

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

**MINUTES OF THE SPECIALTY CROP COMMITTEE
MEETING**

August 2-4, 2016
Oregon State University Foundation, Union Bank Building,
707 SW Washington St, Suite 500, Portland, OR

CONTENTS

EXECUTIVE SUMMARY1

TUESDAY, AUGUST 2

Welcome and Introduction of Members6

Opening Remarks6

Roundtable.....6

Welcome from NIFA.....7
*Dr. Parag Chitnis, Deputy Director, Institute for Food Production and Sustainability,
NIFA*

SCRI Project Director Presentations9
Dr. Dorrie Main, Washington State University.....9
Dr. Doug Walsh, Washington State University9
Dr Dave Slaughter, University of California Davis10
Dr. Bill Snyder, Washington State University10
Dr. Andreas Westphal, University of California Riverside11

**Specialty Crop Research Initiative Presentation of 2016 Program and
Overview of the Relevancy Review Process.....11**
Dr. Tom Bewick, National Program Leader, NIFA

Public Comments12

Listening Session Recap12

Working Session – Discussion of Outcomes of Listening Session.....13

WEDNESDAY, AUGUST 3

Specialty Crop Committee Annual Meeting Tour13
North Willamette Valley Research and Extension Center13
Agricultural Research Service – Horticultural Crops Research Unit14
Agricultural Research Service – National Clonal Germplasm Repository15

THURSDAY, AUGUST 4

Welcome and Overview of Agenda for Day15
Michele Esch, DFO, Specialty Crop Committee

Working Session—Comments on SCRI Grants Awarded in FY201615
Specialty Crop Committee Members

**Working Session – Discussion and Establishment of Recommendations for
FY2017 SCRI16**

Public Comment.....17

RESOLUTIONS, RECOMMENDATIONS AND ACTION ITEMS17

APPENDIX A: List of Meeting Attendees.....18

APPENDIX B: Presentations.....19

EXECUTIVE SUMMARY

The Specialty Crop Committee (SCC), a congressionally mandated committee of the National Agricultural Research, Extension, Education, and Economics (NAREEE) Advisory Board (hereafter “the Board”) met in public session on August 2-4, 2016, in Portland, OR. The main goals of the meeting were to hold a consultation with the National Institute of Food and Agriculture (NIFA) on the industry relevancy review (IRR) process, to consider the past year’s Specialty Crop Research Initiative (SCRI) grants, and to make recommendations about future grant-making efforts.

Roundtable

The SCC members engaged in a roundtable discussion about issues affecting their area of specialty crops and made points about a number of topics, ranging from the controversy over fungicide impacts on honey bees in Florida to the uncertainty created by California’s drought and the vital importance of resolving labor shortages through reform of the H-2A and H-2B programs and the effects of the U.S. Environmental Protection Agency’s precautionary risk assessments in limiting the availability of chemical tools to fight crop threats.

Welcome from NIFA

Dr. Parag Chitnis, Deputy Director, Institute of Food Production & Sustainability, NIFA, discussed key activities occurring at NIFA, such as the tactical science initiative, and remarked on the importance of the \$80 million SCRI grants program. He noted that in October 2016 NIFA plans to hold a meeting to engage in conversation with various stakeholders on the value of big data to agriculture and related issues. He requested that CSS members provide suggestions of people to invite to the meeting.

During a question and answer period, Dr. Chitnis noted that President Obama signed Senate Bill 764 on July 29, 2016, creating a national bioengineered food disclosure standard, and USDA now must implement the law. USDA does not believe that it makes sense scientifically, and with genome editing, there may be no genetically modified organisms (GMO) issue; creating clear regulations will be challenging. Although the USDA Food Safety and Inspection Service, not NIFA, will write the rules, the SCC can make recommendations on the GMO issue to the USDA Secretary. An SCC member noted that growers expect that a solution to citrus green disease will be some form of GMO. The SCRI grants are now requiring a systems approach that is helping to transfer science into applications, but the larger amounts of data are creating computation issues in universities, a problem that the United States must consider as a broader societal concern.

Michele Esch (Executive Director, NAREEE Advisory Board, and Designated Federal Officer, SCC) noted that three SCC positions are open because three members are rotating off the committee: Berry Bedwell, California Fresh Fruit Association; Henry Giclas, Western Growers Association, and Terril Nell, University of Florida. She asked SCC members to recommend colleagues in industry or stakeholder groups who would fit well into the committee. The deadline for nominations is August 12, 2016. Ms. Esch agreed to send the member list so that the SCC can understand the current geographic distribution. In addition, the term for Charles Hall, of the

Georgia Fruit and Vegetable Growers Association, ends in 2017, but he can extend his membership for one more year.

SCRI Project Director Presentations

The five SCRI Project Directors provided 15-minute presentations on the goals of their research projects and accomplishments to date, followed by questions from SCC members.

1. Dr. Dorrie Main, Washington State University, described the “Genome Database for Rosaceae,” which was started in 2002 as a genomics database for specialty crops and in 2015 had 18,244 site visitors from 144 countries.
2. Dr. Doug Walsh, Washington State University, gave a presentation on the “Hops - Specialty Crops Research Initiative,” a legislatively mandated 4-year project that is 85% focused on identifying and addressing threats from pests and diseases and 15% on breeding.
3. Dr. Dave Slaughter, University of California Davis, presented on the Aginnovation project’s “Crop Signaling for Automated Weed/Crop Differentiation and Mechanized Weed Control in Vegetable Crops,” explaining the crop signaling concept and results using the technology.
4. Dr. Bill Snyder, Washington State University, described the project on “Mapping and Predicting Psyllid Sources, Immigration, and Locality-Specific Disease Spread in the PNW,” reviewing the harm caused by the Zebra chip bacterium spread by psyllids that has been responsible for 30% crop losses in the Southwest.
5. Dr. Andreas Westfall, University of California Riverside, presented the project aimed at “Exploiting walnut wild relatives to identify disease resistant genotypes for use in commercial rootstock development,” describing the process for improving rootstocks, starting with conventional breeding, then using biotechnology, genomics, and genetics to advance the project’s goals.

