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Cooperative State Research, Education, and Extension Service

Strategic Plan for 2007-2012



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MESSAGE FROM THE ADMINISTRATOR



The mission of the Cooperative State Research, Education, and Extension Service (CSREES) is *to advance knowledge for agriculture, the environment, human health and well-being, and communities*, which CSREES fulfills by leading the advancement of knowledge through its vital linkages with the components of a broad-based, national agricultural higher education, research, extension system, utilizing the partner resources of the U.S. Department of Agriculture with land grant and other colleges and universities, and public and private laboratories. In support of this vibrant system, CSREES sponsors research and education programs to protect our food and fiber supply from the farm to the consumer, and finding environmentally and economically sustainable

ways to develop the most successful agricultural production system possible. These activities build the future of our nation, which lies in the education of our people, the preservation of our natural resources, and the stimulation of economic growth and development.

Strategic planning is critical to CSREES to ensure fair, effective, and efficient administration of federal assistance, implementing research, education, and extension awards and agreements. This strategic plan is an update of the 2004-2009 CSREES Strategic Plan to reflect the priorities of the Department as described in the USDA Strategic Plan for FY 2005-2010. It updates the key policy and management objectives that integrated within CSREES budget priorities and accounted for through evaluations of portfolios of Agency programs and by the Office of Management and Budget (OMB) in its Program Assessment Rating Tool (PART).

Central to the plan is effective management of the Agency's limited resources to best address USDA education and research needs. As noted in the USDA strategic plan, research (which provides the foundation for modern agriculture) is a key to success in meeting the Department's goals. Extension assures the timely transfer of scientifically valid knowledge and information to producers, managers, and other citizens. Education programs provide the foundation upon which research and extension rely by building the scientific and agricultural literate human resource capacity. CSREES continues to advance the strength of its programs through emphasizing a greater interdisciplinary focus and by integrating research, education, and extension activities, where appropriate. The goal of these approaches is to apply the best and brightest thinking from multiple disciplinary backgrounds to increasingly complex problems and to facilitate the transfer of information and technology from the researcher to public benefit.

This Strategic Plan is a living document that will evolve in response to changes in national needs. We appreciate the interest and support of CSREES staff and partners who contributed to this plan, and look forward to continued dialogue to further strengthen research, education, and extension related to agriculture, communities, and the environment.

A handwritten signature in black ink that reads "Colien Hefferan". The signature is written in a cursive, flowing style.

Colien Hefferan
Administrator, CSREES



Introduction

Mission Statement

To advance knowledge for agriculture, the environment, human health and well-being, and communities.

Vision Statement

To improve the lives of people worldwide through an agricultural knowledge system sustained by the innovation of scientists and educators.

CSREES FUNCTIONS

- ◆ Program leadership to identify, develop, and manage programs to sponsor university-based and other institutional education, research, and extension.
- ◆ Fair, effective, and efficient administration of Federal assistance implementing education, research, and extension awards and agreements.

The Cooperative State Research, Education, and Extension Service (CSREES) has primary responsibility for providing linkages between federal and state components of a broad-based national agricultural higher education, research, and extension system designed to address national problems and needs identified by the Secretary of Agriculture in the USDA Strategic Plan for FY 2005-2010 and by the Congress in its legislation. CSREES manages this system by providing national leadership in setting research, education, and extension priorities, and obtaining feedback from the states on local and regional priorities. CSREES influences higher education, research, and extension by representing the Secretary in administering formula and competitive grant funds appropriated by Congress. CSREES helps ensure that a high-quality higher education infrastructure will be available to address national needs, and uses that infrastructure of scientific expertise at colleges, universities, and public and private laboratories to partner in addressing national priorities. The primary partners are institutions of higher learning, particularly the land grant institutions - 1862, 1890 (historically black colleges and universities) and 1994 (tribal land-grant colleges and universities), and the non-land-grant public institutions. High rates of return on the public investment in agriculturally related research and extension are well documented. Public investment in higher education in the food and agricultural sciences has been similarly successful, especially for underserved populations and minority-serving institutions.

BACKGROUND

When the U.S. Congress established the U.S. Department of Agriculture and the land-grant university system in 1862, the scientific basis of agriculture was rudimentary and focused primarily on increasing the productivity of land and animals. Plant and animal breeding, nutrient management, pest-control, and mechanization are significant milestones in the spectrum of scientific investment in agricultural productivity. As agriculture matured and became more fully integrated into the social, political and economic structure of the nation, broader issues, including positive and negative environmental and economic externalities, public investment in agriculture and rural communities, and the sustainability of the scientific workforce emerged.

Breakthroughs in fundamental science, including genomics, microbiology, and nanotechnology are providing new opportunities for the application of science, technology, and advanced practices in the production, marketing and distribution of food and fiber products. These sometimes motivate additional questions regarding long-term risks and benefits, ethics, and domestic and international consumer acceptance. Current national security needs raise important issues regarding the aggregate safety and security of the food and fiber supply. Blocking terrorism aimed at food and fiber products, and protecting public health and well-being require a coordinated effort to apply cutting edge food and agricultural science in diverse areas, ranging from emergency preparedness to epidemiology.

The increasingly global nature of contemporary agriculture products offers the world the benefit of a more varied food supply, but is accompanied by increased risks of food-borne disease and invasive pests. The information available from the sciences of plant and animal genomics, remote sensing, disease epidemiology, animal and human nutrition, and market and policy analysis have transformed agriculture into a high-tech, environmentally sustainable, and profitable industry that can address the world's accelerating food and fiber needs. Expanding our scientific base beyond the production sciences to also address human health, environmental sustainability, and community and economic development is crucial to sustain the availability of food and fiber in growing international markets.

Healthy diets and active lifestyles are needed to promote human health, maintain a healthy body weight, and to reduce the risk of chronic disease related to food consumption. State-of-the-art scientific techniques document optimal nutritional needs from gestation through old age. Technological advancements, like sequencing of the human and other genomes, may someday allow scientists to develop individual nutrient requirements as determined by age, environment, gender, genetics, lifestyle, and physiology. Research which provides greater understanding of the determinants of food choices and variations in energy metabolism will allow educators to design more effective nutrition education strategies.

The ultimate customers of CSREES are citizens – CSREES works with land-grant and other institutions and industries to create, apply, and transfer knowledge and technology from the laboratory to farmers, consumers, policy makers, and agribusiness. CSREES-sponsored extension provides information to nearly every one of the 3,150 counties in the nation, offering education that links research, science, and technology to people where they live and work.

STRATEGIC PLAN FRAMEWORK

The six strategic goals and their accompanying objectives contained in this plan describe major programmatic policies of CSREES that support the same six goals in the USDA Strategic Plan for FY 2005-2010. Actionable strategies delineate the activities planned to reach the strategic goals. This plan also describes management plans that detail improvements in human capital, financial management, electronic government, budget and performance integration, competitive sourcing, improper payments, real property management, research and development criteria, and faith-based and community access to grant opportunities.

PERFORMANCE MEASURE

The primary performance measure for CSREES programs is the portfolio review score for each portfolio of research, education, extension and integrated activities. Portfolios of projects are subject to rigorous assessment by National Program Leaders on an annual basis and by external, expert panels every five

years to determine the extent to which the portfolio is making progress toward solving national problems. An assessment tool is used to review each portfolio's relevance, quality, and performance (the research and development evaluation criteria developed by the Office of Management and Budget (OMB)), assigning a quantitative score. Using recommendations from expert reviewers, National Program Leaders work to improve portfolio leadership, management, and programs. Performance criteria may change over time for established programs as issues emerge and priorities evolve. CSREES also supports overall USDA measures for Departmental efforts.

KEY EXTERNAL FACTORS

There are many external facilitating and hindering factors outside the control of any Federal agency that may affect progress toward performance goals. It is important to note these factors for planning purposes in order to mitigate or leverage their influence, as well as for evaluation purposes so that proper causal conclusions can be made regarding the true effectiveness of programs and proper remedial steps can be implemented to improve programmatic efforts. Such external factors must be considered in evaluation and in expert panel reviews to provide accurate feedback and recommendations for management improvements to policy makers and program leaders.

Key external factors that may influence CSREES programs include:

- ◆ Weather and other growing conditions at home and abroad;
- ◆ Cost to implement advances (knowledge, techniques, inventions, etc.);
- ◆ Domestic and international economic factors, including consumer purchasing power, the strength of the U.S. dollar and competing currencies, and price volatility;
- ◆ National and foreign policy and political changes;
- ◆ Increasing world population and attendant increases in demand for agricultural products;
- ◆ The accidental or intentional introduction of foreign diseases and hazardous agents, and emerging and re-emerging pests and diseases, affecting plants, animals and humans;
- ◆ Food choices made available and advertised to consumers by producers;
- ◆ Agricultural lands that are commingled with urban, suburban, and non-agricultural lands as part of complex watersheds and ecosystems, and the attendant activities taking place beyond CSREES influence;
- ◆ Access to timely and accurate information;
- ◆ Acceptance of advances (knowledge, techniques, inventions, etc.) in agricultural science by farmers, producers, and the general population;
- ◆ Coordination and cooperation of other federal agencies with CSREES;
- ◆ Coordination and cooperation of state partners with CSREES;
- ◆ Existence of local collaboration;
- ◆ Level of funding available for agricultural partnering efforts at the federal, state, and local level; and
- ◆ Willingness of private sector funders, such as corporations, foundations, community organizations, to partner with CSREES, adopt new advances, etc.



Strategic Goal 1:

Enhance International Competitiveness of American Agriculture

Expanding global markets for agricultural products is critical for the long-term economic health and prosperity of our food and agricultural sector. U.S. farmers have a wealth of natural resources, cutting-edge technologies and a supporting infrastructure that result in a production capacity beyond domestic needs. Expanding global markets will increase demand for agricultural products and contribute directly to economic stability and prosperity for America's farmers.

To expand overseas markets and facilitate trade, USDA assists in the negotiation of new U.S. trade agreements and the monitoring and enforcement of existing trade agreements. In cooperation with private sector producer and commodity trade associations, USDA administers an array of market development and export promotion programs designed to build long-term markets overseas. The Department helps to expand trade opportunities through programs of technical assistance and training that support agricultural development and growth in developing countries and help them participate and benefit from international trade. USDA also works to facilitate trade through the adoption of science-based regulatory systems and standards.

OBJECTIVE 1.1: PROVIDE RESEARCH, EDUCATION, AND EXTENSION TO EXPAND AND MAINTAIN INTERNATIONAL EXPORT OPPORTUNITIES

The economic viability of U.S. agriculture depends on its performance in the global market.

To enhance the competitiveness of U.S. agricultural commodities, products, and processes in the global economy, the production, processing and distribution system must provide reliable supplies of desired products to buyers at competitive prices. High-growth areas for food demand are middle-income and developing countries where both population and income are growing relatively rapidly. Timely, reliable, and valid research, along with education and extension leading to adoption of new technologies and their resulting economic advantage, help the U.S. maintain its net positive agricultural balance of trade by expanding international markets.

CSREES supports this objective through work described under Objective 2.1, *Provide Research, Education, and Extension to Expand Domestic Market Opportunities*.

OBJECTIVE 1.2: SUPPORT INTERNATIONAL ECONOMIC DEVELOPMENT AND TRADE CAPACITY BUILDING

The President's 2002 National Security Strategy cites economic development as one of the top three priorities of U.S. foreign policy, joining diplomacy and defense. The strategy recognizes that economic and political instability associated with insufficient economic development is a major national security threat to the U.S. For most developing countries, particularly in Africa, a productive and sustainable agricultural sector supports economic well-being. Thus, targeted

agricultural development is crucial to the President's National Security Strategy.

Activities that support economic development also play an important role in efforts to expand overseas market opportunities for American agriculture. Most future growth in food demand will occur in developing and middle-income countries, where population and income are growing relatively rapidly. As incomes increase in these countries, consumers spend a far greater proportion of the extra income on food compared to consumers in higher-income countries. Moreover, growing incomes also allow consumers to diversify their diets and purchase more high-value and processed food products.

CSREES funds the production and dissemination of science-based information, education and technical assistance that lead to capacity building in developing countries, promoting economic, political, and social stability. Research discovers more productive and environmentally benign ways to produce food and fiber, not only in the U.S., but worldwide. Education programs strengthen the foundation for this goal by building capacity in the agricultural research and extension system and training the next generation of scientists and educators.

