Agricultural Research Service

ARS Strategic Plan

AGENCY: Agricultural Research Service, Department of Agriculture.

ACTION: Request for Comments on the Agricultural Research Services' Draft Strategic Plan.

SUMMARY: The Agricultural Research Service, in compliance with the Government Performance and Results Act (GPRA) of 1993 (Pub. L. 103–62), has developed a five year strategic plan covering Fiscal Years 1998 to 2002. The proposed ARS Draft Strategic Plan presents the work of the Agency against five broad societal outcomes and twelve general goals/initiatives, most of the latter are taken, verbatim, from Section 801 ''Purposes of Agricultural Research, Extension, and Education'' of the Federal Agriculture Improvement and Reform Act of 1996 (Pub. L. 104–127). When finalized, the ARS Strategic Plan will be supplemented by one or more implementation plans that will link, in greater detail, the scientific work of the Agency to this plan. Within the U.S. Department of Agriculture, the Office of the Chief Financial Officer (CFO) has been given lead responsibility for securing Departmental, Congressional and Office of Management and Budget (OMB) review of Subagency plans. Each agency is responsible for securing input from its employees, customers, stakeholders, and partners. The finalized Strategic Plan will take effect on October 1, 1997. The ARS Draft Strategic Plan can also be found, electronically, on the ARS Home Page on Internet (http://www.ars.usda.gov).

DATES: Comments on the ARS Draft Strategic Plan must be submitted, in writing or electronically, to the addresses shown below by August 21, 1996.

ADDRESSES: Interested persons should submit comments to David A. Rust, Program Planning Advisor, Agricultural Research Service, Building 005, Room 112, 10300 Baltimore Road, Beltsville, Maryland 20705; FAX to 301–504–6191; or electronically DAR@ARS.USDA.GOV.

FOR FURTHER INFORMATION CONTACT: David A. Rust, Program Planning Advisor, Agricultural Research Service, Building 005, Room 112, 10300 Baltimore Road, Beltsville, Maryland 20705; FAX 301–504–6191; electronically DAR@ARS.USDA.GOV; or telephone 301–504–6233.

SUPPLEMENTARY INFORMATION: ARS is the principal in-house research agency of the U.S. Department of Agriculture. In Fiscal Year 1996, ARS received an appropriations from Congress of $710 million which supported 1,200 research projects at 104 locations involving approximately 1,950 scientists.

Dated: July 11, 1996.

Robert J. Reginato,

Associate Administrator.

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Background

Introduction

ARS Approach to GPRA

Since 1983, ARS has developed as series of multiyear strategic plans to help guide development and management of the agency's work. In 1993, the Government Performance and Results Act (GPRA), Public Law 103–62, was enacted. It seeks to make all Federal departments and agencies more accountable to Congress and the U.S. taxpayers. The ARS Strategic Plan, covering fiscal years 1998–2002, was developed in accordance with the GPRA requirements.

In the spring of 1994, the agency established a work group to study how best to implement GPRA within ARS. After completion of the work group's report, ARS undertook an extensive outreach effort to gain individual input from a broad cross section of the agency's customers, stakeholders, and partners. This visioning process consisted of a pilot conference in January 1995, followed by five regional conferences held in June and July of 1995. The conferences brought together over 400 participants who worked in more than 30 breakout groups to provide individual input regarding:

- The key forces that will influence American agriculture during the next 20 to 25 years.
- How these changes will affect agricultural research.
- More specifically how ARS should respond to these changes.

Using input and information gathered from this process ARS identified 10 major issue areas that will affect agriculture and agricultural research over the next 25 years:

International/Global Issues

- Competition will increase for international markets and resources.
- International trade and treaties will influence the profitability of U.S. agriculture.
- The political climate in foreign nations will impact U.S. agriculture.

Population/Demographics Issues

- Growth in world population will increase demand for food, fiber, energy, and land.

Environmental Issues

- Resource competition among agricultural and industrial users.
- Need to address current and potential environmental pollution.
- Impact of pesticide and herbicide use.
- Ecosystem management.
- Maintaining biological and genetic diversity.

Sustainability of Production Systems Issues

- Need to respond to changes in biological resistance (resistance to pesticides).
- Need to address environmental restrictions to expand the range where plants can grow in response to changes in climate and other circumstances.

Economic Issues

- The profitability of U.S. agriculture is impacted by the cost of labor, the transportation and distribution of foods, and the quantity of food versus its price.
- The concern over the federal deficit will continue to impact agricultural subsidy programs.
- The trend in U.S. agriculture is a shift from family farms to agribusiness/corporate farms.

Government and Political Issues

- Budget constraints are changing the relationship between the federal, state, and private sectors.

• Changes in demographics are resulting in decreased political influence for the agriculture community.

• There is a declining knowledge of agriculture among agricultural policy makers.

• There is concern about the type of regulations, their interpretation, and the resulting increase in litigation.

• Maintaining a safe and secure food supply will continue to be a critical element of national security.

Consumer/Societal Issues

• Consumers changing preferences, their needs and expectations for food security, and their demands for better quality of life will impact U.S. agriculture.

• U.S. agriculture needs to increase acceptance of new technologies and new products among consumers and to allay their fears of science and technology.

• Consumer perceptions and concerns over bioethics and animal welfare will impact U.S. agriculture.

Food and Health Issues

• Issues concerning nutrition, disease prevention, and food security will influence U.S. food production.

—Food security issues encompass food safety, quantity, and quality.

• Changing dietary consumption patterns will impact U.S. food production.

Technological Advancement Issues

• Some of the key technological issues influencing U.S. agriculture are:

—Information and communication technology

—New uses of food and fiber and non-food uses of agriculture products

—Development of new production and delivery systems

—Intellectual property rights

• The concern over ethics of biotechnology and genetic engineering will influence the development of new U.S. technology and its implementation.

Education and Information Issues

• Education programs need to be developed to address the following issues that influence the American public.

—The environment

—The economy

—Technology

—Nutrition, food and health

—Science and agriculture

In analyzing the input and information gathered at the five conferences, nine major roles were identified for ARS in meeting the research needs of the next 25 years. The nine roles are as follows: provide leadership in the agricultural research agenda; strengthen relationships with ARS partners; educate and relate to consumers and other constituents; develop and transfer information systems and technology; carry out and support strong, relevant science; focus on long-term, high-risk research; address environmental issues; promote interdisciplinary team and systems approaches; and develop and strengthen institutional and human resources.

The ARS guiding principles that appear on page 14 are based on the input and information gathered at the visioning conferences. In addition, the visioning process provides a broad thematic framework that runs throughout the ARS strategic plan. Shortly after the visioning process was completed, the agency established a strategic planning team (SPT) charged with drafting a new ARS strategic plan that meets the GPRA requirements.

GPRA Outcomes and General Goals

In GPRA, Congress intended for each agency to identify the societal impact or outcome of its work. These outcomes are usually long-term and reflect the agency's general direction and purpose.

