CSREES Portfolio Review Expert Panel Report

Portfolio 1.1 Agricultural Markets and Trade
Portfolio 1.2 International Economic Development
Portfolio 1.4 Structure of the Agricultural Sector and Farm Management
CY 1999 -2003

REPORT

External Review Completed: July 2004

Portfolio Overview

Portfolio 1.1 Agricultural Markets and Trade

The Agricultural Markets and Trade (AMT) portfolio focuses on the marketing system that assembles agricultural commodities, converts them into food products, and distributes those products to consumers around the world. CSREES provides program leadership and funding to a combination of research-education-extension programs that enhance the performance of the food marketing system by helping producers, food companies, consumers, and society make better marketing and public policy decisions. The public policy portion of this portfolio also includes a broad range of domestic policy issues in addition to marketing. The portfolio includes three CSREES Knowledge Areas:

- KA 603 Market Economics
- KA 604 Marketing and Distribution Practices
- KA 610 Domestic Policy Analysis

Portfolio 1.2 International Economic Development

In an era of expanding global trade, increased interest in international relationships, and increased concern about terrorism, there are many challenges and opportunities for research, education and extension by CSREES and its partners. The International Economic Development (IED) portfolio focuses on the economies of other nations (both developed and developing) and the interaction between those economies and the U.S. economy. International trade is a major area of interest, as is economic development and development assistance programs. The portfolio includes two CSREES Knowledge Areas:

- KA 606 International Trade and Development Economics
- KA 622 Foreign Policy and Programs

Portfolio 1.4 Structure of the Agricultural Sector and Farm Management

The U.S. agricultural sector must be able to quickly respond to changing political, economic, technological, environmental, and consumer-driven market forces. Agricultural production and marketing are constantly affected by external factors such as weather and growing conditions, diseases and pests, financial conditions, cultural practices, and consumer demand. New and emerging risks associated with domestic and international policy, genetic technology, exotic invasive species, and complex agricultural diseases that can affect humans defy conventional means of identification, quantification, and management.

CSREES contributes to the improvement and strengthening of this dynamic agricultural system through sponsoring 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. Portfolio 1.4 includes Knowledge Areas:

- KA 601 Farm Management and Risk Management
- KA 401, Structures, Facilities, and General Purpose Farm Supplies
- KA 402, Engineering Systems and Equipment
- KA 404, Instrumentation and Control Systems

Comments on R&D Criteria and Dimensions

In 2004 a panel comprised of independent experts from the field was convened to assess and score the current state of the Agricultural Markets and Trade, International Economic Development, and the Structure of the Agricultural Sector and Farm Management Portfolios. A discussion of specific comments and recommendations related to each of the dimensions of the three Office of Management and Budget (OMB) research and development (R&D) criteria used (relevance, quality, and performance) is provided below.

Portfolio 1.1

Relevance

Scope

The wide variety of projects exceeds expectations, but the declining number of undergraduate and graduate degrees awarded in agricultural economics, and the declining number of doctoral degrees awarded in agricultural economics may inhibit future research capacity.

Focus

The portfolio lacks needed focus on critical issues. Too much attention is given to evaluating existing policy relative to the development of new policies and analysis of policy alternatives. Policy analysis should get more attention in the Markets and Trade section of the NRI and in other sections of all competitive grant programs (NRI & Sec. 406).

Emerging Issues

Identification of contemporary and emerging issues is good. More could be done to provide incentives for research on emerging issues, such as creating a special category for such issues in the NRI.

Integration

This portfolio has achieved very good integration of research, teaching, and extension. Principal investigators should be given incentives to take more responsibility for extending research results.

Multidisciplinary Balance

This portfolio has a very good mix of work with other disciplines. Further progress would occur if economic analysis was invited from other competitive program areas outside of Markets and Trade in the NRI.

Quality

Significance

Stakeholder needs are being met. However, more attention should be given to projects that emphasize the “public good” rather than “private good.”