Key Outcome: EXPANDED INTERNATIONAL ECONOMIC DEVELOPMENT AND TRADE CAPACITY BUILDING THROUGH:

- (1) PARTNERSHIPS BETWEEN U.S. AND COUNTERPART FACULTY IN DEVELOPING OR TRANSITIONING COUNTRIES TO STRENGTHEN SCIENCE APPLICATIONS AND
- (2) TECHNICAL ASSISTANCE PROVIDED TO THESE COUNTRIES TO SUPPORT MARKET AND AGRICULTURAL SECTOR DEVELOPMENT.

Long Term Performance Measure:

HIGHER PARTICIPATION OF FACULTY, PUBLIC AND PRIVATE SECTOR PROFESSIONALS IN INTERNATIONAL SCIENTIFIC, CULTURAL AND ECONOMIC FORUMS.

Performance Criteria

- 1.2.1** Increase knowledge and understanding of economic components of international trade and development, trade performance of sectors of the U.S. economy, and that of other countries development impacts (CSREES Knowledge Area 606).
- 1.2.2** Increase understanding of U.S foreign policy goals and policies that have been implemented (CSREES Knowledge Area 611).

Actionable Strategies

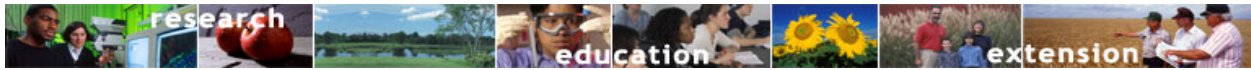
- ◆ Provide technical assistance and training to developing countries to strengthen market infrastructure, market institutions, trade and investment, and supportive market policies;
- ◆ Provide technical assistance to help developing countries adopt rules-based and science-based policies and regulatory frameworks of international standards setting bodies;
- ◆ Support the recruitment, retention, training, graduation, and placement of the next generation of research scientists, educators, and practitioners in the food and agricultural sciences;
- ◆ Help developing countries raise agricultural productivity in a sustainable environment with applications of science and technology, including biotechnology, to boost food availability and access, and improve nutrition; and
- ◆ Continue to provide technical assistance to countries in agricultural, economic, and environmental reconstruction following armed conflicts or natural disasters and strengthen their capacity to mitigate future problems.

OBJECTIVE 1.3: PROVIDE RESEARCH, EDUCATION, AND EXTENSION TO IMPROVE SANITARY AND PHYTOSANTARY (SPS) TO FACILITATE AGRICULTURAL TRADE

SPS refers to the protection of human, animal and plant life and health from foreign pests, diseases and contaminants. SPS barriers identified as trade barriers continue to grow due to the lack of regulatory capacity in various countries and/or through the lack of sound science. This growth impedes agricultural trade around the world. Reduced trade flows due to SPS barriers limit U.S.

exports and efforts of developing countries to participate in and benefit from global trade. In response to these problems, USDA will use its extensive expertise and work closely with other U.S. agencies to strengthen regulatory coordination, streamline procedures to enhance trade and encourage the use of sound science in addressing SPS and biotechnology issues.

CSREES supports this objective through work described under Goal 4, *Enhance Protection and Safety of the Nation's Agriculture and Food Supply*.



Strategic Goal 2: Enhance the Competitiveness and Sustainability of Rural and Farm Economies

An economically prosperous agricultural production sector contributes to the Nation's economic vitality and standard of living. Consumers benefit from efficiently produced and marketed agricultural products that minimize their food costs and maximize their consumption choices. The sector's success depends on the ability to expand into new markets, gain adequate capital, protect itself adequately against financial risk and adjust to changing market conditions. This success also depends on the economic well being of producers and their ability to increase production potentially through increased farm acreage and/or other methods, maintain their farms and equipment, and utilize tools to mitigate risks associated with various aspects of production. There is much diversity in the farm sector driven by diversity in resources, climate, individual preferences, and even lifestyles. The needs, concerns, and opportunities of larger, commercially oriented farms differ from those of smaller, intermediate farms, regardless of location. USDA supports much needed basic research, economic analysis, and baseline information to identify new uses and more efficient technology for producing and marketing agricultural products.

CSREES supports numerous research and extension activities to enhance the competitiveness and sustainability of rural and farm economies, ranging from the development of new products to improvements in productivity and financial management. Education programs strengthen the foundation for this goal by building capacity in the agricultural research and extension

system and training the next generation of scientists and educators.

OBJECTIVE 2.1: PROVIDE RESEARCH, EDUCATION, AND EXTENSION TO EXPAND DOMESTIC MARKET OPPORTUNITIES

Technological progress is increasingly pushing the market for agricultural products in new directions. Biobased technologies promise new opportunities for energy, industrial, and pharmacological markets for U.S. farmers. For example, agriculture is the source of: clean-burning fuel and industrial ethanol, a variety of specialty chemicals, soy-based inks, and home heating and diesel fuel, industrial adhesives, biopolymers, and films, all derived from plants rather than from petroleum and other mined raw materials. In addition to the emergence of new markets for products made from agricultural materials, new markets are emerging for environmental activities and products that mitigate environmental concerns, such as offsetting greenhouse gas emissions through carbon sequestration and other farming and ranching activities. A key priority for USDA will be research to support development of new markets and products.

CSREES sponsors vital research and development contributions for new food and non-food products and technologies, quality improvements, new uses, and value-added processes that enhance market opportunities for agricultural and forest products. Through extension, CSREES and its partners effectively demonstrate and transfer this knowledge to users.

Key Outcome: EXPANDED SCIENCE-BASED KNOWLEDGE AND TECHNOLOGIES TO GENERATE HIGH-QUALITY PRODUCTS AND PROCESSES BY:
 (1) INCREASING KNOWLEDGE OF BIOENERGY AND BIOMASS CONVERSION,
 (2) CREATING NEW COMMERCIALY VIABLE AND MARKETABLE ALTERNATIVE CROPS, AND ALTERNATIVE MARKETS FOR NON-FOOD PRODUCTS FROM EXISTING CROPS, AND
 (3) ESTABLISHING NEW INTEGRATED RESEARCH AND EXTENSION PROGRAMS AND MULTI-DISCIPLINARY GRADUATE EDUCATION TRAINING PROGRAMS.

LONG TERM PERFORMANCE MEASURE:
 CUMULATIVE NUMBER OF EXPANDED COMMERCIALY ADAPTABLE PROCESSES THAT CONVERT BIOMASS TO FUELS THROUGH THE DEVELOPMENT OF COST EFFECTIVE BIOCHEMICAL OR THERMOCHEMICAL TECHNOLOGIES, AND USED COMMERCIALY

Performance Criteria

- 2.1.1** Improve the design, construction, and cost effectiveness of facilities for animals, agricultural products, agricultural inputs, equipment and other materials products (CSREES Knowledge Area 401).
- 2.1.2** Improve mechanization, including nanotechnology, to increase efficiency and decrease labor requirements in agricultural and forestry production (CSREES Knowledge Area 402).
- 2.1.3** Develop and improve instrumentation and information systems and sensors for improved control of the production and processing of biological materials and biohazards (CSREES Knowledge Area 404).
- 2.1.4** Develop new and improved food products and processing technologies (CSREES Knowledge Area 501).

- 2.1.5** Develop new and improved food products (CSREES Knowledge Area 502).
- 2.1.6** Improve quality maintenance in storing and marketing food products (CSREES Knowledge Area 503).
- 2.1.7** Improve home and commercial food service (CSREES Knowledge Area 504).
- 2.1.8** Develop new and improved non-food products and processing technologies (CSREES Knowledge Area 511).
- 2.1.9** Improve quality maintenance in storing and marketing non-food products (CSREES Knowledge Area 512).
- 2.1.10** Foster understanding of markets, productivity, agricultural competitiveness, and inter-regional trade and provide insight to the role and function of markets and their regulation (CSREES knowledge Area 603).
- 2.1.11** Increase knowledge and understanding of distribution of products, goods, and services, the practices of buying and selling and development and improvement of markets (CSREES Knowledge Area 604).
- 2.1.12** Increase understanding of economic and social impacts of domestic programs and policies, including the effect of government actions on the U.S (CSREES Knowledge Area 610).

Actionable Strategies

- ◆ Expand research to assess the effectiveness of developing profitable alternative crops and on- or near-farm processing that add value to agricultural products and enhance the economic viability of rural communities and

- families, particularly socially disadvantaged farm operators;
- ◆ Focus existing research, and education programs to encourage new, innovative, and alternative uses for agricultural products, including increasing the use of biomass, biofuels and bioproducts;
 - ◆ Provide research, education, and extension to enable an increase in the amount of ethanol produced through cellulosic conversion technology;
 - ◆ Expand research, education and extension to help producers, processors, and distributors address changing consumer needs, tastes, and preferences;
 - ◆ Support research to understand the relationships between chemical composition, molecular and physical structure, and end-use quality and function of bioproducts;
 - ◆ Sponsor development of food products with improved nutritional and health-related characteristics;
 - ◆ Support the recruitment, retention, training, graduation, and placement of the next generation of research scientists, educators, and practitioners in the food and agricultural sciences;
 - ◆ Strengthen working relationships with other Federal agencies and departments, including the Department of Energy, the Environmental Protection Agency, the Department of the Interior, the Department of Defense and the Office of Federal Procurement Policy, to coordinate programs related to development

of new markets for agricultural products and activities; and

- ◆ Use grant programs to provide research, education, and extension that enables an increase energy production from the Nation's farms, ranches, and forests.

OBJECTIVE 2.2: PROVIDE RESEARCH, EDUCATION, AND EXTENSION TO INCREASE THE EFFICIENCY OF AGRICULTURAL PRODUCTION AND MARKETING SYSTEMS

Fundamental to the long-term viability of an agricultural producer is the ability to manage an efficient and profitable operation. USDA activities make this possible through programs that develop and transfer to producers the technology, production practices, and business and marketing tools and information that are the center pieces for an efficient and economically sustainable agricultural sector.

CSREES funds research, education, and extension programs to develop and transfer technology, practices, and skills to support economically viable farms and ranches of various size and scale. This work reduce per unit and overall production costs; improve quality and yields, reduces environmental impact, improves marketing and management decisions, develops new products and uses for by-products, and finds new ways of adding value to traditional crops and products. Research ranges from using genomics to develop hybrids requiring fewer chemical inputs, to systems for more informed decision making, to new precision technology and nanotechnology to improve management of crops and animals.

Key Outcome: INCREASED EFFICIENCY OF THE AGRICULTURAL PRODUCTION SYSTEM BY:
 (1) EXPANDING INFORMATION TO MODEL FEED UTILIZATION FOR ANIMAL SPECIES,
 (2) RELEASING NEW OR IMPROVED VARIETIES OR GERMPLASM WITH ENHANCED PEST OR DISEASE RESISTANCE,
 (3) FURTHER UNDERSTANDING THE BIOLOGICAL ROLE OF GENE SEQUENCES IN PLANTS, ANIMALS, MICROBES AND INSECTS,
 (4) STRENGTHENING MASTERS DEGREE LEVEL COURSES IN THE FOOD AND AGRICULTURAL SCIENCES, PARTICULARLY AT MINORITY-SERVING INSTITUTIONS,
 (5) INCREASING THE NUMBER OF MINORITY STUDENTS PARTICIPATING IN THE WORKFORCE BY FUNDING MINORITY-SERVING PROJECTS AT HISPANIC SERVING INSTITUTIONS, 1890 INSTITUTIONS, 1994 INSTITUTIONS, ALASKA-NATIVE SERVING, NATIVE-HAWAIIAN SERVING INSTITUTIONS, AND
 (6) INCREASING THE NUMBER OF SOCIALLY DISADVANTAGED MINORITY FARMERS AND RANCHERS WHO ARE KNOWLEDGEABLE, ELIGIBLE, AND PARTICIPATING IN USDA FARM PROGRAMS.

Long Term Performance Measure:
 CUMULATIVE NUMBER OF NEW CROPS THAT HAVE BEEN DEVELOPED AND USED COMMERCIALY.

Performance Criteria

- 2.2.1** Develop fundamental information and improve understanding of plant genetics, plant breeding technology (CSREES Knowledge Area 201).
- 2.2.2** Identify, preserve, and characterize genetic resources for plant production or protection (CSREES Knowledge Area 202).
- 2.2.3** Understand and improve plant productivity and quality as affected by reduced inputs, or stresses (CSREES Knowledge Area 203).

