

CSREES Portfolio Review Expert Panel Report

Portfolio 3.2.2 Animal Protection CY 1999 – 2003

REPORT

External Review Completed: March 2005

Portfolio Overview

The overall aim of the Animal Protection portfolio is to provide strong research, extension, and educational programs to promote economically competitive, environmentally sound, socially acceptable, animal production systems that produce safe, high quality products for the American consumer and international markets. The CSREES national leadership integrates research, education and extension expertise to address emerging diseases, pests, health, and welfare problems with new approaches that are economically sound, socially acceptable, and environmentally advantageous. The portfolio's programs strengthen the nation's capacity to address critical existing and emerging animal health issues, and welfare concerns related to management, training, and societal perceptions. It is aligned with eight Knowledge areas (KA) related to the efficiency of animal productions systems:

- KA 301 Reproduction
- KA 302 Nutrition
- KA 303 and KA 304 Genetics
- KA 305 Physiological Processes
- KA 306 Environmental Stress
- KA 307 Animal Systems and Management
- KA 308 improved Products

The CSREES Animal Protection Portfolio also includes:

- KA 311 Animal Diseases
- KA 312 External Parasites and Pests of Animals
- KA 313 Internal Parasites in Animals
- KA 314 Toxic Chemicals, Poisonous Plants and Naturally Occurring Toxins and other Hazards Affecting Animals
- KA 315 Animal Welfare, Well Being and Protection

Finally, the Portfolio includes a review of the National Animal Health Laboratory Network (NAHLN), an emerging area that has not been formally incorporated into a KA. In describing and reporting on the performance of the portfolio, it is important to recognize that an integrated systems approach is utilized in planning, developing, and implementing programs.

Comments on Research & Development Criteria and Dimensions

In 2005 a panel comprised of independent experts from the field was convened to assess and score the current state of the Animal Protection Portfolio. 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.

Relevance

Scope

The portfolio was generally good in coverage for the time period 1999-2003 and great efforts have been made to move forward and bring together research results in a meaningful and comprehensive way. However, the panel would like to see the enumeration of the value of the industry, the potential value of working on a problem, and the value of a successful implementation of the knowledge generated by a CSREES-funded effort. Animal welfare efforts are currently focused on establishing relationships and increasing awareness. Because the concept of animal welfare is relatively new and not well-defined, research and extension efforts will need to be prioritized and the right mix of expertise assembled to address this issue in an efficient and effective way. Additionally, it is alarming that the U.S. imports more food than it exports. This has become a food security and balance of trade issue upon which CSREES and its partners should act. Lastly, insufficient credit is given to the value of the acquisition of new knowledge and the education of new scientists. It is difficult to know when this new knowledge will be needed to address a problem or opportunity, but CSREES should make investments that provide an insurance policy for American agriculture and the American public.

Scope of the portfolio is expansive and it is recognized that the funding level limited this scope. Because of the importance of animal protection to U.S. agriculture and the nation's food supply, it is extremely important to increase funding in order to continue to expand the scope of the portfolio.

Focus

The panel found that the portfolio was relevant and timely for the period 1999-2003, and that it performed well despite funding limitations. While there might be reasons to focus on a few diseases in the NRI, for example, we need to maintain our scientific knowledge in a number of areas (i.e., we must maintain the capacity to address new or emerging diseases). We also need to maintain high scientific standards in our research.

Emerging Issues

The panel felt NPLs were well connected into happenings that occurred during the review period because they were active in meetings and with various organizations. The panel further commends the NPLs recognition of the involvement of other agencies within this portfolio. Although, this portfolio is underfunded it has done a great job with limited resources. However, and given that the world is changing rapidly, great accomplishments should not lead to complacency. New working paradigms will be needed and complacency is not an option.

It was noted that animal welfare is a new and emerging issue that needs to be addressed with good science. It will be important to get out in front of this issue and keep policy makers and the public fully informed.

Integration

The panel felt that integration is an area that requires significant attention. Integration between the three parts of USDA is weak and completed efforts lack proper documentation. Serious efforts should be made immediately to bring the appropriate parties together to develop a new working paradigm that structures how CSREES operates internally. This new paradigm should then be rolled out to Land-Grant partners via the RFA process.

Multidisciplinary Balance

The panel felt that coverage was good with good multidisciplinary and international efforts reinforcing the concept that animal agriculture is both a national and international issue – the U.S. is part of a global food economy. The balance of fundamental to mission-oriented research is commendable. However, additional effort in this area is needed.

Quality

Significance

The panel felt that output was good for the years 1999-2003. The topics of monographs/proceedings were excellent. Outcomes need to be measured, the results packaged in a consumable way and then they need to be promulgated so that they inform and promote CSREES' efforts. There is also a need to continue to use science to inform policy making. A successful example of this is OIE taking data on bluetongue from research in California to create international recommendations. Similar efforts are recommended. Finally, uses of CSREES-funds in this arena need to be tracked and, perhaps, even directed specifically towards policy purposes.

Stakeholder Input

The panel acknowledges the good efforts that have been made to reach out to stakeholders. Unfortunately, the self-review document is not that explicit in this regard. It would be more helpful to have had a clear definition of the term "stakeholder" in the self-review document. In the future it would be nice to take a more systematic approach to the methods and timing of connecting with stakeholders.

