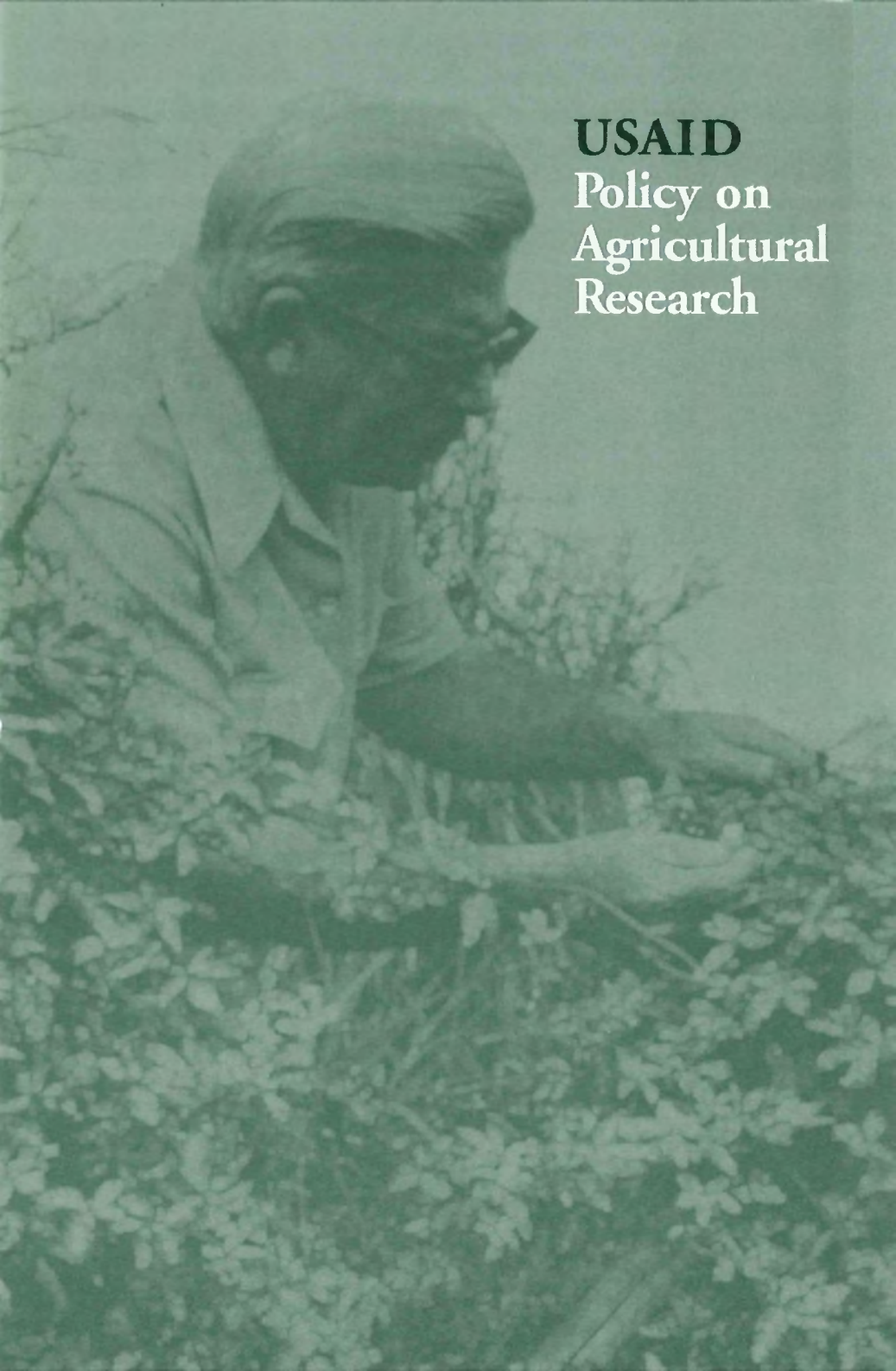

USAID Policy on Agricultural Research

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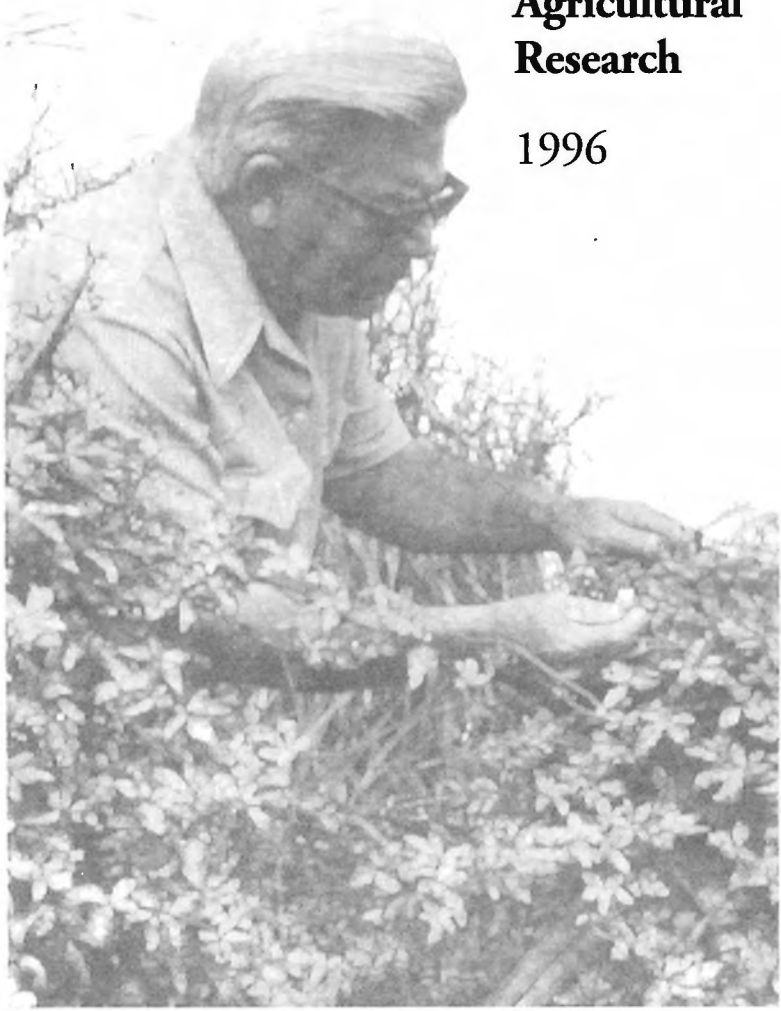
1996



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

This policy document includes:

1) a policy framework;

2) criteria for selecting agricultural research topics and institutions; and,

3) guidance for applying criteria.

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I Policy Framework

The U.S. Agency for International Development (USAID) has a long history of support for agricultural research. Its efforts and funding reflect confidence in the strong contribution agricultural research makes toward achieving the long-term objectives of U.S. foreign assistance. Originally begun in the 1960s, USAID's agricultural research program expanded significantly in the 1970s in response to the global food crisis. During the 1980s, local crisis and development needs replaced the global food shortage as the driving force motivating agricultural research.

Agricultural research is now understood, more broadly, in terms of three fundamental goals. First, agricultural research remains a key weapon in the fight against hunger; the technologies and policies it generates reduce the per unit cost of food production, processing and delivery, lowering real prices and raising real incomes of agricultural producers. Application of improved technology also fights hunger by stabilizing food supplies and providing access to food for poor households. Second, productivity gains from agricultural research foster a wide array of economic linkages; the resulting agricultural transformation is a necessary but not sufficient condition for broad-based economic growth. Third, agricultural research underpins the environmental sustainability of land and water use systems, whether intensively or extensively managed. Many USAID environmental objectives, such as conserving biodiversity, reversing tropical deforestation, or assuring adequate and safe water supplies, depend on sound agricultural management of natural resources by agricultural producers.

