

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

MINUTES OF THE FALL 2014 MEETING

October 21-23, 2014
The Loews Madison Hotel
1177 15th St NW, Washington, D.C.

CONTENTS

EXECUTIVE SUMMARY1

TUESDAY, OCTOBER 21

Part I: Welcome

Welcoming Comments and Introductions4
Opening Remarks from the Under Secretary for REE4
Discussion Regarding REE Activities6

Part II: Research, Education, and Economics (REE) Updates

USDA Pollinator Health Initiative7
 Board Discussion8
Agricultural Research Service (ARS)8
 Board Discussion10
National Institute of Food and Agriculture (NIFA).....11
 Board Discussion12
National Agricultural Statistics Service (NASS).....12
 Board Discussion14
Economic Research Service (ERS).....14
 Board Discussion16
Public Comments17
Evening Session18

WEDNESDAY, OCTOBER 22

Part III: Relevancy and Adequacy Roundtable

Introduction of Roundtable Topic and Goals18
Roundtable Discussion.....18
Wrap-up and Conclusion of Roundtable.....21

Part IV: Working Group Updates

Data Management Working Group21
Board Discussion22
Balance of Crop Research – Private and Public Investment23
Board Discussion24
Agricultural Experiment Station System Review25
Board Discussion26
Equity and Diversity in USDA Programs26
Relevancy and Adequacy Report27

Working Session.....28

THURSDAY, OCTOBER 23

Closing Remarks from the Under Secretary for REE.....28

Part V: Subcommittee Reports

National Genetic Resources Advisory Council.....30
Report from Chair30
Board Discussion31
Specialty Crops Committee.....31
Report from Chair31
Board Discussion33
Citrus Disease Subcommittee.....35
Report from Chair35
Board Discussion35

Board Business36

RESOLUTIONS, RECOMMENDATIONS AND ACTION ITEMS37

APPENDIX A: List of Meeting Attendees.....38

APPENDIX B: Board Appointments, Working Groups and Subcommittees40

APPENDIX C: Presentations.....41

**APPENDIX D: Recommendations of the NAREEE Data Management Working Group to
USDA.....42**

Respectfully submitted,

Dr Milo Shult
Chair

Dr Steven Daley-Laursen
Vice Chair

Michele Esch
Executive Director

APPROVAL BY ADVISORY BOARD:

Date

Initials
Chair

Initials
Executive Director

EXECUTIVE SUMMARY

The National Agricultural Research, Extension, Education, and Economics (NAREEE) Advisory Board (hereafter “the Board”) met in public session on October 21-23, 2014, in Washington, D.C. The meeting welcomed one new Board member.

The meeting included a focus on the Relevancy and Adequacy (R&A) annual report, one of the Board’s primary charges. A substantial roundtable discussion was held on several key aspects of the report: 1) content and format; 2) required inputs; 3) working group; 4) timeline; and 5) metrics. It was determined that three types of assessments could be included: issues that the USDA brings to the Board, such as the Balance of Crop Research charge; issues that the Board identifies internally, such as data management; and work on R&A themes as part of other specific Board reports. The R&A report could include long-term issues of general importance to USDA activities, e.g. cultural diversity of program support, as well as emerging issues that arise or attain higher priority in certain years, such as a cross-agency program that the USDA would like feedback on. To inform the report, it is critical that the Board receive information from the Research, Education and Economics (REE) mission areas on progress over the previous year, specifically stating how recommendations made in the previous R&A report were or were not addressed. Updates should be provided at the Board’s Fall meeting, with the Spring meeting used to discuss the draft report. The discussion emphasized the need for continual improvement in communications between the Board, the Office of the Under Secretary for REE and the REE mission areas, including written responses from both the Under Secretary and the Secretary.

The Board heard a presentation from the Data Management Working Group, which was formed at the May 2014 meeting in response to concerns about the USDA’s Open Data Initiative. The working group held conversations with staff throughout the USDA and compiled a list of ten recommendations in four areas: share planning information; expand stakeholder engagement; expand inter-departmental and inter-agency collaboration; and initiate collaborations with universities. Key issues that still require resolution include: cost; compliance; data use and interpretation; institutional differences; and cross-agency consistency. The recommendations and an accompanying report will be finalized as soon as possible and submitted to the Board for review and approval, before sending to the USDA as a living document. The Board agreed to retain the working group as the NAREEE Ad Hoc Committee on Data Management, for continuing work on the issue and providing updated recommendations to the USDA as needed.

The Board heard a presentation from the Balance of Crop Research Working Group describing the *Report on the Re-balancing of the Research Portfolio: Private vs Public Investments*. The report lists a series of considerations and questions that should inform the USDA’s response to the 2012 report by the President’s Council of Advisors on Science and Technology (PCAST), and provides three recommendations for USDA action. It was noted that perhaps the most impactful recommendation is for an annual research roundtable to encourage information sharing within and between the private and public sectors.

The Board heard a presentation from the Agricultural Experiment Station (AES) Working Group describing the report it was tasked to develop in reviewing the AES system. The report provides three broad recommendations to the USDA: 1) enhance research partnerships with universities,

other federal departments and agencies, and industry; 2) increase formula and competitive funding to improve returns on investment, particularly focusing on research relevant to the priority areas, while maintaining the correct balance between formula and competitive funding; and 3) focus the AES system research on foundational issues. The Board engaged in significant discussions regarding the AES system on the following key issues: (i) equity and diversity; (ii) balancing competitive and formula funding; (iii) the relationship between AES and extension; and (iv) language used in the AES review. Following these discussions, the Board agreed to table its review of the AES report until further revisions are made.

During several Board discussions, concerns were raised as to whether or not the USDA's programs and funding adequately support cultural equity and diversity, especially with regard to capacity funding for minority-serving institutions and tribal colleges, required matches in state funding, and support for workplace training and development. It was determined that more information is needed about the current state of equity and diversity in USDA activities before any further discussion can be meaningful. It was suggested that the Board could create a working group to work on this issue across the whole of REE's portfolio, including education, extension and research. The working group could determine the best mechanism by which the Board can review the issue and provide recommendations to the USDA. It was agreed that this topic will be revisited at the Spring 2015 meeting, at which time REE staff will provide an in-depth briefing to the Board about current equity and diversity within the USDA's programs and funding.

The Under Secretary for REE updated the Board regarding: the status of reports submitted by the Board to the Under Secretary's office; implementation of the 2014 Farm Bill; appropriations for the 2015 and 2016 fiscal years; ongoing USDA activities regarding antibiotic resistant bacteria; and a review undertaken by the National Research Council (NRC) of the Agriculture and Food Research Initiative (AFRI). It was noted that the Foundation for Food and Agricultural Research is now incorporated, with a Board, elected officers, by-laws, and transfer of funds to a bank account. It was also noted that the National Institute of Food and Agriculture (NIFA) is still developing guidance materials for granting waivers and exceptions to the requirement for matching funds in NIFA's competitive grants program beginning in the 2015 fiscal year.

The Deputy Under Secretary for REE briefed the Board on agency activities related to the President's memorandum *Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators*, which called for the creation of a multi-agency Pollinator Health Task Force. The USDA is co-chair of both the research action plan and public education plan. Initial drafts of these plans are due on November 28, with final plans to be submitted to the Office of Science and Technology Policy (OSTP) by December 20, 2014.

REE Agency administrators and directors presented updates to the Board regarding mission area activities and budget proposals for the 2015 fiscal year. The agencies are operating under a Continuing Resolution at last year's funding levels, with funds available through December 11, 2014. The REE mission areas are all actively participating in the Pollinator Health Task Force efforts, and are investing in research on the issues of pollinator health and antimicrobial resistance. The agencies are implementing Six Sigma-style approaches to process improvement and investing in IT infrastructure to enable better data access, use and storage.

In Board business, the Board voted to retain the current Executive Committee, Chair and Vice Chair to the Board for the new fiscal year. The Board asked for volunteers for four new representatives to the Specialty Crops Subcommittee, bringing the total Board representation on that committee to six members plus one Board member serving as Subcommittee Chair. The Executive Committee will approve the new members at their next teleconference. The Board heard updates from the National Genetic Resources Advisory Council (NGRAC), the Specialty Crops Committee and the Citrus Disease Subcommittee. Notes and recommendations from the last NGRAC meeting will be passed to the Board once they are finalized and approved. The Board agreed that the Specialty Crops Subcommittee's revised recommendations to NIFA on relevancy reviews would be reviewed by the Executive Committee and submitted to NIFA to ensure consideration for inclusion in the FY 2015 Request for Applications.

Resolutions and Recommendations

- The Board agreed to retain the Data Management Working Group as the NAREEE Ad Hoc Committee on Data Management, for continuing work on the issue and providing updated recommendations to the USDA as needed.
- The Board approved the report of the Balance of Crop Research Working Group for forwarding to the Under Secretary, with the amendment that the phrase on page 3, 'intellectual property remaining in the public realm **might seem** of value to society', be changed to read 'intellectual property remaining in the public realm **is** of value to society'.
- The Board agreed to table the review of the Report on the Agricultural Experiment Station System until further revisions can be made.
- The Board recommended that information be gathered on the current state of equity and diversity in USDA programs and funding to inform further discussions on the issue.
- The Board agreed that the Specialty Crops Subcommittee's revised recommendations to NIFA on relevancy reviews would be reviewed by the Executive Committee and submitted to NIFA to ensure consideration for inclusion in the FY 2015 Request for Applications. The full Board will review the final report before being formally submitted to USDA.
- It was suggested that the Spring 2015 Board meeting be held in Beltsville, MD, to allow for site visits to ARS intramural programs and conversations with agency staff.

Action Items

- REE agency staff will work with the Relevancy and Adequacy Subcommittee to gather the necessary inputs for the 2015 report and further refine the reporting process.
- Relevancy and Adequacy Subcommittee will produce a draft report using the structure described in this report for review at the Spring 2015 meeting.
- Ad Hoc Committee on Data Management will organize a meeting with the OSTP.
- Ad Hoc Committee on Data Management will finalize a list of recommendations based on the discussion described in this report as soon as possible and write an accompanying report for submitting first to the Board's Executive Committee and then to the entire Board for review and approval, before sending to the USDA as a living document.
- AES Working Group will revise its report based on the discussion described in this report and circulate to the Board electronically for review before the Spring 2015 meeting.
- REE administrators and directors will provide an in-depth briefing to the Board at the Spring 2015 meeting about equity and diversity within the USDA's programs and funding.

TUESDAY, OCTOBER 21, 2014

PART I: Welcome

WELCOMING COMMENTS AND INTRODUCTIONS

Note: A list of attending Board members and other participants and guests for each session of the meeting is provided in Appendix A of this report.

Dr Milo Shult (Chair, NAREEE Advisory Board, hereafter “the Board”) called the meeting to order at 1:07 p.m. and welcomed new and returning members, USDA administrators and staff, and public guests.

Being the first meeting of the fiscal year, the Board was required to elect officers for the coming year. By a unanimous verbal vote, the Board decided to retain the current Chair, Vice Chair and Executive Committee, since those positions were elected recently at the Board meeting in May.

Note: A list of Board positions that were voted upon, volunteered or appointed during the October 2014 meeting is provided in Appendix B.

OPENING REMARKS FROM THE UNDER SECRETARY FOR REE

Dr Catherine Woteki (Under Secretary for USDA Research, Education and Economics [REE] / USDA Chief Scientist) gave a presentation to the Board entitled ‘National Agricultural Research, Extension, Education, and Economics Advisory Board’.

Note: the presentation slides were made available to Board members through the Sharepoint website. A list of all meeting presentations made available to Board members is provided in Appendix C.