Portfolio Alignment

Given the time period and resources available during that time (1999-2003) the panel felt there was good alignment between work that preceded the review period and work accomplished during the review period. Assuming those making up the review teams were selected in a way that provided for the broad representation of salient characteristics, the panel felt there was enough rigor in the project review processes. The committee acknowledges that CSREES NIFT supports the use of cutting-edge technology in agricultural research. There are however, a number of suggestions for improvement.

Appropriate Methodology

In general, the panel felt appropriate methodology was used during the review time period. However, it was hard to tell given the fact that the panel was not part of the initial proposal review process and/or may not have had the breath of knowledge to assess all projects in this area. The panel felt the peer review process must be visible, transparent, and applied, wherever possible. It also felt that highly advanced, cutting-edge methods may not always be required to answer some important issues. The key to this evaluation question is appropriate methods. Overall, the current system is good, but there is a concern about the limiting nature of funds spent only on certain diseases. There is no way of knowing when the next important disease will emerge and therefore there is a need to educate a pool of experts on many diseases not just certain diseases.

Performance

Portfolio Productivity

The panel congratulates the NPLs on the efficiency of their performance (funds, activities, and personnel). While the portfolio has accomplished much with limited resources, it can not continue in its current state forever. At some point, additional resources are needed if the success of this portfolio is to be sustainable.

The efficient use of funds is obvious. The outcome of investments has been leveraged and amplified by the contributions of others. This is commendable, but it carries an inherent danger in that reduced investment by CSREES brings about a relatively minor contribution to the ultimate outcome. Therefore, recognition of CSREES's contribution would likely become limited. For this reason, among others, increased funding can lead to a more proportional involvement with outcomes moving forward.

Additionally, there needs to be an effective and appropriate method for evaluating and reporting productivity. Recognition, in this way, can be based upon proportion of investment as well as the relative

contributions of others. There is a need to determine how the tangible and intangible outcomes can be measured and recognized, with due credit given and reported. The tangible aspects of research involvement are one thing; the intangibles of education and extension involvement are another. This provides a challenge of incorporating education and extension into the logic model to get the recognition of and feedback from those aspects.

Portfolio Comprehensiveness

The panel found the portfolio to be very comprehensive. There was good coverage of national and international needs. The International workshop on Minor Use and Minor Species (MUMS): A Global Perspective was identified as an excellent output. However, given the breadth of the portfolio, the amount of funds appears to be spread too thin. "Focusing" could be helpful but would probably not be uniformly accepted. The panel wants to emphasize that it is important to maintain an infrastructure of facilities and to continue to train individuals to carry on the activities of this agency so that the very dynamic and varied needs of the future are met.

Portfolio Timeliness

Timeliness was an area that was difficult for the panel to assess given that there is little to no data available on timeliness of projects. Nonetheless, anecdotal evidence allowed the panel to feel comfortable with the notion that projects were being completed in a reasonable amount of time. The bioethical issues in animal production were very timely.

Agency Guidance

While the panel the leadership shown by NPLs was impressive and should continue, it was another difficult area to evaluate. The panel was uncertain as to what actual guidance had been given by the agency. There is evidence suggesting communication at higher levels of the Land-Grants (administration and fiscal through meetings and associations) but it is unclear as to what information and training has penetrated to the investigator level. Improved communication is needed with physical geographic contact from top to bottom, bottom to top, and laterally. For example, NPLs need to communicate available programs to investigators as well as institutional administrators. Also, administrators should communicate better with investigators / recipients and feedback (formal reports and informal comments) should be expected and incorporated into work plans. The panel felt this was an important need.

Portfolio Accountability

Overall, the panel was pleased with the accountability as evidenced in the self-review document. Communication of research results seems to be adequate, if not exemplary. Even though the funds contributed to a project by CSREES may be a minor percentage of the total project funding, investigators need to be reminded that demonstration of wise use of all funds, as well as research outcomes, is paramount for assuring sustained or increased federal research funding in the future. The panel also applauds the intent to make this panel's review on the 3.2B self-review document available to the stakeholders and universities in the spirit of transparent sharing of information and to encourage full accountability for all CSREES research funding received by investigators.

General Comments

The panel received the self-review document two weeks prior to arrival and convened for two and a half days. Day One consisted of an introduction to the processes along with a number of presentations made by the National Program Leaders (NPLs) to further inform the panel and to introduce the panel to CSREES administrators and the NPLs. One day two, Panel members reviewed the self-review document and examined the evidentiary materials provided. Discussions and portfolio scoring took place later in the day. The panel presented their observations, recommendations and their score to CSREES administrators, NPLs, and Planning and Accountability representatives on the third day. The panel's observations are covered in detail below. The panel scored the self-review document 95 out of 100

possible points. This score reflects the panel's assessment that the CSREES Objective 3.2B portfolio self-review document was described in depth, provided detailed analysis and showed significant accomplishments for the assessment period 1999-2003.

Panel members appreciated being invited to participate in CSREES 3.2B Animal Protection Portfolio Review. The document was sent with enough time for panel members to review prior to arrival in Washington D.C. and the travel arrangements were good. The panel identified the following strengths and needs of the portfolio review efforts and formulated a series of recommendations. They were not presented in any particular order.