- 2.2.4** Improve biological quality before harvest (CSREES Knowledge Area 204).
- 2.2.5** Develop and implement comprehensive plant production management systems (CSREES Knowledge Area 205).
- 2.2.6** Improve understanding of fundamental processes and mechanisms basic to plant life (CSREES Knowledge Area 206).
- 2.2.7** Increase and improve the reproductive performance of animals (CSREES Knowledge Area 301).
- 2.2.8** Enhance understanding and improve application of animal nutrition (CSREES Knowledge Area 302).
- 2.2.9** Develop and apply information and technology for genetic improvement of animals (CSREES Knowledge Area 303).
- 2.2.10** Map and understand the genome of agriculturally important animal species (CSREES Knowledge Area 304).
- 2.2.11** Improve understanding of fundamental animal physiological processes (CSREES Knowledge Area 305).
- 2.2.12** Mitigate or reduce animal environmental stress (CSREES Knowledge Area 306).
- 2.2.13** Develop and implement comprehensive animal production management systems (CSREES Knowledge Area 307).
- 2.2.14** Increase knowledge of composition of animal products, quality factors, and consumer preferences (CSREES Knowledge Area 308).

Actionable Strategies

- ◆ Expand the knowledge base and provide information to enable producers and policymakers to make informed production, management and marketing decisions to increase the profitability and competitiveness of agriculture;
- ◆ Increase outreach and education supporting the broad view of agriculture from the rural community to the consumption of products thereby gaining communication and input from all stakeholder groups in agriculture;
- ◆ Support the recruitment, retention, training, graduation, and placement of the next generation of research scientists, educators, and practitioners in the food and agricultural sciences;
- ◆ Sponsor science-based work to increase producers' knowledge and understanding of the disciplines involved in providing products that strengthen the rural community, support the sustainability of plant and animal production and create a richer wealth of products for the health, welfare and satisfaction of consumers;
- ◆ Support research, education and extension efforts to improve understanding of animal nutrition for improved efficiency, performance, health, and well being of animals and to optimize resource use while delivering environmental benefits;
- ◆ Sponsor efforts to preserve, conserve, characterize, and make available genetic resources for research and development;
- ◆ Integrate new science-based knowledge, technologies, decision-support systems and best-management practices to optimize efficient, economical and environmentally sustainable production systems appropriate in size and scale;

- ◆ Sponsor analyses of the benefits and costs of agricultural and environmental policies to compare the effects of alternative production and management systems;
- ◆ Support research, education and extension to 1) better understand and address consumer needs, tastes and preferences, 2) inform consumers, 3) provide continuing professional development throughout the agricultural and foods system; and
- ◆ Sponsor research and extension efforts to use plant, animal and microbial genomic sequences in addition to population approaches to improve the efficiency, quality, and sustainability of plant and animal production.

OBJECTIVE 2.3: PROVIDE RISK MANAGEMENT AND FINANCIAL TOOLS FARMERS AND RANCHERS

Agricultural producers are subject to a wide array of natural, financial and market risks. Like other business owners, agricultural producers use a variety of tools to manage these risks, including crop insurance, non-insured crop disaster assistance, credit and direct payments. USDA works diligently to provide financial tools to producers. When natural disasters strike, USDA reacts quickly to help affected producers recover from losses and restore their lands to pre-disaster productivity levels.

Farming in the 21st century requires substantial resources and extensive management skills. USDA helps agricultural producers manage the risks associated with agricultural production, improve good farming practices and become good stewards of the land, and recover economically and structurally when natural disaster strikes.

CSREES contributes to the improvement and strengthening of this dynamic agricultural system through sponsored research into alternative methods to identify, assess, and manage risk, providing relevant education, and extending information and practices to improve production and market decision making through enhanced risk management.

Key Outcome: INCREASED PRODUCERS' KNOWLEDGE OF PRINCIPLES AND TECHNIQUES OF RISK MANAGEMENT.

LONG TERM PERFORMANCE MEASURE: BENEFITS TO FARMERS CHANGING THEIR RISK MANAGEMENT BEHAVIOR PER THE NET DOLLAR COST OF THE RISK MANAGEMENT EDUCATION PROGRAM.

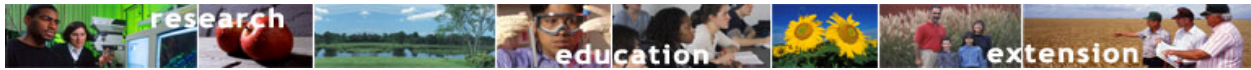
Performance Criteria

- 2.3.1** Improve the economic choices farmers and ranchers make to access and allocate resources for the production of commodities, services and products (CSREES Knowledge Area 601).
- 2.3.2** Reduce hazards to the health, safety and biosecurity of people involved in the production, processing and distribution of agricultural and forest products (CSREES Knowledge Area 723).

Actionable Strategies

- ◆ Encourage agricultural producers in the use of good farming practices;
- ◆ Continue to work aggressively to increase farm program participation rates among underserved populations and communities;
- ◆ Continue risk education initiatives to help farmers and ranchers develop production, marketing and risk management skills;

- ◆ Encourage producers to utilize computer-based record-keeping systems and other financial planning and risk-management tools;
- ◆ Focus outreach efforts on minority producers, beginning farmers, and women by or through:
 - 1) expanding efforts to partner with other Federal, State and local agencies, and non-Governmental organizations that serve these targeted populations of agricultural producers; and
 - 2) enhancing existing partnerships with land-grant universities and other educational organizations to identify and assist minority and women producers and to remove program barriers to participation;
- ◆ Sponsor research, education and extension on the adequacy and efficacy of risk assessment, management and abatement tools and techniques;
- ◆ Provide outreach, education and extension to help producers, processors and distributors adapt to changing foreign and domestic market structures and consumer preferences;
- ◆ Sponsor academic and public outreach programs to deliver science-based information, education, training and continuing professional development to agricultural producers on risk management;
- ◆ Support the recruitment, retention, training, graduation, and placement of the next generation of research scientists, educators, and practitioners in the food and agricultural sciences; and
- ◆ Sponsor development of knowledge to inform public and private decision makers on strategies for reducing risk in the management of natural resources.



Strategic Goal 3: Support Increased Economic Opportunities and Improved Quality of Life in Rural America

Rural America, home to one-fifth of the Nation's population, is a collage of people and economic activities. Today, seven out of eight rural counties are dominated by varying mixes of manufacturing, services and other non-farming activities. Of the 65 million people who live in rural America, only 2 million are engaged directly in production agriculture. While farm income is an important source of revenue for some rural families, most rural residents are not dependent on agriculture. Many family farmers rely on local, off-farm employment to supplement their farm income.

A diversity of other enterprises, including renewable energy and "place"-based opportunities, such as support services for agriculture, forestry and mining, recreation, and manufacturing, provide many of the jobs and income in rural America. The well-being and needs of communities and their residents vary widely. Minorities are especially likely to be disadvantaged due to poverty, lack of access to education and health care, and limited opportunity for high wage employment. Disparities are found between communities, and across America, in income, savings, education, housing, and other quality-of-life measures. USDA strives to ensure that rural residents have equal opportunity to share in the Nation's prosperity and technological advancement. USDA is the leading advocate for rural America.

USDA facilitates the achievement of Presidential initiatives by encouraging, for example, the production of renewable energy. The Department

will continue to work with other Federal agencies, State and local governments, and private-sector interests to achieve a coordinated effort for the realization of Presidential initiatives as well as other activities important to rural America.

CSREES promotes the well-being of America through research, education, and extension to better understand the economic, demographic, and environmental forces affecting regions and communities, and using knowledge to develop strategies that make maximum use of local assets. CSREES supports the education and training of residents and community and business leaders to help their communities thrive in the global economy. Education programs strengthen the foundation for this goal by building capacity in the agricultural research and extension system and training the next generation of scientists and educators.

OBJECTIVE 3.1: EXPAND ECONOMIC OPPORTUNITIES IN RURAL AMERICA BY PROVIDING RESEARCH, EDUCATION, AND EXTENSION TO CREATE OPPORTUNITIES FOR GROWTH

One of USDA's core missions is ensuring that rural residents enjoy economic opportunities equivalent to those of other Americans. A sustainable local economy is a major factor for creating stronger communities and fostering a desirable social and economic environment for individuals, families, firms, and the community as a whole. A strong economy gives residents access

to meaningful, financially rewarding employment, and is the foundation of the tax base that supports vital public services like education, law enforcement, fire protection, health care, and recreation. Comprehension of the dynamics of the economy and the policies and programs that promote economic activity is critical to success.

The development of the Internet-based economy provides unique opportunities for rural America. Broadband infrastructure greatly helps to mitigate the limitations on business development in rural areas caused by geographical distance and a limited customer base. This access is critical to enable rural businesses to participate in the developing global economy.

CSREES supports the generation, dissemination, and use of research-based information and knowledge to support new and innovative economic opportunities for communities and to assist public and private sector leaders in their decision making of rural issues.

Key Outcome: EXPANDED ECONOMIC OPPORTUNITIES IN RURAL AMERICA AND INCREASED KNOWLEDGE PERTAINING TO ECONOMIC DIVERSIFICATION, COMMUNITY PLANNING, SERVICE INFRASTRUCTURE, LOCAL GOVERNMENT, YOUTH/ADULT WORKFORCE PLANNING, AND CIVIC ENGAGEMENT THROUGH INNOVATIVE INTEGRATED RESEARCH AND EXTENSION PROJECTS TARGETED TO REGIONAL BUSINESS, ECONOMIC AND BUSINESS DEVELOPMENT.

Long Term Performance Measure: THE NUMBER OF FARMERS AND RANCHERS THAT GAINED AN ECONOMIC, ENVIRONMENTAL OR QUALITY-OF-LIFE BENEFIT FROM A CHANGE IN PRACTICE LEARNED BY PARTICIPATING IN A SARE PROJECT.

Performance Criteria

- 3.1.1** Improve management of physical resources and socioeconomic relationships for recreation (CSREES Knowledge Area 134).
- 3.1.2** Develop and improve management and administrative techniques applied to farming, agricultural business and other businesses and enterprises to enhance planning, decision making, and resource use (CSREES Knowledge Area 602).
- 3.1.3** Increase knowledge and understanding about community needs and preferences to develop information, skills, and decision-making tools to help community leaders, organizations, and rural enterprises understand problems, identify opportunities, and plan for renewal and growth (CSREES Knowledge Area 608).
- 3.1.4** Develop economic theory and methodology to assist government, public and private entities and individuals to improve their knowledge base and decision-making capacity (CSREES Knowledge Area 609).
- 3.1.5** Increase understanding of the technological, demographic and social changes occurring in society and ways in which individuals, families and communities cope with sociological and technological change (CSREES Knowledge Area 803).
- 3.1.6** Enhance and improve program and project design, experimental design, surveys, sampling, and statistical analysis (CSREES Knowledge Area 901).

3.1.7 Increase the efficiency and effectiveness of research, education and extension methods, management and proposals (CSREES Knowledge Area 902).

3.1.8 Develop, implement and improve educational processes, needs and methods to achieve educational goals, use and assessment of communication, information delivery, and technology transfer methods and systems (CSREES Knowledge Area 903).

Actionable Strategies

- ◆ Sponsor analysis of policy and translate research results into recommendations for business management and community leadership to optimize public and private decision-making;
- ◆ Sponsor education, research, and extension on economic diversification, e-commerce, entrepreneurship, community planning, service infrastructure, local government, workforce development, leadership development and civic engagement;
- ◆ Support application of geographic information systems and other information technologies for problem solving and strategies for local community and socioeconomic development;
- ◆ Sponsor research and analyses on the structure and performance of rural economies and on services and resources that promote economic development;
- ◆ Support the recruitment, retention, training, graduation, and placement of the next generation of research scientists, educators, and practitioners in the food and agricultural sciences;
- ◆ Sponsor education to public and private decision makers that facilitate greater understanding of the policies and programs

that promote economic opportunities and improve quality of life; and

- ◆ In cooperation with the Rural Development mission area, support technology transfer information available to individuals and businesses.

OBJECTIVE 3.2: PROVIDE RESEARCH, EDUCATION, AND EXTENSION TO IMPROVE THE QUALITY OF LIFE IN RURAL AREAS

If new businesses are to operate in a rural community, that community must possess the amenities that businesses require and employees desire. This includes access to such basic needs as clean water, adequate housing, reliable electricity and telecommunications, and such essential needs as quality education, health care, day care, public safety services and cultural activities. If a community cannot meet the public's essential needs, young people will neither stay in nor migrate to the rural community.

USDA is an important source of credit and technical assistance for developing the economic infrastructure of rural America. These resources are essential if rural residents and communities are to improve their quality of life through increased economic opportunity. Availability of adequate housing is critical to the wellbeing of a community. Ensuring that low-income families have access to decent and safe housing is a major concern in every area, whether urban or rural. The President has expressed his desire to increase homeownership, particularly among minorities. He has established a major initiative to increase minority homeownership nationwide. USDA is implementing an action plan aggressively in support of the President's goal.