Specialty Crop Research Initiative Presentation of 2016 Program and Overview of the Relevancy Review Process

Dr. Tom Bewick, National Program Leader, NIFA, presented SCRI grant statistics, including data on the steady rise in the size of grants requested for standard and extension projects, resulting in a reduced number of projects being funded. He presented a solution to the problem that would support the program’s goal of starting as many projects as possible. The proposed solution would restrict projects to 4 years instead of 5, and would include publishing historical data on the dollar amounts of requests for pre-applications (the mean, median, min and max), without indicating the maximum allowed. He also discussed a proposal for Workforce Development Cluster Projects (WDCPs) to address the specialty crop industry’s anticipated workforce training needs, informing the SCC that they must decide if now is the time to review and modify the proposal for implementation in 2018 or in 2019 if a Farm Bill is passed. SCC members rejected diverting any SCRI funding from research to WDCPs.

Dr. Bewick noted the need for more IRR panelists; he requested that SCC members offer nominations and said he would obtain the list of participants in the Grand Rapids, MI, and

Savannah, GA, stakeholder listening sessions and contact them as another source of candidates. It was noted that this year's request for applications will be released October 1, with the relevancy reviews following shortly thereafter.

Listening Session Recap

Michele Esch reviewed the listening sessions held in Grand Rapids, MI, December 10, 2015, and Savannah, GA, January 7, 2016, presenting data on the most frequently raised topics. The top issues discussed at the sessions were invasive pests and the IR-4 program, and members agreed more information should be collected to flesh out these areas. Concerns also were raised that each state manages its USDA specialty crop block grants differently, and it was suggested that the block grant manager could be invited to the next SCC meeting.

Members also discussed future listening sessions and agreed that the next sessions should be held in conjunction with the annual Northwest Horticultural Exposition and the Mid-Atlantic Fruit and Vegetable Convention. Chalmers Carr III (Titan Farms), Mike Aerts (Florida Fruit & Vegetable Association), and Phil Korson (Cherry Marketing Institute) will help develop the additional sessions. Members discussed returning to the venues of the previous listening sessions to follow up but some members expressed reluctance to do so; however, a Qualtrics survey of Specialty Crop Alliance members and growers might be useful.

Specialty Crop Committee Annual Meeting Tour

The SCC members took a van to the North Willamette Valley Research and Extension Center in Aurora, where Director Dr. Mike Bondi led them on a tour of the facility's organic blueberry, black raspberry, and other field plots, with presentations by berry crops specialists Wei Qiang Yang and Bernadine Strik. The SCC members then visited the Agricultural Research Service (ARS) Horticultural Crops Research Unit in Corvallis, where they were given a facility tour by Research Leader Bob Martin and interacted with eight scientists from different specialty crop areas who gave poster presentations on their projects. During the visit, Oregon Department of Agriculture (ODA) Director Katy Coba stopped in for a brief visit with the SCC and ARS group, describing the great diversity of the state's agriculture and reviewing ODA activities. Lastly, the committee members visited the ARS National Clonal Germplasm Repository, also in Corvallis, where Supervisory Research Horticulturist Dr. Kim Hummer introduced two scientists, who made poster presentations, and led a tour of the facility.

Working Session – Comments on SCRI Grants Awarded in FY2016

SCC members met and discussed their recommendations on the relevancy review process for SCRI grants, generally commenting favorably on the much-improved system, and discussed grants awarded in 2016. To meet relevancy review panel needs, SCC members recommended that multi-county extension agents be considered because they do not have the conflict of interest that excludes other academic faculty from serving. SCC members should send nominations to Michele Esch or Tom Bewick. The request for grant applications will be released October 1, and a list of reviewers must be ready by November 1. SCC members requested clarification on the timeline and commitments for reviewers and Michele Esch stated that she would provide

clarification, including by sending SCC members the slides used in recruiting relevancy reviewers. SCC members also reiterated their interest in having the list of relevancy-review nominees so they can avoid redundancy in soliciting reviewers.

The SCC members also discussed Tom Bewick's proposed solution to the problem of rising amounts of funding requested in grant applications and resulting limits on the number of projects funded. Members had favorable comments on the proposed solution. In discussing Tom Bewick's WDCP proposal, members agreed it should be a low priority but they will consider the concept and discuss it at the next SCC meeting. Members discussed training that could be conducted through 2-year community college or college programs using non-SCRI funds.

The SCC members discussed the 2015 SCRI grants awarded, commenting that they would not want to second-guess the judgments of the reviewers if applications had received a relevancy review. A member commented on the disappointingly low number of awards, attributable to the fact that the four Coordinated Agricultural Projects awards were large.

Members touched upon the question of whether technology assessment is relevant to the SCC. Requests for applications could include a technology assessment component. Robotics and other technologies are clearly part of the specialty crop industry. One SCC member described grants that must all consider if the cost of implementing a new technology makes sense economically if the technology is proposed for growers to adopt.

General Recommendations and Resolutions

- No funds should be diverted from SCRI research to WDCPs.
- The USDA block grant manager will be invited to attend the next SCC meeting.
- The next listening sessions should be held in conjunction with the annual Northwest Horticultural Exposition and the Mid-Atlantic Fruit and Vegetable Convention. Chalmers Carr III, Mike Aerts, and Phil Korson will help develop the additional sessions.
- Multi-county extension agents should be considered to serve on SCRI relevancy review panels.
- The SCC responded favorably to Tom Bewick's proposal to limit SCRI grants to 4 years, with an optional fifth year, together with the publication of historical data on the amounts requested in applications. However, they deemed the WDCP proposal a low priority.