The Under Secretary for USDA Research, Education and Economics (REE) updated the Board regarding: the status of reports submitted by the Board to the Under Secretary’s office; implementation of the 2014 Farm Bill; appropriations for the 2015 and 2016 fiscal years; ongoing USDA activities regarding antibiotic resistant bacteria; and a review undertaken by the National Research Council (NRC) of the Agriculture and Food Research Initiative (AFRI).

It was noted that the Office of the Under Secretary has begun providing written responses to reports received from the Board, beginning with an interim report developed by the National Genetic Resources Advisory Council (NGRAC). Responses prepared by the Office of the Under Secretary will accompany the Board’s reports when forwarded to the Secretary. Reports that have not yet been submitted to the Secretary, for which responses are currently being prepared, are the 2014 Specialty Crop Committee report, the 2012 Relevancy and Adequacy report, and the 2012 Renewable Energy report.

Woteki noted that the 2014 Farm Bill includes several provisions that encourage partnerships to leverage Federal funds: the Foundation for Food and Agriculture Research, the Centers of Excellence, matching funds, and the role of Commodity Promotion Boards with AFRI. It was noted that the Foundation for Food and Agricultural Research (FFAR) is now incorporated, with

a Board, elected officers, by-laws, and transfer of \$200 million in funding to a bank account. The first Board meeting will be held on November 6-7 in Washington, D.C. One of the first items of business will be developing an operational strategy for FFAR. The 2014 Farm Bill requires the National Institute of Food and Agriculture (NIFA) to prioritize funding to institutions and entities that self-organize as 'Centers of Excellence'. NIFA is currently developing processes to recognize these Centers and determine how prioritized funding would work. Regarding matching funds, every recipient of a long list of NIFA's competitive grants is required to match dollar for dollar with other funding sources, with exceptions given to entities that receive 'capacity and infrastructure' funds. This legislation will apply to grant programs that begin in the 2015 fiscal year. NIFA is still developing guidance materials for granting waivers and exceptions to the matching funds requirement, and expects to release this guidance next month. Under the Commodity Promotion Board provision, NIFA would be able to accept suggestions for topics for the AFRI competitive grants program from national, state and local commodity boards. If NIFA chooses to run a competition on the suggested topic, the commodity board must provide an equal match of available funds. NIFA is currently seeking input as to the mechanics of how this process would work.

It was noted that both the House and Senate Agriculture Appropriations Committees completed their work on the 2015 spending bills, but neither the House nor the Senate has had Floor consideration of the bills. A continuing resolution was passed that will expire on December 11, 2014. Hence the REE agencies will be conservative in their spending over the coming months.

In September 2014, the NRC released its report reviewing the quality and value of the research funded by the AFRI program. NRC's recommendations identified a number of opportunities for the improvement and long-term success of AFRI, which are in line with NIFA's own analysis and steps taken by the agency over the last 2 years in addressing concerns from the research community. These include increasing the proportion of the portfolio that is in the foundational programs and scaling back on large multi-year challenge grants.

Due to biosafety concerns about select agents in some national laboratories and in response to a memorandum from the President, the USDA implemented a laboratory standdown and completed an inventory of its holdings to identify any select agents. Select agents are those pathogens and toxins of greatest concern because of their potential use as biological threat agents. Some of the select agents are related to agriculture, primarily zoonotic diseases that affect both humans and animals. The inventory identified some select agents, which were appropriately dealt with in consultation with regulatory agencies.

In late September, the Office of Science and Technology Policy (OSTP) issued additional guidance on policy for institutional oversight of dual use research of concern in the life sciences. The policy provides a framework for identifying the risks associated with experiments involving select agents and mitigating those risks. Government funding for 'gain of function' and dual use research involving pathogens with pandemic potential has temporarily been paused while new policy is developed to minimize the risks of such research. However, it was noted that the USDA does not fund or conduct any 'gain of function' research and hence should not be actively affected by this funding pause.

On the issue of combatting antibiotic resistant bacteria, Woteki noted that the USDA has been an active participant in an interagency policy committee that has provided advice to the President about what federal agencies can do. The President has issued an executive order with two charges. The first establishes a task force that the Secretary of Agriculture will be co-chairing, which will be charged with implementing an action plan to be developed within 90 days. The executive order's second part is to establish an external advisory committee on combatting antibiotic resistance, which is still in development.

Woteki noted that there is a large international component to this issue, with over 40 countries (including the US) now committed to a Global Health Security Agenda – a commitment to develop ways to identify emerging pathogens early, provide early detection, have a rapid and effective response, and prevent or reduce the likelihood of outbreaks. This commitment reframes the response to infectious disease as a national security issue that requires a national response rather than a public health issue. The Global Health Security Agenda has been focused around a 'one health' approach, recognizing that emerging and infectious diseases of late have been zoonotic in origin, and it establishes 11 specific agendas for action of which 7 involve agriculture. In addition, the World Health Organization (WHO) has been leading an international team that is developing a Global Action Plan on Antimicrobial Resistance. The USDA is engaged in this effort with colleagues from multiple departments.

Woteki noted that the USDA has been working systematically to ensure that commitments to the WHO are consonant with the Global Health Security Agenda and the President's Executive Order, with no confusing overlap or competing agendas. It was noted that the main goal is to preserve for as long as possible the utility of antimicrobials for human health and agriculture applications. The USDA is working very closely with the Federal Drug Administration in their implementation of guidance on medically-important antibiotics used in livestock.

Regarding concerns over Ebola management, Woteki noted that the USDA's role is as part of an interagency working group focused on bush meat imports. Within the USDA, an Ebola working group has been formed with veterinary and infectious disease experts to focus on food safety and health concerns for companion animals and livestock.

DISCUSSION REGARDING REE ACTIVITIES

In response to questions, Woteki clarified that the pause in funding for gain of function research has affected only a small proportion of projects within the National Institutes for Health (NIH) budget. The NIH has responsibility, as the funding agency, to assess a research proposal to determine if it meets the definition of gain of function research. If so, the proposer must provide a risk assessment to demonstrate that the laboratory involved meets the requirements for biosafety and has a plan in place for mitigation of any identified risks.

PART II: Research, Education, and Economics (REE) Updates

USDA POLLINATOR HEALTH INITIATIVE

Dr Ann Bartuska (Deputy Under Secretary for USDA REE) updated the Board on current activities within the USDA with regard to pollinator health.

Note: no presentation slides were used for this update.

A hard copy of the President's Memorandum entitled 'Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators' was provided for all meeting participants.

The Deputy Under Secretary for REE briefed the Board on agency activities related to the President's memorandum *Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators*, which called for the creation of a multi-agency Pollinator Health Task Force. The Task Force is charged with creating a research action plan and public education plan, developing public-private partnerships to promote pollinator health, and increasing and improving pollinator habitat.

The USDA is co-chair of both the research action plan and public education plan. The USDA has interagency teams established to develop these plans. For the research plan, the team is looking at the full scope of issues raised around bee and pollinator health, including status and trends, nutrition, habitat, pathogens, pests, pesticides and toxins, genetics and breeding, native plant development, economics, and biology of the pollinators. The goal is to build on the research that has already been done but also to identify key emerging questions. Bartuska noted that there has been good cooperation between scientists from the US Geological Survey (USGS), the US Forest Service and the USDA's Agricultural Research Service (ARS) in developing research questions.

It was noted that the public education plan has expanded to include extension and outreach work. The interagency team for this plan is beginning to work on priorities and 'low-hanging fruit' that could be targeted in terms of initial commitments. There have been requests to use this plan as a mechanism to develop a curriculum for middle and high school students around the pollinator issue. The team is also exploring opportunities for partnering with 4-H programs, visitor's centers, and commercial groups such as Home Depot, which propose promoting the use of pollinator plants in home gardens.

Bartuska described the Task Force's mission with regard to pollinator habitat as being one of application of past research rather than new research. For the USDA, this charge provides opportunities in USDA facilities nationwide, with plenty of work around restoration of habitat and planting of pollinator gardens. The US Forest Service and Department of Interior are heavily involved in restoration work. The USDA's Natural Resources Conservation Service (NRCS) has the greatest role in providing the tools and grants for private land owners to restore pollinator habitat through a conservation program.

Listening sessions will be held in early November to get input from stakeholders on the research action plan. Initial drafts of these plans are due on November 28, with final plans to be submitted to OSTP by December 20, 2014.

Board Discussion

In response to a question from the Board, Bartuska noted that the outline for the research action plan reflects current thinking about the reasons for the observed decline in pollinator populations, being a complex combination of factors. For example, regarding honeybees, hypotheses include some influence of pesticides but also nutritional issues developed in hives, issues with regard to genetic variability promoted through commercial production, pest and pathogen issues. For native pollinators, two large factors are habitat loss and competitors. Bartuska noted that climate change is being considered as a stressor on habitat, with secondary effects on pollinators via drought and heat stress. It was noted that the large majority of research investment so far has been in honeybees, with little investment in non-insect pollinators. Hence that gap in investment will be addressed in the research action plan.

In response to questions, Bartuska noted that there is a desire for quick deliverables with regard to the public education plan, and hence the focus may be on established information around the importance of pollinators and what individuals can do to help with habitat restoration. It was noted that working with school systems is a very high priority, particularly with regard to promotion of pollinator gardens.

Bartuska noted that recreation of pollinator habitat has already been included in the NRCS's programs about wildlife and habitat as part of their 90-day deliverable in response to the President's memorandum.

In response to a question, Bartuska noted that the task force teams are gathering information on existing programs, including state-level USDA programs on pollinator health, in order to build on existing work.

In response to a question, Bartuska noted that the FDA has not yet been involved in these task force groups.

It was noted that the ARS laboratories are actively involved in work on the issue of 'killer bees'.

Bartuska encouraged members of the Board to participate in the listening sessions planned for early November to provide input on the research action plan.

AGRICULTURAL RESEARCH SERVICE (ARS)

Dr Chavonda Jacobs-Young (Administrator, USDA ARS) gave a presentation to the Board entitled 'ARS Update and Outlook for FY 2015'.

Note: the presentation slides were made available to Board members through the Sharepoint website.

As of October 1, 2014, the ARS has consolidated its geographic administrative areas from 8 to 5, with the intention of creating critical mass and enhancing existing resources in each area.

Jacobs-Young noted that the ARS is operating under a continuing resolution at last year's funding levels and therefore will move forward with caution. However, ARS's 2014 budget had a \$105 million increase over the 2013 budget, which has enabled funding commitments for high priority research and new initiatives in the areas of: Big Data; Antimicrobial Resistance; Long-Term Agro-ecosystem Research (LTAR) Network; and genetic resources and information.

The LTAR network has been expanded from 10 to 18 sites, with additional new funding for the original sites. It was noted that many of ARS's university partners are involved in these sites. The increased funding to the LTAR network will be used to accelerate the use of the sites for systems-type research, for example into pollinator health, and create a coordinated network of platforms for watershed and rangeland research.

In 2014, ARS is investing more funding into the conservation, evaluation and distribution of the genetic resources and information in the 20 genebanks. These resources will be used to accelerate the utilization of genomic and genetic information, tools and data for the crop databases, such as MaizeGDB and SoyBase, and for germplasm improvement and metagenomic analyses to improve nutritional efficiency of beef cattle, sheep, trout, chicken and dairy. It was noted that ARS shares these resources with partners free of charge.

ARS has begun work on a Big Data Initiative. This system is intended to be transformative in the way that ARS handles data inside the agency, moving away from scientists being individually invested in their own data towards a more agency-level approach, and generally improving the IT infrastructure across the agency. The first step is to create a high speed network called SciNet, which will rely on Internet 2, to speed up the sharing and processing of databases. This work is being done in partnership with universities, many of which have already upgraded to Internet 2. SciNet will be established at 6 locations dedicated to the transport of research data and ARS hopes to have this in place by the end of FY 2015. Three locations will have a transfer capacity of 100 gigabytes per second. It was noted that SciNet will be separate from the current ARSNet to minimize security risks. The second part of the Big Data Initiative is development of a high performance computing (HPC) system to provide storage and efficient processing of data. This will be a hybrid of physical and cloud resources. The third component is to develop a virtual research support core – IT experts to staff the new computing infrastructure and people to assist with computational research, for example in bioinformatics. It was noted that some staff within ARS have the required IT skills to do such work but there are not nearly enough staff with the necessary combination of scientific and computational skills. The plan is to invest \$25 million in the infrastructure for the Big Data Initiative, with an additional \$30 million in projects that will use and support the big data network.

