interstate flow of food and related commodities and the spillover effect of research from one geographic region to another, are also cited. Producers benefit from expanding demand and from reduced costs. The distribution of consuming population among States, however, is related to the distribution of agricultural production only to a very limited degree. From the equity consideration of the geographic distribution of costs associated with research and the benefits flowing from this research, substantial Federal funding of food and agricultural research is considered the most equitable. Paradoxically, Federal research funding, relative to State funding, has decreased as the interstate flow of commodities has increased. Therefore, taxpayers in food-surplus States are subsidizing consumers in food-deficit States, and the degree of subsidization is increasing steadily.

OPTION 1

Maintain present Federal funding levels.

Pros

From a management standpoint, limited funding, up to a point, tends to increase the efficiency in the use of funds. It focuses the use of funds on the highest priority areas. Even though funds are not adequate, in times of austerity it may be all that can be afforded.

Cons

There is a certain level of funds needed just to maintain the research establishment. This does not allow research institutions to keep pace with higher research costs and does not allow research into new problem areas without reducing significant levels of effort in important traditional research areas. Nor does it allow the United States to maintain the strength and responsiveness necessary in meeting growing U.S. and worldwide needs and demands for food and other agricultural products. From an equity consideration, the ratio of Federal funding relative to State funding for research would not improve, causing taxpayers in food-surplus States to continue subsidizing consumers in food-deficit States.

OPTION 2

Significantly increase present Federal funding levels for food and agricultural research.

Pros

Significantly increasing the Federal level of funding will: 1) allow the research institutions to better keep pace with the high cost of conducting research, 2) allow the pluralistic research system to embark into new areas of research while maintaining significant levels of effort in important traditional research areas, and 3) allow the United States to maintain the strength and responsiveness neces-

sary in meeting growing U.S. and worldwide needs and demands for food and other agricultural products. From an equity standpoint Federal funding relative to State funding for research would increase, which in turn would decrease, if not eliminate, the subsidization by taxpayers in food-surplus States to consumers in food-deficit States.

Cons

From a strict management standpoint an increase in funding may tend to decrease the efficiency in the use of funds.

ISSUE: DOES THE INTERNATIONAL RESEARCH PROGRAM SERVE NATIONAL AND INTERNATIONAL INTERESTS?

FINDINGS

AID and USDA are involved in international agricultural research and technical assistance, but from the developing country standpoint, AID is the prime Federal agency.

Research and technical assistance to assist developing countries requires an in-house capability in the technical disciplines and issues to be effective. Organizational structure, responsibilities, accountabilities, and procedures must reflect this fact.

Through early 1981, AID was not organized to be effective in carrying out its responsibilities. Technical leadership was lacking in the decisionmaking positions. With 50 percent of the total budget in food and agricultural activities, technical personnel trained in these areas accounted for 5 percent of the total. Few, if any, were in decisionmaking positions.

The United States has much to gain as well as give in the international research network. At present no Federal agency has the specific responsibility for taking the lead in coordination and cooperation on methods, proce-

dures, and actions necessary to accomplish maximum U.S. benefits.

OPTION 1

Centralize technical staff in one bureau in AID. USDA would maintain its present level of activity. * (Discussed in app. A.)

OPTION 2

Establish within AID technical operating bureaus around the major thrusts of the AID program as defined in legislation—i.e., food and nutrition, population and health, and natural resources and energy (technical bureaus would be headed by technical career professionals). USDA would maintain its present level of activity. (Discussed in app. A.)

OPTION 3

Increase USDA involvement in the international agricultural research network with major emphasis on maximizing U.S. benefits. This applies to both options 1 and 2 above. (Discussed in app. A.)

*AID has moved in the direction of this option, but still retains the regional bureau structure,