ACTION ITEMS

- SCC members will suggest to NIFA any names of people who should be invited to attend a meeting in October 2016 about big data and agriculture.
- SCC members will recommend replacements for the three SCC members who are rotating off. To support this effort, Michele Esch will distribute the membership list so the SCC can understand the current geographic representation.
- At the next SCC meeting the members will consider the proposed WDCPs concept and decide if it should be reviewed and modified for implementation in 2018 or 2019.

- SCC members will suggest candidates to serve on IRR panels.
- Dr. Tom Bewick will obtain the names of listening session participants and contact them as a possible source of IRR panel candidates.
- Michele Esch will provide clarification of the IRR timeline and role of panelists, including by providing SCC members the relevancy reviewer recruiting slides.

TUESDAY, AUGUST 2, 2016

Welcome and Introduction of Members

Michele Esch (Executive Director, NAREEE Advisory Board, and Designated Federal Officer, SCC) began the meeting at 8:07 a.m. and welcomed committee members and members of the public. All of the attending SCC members, other meeting participants, and guests introduced themselves. Ms. Esch also provided a brief overview of NAREEE and the SCC meeting's purpose, noting that the Board will deliberate on the SCC recommendations before the USDA Secretary finalizes the process.

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

Opening Remarks

Chalmers Carr III (SCC Chair, owner of Titan Farms) welcomed all meeting participants and reviewed the meeting agenda. He urged SCC members to share with industry partners the message that industry must be the mechanism for SCRI relevancy reviews.

Roundtable

Michele Esch opened the roundtable session, explaining that it is an opportunity for members to bring issues impacting their industries to the SCC's attention. The members made the following statements about issues affecting their area of specialty crops:

- In Florida, the effects of fungicides on honey bees and the resulting impact on specialty crop sectors has become a highly contentious issue over the past three years. Fungicides are applied at bloom and affect the pollinators.
- The H-2A agricultural workers program must be fixed at a national level because labor shortage is a top priority issue for growers in Georgia and elsewhere. H-2A reform must come ahead of comprehensive immigration reform. The Department of Labor has taken an aggressive posture regarding wage and hour issues.
- In Louisiana labor is also a tremendously important issue, with seafood processing among the areas of concern, and both the H-2A and H-2B programs need reform to support the specialty crop industry.
- In California, the drought has created significant uncertainty that is affecting strawberry and other specialty crops and is having a ripple effect on employment.
- Combating a new generation of insects as chemical tools become less available is a challenge. So too are rootstock diseases, for which there is no resistance.
- An H-2A solution for agriculture should be placed in the Farm Bill so the industry can accomplish reform independently from broader reform, a need that is broadly recognized in all of the industry trade associations and among a growing number of lawmakers.
- State block grants are used in different ways by each state and there is concern about implementation.

- Spotted wing drosophila (SWD) is a major problem for cherries and chemical technologies are insufficient; growers are spraying daily to stay ahead of the problem, but the cost of controls is extremely expensive and therefore is not occurring. The cherry industry's continued existence is at risk. In addition, labor to harvest the crops is short, a factor affecting decisions about what to grow.
- To deal with insect problems, the biggest concern, more trained students are needed; entomology programs need more support, especially for horticulture.
- The U.S. Environmental Protection Agency's risk assessments based on the precautionary principle are making it impossible to obtain and maintain registrations for chemical tools to combat threats to specialty crops; the use of such precautionary risk assessments must be slowed down. Although it is unclear what the SCC can do about the issue, the committee must nevertheless voice its concerns. There has never been a comparable time when growers are spending so much money on ineffective tools to combat threats, creating daunting pressure.
- The Entomological Society of America supports a Subject Matter Expert (SME) and Liaison to EPA; Dr. Allan Felsot, Professor and Extension Specialist in Entomology and Environmental Toxicology, Washington State University, is the current SME, and he could be a good advocate. More broadly, scientific and academic societies are increasingly advocating for better science-based decisions through their policy committees. However, as individuals, academics are unable to engage in advocacy.
- Louisiana State University enjoyed major successes when it invited EPA representatives to meet with industry to hear different specialty crop perspectives, but in Florida EPA representatives have visited for 20 years with less success.
- The IR-4 program (Inter-Regional Research Project Number 4) within the USDA Cooperative State Research, Education, and Extension Service has coordinated the visits with EPA; perhaps IR-4 could coordinate a national effort to educate EPA and other policymakers and the SCC could help in such an effort.
- The Committee for Economic Development of the Conference Board, a business-led policy group, is in the preliminary stages of launching a critical industries project to research the economic impact of the food industry.
- The Food Safety Modernization Act (FSMA) has not yet affected specialty crops and training has not yet begun, but training is needed for the law's produce rule. Significant misinformation about FSMA must be dispelled.

Welcome From NIFA

Dr. Parag Chitnis, Deputy Director, Institute of Food Production and Sustainability, NIFA welcomed meeting participants and thanked the SCC members for their work on behalf of NIFA. He remarked on the importance of the \$80 million SCRI grants program, describing it as NIFA's most efficient bureau. Describing activities at NIFA, he cited the work toward transitioning to a new administration, the review of areas needing revision in the next Farm Bill, and the tactical science initiative. NIFA wants to convene all interested parties at the University of Maryland to consider a consistent message to Congress on plant protection.

Dr. Chitnis noted that in October 2016 NIFA plans to hold a meeting in Chicago to engage in conversation with various stakeholders on the value of big data to agriculture and related issues, including what NIFA should invest in the area. There are social implications of big data as companies gain access to such information. Specialty and row crop sectors should be involved in the conversation. He requested that SCC members provide suggestions of people to invite to the meeting.