Jacobs-Young noted that ARS is also making changes to the work environment, developing a new intranet platform, electronic lab notebooks, and equipment and services that facilitate virtual work and telework. She noted that IT will be a critical part of how ARS does business and not merely an overhead.

ARS has directed significant new funding towards the issue of antimicrobial resistance, which it considers one of the most serious health threats to both animals and humans. Part of the funding will enhance programs looking for alternatives to antibiotics in all species of food-producing

animals, with an emphasis on poultry and cattle. Part of the funding will go towards expanding our understanding of the microbiome of pigs, cattle and chickens. Other funding will be used to begin sequencing whole genomes of food borne pathogens to better understand resistance and the transfer of genetics between bacteria. It was noted that policymaking with regard to antibiotic use has so far been hampered by a lack of science-based data. ARS has a role in providing the necessary data for decision making.

Jacobs-Young noted that the most significant outcome of the 2014 Farm Bill for ARS is that federal funding can now be considered as part of the grant match for NIFA's competitive grant programs. This change allows more ARS scientists to participate as lead investigators. It is expected that this change will also be beneficial to smaller universities who may want to partner on a larger project with ARS but would not have the resources to be the lead on a proposal.

Jacobs-Young noted that she serves as an *ex officio* Board member for the new Foundation for Food and Agriculture Research (FFAR). FFAR is considered to be a benefit for ARS, not competition to ARS research, and will provide one more potential avenue for new research grants.

The FY2015 proposed budget has a small cut in funding compared to the FY2014 budget, and has once again included a request for funding to build a new poultry disease research laboratory. ARS has proposed two new multidisciplinary program initiatives as part of the FY2015 budget: Climate Resilient Land, Crop, Grazing and Livestock Production Systems, and Advanced Crop and Livestock Genetic Improvements and Translational Breeding for Enhanced Food Production. ARS has also requested funding for a new Pollinator Health Initiative and additional research on Colony Collapse Disorder (CCD).

Finally, Jacobs-Young noted ARS's involvement in training the next generation of scientists through the undergraduate and graduate students who work in ARS laboratories, as well as the interns and postdocs who work in those laboratories. While education is not a part of ARS's mission, a lot of education takes place inside the agency. It was also noted that many of the ARS scientists serve as adjunct faculty at universities.

Board Discussion

In response to a question about the impact of changing leadership within ARS, Jacobs-Young noted that her administration is focusing on partnering and reaching out to the leadership at land grant universities. She also noted that 3 senior executives have been placed in each of the new administrative area offices with increased staff support so that the senior staff can spend more time meeting with partners.

In response to a question about closing of ARS facilities, Jacobs-Young noted that any decisions to close facilities are based on economic viability, science and historical trends, and that having too many locations to operate reduces the available support for high priority research. In recent years, ARS has not received any funding to invest in facilities and many locations need repairs.

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE (NIFA)

Dr Sonny Ramaswamy (Director, USDA NIFA) updated the Board on current activities within NIFA.

Note: no presentation slides were used for this update.

In the FY2015 budget, NIFA articulated some guiding principles including significant increases in both AFRI, its flagship competitive grants program, and capacity funds for the experiment station and extension networks, forestry enterprises and minority-serving institutions. NIFA also asked for funding to create three innovation institutes as called for in the 2012 report from the President's Council of Advisors on Science and Technology (PCAST). NIFA is currently developing the FY2016 budget, which will articulate very similar principles – increases to the competitive grants and capacity funding programs, with ancillary requests to support pollinator health, antimicrobial resistance and biomanufacturing research.

NIFA has asked the land grant academic community to undertake an inventory of all existing physical infrastructure, including greenhouses, laboratories and field experiment facilities. The intent is to get a sense for the state of repair or disrepair in these facilities to inform future budget requests.

Ramaswamy noted that NIFA has implemented several Six Sigma approaches to improve the efficiency of its internal processes across the agency. As part of reducing the cost of staff time at the end of the fiscal year, the grant award period has been flattened out. In addition, the release of opportunities for capacity funding was moved from July to September to provide more time for those funds to be used. As part of the process of continuous improvement, NIFA has also developed approaches for knowledge discovery tools, providing information via the web portal about the types and amounts of investments that NIFA makes, and is attempting to move forward with paperless (i.e. digital) documentation. It is anticipated that space savings will result in NIFA decreasing its building footprint down to 3 floors.

With regard to pollinator health, Ramaswamy noted that NIFA currently provides about \$7 million per year for research on the issue. There is also a significant investment in the extension system, for the development and delivery of solutions for users.

NIFA also makes significant investments on the order of \$3-5 million per year with respect to antimicrobial resistance, providing support for taking a systems approach from farm to consumer.

Ramaswamy noted that training of the next generation of scientists, students and postdocs is a critical issue since many more jobs in the food systems industries are generated than there are graduates from agricultural colleges. NIFA also wants to invest to resurrect the extension footprint in the US – the ability to translate research into usable solutions for users – which has been decreased by about one third over the past decade. In the near future, NIFA hopes to hold a conference about the relative responsibilities of corporate entities and the academic community to produce the needed pipeline of qualified individuals. Information gleaned from those conversations will be incorporated into future budget requests.

Ramaswamy noted that the recommendations contained in the NRC's review of NIFA were not surprising to the agency, but rather were congruent with the agency's own analysis and decisions that have already been made. NIFA will provide a formal response to the NRC's report and add information about the report on its website.

Finally, Ramaswamy stated that NIFA is still developing the necessary guidance with regard to the 2014 Farm Bill's provisions for exceptions to the matching funds requirement. All the institutions that receive capacity funds are immediately exempted from the matching requirement. If an entity partners with one of those institutions, it will also be excepted from the requirement. In addition, if an entity submits a proposal related to a high priority area, it may be waived from the matching requirement. NIFA has held listening sessions and is currently consulting with the USDA Office of General Counsel about how to administer these exceptions.

Board Discussion

During discussions, it was noted that the USDA wants to engage with the university community in a dialogue about infrastructure needs for the future of the food and agricultural sciences, including laboratories, people and other resources including data. It was noted that the number of facilities that have historically been created and maintained by ARS don't currently fit with the capacity that has been created within universities and the evolving needs of agricultural science.

Further, it was noted that the infrastructure for science in minority-serving institutions may be particularly in need of upgrades and repairs. The infrastructure inventory that NIFA has requested includes minority-serving institutions. To improve capacity in those institutions, NIFA wants to enhance public-private partnerships but is mindful of the issue that corporations may place requests or demands on curriculum.

With regard to the issue of open data, Ramaswamy noted that the new Requests for Applications (RFAs) within the AFRI competitive grants program will incorporate language that requires applicants to consider a data management plan. Similar requirements will also be phased in for other competitive grants programs. It was noted that the capacity funds program also generates data but that it is harder to track spending within those programs and the data that are attributable to capacity funds, therefore requirements for open data within those programs will be phased in over time. There is a separate effort for open publications. NIFA will allow grantees to attribute the cost of making data and publications openly available to direct costs so that it is not an unfunded mandate.

In response to a question, it was noted that the USDA has not yet had any reviews of its funding decisions in the same manner that the National Science Foundation (NSF) has faced. However, it was noted that the requirement for relevancy reviews may create challenges for the department going forward.

NATIONAL AGRICULTURAL STATISTICS SERVICE (NASS)

Joe Reilly (Administrator, USDA NASS) gave a presentation to the Board entitled 'Fall 2014 NAREEE Advisory Board Meeting'.

Note: the presentation slides were made available to Board members through the Sharepoint website, and a hard copy was provided to all meeting participants.

The National Agricultural Statistics Service (NASS) issues about 400 statistical reports per year, including monthly crop reports and quarterly hog, pig, cattle and poultry reports. Reilly noted that NASS is now being evaluated on whether reports are issued within milliseconds of their required deadline because of the impact on trading markets.

NASS is continuing to release results from the 2012 Census of Agriculture and is nearing the end of the comment period for drafting the 2017 census.

NASS is working jointly with the Economic Research Service (ERS) to finalize the 2015 Tenure, Ownership, and Transition of Agricultural Land (TOTAL) survey. This survey will identify land owners, operators and uses. The last TOTAL survey was in 1998 so an update is greatly needed. After the Office of Management and Budget (OMB) has approved the survey, NASS hopes to begin data collection in December of this year. The first phase will be a study of who operates agricultural activities within certain segments of land, identification of land owners and information about the land in conjunction with the land management survey – ARM III – being conducted next year. A separate study will target land use by landlords only. NASS hopes to release these results in August 2015.

NASS received funding in the 2014 appropriations for work on organics and has recently completed a data mining study to obtain information about organic production as it was reported in the 2012 census. Next, NASS will work with a risk management agency, which has been tasked with developing a crop insurance program for organic producers. In 2015, NASS will start an organic production survey. Of particular interest is the proportion of a producer's inventory that comprises organic commodities, which will help develop the insurance program. The results of that survey should be released in the fall of 2015. NASS will also begin a Census of Certifying Agents and is in discussions about the possibility of conducting an organic prices survey.

Also in 2015, NASS will conduct a survey that combines floriculture with the 5-yearly horticulture survey. As of 2016, NASS will reinstate an annual floriculture survey.

Other reports to come in 2015 are on Current Agricultural Industries. These reports were previously done by the Bureau of Census, but were eliminated from their budget due to cuts in 2011. NASS is looking to reinstate several programs, including monthly reports on fats and oils, quarterly reports on flour milling, and monthly reports on cotton. It is anticipated that the first results from these surveys will be released early in 2015.

NASS plans to expand the annual honeybee survey to add a few questions related more broadly to pollinator health. NASS will also begin conducting a quarterly loss survey to better understand how hives and colonies change throughout the year. NASS is currently in conversation with ERS about whether to conduct a survey that will gather information about the cost of pollination.

NASS has also added questions related to antimicrobial resistance to the existing programs about hogs, pigs, cattle and poultry.

It was noted that large operations in urban agriculture are appearing and NASS is getting questions about data on urban agriculture, which is not currently being measured. However, NASS is still working out a framework for conducting such surveys. For example, traditional reliance on satellite imagery may not be effective in urban areas where crops are grown under cover or in ways that traditional coverage may not capture. NASS also does not have enumerators for urban areas, since all enumerators currently come from colleges of agriculture across the country. NASS will consider including these growers in the 2017 Census of Agriculture.

Board Discussion

In response to a question from the Board, Reilly noted that foreign ownership of agricultural land may not currently be accounted for in the census. NASS has identified the owner of land that is included in the census but Reilly was unaware if any of the owners were from other countries.

It was noted that the extension network has been working with urban farmers, particularly in 'urban food desert' areas, but that sometimes urban farms go unnoticed by the agency because they operate under glass or other covers that don't allow for traditional mapping. However, Reilly noted that NASS has a sound methodology for determining the economic value of urban agricultural production once the producers can be identified. Urban producers would be included as a farm if they have agricultural production with commercial value (with intent to sell) of at least \$1000. As with other growers, urban producers would be classified as organic if they have been appropriately certified.

It was suggested that NASS would benefit from surveying the new extension group for urban food systems.

In response to a question about tracking land ownership, Reilly clarified that the process for conducting the census is as follows: all the land in the US is divided into segments about a mile square in area, then a sample is pulled from those segments. Enumerators are sent out to look for anybody involved in agricultural activity within the sample areas. If a person is an owner-operator, they will be included in the ARM program. If there is an activity on land not operated by the owner, that will be accounted for by a different method, for example by going through tax records.