While limiting the areas of eligibility during times of financial constraints may be essential or necessary, panel members thought that narrowing the portfolio focus might not be a good thing in the long run. Focusing too narrowly over the long term will diminish national leadership the area of animal health and food safety.

Comments on Future Directions presented by CSREES

Notwithstanding the positive aspects of the portfolio self-review document, the NPLs, and the efforts of many hundreds of researchers, and academic and extension educators, the panel has identified a number of items to which they hope CSREES will attend to in a timely manner. By implementing these suggestions, the panel feels that substantial progress can be made in the following areas:

Funding

Adequately funded national animal protection programs are essential. Action must be taken to support the need for this funding and is a matter of national interest. Additional funding, at least to the level of congressional authorization, is required to safeguard our nation's food supply derived from animals.

There is a great need to fund and maintain infrastructure within the Land-Grant system. Good mechanisms, and sufficient funding, are needed to maintain animal disease programs. Additionally, new ways must be found to ensure these programs are adequately funded. The nation faces ever increasing threats and a dangerous world with a wide variety of actual and potential diseases that need immediate attention. Therefore, it is essential to have easily accessible funds for emerging issues and to rethink the idea of too much focus on specific areas of research (i.e. money only to 3 areas/species out of a large number of areas). It is the view of the panel that the narrow focus of this portfolio, concentrated on just a few areas of science, or diseases, could effectually put U.S. agriculture at great risk. Overall, the impact of a narrowly focused portfolio and its implication on developing new scientists needs to be fully understood. Adequate funding of research, in a broad range of problem diseases and pests, is essential to the development of this nation's future generation of scientists.

One suggestion is to begin efforts to change the name Formula Funds to "Infrastructure Funds." This would more accurately represent what Hatch, Smith-Lever Animal Health, 1433, Evans-Allen, and other similar funds accomplish for the CSREES-Land-Grant partnership and U.S. agriculture, American communities and families, and our Nation's higher education system. Infrastructure funds seed junior faculty efforts, creative ideas, graduate student support, and institutional cooperation. The loss of these funds to the competitive-only arena would further exacerbate the divide between the have and have-not Land-Grant systems and lead to a loss of critical services for many Americans. Loss of Infrastructure Funds would also lead to a loss in the ability of states to quickly invest some resources in emerging problems or opportunities.

Information and Dissemination

A concerted effort must be made by CSREES and the Partnership to tell the important story of food animal origin in the U.S. food system. We need a unified and strong message for all of agriculture and that message needs to be steadfast. The public's perception of the importance of agriculture needs to be

improved and USDA seen beyond the common perception of just being a regulatory agency. CSREES's unique strengths through the partnerships should be illustrated. An example of this would be the type of extramural investment made in the Land-Grant system complementing intramural investments made directly to ARS.

Networks in extension and education need to be fully utilized to help inform local and national politics and to make U.S. consumers more involved in promoting and protecting their agriculture. A concerted effort should also be made to involve all stakeholders in the decision-making and management process. Animal protection and animal welfare are extremely important issues that directly relate to food security and it is important that society understands its value in the economy and day to day lives. The USDA/CSREES portfolio should be used to disseminate critical and useful information to other agencies. The partnership needs to establish a good framework for capturing evidence of impacts from our investment. This would embolden the partnership to ask for much needed resources from Congress and local legislators to pursue additional work in specific subject areas.

Agriculture needs to be more proactive when it comes to public perception and legislative support, both locally and nationally. The partnership needs to undertake serious efforts to understand why the NIH extramural research budget has doubled whereas the agriculture research budget has remained fairly flat. Consumers and citizens need to understand that, while agriculture production involves less than 1 percent of the population, food involves virtually 100 percent of the population on a day to day basis and animals play a big part in that. To help the citizenry understand and appreciate the vital contributions of this portfolio to the security and safety of the nation's food supply, CSREES, the Land-Grant universities and animal industries need to engage in a vigorous communications effort to explain the importance of foods of animal origin to the health and welfare of this nation.

Toward this end, the partnership needs to tell the story about the value of creating new knowledge and training scientists and not just in producing "products." It needs to utilize and capitalize on the network of veterinarians to help tell the story to the public and it needs to market the value of protecting human health by protecting animal health using food safety, control of zoonotic diseases and Homeland Security hooks where appropriate. Finally, the partnership must develop a list of outcomes and impacts that can be used in its marketing campaign.

The panel consisted of seasoned scientists who recognize the importance of training and education as critical components of infrastructure development. The panel wants to encourage CSREES to take a more proactive role in planning for and funding new scientists and educators so that the U.S. possesses the necessary intellectual capital to safeguard our animal food system.

Efforts also need to be made to train the future research workforce including new field veterinarians. Ninety percent of the nine billion poultry processed are serviced by approximately seventy veterinarians – is this enough to protect the food source? The research workforce is also dwindling. ARS now has only twenty-five research veterinarians for their seven locations. This is insufficient for conducting necessary the research of that agency. CSREES can take a big role in helping to fund training for the next generation of the research workforce in the areas of animal protection and welfare. CSREES should work with its Partners to emphasize and fund efforts to train new animal-focused scientists (graduate and post-doctorate) in animal welfare, animal health, and humane harvesting techniques. Also, training programs should be created for farm and processing facility workers who speak a number of foreign languages. These workers have major roles in protecting the health of animals and consumers and it would be advantageous to develop training programs that fit their language needs.