Additionally, workforce issues are a concern. Pesticide companies are laying off employees but also reporting that they lack sufficient numbers of trained workers; in a competitive environment, companies are spending less on training. The next request for applications could address workforce needs.

During a question and answer period, Dr. Chitnis stated that NIFA has a big data group, and there are 30 to 40 people working on the issue whom he wants to bring to the Chicago meeting. Farmers own the data that they generate, raising questions about whether they should charge for using their data. Dr. Chitnis also noted that President Obama signed Senate Bill 764 on July 29, 2016, creating a national bioengineered food disclosure standard, and USDA now must implement the law. USDA does not believe that it makes sense scientifically, and with genome editing, there may be no genetically modified organisms (GMO) issue; creating clear regulations will be challenging. Although the USDA Food Safety and Inspection Service, not NIFA, will write the rules, the SCC can make recommendations on the GMO issue to the USDA Secretary. An SCC member noted that growers expect that a solution to citrus green disease will be some form of GMO. Another added that many companies plan to use electronic disclosure methods to comply with the new GMO law because of limited label space on products and the electronic information could provide an opportunity to explain the good that GMO science has done and perhaps allay consumer fears.

On the question of how SCRI grants might help in applying more science to agriculture, it was noted that SCRI grants are now requiring a systems approach that is helping to transfer science into applications, but the larger amounts of data are creating computation issues in universities, a problem that the United States must consider as a broader societal concern, including the challenge of retaining data over time and transmitting it between users. Dr. Chitnis stated that infrastructure will be discussed at the October meeting, but unlike the National Institutes of Health (NIH) and other government agencies NIFA does not have an infrastructure program to deal with instrumentation facilities and other such issues; however, in part because the industry raised concerns with Congress, the National Science Foundation and NIH are putting \$50-75 million toward agriculture. The national robotics initiative is relevant to the industry.

Michele Esch noted that three SCC positions are open because three members are rotating off the committee: Berry Bedwell, California Fresh Fruit Association; Henry Giclas, Western Growers Association, and Terril Nell, University of Florida. She asked SCC members to recommend colleagues in industry or stakeholder groups who would fit well into the committee. The deadline for nominations is August 12, 2016. Ms. Esch agreed to send the member list so that the SCC can understand the current geographic distribution. In addition, the term for Charles Hall, of the Georgia Fruit and Vegetable Growers Association, ends in 2017, but he can extend his SCC membership for one more year.

SCRI Project Director Presentations

Michele Esch introduced five SCRI grantee presenters and noted that the purpose of their talks was to hear about the current status of their Specialty Crop Research Initiative grants.

Genome Database for Rosaceae (GDR)

Dr. Dorrie Main of Washington State University explained that the Roseaceae project was started in 2002 at Clemson University as a genomics database for specialty crops, starting with USDA funding for a workshop that produced two agreements. The first was a vision that the GDR would facilitate Roseaceae research, a vision made possible by a highly supportive and engaged community, continuous funding for 2003-2019, and an excellent development and curation team that now includes 13 members around the United States working on discovery, translation, and application research. In 2015, the GDR had 18,244 site visitors from 144 countries. The second agreement was a vision that GDR should develop open source software resources to facilitate sharing of tools and data across the bioinformatics community. A newly designed GDR was launched August 1, 2016, and includes a Major Genera Quick Start section containing data from diverse sources that GDR analyzes. New data entered into GDR in 2015 produced a 97,044 increase in genes, 5 additional genomes, and other increases in genetic maps, genotypes, and other data. Major work in progress includes converting GDR from Tripal 1 to Tripal 2 with a major redesign; designing and implementing a comprehensive breeding information management system (TripalBIMS); evaluating the FieldBook App for collection of phenotype data; adding more GGB data and working on data standards and ontologies; and integrating GenSAS for community curation of annotated Rosaceae genomes. Computation resource needs are great given the high GDR user demand, and some international users are providing funds. Data are kept at a single site, but GDR is moving to a distributed database.

Hops - Specialty Crops Research Initiative

Dr. Doug Walsh of Washington State University is working with colleagues, including a sociologist, on 4-year legislatively mandated project aimed at reducing the impact of industry-critical insect and disease problems in hop through the development of preventive and predictive strategies. As mandated, the program is 85% focused on identifying and addressing threats from pests and diseases and 15% on breeding. The project employs a total systems approach to achieve sustainability outcomes and impacts. The project's research and outreach objectives are several. The researchers seek to discern the impacts on pests of water and nutrient levels. They seek to identify and quantify risk factors that underlie outbreaks of arthropod pests and diseases at multiple spatial scales. As part of this second goal, they seek to develop a damage function and dynamic action threshold for spider mites and hop aphids based on key risk factors; to expand robust molecular diagnostics to predict acaricide resistance in the field; and to develop a predictive model and area-wide management program for powdery mildew in hop. Other goals are to characterize and select varieties with disease and arthropod pest resistance traits as a preventive pest management tool; to conduct timely, targeted education outreach; to assess outcomes from a physical science, economic, and sociological standpoint, as well as to assess changes in knowledge and production practices; and to mentor the next generation of scientists

by involving undergraduate and graduate students in key research and extension activities. Demand for local hops is surging. Today, there are 4,400 microbreweries in the United States and rising, with 90,000 jobs in the industry and a 25-member House Brewing Caucus. Downy mildew will wreak havoc in the Southeast, and even Michigan has problems with the disease.