This document describes USAID policy with regard to USAID-funded research on agriculture. It serves as the basis for determining the intent and scope of such research, establishing research priorities, identifying new research initiatives, and guiding the allocation of USAID resources for agricultural research. The guidance on selection of topics is useful for testing how any proposed research compares with alternative proposals in meeting USAID thematic interests.

Agricultural research is an essential component of development assistance due both to the critical role of agriculture in developing economies and to the capabilities of donor agencies. Agriculture is the largest source of employment in developing countries and will remain so in most of the poorest nations for many years. The majority of poor people in developing countries live in rural areas. Because the aggregate food needs in developing coun-

tries may already or soon will exceed the ability of those countries to produce food with existing technology, food needs burden the trade balance of these countries. The rising global pressure on food production capacity, arising largely from population increase and from urbanization, will make greater food production in developing nations essential. Efficient, local food production strengthens access to adequate nutrition for rural people and uses the resources available to the relatively poor in rural areas. Donor agencies like USAID are more experienced in supporting research and better able to fund international research institutions than are agencies in developing countries.

A. Agricultural Research Objectives

Authority for USAID funding of agricultural research is explicitly granted in the Foreign Assistance Act (P.L. 87-195, section 103A), which states such research shall:

(1) take account of the special needs of small farmers;

(2) investigate interrelationships among technology, institutions and economic, social, environmental and cultural factors affecting small-farm agriculture; and,

(3) make extensive use of field testing to adapt basic research to local conditions.

The current USAID Policy Paper on Food and Agricultural Development (1982) states two broad objectives:

(1) increased food availability through increased agricultural production and greater efficiency in marketing and distribution; and,

(2) improved food consumption through expanded employment, better use of nutritional principles in health, education and other programs affecting food access and utilization, and more effective distribution of food to people facing severe malnutrition and temporary food shortages.

Effective pursuit of each of these objectives requires research on both social and technological issues to reinforce the effectiveness of non-research USAID activities in each area. This research must address the technical issues that are relevant globally as well as the local contexts that influence application of improved technology. To be effective, research should be linked to a process for dissemination and utilization. Dissemination is not funded by research funds, but a dissemination mechanism should be identifiable before the research can be justified.

Further objectives for agriculture are expressed in the agency's Strategies for Sustainable Development (1994), including conservation of soil and water through improved cultural programs, erosion planning and control, integrated pest management, reductions in the use of pesticides and in fertilizer and pesticide runoff, and efficient design and management of irrigation systems.

The agricultural research objectives must also be consistent with the objectives expressed in the USAID Policy on Research. USAID research will:

(1) enhance the nature, effectiveness, efficiency, and appropriateness of interventions that improve the well-being of women, men and children by offering long-lasting solutions to key development challenges in the areas of population, health and nutrition, economic growth, democratic governance, and management of the environment, and humanitarian assistance; and,

(2) foster creative scientific and technological discoveries, innovative strategies, and self-reliance. Research should develop host country capacity, when appropriate, for identifying and solving local problems and be readily available to decision makers.

Achieving self-reliance calls for research methods that build the capacity of individuals and institutions in developing countries to fully implement future research programs.

The USAID Policy Paper on Food Aid and Food Security calls for research that:

(1) enhances agricultural productivity;

(2) investigates nutrition at the household level;

(3) focuses on basic food crops; and,

(4) focuses on crops that are critical to maintaining food supplies in periods of crisis.

B. Definition of Agricultural Research

Agricultural research supported by USAID should systematically investigate well-defined problems in order to produce knowledge that will offer solutions to specific development challenges in the agricultural sector. The problems at issue may require improved technology or social understanding (or both). In contrast to most other fields of knowledge, agriculture often requires research on how to maintain existing levels of productivity. In addition to the commonly accepted elements of agriculture— producing crops and raising livestock— the breadth of activities in the agricultural sector to be addressed by USAID is indicated by the Foreign Assistance Act (P.L. 87-195, section 103b1), which directs agricultural assistance primarily toward increasing the productivity and income of the rural poor through:

(1) strengthening local institutions;

(2) stimulating small, rural enterprises;

(3) improving marketing facilities;

(4) expanding rural infrastructure;

(5) improving land tenure arrangements; and,

(6) strengthening farm input supply systems, including the research system.