Miscellaneous Comments on Future Directions

- Increase and intensify efforts to truly integrate research, extension and education. This can be accomplished through the use of collaborative requirements in the Request for Application (RFA) process and other means that stimulate collaboration to achieve a higher level of integration.
- Consider beginning a discussion to change the word "extension" to "engagement" to be more relevant.

- Determine better ways of incorporating cost/benefit analysis in the determination of priorities for investments in research, extension and education. Include the value of an industry and the estimated value of a problem solution or opportunity in the priority making process. Encourage the use of agricultural economists and other social scientists at the CSREES and Land-Grant level to accomplish this task.
- Tabulate investments and develop and implement a Memorandum of Understanding between CSREES and other USDA agencies so that research, education, and extension efforts are coordinated and investments optimized.
- Encourage and support multi-Land-Grant efforts across Land-Grant designations (1862 / 1890 / 1994 and Hispanic Serving Institutions) and encourage more intra-state and inter-state efforts to add to diversity, team building, and skill development. Also, allow for a wider distribution of resources.
- Rethink the concept of partnership between CSREES and land grant universities. CSREES is contributing less than fifteen percent to many extension projects and an even lesser amount to academic support efforts. More serious investments must be made.
- Invest some funds to conduct a cost/benefit analysis of a cluster of projects, (value-for-money studies) and use that information to educate decision makers. Also, cost/benefit analysis needs to be used to prioritize disease issues that may be worth investigating.
- Making efforts to secure funding for priorities that are important for a region, but not necessarily for the nation. Currently, there is limited funding for regional diseases.

Data Issues

That the self-review document the need for more accurate record-keeping to better illustrate the value of investments made in research, education, and extension and that the limitations of the current CRIS system are recognized, should be applauded. However, the availability, quantity and quality of data were among the most obvious shortcomings of the self-review document. The panel hopes efforts will be made by CSREES to address these shortcomings before the next review process takes place.

CSREES needs to ensure future self-review documents illustrate a more comprehensive picture of USDA funding and efforts for particular goals, objectives, portfolios and/or Knowledge Areas. In addition to being done at the CSREES level, this should also be done at the department level (inclusive of FSIS, APHIS, and ARS). Perhaps it can be further extended to other Federal department levels where appropriate. This larger picture should also be promulgated to stakeholders and the public (i.e., what is ARS doing in the same and different areas funded by CSREES?). It is also important to study and evaluate the amount and style of reporting that must be done. This should depend on the amount of CSREES funding invested in a project. Across-the-board reporting requirements where CSREES is putting in a small percentage of funding into a project can be onerous.

To help alleviate problems with data collection, a nation-wide educational effort at all levels in Land-Grants (not just upper administration) should be undertaken. This effort will illustrate the importance of documenting CSREES-funded efforts (they help to inform national policy) and also highlight how legislative and CSREES processes work. A Performance Monitoring Plan (PMP) needs to be implemented to encourage the timely input of high quality information into the new database system. For example, before PIs get new funding they must have all their reports for active projects updated in the system. Also, the new database system needs to allow for data gathering about goats, equine, companion animals, and lab animals. Furthermore, it should track impacts after the project has concluded such as patents and medicines that evolved from the project.

Finally, the new database system needs to provide the framework to track extension and classroom education efforts. Research efforts are highly visible in this self-review document as evidenced by CRIS reports, but efforts need to be made to document and promulgate extension and higher education work at the same level of transparency. Increased reporting ability will allow for better recognition and appreciation of cost-benefit analysis of investments in these areas.

Evaluation Issues

After reading the self-review document and going through the portfolio review process, the panel made some suggestions for improving the effectiveness of the process effectiveness for the next review. In future self-study reports, it would be useful to show links and overlaps in strategic goals and objectives among the portfolios as well as provide a more fundamental description of the agency and how it fits into the department. Academia, in general, and some partners do not understand how government and government agencies function. It would be useful to include organizational diagrams of the department and its agencies in future self-review documents to help inform readers. These diagrams must also illustrate how research, extension and education are organized and operate under the agency.

Another way that the document can be improved is through reviewing the present portfolio scoring sheet and looking for ways to increase its clarity for panel reviewers. This should be done immediately and steps put into place to more effectively coordinate the organization of the next self-review document so that it aligns better with the scoring sheet. For example, on item 2.4, it is unclear what methodology for investigation is being used and it is therefore difficult to determine whether or not "appropriate technology" had been used for projects during the 1999-2003 timeframe.

Miscellaneous Comments on Evaluation Issues

- Solicit additional and more frequent stakeholder input and feedback and then show how this feedback is used in the decision-making process.
- Make an extra effort to reach out to critics of the portfolio so that their comments also become part of the self-review document and review process.
- The logic model is a good start and the panel suggests including feedback loops within the model. The entire Partnership needs a comprehensive, unified performance evaluation process. The new system should allow for more precise outcome measures and the ability to garner significantly more recognition for the partnership's efforts. There is a need to establish an accountability system to document project-related outcomes that happen years after a project has been completed.
- The panel recognizes the potential power of the logic model. It is a great method for thinking through project planning, implementation and evaluation. The panel encourages its rapid evolution so that it becomes more easily usable and understood, and can be extended out to Land-Grants to become a working paradigm everyone follows. This could be accomplished through training of implementing partners.
- Add a feedback loop to the logic model that takes information from outcomes and feeds it back into the next round of decision-making. As the model is currently designed, it appears to be a one-way system.
- Study and refine the definitions of the term "outcomes" to improve the fit to research, education, and extension in short, medium and long-term efforts more appropriately.