Crop Signaling for Automated Weed/Crop Differentiation and Mechanized Weed Control in Vegetable Crops

Dr. Dave Slaughter of University of California Davis was funded to research better weed management tools that are needed to contain hand-weeding costs that are high because of labor shortages, increasing labor expense, and a loss of herbicides, all of which threaten vegetable crop grower profitability. AgInnovation's project seeks to develop reliable weed removal technologies for vegetables that can accurately and rapidly differentiate crop plants from weeds as well as automatically remove weeds without damage to the crop. The project uses three core technologies: 1) crop signaling, 2) machine vision, and 3) automated intra-row weed removal. The three will be integrated using a systems approach to create a novel automated solution. Working as partners, AgInnovation and the Centor Group have developed a novel crop marking system, called QuantiMark™ based upon systemic food-safe markers that are applied to crop seeds. When the crop begins to grow, the treated crop plants produce a unique optical signal, allowing a robot to readily tell the difference between a weed and a crop plant. Preliminary results showed that using the Crop Signaling Robotic weeder automatically removed an average 83% of within-row weeds. On average, when follow-up hand hoeing was done, 75% less time was required by workers to hoe within-row weeds following use of the Crop Signaling Robotic system. To be economically feasible, the robotic system must travel at 2 miles per hour. Some marker material would still have to be tested and issues resolved before the system is presented to the Food & Drug Administration for approval.

Mapping and Predicting Psyllid Sources, Immigration, and Locality-Specific Disease Spread in the PNW

Dr. Bill Snyder of Washington State University was funded to pursue a project to address the harm caused by the Zebra chip bacterium (*Candidatus Liberibacter solanacearum*), which is spread by psyllids and has been responsible for 30% crop losses in the Southwest at a cost of \$25 million per year. The Pacific Northwest was thought to be safe because the region's cold weather would be un conducive to the disease's spread, but in 2011 there was a massive outbreak in the PNW. The basic question to be explored was where the disease-spreading Potato psyllid (*Bactericera cockerelli*) was coming from. Bittersweet nightshade (*Solanum dulcamara*) found in swampy areas was thought to be the host and, after graduate students collected samples, thousands of the psyllids were found on the plants. With bittersweet nightshade identified as a potential host, NIFA provided an SCRI 5-year, \$2,688,111 grant for a project aimed at mapping psyllids across the PNW, conducting a molecular analysis of psyllid movement, and developing a decision-support tool. Other habitats near potato fields were mapped and other possible host plants, such as Goji berries, were studied. It was clear that bittersweet nightshade is not the sole psyllid host. In developing a decision-support tool, the aim is a practical tool that will use mobile devices to tell farmers the risks to individual growers' fields, with real-time recommendations about looking for psyllids. Economic analysis is being conducted to understand the economics of

growers' decisions, and sociological methods are being used to determine what farmers like or dislike about prototype support tools. Large SCRI grants are important to enable multiple states to work together.

Exploiting walnut wild relatives to identify disease resistant genotypes for use in commercial rootstock development

Dr. Andreas Westphal of University of California Riverside and a large team of collaborators are focused on breeding disease-resistant rootstocks because walnuts are grown on rootstocks that are subject to various soil-borne diseases. The project's goal of improving rootstocks is using conventional breeding to start with, then using biotechnology, genomics, and genetics to advance the goal of discovering durable disease-resistant rootstocks adaptable to varied soils. Five objectives guide the research: 1) generate diverse *Juglans* germplasm; 2) identify and characterize diverse *Juglans* germplasm resistant to key soil-borne pathogens; 3) generate and clonally propagate hybrid and elite disease-resistant genotypes; 4) develop genomic tools to facilitate rootstock breeding; and 5) deliver disease resistant rootstocks to growers. The breeding process begins with the generation of interspecific full-sib hybrids from selected "Mother Trees," followed by *in vitro* germination of the hybrid seed to produce clonal plants for replicated pathogen testing. Resistance to five targeted pathogens was examined and the strength of hybrid plants' ability to resist the diseases was rated from "no disease symptoms" to increasingly higher rates of symptoms. Thousand cankers disease was identified as an emerging concern. The work is available at the project's website (<http://rootstocks.net/>) and the industry is working collaboratively with the project (www.walnuts.org). So far, the project has screened diverse open pollinated seedlings for pathogen resistance and identified sources of pathogen resistance. Researchers are crossing the best individual sources by *J. regia* to generate full-sib hybrid "Paradox" seedlings and screening clonal copies of hybrids in replicated tests. The research has identified hybrids resistant to multiple pathogens and initiated large-scale field trials of elite germplasm. In addition, participants are developing genomic information for future use in breeding and are selecting new "Paradox-like" rootstocks for commercial walnut production. Significant discussion of GMO perception issues is under way, given that walnuts are an internationally marketed product and could face GMO resistance overseas.

Specialty Crop Research Initiative Presentation of 2016 Program and Overview of the Relevancy Review Process

Dr. Tom Bewick, National Program Leader, NIFA, presented 2016 SCRI grant statistics: 121 pre-applications were received and underwent relevancy review, resulting in 61 invitations to submit full applications, with 19 new awards made and 9 continuations for a total of 28 awards, or 33% of applications being funded. Continuation awards are key to the SCRI program, using transdisciplinary teams to get as many projects in the pipeline as possible. However, in 2011 NIFA senior leaders declare that there would be no continuation awards beyond the Farm Bill, so in the current cycle no funding has been promised beyond fiscal year 2018. Data on Standard Research and Extension Project (SREP) funding requests from 2008-2016 shows a steadily rising dollar amount that is affecting NIFA's ability to initiate projects, even though the goal is to start as many projects as possible. The average SREP request from 2008-2012 was \$1,736,520; the average request from 2014-2016 was \$2,655,715, a 35% increase. The rise is attributable to

the allowance after 2010 of 5-year project periods, rather than 4 years, resulting in a 20% budget increase. A possible solution to the problem that would support the program's goal of starting as many projects as possible would restrict projects to 4 years instead of 5, and would include publishing historical data on the dollar amounts of requests for pre-applications (the mean, median, min and max), without indicating the maximum allowed. That would encourage more realistic management of expectations when applicants submit budget requests. It is unclear how many new projects would be funded under a 4-year cycle, although it was suggested that two rather than five more Coordinated Agricultural Projects (CAP) would be funded; overall, with the 20% more funds available under a 4-year cycle, it is likely that 25 CAP and SREP projects could be funded.