CSREES sponsors research, education, and extension to improve the understanding of

socioeconomic conditions in rural America, and to promote community, youth and family well-being.

Key Outcome: INCREASED KNOWLEDGE AMONG COUNTY BASED STAFF AND COMMUNITY LEADERSHIP IN ORDER TO PROVIDE RESEARCH-BASED PRACTICES TO ENCOURAGE APPROPRIATE COMMUNITY CAPITOL DEVELOPMENT WHICH ENHANCES BUSINESS AND ECONOMIC DEVELOPMENT, THE AVAILABILITY OF APPROPRIATE EDUCATION AND HEALTH SERVICES, TRANSPORTATION NETWORKS AND THE VIBRANT COMMUNITY CONNECTIONS. ELECTRONIC DEPLOYMENT OF INFORMATION TO INCREASE THE SOCIAL, CULTURAL, HUMAN AND ECONOMIC CAPITOL AVAILABLE FOR MORE NIMBLE AND CREATIVE COMMUNITY RESPONSES TO NEEDS.

Long Term Performance Measure: THE PERCENTAGE OF COOPERATIVE EXTENSION EDUCATORS TRAINED AND USING EVIDENCE BASED PROGRAMMING BASED ON THE SEVEN COMMUNITY CAPITOLS TO FACILITATE INFORMED DECISIONS THAT IMPROVE QUALITY OF LIFE AND INCREASE ECONOMIC VIABILITY.

PERFORMANCE CRITERIA

- 3.2.1 Improve insight and understanding into the demands, preferences, behavioral responses and needs of individuals and consumers (CSREES Knowledge Area 607).
- 3.2.2 Develop, evaluate, and disseminate methods and strategies, including screening, immunization, and preventive care to enhance health-related practices (CSREES Knowledge Area 724).
- 3.2.3 Improve understanding of how individuals and families obtain and use resources of time, money and human capital to achieve

their standard of living and quality of life (CSREES Knowledge Area 801).

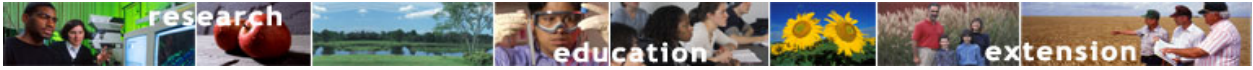
- 3.2.4 Increase understanding and development of the social, cognitive, emotional and physical capacity of children, youth, and adults throughout the life cycle (CSREES Knowledge Area 802).
- 3.2.5 Increase knowledge and understanding about the agricultural products used in apparel and textiles, and on factors that affect consumer choice and the interface between producers, retailers and consumers (CSREES Knowledge Area 804).
- 3.2.6 Improve the development, quality and functioning of community institutions and social services (CSREES Knowledge Area 805).
- 3.2.7 Promote positive youth development (CSREES Knowledge Area 806).

Actionable Strategies

- ◆ Sponsor research-based information on community assets and liabilities that affect youth, family and community well-being;
- ◆ Sponsor research on policies and programs addressing circumstances that impact the well-being of individuals, family and communities;
- ◆ Support the recruitment, retention, training, graduation, and placement of the next generation of research scientists, educators, and practitioners in the food and agricultural sciences;
- ◆ Sponsor education, research, and extension to support effective family decision-making in managing their social and economic capital;

STRATEGIC GOAL 3

- ◆ Sponsor regional rural development training, research and information access;
- ◆ Sponsor analysis and education on issues that impact the well-being of communities and families, characterize people and places in need of assistance, and on the effectiveness of related public policies and programs; and
- ◆ Sponsor education and extension to help parents provide a safe, healthy and nurturing atmosphere in which children and youth can grow and learn.



Strategic Goal 4:

Enhance Protection and Safety of the Nation's Agriculture and Food Supply

USDA has unique and critical responsibilities to provide the consumer with a healthy food supply and a secure agricultural production system. These goals are achieved by ensuring that the Nation's meat, milk, eggs, and plants are safe and wholesome. This also is achieved by protecting the Nation's agricultural system from pests and disease outbreaks, minimizing production losses, maintaining market viability and promoting responsible environmental stewardship.

To sustain a high quality, affordable and safe food supply, the food chain must be protected at each crucial link from production through consumption. Crop and livestock production systems must be protected from economically significant pests, pathogens, diseases, and toxins whether naturally occurring or introduced. Throughout production, processing, distribution, and preparation the food supply must be sheltered from contamination by organisms, toxins, and chemical residues that cause disease in or harm to humans.

Through cooperation with its partners, CSREES sponsors the development and distribution of scientific-based information, technology and practices to producers, manufacturers, the work force, and regulatory agencies to help ensure the safety of agriculture and the food supply to

domestic and global consumers. Education programs strengthen the foundation for this goal by building capacity in the agricultural research and extension system and training the next generation of scientists and educators.

OBJECTIVE 4.1: REDUCE THE INCIDENCE OF FOODBORNE ILLNESSES AND CONTAMINANTS THROUGH RESEARCH, EDUCATION, AND EXTENSION

Maintaining an affordable and safe national food supply is essential to agriculture and the nation. The ability to detect and prevent contamination by intentional or naturally occurring causes is a priority to ensuring food safety throughout the production, processing and distribution system. Collecting and disseminating accurate scientific knowledge will promote food safety from production to consumption.

CSREES sponsors education, research, extension, and technology development to identify and assess organisms, pathogens, and toxins that cause human disease throughout the agricultural environment, in foods, and in the processing and distribution system, and supports the development and transfer of practices and intervention strategies that manage, reduce or eliminate food safety risk throughout the food chain.

Key Outcome: REDUCED INCIDENCE OR PREVALENCE OF FOOD BORNE ILLNESSES AND CONTAMINANTS THROUGH INCREASED KNOWLEDGE AND/OR THE DEVELOPMENT OF MITIGATION, INTERVENTION, OR PREVENTION STRATEGIES VIA RESEARCH OR INTEGRATED RESEARCH, EDUCATION, AND EXTENSION PROJECTS IN THE FOLLOWING FOOD SAFETY AREAS: PRE-HARVEST FOOD PRODUCTION AND TRANSPORTATION, POST-HARVEST PROCESSING AND DISTRIBUTION, RETAIL PREPARATION AND DISTRIBUTION, AND CONSUMER PREPARATION, CONSUMPTION, AND BEHAVIOR..

Long Term Performance Measure: THE NUMBER OF METHODS THAT REDUCE FOOD CONTAMINATION AND GROWTH OF FOODBORNE ORGANISMS.

Performance Criteria

- 4.1.1** Ensure food products are free of harmful chemicals, including residues from agricultural and other sources (CSREES Knowledge Area 711).
- 4.1.2** Protect food from contamination by pathogenic microorganisms, parasites and naturally occurring toxins (CSREES Knowledge Area 712).

Actionable Strategies

- ◆ Sponsor research to provide a science-based, cost effective approach to food safety that is valuable to industry, policy makers, academia, and the public;
- ◆ Sponsor education and extension to provide the public with information addressing food safety, recommended handling practices, microbiological testing, and innovative methods and technologies;
- ◆ Sponsor development of information on the epidemiology, ecology, and mechanisms of foodborne pathogens and diseases;

- ◆ Sponsor research for the development and implementation of new methods and approaches for foodborne pathogens and foodborne diseases;
- ◆ Work with federal food safety agency partners, industry, and academia, to evaluate food borne illness data and the development of accurate measures on the effectiveness of prevention, control, or intervention strategies to reduce preventable food-borne illness;
- ◆ Support the recruitment, retention, training, graduation, and placement of the next generation of research scientists, educators, and practitioners in the food and agricultural sciences;
- ◆ Sponsor research that will fill existing data gaps and aid the development of risk assessments and models that will ensure implementation of science based policies;
- ◆ Provide educational and extension outreach to food animal and produce growers, to owners and operators of small and very small plants, and to food preparers and handlers, including minority populations such as Native Alaskans, Asian Pacific Islanders, and American Indians; and
- ◆ Provide educational and extension support for the implementation of HACCP.

OBJECTIVE 4.2: DEVELOP AND DELIVER RESEARCH, EDUCATION, AND EXTENSION TO REDUCE THE NUMBER AND SEVERITY OF AGRICULTURAL PEST AND DISEASE OUTBREAKS

Safeguarding America's animal and plant resources from invasive pests and diseases ensures the continued prevalence of agricultural trade as the foundation of America's prosperity and its people's existence. The dynamic nature of invasive pests and diseases demands a proactive

approach to effectively prepare for, prevent, respond to, and recover from outbreaks of established and foreign pests and diseases. Partnerships with Federal and State agencies, the land-grant university system, other academic institutions, industry, and professional organizations provide the framework from which we sponsor prevention activities. These activities allow for the coordination of effective pest and animal disease emergency response systems to limit the severity of such outbreaks. USDA has begun phasing in a new measure of the economic damages avoided or mitigated by pest and disease eradication or control efforts.

Economic sustainability of the agricultural crop and livestock systems and participation in global markets is limited by disease status. Many factors affect the likelihood of diseases of crops and livestock. These include:

- ◆ Globalization and international commerce,
- ◆ Presence of pathogen vectors,
- ◆ Industrialization of agriculture,
- ◆ Availability of vaccines and protection systems,
- ◆ Movement of animals during production,
- ◆ Continued emergence of new diseases,
- ◆ Genetic resistance of crops and livestock, and
- ◆ Availability of trained plant and animal health specialists.

While traditionally open and extensive livestock production systems increasingly are more closely monitored, they remain vulnerable to intentional exposure to pathogens. Crop systems have limited diversity and will remain extensive, making them more vulnerable to intentional exposure to pathogens.

Agricultural pests and diseases threaten the quality of agricultural products and the economic success of a farm operation and its surrounding community. Through basic and applied research, host-pathogen interactions can be identified, epidemiological and economic impacts of diseases and pests described, and control measures improved and validated. Through education and extension, producers and practitioners understand the threats from diseases and pests, and can implement effective and efficient means of control.

CSREES sponsored research and analysis is a primary source of information on pests and diseases that impact the food and fiber system. CSREES sponsors work on the investigation, understanding and control of zoonotic diseases that pose human health threats, which results in methods and practices to prevent or control outbreaks of exotic, native and foreign pests and diseases, including invasive pests.

Key Outcome: EXPANDED SCIENCE-BASED INFORMATION AND TECHNOLOGIES AND REDUCED NUMBER AND SEVERITY OF AGRICULTURAL PEST AND DISEASE OUTBREAKS THROUGH:

- (1) CONNECTION AND DATA EXCHANGE AMONG NATIONAL PLANT AND ANIMAL DISEASE DIAGNOSTIC NETWORKS,
- (2) INCREASED RESOURCE EFFICIENCY AND DECREASED ECONOMIC RISK REGARDING THE ADOPTION OF SUSTAINABLE PEST MANAGEMENT TACTICS,
- (3) DEVELOPED CAPACITY TO MINIMIZE OR MITIGATE OCCUPATIONAL AND NON-OCCUPATIONAL HUMAN HEALTH RISKS ASSOCIATED WITH PEST MANAGEMENT, AND
- (4) INCREASED CAPACITY IN MINIMIZING OR MITIGATING ENVIRONMENTAL RISK ASSOCIATED WITH PEST MANAGEMENT.

Long Term Performance Measure: THE NUMBER OF HIGH-CONSEQUENCE PESTS, BACTERIAL, PARASITIC, AND VITAL PATHOGENS, AND DISEASE THREATS DETECTED AND DIAGNOSED BY INTEGRATED THE NATIONAL PLANT DIAGNOSTIC NETWORK AND THE NATIONAL ANIMAL HEALTH LABORATORY NETWORK DIAGNOSTIC LABS.

Performance Criteria

- 4.2.1** Reduce adverse impacts of indigenous and exotic pathogens, toxins, plants and pests on plant yield and quality (CSREES Knowledge Area 211).
- 4.2.2** Reduce adverse impacts of indigenous and exotic bacteria, fungi, nematodes, viruses and other pathogens on plant yield and quality (CSREES Knowledge Area 212).
- 4.2.3** Reduce adverse impacts of competition from indigenous and exotic weeds, including aquatic weeds and parasitic plants, on plant yield and quality (CSREES Knowledge Area 213).
- 4.2.4.** Reduce adverse impacts of indigenous and exotic vertebrate pests (including birds and mammals), mollusks (including slugs and snails) and other plant pests on plant yield and quality (CSREES Knowledge Area 214).
- 4.2.5** Improve and enhance the use of natural enemies, including microbial biological control agents, to manage plant pests (CSREES Knowledge Area 215).
- 4.2.6** Develop and improve integrated control tactics and systems to manage plant pests or pest complexes in an economically, socially and environmentally sound manner (CSREES Knowledge Area 216).
- 4.2.7** Reduce adverse impacts of and improve the management of animal diseases that represent a threat to animal production, biosecurity or public health (CSREES Knowledge Area 311).
- 4.2.8** Reduce adverse impacts, increase knowledge and improve management of pests and external parasites, including insects, ticks, mites and other parasitic arthropods that reduce animal productivity (CSREES Knowledge Area 312).
- 4.2.9** Reduce adverse impacts of, and increase knowledge to control internal parasites such as worms, flukes, and protozoa to reduce losses due to mortality, reduced yield, and condemnation of meat, feed wastage and cost of drugs (CSREES Knowledge Area 313).
- 4.2.10** Reduce losses in livestock, poultry and farmed aquatic species due to toxic chemicals, pesticides, poisonous plants, predators, ingestion of foreign bodies, and

other hazards (CSREES Knowledge Area 314).