ARS' research focuses on achieving five broad outcomes that parallel almost verbatim the outcomes identified in the strategic plan of the Research, Education, and Economics (REE) mission area. GPRA calls on each agency to establish general goals that will contribute to achieving the long-term outcomes and that shape and drive the work of the agency during the 5 years covered by the plan. ARS derives its general goals and some of its initiatives from statutory language, specifically the ''Purposes of Agricultural Research, Extension, and Education'' set forth in section 801 of the Federal Agriculture Improvement and Reform Act of 1996.

The Agricultural Research Service

The Agricultural Research Service (ARS) is the principal in-house research agency of the U.S. Department of Agriculture (USDA). Congress first authorized federally supported agricultural research in the Organic Act of 1862, which established what is now USDA. That statute directed the Commissioner of Agriculture ''* * * To acquire and preserve in his Department all information he can obtain by means of books and correspondence, and by practical and scientific experiments, * * *'' The scope of USDA's agricultural research programs has been expanded and extended more than 60 times in the 134 years since the Department was created.

Before the enactment of large scale crop support and nutrition programs, agricultural research was a substantial part of the Department's budget. Shortly before World War II, USDA received about 40 percent of all Federal funds appropriated for research. To better support the war effort, the Department's various research components were brought together into the Agricultural Research Administration (ARA). In 1953 the ARA was reorganized into the Agricultural Research Service. In FY 1996, ARS received an appropriation from Congress of $710 million (less than 1 percent of the Federal research funds appropriated for that year) which supported 1,200 research projects at 104 locations involving about 1,950 scientists.

ARS Research

ARS research has long been associated with higher yields and more environmentally sensitive farming techniques. But the impact of ARS research extends far beyond the farm gate and the dinner table. Agricultural research is as much about human health as it is about growing corn. For example, ARS recently developed a fat substitute called Oatrim. Not only does this technology benefit farmers by providing a new use for oats, it enables processors to produce tastier low-fat foods. Consumers may reap the biggest benefits: Oatrim-rich diets lower the bad (LDL) type of cholesterol without decreasing the good (HDL) type, and it improves glucose tolerance. ARS research is also as much about development of industrial products such as printing ink from crops like soybeans as it is about development of high-yielding wheat varieties. And as with Oatrim, printing inks made from 100-percent soybean oil instead of petroleum solve more than one problem: Unlike petroleum, soybeans are a renewable resource, and this technology diversifies markets for soybean farmers and choices for ink manufacturers and printers.

ARS research provides solutions to a wide range of problems related to agriculture—problems requiring long-term commitment of resources or unlikely to have solutions with quick commercial payoff that would tempt private industry to do the research. These problems range from the ongoing battle to protect crops and livestock from costly pests and diseases to improving quality and safety of agricultural commodities and products determining the right mix of nutrients for humans from infancy to old age,

making the best use of natural resources, and all the while ensuring profitability for producers and processors while keeping costs down for consumers.

To develop these solutions, ARS scientists carry out basic, applied, and developmental research. These are inextricably linked. Scientists cannot do applied and developmental research without the foundation provided by basic research; and ARS basic research must point toward specific uses for new knowledge resulting from the research. Also, basic research is necessary in anticipation of new problems and to provide information needed for rational nationwide policies.

ARS scientists communicate research results and transfer new technologies from ARS to other scientists, institutions of higher education, products and process developers, and consumers, producers, and other end users through:

Publications: ARS scientists write several thousand articles each year for scientific journals and trade magazines. Such publications are a primary means of sharing information with other scientists and are the first step in transferring results from the laboratory to everyday use. Equally important, peer review of articles published in scientific journals helps ensure that ARS research is of the highest quality.

Conferences, Workshops, and Consultations: ARS scientists participate in selected conferences and workshops each year to ensure timely exchange of information with other scientists in the same and related fields and to work with customers in identifying research needs and opportunities. They also correspond extensively with other scientists and customers via paper and electronic mail, serve as expert consultants both locally and nationally, and otherwise stay connected with their scientific and customer communities. An expanding ARS involvement with electronic communications networks such as the Internet ensures that agency scientists will be participants in this relatively low-cost global information exchange.

Cooperative Agreements and Patent Licenses: ARS aggressively pursues cooperative relationships with private industry, academia, and other Government agencies for further development of new technology. The agency also markets both patented and nonpatented technology for immediate use or further refinement. ARS continues to be an acknowledged leader among Federal agencies in technology transfer as judged by the relative number of patents, partnerships, patent licenses, and technology transfer awards.

International Collaboration

The combined government funding for agricultural research in foreign countries far exceeds U.S. Federal funding for agricultural research. Recognizing this resource, ARS has set up carefully selected international collaborations, consistent with ARS program goals. This has led to a cost-effective supplementation of ARS technology development and germplasm. At present, the agency has 368 cooperative linkages with 51 countries. Collaborations often result in co-publication of research results. Where appropriate, intellectual property is mutually protected with co-patents. Through its tactically constructed network of international research interchanges. ARS in cooperation with the U.S. Department of State, helps to advance techno-scientific diplomacy for the U.S. Government.

National Agricultural Library

The National Agricultural Library (NAL) was established by Congress in 1862. It is the largest agricultural library in the world and one of only four national libraries in the United States. In 1994 it became part of the Agricultural Research Service. The library's unique, comprehensive collection of more than 2.2 million volumes forms the fundamental base of knowledge on agriculture and related basic and applied sciences and social sciences for the Nation. Traditional as well as innovative and specialized information services and products enable customers to identify, locate, and obtain needed information on agriculture and related topics. Through preservation activities, NAL ensures that the collection is available for current and future use. NAL produces AGRICOLA (AGRICultural OnLine Access), a bibliographic database of more than 3 million citations to agriculture literature, and provides leadership in development and application of information technologies that help ensure access to knowledge and information such as gene maps.

Technology Transfer Activities

Products, techniques, and information generated from ARS research must be transferred to customers, if the United States is to maintain its global competitive edge in agriculture. The technology transfer process ranges from the controlled release of information via oral, written, or electronic form, to the establishment of research and development partnerships with private industry, other Government agencies, and universities. Intellectual property is guarded by patents and plant variety protection, and commercialization is achieved by patent licensing and Cooperative Research and Development Agreements (CRADA'S).

Vision, Mission, Guiding Principles, and Values

Vision

Leading America toward a better future through agricultural research and information.

Mission

Provide access to agricultural information and develop new knowledge and technology needed to solve technical agricultural problems of broad scope and high national priority to ensure adequate availability of high-quality, safe food, and other agricultural products to meet the nutritional needs of the American consumer, to sustain a viable and competitive food and agricultural economy, to enhance quality of life and economic opportunity for rural citizens and society as a whole, and to maintain a quality environment and natural resource base.

Guiding Principles

Provide leadership for the national agricultural research agenda.

Carry out and support excellent, relevant science.

Support long-term research to provide a foundation of problem solving.

Apply the science base to address critical emerging problems.

Provide the science base for informed policymaking.

Strenghten relationships with ARS partners.

Educate and relate to consumers and other constituents.

Respond to societal, consumer, and environmental concerns.

Promote interdisciplinary team and systems approaches.

Develop and strengthen institutional and human resources.

Develop and transfer information systems and technology.

Values

Accountability: We are responsible to the public.

Appreciation: We respect one another and value everyone's contribution.

Cooperation: We work with others to most effectively use available knowledge, resources, and technologies.