For accounting purposes, research funds allocated by USAID are placed into three categories: applied, basic and development (OMB Circular A-11). Applied research includes the development of agricultural practices, and economic, social and technical research as it relates to agricultural programs. Basic research is the study of fundamental aspects of phenomena and of observable facts without specific applications toward processes or products in mind. Development research is the application of knowledge toward the production of useful materials, devices, systems or methods.

II Criteria for Selecting Agricultural Research Topics and Institutions

The selection of research topics and institutions is a critical stage in the formulation of USAID's agricultural program. The selection will be guided by the following criteria delineated in the USAID Policy on Research, but these criteria must be interpreted for application to agriculture. Furthermore, the implementation of these criteria requires an understanding of USAID priorities among agricultural strategies for development, which are not addressed in the research guidance. Therefore, this paper addresses how the selection criteria should be applied for agricultural research to determine priority areas and institutional arrangements for research. Generally, the same criteria guide selection of topic and institutional arrangements for research. A minimum level of expected performance on each criterion must be met simultaneously for a research topic to receive priority in USAID funding.

(1) **Relevance.** Relevance to USAID's strategic priorities must be clear, including the attainment of functional and cross-functional goals as delineated in USAID's Strategies for Sustainable Development.

(2) **USAID's Unique Role.** There must be a critical need for and comparative advantage of USAID support as a unique or important donor.

(3) **Importance of the Problem.** Magnitude or severity of the problem is large, and opportunities for impact and involvement are great. Significant factors include, but are not necessarily limited to: numbers of people affected, geographic area affected, and economic impact.

(4) **Consistency.** Consistency with ongoing development assistance activities and strategies must be clear so that the research contributes to and builds upon current activities and promotes the agency's strategic objectives.

(5) **Feasibility.** There must be a reasonable likelihood that research will produce useful knowledge or understanding, or critical related technology(ies) within a specified time.

III Guidance for Applying Criteria

This guidance does not identify highly specific research topics and institutional arrangements for support. The merit of specific topics depends too heavily on circumstances that are changing. Furthermore, the universe of possible topics cannot be specified and the topics cannot be defined in optimal units for implementation without interaction with potential implementors, beneficiaries, and alternative suppliers of research funds. However, guidance is provided here on the desirability of key research attributes and on institutional arrangements for achieving those attributes.

This guidance defines a set of mandatory considerations and indicates how each shall be used to implement USAID policy. The mandatory considerations must be taken into account simultaneously to determine what priority USAID places on a potential research topic or institution. No subset of mandatory considerations is sufficient to determine whether a project should be funded. A low priority attribute on a mandatory consideration might be offset by high priority on another mandatory consideration. For example, an agricultural research project design that fails to demonstrate effective targeting of poor people would not necessarily be eliminated from consideration even though it would have thereby received low priority on the targeting consideration. If the same project cannot be redesigned, but it receives high priority on the basis of other mandatory considerations, it might be funded.

In contrast to the mandatory considerations, each criterion described in Section II must be met. Failure to meet any single criterion is sufficient to deny funding for a research project.

A. Mandatory Considerations for Selecting Topics

- **Portion of the economy under study:** Agricultural research might address a single commodity, a group of commodities, the agricultural sector, the rural economy, or the national, regional or international economy. Any of these might be the most relevant approach in a particular circumstance. Narrower focus will tend to address smaller problems but have greater impact on the solution. Commodity programs should be undertaken only when the size of the problem they represent in relation to USAID objectives is well documented. Thus, research on rice, on which a large portion of the people in USAID-assisted countries depend for food and income, is a better candidate for USAID funding than research on a commodity serving

an export niche market. Similarly, a program on rice genetics is favored when it is shown that crop genetics is limiting incomes of targeted populations more than input availability, price policy or other sectoral constraints. Some commodities have broader use among countries and thus should be targeted over those with fewer potential users. Food crops are usually better candidates for USAID research.