Dr. Bewick also discussed a proposal for Workforce Development Cluster Projects (WDCPs) to address the specialty crop industry's anticipated workforce training needs. The future speciality crop workforce will require a breadth of knowledge, including a traditional understanding of plant biology and skills in using new technologies. The SCC must decide if now is the time to review and modify the proposal for implementation in 2018 or in 2019 if a Farm Bill is passed. In remarks, SCC members rejected diverting any SCRI funding from research to WDCPs

In addition, Dr. Bewick noted the need for more IRR panelists, who must be with industry, not academia. He requested that SCC members offer nominations and said he would obtain the list of participants in the the listening sessions held at the Fruit and Vegetable Expo in Grand Rapids, MI, December 10, 2015, and the Southeast Fruit and Vegetable Conference in Savannah, GA, January 7, 2016, and contact them as another source of candidates. It was noted that this year's request for SCRI grant applications will be released October 1, with the relevancy reviews following shortly thereafter.

Public Comment

Ms. Vic Vong, a summer intern at the USDA, spoke for herself as an activist in remarking that white males dominate the agricultural space, a fact that she is aware of as a woman of color. She questioned what unique challenges migrant farm workers face whose perspective could enrich the discussion of farm issues. Food affects everyone and must be safe, healthy, and affordable.

Listening Session Recap

Michele Esch reviewed the outcomes of the Grand Rapids, MI, and Savannah, GA, stakeholder listening session, presenting data on the most frequently raised topics. The top issues discussed at the sessions were invasive pests, mentioned 12 times in Grand Rapids and four times in Savannah, and the IR-4 program, mentioned 8 times in Grand Rapids and four times in Savannah. Concerns also were raised at the listening sessions that each state manages its USDA specialty crop block grants differently. Generally, participants in Georgia and Michigan highlighted successful programs and projects, but they identified such concerns are there not being enough block grants to meet the needs and a desire for funds to go to state-specific research projects rather than marketing orders.

Working Session—Discussion of Outcomes of Listening Sessions

Members agreed more information should be collected to flesh out the areas of concern, especially the top two, as the SCC develops its report. It was suggested that the USDA block grant manager could be invited to the next SCC meeting. The H-2A workforce and immigration issue also was a big topic at the sessions but the issue is within the Department of Labor's (DOL) bailiwick, with USDA having a slight role, perhaps helping states to determine actual state wage rates in contrast with the extremely high DOL labor rates for the H-2B program. Members discussed improvements needed in the H-2A and H-2B surveys and the possibility of using SCRI funds to survey wage rates as a research and extension question, with results being used to recruit domestic workers. It was noted that the National Council of Agricultural Employers would have to participate and that the issue is on the margins of NAREEE's research focus.

The Food Safety Modernization Act (FSMA) also was discussed at the listening sessions, although by only one person, who raised concerns about implementation inconsistencies and the need for improving Good Agricultural Practices (GAP) audits. SCC members commented on the need to avoid duplicative GAP audits and the benefit of having a "cost-per-acre assessment" to help with arguments about FSMA's actual and perceived benefits. On the issues of SCRI, more money was cited as a need along with more targeted outreach, and miscellaneous other topics were mentioned, such as crop insurance and the Farm Bill's conservation title.

Members also discussed future listening sessions and agreed that the next sessions should be held in conjunction with the annual Northwest Horticultural Exposition and the Mid-Atlantic Fruit and Vegetable Convention. Chalmers Carr III (Titan Farms), Mike Aerts (Florida Fruit & Vegetable Association), and Phil Korson (Cherry Marketing Institute) will help develop the additional sessions. Members discussed returning to the venues of the previous listening sessions to follow up but some members expressed reluctance to do so; however, a Qualtrics survey of Specialty Crop Alliance members and growers might be useful.

The first day of the SCC meeting adjourned at 5:00 p.m.

WEDNESDAY, AUGUST 3, 2016

Specialty Crop Committee Annual Meeting Tour

The SCC members assembled at 8:30 a.m. and were driven in a van from Portland to three research facility locations during a day-long tour during which they met with laboratory directors and researchers who presented work being done to improve various specialty crops.

North Willamette Valley Research and Extension Center

The SCC members first went to the North Willamette Valley Research and Extension Center in Aurora, where Director Dr. Mike Bondi led them on a tour of the facility's organic blueberry, black raspberry, and other field plots. The center is one of 12 around Oregon, nine of them with farmlands, including the Willamette location, which rests on 60 acres of land. The center includes new plantings of hazelnut, the fastest-growing agricultural sector in the state because the China market has exploded in recent years. Because of the California drought, Oregon is seeing 1,000 people moving into the state each month, so water wells are limited. Other crops included peaches, nectarines, and almonds, as well as Christmas trees. IR-4 pesticide research is

conducted in one area of the center. The center has developed the world's first blueberry tree and is working to meet the demand among growers for organic blueberries, which use black landscape fabric and other techniques to control pests and manage nutrients. Berry crops specialist Wei Qiang Yang described his SCRI-funded blueberry project to develop blueberry rootstocks, noting the preferences of different blueberry bushes for heat levels that kill spotted wing drosophila. Bernadine Strik noted that in 2006 growers asked for help in developing trial systems for managing weeds organically, explaining that 10 years of data on weed-management costs have shown huge treatment effects from the cost-effective landscape fabric approaches. She also discussed research on root growth *in situ* and effects of fish fertilizer and other soil amendments. The center also houses the world's leading black raspberry plot. Growers are involved with tasting and rating the fruit, and nurseries pay for licenses to grow patented berries. A culinary breeding network brings together breeders with culinary chefs and restaurateurs to discuss specific colors, sizes, shapes, and other attributes the market demands.