Stakeholder Input

Stakeholder input is included at a high level, but there are times when some stakeholders have more influence than they should. CSREES and Land-Grant Universities need to do a better job of communicating stakeholder needs to individual faculty.

Portfolio Alignment

The alignment of portfolio projects with the current state of science-based knowledge and previous work is generally good. Competitive grant projects (e.g. NRI) are more reflective of current science than are core-funded projects. The Panel is concerned that social scientists are much more critical than other scientists when judging competitive grant proposals; hence, a smaller proportion of proposals are deemed fundable. We are concerned that this phenomenon may be used as a signal to decrease funding allocated to this area at a time when socioeconomic issues increasingly drive the U.S. policy agenda reflecting citizens’ concerns and needs.

Appropriate Methodology

Current and appropriate methodologies are used in research, teaching, and extension.

Performance

Portfolio Productivity

The portfolio has visibility despite the lack of leadership resources devoted to it.

Portfolio Completeness and Timeliness

Most projects are completed on time. However, Hatch research projects should be monitored more closely to ensure they achieve goals by expected completion dates. Furthermore, some Hatch projects may be allowed to continue for too many years.

Agency Guidance

There is an immediate need for leadership in the area of economics (Economic and Community Systems Deputy Administrator and economics NPLs). It is incomprehensible that the economics programs have been allowed to languish with declining leadership over the past five years. There is also a need to strengthen overall strategic leadership in economics programs across the portfolio. Economists could make significant contributions by addressing critical agricultural and societal issues and should be fully engaged with other NPLs.

Portfolio Accountability

There is a critical need to be able to report outputs and impacts according to criteria established by CSREES for meeting OMB requirements, and a need to effectively communicate the impact of CSREES programs to all stakeholders via scholarly and stakeholder-oriented communication channels. Teaching and extension activities need to be included. An improved, post-award evaluation process needs to be implemented.

Portfolio 1.2

Relevance

Scope

The number and types of projects meets expectations, but the scope in development assistance projects is very limited. The declining number of undergraduate and graduate degrees awarded in agricultural economics and the declining number of doctoral degrees awarded in agricultural economics may inhibit future research capacity.

Focus

The portfolio focus on critical issues generally meets expectations. However, CSREES should be more strategic and proactive in providing leadership to international programs. A single nation (Armenia) should not receive such a disproportionate share (85 percent) of the total developmental assistance funding.

Emerging Issues

Identification of contemporary and emerging issues is good. More could be done to provide incentives for research on emerging issues, such as creating a special category for emerging issues in the NRI.

Integration

This portfolio has achieved very good integration of research, teaching, and extension. Principal investigators should be given incentives to take more responsibility for extending research results.

Multidisciplinary Balance

This portfolio has a very good mix of work with other disciplines. However, the Panel questions whether there is adequate, multidisciplinary participation in development assistance projects. Further progress would occur if economic analyses were invited in other competitive program areas outside of Markets and Trade in the NRI.

Quality

Significance

Stakeholder needs are being met. Appropriate benefits are provided to stakeholders in foreign countries receiving development assistance but the benefits of such programs to U.S. stakeholders seem less clear.

Stakeholder Input

Stakeholder input is at an acceptable level, but there are times when some stakeholders have more influence than they should. CSREES and Land-Grant universities need to do a better job of communicating stakeholder needs to individual faculty.

Portfolio Alignment

The alignment of portfolio projects with the current state of science-based knowledge and previous work is generally good. Competitive grant projects (e.g., NRI) are more reflective of current science than are core-funded projects. The Panel is concerned that social scientists are much more critical than other scientists when judging competitive grant proposals; hence, a smaller proportion are deemed fundable. We are concerned that this phenomenon may be used as a justification to decrease funding allocated to this area at a time when socioeconomic issues increasingly drive the U.S. policy agenda.

Appropriate Methodology

Current and appropriate methodologies are used in research, teaching, and extension.

Performance

Portfolio productivity

The portfolio has visibility despite the lack of leadership resources devoted to it.