ECONOMIC RESEARCH SERVICE (ERS)

Dr Mary Bohman (Administrator, USDA ERS) gave a presentation to the Board entitled 'Updates from the Economic Research Service'.

Note: the presentation slides were made available to Board members through the Sharepoint website.

Like the other REE mission areas, ERS is involved in developing the research action plan for the Pollinator Health Task Force. ERS is also building programs on several pollinator research themes. This past summer, ERS began a program to investigate the impact of land management practices on pollinator health in partnership with the USGS, US Farm Service Agency and the University of California at Davis. In partnership with NASS, the Animal and Plant Health Inspection Service (APHIS), North Carolina State University and Montana State University, ERS is looking into the welfare implications of variable pollinator availability, i.e. the social impacts of variable pollinator health. ERS is also conducting research in other theme areas, including honey and pollination market analysis, ecosystem services and apiary insurance. ERS submitted a Congressional report in August on the economic value of honey bees and other pollinators, which presented results that are consistent with other studies on this topic. In addition, ERS held a workshop, *Economics of Pollinator Health*, which brought together Federal agencies, academics, industry and farmers to discuss current research and gaps in research. ERS produced a pollinator route map, showing the movement of pollinators with respect to crops, which was published in a recent newsletter.

ERS is also conducting research on the issues of sub-therapeutic antibiotic (STA) use and antimicrobial resistance. This line of research is ongoing, with updates produced over time. Key findings of recent research indicate that administration of STA in the livestock sector is not universal, with 38% of finishing hogs in 2009 and 48% of broilers in 2011 raised on operations that stated they did not provide STA use. However, it was noted that because most hogs and broilers are raised on contract operations that receive young animals and feed from integrators, many operators do not know about the specific STA use on their farms.

In the 2014 budget, ERS received funding to scale up work in two areas – behavioral economics and statistical uses of administrative data.

Behavioral economics refers to the idea that the environment in which a person makes decisions affects the outcome, in addition to influences from prices, other economics incentives or tastes. Bohman noted that this area of work strongly relates to agriculture, particularly with regard to decisions about food and the environment. In 2010, ERS awarded a competitive grant to Cornell University to establish the USDA Cornell Center for Behavioral Economics in Child Nutrition Programs (BEN Center). Bohman noted that the research from this center produces policy-relevant results, for example how some simple low cost changes in the school lunch room can lead to significant improvements in food choices and less food waste. The research on food nutrition has been expanding to include adults, for example looking at food purchases among SNAP shoppers. Another competitive grant was awarded in September of this year to found the Duke-UNC Center for Behavioral Economics and Healthy Food Choice Research. Another area of behavioral economics research for ERS is in farmer behavior and the adoption of conservation practices. In September 2014, the CBEAR academic center was established to provide USDA with cutting-edge agri-environmental research based on laboratory and field experiments.

Bohman described administrative data as the associated data that is collected as a routine part of operating a program, such as demographic information and payments made to participants. With increasing computational power, there is interest in mining this existing data for information. The OMB has issued guidance to federal agencies to use these records and to share them across

agencies. But there are challenges to their use, including the quality of data, legal and ethical issues around disclosure and confidentiality, and the sheer volume of data involved. ERS is working with the Farm Service Agency, the National Center for Health Statistics and the Census Bureau on this area.

As mentioned earlier, ERS is working with NASS on the new TOTAL survey of agricultural land use and ownership. This data hasn't been collected since 1998 and has some fundamental uses, for example within ERS for preparing national income accounts for agriculture that go into measuring Gross Domestic Product. It is anticipated that this survey will provide information about the drivers of changes in land ownership patterns, how land ownership affects the benefits and outcomes of programs, and differences between practices on small and beginning farms compared to larger and older farms.

Lastly, ERS has funded a NASS survey of food safety practices that will be in the field in 2015. The survey is motivated by the Food and Drug Administration's new Food Safety Modernization Act, which highlighted the lack of available data on produce growers and their food safety practices. It was noted that this research will be used at ERS but also made accessible to the broader research community.

Board Discussion

In response to questions, Bohman clarified that the survey questions related to on-farm practices are still being developed with the farming community and experts from the extension network.

It was suggested that ERS contact a university group who have recently finished a study on the economics of food safety compliance.

In response to a question, Bohman noted that behavioral economics can be a useful method of examining the issue of food waste. ERS is the source of much of the statistics on food loss, though food waste cannot be separated from general loss in the current data. Behavioural economics strategies focused on the school lunchroom have targeted food waste, for example at the BEN Center. Research that looks at motivating retailers to reduce food loss is not currently part of the research program but is an interesting issue.

In response to a question about the link between sub-therapeutic antibiotic use and obesity, such as has been reported in new research about childhood nutrition, Bohman deferred to colleagues in ARS for an appropriate answer – to be provided tomorrow.

It was noted that the NAREEE Data Management Working Group has complimented ERS on its data management protocols.

In response to a question, Bohman noted that decisions about how to use the SNAP program to influence healthier nutrition choices falls within the Food and Nutrition Service's purview, not ERS.

It was suggested that one way ERS could demonstrate the broader impact of its research is by reporting on the use of ERS data and resources in classroom instruction and educational material.

In response to a question about how to track multiple tracts of land farmed by a single operator, Joe Reilly noted that NASS follows the operator's activities, collecting information about total economic productivity across different locations.

PUBLIC COMMENTS

In response to a call for public comments, a representative from the organization 'The Organic Center' presented a formal comment to the Board. A transcript of the letter's contents is provided below.

"The Organic Center is a non-profit organization with the mission of convening credible, evidence-based science on the environmental and health benefits of organic food and farming and communicating the findings to the public. We are a leading voice in the area of scientific research about organic food and farming, and cover up-to-date studies on sustainable agriculture and health while collaborating with academic and governmental institutions to fill knowledge gaps.

We would like to thank the National Agricultural, Research, Extension, Education and Economics (NAREEE) Advisory Board for its recommendations on top priorities regarding agriculture research and education, and also for the opportunity to publicly comment on the subject.

The Organic Center would like to stress the importance of developing research priorities that are applicable across all areas of agriculture, regardless of production practice. For example, citrus greening disease has been destroying U.S. organic and conventional citrus crops alike. Currently, the majority of research directed at controlling the disease focuses on developing genetically modified citrus varieties and on the use of synthetic chemicals not approved in organic systems. This gap in our knowledge leaves organic growers without the necessary tools to combat devastating pathogens.

Alternatively, the development of organic methods to combat and control crop pests and diseases will also be useful to conventional growers for a number of reasons. Organic farming methods generally require fewer and less toxic inputs. Therefore, by integrating these techniques into their management scheme, conventional farmers can lower production costs while providing a safer environment for their workers. Additionally, organic pest control strategies are designed for long-term control and therefore can provide useful alternatives for conventional producers in the face of developing pesticide resistance. By adding organic management strategies to their toolbox, conventional growers can implement a wide range of techniques for optimal pest and pathogen control.

Another example of necessary research that will benefit agricultural producers regardless of farming method is the development of methods and best practices to avoid contamination from genetically modified organisms. Organic standards do not allow for

the use of genetically modified organisms, creating a clear motive for organic farmers to avoid contamination. However, many conventional producers also grow a proportion of non-GMO crops, and producers who sell their crop for export have additional incentives to avoid the contamination of their crop with unapproved traits.

The Organic Center has convened with industry leaders, farmers and the academic community to determine some of the most pressing issues in need of research that will be of benefit to both organic and conventional farmers alike. These issues include, but are not limited to, developing methods and best practices to protect and promote pollinator health, developing methods for managing drought conditions, developing methods to protect the quality of surrounding waters from agricultural runoff, and determining ways to reduce agricultural greenhouse gas emissions that contribute to climate change.

Again, on behalf of The Organic Center, I would like to extend my thanks to the National Agricultural, Research, Extension, Education and Economics Advisory Board for its commitment to furthering agricultural research.”

The meeting was adjourned for the day at 5:40 p.m. pending an informal evening session.

EVENING SESSION

An informal evening session began at 6:00 p.m. at The Potomac Room located at the Loews Madison Hotel.

WEDNESDAY, OCTOBER 22, 2014

Dr Milo Shult (Chair, the Board) reconvened the meeting at 8:36 a.m. and introduced the day’s agenda.

PART III: Relevancy and Adequacy Roundtable

INTRODUCTION OF ROUNDTABLE TOPIC AND GOALS

Dr Milo Shult introduced the session as being an open discussion about how the Board might approach its charge to review the USDA’s activities for relevancy and adequacy (R&A), ensuring that the Board’s reports are appropriate, timely, and informative, but that the process is not disruptive to the agencies. Shult noted that it is important for these reports to be a reflection of the thinking of the entire Board, and that they be forwarded in time to be useful to the Under Secretary and the USDA.

ROUNDTABLE DISCUSSION

The Board engaged in an open roundtable discussion on several topics related to the process used to construct the 2012 R&A report and possible processes for developing the next report.

Note: members of the Board were provided with a handout containing language from the 1995 Farm Bill that describes the Board’s responsibilities.

The discussion was halted for a short break during mid-morning, after which the Board members introduced themselves before resuming the conversation.

It was noted that the entire Board was able to provide input to the 2012 report, which was an unorthodox approach but considered extremely beneficial. It was noted that the 2012 report was compiled from work done by separate relevancy and adequacy working groups, but that future reports could be done by a single group working on both aspects. For the 2012 report, the adequacy working group adopted a framework of asking and answering a set of questions about USDA performance. It was noted that a similar set of questions could be created to provide a framework for future reports. It was also emphasized that the entire Board should continue to have an opportunity to provide input to future R&A reports.

The Board recognized that development of the R&A report has several challenges, including:

- The Board's members are expected to bring their diverse perspectives to the development of reports and should act as representatives of their respective stakeholder groups. However, final reports need to be based on a collective conversation, and Board members cannot play a lobbying role to Congress while acting as members of the Board.
- The R&A report requires the Board to critically review the USDA while simultaneously responding to requests from the USDA and relying on the Secretary to forward the report to Congress. The Board must retain some degree of independence in choosing what topics require R&A review and not only respond to agency demands.
- The REE mission areas are always at different stages in their planning and implementation processes, so each annual R&A report may contain more or less content related to specific programs as appropriate. One suggested method for evaluating the USDA's portfolio on a given area, for example crop science or human nutrition, might be to undertake a periodic cross-sectional review of all relevant activities across the four mission areas.
- It was noted that, because the USDA's budget planning occurs so far in advance (e.g. at the time of the meeting, the USDA was already working on the 2017 budget), the Board's ability to provide input on budgetary issues will be limited to broad programming recommendations.

Key points of discussion regarding the development of future reports were:

- 1) *Content and Format.* Three types of assessments could be included:
 - Issues that the USDA brings to the Board, e.g. PCAST Balance of Crop Research charge.
 - Issues that the Board identifies internally, e.g. Data Management.
 - Work on R&A themes as part of other specific reports completed by the Board.

The R&A report could include long-term issues of general importance to USDA activities, e.g. cultural diversity of program support, as well as emerging issues that arise or attain higher priority in certain years, for example a cross-agency program that the USDA would like feedback on such as human nutrition. The R&A report should focus on USDA activity over the previous 12 months rather than look at the history of USDA activity, but could rollover topics of concern and/or recommendations from year to year. When special topics of interest arise – e.g. the current work on antimicrobial resistance or pollinator health – that draw resources away from regular USDA activities, the R&A report should not assess the

work done on that topic but could assess the impact of that work on the R&A of the rest of the USDA's mission.