Focusing agricultural research efforts on problems within the agriculture sector is advisable to assure the most effect on agriculture, leaving research that goes far beyond that sector to other funding sources. Macroeconomic problems like foreign exchange overvaluation and excessive government budget deficits, for example, should not be targeted by USAID agricultural research, in the expectation that they will be addressed by institutions like the International Monetary Fund. Nonetheless, USAID research should take into account macroeconomic developments when relevant.

- **Planned research use:** Although all forms of research (basic, applied and development) are important for individual situations, USAID's comparative advantage generally lies in applied or development research, i.e., research that identifies a particular need and applies established techniques for remedy. Development research is often addressed most effectively under leadership from the private sector or institutions in recipient countries. USAID may provide significant support to such local institutions, but that institutional support should not come from research funds. Basic research (as defined above) should be addressed in U.S. institutions and elsewhere with alternative funding sources.

- **Timing of research impact:** Research may be intended for immediate, intermediate or long-term impact. Internationally funded research is limited in its ability to deliver a usable product in response to immediate objectives. Even adaptation of existing technology to local conditions is slowed by the need to develop a knowledge base on local conditions that is useful to the holders of technological knowledge. USAID research is hampered in addressing long-term issues by the fluctuation in availability of funding for any particular line of research. However, long-term research has potential for more aggregate impact and for value to more users. Therefore, USAID-funded agricultural research should be directed toward relatively long-term research.

- **Degree of targeting:** Each agricultural research effort should define its target beneficiaries within developing countries. Beneficiaries might be appropriately defined among disadvantaged groups of a specified country or region. More broadly, agricultural researchers face a choice among problems identified as global, regional, national, local, or individual. Following the criterion expressed above of placing priority, in part, according to the number of people potentially affected, research should be directed toward problems with broad impact. However, USAID should focus on problems of particular importance to disadvantaged people in developing countries. Problems with immediate impact on developed nations will tend to be addressed by funding sources outside USAID. For example, global warming, which can be linked to agricultural activity in developing countries, will be a concern to funding sources whose central mission is not development.

Problems defined at the national level obscure differences among national units. Small countries are much more likely to have their problems recognized in an array of national aggregate data than a large country in which positive attributes offset negative ones. There is more hunger in India than in any African nation, but there is no aggregate food shortage in India because the nation is able to import sufficient food to fulfill its effective demand.

Identifying needs at the individual level may be so demanding of data that it wastes money on documentation. The degree of detail in targeting should reflect the level of information necessary to assure that beneficiaries are needy relative to those of alternative research projects.

- **Implementation capacity:** Where more than one constraint to development is present, research priority should be placed where the most impact is expected, rather than to explore all constraints with equal vigor. The selection of constraints researched by USAID should account for comparative advantage in USAID implementation strategies. For example, USAID's budget limitations constrain its capacity to supply or subsidize variable agricultural inputs, like fertilizer or credit, particularly in the long run. Thus, research that shows the best ways to subsidize credit would have a low priority for USAID funding even though research on other aspects of credit might be justified. In contrast, USAID can leverage its policy recommendations with influence from other U.S. activities and through cooperation with other donors. Research on policy reform would receive high priority. USAID implementation capacity favors management-intensive strategies over resource-intensive strategies. Similarly, USAID implementation strategy emphasizes working through governments in recipient nations (rather than individuals), through U.S. suppliers of expertise and resources, and through non-governmental organizations with demonstrated abilities.

Some attributes of agricultural research are not relevant for determining the priority of the research.