Creativity: We nurture and reward creativity.

Global Perspective: We encourage and promote an international perspective and global collaboration on agricultural issues.

Integrity: We are committed to the highest standards of honesty and ethical conduct.

Leadership: We promote leadership in information and agricultural science.

Objectivity: We are proud of our scientific objectivity and will continue to provide unbiased information.

Partnerships: We encourage partnerships with other organizations and individuals.

Quality: We are dedicated to the highest standards of quality in agricultural research and information dissemination.

Relevance: We respond to the needs of the agricultural community and all of society.

Service: We listen to our customers, both internal and external, and provide them quality scientific research, technologies, and information.

Sharing: We are committed to share information broadly and in a timely fashion.

Strategy: We shape the future by strategically positioning our resources and capabilities.

Teamwork: We support teams that approach holistically by looking at the total implications of their work.

Key External Factors

Consumer, Socio-Economic, and Policy Trends

The abundance and affordability of the American food supply is chiefly due to U.S. agricultural research. The Nation's ability to sustain this plentiful and inexpensive food supply continues to be paramount. But in recent years, consumer and producer attention has expanded somewhat to other areas of concern such as food safety and quality, the relationship of agriculture and the environment, the profitability of the agricultural enterprise, the impact of government regulations, land use restrictions, and economic options that diminish the supply of farmable, grazable land.

The long-term sustainability of the Nation's food and fiber production systems will be determined not only by the continued profitability of farming and ranching, but also by how these production systems affect the environment. The capacity of U.S. agriculture to adapt to environmental changes is also a concern as are the availability and quality of natural resources. Another key environmental issue is how human activities affect weather patterns, atmospheric composition, and soil and water quality and productivity.

Global population increases, demographic changes, and economic growth will substantially increase the demand for agricultural products. These changes should promote development of new markets. At the same time, increased agricultural efficiency in other countries will require that U.S. agriculture be more competitive. Meanwhile, budget deficits and external pressures on the domestic economy may reduce funding for agricultural research in both the public and private sectors.

Congressional Support

The ability of ARS to respond to the many and diverse needs of producers and consumers is determined by congressional appropriations. Adjusted for inflation, these appropriated funds are substantially smaller now than they were two to three decades ago. As a consequence of inflation and the higher operating costs associated with advances in research equipment and techniques, the ARS scientific workforce, which reached a maximum of about 3,400 scientists in 1970, decreased by almost 40 percent during the following 25 years. In recent years, Congressional appropriations, expressed in current dollars, have remained static. Because of widespread concern about Federal budget deficits, and the commitment by both the Administration and the Congress to reduce Federal expenditures, future ARS budgets are expected to remain at or near the current level of $710 million. Even with the current low rate of inflation, this scenario is expected to lead to further decreases in both the strength of the scientific workforce and the scope of the research program.

Workforce Competition

The Department of Labor projects an increase of 19 percent in the size of the general workforce in the next decade, which is slightly lower than the rate of growth for the preceding decade. The labor market during this period is also expected to be highly comptetive for many occupations that require and advanced education, including scientists, engineers, economists, and computer specialists. The high earning potential of professions, such as law and medicine, will continue to make a career in science less attractive to many young men and women who have the creative intelligence needed for professional success in agricultural research. Consequently, a major emphasis on recruitment, student employment, upward mobility, and training programs will be needed to attract and retain a quality workforce. The trend toward increasing workforce diversity is also expected to continue, and opportunities for encouraging women and minorities into careers in science, engineering, and economics will need to be given a high priority.

Key Internal Factors

Facilities

ARS owns and manages nearly 3,000 laboratory and office buildings and about 400,00 acres of land in support of its research mission carried out at 104 domestic and foreign locations. The quality of ARS facilities' infrastructure directly affects the ability of ARS scientists to accomplish their research mission objectives and projects. ARS implemented a comprehensive facilities modernization program through which it determines priorities for allocation of resources for facilities modernization related to and consistent with the research priorities of the agency.

In addition, ARS is currently participating in the Under Secretary's Agriculture Research Facilities Study Commission. The commission is charged with reviewing existing and proposed federally funded facilities to determine which ones should be closed, consolidated, or modernized.

Information Infrastructure

The confluence of computers, advanced communications, and space technology has brought about an information systems revolution that is resulting in change comparable to that which occurred during the Industrial Revolution. The National Information Infrastructure (NII) will have the capacity to transmit information anywhere in the world at both high and low speeds, in a variety of data formats, including image, voice, and video.

Scientists searching for research information will find it on the Internet; companies searching for new research findings and technology will find them on the Internet. Information is a key to opportunities and an economic resource. Those who learn to exploit database technology and electronic networks as a utility will be the ones to get ahead.

As one example, the NII presents a unique opportunity to the National Agricultural Library (NAL). NAL has traditionally collected, managed, and housed food and agricultural research information to respond to requests by scientists, educators, consumers, and other constituents. But accumulation is no longer the answer: proper access is. Strategic alliances and partnerships are required to capitalize on the greater breadth of information available, while at the same time targeting audiences and tailoring information and delivery

formats to meet the needs of internal and external customers.

Human Resources

ARS will need to continue using innovative approaches to human resources management to attract and retain critical core scientific, technical, and support capability. To meet the agency's human resources requirements and maintain the quality, relevance, and excellence of its core research programs, ARS must ensure continued innovations in human resources management such as the USDA' ARS and Forest Service Demonstration Project and the ARS Research Peer Evaluation System as a part of its overall strategic plan.

Core Capabilities

ARS' policy is to maintain the essential combination of scientific expertise, fiscal and information resources, and facilities required to meet the needs of the agency's national programs. These core capabilities are a defining feature of the agency and can be mobilized to address national crises and other emerging problems.

Customers, Beneficiaries, Stakeholders, and Partners

A listing of ARS' customers, beneficiaries, stakeholders, and partners is shown below. Although the list is constantly changing, it gives an indication of the breadth of ARS' customer base. Sometimes the same organization can be a customer, beneficiary, stakeholder, and/or partner.

Customers—Individuals or organizations that directly use ARS services.

Producers and processors
National and international organizations
- Advocacy groups
- Commodity and futures markets
- International trade organizations
- International science and research organizations

Legislative Branch
Executive Branch
U.S. Department of Agriculture
- Secretary of Agriculture
- Other mission areas
- Action and regulatory agencies
- Office of Budget and Program Analysis
- Inspector General
- Chief Financial Officer

Other Federal agencies
Scientific community
Medical community
Health and dietary community
State and local Governments
News media

Beneficiaries—Individuals whose well-being is enhanced by the agency's activities.

Domestic consumers
Foreign consumers of U.S. agricultural exports and technologies.

Stakeholders—Orginzations or individuals that have an interest in the work of ARS but do not directly use the agency's products.

Legislative branch
Executive branch
ARS employees
- National and international organizations
- Producer and processor organizations
- Food and commodity organizations
- Foreign countries/governments
- Trade organizations
- Environmental organizations
- Retail organizations
- Consumer organizations

Partners—Organizations that ARS works with collaboratively.