Portfolio Completeness and Timeliness

Most projects are completed and on time. However, Hatch projects should be monitored more closely to ensure they achieve goals by expected completion dates. Furthermore, some Hatch projects may be allowed to continue for too many years.

Agency Guidance

CSREES is doing a good job of managing "pass-through" funds for development assistance projects, but strategic leadership for the entire program is clearly needed. There is an immediate need for leadership in the area of economics (ECS Deputy Administrator and economics NPLs). It is incomprehensible that the economics programs have been allowed to languish with declining leadership over the past five years. There is also a need to strengthen overall strategic leadership in economics programs across the portfolio. Economists could make significant contributions by addressing critical agricultural and societal issues and should be fully engaged with other NPLs.

Portfolio Accountability
There is a critical need to be able to report outputs and impacts according to criteria established by CSREES for meeting OMB requirements, and a need to effectively communicate the impact of CSREES programs to all stakeholders via scholarly and stakeholder-oriented communication channels. Teaching and extension activities need to be included. An improved, post-award evaluation, process needs to be implemented.

Portfolio 1.4

Relevance

Scope

The scope of work generally meets expectations and there is adequate coverage of farm structures, but there is a need to achieve greater coverage in the area of sensors. The declining number of doctoral degrees awarded may inhibit future research capacity.

Focus

There are probably more wood construction projects than needed, and the future should include a greater focus on bioenergy, bioproducts, and nanotechnology. The Panel is concerned about an overemphasis on risk management in KA 601 and about CSREES becoming an implementer of other agencies' programs (e.g. Risk Management Agency, and Trade Adjustment Assistance program). CSREES needs to be a more proactive leader in research, extension, and teaching to meet critical needs.

Emerging Issues

Identification of contemporary and emerging issues is good. Sensors for food safety and security will be important in the near future and will need greater attention. When the current Concentrated Animal Feeding Operations (CAFO) regulations are extended to smaller operations, engineering and economic research, and extension will be needed.

Integration

The necessary transition to more integrated work has been accomplished and is going quite well. Principal investigators should be given incentives to take more responsibility for extending research results.

Multidisciplinary Balance

The application of multidisciplinary approaches within this portfolio falls short of expectations. Work on sensors will need to be multidisciplinary and integrated with other sciences (physics, chemistry and biology) that occupy space outside of historic working relationships.

Quality

Significance

Stakeholders are well served by this portfolio. The Midwest Plan Service has been a great source of output and the number and quality of educated young engineers are the greatest output of the System.

Stakeholder Inputs

Stakeholder input is incorporated at a high level. The System responds well to the engineering needs of producers and agribusinesses. CAFO regulations are a great example – the System had a major role in providing information and shaping the regulations. Industry has a good working relationship with the agricultural research and education system when it comes to setting priorities.

Portfolio Alignment

The historical alignment of the portfolio with stakeholder needs seems to be good. Harvesting of biomass materials may justify developing new machine concepts and there is a substantial need for mechanization in crops that have high labor requirements. For example, labor costs may force U.S. producers out of the tree fruit business. Such mechanization is now acceptable to labor groups because replacing two or three workers with machinery is better that having no work for anyone when jobs are exported.

Appropriate Methodology

Current and appropriate methodologies are used in research, teaching, and extension.

Performance

Portfolio Productivity

Productivity meets expectations. For example, research funding in engineering divided by the number of published reports results in an average cost of $20,000 per publication. This cost is comparable to the expense of hiring a graduate student who produces one publication per year.

Portfolio Completeness and Timeliness

Some uncertainty exists because of lack of documentation. CSREES needs to ensure that projects are completed in a timely manner. Hatch projects should be monitored more closely to ensure they achieve goals by expected completion dates. Furthermore, some Hatch projects may be allowed to continue for too many years.

Agency Guidance

CSREES appears to administer its programs fairly and objectively. NPL leadership is good in specified engineering areas (i.e. nanotechnology), but there is a need to strengthen overall strategic leadership in economics and engineering programs across the portfolio. CSREES should carefully evaluate the practice of regionally outsourcing competitive grant programs such as risk management education, Sustainable Agriculture Research and Education (SARE), and Rural Development Centers. While leveraging resources is generally a wise strategy, our concerns include:

- Is decentralized regional grants administration more effective than centralized?
- Is CSREES losing control and accountability?
- Is there sufficient coordination among regions?

