

APRIL 7, 2004

**National Agricultural Research, Extension, Education, and Economics
Advisory Board (NAREEEAB)**

**Task Force on the Peer Review Process for
ARS National Research Programs**

Chair: Thomas Fretz

Members: Barbara Stowe, Jeff Armstrong, Walter Armbruster, and Ronald Hardy.

The task force was charged by the NAREEEAB (hereafter referred to as “the Board”) with reviewing and providing oversight to the Agricultural Research Service (ARS) *Peer Review Process* as required by statute. The task force last met via conference call on August 22, 2000 (see attached “Working Group on Peer Review Advice Minutes”), although the Board has had regular updates from the Acting Administrator of ARS, Dr. Ed Knipling, and/or the Director of the Office of Scientific Quality and Review, Dr. Frank Greene, since that time. In fiscal year 2004, the Advisory Board decided that the ARS *Peer Review Process* should be revisited by the task force and appointed several individuals to this group.

In preparing an overview of the process and in developing recommendations for the Board regarding our advisory responsibilities in the ARS *Peer Review Process*, it must be understood that any review of this nature will be limited and in no way should it be construed as comprehensive.

Overview

First, we want to thank the Office of Scientific Quality and Review (OSQR) for providing an overview of the process and taking time to respond to our questions and requests for additional information.

From our limited observation and discussions with the OSQR officials and from observing a panel in action, we believe it is important to provide some background before we discuss more specific recommendations.

First and foremost, the *ARS Peer Review Process* is not an investigator-driven process in the same context as the National Research Initiative (NRI) or other competitive processes at the National Science Foundation (NSF) or the National Institutes of Health (NIH), but rather the review is focused on the mission programs of the agency. Individual projects do not compete against one another in the review, as projects are reviewed by programmatic area within one of the 22 ARS national priorities. The reviews focus on reaching an “action” decision on the proposals, and not on funding priority determinations. Panel reviewers assign one of five action classes’ scores (No Revision, Minor Revision, Moderate Revision, Major Revision, or Not Feasible) to each project together with comments to the Principal Investigator (P.I.). The 22 ARS research program areas are defined by the National Program staff and the project review process is expected to evaluate experimental approaches, probability of success and merit of the proposed work in determining the overall “action class” or recommendation. Thus panels need to be diverse in composition, consist of individuals who possess extensive knowledge and expertise in a relevant field of science, and have a clear understanding of the mission and goals of the ARS.

After briefly observing the panel on Non-Lipid Biobased Technologies (Research Program Area 306 – Quality and Utilization of Agricultural Products) on February 11, 2004 and the subsequent debriefing on February 13, we were impressed with the understanding and grasp that the panel had of the nature of the work being undertaken and of the mission of ARS. Clearly, the Office of Scientific Quality and Review did an excellent job of orienting the panel on the mission of the agency before they began the review. The panel, in this case, was clearly focused on the merit and the ability of the scientists and their teams to achieve their stated goal(s), and on the possible economic benefits of the research. This speaks well of the diversity and experience of the panel.

As we became engaged with the *ARS Peer Review Process*, we believed it was important to review the previous minutes of the Working Group (WG) of August 2000 to ascertain if recommendations were either addressed or incorporated into the current *ARS Peer Review Process*. It was clear from our limited observation that the process is an iterative and evolving activity of the Department, which for the record, has been in place only four years. All ARS National Research Program areas are to be reviewed over a 5-year cycle. The first cycle of reviews is nearing completion, so the impacts of the process are not fully known at this time, but it is clear that ARS has incorporated many, if not all, of the suggestions made earlier and continues to look for input to improve its peer review process.

The earlier WG identified or otherwise noted several issues of concern.

1. **ARS options for an External Advisory Group.** As ARS initiated the *Peer Review Process*, it considered an external advisory group to provide oversight to the review process, but opted to utilize a task force of the Board to fulfill this function.

Task Force Recommendation: We recommend that a task force of the Board provide oversight to the ARS Peer Review Process.

This, in a large part, has been accomplished. However, the hiatus in having members of the Board participate in the ARS Peer Review Process from August 2000 to the present date needs to be corrected.

2. Development of Explicit Criteria for Selection of Review Panels and Chairs.

There was a previously raised concern about the diversity of panels and chairs that participated in the review process. It was suggested that ARS develop written criteria for use in selecting the panel members and chairs. This task has been accomplished (see attachment).

Our observation although limited, suggests that the issue of diversity of panel members and chairs has been taken seriously. The panel we observed had individuals of gender, color, ethnicity, background, and experience (industry, university and other governmental agencies). In reviewing the Peer Reviewer Affiliations (provided in the 1/15/2004 – Peer Review Briefing Book), we did note, however, the heavy focus on using university scientists as panelists (79%), and suggest that efforts be made not to exceed this level.

Task Force Recommendation: We recommend that an effort be made to increase industry and other agency representation and input on future ARS Review Panels.

It was clear in observing the panel in action that industry and other agency input are important and should be increased whenever possible, to coincide with the mission orientation of the agency.