Institutions of higher education
Federal research agencies
Private industry

Strategic Plan

ARS Outcomes

ARS' general goals and specific goals are focused on achieving five outcomes, which are expressions of long-term desirable societal results toward which the work of ARS is ultimately directed. The five ARS outcomes parallel, almost verbatim, the outcomes identified in the REE mission area strategic plan. The ARS general goals directly support the agency's ongoing efforts to achieve these five broad societal outcomes. Under each outcome is a brief explanatory statement that describes how ARS relates the outcome to the work of the agency. In addition, there are performance measures that indicate progress towards achieving each outcome.

General Goals and Explanatory Statements

Under each outcome is one or more general goals and a brief explanatory statement that describes how ARS interprets the general goal and relates it to the work of the agency. ARS derives its general goals and some of its initiatives from statutory language, specifically the ''Purposes of Agricultural Research, Extension, and Education'' set forth in section 801 of the Federal Agriculture Improvement and Return Act of 1996. The general goals are broad enough to allow activities to overlap. In those instances, explanatory statements cross-reference the general goals where certain areas of related research would be covered. Each general goal has been given a short title.

Specific Goals

Under each of the ARS general goals there are several subgoals. These focus the general goal on the mission and work of ARS. Many departments and agencies are using the term ''objective'' to identify their subgoals. ARS has an existing classification system that uses the term ''objective'' to describe areas of research. To avoid confusion, the ARS strategic plan uses the designation ''specific goal.'' Each specific goal has been given a short title.

Program Activities

GPRA requires agencies to describe how the goals are to be achieved and how the performance measures relate to the general goals. The program activities describe briefly and broadly what activities ARS will undertake to accomplish the specific and general goals.

Performance Measures

The performance measures describe specific achievements that indicate progress toward reaching the goals.

Agencywide Performance Measures

The following performance measures are across the agency (not broken out by outcome or goal) over the 5 years covered by the plan.

—200 new patent applications*
—250 new CRADAs
—100 new Licenses
—650 new interagency agreements
—350 new plant germplasm releases to industry for further development

** 1,750 postdoctoral students will be involved in ARS research activities; 10 percent will be hired as full-time employees of the agency.

Conduct 2,250 reviews under the research position evaluation system (RPES) to ensure the quality of the agency's scientists; 95 percent will achieve fully successful to outstanding ratings and 40 percent will be found qualified to work at a higher level of scientific inquiry.

Conduct 1,250 peer reviews of research projects.

Conduct 100 location reviews at research laboratories.

Outcome 1. An agricultural production system that is highly competitive in the global economy.

Explanatory Statement: ARS will conduct research designed to generate new knowledge; improve production systems; enhance resource efficiencies; improve processing quality, performance, and the value of commodities; and develop technologies to reduce nontariff trade barriers. The national needs for scientific agricultural

information will be met in a timely manner. U.S. agricultural producers and processors will have access to current knowledge and technologies.
Performance Goals: During the 5 years covered by this strategic plan, ARS will report:

- In basic research.

—1,300 scientific papers published in refereed journals
—1,100 presentations to scientific organizations
—50 basic research accomplishments with significant potential long-term benefits to U.S. agricultural industry and American society

- In applied research.

—270 scientific papers published in refereed journals
—230 presentations to scientific organizations
—50 applied research accomplishments with significant potential long-term benefits to U.S. agricultural industry and American society

- In development research and technology transfers.

—New patent applications*
—New CRADAs*
—New licenses*
—New interagency agreements*
—New plant germplasm releases to industry for further development*

- In nonformal education.

—95 percent of customer requests received and handled within established time frames
—12 presentations to lay and professional organizations

- In higher education.

—Knowledge and technologies promptly communicated to institutions of higher education within established time frames
—Graduate and postgraduate students involved in ARS research activities**

General Goal 1.1 Strengthen Competitiveness

''Enhance the competitiveness of the United States agriculture and food industry in an increasingly competitive world environment.''

Explanatory Statement: ARS will generate new knowledge and develop new and improved production systems with greater resource efficiencies; improve the processing quality, performance, and value of commodities to meet domestic and global market needs; develop technologies to eliminate trade barriers due to quarantine issues and other nontariff trade constraints; and develop sustainable and cost-competitive food and industrial commodity processing technologies and concepts.

Specific Goal 1.1.1 Cost-Effective Agricultural Program Systems

Develop new knowledge and integrated technologies for more efficient and economically sustainable agricultural production systems.

Program Activity: Integrate the production, processing, and marketing technologies and knowledge into systems that optimize resource management, improve environmental quality, and facilitate technology transfer.

Performance Measures: Demonstrate and transfer to users integrated systems. Demonstrate and transfer to users computer-based simulation models and decision-support systems.

Specific Goal 1.1.2 Postharvest Technologies

Develop technologies and processes to reduce or overcome nontariff trade and quarantine barriers.

Program Activity: Develop and evaluate alternative means of controlling or eliminating postharvest insects, diseases, and spoilage organisms in agricultural commodities and products.

Performance Measure: Demonstrate techniques to control or eliminate postharvest insects and diseases and increase market quality and product longevity.

Program Activity: Develop technologies to replace methyl bromide to meet phytosanitary requirements, and to improve export opportunities for agricultural commodities.

Performance Measure: Demonstrate technologies to control quarantine insects and diseases on fruit.

Program Activity: Develop diagnostic methods to identify weeds, diseases, and pests that must be controlled to permit the international movement of animals, plants, or animal and plant products.

Performance Measure: New and improved diagnostic tests are developed and available.

Specific Goal 1.1.3 Product Quality and Marketability

Improve quality, uniformity, value, and marketability of commodities and other agricultural products.

Program Activity: Support the mission of action/regulatory agencies by defining and characterizing the desired physical, chemical, and aesthetic properties of agricultural commodities.

Performance Measure: Provide knowledge and technology to expand and improve the grading systems for agricultural commodities and products.

Program Activity: Advance the technology for measuring important nutrients and other quality components.

Performance Measure: Demonstrate methods to measure the critical processing and end-use properties of agricultural commodities important to the agricultural marketing system and to the processing industry.

Specific Goal 1.1.4 International Technology Interchange

Develop a strategy for selective international research interchange to supplement ARS technology developments and strengthen competitiveness of U.S. agriculture.

Program Activity: Gain access to foreign technology developments through tactical selection of opportunities for international research cooperation coherent with ARS domestic programs.

Performance Measure: Strategic alliances formed with specific foreign institutions, leading to the joint development of germplasm and value-added technologies, mutually protected through intellectual property agreements.

General Goal 1.2 Develop New Uses and Products

''Develop new uses and new products for agricultural commodities, such as alternative fuels, and develop new crops'' Explanatory Statement: ARS will contribute to development of new and alternative crops, new food and nonfood uses and products from plants and animals, alternative fuels, and new processes and other technologies using these commodities.

Specific Goal 1.2.1 New and Alternative Crops

Develop new and alternative crops with economic and social value.

Program Activity: Introduce and genetically improve new and alternative crops to increase diversity of agricultural commodities and satisfy societal needs.

Performance Measure: Experimentally demonstrate genetically improved crops with potential for successful introduction.

Program Activity: Develop management practices for production, harvesting, and postharvest handling of new alternative crops.