Summary of Comments and Recommendations

Overall, this portfolio is an extremely important part of the U.S. animal food system, safety and security. Monitoring and responding to animal health and disease is the backbone of the entire safe and secure food supply in the U.S. and it is paramount that high quality programs and excellence in this area are maintained. NPLs are creative, well-respected and have a good network of connections with various agencies and stakeholders. The NPLs have provided an excellent level of service to Land-Grant University System (LGU) partners and other stakeholders over the years. There is clear evidence of a strong commitment to the development and maintenance of partnerships. The Coordinated Agriculture Programs (CAP) is an identified strength in that the programs bring together multiple states, agencies and industry in coordinated, integrated, and focused research, education, and extension efforts. These efforts are not bound by location and take advantage of advanced information and communication technologies.

The portfolio addressed national needs by funding relevant projects and the quality of outputs was excellent. Funds appeared to be directed to the areas of importance and all funded areas seemed to be

significantly important. Adequately funded, multi-institutional programs were a very good investment. There was significant leveraging of funds from multiple partners illustrating a high level of resourcefulness. Significant productivity has been accomplished with relatively limited funding.

Given these accomplishments, the panel is convinced funding and accountability go hand-in-hand. This experience demonstrates the need to establish clear data collection and reporting mechanisms to highlight the fact the more accountable the partnership becomes the easier access to funding will be. Additional accountability on the education and extension side is needed and the panel is confident that these issues will be addressed with the "OneSolution".

Panel members thought that the self-review document was well-organized and well-written. It provided significant information about the activities within Objective 3.2B portfolio for the 1999-2003 review period. It was well developed and presented in an understandable format. The panel found it useful to understand the relationship between CSREES and its partners, the university and its stakeholders. Overall, the presentations were informative, the agenda well planned, and the review process fair and balanced. The written notes framework helped organize panel thoughts and the score sheet allowed panelists to evaluate the portfolio from many angles.

Portfolio Score

Portfolio 3.2.2 received a total score of 95 from the panel. This score places the portfolio in the highest category, 'effective in supporting CSREES objectives.'

APPENDIX: Panelist Comments

Relevance

Scope -- coverage of the work of the full portfolio

Suggestions for expansion include:

- Increasing input from stakeholders.
- Recognizing the importance of veterinary extension and economic value of the industry.
- Developing a better understanding of the urban/rural interface and a holistic research approach to animals and the environment.

Need to:

- Change the concept of “species of interest” to include traditional and non-traditional food animals.
- Reach out to the American Association of Small Ruminant Veterinarians as well as more stakeholders, state commodity groups, consumers, and related industries for their input in this process.
- Maintain a broad scope of skills and interests within the Animal Health Production portfolio to solve problems in the food supply.
- Improve documentation of the impact of veterinary extension programs.
- Look at urban/rural interface problems.
 - Water supplies may impact food supply, avian influenza can travel through air, etc.; need to think beyond where we are; many infectious agents survive in ecosystems.
 - Disposal systems and procedures
- Establish better balance to projects by including the economic implications of those projects. Projects need more data on potential and actual impacts.
- Be more proactive rather than reactive to animal welfare and well-being issues. A change of paradigm is needed.
- Be more holistic in research approach to animal welfare. There are many other factors over which there is no control. Nonetheless, we need to understand their influence on the animal/environment system.
- Know the contribution of the different animal industries to the economy, what the impacts of disease are on production, and what else is happening in the areas of balance of trade and the American food supply.
- Consider increasing the number and geographic location/distribution of NPLs and program assistants to handle the workload now and in the future, especially when there is more oversight and tracking of the results of projects.
- Look at the connection between animals and plants (e.g. salmonella living in the seeds of sprouts).
- Explain that investments in our animal production system help to address the demand for food in the U.S. and elsewhere.
- Maintain focus on food-producing species (NIH does not fund projects other than public health related activities or animal models for human disease).
- Document the value of extension programs.
- Explain how plant and animal systems are related, and identify the amount, value and added value of forages and feed grains fed to animals. The plant industry needs to understand that improved animal health and agriculture is good for plant agriculture.

Ability to remain focused

Need to:

- Acquire additional funding. Current funds are woefully inadequate given the risks and importance of animal protection to our food supply and public health.
- Maintain an animal biology focus as it relates to animal well-being research efforts.
- Make sure that we are not worried so much about “focus” but rather on keeping our eyes on “critical needs”. This includes defining critical issues and obtaining feedback so that the most critical needs receive appropriate attention.
- Add feedback loops from the end of the logic model to the beginning as described previously.
- See where consumers fit into the Animal Protection portfolio. The vision statement talks about being “consumer-driven” but where is the consumer in the logic model?
- Expand CAP groups with new funds if/when available.
- Bring more resources to graduate programs to develop future scientists and leaders. For example, seventy veterinarians looking at ninety percent of nine billion poultry animals - is this sufficient to protect our food supply? Students need to learn about animal health and well-being.
- Maintain the same diversity in programs in the portfolio because, as priorities change, trained scientists will be needed.
- Understand that Animal Protection is a moving target. There needs to be some ability and resources available to address emerging needs as soon as they occur (not years later after a formal program is established).
- Provide funds to upgrade and improve research, extension and education facilities.
- Fund more BSL3 animal research facilities to satisfy/meet restrictions in use of certain animal pathogens as a result of 9-11. There is a need for regional bio-containment facilities.
- Maintain focus on food-producing species.
- Improve and expand stakeholder input. There needs to be a more formal reporting system in place, perhaps web-based, and more formal advisory councils (formal advisory councils have several advantages including ability to bring in a lot of stakeholders, and the fact that their comments go directly to the Secretary of Agriculture).
- Show how stakeholder input is used in the allocation of formula funds at the state level.
- More diversified inputs from stakeholders are needed from each state commodity group. This is necessary because diseases differ by region.
- Develop a consistent format and mechanism to capture stakeholder input – and use the same format each year (see page IV-12, it documents several activities from different times).
- Align the animal well-being program with commodity-based programs such as the Swine Welfare Assurance Program and United Egg Producers Scientific Advisory Group to assure relevance and the use of a science-based approach.
- Emphasize that high priority issues are often related to “food”; healthy animals = high quality food.
- Manage using science-based information.

Identification of emerging issues relevant to the portfolio

Need to:

- Gather more input, especially about emerging issues, from stakeholders and the public in general.
- Understand that a business’ work force is critical to identifying animal diseases. As facilities get larger owners might not see the animals. The hiring of workers who might be acting in critical animal health areas but who do not have the background knowledge create a local, regional and national risk to animal health. They are, however, trainable and thus there is a need for education and training to be designed that is user-friendly and available in a number of different languages.
- Think outside the box to understand that many of the diseases being dealt with are part of an ecosystem, (e.g. such as salmonella in our water systems).

- Secure more congressional funding for NAHLN. NAHLN is very critical to the identification of emerging needs. Gaps in coverage exist and the security of the nation's food supply depends on the ability to identify means by which to fill these gaps.
- Expand and maintain contact with activities implemented in the field. There appears to be a great deal of centralization around Washington DC, therefore it would be advantageous to have NPL's living away from Washington DC to get more immediate feedback. Perhaps consider placing project leaders (or other personnel) geographically closer to the investigators / audience and extension / education personnel in order to maintain this.
- Assess whether there is enough in-house ability to keep in contact with implementing partners in the field and vice versa.
- Increase the number of IPAs to develop white papers on critical issues.
- Include more strategic factors (social, economic, environmental, and demographic, etc) because they provide a better guide to emerging as opposed to political driven topics of the day (e.g., not focus so much on monkey pox, but rather on the importation of exotic animals).
- Coordinate more with APHIS's Center of Emerging Issues (the center has software that scans the internet and other tools to monitor future trends).
- Look into using models like FAO's disease prediction system based on GIS information and data.
- Look at trends in urban agriculture (e.g., fighting cocks and what pathogens they bring in) and also reptiles and invasive species. People may not be aware of animal problems brought in by importation, smuggling, etc. that exist and are common cultural practices.
- Be aware of urban / rural interface issues to maintain a safe production environment.
- Link with NAHLN IT to enhance the communication network and to connect with CRIS and OneSolution.

Integration of CSREES education, research, and extension efforts in the portfolio

Need to:

- Put more effort into emphasizing, highlighting and recognizing the contributions of extension and formal education. Similar efforts for research are already well represented.
- Make sure that virtually every research project has an extension component (besides just a website) with impact demonstrated or success stories delineated showing the usefulness of the research.
- Expand CAPs with new money, as they are a good example of an integrated working paradigm. Look into integrating CAPs with SBIR.
- Expand the CAP model to include 1890s, 1994 and Hispanic Serving Institutions.
- Identify the products, outputs, and impacts of CAP projects in regard to veterinary extension.
- Make sure that coordinated agriculture programs continue to be funded at appropriate levels.
- Document the value / impact of higher education challenge grants on animal health.
- Expand funding for graduate students in veterinary medicine and animal welfare.
- Make sure that animal welfare and well-being is embedded into every extension and education program and not viewed as a separate entity.
- Emphasize and incorporate extension through NAHLN.
- Develop bi-lingual and multi-lingual training programs for farmers, and farm and processing facility workers.
- Expand international education of students and encourage exchange programs, as this will expand students' views of a global food economy.
- Expand eXtension for animal protection.
- Encourage diversity all the way through the system. Cultural and ethnic understanding is needed for animal management systems.