- **Location in the production chain:** Agricultural research might address topics defined at the level of input supply, production, storage, processing, marketing, consumption or some subset or combination of these. Every research effort should be coordinated with the rest of the agricultural system, and thus it is inappropriate to exclude systematically any portion of it from the research scope. Research priority on a commodity should be located wherever in the production chain the constraints are most pressing. Each research effort should link its problem definition and its recommendations to both forward and backward links in the chain.

- **Disciplinary approach:** USAID should not allocate research on the basis of academic specialties. Agricultural research requires simultaneous application of insights from various disciplines to assure that appropriate technology is developed. Social science will be required to assess needs and constraints alongside agronomic, biological and engineering applications.

B. Selection of Institutional Arrangement

Agricultural research is undertaken by USAID through support to International Agricultural Research Centers, U.S. and other higher education institutions, private

research and consulting firms, and national agricultural research institutions and universities in developing countries. These institutions tend to have comparative advantage in different areas of research. While none of them is universally ascribed priority, each should receive priority according to its relative ability to address the research topics given priority in the discussion above. The USAID Policy on Research emphasizes that all institutions must compete on an equal basis by specifying that when a U.S. institution is involved, its comparative advantage as a participant in the research must be clear.

Since development problems often require research at a number of levels, complementary relationships among researchers, research institutions and higher education institutions are essential to effective performance. They should be considered at two levels. First, within an activity, the participating institutions should be linked in such a way as to ensure that the whole activity becomes more efficient than if various parts were conducted independently. Second, the activity should be integrated into its setting in relation to complementary research, extension and commercial activities, user groups and other constituencies. Within USAID, this implies a partnership involving missions, regional bureaus, the Global Bureau and the Policy and Program Coordination Bureau. Linkages outside of USAID are also important, involving other donors, the research community, technology disseminators, farmers and consumers.

Funding research should be clearly separated from funding research institutions *per se*. USAID has an interest in supporting a research capacity for addressing development issues, and that capacity must be diverse enough to meet the wide range of problems to be faced in the future. Research funds, however, should be directed principally to the institution best able to solve the problem in question. When institutional support is taken into consideration, priority should be granted to institutions with unique capabilities or fewer alternative sources of funds.

Despite the synergy of cooperation, higher education institutions, international centers, developing country institutions, and the private sector clearly have areas of greater or lesser comparative advantage. Within USAID, different offices are better situated than others for managing particular research efforts. Some of these advantages derive from the nature of the institutions while others depend on the situation in a particular country or a specific set of objectives.

- **Geographical coverage:** The geographical coverage of a research institution has much to do with the types of problems it can address. Institutions that are relatively local in orientation tend to have better information on local conditions while less local institutions tend to have better access to highly technical expertise. Additionally, less local institutions are better placed to draw on the experience of other localities and to transmit their results to other localities. This divergence in capabilities is so strong as to dictate in nearly all cases that research proceed collaboratively in pursuit of efficiency. A group of local institutions may be able to guide an international institution in defining problems by using their closer relationship to targeted beneficiaries. During research, the local institutions can assist in providing information on local conditions. After research findings are achieved, local institutions can contribute to dissemination based, again, on their unique linkage to beneficiaries and to other local institutions.

  In addition to the contribution to research efficiency from using local institutions, there is benefit to development

from collaboration because it builds their institutional capacity. Serving this second objective supports the sustainability of the research under way by placing an intimate knowledge of research results in a relatively permanent location in the recipient economy and is supportive of future research efforts on other topics, regardless of whether USAID participates.

Cooperation with institutions at any level of geographical coverage presents opportunities for leveraging USAID's funding. Institutions with broad coverage should attract funds from a variety of donors, and USAID-supported research should seek ways to apply the other funds to the priorities it identifies. At more local institutions, the research impact should be more tightly focused, justifying support from local funding. Thus, recipient governments should recognize the value of the research to their objectives enough that they are willing to support it tangibly alongside USAID.