Portfolio Accountability

Much of the evidence presented to the Panel had to be teased out of a variety of sources by NPLs, rather than being part of a readily accessible database. CSREES' lack of available information meant that the evidence presented was often incomplete.

CSREES needs to be able to report outputs and impacts according to criteria that meet OMB requirements and, also, be able to effectively communicate the impact of CSREES programs to all stakeholders via scholarly and stakeholder-oriented communication channels. Teaching and extension activities need to be included in the database. An improved post-award evaluation process needs to be implemented.

Comments on Future Directions presented by CSREES

The National Research Initiative (NRI) should set aside a portion of its funds (perhaps 10 percent) to address critical emerging issues, while allowing NRI to continue funding its ongoing lines of research. Proposals submitted for critical emerging issues could be interdisciplinary and multifunctional (research-teaching-extension).

The term "core funding" should be used instead of "formula funding." The latter is perceived as an entitlement program similar to USDA's entitlement programs for farmers and low income consumers.

Other federal science agencies have core funding but do not receive criticism like agriculture does. Core funding is an important part of the total CSREES/Land-Grant portfolio of funds that gives the system the stability and agility needed to address a wide variety of existing and emerging issues. Research, teaching, and extension activities are important dimensions of the portfolio and enable the System to create new knowledge, increase understanding, and improve decision making.

CSREES needs to improve its post-award management process. While the Panel does not perceive non-performance and under-performance to be a major problem, there is evidence that some projects are not completed in a timely manner. Further, the perception that some recipients are not held strictly accountable for grants and core funding damages the credibility of the USDA/Land-Grant System.

To achieve greater recognition for its contributions to research, teaching and extension, CSREES needs to require that a specific citation be used on all materials published as a result of its funding (both hard copy and electronic copy). This will help to ensure that CSREES receives the deserved credit for its participation in projects that made the publications possible.

<u>Data Issues</u>

The Current Research Information System (CRIS) database needs to be improved so that it captures more useful information about the research being conducted. CRIS also needs to be expanded to capture teaching and extension activities. Furthermore, there is a need to capture the synergy of research, teaching, and extension working together to address important societal concerns.

Individual Panel members had some suggestions for improving the system such as:

- Identifying common performance indicators and criteria for measuring outcomes/impacts.
- Using more explicit templates for inputting information.
- Convincing faculty of the importance of the system.
- Withholding a portion of grant funds until CSREES is satisfied that deliverables have been completed and reports filed.
- Capturing impacts after the work is completed.

However, the total plan for improving the system needs to be fleshed out by a USDA/university task force.

Evaluation Issues

CSREES needs to improve its system for capturing and reporting the outputs and impacts of its research, teaching and extension activities. It also needs to align reporting requirements with the portfolio management process and the evaluation criteria established by OMB. The ability of the Panel to make informed judgments about the relevance, quality, and performance of each portfolio was limited by the information available for the review. An improved system is needed to report the benefits of CSREES/Land-Grant programs not only to OMB, but also to the System's many other stakeholders.

Summary of Comments and Recommendations

The Portfolio Review Panel commends CSREES staff for their management of these diverse portfolios. However, we urge CSREES to give high priority to correcting the leadership deficit in the economics area and to providing needed strategic thinking and planning for all three portfolios.

The Panel also commends CSREES for establishing this portfolio review process as a way to meet OMB's requirements for assessing the relevance, quality and performance of the Agency's programs. We encourage CSREES to improve its data collection process for capturing the full scope and impact of CSREES/Land-Grant research, teaching and extension programs not only to satisfy OMB, but also to meet the needs of all stakeholders.