Multi disciplinary balance of the portfolio

Need to:

- Find and fund ways to become globally interdisciplinary.
- Provide data on the efforts and impacts of extension and education efforts funded by CSREES.
- Incorporate research findings of animal well-being into extension and education programs.
- Find ways to maintain multidisciplinary expertise.
- Find ways to increase participation by agricultural economists.
- Look to leverage new scientific knowledge into trade standards (bluetongue research in CA leading to a change of OIE code is a good example of what needs to be done for many other diseases). This should be kept in mind for PRRS, Johne's and Avian Influenza and this information should be coordinated with APHIS vet services and the OIE coordinator's office.
- Find ways to preserve the genetic diversity of domesticated animals.
- Think about including minor species, which may not yet be on the radar screen but are an evolving enterprise.
- Strengthen and continue to work with APHIS on NAHLN.
- Guide some research to enhance our foreign trade.
- Understand that most diseases affect multiple species, and therefore look at re-crafting RFAs to take this factor into account.
- Put more emphasis on disease-agent research rather than commodities. This approach requires interdisciplinary teams.
- Investigate the ecology of disease, as it is an urgent area of inquiry.
- Have more realistic assessments of research costs for CAP.
- Focus on a CAP disease project for 3-5 years but leave 1/3 funding for "other disease / issues" that may emerge as high priorities.
- Include invasive species topics/areas in this portfolio

QUALITY

Significance of portfolio outputs and outcomes

Need to:

- Develop a bulleted list of impacts of outcomes so people can read them and see them and be aware of what has been resolved. This can help with external marketing and marketing back to our faculties at state universities.
- Provide information to stakeholders on extension activities and impacts.
- Identify technology transfer (i.e., vaccines and diagnostics)
 - Vaccines:
 - Educate the stakeholders and the public on the value of vaccines in reducing infectious diseases (economic benefits).
 - Take into consideration the cost of doing trials and what USDA's CVB (Center for Veterinary Biologicals) will want in/out of the equation. Researchers may have problems getting core funding to follow projects through to the end.
 - Diagnostics:
 - Demonstrate applications and impact on identifying and controlling diseases.
 - A cautionary note regarding the development of diagnostics and especially vaccines as most of them, although having shown proof-of-principle in "refereed" publications, never get to market. Special incentives should be in place to give "extra points" to those proposals with good plans for commercial technology transfer. University faculty need to learn the protocols for developing vaccines from the start.
- More effectively and appropriately document the impacts of vet extension and education activities.

- Better utilize NAHLN resources by disseminating findings to extension veterinarians.
- Make a list of manuscripts, monographs, and proceedings that come from CSREES-funded work.
- Make concerted efforts to attract and train minority students.
- Include some aspect of animal well-being's implementation of Swine Welfare Assurance Program (SWAP) / United Egg Board (UEB) guidelines by swine and poultry producers as an indication of behavior change in stakeholders. Indicate the role that CSREES had in bringing about this change.
- Acknowledge that the establishment of industry best practices guidelines is one example of behavior change in stakeholders.
- Understand the results of well performed investigations are important or significant regardless of whether the null hypothesis or the alternative hypothesis was accepted. The application of these results varies and should not be equated with significance or impact.
- Offer grant programs for funding subject matter workshops and symposia for stakeholders. Some other agencies do this.

Stakeholder/constituent inputs to the portfolio

Need to:

- Investigate ways of expanding the involvement of the stakeholder community and document feedback. A more formalized approach for feedback could be employed and done jointly with other agencies.
- Make sure that the gathering and reporting of feedback is expanded, perhaps better coordinated and reported back to the research / extension / education community.
- Establish a more formalized approach to stakeholder assessment of animal well-being programs. This could give programs more direction and boost the evaluation of current efforts. (Joint with other agencies)
- Use multi-state research participants to develop / evaluate priorities (such as is found in NE 1022)
- Plan research efforts with ARS and APHIS. The panel encourages CSREES to make the relationship more formal with MOUs at the Undersecretary levels within USDA. This will allow the working relationships to persist across administrations.
- Clarify the coordination, communication, duplication, and recognition of similar research, extension, and education efforts by sister agencies.
- Clarify the reference in the vision statement of the animal protection group to consumers because there was no evidence in the document that consumers were involved in providing input to the portfolio.
- Align efforts with commodity-based programs in animal well-being to assure consistency.
- Encourage more comprehensive reporting – NPLs coordinate workshops to report results. A good model of comprehensive reporting to follow is that of PRRS.
- Encourage extension to use information in face-to-face meetings with stakeholders. Communication cannot be solely electronic.
- Align more closely with commodity-based programs so there is a consistent message being delivered to all animal industries.

Alignment of portfolio project with current state of science-based knowledge and previous work

Need to:

- Reinforce throughout the Partnership the use of the basic logic model. The model must address the uniqueness of research – education – extension. Stakeholders need to be familiar with the model and use it as a source of information.
- Continue to encourage the development of innovative methods of extension such as the Emerging and Exotic Diseases of Animals course offered at: <http://www.vin.com./CE/MULT101-0905.htm> which came from a collaboration of three land grants.

- Promote the use of eXtension to faculty, staff and stakeholders. eXtension is a good outlet through which findings can be validated.
- Foster multi-disciplinary teams to handle projects as many animal-issues (diseases) are not isolated within an environment. Teams should include agricultural economists, communication specialists, educators, sociologists, psychologists, and others.
- Consider supporting animal health training programs at the undergraduate level to increase the pool of animal health personnel and drive down or disseminate information to all educational levels. Or, instead of using the word “lower” in the self-review document, perhaps using “undergraduate levels” would be better.
- Expand the multi-state activities in all areas of teaching, research, and extension because there are a limited number of scientists working in animal well-being.
- Create animal well-being educational programming to provide a science-based approach to training students for employment as third party auditors in the future.
- Look at the amount of money allocated to efforts. Current size of awards does not reflect nor adequately address the costs of today’s research.
- Emphasize the importance of 1433 funds for developing scientists, increasing competitiveness, and promoting redirection.
- Continue to support Infrastructure Funding (Formula funds) as it provides a foundation for larger grants.