- 2) *Required Inputs*. Several types of information are required as input for the R&A report:
 - REE mission areas should report to the Board at the annual Fall meeting on progress over the previous year, specifically stating how recommendations made in the last R&A report were or were not addressed, and include discussion of their own impact measurements.
 - REE mission areas should also report to the Board on how each agency is working to address a cross-agency issue of concern, e.g. the human health-agriculture relationship.
 - Under Secretary's office should provide a formal response to the report, collating feedback from each REE area on if / how the Board's recommendations are addressed.
 - REE mission areas should provide the Board with any other relevant review documents related to their activities, including those issued by other departments or organizations.
- 3) *Working Group*. The R&A report will be completed by a working group of volunteers drawn from the Board, with a member of the Board's Executive Committee to serve as Chair. Smaller subgroups can be formed to work on specific topics as needed.
- 4) *Timeline*. The Board's annual Fall meeting will be used to draft issues of importance that are to be included in the next R&A report. The Board's annual Spring meeting will be used to discuss the draft report and to make requests for information from the REE agencies.
- 5) *Metrics*. It was noted that the R&A report should use targeted metrics to assess USDA progress, which could be drawn from existing USDA metrics or determined by the Board.

The discussion emphasized the need for continual improvement in communications between the Board, the Under Secretary's office and each of the REE mission areas to provide feedback on the Board's recommendations and to ensure that the Board's reports are useful to the USDA. It was noted that development of the R&A report requires considerable time on the part of the Board, which is only worthwhile if the USDA utilizes and engages with each report.

The Board's discussion raised the issue of cultural diversity and equity within the USDA's programs and funding as being part of the R&A review. To provide a baseline of information to work from moving forward, it was suggested that the REE agencies provide data on current diversity within their programs. For example, when reporting on the numbers of students involved in training capacities, the numbers could be broken up into different diversity groups.

During the discussion, questions were raised about the process by which the Board's reports are received and disseminated. It was noted that the Board's reports are given to the Office of the Under Secretary, who will collate feedback from the REE mission areas and provide a formal response, which is then forwarded with the Board's report to the Secretary of Agriculture. The Secretary then forwards the reports to the appropriate House and Senate committees and provides a written response back to the Board.

It was noted that the Board meetings taking place in Washington, D.C., allow more time for in-depth conversations. However, meetings that take place elsewhere provide opportunities for site

visits relevant to current topics of discussion, such as the experiment station visits in Wooster, Ohio, during the May meeting. It was suggested that future meetings could be planned for locations pertinent to current issues of discussion, such as the cross-agency program focus.

WRAP-UP AND CONCLUSION OF ROUNDTABLE

Dr Milo Shult wrapped up the roundtable discussion by noting that the Board had discussed the following aspects of the R&A report: timeframe, content, format, working group structure, and required communications between the Board and the REE mission areas. With no further comments, it was agreed that the discussion would be concluded, with key points of discussion to be reviewed at a later time in the afternoon.

Note: key points of discussion were compiled during the lunch break and reviewed by the Board following the report by the Data Management Working Group. There was general agreement by the Board members that the numbered bullet points listed above were a good representation of the morning's discussion.

Part IV: Working Group Updates

DATA MANAGEMENT WORKING GROUP

Presentation from Chair

Dr Steven Daly-Laursen (Chair, Data Management Working Group) gave a presentation to the Board entitled 'NAREEE Data Management Working Group'.

Note: the presentation slides were made available to Board members through the Sharepoint website.

The Data Management Working Group was formed at the May 2014 meeting in response to concerns and questions about the USDA's Open Data Initiative. It was noted that the working group adopted a broad description of the issue – 'data management', instead of restricting itself to 'big data', 'open data' or other more narrow references.

Daley-Laursen described several drivers that motivated the work on data management, including: the recent explosion in the volume, variety and velocity of data creation; changes in the process of doing scientific research towards being more computation- and data-intensive; web-based applications that can be accessed from anywhere in the world, allowing sharing of issues and solutions; and two mandates from the federal government. A February 2013 mandate from OSTP requires a plan to support increased public access to the results of research funded by the federal government, while a May 2013 mandate from OMB requires making government information open and machine readable.

It was noted that the working group has been in conversation with the USDA about this issue from the time it was first discussed internally up until the present. The working group convened in July and established 7 areas for the working group to focus on. In September, the working

group held discussions with each of the REE mission areas, the Office of the Under Secretary, the Office of the Chief Scientist, and the Office of the Chief Information Officer.

The working group then compiled a list of ten recommendations in four areas: share planning information; expand stakeholder engagement; expand inter-departmental and inter-agency collaboration; and initiate collaborations with universities. The recommendations and an accompanying report will be submitted to the Executive Committee for review, and then to the entire Board before forwarding to the USDA.

Note: A copy of these recommendations is provided in Appendix D.

The working group believes that the USDA should avoid rushing into investments in data management before undertaking adequate consultation with other agencies and universities. Where possible, it was recommended that the USDA work on joint planning and implementation with other institutions. The working groups recommends that support for data management and data science be part of the infrastructure that USDA considers moving forward.

Board Discussion

The Board engaged in a significant discussion about the issue of data management following the working group's presentation. Key issues that still require resolution include:

- 1) *Cost.* An appropriate cost model for data management has still not been developed. Questions to be answered include: for how long should the direct cost of data management be paid, by whom, and how can the projected future cost of data management be calculated?
- 2) *Compliance.* A question was raised as to the obligation for data management that should be borne by projects who receive only a small portion of federal funding compared to those fully funded by federal sources. Hence clear definitions of the requirements are needed, including the definition of partial funding. The entity responsible for ensuring compliance – institution or investigator – has also yet to be finalized.
- 3) *Data Use and Interpretation.* Concerns were raised that publicly-funded and publicly-available data may be used or interpreted in ways that were not intended and/or for commercial purposes. Hence some oversight of data access and IP protection is required. Additionally, information might be provided as to the original purpose and method of collection for each dataset. It was noted that universities now have processes in place to protect the IP of the data creator, for example graduate student theses.
- 4) *Institutional Differences.* Concerns were raised that some institutions may not be fully aware of the requirements for data management, and that others may be approaching the issue in a non-strategic manner or lack the necessary resources to meet the requirements. It was suggested that increased collaboration among universities and federal agencies would provide for more efficient and cost-effective data management.
- 5) *Cross-agency Consistency.* A question was raised as to how the mandate for data management will be implemented consistently between different federal agencies and departments. It was suggested that OMB and OSTP could play roles in coordinating the rules that are developed.

It was agreed that the working group's recommendations and accompanying report should be finalized based on this discussion for review by the Executive Committee and then the entire Board, and then submitted to the USDA as soon as possible to ensure that the Board's concerns are incorporated into the USDA's planning process on this issue. It was agreed that such a report would remain as a living document so that recommendations can be updated as needed.

It was noted that there is some confusion as to the definition of 'big data' or 'open data' and the requirements for each. Hence it was recommended that the USDA create a fact sheet, available on the website, to provide definitions and explain the relevant requirements to stakeholders and universities.

The working group will continue to pursue a meeting with OSTP on this issue.

It was noted that the NIH has become quite prescriptive in how its funded investigators handle data management, and that some of the NIH's methods may be helpful to the USDA.

The Board agreed to retain the Data Management Working Group as the NAREEE Ad Hoc Committee on Data Management, for continuing work on the issue and providing updated recommendations to the USDA as needed.

BALANCE OF CROP RESEARCH – PRIVATE AND PUBLIC INVESTMENT

Presentation from Chair

Dr Mark McLellan (Chair, Report on Balance of Crop Research Working Group) gave a presentation to the Board about the recommendations of the working group.

Note: no presentation slides were used for this update.

A hard copy of 'A Report on the Re-balancing of the Research Portfolio: Private vs. Public Investments' was provided to all meeting participants.

The report provides guidance to the USDA as to how it may proceed in addressing the concern about re-balancing private versus public funding of agricultural research, as stated in the 2012 report by the President's Council of Advisors on Science and Technology (PCAST).

The report describes the various sources of public funding, in terms of government agencies and grant programs, and acknowledges the considerable built research infrastructure at both the federal and state level. The report also describes the various sectors in which private funding for agricultural research might be found, and emphasizes the need to separate private sector investment in research versus development.

The report lists a series of considerations for the USDA. Firstly, the report suggests that it might be of benefit to society if some intellectual property remained in the public good, rather than being owned by the private sector. An example of where public interest is not matched by private commercial interest is with regard to production of organic varieties. Secondly, it is noted that duplication and replication in the sciences is not viewed negatively but rather is necessary to ensure that results are dependable. Duplication can also be useful in building needed redundancy.

Hence duplication of private and public funding is not necessarily a bad idea. The report then notes that the private sector has exceptional capacity to provide funding for agricultural research, and this contribution must be recognized. Finally, the report notes that training is an essential part of the agricultural economy and requires a certain level of commitment and funding. On the question of comparing competitive grants and capacity funding, the report recognizes that capacity funding has value in two critical ways – providing ‘boots on the ground’ in terms of built capacity that can rapidly respond to emerging issues, and providing diffusion of technology through the extension network.

The report then provides three distinct recommendations to the USDA. Firstly, the USDA should commission a set of studies to create an accurate and broad picture of current private and public funding of agricultural research. It was felt that current data on investment is substantially outdated, and there may be some need to distinguish research from development within private sector investment. It was noted that some entities in the private sector may be reluctant to divulge such information, but intermediaries may play a productive role.

The second recommendation is that the USDA should host various regional listening sessions to assess public opinion on the issue of rebalancing research investment. It was felt that the USDA would benefit from showing sensitivity, awareness and potentially action based on such listening sessions.

It was noted that the third recommendation is perhaps the most impactful: the USDA should host an annual research roundtable for the purpose of sharing information about research focus and research needs within and between the private and public sectors. This would allow each sector to have a better appreciation of where the other is investing. It was noted that it will take time to build relationships and trust across these divides, but that an annual effort for such a roundtable would begin to open up conversations and understanding that has previously been lacking.

Board Discussion

A question was raised during discussion about the monitoring of scale bias. It was noted that private sector research budgets may not be evident until an entity reaches a high level of operations. It was also noted that programs within NIFA and ARS focus on the issue of scale bias and may be used as examples. It was noted that the working group attempted to be scale neutral so that the recommendations and considerations in the report could apply equally to small or large operations.

It was suggested that some intellectual property remaining in the public good is definitely of value to society. A comparison was made to the Food and Drug Administration, which must deal with issues arising over health benefits that cannot be kept proprietary.

General support was expressed for the recommendations for listening sessions and a research roundtable. It was noted that the nature of the research roundtable could be flexible and change focus each year, for example to look at smaller landholders or large soybean growers.

Dr Catherine Woteki noted that the report provides recommendations at a level that is very appropriate for the USDA to act on. She noted that these recommendations will be useful as the Foundation for Food and Agricultural Research begins to develop its portfolio, as it will look at questions of public good and partnerships with the private sector.

A motion was put forward to approve the report for forwarding to the Under Secretary, with an amendment that the phrase on page 3, ‘intellectual property remaining in the public realm **might seem** of value to society’, be changed to read ‘intellectual property remaining in the public realm **is** of value to society’. The motion was accepted by a unanimous verbal vote.

AGRICULTURAL EXPERIMENT STATION SYSTEM REVIEW

Presentation from Chair

Dr Dawn Thilmany (Chair, Report on Agricultural Experiment Station System Working Group) gave a presentation to the Board about the recommendations of the working group.

Note: no presentation slides were used for this update.

A hard copy of ‘Report and Recommendations of the Agricultural Experiment Station Working Group of the National Agricultural Research, Extension, Education and Economics (NAREEE) Advisory Board’ was provided to all meeting participants.

The report provides three broad recommendations to the USDA to: 1) enhance research partnerships with universities, other federal departments and agencies, and industry; 2) increase formula and competitive funding to improve returns on investment, particularly focusing on research relevant to the priority areas, while maintaining the correct balance between formula and competitive funding; and 3) focus the Agricultural Experiment Station (AES) system research on foundational issues.