4.2.11 Develop and implement effective animal care and use methods and systems contributing to the welfare, well-being and humane treatment of food animals (CSREES Knowledge Area 315).

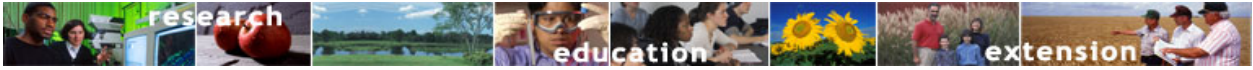
4.2.12 Increase knowledge and impact of insects, ticks, mites, and other pests that are a threat or annoyance to human health and develop safe, effective and economical control measures (CSREES Knowledge Area 721).

4.2.13 Identify, understand and control animal diseases and parasites that pose threats to human health (CSREES Knowledge Area 722).

Actionable Strategies

- ◆ Assist the Animal and Plant Health Inspection Service in supporting the development, validation, and deployment of new identification devices and tests that:
 - are operationally robust;
 - can rapidly detect pathogens, toxins, and other contaminants that threaten livestock poultry, plant/crops and food; and
 - can be used by producers, processors, veterinarians, diagnosticians, and regulatory agencies;
- ◆ Sponsor research, education, and information transfer on the transmission and epidemiology of animal and plant diseases to rapidly develop and apply strategies for controlling disease outbreaks;
- ◆ Intensify research, education, and extension efforts to rapidly identify pests and diseases that enter the United States;
- ◆ Support development and increase capacity and capability of national diagnostic laboratory networks for crops and livestock that can rapidly detect pathogen outbreaks, and support work with APHIS to more effectively prepare for, prevent, respond to, and recover from animal and plant disease outbreaks;
- ◆ Support an increase in scientific monitoring for a broader array of emerging agricultural pests and diseases;
- ◆ Support the strengthening of surveillance systems for plant and animal pests and diseases to minimize spread beyond the original area of introduction and minimize economic and environmental risk;
- ◆ Support the development of a national pathogenic control and prevention program targeting *Avian Influenza*, an infectious disease found in poultry;
- ◆ Support the development and dissemination of scientific information to protect animals from pests, infectious diseases, and other disease-causing entities that impact animal and human health;
- ◆ Sponsor research, education, extension, and the dissemination of results on:
 - The role of genes, proteins, and nutrients in the immune systems of animals and plants;
 - Vaccinology;
 - Microorganisms, pathogens, and toxins that can contaminate foods;
 - Advanced molecular, biological and immunological studies of the effects of pathogens on vulnerable animal species;
 - Advanced, rapid, accurate, and cost effective diagnostics, protections, treatments, and monitoring technologies; and

- Improved management practices to improve the management, control, and prevention of pests and diseases;
- ◆ Support the development of rapid, economical, environmentally sound, and humane methods of euthanasia for animals and the large-scale disposal of plants, animal carcasses, tissues, or environmental contaminants should an emergency occur;
- ◆ Sponsor research, education, and extension on effective real-time cleaning and disinfecting technologies to limit or contain the spread of infectious materials, and isolate and contain potential outbreaks;
- ◆ Sponsor research using traditional breeding and biotechnology to develop new or enhanced varieties and germplasm with enhanced disease resistance;
- ◆ Support the recruitment, retention, training, graduation, and placement of the next generation of research scientists, educators, and practitioners in the food and agricultural sciences;
- ◆ Sponsor research and dissemination of science-based information on:
 - the efficacy of chemical usage to fight pests and disease;
 - the development of strategies to minimize the need for chemical pesticides; and
 - the development of knowledge to support approval and licensing by the Environmental Protection Agency of safe and effective disinfectants and pesticides; and
- ◆ Sponsor research and education on the use of antimicrobial agents in the food production chain and their effects on the development of antimicrobial resistance.



Strategic Goal 5: Improve the Nation's Nutrition and Health

USDA promotes America's health through food assistance for low-income people, and nutrition education, guidance and promotion for the general public and targeted groups. The Department teaches, informs and motivates Americans to use this information to improve their diets and physical activity patterns. USDA also expands research and scientific knowledge about the contribution of food and human nutrition to public health. By promoting better diets, reaching children early and ensuring access to healthy food, the Department contributes to the Nation's health.

Public policies and programs support access to a healthy, nutritious, safe, abundant, and affordable food supply for all citizens. While food and nutrition assistance programs have helped reduce nutritional deficiencies, improving access to healthy and nutritious food for low-income Americans remains a challenge. A large and growing portion of the population faces health risks linked to quality and quantity of diet as changes in culture and lifestyle affect food selection and consumption. Major causes of mortality – cardiovascular disease, cancer, stroke, and diabetes – are clearly related to diet. Obesity is increasing in all age and ethnic groups.

CSREES sponsors research and analysis to improve the scientific knowledge base concerning nutrition and health, and sponsors education and extension to promote healthy diets, reach children early, ensure access to healthy food, and utilize

scientifically valid information to improve food, diet, and activity level decisions. Education programs strengthen the foundation for this goal by building capacity in the agricultural research and extension system and training the next generation of scientists and educators.

OBJECTIVE 5.1: ENSURE ACCESS TO NUTRITIOUS FOOD

New discoveries in nutritional science linking individuals' health to the nutritional value of foods and individuals' dietary intake increases the need for nutritional research, education and extension. Understanding the nutrient role of food components and human health and improving the health-promoting value of food is critical to address the health issues of today's society.

CSREES partners develop, test and release new technologies and innovative production practices to enhance the nutritional properties of foods, and increase accessibility to more healthy and nutritious food products for the entire population. Research helps verify new classes of food compounds that play a role in human health through optimal nutrition. Education of professionals and practitioners helps ensure that relevant, scientifically valid information and recommendations reach consumers. Extension reduces risks from adoption of unproven and dangerous practices through science-based education.

Key Outcome: NEW KNOWLEDGE THAT CLARIFIES DIETARY HEALTH RELATIONSHIPS IN ORDER TO SUPPORT BETTER DIETARY RECOMMENDATIONS AND IMPROVED FOOD PRODUCTS

Long Term Performance Measure: CONFIRMATION AND/OR CHANGES TO THE EXISTING GUIDELINES TO BE IN THE 2010 DIETARY GUIDELINES FOR AMERICA

Performance Criteria

- 5.1.1** Improve the nutrient composition of food (CSREES Knowledge Area 701).
- 5.1.2** Identify the requirements and function of nutrients and other food components (CSREES Knowledge Area 702).

Actionable Strategies

- ◆ Sponsor research to understand the bioavailability of nutrients in foods, the role of the nutrition in disease prevention and health promotion, and the health benefits from nutrients and food components;
- ◆ Sponsor research to understand the interaction between genes and diet, how genetic diversity affects the use of nutrients and other food components, and the relationship between individual nutrients and other food components, and the relationship between individual nutrients, whole foods and whole diet as risk factors and preventative agents for obesity and chronic disease;
- ◆ Sponsor human nutritional studies on nutritionally enhanced commodities and promising new foods and food components following chemical and animal evaluations;
- ◆ Support the recruitment, retention, training, graduation, and placement of the next generation of research scientists, educators, and practitioners in the food and agricultural sciences;

- ◆ Sponsor research to develop nutrient requirements for all stages of the life cycle;
- ◆ Sponsor research to identify, characterize and modulate biologically active compounds in crops and animals having beneficial health effects, document benefits for humans, and optimize their use through production and processing;
- ◆ Sponsor research, education and extension that demonstrate effective strategies which promote the adoption of research-based eating practices in vulnerable populations; and
- ◆ Sponsor research which identifies the most cost effective critical periods and most effective educational models to promote understanding of the role of food in human health and the adoption of recommended dietary practices.

OBJECTIVE 5.2: PROMOTE HEALTHIER EATING HABITS AND LIFESTYLES

The Nation faces significant public health issues related to the quality of America's eating habits. One such issue is the increasing prevalence of excess weight and obesity. USDA intends to use its nutrition assistance programs and broader nutrition education efforts as key opportunities to promote healthier eating and more physical activity across the Nation.

Key Outcome: REDUCED PROPORTION OF ADULT PARTICIPANTS AGE 20 YEARS AND OLDER WHO ARE OBESE, AND OF CHILDREN AND ADOLESCENTS WHO ARE OBESE AND OVERWEIGHT BY INCREASING HEALTHIER FOOD CHOICES AND LIFESTYLES.

Long Term Performance Measure: DEVELOPMENT AND USE OF EFFECTIVE INTERVENTION METHODS AND STRATEGIES TO CHANGE BEHAVIOR AND IMPROVE DIET AND PHYSICAL ACTIVITY IN TARGET POPULATIONS.

Performance Criteria

- 5.2.1** Assess food intake and dietary patterns, factors that influence food intake and dietary patterns, their interrelationships, and food and nutrient intake in relation to nutrient requirements, dietary guidance and food plans (CSREES Knowledge Area 703).
- 5.2.2** Increase understanding of food insecurity, insufficiency and hunger in the population, and activities to reduce hunger (CSREES Knowledge Area 704).

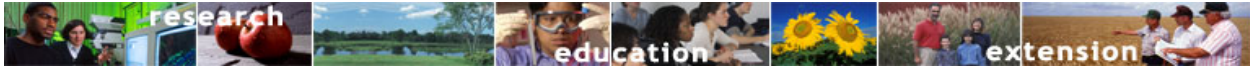
Actionable Strategies

- ◆ Promote the *2005 Dietary Guidelines for Americans*, use an evidence-based system to plan for and develop the *2010 Dietary Guidelines for Americans*, revise the Healthy Eating Index so that scores are based upon up-to-date nutrition guidelines, and re-engineer Federal nutrition guidance:
 - Conduct research, education and extension on promoting healthy weights, and preventing overweight and obesity;
- ◆ Update Nutrition Assistance Programs based on the new *Dietary Guidelines*:
 - Update nutrition curricula for children and youth;
- ◆ Leverage nutrition assistance to promote healthful lifestyles and healthy weight:
 - Promote increased intake of fruits, vegetables, whole grains, and low-fat dairy products,
 - Develop and expand cross-program nutrition promotion and education efforts, including developing common messaging, and
 - Work with State partners to integrate nutrition and physical activity promotion within and across programs;
- ◆ Support the recruitment, retention, training, graduation, and placement of the next generation of research scientists, educators, and practitioners in the food and agricultural sciences;
- ◆ Sponsor research, education and extension involving the community to increase better lifestyles decision making and selection of healthy, nutritious affordable foods;
- ◆ Sponsor research, education and extension on food assistance policy, health promotion, and community dimensions of nutrition and food security;
- ◆ Improve the quality and quantity of data to assess dietary and nutritional status and physical fitness; and
- ◆ Sponsor research on food choices and their determinants, including cost, education, and environmental and socioeconomic factors.

OBJECTIVE 5.3: IMPROVE NUTRITION ASSISTANCE PROGRAM MANAGEMENT AND CUSTOMER SERVICE

USDA is strongly committed to maintaining a high level of integrity and efficiency in nutrition assistance programs. The Department also works proactively to prevent errors and other problems.

CSREES does not fund nutrition assistance programs.



Strategic Goal 6: Protect and Enhance the Nation's Natural Resource Base and Environment

High-quality soils and abundant supplies of clean air and water are the essential building blocks for production agriculture and forestry, many rural economies and all life. America's soils, water supplies and range and forest ecosystems produce the raw materials for food, clothing, shelter, and energy. They also provide the settings for recreation and other activities highly valued by Americans.

USDA provides high-quality, science-based, and site-specific technical assistance to enable good stewardship on the 1.5 billion acres of non-Federal lands in the U.S.

The Department's activities are designed to help ensure that the Nation's natural resources meet the long-term needs of a dynamic society with an increasing population.