Performance Measure: Experimentally demonstrate new and improved production, harvest and postharvest handling procedures of these crops.

Specific Goal 1.2.2 New Uses and Products

Develop new food and nonfood uses and products from plants and animals,

and new processes and other technologies that add value.

Program Activity: Improve process technologies and develop new bioproducts and uses that will increase the demand for agricultural commodities.

Performance Measure: Experimentally demonstrate improvements in processing technologies and develop new bioproducts and uses that have potential to increase demand for agricultural commodities.

Outcome 2. A Safe and Secure Food and Fiber System

Explanatory Statement: ARS will conduct research designed to generate knowledge regarding new and improved management practices, pest management strategies, sustainable production systems, and the control of potential contaminants. Food safety research seeks ways to assess and control potentially harmful food contaminants. These activities will ensure a safe, plentiful, diverse, and affordable supply of food, fiber and other agricultural products.

Performance Goals: During the 5 years covered by this strategic plan, ARS will report:

- In basic research.

—2,470 scientific papers published in refereed journals
—2,090 presentations to scientific organizations
—50 basic research accomplishments with significant potential long-term benefits to U.S. agricultural industry and American society

- In applied research.

—435 scientific papers published in refereed journals
—365 presentations to scientific organizations
—50 applied research accomplishments with significant potential long-term benefits to U.S. agricultural industry and American society

- In developmental research and technology transfers.

—New patent applications*
—New CRADAs*
—New licenses*
—New interagency agreements*
—New plant germplasm release to industry for further development*

- In nonformal education.

—95 percent of customer requests received and handled within established time frames
—12 presentations to lay and professional organizations

- In higher education.

—knowledge and technologies promptly communicated to institutions of higher education within established time frames
—graduate and postgraduate students involved in ARS research activities**

General Goal 2.1 Secure Food and Fiber System

Maintain a safe and secure food and fiber system that meets the Nation's needs now and in the future.

Explantory Statement: ARS' research program will conserve and enhance genetic resources and improve the efficiency of agricultural production and processing systems to provide America with a safe, adequate, secure, affordable and nutritious supply of food and fiber.

Specific Goal 2.1.1 Plant and Animal Production Systems

Improve efficiency of agricultural production and protection systems to ensure the security of the Nation's food, fiber, and energy supply.

Program Activity: Enhance output of agricultural products through development of new production methods that maximize net economic returns and minimize input costs while using environmentally sustainable technologies.

Performance Measures: Demonstrate increases in productivity above current levels, using sustainable technologies.

Demonstrate a more efficient and cost-effective use of resource inputs while increasing productivity above current levels.

Develop and demonstrate new integrated technologies for improved protection of plants and animals.

Specific Goal 2.1.2 Plant and Animal Germplasm Resources

Acquire, preserve, evaluate, and enhance genetic resources and develop new knowledge and technologies to increase the productive capacity of plants and animals.

Program Activity: Develop improved genetic engineering and conventional methods and use them to produce new germplasm with increased production potential, improved resistance to pests and diseases, and enhanced productive capacity.

Performance Measures: Release of improved germplasm, varieties, and breeds based on effective use of genetic resources.

Improved methods for identifying useful properties of plants and animals and for manipulating the genes associated with these properties.

Program Activity: Collect, preserve, evaluate, and make available a diverse range of germplasm that increases genetic variability and enhances productive capacity and food and fiber security.

Performance Measures: Maintenance of collections of well-documented plant and animal germplasm of importance to U.S. agricultural security.

Specific Goal 2.1.3 Plant and Animal Biological Processes

Develop biologically based technologies to improve productivity, safety, nutrient content, and quality of plants and animals and their products.

Program Activity: Conduct fundamental and applied investigations of plant and animal biological processes that influence productivity, safety, nutrient content, and quality.

Performance Measure: Make technologies available for improving productivity, safety, and quality.

General Goal 2.2 Safe Food

''Maintain an adequate, nutritious, and safe supply of food to meet human nutritional needs and requirements.''

Explanatory Statement: ARS' food safety research program will assess the safety of animal and plant products and develop methods to control potential food contaminants. The human nutrition research activities covered in this general goal are addressed in outcome 3, general goal 3.

Specific Goal 2.2.1 Plant and Animal Product Safety

Provide knowledge and means for production of safe plant and animal products.

Program Activity: Develop methods to reduce toxin-producing and/or pathogenic bacteria and fungi, parasites, mycotoxins, chemical residues, and plant toxins.

Performance Measure: Transfer knowledge developed by ARS to industry and regulatory agencies.

Outcome 3. A healthy and properly nourished population.

Explanatory Statement: ARS will conduct research to generate new knowledge in human nutrition that will establish the relationship between diet and health, measure food consumption patterns, and develop new methods to measure the nutrient composition of food. The outcomes of these efforts will be a safe, and nutritious food supply and a knowledge base that enables people to make healthful food choices.

Performance Goals: During the 5 years covered by this strategic plan, ARS will report:

- In basic research.

—325 scientific papers published in refereed journals
—275 presentations to scientific organizations
—50 basic research accomplishments with significant potential long-term

benefits to U.S. agricultural industry and American society

• In applied research.

—25 scientific papers published in refereed journals
—22 presentations to scientific organizations
—50 applied research accomplishments with significant potential long-term benefits to U.S. agricultural industry and American society

• In developmental research and technology transfers.

—New patent applications*
—New CRADAs*
—New licenses*
—New interagency agreements*
—New plant germplasm releases to industry for further development*

• In nonformal education.

—95 percent of customer requests received and handled within established time frames
—12 presentations to lay and professional organizations

• In higher education.

—Knowledge and technologies promptly communicated to institutions of higher education within established time frames
—Graduate and postgraduate students involved in ARS research activities**

General Goal 3.1 Nutritious Food

''Maintain an adequate, nutritious, and safe supply of food to meet human nutritional needs and requirements.''

Explanatory Statement: ARS' human nutrition research program will establish the relationship between diet, nutritional status, and health throughout life and the contribution of diet to disease resistance and the reduction of disorders related to nutrition. The program will develop methods for determining food components and maintain national food composition databases. ARS will monitor food consumption, knowledge, attitudes, and behavior of the U.S. population and design and test techniques that enable people to improve their nutritional status. The food safety activities covered in this general goal are addressed in outcome 2.

Specific Goal 3.1.1 Human Nutrition Requirements

Determine requirements for nutrients and other food components of children, pregnant and lactating women, adults, and elderly of diverse racial and ethnic backgrounds.

Program Activity: Using population and survey data, human feeding studies, genetic models of metabolism, animal studies, and other methods, establish indicators of nutrient functions that show requirements and bioavailability of food components and their effects on health.

Performance Measure: Indicators of function determined and related to diet and health.

Specific Goal 3.1.2 Food Composition and Consumption

Develop techniques for determining food composition, maintain national food composition databases, monitor the food and nutrient consumption of the U.S. population, and develop and transfer effective nutrition intervention strategies.

Program Activity: Develop new methods for measuring selected nutrients and food components, conduct surveys of food consumption, analyze survey results to determine consumption of nutrients, and design strategies for improvement.

Performance Measure: Transfer new measurement techniques and data to users, release results of surveys, transfer effective nutrition intervention strategies.

