

Welcome

- Megan Haidet: I wanted to welcome you all to NIFA Listens: Investing in Science to Transform Lives. My name is Megan Haidet, and I'm a Program Specialist at the National Institute of Food and Agriculture, and we're so happy that you've all come out today to give us your feedback and let us know your science priorities, challenges, and needed breakthroughs that NIFA should address through our research, education, and extension programs.
- Megan Haidet: This is our first in-person listening session of 2018, and it's your opportunity to let us know what you think. This is just one part of a multi-pronged plan that we're carrying out to hear from stakeholders, and those other parts also include the Stakeholder Input Form and an email address. Dr. Qureshi will talk about this a little bit more later.
- Megan Haidet: First, I wanted to recognize my NIFA colleagues here in the room. If you guys could all stand up. We have Kelly Sprute from Communications, Kelly McDonald from our Institute of Bioenergy, Climate, IBEC, and Environment. We have Jeanette Thurston from the Director's office, and Dr. Muquarrab Qureshi, who is the Deputy Director of our Institute of Youth, Family, and Communities.
- Megan Haidet: So I hope when you came in this morning you were able to pick up an agenda. This is our guide for the day. But we are allowing for some flexibility, so if you did not reply that you wanted to speak but you are inspired while you're here, please feel free to sign up to speak - provide your name and organization - and we'll add you on to the end of the agenda.
- Megan Haidet: We invite each speaker to provide comments for up to 10 minutes. Kelly will be giving you a five-minute and two-minute warning. When she stands up, that's when it's time to move off the stage and wrap up. We hope that you can stay on topic and are respectful of everyone in the room. So please silence your phones, and if you need to take a call, please step out. There are restrooms, refreshments, and in case you didn't know, we're recording the session today, so please try to stay at the podium so your image is on video. There will be a live webcast - people may be viewing now - and it will be available in a week or so on our NIFA Listens website.
- Megan Haidet: I think that's about it for housekeeping duties. I would like to, again, invite Dr. Qureshi to come up and provide a little bit more background about why we're doing this, what we did last year, and what we intend to do with the information. Thank you.
- Muquarrab Q.: Is this the changer?
- Megan Haidet: That's the changer. Yup, forward, yup, and that's [inaudible 00:03:24], forward and back.

Muquarrab Q.: Thank you.

Megan Haidet: Mm-hmm (affirmative).

Muquarrab Q.: Thank you, Megan, and good morning, everybody.

Muquarrab Q.: Well, thank you for showing up. This beautiful state of Connecticut and Hartford. The weather is beautiful, although they are calling for a lot of rain coming up. So we thought we'll check in and check out before that thing happens. So, thank you. Thank you for taking the time to come and visit us today.

Muquarrab Q.: For some of you who do not know what NIFA is, NIFA is an extramural science funding agency of USDA. Our mission area is research, education, and economics, and our mission is really to invest in and advance agriculture research, education, and extension to help solve societal challenges.

Muquarrab Q.: NIFA collaborates with leading scientists, policymakers, experts, and educators in organizations in the United States, as well as throughout the world, to find innovative solutions to the most pressing local and global challenges. Scientific progress, we believe, is made through discovery and application, and that helps transform lives of people that we serve.

Muquarrab Q.: NIFA prioritizes its portfolio through several guidances and authorities. Of course, the major guidance and authority comes to us from the Congress in the form of the Farm Bill, and through the appropriation process, which attaches funding to those Congressional priorities. Then we get a lot of directives and priorities through our leadership at USDA, like the Secretary of Agriculture, as well as certain executive orders which come through to us, through the Secretary and the President of the United States and the White House.

Muquarrab Q.: But we also have a fantastic set of subject matter experts in-house - people who are experts in their own fields of science - and also those who are very closely in touch with our land-grant universities, cooperative extension system, and really know the state of the art, ongoing science and scientific and technological needs.

Muquarrab Q.: And we also interact very closely with our USDA colleagues, especially those who are in our mission area. A lot of people in ARS and NASS and ERS and others, who constantly interact with us in sort of discussing what is important for us as a one USDA to tackle.

Muquarrab Q.: And then, in addition to internal stakeholders, as you know, we value input from our external stakeholders, external stakeholders such as you. The input process includes listening sessions across the nation, where stakeholder input - both verbal and written - is collected over a two-month period.