USDA's conservation activities on public and private lands are cooperative efforts with State, Tribal and local Governments, conservation districts, non-governmental organizations, private land managers, and local interests. In the future, USDA will increase its emphasis on cooperative conservation to achieve natural resource and environmental quality goals. This plan will ensure that natural resource use and management decisions are made by the people most affected by the decisions and most knowledgeable about local conditions.

The development of the scientific and policy knowledge base and educational and extension efforts to achieve maximum sustainable benefits

from both private and common property natural resources is a goal of CSREES. Education programs strengthen the foundation for this goal by building capacity in the agricultural research and extension system and training the next generation of scientists and educators.

Key Outcome: EXPANDED AND DISSEMINATED SCIENCE-BASED KNOWLEDGE AND INFORMATION FOR MANAGEMENT OF THE NATION'S NATURAL RESOURCES AND ENVIRONMENT, INCLUDING SOIL, AIR AND WATER, IN AGRICULTURAL, FOREST, AND RANGE WORKING LANDS AND ECOSYSTEMS.

Long Term Performance Measure: DEVELOPMENT AND ADOPTION OF SCIENCE-BASED TECHNOLOGIES, EDUCATION AND MANAGEMENT PROCEDURES SUCH THAT PRODUCTION OF AGRICULTURAL GOODS AND SERVICES ARE OPTIMIZED WHILE PROTECTING OUR NATURAL RESOURCES AND ENVIRONMENT.

OBJECTIVE 6.1: ENSURE CLEAN, ABUNDANT WATER AND CLEAN, HEALTHY AIR

A clean, healthy agricultural landscape is one in which local individuals and organizations, and other interested stakeholders, have defined and are working toward an acceptable balance of economic growth, environmental protection and social activities. Clean watersheds and healthy airsheds vary widely, depending on resource conditions, ecosystem processes, and the values and management objectives of their residents. In

locally led natural resource planning, people within an airshed or watershed assess natural resource conditions, develop proposals and recommendations for improved management, implement solutions and measure success. Specific resource concerns that can be addressed best through an airshed or watershed approach include water quality and quantity, siting of production facilities, wetland restoration, and other terrestrial and aquatic habitat improvement issues.

CSREES sponsors basic and applied research integrated with education and extension to better understand the complex environmental interrelationships affecting agricultural, forest, and rangeland ecosystems to improve scientific and lay understanding of water and air for improved management of working lands, and to minimize adverse environmental impacts of resource management.

Performance Criteria

- 6.1.1** Increase efficiency in collecting, storing, conveying and using water (CSREES Knowledge Area 111).
- 6.1.2** Improve soil and water management at whole watershed level (CSREES Knowledge Area 112).
- 6.1.3** Improve knowledge and understanding of alternative uses of land (CSREES Knowledge Area 131).
- 6.1.4** Increase knowledge and understanding of the impact of weather and climate on agriculture and natural resources (CSREES Knowledge Area 132).
- 6.1.5** Prevent and mitigate pollution from agricultural and forestry practices and its effects on plants, animals, soil, air, water

and humans (CSREES Knowledge Area 133).

- 6.1.6** Improve knowledge, understanding and management of emissions, fate and transport, and practices to mitigate agricultural and forestry emissions (CSREES Knowledge Area 141).
- 6.1.7** Develop and improve equipment, systems, operation and maintenance of drainage and irrigation systems (CSREES Knowledge Area 405).

Actionable Strategies

- ◆ Expand research that addresses the measurement, transport and fate of agricultural pollutants in working land ecosystems and the policy, social and economic aspects;
- ◆ Provide information and options to mitigate adverse impacts to watersheds and terrestrial systems from air pollution and atmospheric deposition;
- ◆ Support airshed and watershed monitoring, inventories and assessments to better understand opportunities for improved natural resource management;
- ◆ Support the development of measurement and monitoring protocols for characterizing agricultural emissions to the atmosphere and to ground and surface waters;
- ◆ Provide methods to evaluate, improve, and restore terrestrial, riparian and aquatic habitats in agricultural, forested and grassland airsheds and watersheds;
- ◆ Develop analytical systems, process-based ecosystem models and tools to evaluate the effects of conservation practices on improving and protecting air and water quality;

- ◆ Develop and implement outreach/educational practices and materials to assist individuals, agricultural producers, and communities in making air and water resource management decisions to support locally defined environmental goals;
- ◆ Support research and education/outreach that promotes adoption of best available management practices to improve air and water quality and expand water availability;
- ◆ Support creation and implementation of interdisciplinary curricula needed to train the next generation of scientists, engineers and practitioners needed to solve complex environmental issues;
- ◆ Support interdisciplinary research and education needed to inform natural resource policy making and resource management decision-making;
- ◆ Support research and education/outreach to assist the agricultural community in mitigating agricultural emissions of air and water criteria pollutants; and
- ◆ Support the development of strategies to create air and water emission reduction targets from agricultural sources.

OBJECTIVE 6.2: ENHANCE SOIL QUALITY TO MAINTAIN PRODUCTIVE WORKING LANDS

High-quality soils support the efficient production of crops for food, fiber and energy. They also provide for the efficient cycling of nutrients and pesticides through ecosystems, help sequester carbon, and contribute to improved water and air quality and wildlife habitat. Soil-quality management focuses on optimizing its function for both agricultural and environmental benefits. Intensively used soils, such as for production of annual crops, are most vulnerable to degradation and damage. By reducing erosion and increasing

the organic content of soil, the quality of working cropland is improved. Two-thirds of the Nation's land belongs to farmers, ranchers and other private landowners.

CSREES sponsors integrated education, research, and extension work to better understand the complex environmental interrelationships affecting agricultural, forest, and rangeland production practices, to improve scientific and lay understanding of soil for better production management, and to minimize adverse environmental impacts.

Performance Criteria

- 6.2.1** Identify soil parameters for crop production, forest and rangeland management, housing, zoning, planning and other land uses (CSREES Knowledge Area 101).
- 6.2.2** Understand chemical and physical relationships among soils, plants, water and nutrients to improve or restore soil production capability (CSREES Knowledge Area 102).
- 6.2.3** Improve the management of saline and sodic soils (CSREES Knowledge Area 103).
- 6.2.4** Protect soils from harmful effects of natural elements (CSREES Knowledge Area 104).
- 6.2.5** Improve the effectiveness of collecting, storing, transporting, treating and utilizing waste products from agriculture, forestry, and other origins (CSREES Knowledge Area 403)

Actionable Strategies

- ◆ Develop understanding of the relationships between soil parameters and ecosystem

function and services that inform best management practices and strategies for landowners, farmers, foresters, and ranchers;

- ◆ Support the recruitment, retention, training, graduation, and placement of the next generation of research scientists, educators, and practitioners in the food and agricultural sciences;
- ◆ Support the development, dissemination, and implementation of science-based knowledge, tools and technology to assess the consequences of land use and climate change on soil and ecosystem function;
- ◆ Support the development and implementation of multi-disciplinary and inter-disciplinary training for the next generation of educators, scientists and resource personnel to better manage natural resources for both ecological and economic sustainability; and
- ◆ Support research, education and extension-outreach activities that serve to inform policy and decision-making relative to working lands, including crop, forest and rangeland ecosystems.

OBJECTIVE 6.3: PROTECT ENHANCE, AND MANAGE FORESTS AND RANGELANDS

Several serious threats pose an increasing risk to the values, goods and services provided by public and private forestland and rangelands. These threats are:

- ◆ Wildland fire;
- ◆ Invasive species;
- ◆ Fragmentation and loss of open space;
- ◆ Unmanaged outdoor recreation;
- ◆ Demand for clean energy; and
- ◆ Requirements for waste disposal.

USDA already helps land owners, managers, and operators address these threats on privately owned land. However, most forest and rangeland watersheds are a diverse mix of public and private lands, managed by State, Tribal and local land managers. Thus, USDA must work cooperatively with all involved stakeholders to protect, enhance and manage forests and rangelands.

Healthy, vigorous plant communities are critical to healthy forest and rangeland ecosystems to protect soil quality, prevent accelerated soil erosion, and to maintain and improve water quality and quantity. These ecosystems also provide fiber; sequester carbon; and supply forage, cover, and habitat for livestock and wildlife. Active, science-based management is essential to maintaining healthy, diverse and resilient forests and rangelands.

CSREES and its partners collaborate with landowners, industry, non-governmental organizations, citizens and other interested stakeholders to develop, validate and disseminate knowledge and technologies to help manage these communities for sustainable natural resource and ecosystem services.

Performance Criteria

- 6.3.1 Identify and understand biological processes and ecological relationships to improve rangeland management techniques and improve appraisals of range conditions for production of livestock forage, wildlife habitat and water yield (CSREES Knowledge Area 121).
- 6.3.2 Develop new wildfire prevention methods, technology for fuel hazard reduction, improved systems for wildfire prediction, detection and effective attack,

- and suppression technologies (CSREES Knowledge Area 122).
- 6.3.3 Improve management of forest plants and trees, forest ecosystem ecology, breeding, forest nursery practices and silvicultural techniques (CSREES Knowledge Area 123).
- 6.3.4 Improve urban and suburban environments and enhance visual screening, noise suppression, air quality improvement, shade and beautification through tree plantings (CSREES Knowledge Area 124).
- 6.3.5 Improve the integration of trees in farmland and rangeland to improve agricultural production (CSREES Knowledge Area 125).
- 6.3.6 Preserve, enhance and restore natural biodiversity to levels compatible with societal uses of natural resources (CSREES Knowledge Area 136).
- 6.3.7 Define and understand relationships between agricultural production and processing and the environment and natural resource use (CSREES Knowledge Area 605).
- ◆ Expand and strengthen partnerships with other Federal, State, Tribal and local governments and nongovernmental organizations to develop collaborative strategies to address forest and rangeland ecosystem health at watershed scales;
 - ◆ Coordinate and work to improve methodologies to measure and monitor rangeland health and partner to measure and document the benefits of conservation practices on rangelands;
 - ◆ Sponsor research and education/outreach that promotes adoption of best available management practices to improve rangeland health and address issues of invasive species, wildfire, fragmentation and accelerated erosion for forests and rangelands;
 - ◆ Support research and education/outreach to identify, quantify, and actualize ecosystem and other non-market services and amenities, such as carbon sequestration, that derive from forests and rangeland;
 - ◆ Sponsor research and education to produce decision support tools that inform forest and rangeland policy, decision-making, and management at all levels;
 - ◆ Support forest resources research that addresses emerging technologies and issues in production and utilization that enhance the industry's competitiveness, such as genomics, biotechnology, bioprocessing, and nanotechnology;
 - ◆ Develop extension and outreach programs that educate citizens and public officials in the conservation and wise use of forest resources and rangelands;
 - ◆ Sponsor research and education/outreach for utilization of wood-based bioenergy and products to reduce dependency on petroleum;

Actionable Strategies

- ◆ Sponsor research and education/outreach to aid local and regional communities in understanding and possible abatement of habitat fragmentation, and promoting renovation and restoration on degraded forests and rangelands;
- ◆ Fund research and technology development to better manage forest and rangeland ecosystems;

- ◆ Support the development of multidisciplinary curricula that enable solving complex natural resource problems and insure the recruitment, retention, graduation and placement of the next generation of research scientists, educators and practitioners in forest and rangeland sciences;
- ◆ Support the recruitment, retention, training, graduation, and placement of the next generation of research scientists, educators, and practitioners in the food and agricultural sciences;
- ◆ Fund research, education and outreach efforts to assess the effects of climate change, land use and management practices on sustainability of forest and rangeland health and productivity, and the protection of water and air quality; and
- ◆ Sponsor research, education and outreach that analyze and assess the effects of changing natural resource and environmental economics and policies on the maintenance of rural communities, open space, and quality of life;.

OBJECTIVE 6.4: PROTECT AND ENHANCE WILDLIFE HABITAT TO BENEFIT DESIRED, AT-RISK AND DECLINING SPECIES.

The Nation's public and private lands provide habitat for more than 200,000 identified native species. Habitat fragmentation and loss, invasive species and declining resource quality continue to contribute to wildlife declines. Most at-risk species move between public and private lands during their life cycle. Thus, solutions must include cooperative conservation across public and private ownerships and access to USDA programs that assist landowners with restoring, improving and protecting wildlife habitat on their lands.

CSREES chiefly partners with land grant universities, providing funds and coordination for wildlife habitat research and education/outreach programs. Through research, relevant science-based knowledge is obtained, organized and shared with the natural resources management community. Through instructional programs, students are prepared for careers as professional wildlife conservationists and managers. Through extension/outreach, science-based information is used to achieve public understanding and support of wildlife conservation and management principles and procedures.