Portfolio 1.4 was difficult to assess because of its mixture of unrelated engineering and economics programs. We recommend the creation of two separate portfolios in the future: one focused on engineering and perhaps called "Farm Structures and Technologies for Agriculture;" the second focused on "Farm Management," making it more parallel to the topics and titles of Portfolio 1.1 and 1.2.

The Panel urges the Administrator of CSREES to address the deficit of leadership in the area of economics. The number of NPLs trained in economics has declined precipitously (from 5 to 2) over the past five years, and the Economics and Community Systems unit has been without effective Deputy Administrator leadership for over 2 years. With this many vacancies in key leadership positions the CSREES/Land-Grant partnership is not functioning as well as it should.

The leadership deficit affects the relevance, quality and performance of Portfolios 1.1, 1.2 and the economics portion of 1.4. The most notable result is the lack of strategic thinking and planning for a comprehensive program. The Panel is concerned about the approach of chasing or receiving funds, and accompanying administrative requirements, from other agencies, such as those that support risk management education, trade assistance adjustment, and development assistance activities, when they do not appear to be part of a plan to achieve the Agency's strategic objectives. These "pass-through" funds demand and receive the scarce CSREES leadership resources that might be better used in other ways.

The leadership deficit in economics also affects the relevance, quality, and performance of CSREES in a more general way because economists are not present to offer their systems thinking and interdisciplinary approaches to the wide range of societal issues being addressed by the Agency. Economists also bring

an understanding of policy alternatives and policy analysis which is vital to many of the issues being addressed by all program units and all CSREES strategic goals.

The Panel is concerned that all policy work (policy analysis, public policy education, etc.) is reported only in the Knowledge Areas (KAs) in Portfolio 1.1 (KA 610) and Portfolio 1.2 (KA 611) (Strategic Goal 1). Local, state, national, and international laws and regulations have a significant impact on the portfolios that support increasing economic opportunities and improving quality of life in rural America (Strategic Goal 2), enhancing protection and safety of the Nation's food supply (Strategic Goal 3), improving the Nation's nutrition and health (Strategic Goal 4), protecting and enhancing the Nation's natural resource base and environment (Strategic Goal 5). By gathering all policy work into two portfolios in Strategic Goal 1, too little attention is given to the impact of policy alternatives in all of the CSREES program areas. The Panel recommends the creation of additional KAs to capture these critical applications of policy work.

The Panel commends the CSREES engineering group for its leadership in organizing and conducting the strategic planning workshop on nanotechnology designed to develop a roadmap for new research, teaching, and extension actions. Similar workshops are needed in other areas, especially in Portfolios 1.1 and 1.2.

CSREES needs to work closely with the Land-Grant universities to assure the highest quality research and education, communicate its strength within the scientific community, and revitalize the Land-Grant mission of high quality service to the Nation.

Despite the fact that over 250 studies by government, Land-Grant and non-Land-Grant institutions have estimated consistently high levels of return on public investment in agricultural research and extension (http://www.ifpri.org/pubs/abstract/113/ab113.pdf), and that no such comprehensive studies have been done on other scientific fields, agricultural science is not well respected in some segments of the scientific community.

Collaboration with other funding agencies is critical at this juncture for a variety of reasons. These reasons include:

- Quality assurance.
- Maximizing returns to public investment in research and education.
- Solving complex social problems.

Recent steps taken by CSREES to establish collaborative programs with National Science Foundation, National Institutes of Health, National Aeronautics and Space Agency, and other science agencies are commendable and need to be expanded to include other areas, such as those involving economics and engineering. Work on collaborative efforts should be included in the position descriptions for NPLs, including new NPLs in economics. The collaborative programs should include CSREES as a full partner in developing and executing the programs, not just as a conduit for pass-through funding.

Portfolio Score

Portfolio 1.1 received a total score of 75 from the panel. This score places the portfolio in the category 'moderately effective in supporting CSREES objectives.'

Portfolio 1.2 received a total score of 69 from the panel. This score places the portfolio in the category 'adequately supports CSREES objectives.'

Portfolio 1.4 received a total score of 73 from the panel. This score places the portfolio in the category 'moderately effective in supporting CSREES objectives.'