Specific Goal 3.1.3 Nutritious Plant and Animal Products

Develop more nutritious plant and animal products for human consumption.

Program Activity: Improve the nutritional value of animal and plant products.

Performance Measure: Demonstrate improved nutritional quality.

Outcome 4. Greater harmony between agriculture and the environment.

Explanatory Statement: ARS will conduct multidisciplinary research to solve problems arising from the interaction between agriculture and the environment. New practices and technologies will be developed to conserve the Nation's natural resource base and balance production efficiency and environmental quality. Since environmental quality is a global problem, ARS will expand collaboration with foreign research institutions. The outcome will be technology and practices that will mitigate the adverse impact of agriculture on the environment.

Performance Goals: During the 5 years covered by this strategic plan, ARS will report:

• In basic research.

—1,070 scientific papers published in refereed journals
—900 presentations to scientific organizations
—50 basic research accomplishments with significant potential long-term benefits to U.S. agricultural industry and American society

• In applied research.

—215 scientific papers published in refereed journals
—180 presentations to scientific organizations
—50 applied research accomplishments with significant potential long-term benefits to U.S. agricultural industry and American society

• In developmental research and technology transfers.

—New patent applications *
—New CRADAs *
—New licenses *
—New interagency agreements *
—New plant germplasm releases to industry for further development *

• In nonformal education.

—95 percent of customer requests received and handled within established time frames
—12 presentations to lay and professional organizations

• In higher education.

—Knowledge and technologies promptly communicated to institutions of higher education within established time frames
—Graduate and postgraduate students will be involved in ARS research activities **

General Goal 4.1 Balance Agriculture and the Environment

''Increase the long-term productivity of the United States agriculture and food industry while maintaining and enhancing the natural resource base on which rural America and the United States agricultural economy depend.''

Explanatory Statement: ARS will conserve and enhance genetic resources, improve the efficiency of agricultural production systems, and develop new and improved high-quality food and nonfood agricultural and industrial products with improved pest and disease resistance and better adaptability to a wider range of climatic conditions. ARS will develop new and improved management practices, elucidate the potential effects of global climate change, and develop new ways to manage crop and animal production systems in the changing global climate, develop integrated pest management strategies, and integrated sustainable agricultural production systems to enhance the quality and productivity of the Nation's soil, water, and air, ensuring conservation of the natural resource bases essential to meet future needs.

Specific Goal 4.1.1 Natural Resource Quality and Quantity

Develop new and improved management practices that will enhance the quality and productivity of the Nation's soil, water, and air resources.

Program Activity: Develop on-farm agricultural practices and technologies to assess, predict, and improve soil, water, and air quality.

Performance Measure: Demonstrate agricultural management practices and technologies that protect and enhance the environment and natural resource base.

Program Activity: Develop agricultural practices and technologies at the watershed scale that conserve and maintain the quality of natural resources.

Performance Measure: Experimentally demonstrate the appropriateness of watershed-scale practices and technologies that protect the environment and natural resources.

Specific Goal 4.1.2 Global Climate Change

Increase understanding of the responses of terrestrial ecosystems to manmade and natural changes in the global environment.

Program Activity: Quantify the positive and negative aspects of agriculture's role in global change.

Performance Measure: Documentation of agriculture's effects on the global environment.

Program Activity: Assess and predict how changes in the global environment will affect agriculture.

Performance Measure: Documentation of how changes in the global environment affect agriculture.

Program Activity: Develop technologies that promote operational efficiency for agriculture in a changing global climate.

Performance Measure: Demonstrate techniques that can improve efficiency.

Specific Goal 4.1.3 Cropland and Rangeland Management Strategies

Develop cropland and rangeland management strategies that will improve quality and quantity of food and fiber products needed for U.S. competitiveness.

Program Activity: Develop concepts and practices for managing croplands and rangelands that will accommodate major increases in the quantity and quality of food and fiber products.

Performance Measures: Demonstrate cropland and rangeland management strategies that improve productivity and efficiency of croplands and rangelands.

Provide information directly to farmers and through public agencies and private organizations that will lead to adoption of improved cropland and rangeland management strategies.

General Goal 4.2 Risk Management

''Improve risk management in the United States agriculture industry.''

Explanatory Statement: ARS will address the multifaceted risks that are inherent in the U.S. food and fiber production and processing systems. They can have economic, environmental, and human health components. The risks associated with weather extremes, such as droughts and floods, often result in serious economic losses and major environmental damage. Serious crop and animal losses can also result from temperature extremes, hail, and other weather conditions. Crop and animal producers frequently suffer severe economic losses from diseases, insects, and other pests. This general goal is targeted toward minimizing and, where feasible, eliminating the impact of these risks through development of better animals and plants and improved production and processing systems. The presence of toxic elements and bacterial contaminants in the food supply is addressed under general goal 8.

Specific Goal 4.2.1 Economic and Environmental Risks

Reduce economic and environmental risks through improved management of agricultural production systems.

Program Activity: Develop strategies and methods for conserving soil, water, and energy; managing pests and diseases; and reducing plant and animal stresses to minimize economic and environmental risks in agricultural production systems.

Performance Measure: Risk-reduction strategies and methods transferred to the Nation's agricultural industry.

Specific Goal 4.2.2 Weather and Environmental Risks

Develop technologies for predicting and reducing the socio-economic costs and resource damages associated with extreme weather variability.

Program Activity: Develop improved strategies and technologies including crop residue management, irrigation systems, crop pest and disease forecast systems, and plant and animal genetic improvements that reduce the effects of extreme weather variability on food and fiber production.

Performance Measure: Improve strategies and technologies that reduce the effects of extreme weather variability.

General Goal 4.3 Safe Production and Processing

''Improve the safe production and processing of, and adding of value to, United States food and fiber resources using methods that maintain the balance between yield and environmental soundness.''

Explanatory Statement: ARS will develop new and improved management practices, integrated pest management strategies and integrated sustainable agricultural production systems to enhance the safety, quality, and productivity of the U.S. agricultural production and processing systems while protecting the National environment.

Specific Goal 4.3.1 Pest and Disease Management Strategies

Develop environmentally safe methods to prevent or control pests and diseases in plants and animals.

Program Activity: Develop knowledge and strategies for environmentally safe pest and disease management.

Performance Measure: Deliver integrated pest and disease management strategies that are cost effective and protect natural resources, human health, and the environment.

Specific Goal 4.3.2 Integrated Agricultural Production Systems

Deveop knowledge and integrated technologies for promoting the use of environmentally sustainable agricultural production systems.

Program Activity: Develop integrated agricultural production systems that sustain soil, water, air, plant, and animal resources and recognize the importance of social and economic considerations.

Performance Measures: Demonstrate the effectiveness of integrated agricultural production systems in the improvement of natural resources and protection of the environment.

Provide computer-based models and decision-support systems to farmers, public agencies, and private organizations.

Specific Goal 4.3.3 Waste Management and Utilization

Develop and transfer cost-effective technologies and systems to use agricultural, urban, and industrial wastes for production of food, fiber, and other products.

Program Activity: Improve waste-management practices and systems to recycle agricultural, municipal, and industrial wastes on agricultural lands in more profitable and environmentally beneficial ways.