Performance Criteria

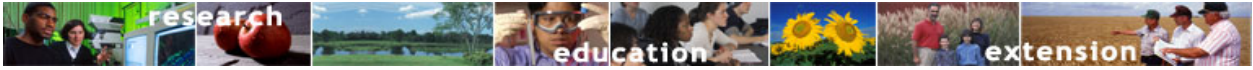
- 6.4.1** Determine biological and ecological needs of species, factors affecting population dynamics, maintaining and enhancing habitats, and managing for sustained wildlife harvest, population, species and community viability (CSREES Knowledge Area 135).

Actionable Strategies

- ◆ Develop and provide research knowledge and information to better manage terrestrial and aquatic habitat ecosystems for wildlife;
- ◆ Remove redundancies and streamline and improve efficiencies in interagency consultation and overall species conservation;
- ◆ Support research and education/outreach to improve habitat, especially for at-risk species;
- ◆ Support the recruitment, retention, training, graduation, and placement of the next generation of research scientists, educators, and practitioners in the food and agricultural sciences;
- ◆ Assess the causes of decline of rare and at-risk species, and provide recommendations for reversing declines;

STRATEGIC GOAL 6

- ◆ Cooperate with stakeholders in the public and private sectors to develop watershed and landscape plans to restore, protect and manage habitat for wildlife;
- ◆ Cooperate with Federal, State, Tribal and local governments and nongovernmental organizations to develop and adopt standard, science-based resource indicators to assess the condition of fish and wildlife resources; and
- ◆ Enhance technology to measure and document the benefits of conservation efforts on wildlife habitat condition.



Management Initiatives

OVERVIEW OF MANAGEMENT INITIATIVES

USDA is working to strengthen its management through vigorous execution of the President's Management Agenda (PMA). Better management will result in more efficient program operations that offer improved customer service and more effective stewardship of taxpayer funds.

USDA expects to:

- ◆ Ensure an efficient, high-performing, diverse workforce, aligned with mission priorities and working cooperatively with partners and the private sector;
- ◆ Enhance internal controls, data integrity, and financial management information and sustain unqualified audit opinion;
- ◆ Reduce spending and burden on citizens, partners and employees by simplifying access to the Department's information. This enhancement is added by implementing business processes and information technology to make services available electronically;
- ◆ Link budget decisions and program priorities more closely with program performance and consider the full cost of programs;
- ◆ Reduce improper payments by establishing targets and corrective actions plans;

- ◆ Efficiently and effectively manage real property;
- ◆ Transform IT enterprise infrastructure to be cost effective and ubiquitous across all agencies and geographic regions;
- ◆ Improve research and development investments by using objective criteria; and
- ◆ Support the essential work of faith-based and community organizations.

A brief summary of CSREES' plans follows.

IMPROVE HUMAN CAPITAL MANAGEMENT

The President has identified as a priority using the strategic management of human capital to create a high-performing workforce that is more citizen-centered and results-oriented. In 2004, CSREES developed a strategic workforce plan, which analyzed the current workforce, identified future workforce needs, and outlined the following strategies for meeting these needs:

- ◆ Workforce Preparation for Current Technology and Transition to e-Government/e-Grants;
- ◆ Utilization of New Communication Methods on Workforce;
- ◆ Utilization of Administrative Support Personnel;
- ◆ Utilization of Program Personnel;

- ◆ Leadership Development and Succession Planning; and
- ◆ Enhance Organizational Culture and Quality of Worklife for Employees.

Progress on activities supporting the six strategies is monitored on a quarterly basis.

In managing its human capital and delivering its services to customers, CSREES will continue to focus on ensuring civil rights and equal employment opportunity for everyone, regardless of race, color, national origin, gender, religion, age, sexual orientation, disability, political belief, marital or familial status, or any other factor. The Agency is committed to continuous civil rights progress in the workplace, program delivery and processing complaints timely and efficiently.

CSREES' plans include:

- ◆ Integrating the human capital impacts of such Presidential initiatives as competitive sourcing and eGovernment;
- ◆ Using workforce planning and hiring flexibilities to recruit, retain and reward employees while developing a high-performing and accountable workforce;
- ◆ Ensuring employment opportunities for all members of the workforce, while implementing programs targeted towards critical occupations with projected skill gaps and underrepresented groups;
- ◆ Developing a succession plan and providing leadership development opportunities/training to provide for a cadre of future leaders; and
- ◆ Ensuring the timely resolution of program and employment civil rights complaints.

IMPROVE FINANCIAL MANAGEMENT

Effectively managing the use of taxpayer dollars is a fundamental Federal responsibility. CSREES intends to ensure that all funds spent are accounted for properly to taxpayers, Congress and the Government Accountability Office. The CSREES Office of Extramural Programs (OEP) works to improve financial management, in partnership with the USDA Office of Chief Financial Officer as a core attribute of the Agency's operating culture. Through efforts to improve financial management, CSREES has received unqualified opinion on its financial audits. OEP is working closely to eliminate all material weaknesses.

CSREES' plans include:

- ◆ Maintain an unqualified opinion on financial statements,
- ◆ Eliminate all material weaknesses and inconsistencies in financial processes,
- ◆ Comply with OMB Circular A-123, "Management's Responsibility for Internal Control" and remediate any internal control weaknesses,
- ◆ Evaluate opportunities to reduce expenses in Agency financial processes and solutions,
- ◆ Modernize Agency financial management systems,
- ◆ Improve financial reporting processes and procedures,
- ◆ Provide transparency and accountability to administrative costs, and
- ◆ Increase the use of financial information in day-to-day decision making and budget formulation.

EXPAND ELECTRONIC GOVERNMENT

The USDA eGovernment Strategic Plan establishes a clear mission, vision, and set of enterprise-wide goals and objectives for eGovernment. In collaboration with the Research, Education, and Economics mission area, CSREES has developed an eGovernment Tactical Plan that guides transformation of business processes to fulfill USDA requirements and improve service to its university and other partners. Specifically, the plan focuses on integrated investment approaches and supporting cross-cutting activities carried out by the Agency to facilitate collaborative delivery of its programs. Consistent with this effort, CSREES is transforming, enhancing, and expanding the delivery of its programs by adopting innovative electronic solutions to provide better, cheaper, and faster service to the public.

CSREES' plans include:

- ◆ Continue to enhance capacity for exchanging proposal and grant data electronically with its grantees through Grants.gov and to process, review, and award proposals and grants electronically;
- ◆ Under the One Solution Initiative, the various reporting processes currently used by CSREES will be unified into an innovative integrated system that better aligns the Agency budget with performance outcomes across research, education, and extension;
- ◆ Focus on key areas for effective IT management, such as Enterprise Architecture, Federal Information Security Management Act, and business case development, as well as on network efficiency, reliability, and capacity to ensure support of our E-Government projects; and

- ◆ Actively participate in the Grants Management Line of Business (GMLoB) by implementing USDA best practice business processes and standard data models. Leverage lines of businesses and services in GMLoB as these become operational.

ESTABLISH BUDGET AND PERFORMANCE INTEGRATION

CSREES continues to improve how it integrates performance information into its budget decisions. Beginning with the FY 2005 President's Budget, the Agency integrated budget with performance throughout the budget formulation process. This integration includes the use of OMB's Program Assessment Rating Tools (PART). PART is used to assess and improve program performance so that the Federal Government can achieve better results. The Agency establishes budget priorities based on CSREES' strategic goals and desired outcomes. The Agency continues to improve its performance information annually.

CSREES' plans include:

- ◆ Continue using performance information during all stages of the budget formulation process;
- ◆ Systematically evaluating programs and integrating the results of those evaluations into the budget decision-making process; and
- ◆ Aligning the budget with the Agency's and Department's strategic plans to keep the focus on results and effective management.

IMPLEMENT COMPETITIVE SOURCING

Through a strategic planning process and development of an approach customized to the REE mission area, competitive sourcing is one of

several tools that can be used in workforce planning or restructuring efforts to improve CSREES operational and organizational efficiencies. The Agency will balance the commitment to improve operational efficiency with minimizing disruption to its ongoing operations and workforce. The REE Competitive Sourcing Working Group, including management officials from CSREES, will provide guidance and leadership for this program.

promote the efficient and economical use of the Department's real property assets and to assure management accountability for implementing Federal real property management reforms.

The Agricultural Research Service's Administrative and Financial Management unit is responsible for CSREES' real property management and therefore for implementation of this initiative for CSREES.

ELIMINATE IMPROPER PAYMENTS

Based on recent audit estimates, Federal agencies make more than \$45.1 billion in improper payments annually. This initiative requires agencies to measure their improper payments annually, develop improvement targets and corrective action plans, and track the results annually to ensure that corrective actions are effective. CSREES has identified 15 programs that are risk susceptible. The Agency has prepared corrective-action plans for these programs to reduce and recover improper payments.

CSREES plans include:

- ◆ Assessing the risk of improper payments in all its programs annually;
- ◆ Working to reduce the number of improper payments made; and
- ◆ Recovering, where possible, overpayments made to individuals and organizations.

IMPROVE REAL PROPERTY MANAGEMENT

Executive Order (E.O.) 13327, Federal Real Property Asset Management establishes the framework for improved use and management of real property owned, leased, or managed by the Federal Government. It is the policy of USDA to

ENHANCE RESEARCH AND DEVELOPMENT CRITERIA

This program initiative calls on Federal Government agencies to apply a framework using three criteria — relevance, quality and performance — to research. CSREES has moved forward aggressively to integrate this framework through its program evaluation processes. The use of the criteria is an effective means to ensure that programs are best targeted, meeting high quality standards, and accomplishing their goals.

CSREES' plans include:

- ◆ Continuing to apply objective criteria as projects are evaluated for funding;
- ◆ Continuing to evaluate portfolios:
 - Annually by internal review teams and
 - Every five years by external, expert review teams;
- ◆ Closely coordinating among research agencies to ensure that common criteria and performance measures are used where possible; and
- ◆ Incorporating results into decision making.

SUPPORT FAITH-BASED AND COMMUNITY INITIATIVES

This initiative strives to support the essential work of faith-based and community organizations. The initiative accomplishes this goal by ensuring that these organizations are allowed to compete on equal footing for Federal dollars and educating them on grant opportunities. Agencies have already identified several barriers to participation in Federal programs and are working to eliminate them. They are conducting outreach and technical assistance to faith-based and community organizations. The agencies are also testing innovative ways to improve program services by engaging faith-based and community organizations.

USDA has a long history of working with faith-based and community organizations to help those

in need. The Department is strengthening these partnerships and creating new ones to alleviate hunger and build strong communities by:

- ◆ Ensuring that faith-based and community organizations have equal access to USDA programs,
- ◆ Educating these organizations about any programs designed to enhance their capacity to serve their communities,
- ◆ Continuing to reduce barriers and encourage participation through improved coordination with State and local organizations,
- ◆ Seeking opportunities to meet the needs of communities through USDA programs, and
- ◆ Reporting on progress to ensure that USDA is producing real results for Americans in need.