The report’s first recommendation advises the USDA to establish and facilitate additional research partnerships among Land Grant Universities (LGUs) and within USDA agencies. The report noted that the new Centers for Excellence and the Foundation for Food and Agriculture Research provide opportunities for enhancing the research and impact of the AES system through establishment of creative partnerships. These new activities might allow for efficiencies in research investment or new infusions of money that should be appropriately leveraged to support the AES system. Similarly, the report recommends that the USDA extend research partnerships with other federal agencies, industry stakeholders, non-profit and non-governmental organizations to further maximize the use of available resources.

The second recommendation refers to the balance between capacity and competitive funding for research, and notes that both types of funding are important for the AES system. It was noted that evaluation metrics are important to assess the value of investments. It was also noted that the balance of capacity and competitive funding might be very different in different disciplines, so there may need to be some flexibility across programs.

The report’s third recommendation notes that AES should focus on foundational issues, where REE mission areas play a lead role in research.

Board Discussion

The Board engaged in significant discussions regarding the AES system review and the recommendations that should be made to the USDA. Key issues of discussion included:

- 1) *Equity and Diversity*. It was suggested that the recommendations could be revised to include discussion of an equitable balance of funding and capability between institutions that partner on AES systems, ensuring that the need for cultural diversity is being met. This could be included either in recommendation 1, with respect to partnerships, or recommendation 2, with respect to the balance in funding. With regard to the larger issue of equitable funding and state matching, it was decided to examine the issue more thoroughly in a separate forum from the AES report (see section heading below).
- 2) *Balancing Competitive and Formula Funding*. Concern was raised as to whether the recommendation to increase both competitive and formula funding would be welcomed by different programs and institutions. It was also noted that many programmatic and funding decisions are made at the state level, outside of USDA influence. Hence it was suggested that the responsibility of REE should be to maintain balance within the REE portfolio across the AES system as a whole and to work with state directors of AES on state-based decisions.
- 3) *Relationship with Extension*. It was noted that the work of AES depends on a productive relationship with the extension network. Hence it was suggested that a new recommendation be added as number 3b to describe the link between AES and extension work.
- 4) *Language*. It was noted that the Hispanic-serving institutions are not land grant universities, and therefore do not fall under the AES umbrella, and that AFRI is the competitive grants program of NIFA and does not provide capacity funding. Hence it was suggested that the language used in the recommendations be revised to be more specific and clear.

Following these discussions, a motion was put forward to table the AES report until revisions can be made and to review a revised report at a time to be determined. The motion was passed by a unanimous verbal vote.

Equity and Diversity in USDA Programs

As part of the discussion around the AES report, the Board returned to the broader issue of whether or not the USDA's programs and funding adequately support cultural equity and diversity, especially with regard to capacity funding for minority-serving institutions and tribal colleges, required matches in state funding, and support for workplace training and development. Suggestions were made that the USDA could provide some measures by which states would be penalized for not fulfilling their matching obligations or that the USDA could provide some other compensation beyond waivers to those institutions that do not receive fair funding.

However, it was determined that more information is needed about the current state of equity and diversity in USDA activities before any further discussion can be meaningful. It was also noted that this issue is very complex and the Board will need to be mindful of staying within the bounds of its charge with respect to the advice it can provide to the USDA.

It was suggested that the Board could create a working group to work on this issue across the whole of REE's portfolio, including education, extension and research. The working group could determine the best mechanism by which the Board can review the issue and provide recommendations to the USDA. As part of an evaluation of USDA activities, the Board may create a set of targeted metrics by which equity and diversity can be measured. It was also suggested that the annual R&A report could include an assessment of equity and diversity in USDA funding and programs.

It was agreed that this topic will be revisited at the Spring 2015 meeting, when the Board will ask the REE mission areas to provide information about efforts to achieve equity and diversity within their programs. A suggestion was made to include Carrie Billy from the American Indian Higher Education Consortium (AIHEC), since she is knowledgeable about conversations between the USDA and tribes nationwide.

RELEVANCY AND ADEQUACY REPORT

As the Board discussed the issue of equity and diversity within USDA programs, the conversation returned to the subject of the Relevancy and Adequacy (R&A) report that was begun in the morning.

It was noted that the R&A working group should accept the USDA's offer of help in developing the process for the R&A report over the coming months. It was also noted that undertaking a review of activities within each REE mission area on a given topic or program using specified metrics might be easier than a more generic, higher-level review, from the perspective of both the REE mission areas responding to requests for information as well as the Board members working on the report. The Office of the Chief Scientist may play a helpful role in being a conduit for providing information requested by the Board. It was suggested that the topic under review could rotate each year through the foundational areas.

It was noted that the report from the Balance of Crop Research working group received a very positive response from the Under Secretary because the recommendations were specific and actionable. It was suggested that the R&A report could focus on making recommendations at a similar level. The Board noted that focused, actionable items are more likely to be implemented by the USDA. However, the Board was also cautious to have the R&A report remain independent and not be dictated by requests from the USDA. Again, the Board discussion emphasized that feedback from the REE mission areas on the R&A reports is critical for understanding how recommendations have been implemented or why they have not.

It was clarified that the 2012 R&A report has not yet been submitted to the Secretary of Agriculture or to the congressional committees. Further, it was clarified that the Secretary is required to provide a written response back to the Board on every report submitted. Typically, the Board will not receive direct feedback on reports from the congressional committees unless individual members are invited to speak to the Board, as has been done in the past. It was noted that in the future the Board could invite congressional staffers to speak with the Board and provide feedback about report recommendations if desired.

WORKING SESSION

It was noted that the Board is currently working on several substantial issues, including the R&A report, Data Management, and the new proposed work on equity and diversity. Therefore it is desirable to have the Spring 2015 meeting of the Board close to Washington, D.C., to allow sufficient time for necessary conversations. However, it was suggested that the meeting could take place in Beltsville, Maryland, to provide an opportunity for the Board to meet with REE mission staff about intramural programs while still being close to Washington.

Shirley Morgan-Jordan (NAREEE Program Support Coordinator) noted that all members of the Board should read the general operating instructions for the Board, particularly with regard to reporting, since there have been some changes in the legislation since its first inception in 1995.

PUBLIC COMMENTS

There being no public comment, the meeting was adjourned for the day at 5:30 p.m.

THURSDAY, OCTOBER 23, 2014

Dr Milo Shult (Chair, the Board) called the meeting to order at 8:35 a.m.

CLOSING REMARKS FROM THE UNDER SECRETARY FOR REE

Dr Catherine Woteki (Under Secretary for USDA Research, Education and Economics [REE] / USDA Chief Scientist) provided some closing comments to the Board.

Due to the previous hiatus and government shutdown, Woteki noted that there is a backlog of the Board's reports awaiting an official response. However, the Under Secretary's office is in the process of preparing responses to each report, which will be forwarded to the Secretary with the associated report. Woteki noted that the Secretary has the opportunity to review the Under Secretary's response and provide comments before the response is given to the Board. Hence the formal response will indicate to the Board where the USDA is planning to act on the Board's recommendations and where the USDA is deferring or not planning to take action.

Woteki noted that the top priority is the plan for how the Relevancy and Adequacy Committee fulfils its reporting responsibility and the development of that plan over the next few months.

In response to a question that was previously raised by the Board in regard to the link between human health and antibiotics, Woteki referenced a recently published study from the Johns Hopkins University's School of Public Health. The paper described a cross-sectional study of obesity in young children associated with a variety of factors, including repeated exposure to broad spectrum antibiotics at therapeutic doses from birth to 2 years old. It was noted that there was an increased rate of obesity between the ages of 2 and 5 among the group with therapeutic doses of antibiotics. However, a number of other factors were also associated with an increase in obesity, and importantly the study did not control for socioeconomic status. Hence it was noted that this study cannot prove any causal link between obesity and antibiotic use in children,

and moreover the study is not relevant to antibiotic use in animals because of the withdrawal period required prior to animal slaughter. It was also noted that any theory on the impact of gut bacteria on obesity does not yet have supporting evidence, and that the sub-therapeutic use of antibiotics in animals to promote growth affects the muscle tissue, not fat.

In closing, Woteki mentioned that the USDA is advising its employees to take similar precautions with regard to minimizing exposure to Ebola as they would take for preventing influenza infection, such as hand washing, staying home from work if ill, and avoid shaking hands.

In response to a question about the dissemination process for the Board's reports, Woteki clarified that the reports are sent to the relevant House and Senate committees within a week of when they are submitted to the Secretary. She also noted that she has not received any questions from committee members or their staff about the Board's reports.

The Board informed Woteki that the previous day's discussion about the AES review included a discussion about the issue of equity and diversity, which will be revisited in the future. The Board wants to ensure that no obstacles are placed in front of the work of any institution, and noted that the issue runs deeper than requests for more funding.

As a final comment on the AES review report, Woteki noted that certain issues fall outside of her authority, particularly with regard to annual budgets. She noted that the USDA puts forward its budget requests each year, but as those requests move through the administration they may or may not be incorporated in the overall budget request, which may or may not be included in the actual appropriation. She also noted that when Congress has been generous with the NIFA budget on both competitive and formula funding, it has decreased funding for intramural programs. Hence the Board should be mindful that when it makes recommendations with regard to increased funding, the USDA may not be in a position to comply. She noted that the USDA has requested increased funding for the tribal colleges and minority-serving institutions over the past couple of years but those requests have not been approved. The Board noted that it can provide support to the USDA's requests through its adequacy reviews of USDA funding and programming.

It was noted that the state requirement for matching funds with regard to capacity funding has been reduced from a 1:1 match to a 50% match. Woteki noted that the change is new and said she would investigate the reasons for it.

In response to a question, Woteki noted that the USDA's internal working group on Ebola is developing guidance materials that will include advice for meat handlers.

In response to a question about an aging workforce, Woteki noted that the number of retiring staff within the USDA and other federal agencies is less than what was anticipated five years ago due to the global economic downturn, which severely affected retirement savings. Portfolios are now beginning to recover so the USDA expects an increase in the number of retirements in the near future. With ARS's budget recovering in the 2014 fiscal year, a number of new hires have been made. However, the USDA is wary of making many more hires since it is operating under a

continuing resolution and the budget for the rest of the year is uncertain. Planning for new hires is very strategic, with a focus on future areas of research rather than replacement of current staff.

PART V: Subcommittee Reports

NATIONAL GENETIC RESOURCES ADVISORY COUNCIL

Report from Chair

Dr Manjit Misra (Chair, National Genetics Resource Advisory Council [NGRAC]) updated the Board on NGRAC's activities via telephone.

Dr Stephen Smith (Member, NGRAC, and Research Fellow of Pioneer Hi-Bred International) also joined the conversation via telephone.

Note: no presentation slides were used for this talk.

Misra provided an overview to the Board of the most recent NGRAC meeting, held September 21-26. He noted that the meeting notes have not yet been vetted by the NGRAC committee members for dissemination, but approval should be given soon. The discussion was focused on three issues: 1) the response that NGRAC developed to the recommendations of the Advisory Committee on Biotechnology and 21st Century Agriculture (AC21); 2) genetic issues impacting tribal nations; and 3) the long and short term needs of the genetic resource system.

NGRAC discussed possible action items with respect to the response to AC21. Due to limited resources, it was decided that the committee will provide guidance and advice to the USDA about work on organic seeds. The committee heard a presentation about the organic seed industry and how access to organic and non-genetically modified seed varieties can be improved. The committee also heard a presentation from ERS, who reported that the demand for organic fruit, vegetables, poultry and dairy is increasing, though total numbers are low compared to non-organic production. It was noted that there is a lot of geographic variability in organic production. The committee then discussed each step of how organic germplasm is characterized, stored and maintained, and asked what can be done to ensure access to the source of the germplasm. The committee noted that production of organic seed is much more demanding than non-organic because the crop is required to provide all its own defensive traits, nutrients and yield, which requires a great deal of agronomic skill. NGRAC will its recommendations on this issue and forward them to the USDA.