- **Institutional structure:** The services needed for a particular research effort often require a diversity of expertise. This diversity may be obtained by contracting with organizations that have a range of abilities, such as large higher education institutions; organizations that assemble expertise from a variety of institutions, like private contracting agencies; or from consortia of specialized institutions. These alternatives have diverse capabilities, and none is specifically favored by USAID policy.

  The International Agricultural Research Centers offer a record of achievement in relatively long-term technology development, usually defined in terms of improving productivity of a specified commodity. The Collaborative Research Support Programs are more responsive to the objectives specified by USAID because USAID accounts for a larger portion of their funding. They conduct applied research complementary to the research of the International Centers, and technological development on a different set of commodities or on particular integrated approaches to agricultural development. Small grants research programs offer responsiveness to initiatives from the research community and an ability to address small-scale problems where they are identified as important constraints to development.

- **Contract structure:** Research may be supported by USAID through contracts, cooperative agreements, or grants. The relative merits of each instrument are described more fully in the USAID Automated Directives System. Generally, contracts provide the greatest accountability for results while grants provide the greatest flexibility for researchers and the least administrative cost to USAID. The advantages of grants are particularly important in research relative to most activities supported by USAID. Since research may require highly specialized knowledge, USAID managers may lack the expertise to describe how research should proceed in the detail necessary for a contractual arrangement. A cooperative agreement is appropriate where USAID is capable of serving as a technical partner during research and the research product is likely to be adjusted during the course of research in response to changing conditions or new information. Contracts should be favored when the deliverable products can be especially well defined prior to beginning research.

  Contracting instruments should be structured to take advantage of competition among potential researchers in most instances. Promoting competition, however, raises the risks facing research institutions, and tends to reduce institutional investment in fixed assets. Although long-term support by USAID

has gone to certain research institutions, USAID does not offer advance commitments of support longer than five years although initial authorization may cover ten years. Continued support should depend on performance of the research institution and the relative priority of the area being researched.

- **Responsibility within USAID:** Where related problems are experienced by several countries, the research effort should be managed within USAID at the regional or global level, meaning that regional bureaus or the Global Bureau should lead the research effort. This presents opportunities for sharing of information and bringing the best expertise to bear on each country's problem. Where the benefits of research will be shared among the units represented by different USAID bureaus, there may be insufficient incentive for any single bureau to undertake the full effort that is justified from the USAID perspective. Research funded entirely at the mission level should be limited to local contributions to regional and global research efforts and to issues with little parallel in other USAID-assisted countries.

- **Linkage to private sector research:** Research funded by USAID should concentrate in areas where insufficient incentive is present to attract private sector research even though the potential benefits are sufficient to justify the research effort. This occurs where either ownership of the research result is difficult to enforce or where beneficiaries of the research have inadequate ability to pay. For example, in the first case, ownership of a new seed hybrid is relatively enforceable since the crop does not yield new seed of equivalent quality to the starting hybrid. In contrast, ownership of a new plant variety that breeds true in farmers' fields is hard to enforce, and, as a consequence, it is difficult for the developer of the variety to recoup research costs. The priority placed on productive research areas with low private incentives supports efforts to develop technologies whose use is inherently public, or whose likely users are especially poor.

In addition to the separate capabilities of public and private research funding, there are areas where public and private cooperation in agricultural research should be recognized. USAID funding of research by private institutions is justified when the private research institution has a unique capacity to do needed research but insufficient incentive to pursue it without USAID support. A unique capacity might arise, for example, due to prior ownership of critical patent rights or to special expertise. USAID might support private research to leverage USAID funds in an area where the private sector will invest but only at a level below that justified by expected public benefits.

USAID should take advantage of the strengths that private research draws from its different incentive system. To do this, however, USAID support should not become such a large proportion of the private effort that the incentive system is fundamentally altered. USAID might support research in the private sector in order to strengthen the problem definition or the delivery of benefits. Successful private research must address problems for which there is effective demand in excess of the research costs. Furthermore, successful private research must link its findings to a delivery process.

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