Appendix A: Program Evaluations

CSREES used several tools in developing this strategic plan, including:

- ◆ The 2005-2010 USDA Strategic Plan
- ◆ Program Evaluations
- ◆ The National Research, Education, Extension, and Economics Advisory Board
- ◆ Internal Management Studies and Performance Measurement Systems

The following table highlights some of these tools as they relate to USDA’s strategic goals and management initiatives

Program Evaluations Used to Develop the Strategic Plan				
Goal	Evaluations/ Analyses	Brief Description	What Was The Effect	Date
Goals 1 and 2 Economic Opportunities	Portfolio Review Expert Panel (PREP)	An independent evaluation of programs based on information and evidence gathered through an internal, self-assessment, and objective scoring based on OMB research and development criteria by and external, expert panel.	Assessment of Goal 1 and Goal 2 programs using the research and development criteria of relevance, performance, and quality. Impacts programming, resource allocation, and budget requests.	2004
	PART review	A PART review was conducted as part of the 2006 budget process and updated during the 2007 and 2008 process.	CSREES improved the management of its programs and measurement of their performance.	2004
Goal 3 Rural Opportunities	Portfolio Review Expert Panel (PREP)	An independent evaluation of programs based on information and evidence gathered through an internal, self-assessment, and objective scoring based on OMB research and development criteria by and external, expert panel.	Assessment of Goal 3 programs using the research and development criteria of relevance, performance, and quality. Impacts programming, resource allocation, and budget requests.	2006
	PART review	A PART review was conducted as part of the 2008 budget process.	CSREES will improve the management of its programs and measurement of their performance.	2006
Goal 4 Protection and Safety of Food Supply	Portfolio Review Expert Panel (PREP)	An independent evaluation of programs based on information and evidence gathered through an internal, self-assessment, and objective scoring based on OMB research and development criteria by and	Assessment of Goal 4 programs using the research and development criteria of relevance, performance, and quality. Impacts programming, resource allocation, and budget requests.	2005

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		external, expert panel.		
	PART review	A PART review was conducted as part of the 2007 budget process and updated during the 2008 process.	CSREES improved the management of its programs and measurement of their performance.	2005
Goal 5 Nutrition and Health	Portfolio Review Expert Panel (PREP)	An independent evaluation of programs based on information and evidence gathered through an internal, self-assessment, and objective scoring based on OMB research and development criteria by and external, expert panel.	Assessment of Goal 5 programs using the research and development criteria of relevance, performance, and quality. Impacts programming, resource allocation, and budget requests.	2006
	PART review	A PART review was conducted as part of the 2008 budget process.	CSREES will improve the management of its programs and measurement of their performance.	2006
Goal 6 Natural Resources	Portfolio Review Expert Panel (PREP)	An independent evaluation of programs based on information and evidence gathered through an internal, self-assessment, and objective scoring based on OMB research and development criteria by and external, expert panel.	Assessment of Goal 6 programs using the research and development criteria of relevance, performance, and quality. Impacts programming, resource allocation, and budget requests.	2005
	PART review	A PART review was conducted as part of the 2007 budget process and updated during the 2008 process.	CSREES improved the management of its programs and measurement of their performance.	2005
All Goals	Annual internal portfolio self-assessments.	In internal evaluation of programs evaluating progress made on recommendations from PREP reviews and scoring on OMB research and development criteria.	Progress in relevance, performance, and quality from the preceding year.	Annual
	Project review	National Program Leaders evaluate projects through required annual and termination reports, and they also may discuss projects with Project Director's or make site visits.	This evaluation allows the Agency to assess program results and determine appropriate areas for future investment.	Ongoing



Appendix B: Cross-Cutting Programs

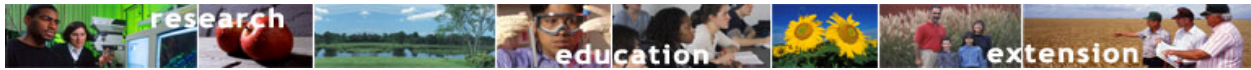
CSREES' work often cuts across jurisdictional lines within USDA, with other Federal agencies, and with State, local, and private partners. This table lists the primary partnerships that will enable CSREES to reach the outcomes in this Strategic Plan. Please note that for the purposes of this table, it is assumed that all USDA Departmental Offices support all strategic goals and management initiatives.

Cross-Cutting Programs		
Goal	USDA Agencies	External Organizations
Goals 1 and 2	Foreign Agricultural Service (FAS), Farm Service Agency (FSA), Risk Management Agency (RMA), Agricultural Marketing Service (AMS), Animal & Plant Health Inspection Service (APHIS), Grain Inspection, Packers & Stockyards Administration (GIPSA), Economic Research Service (ERS), National Agricultural Statistics Service (NASS), Rural Business-Cooperative Service (RBS), Agricultural Research Service (ARS)	Office of the U.S. Trade Representative, Department of Commerce, State Department, Department of the Treasury, Export-Import Bank, Overseas Private Investment Corporation, World Bank, International Monetary Fund, regional development banks, producers, exporters, private industry trade groups, cooperators, State Departments of Agriculture, Department of Energy, National Aeronautics and Space Administration, National Science Foundation, U.S. Agency for International Development, Millennium Challenge Corporation, private voluntary agencies, U.S. Food and Drug Administration, Department of the Interior, land grant colleges and universities, commercial warehouse operators, commercial lenders, cooperative marketing associations and private sector insurance companies
Goal 3	Rural Development (RD)	Commercial lenders and cooperative marketing associations, rural communities, Regional Rural Development Centers, Research community, colleges and universities, U.S. Department of Housing and Urban Development, State, territorial, Tribal and local agencies involved in rural development, private sector firms

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		and organizations, and private non-profit organizations, and private foundations.
Goal 4	APHIS,FSIS, ERS, ARS, NASS	Research community, colleges and universities, U.S. Department of Energy, National Science Foundation, U.S. Department of Health and Human Services, National Institutes of Health, National Aeronautics and Space Administration
Goal 5	ERS, ARS, Food & Nutrition Service (FNS), Center for Nutrition Policy and Promotion (CNPP)	State, territorial, Tribal and local agencies involved in nutrition assistance program delivery, private sector firms and organizations, private non-profit voluntary organizations, private voluntary organizations, Department of Health and Human Services, Dietary Guidelines Alliance, professional organizations, health and public interest organizations, EPA, State Department, United Nations Food and Agriculture Organization, World Bank, regional development banks, State Departments of Agriculture, Food and Drug Administration, academic institutions, research community
Goal 6	Natural Resources Conservation Service (NRCS), Forest Service (FS), FSA, ARS, NASS, Hazardous Materials Management Group (HMMG), ERS	Soil Conservation Districts, Resource Conservation and Development Councils, State agencies, Tribal governments, Bureau of Land Management, Bureau of Reclamation, Federal Emergency Management Agency, U.S. Geological Survey, National Oceanic and Atmospheric Administration, Fish and Wildlife Service, Corps of Engineers, National Park Service, Department of Energy, Tennessee Valley Authority, Department of State, National Science Foundation, National Atmospheric and Space Administration, Environmental Protection Agency



Appendix C: Strategic Consultations

CSREES regularly consults with external stakeholders as delineated below regarding our programs' effectiveness. While many of the consultations were not conducted expressly for the development of CSREES' Strategic Plan, they do impact the strategic direction of the Agency in an ongoing basis.

Strategic Consultations			
Goal	Date	Who	Purpose
All Goals	Ongoing	Groups, associations, and societies related to agricultural research, education and extension; land grant colleges and universities.	Share information and provide input on program direction, delivery, and outreach.
	Annually	National Association of State Universities and Land-Grant Colleges.	Seek input of university leadership to improve science, information, and technology development and distribution.
	Annually	Board on Agriculture Assembly.	Provide input to Agency leadership in agricultural administration, teaching, research, extension, forestry, international programs, human sciences, and veterinary medicine.
	Quarterly	National Agriculture, Research, Education, Economics, and Extension Advisory Board.	Advise the USDA and its land-grant university partners on research, extension, education and economic policies, priorities, and on the effectiveness of those policies and priorities.
	Ongoing	OMB Program Performance Assessment using the Program Assessment Rating Tool (PART).	Structured OMB review as part of the budget process to help determine program effectiveness

Appendix D:

Crosswalk Between CSREES Strategic Goals and Objectives and Knowledge Area Classification

GOAL 1: ENHANCE INTERNATIONAL COMPETITIVENESS OF AMERICAN AGRICULTURE

Objective 1.2: Support international economic development and trade capacity building

Knowledge Areas

- 606 International Trade and Development Economics
- 611 Foreign Policy and Programs

GOAL 2: ENHANCE THE COMPETITIVENESS AND SUSTAINABILITY OF RURAL AND FARM ECONOMIES

Objective 2.1: Provide research, education, and extension to expand domestic market opportunities

Knowledge Areas

- 401 Structures, Facilities, and General Purpose Farm Supplies
- 402 Engineering Systems and Equipment
- 404 Instrumentation and Control Systems
- 501 New and Improved Food Processing Technologies
- 502 New and Improved Food Products
- 503 Quality Maintenance in Storing and Marketing Food Products
- 504 Home and Commercial Food Service
- 511 New and Improved Non-Food Products and Processes
- 512 Quality Maintenance in Storing and Marketing Non-Food Products
- 603 Market Economics
- 604 Marketing and Distribution Practices
- 610 Domestic Policy Analysis

Objective 2.2: Provide research, education, and extension to increase the efficiency of agricultural production and marketing systems

Knowledge Areas

- 201 Plant Genome, Genetics, and Genetic Mechanisms
- 202 Plant Genetic Resources and Biodiversity
- 203 Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 Plant Product Quality and Utility (Preharvest)
- 205 Plant Management Systems
- 206 Basic Plant Biology
- 301 Reproductive Performance of Animals
- 302 Nutrient Utilization in Animals
- 303 Genetic Improvement of Animals
- 304 Animal Genome
- 305 Animal Physiological Processes
- 306 Environmental Stress in Animals
- 307 Animal Production Management Systems
- 308 Improved Animal Products (Before Harvest)

Objective 2.3: Provide risk management and financial tools farmers and ranchers

Knowledge Areas

- 601 Economics of Agricultural Production and Farm Management
- 723 Hazards to Human Health and Safety

GOAL 3: SUPPORT INCREASED ECONOMIC OPPORTUNITIES AND IMPROVED QUALITY OF LIFE IN RURAL AMERICA

Objective 3.1: Expand economic opportunities in rural America by providing research, education, and extension to create opportunities for growth

Knowledge Areas

- 134 Outdoor Recreation
- 602 Business Management, Finance, Taxation, and Estate Planning
- 608 Community Resource Planning and Development
- 609 Economic Theory and Methods
- 803 Sociological and Technological Change Affecting Individuals, Families, and Communities
- 901 Program and Project Design, and Statistics
- 902 Administration of Projects and Programs
- 903 Communication, Education, and Information Delivery

Objective 3.2: Provide research, education, and extension to improve the quality of life in rural areas

Knowledge Areas

- 607 Consumer Economics
- 724 Healthy Lifestyle
- 801 Individual and Family Resource Management
- 802 Human Development and Well-Being
- 804 Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
- 805 Community Institutions, Health, and Social Services
- 806 Youth Development

GOAL 4: ENHANCE PROTECTION AND SAFETY OF THE NATION’S AGRICULTURE AND FOOD SUPPLY

Objective 4.1: Reduce the incidence of food-borne illnesses and contaminants through research, education, and extension

Knowledge Areas

- 711 Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 712 Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Objective 4.2: Develop and deliver research, education, and extension to reduce the number and severity of agricultural pest and disease outbreaks

Knowledge Areas

- 211 Insects, Mites, and Other Arthropods Affecting Plants
- 212 Pathogens and Nematodes Affecting Plants
- 213 Weeds Affecting Plants
- 214 Vertebrates, Mollusks, and Other Pests Affecting Plants
- 215 Biological Control of Pests Affecting Plants
- 216 Integrated Pest Management Systems
- 311 Animal Diseases
- 312 External Parasites and Pests of Animals
- 313 Internal Parasites in Animals
- 314 Toxic Chemicals, Poisonous Plants and Naturally Occurring Toxins and Other Hazards Affecting Animals
- 315 Animal Welfare, Well Being, and Protection
- 721 Insects and other Pests Affecting Humans
- 722 Zoonotic Diseases and Parasites Affecting Humans

GOAL 5: IMPROVE THE NATION'S NUTRITION AND HEALTH

Objective 5.1: Ensure access to nutritious food

Knowledge Areas

- 701 Nutrient Composition of Food
- 702 Requirements and Function of Nutrients and Other Food Components

Objective 5.2: Promote healthier eating habits and lifestyles

Knowledge Areas

- 703 Nutrition Education and Behavior
- 704 Nutrition and Hunger in the Population

GOAL 6: PROTECT AND ENHANCE THE NATION'S NATURAL RESOURCE BASE AND ENVIRONMENT

Objective 6.1: Ensure clean, abundant water and clean, healthy air

Knowledge Areas

- 111 Conservation and Efficient Use of Water
- 112 Watershed Protection and Management
- 131 Alternative Uses of Land
- 132 Weather and Climate
- 133 Pollution Prevention and Mitigation
- 141 Air Resource Conservation and Management
- 405 Drainage and Irrigation Systems and Facilities

Objective 6.2: Enhance soil quality to maintain productive working lands

Knowledge Areas

- 101 Appraisal of Soil Resources
- 102 Soil, Plant, Water, Nutrient Relationships
- 103 Management of Saline and Sodic Soils and Salinity
- 104 Protect Soil from Harmful Effects of Natural Elements
- 403 Waste Disposal, Recycling and Reuse

Objective 6.3: Protect, enhance, and manage forests and rangelands

Knowledge Areas

- 121 Management of Range Resources
- 122 Management and Control of Forest and Range Fires
- 123 Management and Sustainability of Forest Resources
- 124 Urban Forestry
- 125 Agroforestry

- 136 Conservation of Biological Diversity
- 605 Natural Resource and Environmental Economics

Objective 6.4: Protect and enhance wildlife habitat to benefit desired, at-risk, and declining species

Knowledge Areas

- 135 Aquatic and Terrestrial Wildlife