Performance Measure: Demonstrate technologies to store, mix, compost, inoculate, incubate, and apply wastes to obtain consistent economic benefits while at the same time minimizing environmental degradation, nutrient loss, and noxious odors.

Program Activity: Devise technologies and processes that are cost effective on a small scale for converting agricultural residues and wastes into renewable energy and industrial feedstocks.

Performance Measure: Demonstrate the conversion of agricultural waste into liquid fuels and industrial feedstocks.

Outcome 5. Enhanced economic opportunity and quality of life for farmers, ranchers, rural citizens and communities.

Explanatory Statement: ARS will conduct research to identify new crops, products, technologies, and practices to increase profitability, expand markets, add value, and make small-scale processing capabilities available in rural communities. Access to technologies and information will be expanded and simplified so that farmers, ranchers, and rural residents can obtain information in a timely manner. Progress towards this outcome will be seen in the gradual strengthening of rural economic growth and improvements in the quality and stability of rural life.

Performance Goals: During the 5 years covered by this strategic plan, ARS will report:

- In basic research.

—1,285 scientific papers published in refereed journals

—1,080 presentations to scientific organizations

—50 basic research accomplishments with significant potential long-term benefits to U.S. agricultural industry and American society

- In applied research.

—150 scientific papers published in refereed journals

—125 presentations to scientific organizations

—50 applied research accomplishments with significant potential long-term benefits to U.S. agricultural industry and American society

- In development research and technology transfers.

—New patent applications*

—New CRADAs*

—New licenses*

—New interagency agreements*

—New plant germplasm releases to industry for further development*

- In nonformal education.

—95 percent of customer requests and received and handled within established time frames

—12 presentations to lay and professional organizations

- In higher education.

—knowledge and technologies promptly communicated to institutions of higher education within established time frames

—graduate and postgraduate students involved in ARS research activities**

General Goal 5.1 Economic Opportunity and Technology Transfer

Conduct'' agricultural research * * * to promote economic opportunity in rural communities and to meet the increasing demand for information and technology transfer throughout the United States agriculture industry.''

Explanatory Statement: ARS will integrate basic long-term research and targeted short-term research to develop new technologies, practices, and production enterprises that increase profits, enhance the farm ecosystem, and develop small-scale processing technologies to create value-added products from agricultural commodities. In addition, ARS will improve access to research information, target information dissemination, transfer technology more effectively, and enhance exchange of problem-solving information with domestic and international research organizations. While the introductory focus of this goal is expanding economic opportunities, ARS interprets the information and technology transfer provisions to apply across the board to all areas of agricultural research. Activities specifically related to the work of the National Agricultural Library are addressed in initiative 2.

Specific Goal 5.1.1 Rural Development Opportunities

Develop farming systems tailored to diverse agricultural production enterprises to enhance profits, sustainability, and environmental quality.

Program Activity: Devise new technologies and practices and adapt existing ones to create new and diverse farming enterprises, products, and markets.

Performance Measure: Experimentally demonstrate the successful operation of aquaculture systems, evaluate small-scale animal production systems, and enhance high-value horticultural products.

Specific Goal 5.1.2 Information Access and Delivery

Provide improved access to and dissemination of information to increase public knowledge and awareness of agricultural research to aid technology transfer, and to speed up sharing of new knowledge.

Program Activity: Expand the use of electronic means for information delivery.

Performance Measure: Make information on ARS research results and inventions available electronically via the Internet and similar resources.

Program Activity: Increase use of marketing techniques in targeting of public information and technology transfer products and activities.

Performance Measure: Provide more cost-effective and efficient public information and technology transfer.

Program Activity: Develop mechanisms to ensure proper consideration is given to public information and technology transfer needs during the planning and execution of research programs.

Performance Measure: Research programs include information and technology transfer considerations.

Specific Goal 5.1.3 Commercialize Research Results

Develop technology transfer systems that lead to commercialization of research results by industry.

Program Activity: Enhance the probability of success in commercializing ARS technology by ensuring that potential cooperators and businesses have access to non-ARS information on financing and business and product development.

Performance Measure: Provide small businesses with contacts and information on the programs available from public and private sources.

Program Activity: Increase the flexibility and decrease development time for technology transfer agreements.

Performance Measure: Expand the types of agreements used by ARS and delegate signatory authority to the lowest feasible level.

ARS Administrative, Programmatic and Management Initiatives

ARS' general goals and specific goals focus primarily on the Agency's research activities. The three ARS initiatives represent major activities that are of overaching important to the agency because they relate to and support all of the critical work of the agency. Each initiative has been given a short title.

Explanatory Statements

Under each initiative is a brief explanatory statement that describes how ARS interprets the initiative and relates it to the work of the agency.

Specific Initiatives

Under each of the initiatives are several subinitiatives that focus the

initiative on the mission and work of ARS. Each specific initiative has been given a short title.

Program Activities

The program activities describe briefly and broadly what activities ARS will undertake to accomplish each initiative.

Performance Measures

The performance measures describe specific achievements that indicate progress toward reaching the objectives of each initiative.

Administrative, Programmatic, and Management Initiatives

Initiative 1 Support Education

''Support higher education in agriculture to give the next generation of Americans the knowledge, technology, and applications necessary to enhance the competitiveness of United States agriculture.''

Explanatory Statement: ARS has a very limited role to play in directly supporting higher education. The agency provides training opportunities for graduate and postdoctoral students to enable them to gain valuable knowledge and experience. Some of these scientists are eventually hired as full-time employees where they serve to maintain and enhance the agency's core scientific capabilities. Most go on to serve U.S. agriculture in other Federal, State, and local agencies, private industry, or academia. See initiative 3, specific initiative 3.4 ARS, through the programs and services of the National Agricultural Library, provides access to information for institutions of higher education, their faculties, researchers, and students. See initiative 2. In addition, ARS supports public information, outreach, and educational activities. See general goal 5.1, specific goal 5.1.2, and initiative 2, specific initiative 2.1.

Initiative 2 National Agricultural Library

''Ensure and enhance worldwide access to agricultural information through the programs of the National Agricultural Library (NAL).''

Explanatory Statement: ARS, through the programs and services of the National Agricultural Library, will ensure that agricultural information essential to the Nation is acquired, organized, disseminated, and preserved for current and future use, and that appropriate advances are made to improve access to such information.

Specific Initiative 2.1 Access to Information

Collect, organize, and provide access to information that supports agricultural programs and responds to information needs.

Program Activity: Ensure that the NAL collection supports the information needs of current and future customers.

Performance Measures: Implemented selection guidelines for the electronic resources to be acquired and use by NAL.

Expanded representation of electronic formats such as Internet resources, online databases, and digital documents in AGRICOLA (NAL's bibliographic database of references to the literature of agriculture), and NAL's online catalog.

Program Activity: Provide access to agriculture-related information and resources over a network where connections are transparent to the customer.

Performance Measure: A gateway is provided to a large body of electronic information on agriculture over a network such as the Internet.

Program Activity: Collaborate with land-grant universities and other institutions of higher education to improve access to information for faculty and students.

Performance Measure: Demonstrate increased use of agricultural information by institutions of higher education.