Agricultural Research Service (ARS), Corvallis

The SCC members next visited the ARS Horticultural Crops Research Unit in Corvallis, where they were given a facility tour by Research Leader Bob Martin, who explained that there were 10 greenhouses, refrigerated storage chambers, and 15 scientists at the site, nine researching fruits and grapes and six studying ornamentals. The facility overview was followed by a poster session that included presentations of the following research:

- Dr. Mark Chien, Oregon State University – Overview of the Oregon Wine Research Institute
- Dr. Jeff Chang, Oregon State University, and Dr. Nik Grunwald, ARS – Management of diseases in nursery crops
- Dr. Chad Finn, ARS – Black raspberry project
- Dr. Ryan Hayes, ARS – Overview of the ARS Forage Seed and Cereal Research Unit and seed production research
- Dr. Jana Lee, ARS – Brown marmorated stink bug
- Dr. Bob Martin, ARS – Berry National Clean Plant Network
- Dr. Shawn Mellenbacher, Oregon State University – Breeding resistance for Eastern Filbert Blight
- Dr. Jim Myers, Oregon State University – Vegetable breeding for organic production systems

During the poster presentation, Oregon Department of Agriculture (ODA) Director Katy Coba stopped in for a brief visit with the SCC and ARS group, describing the great diversity of the state's agriculture, 40% of which is sold internationally, and reviewing ODA activities. She remarked that FSMA will represent a sea change for growers, but many do not realize that it is coming and will be significant challenge. The role in FSMA of the National Association of State Departments of Agriculture is unclear, which is struggling with the issue and plans to first use outreach, training, and technical assistance, with few enforcement actions expected. Director Coba also emphasized the broadly shared sentiment in agriculture that comprehensive immigration reform is needed and represents a major issue.

ARS National Clonal Germplasm Repository

As the final stop on their field trip, the committee members visited the ARS National Clonal Germplasm Repository, also in Corvallis, where Supervisory Research Horticulturist Dr. Kim Hummer introduced two scientists who made poster presentations. Geneticist Nahla Bassil explained that the genetics laboratory had begun in 2002 to characterize plant material at the DNA level to determine what traits the repository's resources can bring to elite germplasm, noting specifically that DNA-assisted breeding is being used to improve blueberry qualities and disease resistance. Researcher Jill Bushkara discussed the goals of her black raspberry work sequencing the plant's genome and transcriptome. Preliminary research indicates the crop has the potential to fill a previously unexploited niche that could keep farms in the fruit business. Biological science lab technician Jeanine Denoma described the work done in her lab area, which oversees 1,500 accessions in coordination with the repository in Fort Collins, Colorado. Dr. Hummer led members on a tour of the genetics laboratory and greenhouses for different genera. A collection of 500 different strawberry cultivars contains the most demanded material. The SCC toured the fields where diverse blueberries from many countries were grown and the hazelnut collection on six acres where every tree was a different clonal accession.

THURSDAY, AUGUST 4, 2016

Welcome and Overview of Agenda for Day

Michele Esch opened the meeting and stated that two main items of business remained to complete the NIFA consultation with the SCC: 1) to make SCRI relevancy review recommendations, and 2) to discuss the grants awarded in FY2016.

Working Session – Comments on SCRI Grants Awarded in FY2016

Discussion began with a focus on the relevancy review process, with one SCC member commenting that it went well last year, has improved each year, and with a permanent panel director, Dr. Joseph Bischoff, is expected to be even smoother. It was noted that having more reviewers last year was an improvement because it avoids any individual having too much influence and makes for a more deliberative process. Panels need between seven and nine reviewers and should establish a clear timetable well in advance of the review process so that reviewers can organize their schedules. Recommendations for additional panelists are still needed. Currently, proposal reviews take on average 20 hours per person to complete, but the time commitment is moving in the right direction. The call for proposals must be ultra-clear about the objectives to enable better panel formation. At present, approximately seven or eight panels are in operation, each with five members from industry but no academics because academic experts have a conflict of interest (COI) as potential grant applicants. One concern is that the same reviewers serve on panels every year, raising the issue of what can be done to improve the situation for next year's review. It was recommended that faculty who are multi-state extension agents should be considered for review panels because they are knowledgeable and lack COI. Because the request for applications will be published October 1, a list of reviewers will be needed by November 1. SCC members were urged to send proposed panel member names to Michele Esch or Tom Bewick. The goal is to collect a large list of potential

reviewers. A letter could be sent to the Specialty Crop Farm Bill Alliance groups to solicit candidates. SCC members requested the lists of candidate names so that they do not solicit the same candidates twice or, for example, suggest peach experts when reviewers in another fruit specialty are wanted. Michele Esch will send a reminder to SCC members about nominating reviewers.

Working Session – Discussion and Establishment of Recommendations for FY2017

SCC members emphasized that clarity about the review timeline is necessary, and it was pointed out that with the October 1 publication of the RFA, the review period would likely occur from mid-November 2016 through early January 2017. That timing, however, would be problematic for reviewers from Florida because that is the state's period for full-time crop production. Michele Esch agreed to clarify the timeline. A member commented that what is needed is the equivalent of a job description specifying the reviewers' role and expected time commitment. Michele Esch will verify that the reviewer recruiting slides are up-to-date and then she will send them to SCC members.

The SCC members also discussed Tom Bewick's proposed solution to the problem of rising amounts of funding requested in grant applications and resulting limits on the number of projects funded. Members had favorable comments on the proposed solution. Members supported the idea of 4-year grants, with the option of a 1-year extension, as well as the idea of publishing data on the historical minimum and maximum requests. The range would ensure that smaller requests are not discouraged from applying for grants.