NGRAC heard a presentation about the needs and issues that Native American groups face with respect to genetic resources. The focus was on protection of intellectual property (IP) with regard to crops and wild fruits and vegetables. It was noted that some work has been done through the USDA and US Forest Service to protect some sources of IP, and that the Forest Service is developing a guidance document. It was noted that Native American people have considerable knowledge about native plants, and NGRAC wants to ensure that knowledge is not exploited without mutual benefit. Misra noted that the committee will continue to work on this issue at its next meeting until some helpful guidance can be developed.

Misra provided an update on the national genetic resources program. The genetic resources system currently receives about 500,000 requests for germplasm and distributes about 200,000 samples per year. It is a large program and the demand for samples is rising, creating some issues around maintenance and budget. It was noted that new information technology provides opportunities by increasing the amount of information that a viewer can access on the internet. This would allow for more selective sample requests since orders can be made more strategically. It was noted that there is a lot of digital material already characterized, so the work that is needed is in collating the information rather than having to generate new information.

Misra noted that the International Treaty for Plant Genetic Resources for Food and Agriculture has not yet been ratified by the Senate and looks like it won't be this year. NGRAC will continue to push for ratification next year, but Misra noted that other countries that have signed the treaty are not currently living up to their obligations.

Finally, NGRAC considered the topic of big data applications for genetic resources with respect to long term value and research needs. The committee discussed whether there is an opportunity and value in non-destructive use of the germplasm that would allow it to be stored for a longer period of time, such as 50 or 100 years instead of the current 5-10 years.

Board Discussion

For the benefit of other Board members, the acronym 'AC21' was explained. It was noted that AC21 deals with the issue of how germplasm management can meet the needs of all stakeholders, including those using organic, non-genetically modified and genetically modified strains in their breeding.

A question was raised as to whether germplasm management suffers from a problem with different ontology between participants from different countries. Dr Stephen Smith noted that it has not been a problem since the germplasm uses species names, which are well established, and each sample is given a unique name and identification number. Dr Catherine Woteki noted that there is a question about common vocabulary in the broader agricultural context. Under the leadership of the Food and Agricultural Organization, the US National Agricultural Library is part of an international effort working to bridge across vocabularies that are used in different databases.

Michele Esch (Executive Director, the Board) added that the NGRAC committee's finalized recommendations will be forwarded to the Board at the Spring 2015 meeting or possibly earlier electronically. Misra noted that the Secretary of Agriculture has sent a letter to the NGRAC committee acknowledging receipt of the interim recommendations.

SPECIALTY CROPS COMMITTEE

Report from Chair

Dr Charles Boyer (Chair, Specialty Crops Committee [SCC]) updated the Board on the SCC's activities.

Note: no presentation slides were used for this talk.

Boyer provided the Board with a description of the SCC membership and described two aspects of the SCC's work as charged by the 1995 and 2014 Farm Bills.

Boyer noted that the current membership of the SCC reflects the 2012 membership, with 3 members of the Board on the SCC – Dr Rita Green, Leo Holt and himself. Other members of the Board who were on the SCC in 2012 have since rotated off the Board. The SCC also has 6 members who represent the specialty crops industry. The practice prior to 2012 was to annually appoint members to the SCC. The Board's Executive Committee wanted more continuity to the membership and tasked a small working group to make recommendations regarding SCC membership. Those recommendations suggested that the SCC be balanced with 6 members from the Board and 6 external representatives, with an additional Board member serving as Chair. At this time, the Executive Committee has not moved forward to appoint additional Board members to the SCC. A challenge is that the SCC membership can never be truly representative since there are more than 300 specialty crops grown across the US, ranging from small producers to large corporations. But the working group's recommendations noted that diversity should be reflected in the SCC membership as much as possible.

The longstanding charge of the SCC is to study the scope and effectiveness of programs affecting the specialty crops industry. Boyer noted that this is challenging because there is so much ground to cover, from invasive pests and diseases to new crop production tools. In the past, the SCC held an annual listening session to collect input from the industry. After the SCC meeting on October 1, it was proposed that the SCC take advantage of its membership and hold micro-listening sessions across the country to develop a better response to emerging needs and programs within the community. That report will be made available to the Board for the Spring 2015 meeting.

The second charge of the SCC is a new one arising from the 2014 Farm Bill, which charged NIFA with conducting a relevancy review on proposals for the Specialty Crops Research Initiative. That charge has created a two-step process – firstly to look at the relevancy of proposals and secondly to look at scientific merit. In addition, the SCC must annually assess the procedures and objectives used for the relevancy review process and provide comments to NIFA for the next round of grants. Boyer noted that this process is very new in terms of how competitive grants are handled.

It was noted that after the Farm Bill was passed earlier this year, NIFA had to scramble to get the call for proposals in place for this fiscal year and establish a relevancy review process to complement the scientific review. Hence the SCC had to urgently meet and provide recommendations for that process. This was accomplished through a conference call and series of electronic document editing. The recommendations were passed through the Board's Executive Committee in February and presented at the Spring 2014 meeting of the Board.

NIFA has now completed the first round of relevancy reviews, and grant awards were announced on October 2. Much of the SCC's October meeting was devoted to reviewing the process used for relevancy reviews this first year.

Boyer outlined the review process as follows: relevancy reviews of pre-proposals were conducted by a group of panels organized around 6 different cropping areas. Those panels provided recommendations as to which pre-proposals should go forward for full proposal development. That process eliminated about 30% of the pre-proposals. Boyer noted that this was a reasonably rigorous process; the program leader observed that the quality of the full proposals was stronger than in past years. Hence it was suggested that this step not be lost.

However, the SCC saw some breakdown in the process between the relevancy and scientific merit reviews. The results from the relevancy review were provided to the scientific panel as an addendum to the full proposals, without clear instructions as to how the reviewers should consider the relevancy review. It was noted that after only one round of conducting this process, it is difficult to see a system that would provide a clear connection between the two reviews and provide fairness in the treatment of each review.

Another constraint is that NIFA would like to develop the next round of RFAs for this program in November, so the SCC is again operating in a tight window to provide feedback on the process for the next year. However, Boyer noted that this should be the last time that such time constraints exist, since the scientific review will be completed by April or May 2015 and the SCC will have until the following November to provide further feedback.

In addition, Boyer noted that a number of the SCC's initial recommendations from February have not been completely addressed, so the SCC is in the process of revising those recommendations.

Boyer ended by asking the Board how the SCC might do better in meeting the requirements for providing advice to NIFA in a timely manner.

Board Discussion

In response to a question, Boyer clarified the review process as follows: preproposals were first submitted for relevancy review. On the basis of that screening, 30% of the preproposals were rejected and the remainder was invited to submit full proposals. The full proposals were then reviewed for scientific merit. It was noted that the SCC spent significant time discussing the procedure for doing the relevancy review – if there could be an algorithmic approach, when the relevancy review should be done relative to the scientific merit review. While the SCC recognized that the scientific review is superlative, the Farm Bill mandates an equally robust relevancy review to ensure that funding has impact and the challenge lies in combining the two.

Boyer outlined three main areas for recommendations identified by the SCC: adding more rigor to the relevancy review process; creating better guidelines for how investigators address relevancy in their proposals; and providing a response about the relevancy review to those investigators who are invited to submit full proposals, so that they may address any issues moving forward. It was noted that the SCC felt that the relevancy review served more as a gate than a gatekeeper and therefore was not as robust as it should have been. To better integrate the relevancy review into the scientific merit review, Boyer stated that for the next round of

applications the results of the relevancy review will be moved to the front of the informational packets received by the panel reviewers, though he was unsure of the effect that would have.

Boyer noted that other recommendations relate to the importance of having the relevancy review understood by all stakeholders and providing feedback on the process to reviewers. It was noted that some proposals seemed not to understand the relevancy question and did not address it well, while others seemed to have rushed to include something related to relevancy.

It was suggested that investigators should be asked to identify which stakeholders have been engaged for each proposal to indicate the potential benefit of the proposal to industry. Boyer noted that a letter of support from an industry stakeholder should be required in support of the relevancy aspect of the proposal.

In response to questions about the scale of the problems with the review process, Boyer noted that he was not part of the review process and couldn't speak to the number of grants awarded or the number that presented difficulties in review. However, while there was general alignment between the relevancy and scientific merit reviews, Boyer noted that there were a few proposals that received high scientific merit and low relevancy reviews. The SCC believes that the relevancy review needs to carry equal weight to the scientific merit review if both reviews are a required part of the process. The challenge is to build a review structure that honors both.

In response to a question about the definition of relevancy, Boyer noted that the SCC struggled with the issue of relevancy versus impact. He noted that if an industry is small, a proposal may be highly relevant to that group but have low impact overall. At the same time, NIFA is intended to be scale neutral and hence the size of an industry should not *per se* determine its relevance. Boyer noted that the interpretation of relevant may be somewhat left open to the individual reviewer, but investigators should still note what industry stakeholders are relevant to each proposal to get some data for measuring returns on investment.

It was suggested that the SCC consult with Dr Ann Bartuska and her colleagues at the NSF who also undertake a dual review process for relevancy and scientific merit.

In response to a question about the role of education in proposals, as required with the NSF's grants, Boyer stated that he was not aware of the need for investigators to include an educational component in their proposals.

The Board was asked if it was comfortable allowing the SCC's recommendations to be forwarded to NIFA in early November with only the Executive Committee's review rather than full Board review, given the time constraints involved. The Board agreed with this suggestion.

With regard to membership, Dr Milo Shult reminded the Board that the Executive Committee has the authority to appoint representatives of the Board as members of the SCC. It was noted that industry members thought the SCC should be comprised of 9 industry representatives and 3 members from the Board. However, it was also noted that at any given time, the Board might have a number of members who are connected to specialty crops and could add to the diversity represented on the SCC, as well as bring a different perspective such as from academia.

Shult called for four volunteers from the Board to join the SCC, noting that Dr Charles Boyer would remain as Chair of the SCC for one more year. Chalmers Carr III, Twilya L'Ecuyer, Julia Sabin and Dr Robert Taylor volunteered to join. Dr Rita Green and Leo Holt agreed to continue as representatives of the Board on the SCC to provide continuity and experience. The Executive Committee will approve the new members at their next teleconference.

Note: Twilya L'Ecuyer's interest in joining the SCC was communicated in her absence by Dr Patsy Brannon.

CITRUS DISEASE SUBCOMMITTEE

Report from Chair

Tom Jerkins (Chair, Citrus Disease Subcommittee [CDS]) updated the Board on the CDS's activities via telephone.

Note: no presentation slides were used for this talk.

Jerkins gave a quick overview of the membership of the CDS, its mission and work, similar to the descriptions he provided at the previous meeting. He noted that the 9 members of the CDS serve at the discretion of the Board.

The CDS met on May 20 in Washington, D.C., with Dr Sonny Ramaswamy and Dr Catherine Woteki in attendance. The first day of the meeting was spent on orientation and background for CDS members, while the second day was spent finalizing budget priorities. Critical work was for the citrus industry to come together and establish research and extension priorities for next year's competitive grants programs. Jerkins noted that the CDS focused heavily on therapies and actions that might provide results in the short term for the existing trees and crops, given the emergency nature of the disease problem in the industry.

Jerkins summarized a chronology of the grant process since May: NIFA developed the Requests for Applications (RFAs) by July, the relevancy board rankings were completed in August, the scientific reviews of proposals are due in November, and it is expected that awards will be announced by December.