Specific Initiative 2.2 Meet Customer Needs for Information

Anticipate and provide information products and services, including educational programs, that enable NAL's diverse customers to identify, locate, and obtain desired information on agricultural topics.

Program Activity: Use new technologies and methods to promote faster delivery of information services.

Performance Measure: The time for processing requests for services and delivering the information requested is further reduced.

Program Activity: Enhance the coverage, currency, and accessibility of NAL-produced databases.

Performance Measure: The gap between the time that information is published and made available in NAL-produced databases is further reduced.

Program Activity: Develop and implement a multifaceted, integrated training program that enables customers to take full advantage of current and emerging technologies and information systems.

Performance Measure: Expanded provision of Internet and other technology-related training programs for NAL customers.

Specific Initiative 2.3 Preservation of Significant Materials

Preserve significant and important works in agriculture and the fields related to agriculture to ensure availability of NAL's collections to current and future generations.

Program Activity: Work with the land-grant universities and other national and international organizations to coordinate preservation of USDA documents, agriculture-related publications of other Federal and State agencies, and other materials important to agriculture.

Performance Measure: Establishment of a national archive for agricultural literature that serves as a centralized storage facility for archival copies prepared by cooperators in the program.

Program Activity: Coordinate evaluation of digital preservation technologies and recommend policies and procedures for cooperators in the national preservation program for agricultural materials.

Performance Measure: Development of a program for monitoring quality of electronically archived materials to ensure that the data remain accessible.

Initiative 3 Creative Leadership

Promote excellence, relevance, and recognition of agricultural research through creative leadership in management and development of resources, communications systems, and partnerships with our customers and stakeholders.

Explanatory Statement: ARS research administrators, research leaders, and scientific staffs are responsible for promoting the excellence, relevance, and recognition of ARS research programs as part of the U.S. agricultural research community. This includes exercising leadership in developing a national research agenda, strengthening relationships with States and private partners, and effectively managing the agency's research infrastructure to preserve its core capacity for agricultural research.

Specific Initiative 3.1 Develop Research Agenda

Identify ARS program priorities and core research capabilities and use them to provide leadership in development of the coordinated REE and national research agendas.

Program Activity: Develop the annual performance plan as required by GPRA.

Performance Measure: The annual performance plan is delivered on time.

Program Activity: Recommend priorities for inclusion in the REE Coordinated Research Agenda.

Performance Measure: Meet REE deadlines for submission of material for inclusion in the Coordinated Research Agenda.

Program Activity: Articulate approaches to addressing the Nation's most critical agricultural research needs.

Performance Measure: Annual conferences of public and private individuals are convened to discuss major researchable issues in agriculture and to articulate approaches to addressing these problems.

Program Activity: Respond to urgent national problems that require reallocation of resources.

Performance Measure: Rapid responses to crises.

Specific Initiative 3.2 Customer Service

Improve customer service.

Program Activity: Develop and implement customer service plans, and evaluate their effectiveness.

Performance Measure: Improved customer satisfaction.

Program Activity: Solicit customer input in improving ARS programs, products, and services.

Performance Measure: Customer needs are identified.

Specific Initiative 3.3 Management of Facilities

Provide appropriately equipped Federal facilities required to support the research and information activities of ARS into the next century.

Program Activity: Develop criteria and priorities for the construction, consolidation, modernization, and closure of facilities.

Performance Measure: Criteria and priorities identified.

Specific Initiative 3.4 Maintenance of Core Research Capabilities

Develop and implement comprehensive human resource systems and policies to support and enhance ARS' core research capabilities while maintaining the flexibility to shift research and form interdisciplinary teams to address emerging problems.

Program Activity: Develop a comprehensive plan to assemble a core capability of scientific expertise to meet the needs of long-term research objectives and goals with the ability to respond quickly to emerging needs.

Provide training opportunities for graduate and postdoctoral students.

Performance Measures: Identify core capability requirements and develop a scientific staff to meet long-term research needs.

Establish a database of ARS experts by discipline and research areas of expertise.

Train 1,750 postdoctoral students, select 10 percent to fill fulltime positions.

Specific Initiative 3.5 Provide Administrative Support to REE

Serve as the lead agency in providing administrative and financial management services for Research, Education, and Economics.

Program Activity: Solicit customer input and develop strategic plan for administrative and financial management services.

Performance Measures: Customer participation in planning processes. Strategic plan is developed and communicated to REE customers.

Specific Initiative 3.6 Program Excellence and Relevance

Ensure excellence and relevance of ARS programs through a variety of comprehensive reviews.

Program Activity: Obtain broad-based peer review of all ARS research projects.

Performance Measure: Internal and external peer reviews are conducted on all research projects before implementation.

Program Activity: Periodically review the quality, quantity, and impact of the work of ARS scientists.

Performance Measure: Review of the productivity, quality, and impact of individual scientists is conducted as scheduled in the Research Position Evaluation System (RPES).

Program Activity: Continuous input on the relevance and quality of ARS research programs is solicited from peer scientists and users, evaluated, and implemented where appropriate to the ARS mission.

Performance Measure: Program reviews are conducted periodically, and programs are sustained or redirected as appropriate.

ARS Resource Summary

[Million dollars per year]

[The values in this table are approximate and not final]

ARS outcomes	Basic research	Applied research	Developmental research and technology transfer	Extension, outreach, and public information and education	Higher education	ARS total by outcome
Competitive agricultural system in the global economy	61.6	13.68	53.5	19.5	.....	148.28 (20.9%)
Safe and secure food and fiber system	128.8	21.72	95.14	.....	.....	245.66 (34.7%)
Healthy, well-nourished	48.6	1.76	15.3	.....	.....	65.66 (9.2%)
Agriculture's interface with the environment	53.3	11.06	54.22	.....	.....	118.58 16.7%)
Economic enhancement and quality of life	69.95	8.22	53.66	.....	.....	131.28 (18.5%)
Total by function	362.25 (51%)	56.44 (7.9%)	271.82 (38.3%)	[3]19.5 (2.8%)	[4]0	710.0 (100%)

Footnotes:

[1] All of the above budget values are based on FY 1996 appropriated dollars.

[2] Allocation of budget across functions and program outcomes is based on scientists' division of funds.

[3] $19.5 million constitutes the budget for the National Agricultural Library which supports work in all 5 outcomes.

[4] The financial and human resources needed to support the non-NAL public information activities are included in the basic, applied and developmental/technology transfer activities.

The following will appear on the inside back cover of the published plan.

The ARS Pledge to Customer Service

In addition to the customer focus in GPRA, the President's Executive Order 12862 Customer Service Standards mandated each agency to, among other things, ''identify the customers who are served by the agency'' and establish and ''post service standards and measure results against them.'' A work group developed the following customer service pledge, which applies to all ARS employees:

Our vision of customer service:

To practice the highest standards of integrity and ethical conduct.

To dedicate ourselves to quality and excellence.

To provide objective and factual information to our customers.

To value and treat each customer courteously.

To listen to our customers and strive to understand their needs.

To appreciate the diversity of our customers and respect their contributions.

To provide timely, complete, and understandable responses to customer requests.

To treat our coworkers as customers.

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