In discussing Tom Bewick's WDCP proposal, members agreed it should be a low priority but they will consider the concept and discuss it at the next SCC meeting. Research needs are great, so none of the research funds should be lost to training. The Food and Drug Administration, for example, should fund FSMA training. Members discussed training that could be conducted through 2-year community college or college programs using non-SCRI funds. A member commented favorably on the concept of a training template that could be used to move young people into specialty crops or agriculture in general.

The SCC members discussed the 2015 SCRI grants awarded, commenting that they would not want to second-guess the judgments of the reviewers if applications had received a relevancy review. A member commented on the disappointingly low number of awards, attributable to the fact that the four CAP awards were large. The fact that 50% of applications were dropped was deemed normal, and it was noted that most applicants who are rejected reapply, revising their applications using the comments they receive in the review process.

A member asked if the goal was to bring researchers from specific regional areas to present their work to the SCC. Michele Esch responded that she would check with Tom Bewick to determine if researchers from another geographic region need to be included in the SCC meeting in Washington, DC, to be held July 2017. Members commented on how valuable they found the poster sessions during the SCC tour.

Members touched upon the question of whether technology assessment is relevant to the SCC. Requests for applications could include a technology assessment component. Robotics and other technologies are clearly part of the specialty crop industry. Grants that one SCC member described must all consider if the cost of a new technology makes sense economically if the technology is proposed for growers to use.

Public Comment: There were no public comments offered on August 4, 2016

Michele Esch described the procedure for obtaining reimbursements for travel expenses.

RESOLUTIONS, RECOMMENDATIONS, AND ACTION ITEMS

General Recommendations and Resolutions

- No funds should be diverted from SCRI research to WDCPs.
- The USDA block grant manager will be invited to attend the next SCC meeting.
- The next listening sessions should be held in conjunction with the annual Northwest Horticultural Exposition and the Mid-Atlantic Fruit and Vegetable Convention. Chalmers Carr III, Mike Aerts, and Phil Korson will help develop the additional sessions.
- Multi-county extension agents should be considered to serve on SCRI relevancy review panels.
- The SCC responded favorably to Tom Bewick's proposal to limit SCRI grants to 4 years, with an optional fifth year, together with the publication of historical data on the amounts requested in applications. However, they deemed the WDCP proposal a low priority.

ACTION ITEMS

- SCC members will suggest to NIFA any names of people who should be invited to attend a meeting in October 2016 about big data and agriculture.
- SCC members will recommend replacements for the three SCC members who are rotating off. To support this effort, Michele Esch will distribute the membership list so the SCC can understand the current geographic representation.
- At the next SCC meeting the members will consider the proposed WDCPs concept and decide if it should be reviewed and modified for implementation in 2018 or 2019.
- SCC members will suggest candidates to serve on IRR panels.
- Dr. Tom Bewick will obtain the names of listening session participants and contact them as a possible source of IRR panel candidates.
- Michele Esch will provide clarification of the IRR timeline and role of panelists, including by providing SCC members the relevancy reviewer recruiting slides.

The SCC Meeting Adjourned at 9:15 a.m

APPENDIX A: LIST OF MEETING ATTENDEES

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

TUESDAY, AUGUST 2, 2016

SCC Members Present: Michael Aerts, Chalmers Carr III, Charles Hall, Phil Korson, Dr Annette Levi, Julia Sabin, Dr Robert Taylor

SCC Members Absent: Barry Bedwell, Henry Giclas, Dr Rita Green, Twilya L'Ecuyer, Terril Nell, Richard Tracy

NAREEE Advisory Board Staff: Michele Esch, Vic Vong

Other USDA Staff: Dr Tom Bewick, Dr Parag Chitnis, Megan O'Reilly

Invited Guests: Carrie Castille, Dr Dorrie Main, Dr Dave Slaughter, Dr Bill Snyder, Dr Doug Walsh, Dr Andreas Westphal

Members of the Public: Camron King

WEDNESDAY, AUGUST 3, 2015

SCC Members Present: Michael Aerts, Chalmers Carr III, Charles Hall, Phil Korson, Dr Annette Levi, Julia Sabin, Dr Robert Taylor

SCC Members Absent: Barry Bedwell, Henry Giclas, Dr Rita Green, Twilya L'Ecuyer, Terril Nell, Richard Tracy

NAREEE Advisory Board Staff: Michele Esch, Vic Vong

Other USDA Staff: Dr Tom Bewick, Megan O'Reilly

THURSDAY, AUGUST 4, 2016

SCC Members Present: Michael Aerts, Charles Hall, Phil Korson, Dr Annette Levi, Julia Sabin

SCC Members Absent: Barry Bedwell, Chalmers Carr III, Henry Giclas, Dr Rita Green, Twilya L'Ecuyer, Chuck Leslie, Terril Nell, Dr Robert Taylor, Richard Tracy

NAREEE Advisory Board Staff: Michele Esch, Vic Vong

Invited Guests: Carrie Castille

APPENDIX B: PRESENTATIONS

Presentations made to SCC members, available upon request to the NAREEE Advisory Board Office or available on the NAREEE Advisory Board website (<http://nareeeab.ree.usda.gov>):

Specialty Crop Committee Project Director Presentations

- Dr. Dorrie Main, Genome Database for Rosaceae
- Dr. Doug Walsh, Hops - Specialty Crops Research Initiative
- Dr. Dave Slaughter, Crop Signaling for Automated Weed/Crop Differentiation and Mechanized Weed Control in Vegetable Crops
- Dr. Bill Snyder, Mapping and Predicting Psyllid Sources, Immigration, and Locality-Specific Disease Spread in the PNW
- Dr. Andreas Westphal, Exploiting walnut wild relatives to identify disease resistant genotypes for use in commercial rootstock development

Othr Presentations

- Dr. Tom Bewick, NIFA Report to the Specialty Crop Committee on the 2016 Program and Overview of the Relevancy Review Process
- Michele Esch, Listening Session Results