3. Short Courses and/or Workshops on Proposal Preparation. In the review of the ARS *Peer Review Process*, it was noted that up to 20% of the projects reviewed were judged to be inadequate in scope and/or quality. ARS should consider workshops or short courses to assist researchers with project preparation. The number of projects that require extensive and major revision continues to approach 20-25%, however upon re-review, 95% of those projects requiring revision for shortcomings are approved. Thus, there appears to be a significant need for assistance.

Task Force Recommendation: We recommend that ARS consider in-depth regional workshops to assist researchers with improving project preparation skills as has been suggested earlier. In addition, we understand that “*Guidelines for Preparation of ARS Projects*” is under revision. We recommend that these guidelines be prepared in depth, and with examples of excellent and poor project preparation. In addition, this material should be web-based for easy reference and access.

Whenever possible, we suggest that ARS utilize those researchers who have demonstrated and proven to be adept at proposal preparation as a component part of any workshop effort.

4. **Future Advisory Board Opportunities to Observe the Review Process – “In Action”.** The working group of 2000 suggested that the process of observing the panels in action be opened to any Board members who would be available to participate. *An assessment and observation of the ARS “project review process” are critical in understanding the mission and rigor of research review process.*

Task Force Recommendation: After observing the panels in action, we recommend that members of the NAREEE Advisory Board make the effort to observe the process first hand.

A list of future peer review dates by program area is attached.

5. **Potential Modification of the Review Process.** The Working Group’s overview from August 2000 suggested that the peer review process provide reviewers with (1) budgetary materials, and (2) enhanced project-rating definitions.

With regard to providing panel members with budgetary information, this recommendation appears to have been met at least as reported by the Panel observed by the current Task Force. It should be understood that the ARS project review process is first and foremost *designed to evaluate research quality and feasibility*. Panelists, when queried, felt that sufficient information regarding facilities, equipment, technical support, etc., was provided, thus enabling them to determine whether the resources were sufficient and available to achieve the stated outcomes. Most helpful to the reviewers, was the inclusion of the names of scientists assigned to the project. Familiarity with individual scientist’s work gave the panel assurances of quality.

With regard to the rating system definitions, ARS followed the recommendation provided by the August 2000 Working Group to clarify ARS rating criteria. At present, the rating system appears to work well, and panelists are not confused or bewildered by it.

From the recent review and observation by the “Task Force on the Peer Review Process” of the research panel held February 11-13, 2004 for ARS National Program 306 – Quality and Utilization of Agricultural Products, as well as discussions held at the full Board Meeting, March 23-25, 2004, the Advisory Board approves and submits the following recommendations:

From an outsider’s perspective, a fundamental question for ARS has to be, “*Will the review process make ARS more effective and more efficient in carrying out its mission?*” Clearly, as ARS completes the first cycle of project review, it needs to determine the impacts of this review process.

Questions that need to be asked and answered include, but are not limited to, the following:

- How has ARS research been improved by the peer review process?
- Has the peer review process helped ARS assure that its research programs are addressing “cutting edge” issues?
- Are ARS scientists more productive?
- Is ARS better positioned to conduct and achieve its goal of mission-oriented research?
- As a result of this peer review process, are ARS scientists more competitive for extramural funding to expand and extend their research?
- Has ARS enhanced its technology transfer via CRADAs and other means?
- Has the external awareness in the quality of ARS research changed as a result of the scrutiny of a peer review process?

Recommendation: We recommend that as the current cycle of reviews is completed, that ARS formalize a process of documenting the impacts of the review process on research productivity, quality, direction, and competitiveness. We understand that this is likely to be a difficult process, and suggest at a minimum, a survey of scientists, administrators, industry, panelists, and other stakeholders to attempt to answer some of the questions stated above.

Recommendation: We also recommend that as this cycle of peer review is completed, ARS use the impact information from the peer review process as stakeholder input in its re-evaluation of the 22 priority research programs.

Project and research collaborations across national program areas. It is our understanding that many, if not all of ARS research projects, link to one or two other national program areas as defined by the national research agenda of the agency. These links are important in demonstrating the collaborative nature of the agency’s research. It would be useful to see this illustrated in a matrix.

Summary

In closing, a few other general observations are warranted. Based on the Task Force’s observation of a peer review panel “in action” and subsequent discussion by all Board members on the *ARS Peer Review Process*, it is clear to the Board that ARS’ adoption of an external project review system is changing the culture of the agency as well as changing the mindset of scientific researchers in positive ways. We believe that this is a very important ARS activity that will continue to improve the quality and focus of the agency’s research mission.

In addition and based on our limited observation, the panel we observed was duly impressed with the overall quality of the proposals, the quality of ARS scientists, and the mission orientation of the research. However, they did emphasize the need for project plans to include the development of milestones to measure progress, and that metrics need to be developed for measuring progress against a goal or objective.

Panelists felt that strategies need to be developed to assist with the transition to commercialization and/or developmental activities. Incentives need to be considered to encourage collaborative work on multiple disciplines at divergent ARS laboratories. Lastly, and where applicable, research projects should address the long-term economic feasibility and consequences of the research undertaken.

Attachments:

Working Group Minutes on the ARS Peer Review Process – August 28, 2000
Selection Criteria for Panel Chairs and Members – ARS
Future ARS Peer Review Schedule