The CDS will meet in Florida on December 9-10 and review the outcome of the award process so that it can move immediately into setting priorities for the second year, since the next year's RFAs will be issued in January. Jerkins noted that this work plan implies that the grant awards will be privately available to the CDS at the meeting even if they are not yet publicly announced.

The other action item for that meeting will be to get feedback on the relevancy review process and develop a written summary report to the Board, which is an obligation of the committee.

Board Discussion

A question was asked about the process for grant awards. Jerkins noted that the CDS is not involved in the grant awarding process due to a conflict of interest; the CDS's only input is with

regard to funding priorities. Michele Esch noted that the citrus disease research program is a subset of the specialty crop research program, with similar award types.

The Board asked if there was any encouraging news coming out with respect to fighting citrus disease. Jerkins responded positively. He noted that \$80 million has been invested by Florida stakeholders on this issue, and there is a lot of research coming from the University of Florida system, the USDA and the grant program that is run in Florida. Efforts have been targeted at the host, the pathogen and the vector for the disease. Jerkins noted that the work on hosts is more long term, and that work to limit the vector has probably gone as far as it can. Current work is prioritizing antibacterial solutions to the pathogen. It is hoped that a product might be approved through the EPA as early as next summer or fall.

A question was asked about the extension of work on citrus disease in the Caribbean, since disease vectors may transfer between islands. Michele Esch offered to find out more information.

TRAVEL REIMBURSEMENT PROCEDURES

Shirley Morgan-Jordan (NAREEE Program Support Coordinator) explained the logistics for booking travel and obtaining reimbursements for all Board members.

PUBLIC COMMENTS

There being no public comment, the meeting was adjourned at 10:50 a.m.

RESOLUTIONS, RECOMMENDATIONS AND ACTION ITEMS

Resolutions and Recommendations

- The Board agreed to retain the Data Management Working Group as the NAREEE Ad Hoc Committee on Data Management, for continuing work on the issue and providing updated recommendations to the USDA as needed.
- The Board approved the report of the Balance of Crop Research Working Group for forwarding to the Under Secretary, with the amendment that the phrase on page 3, ‘intellectual property remaining in the public realm **might seem** of value to society’, be changed to read ‘intellectual property remaining in the public realm **is** of value to society’.
- The Board agreed to table the review of the Report on the Agricultural Experiment Station System until further revisions can be made.
- The Board recommended that information be gathered on the current state of equity and diversity in USDA programs and funding to inform further discussions on the issue.
- The Board agreed that the Specialty Crops Subcommittee’s revised recommendations to NIFA on relevancy reviews would be reviewed by the Executive Committee and submitted to NIFA to ensure consideration for inclusion in the FY 2015 Request for Applications. The full Board will review the final report before being formally submitted to USDA.
- It was suggested that the Spring 2015 Board meeting be held in Beltsville, MD, to allow for site visits to ERS intramural programs and conversations with agency staff.

Action Items

- REE agency staff will work with the Relevancy and Adequacy Subcommittee to gather the necessary inputs for the 2015 report and further refine the reporting process.
- Relevancy and Adequacy Subcommittee will produce a draft report using the structure described in this report for review at the Spring 2015 meeting.
- Ad Hoc Committee on Data Management will organize a meeting with the OSTP.
- Ad Hoc Committee on Data Management will finalize a list of recommendations based on the discussion described in this report as soon as possible and write an accompanying report for submitting first to the Board’s Executive Committee and then to the entire Board for review and approval, before sending to the USDA as a living document.
- AES Working Group will revise its report based on the discussion described in this report and circulate to the Board electronically for review before the Spring 2015 meeting.
- REE administrators and directors will provide an in-depth briefing to the Board at the Spring 2015 meeting about equity and diversity within the USDA’s programs and funding.

APPENDIX A: LIST OF MEETING ATTENDEES

A list of public attendees is available from the NAREEE Advisory Board Office.

Tuesday, October 21

PART I: WELCOME

Board Members Present: Dr Charles Boyer, Dr Patsy Brannon, Dr Adriana Campa, Chalmers Carr III, Dr Carrie Castille, Dr Nancy Childs, Dr Steven Daley-Laursen, James Goodman, Dr Govind Kannan, Wathina Luthi, Dr Mark McLellan, Dr Neil Olson, Julia Sabin, Dr Milo Shult, Dr Robert Taylor, Dr Dawn Thilmany, Chad Waukechon.

Board Members Absent: Dr Rita Green, Dr Steven Hamburg, Leo Holt, Twilya L'Ecuyer, Dr Agnes Mojica, Ralph Paige, Dr Chandra Reddy.

REE Advisory Board Staff: Michele Esch.

Other USDA Staff: Dr Ann Bartuska, Dr Mary Bohman, Dr Chavonda Jacobs-Young, Dr Sonny Ramaswamy, Joe Reilly, Dr Catherine Woteki.

PART II: RESEARCH, EDUCATION, AND ECONOMICS UPDATES

Board Members Present: Dr Charles Boyer, Dr Patsy Brannon, Dr Adriana Campa, Chalmers Carr III, Dr Carrie Castille, Dr Nancy Childs, Dr Steven Daley-Laursen, James Goodman, Dr Govind Kannan, Jeremy Liley, Wathina Luthi, Dr Mark McLellan, Dr Neil Olson, Julia Sabin, Dr Milo Shult, Dr Robert Taylor, Dr Dawn Thilmany, Chad Waukechon.

Board Members Absent: Dr Rita Green, Dr Steven Hamburg, Leo Holt, Twilya L'Ecuyer, Dr Agnes Mojica, Ralph Paige, Dr Chandra Reddy.

REE Advisory Board Staff: Michele Esch.

Other USDA Staff: Dr Ann Bartuska, Dr Mary Bohman, Dr Chavonda Jacobs-Young, Dr Sonny Ramaswamy, Joe Reilly, Dr Catherine Woteki.

Wednesday, October 22

PART III: RELEVANCY AND ADEQUACY ROUNDTABLE

Board Members Present: Dr Charles Boyer, Dr Patsy Brannon, Dr Adriana Campa, Chalmers Carr III, Dr Carrie Castille, Dr Nancy Childs, Dr Steven Daley-Laursen, James Goodman, Leo Holt (via telephone), Dr Govind Kannan, Jeremy Liley, Wathina Luthi, Dr Mark McLellan, Dr Neil Olson, Julia Sabin, Dr Milo Shult, Dr Robert Taylor, Dr Dawn Thilmany, Chad Waukechon.

Board Members Absent: Dr Rita Green, Dr Steven Hamburg, Twilya L'Ecuyer, Dr Agnes Mojica, Ralph Paige, Dr Chandra Reddy.

REE Advisory Board Staff: Michele Esch, Shirley Morgan-Jordan.

Other USDA Staff: Dr Catherine Woteki.

PART IV: WORKING GROUP UPDATES

Board Members Present: Dr Charles Boyer, Dr Patsy Brannon, Dr Adriana Campa, Chalmers Carr III, Dr Carrie Castille, Dr Nancy Childs, Dr Steven Daley-Laursen, James Goodman, Dr Rita Green, Leo Holt (via telephone), Dr Govind Kannan, Jeremy Liley, Wathina Luthi, Dr Mark McLellan, Dr Neil Olson, Julia Sabin, Dr Milo Shult, Dr Robert Taylor, Dr Dawn Thilmany, Chad Waukechon.

Board Members Absent: Dr Steven Hamburg, Twilya L'Ecuyer, Dr Agnes Mojica, Ralph Paige, Dr Chandra Reddy.

REE Advisory Board Staff: Michele Esch, Shirley Morgan-Jordan.

Other USDA Staff: Dr Catherine Woteki.

Thursday, October 23

PART V: SUBCOMMITTEE REPORTS

Board Members Present: Dr Charles Boyer, Dr Patsy Brannon, Dr Adriana Campa, Chalmers Carr III, Dr Carrie Castille, Dr Nancy Childs, Dr Steven Daley-Laursen, James Goodman, Dr Rita Green, Leo Holt (via telephone), Dr Govind Kannan, Jeremy Liley, Wathina Luthi, Dr Mark McLellan, Dr Neil Olson, Julia Sabin, Dr Milo Shult, Dr Robert Taylor, Dr Dawn Thilmany, Chad Waukechon.

Board Members Absent: Dr Steven Hamburg, Twilya L'Ecuyer, Dr Agnes Mojica, Ralph Paige, Dr Chandra Reddy.

REE Advisory Board Staff: Michele Esch, Shirley Morgan-Jordan.

Other USDA Staff: Dr Catherine Woteki.

APPENDIX B: BOARD APPOINTMENTS, WORKING GROUPS AND SUBCOMMITTEES

The following positions were voted upon, volunteered or appointed during the October 2014 meeting.

CHAIR: Dr Milo Shult

VICE CHAIR: Dr Steven Daley-Laursen

EXECUTIVE COMMITTEE: Dr Charles Boyer, Dr Patsy Brannon, Dr Carrie Castille, Leo Holt, Dr Mark McLellan, Julia Sabin, Dr Robert Taylor.

SPECIALTY CROPS SUBCOMMITTEE: Dr Charles Boyer (Chair), Chalmers Carr III, Leo Holt, Dr Rita Green, Twilya L'Ecuyer, Julia Sabin, Dr Robert Taylor.

APPENDIX C: PRESENTATIONS

Presentations made available to Board members via Sharepoint or in hard copy:

- ‘National Agricultural Research, Extension, Education, and Economics Advisory Board’, from Dr Catherine Woteki (USDA Chief Scientist, Under Secretary for REE)
- ‘ARS Update and Outlook for FY 2015’, from Dr Chavonda Jacobs-Young (Administrator, ARS)
- ‘Fall 2014 NAREEE Advisory Board Meeting’, from Joe Reilly (Administrator, NASS)
- ‘Updates from the Economic Research Service’, from Dr Mary Bohman (Administrator, ERS)
- ‘NAREEE Data Management Working Group’, from Dr Steven Daly-Laursen (Chair, NAREEE Data Management Working Group)

APPENDIX D: RECOMMENDATIONS OF THE NAREEE DATA MANAGEMENT WORKING GROUP TO USDA

Share Planning Information:

1. Provide NAREEE with USDA's Open and Big Data planning documents submitted to OMB and OSTP.
2. Provide briefings to the NDMWG on the activities of the US Open Data Council and other interagency and inter-departmental groups focused on Open and Big Data.

Engage Stakeholders:

3. Sponsor additional stakeholder engagement on the topics of Open and Big Data and data management, with regulatory agencies, agricultural producers and agricultural consultants.
4. Launch a USDA REEE Data Management website to communicate with universities and other stakeholders. Include information and links that explain the value, best practices and benefits of actively managing data, feature USDA initiatives and efforts in Big and Open Data, and encourage cooperation and collaboration between government and universities on the build out of data management infrastructure.
5. Develop a fact sheet defining Open Data and Big Data, the requirements for complying with mandates for each, and a glossary of terms and definitions relating to each.

Expand Inter-Departmental and Inter-Agency Collaboration:

6. Encourage REEE agencies to consult with the ERS on best practices in data management, given ERS's long history of developing, collecting, curating, serving and publishing stakeholder and agency data.
7. Actively expand interagency and inter-departmental data management collaboration on topics where it can have an immediate, positive effect on major issues (e.g., climate change).

Plan and Implement Data Management Initiatives in Collaboration with Universities:

8. Encourage ARS to consult with and conduct joint planning exercises with land grant universities on the provision of data management infrastructure and policies.
9. Encourage all REEE agencies, especially ARS, to work with universities on the planning and implementation of a data symposium where all can share their plans for the build-out of infrastructure in support of researchers in data-enabled science. Identify areas for cooperation, collaboration and complementarity between universities and agencies.
10. Encourage NIFA to require data management activity and metrics in all competitive research and outreach proposals, to formalize processes for accountability, and to communicate that data management activity should be covered as a direct expense in grant proposals.