Appropriate methodology of funded portfolio projects

Need to:

- Use economic analysis when choosing alternative production systems and practices that would contribute to animal well-being.
- Use economic “cost-benefit” analysis to choose between critical issues rather than simply saying this disease is “important”. Economics can help to answer the question of “how important”.
- Determine linkage to ARS through economic analysis.
- Make sure that future animal well-being work emphasizes sentience in addition to transportation, slaughter, fatigue, management practices and space allocations that are already being focused on.
- Maintain some non-competitive (not-as-competitive) funding for junior faculty (seed grants) to encourage research.
- Understand and take advantage of the fact, or make up for the fact, that funding for emerging diseases / issues for food producing animals would not qualify for NIH funding unless modeling for human diseases is used in the criteria.

PERFORMANCE

Portfolio productivity

Need to:

- Place more emphasis on the generation of new knowledge and less on product output.
- Place more emphasis on new MS and PhD-prepared scientists as a critical need for the nation.
- Develop effective and appropriate methods to evaluate and report tangible benefits of supported efforts (dollar invested, product delivered) vs. intangible efforts (education of future scientists, extension).
- Place more emphasis on the value of developing science capabilities (esp. 1433 – Hatch)
- Develop measures to document change in attitudes and behavior from animal husbandry toward animal welfare by producers.
- Find ways in “OneSolution” to acknowledge and highlight the value of non-competitive portions of the portfolio.

- Find ways to fully illustrate the productivity of education and/or extension activities within the portfolio.
- Take satisfaction in the excellent performance achieved with a small amount of funds, but with some hesitation. This could be a two-edged sword. Leveraging funds by a factor of 10x to 20x could be dangerous because that leveraged amount (1/10 or 1/5th) is like a down payment, not “ownership.”
- Find ways to measure the potential impact of getting more funds, i.e. how would performance (efficiency, quality, quantity, volume) be measured?
- Find ways to assess and value productivity of extension and education. Need to include this information in the CRIS system.
- Include underserved populations in the populations being targeted for assistance.
- Consider long-term cost/benefit analysis.
- Consider long-term management impacts.

Portfolio comprehensiveness

Need to:

- Find ways of assessing the performance and impact of extension and education efforts.
- Maintain infrastructure support. Broad funding is needed to maintain infrastructure, seed research, and to allow training to meet dynamic and varied needs.
- Obtain funding at the Congressional authorized level. This will significantly improve the comprehensiveness of the portfolio.
- Garner support for additional funding. This impacts the ability at the local level to meet constituent demands especially in underserved populations.
- Focus on higher priority diseases / issues – but leave room to fund “other” disease issues, including regional diseases with “infrastructure grant.”

Portfolio timeliness

Need to:

- Make more obvious which funds are available for emergency disease response by the scientific community, not just regulatory agencies.
- Withhold funds from investigators that do not adequately report on their work.
- Require grant awardees to document extension and education activities.
- Develop a mechanism to assess impacts of extension programs on the portfolio.
- Encourage two-way feedback between Partners and CSREES. This feedback can help the investigator understand the need for better project reporting, and CSREES can, in return, acquire documentation of accomplishments to use as impacts. This may require personnel and funds and it may require more involvement in the field or placing CSREES personnel in regional locations. More one-to-one contact will encourage more reporting and thus accountability.
- Future Trends in Animal Agriculture (FTAA) was identified as an excellent resource and information from its speakers and programs needs to be put on DVD and circulated to education and extension sectors. The work highlights local and global activities.

Agency guidance relating to the portfolio

Some others include the need to:

- Establish and hold leadership workshops for partner’s employees on authorization, appropriations, rule making, policy development and accountability. These need to be developed and delivered to faculty to drive the impact of available funds.

- Provide workshops at universities to inform faculty of the critical need to be accountable in responding to plans of work, CRIS reporting and dissemination of information and the importance of these activities to the future funding of all of animal agriculture.
- Establish and hold grantsmanship courses / workshops for graduate students / faculty (this, however, may create a negative impact due to limited funding).
- Continue to develop Coordinated Agricultural Projects (CAP) as funds will allow while looking for new sources of funding.
- Continue to interact and confer with professional society members, commodity groups, state and federal partners.
- Develop mechanisms to show how formula funds are used to support infrastructure and competitive programs at the university level.
- Encourage NPL leadership to organize periodic workshops to inform stakeholders of progress every 3-5 years.
- Market successes / issues through print media.

Portfolio accountability

Need to:

- Find ways to document the impacts of extension and education. Once those ways are found, it will be important to track impacts that might develop well after a research and educational activity has taken place.
- Perform a limited value-for-money audit (limited, not a comprehensive audit) on some of the efforts funded by CSREES.
- Find even better ways to coordinate projects – determine how this can be done without “kingdom building” or exclusionary assessments that might “one-up” others in the cooperating / collaborating institutions. The panel suggests a system of accountability proportional to contributions by respective contributors. There is also the issue of tangible/intangible: the complexity of accountability, responsibility, and especially, reporting of activities by multi-site cooperators needs to be addressed.
- Develop a more streamlined system for determining accountability for funding (formula). For the relatively small amount of funds that a state receives, the transaction costs to universities are high.