- Muquarrab Q.: NIFA Listens - this is a listening opportunity. This year, 2018, we are asking some very fundamental questions, which we think would be extremely helpful for us to sort of move forward in a way that we can align what NIFA does to the stakeholder needs.
- Muquarrab Q.: For example, the first question we are asking this year where we will really need your help and input is, when considering all of agriculture, what is the greatest challenge that should be addressed through NIFA's Research, Education, and Extension program? So we are talking about our entire \$1.5, \$1.6 billion portfolio. This is not just a listening session for research, or only extension or education. We are talking about general - for our entire, broad portfolio of agriculture.
- Muquarrab Q.: And secondly, in your field, what is the most needed breakthrough in science/technology that would advance your agricultural enterprise? We know breakthroughs result in transformative changes in knowledge, technology, or behavior. And the third question is, what is your - as a scientist - what is your top priority in food and agriculture research, extension, or education that NIFA should address.
- Muquarrab Q.: NIFA Listens continues its input process, as you heard earlier. We have open period 'til November 30th. Stakeholder Input Form is available on the website. You can just go to NIFA website and you will see NIFA Listens links.
- Muquarrab Q.: We are doing, in addition to this open period where you can provide electronic input through the web portal, we are doing four listening sessions. The idea is to go to almost four regions covering the United States. First one is here today. Second one, and the reason I put this slide up, so that you can let your colleagues know that we'll be going to New Orleans in October 18th, Minneapolis, October 25th, and then Albuquerque, New Mexico on November 1st. So that will wrap up our in-person four listening sessions for 2018, and we would appreciate if people can RSVP us about a week or so prior to in-person presentations so that we can put you on the agenda and block the time slot for you.
- Muquarrab Q.: So how will we use, or how do we use, this input which we receive? Well, first and foremost, it really informs our prioritization of what we call our science emphasis areas. We identify the gaps in programming through this input. We determine which programs may be redundant or underperforming. So not only we look forward to starting new programs, but maybe sunseting some programs which, in our stakeholders' opinion, are really not that crucial in terms of their contemporary needs. And we combine this input from NIFA staff, feedback gathered through listening sessions, and in the context of, then, our science emphasis area, this really helps, as I said earlier, identify the gaps in our programs so that when we develop our future budget narratives, we can certainly take these feedbacks into consideration.

- Muquarrab Q.: Just an example of what type of stakeholders provided their input the last time when we did NIFA Listens. Remember, this is the second NIFA Listens session. We've done the last one in 2017 was absolutely fantastic. Very, very successful. Got some excellent input. But just wanted to give you an idea that we had 599 total responses last year. And if you look down here, we had 383 personal opinions and 216 organizational opinions. For example, American Veterinary Medical Association or Poultry Science Association or ... These are the associations I like because they are in my field. I'm sure there are a lot of other organizations. They all came, and they represented thousands and thousands of their membership in bringing up their priorities to us. So this was a great, great experience, some great input from a very diverse group of stakeholders. Organizationally, you see most of the representations was from universities, and then also some for-profit and nonprofit organizations.
- Muquarrab Q.: So what we heard, what we actually heard in terms of stakeholder input last year. One thing which we heard loud and clear, folks, was that big challenges facing agriculture require a systems approach. These challenges - the systems - what ... System can be defined, which is very contextual depending upon what is your context of defining a system, but these systems include economic, social, agricultural, ecological, and technical aspects. So it's really - rather than a siloed approach - a very holistic approach in addressing challenges facing agriculture.
- Muquarrab Q.: And the solutions proposed, what we heard, was that data and technology as solutions to better manage agricultural systems; extension, education, and community development as central to improving agriculture; and the need to strengthen communication between research and extension. So, some very, very valuable feedback in these three bullets, which we really take to our heart and have started addressing these solutions in our RFAs.
- Muquarrab Q.: It's a very complex issue or an exercise to really analyze all the data and come up with what really boils up in terms of either priorities or themes. So we employed some really excellent statistical experts who understood science, who understood agricultural science, and really took almost couple months to analyze all the feedback we got. And what we show here in this slide is really about 20 or so themes which are the top themes which appeared in our analysis from last year.
- Muquarrab Q.: For example, 40% of, oops, 40% of the comments were on data and technology, then plant production, sustainability and agroecology, economics, social systems, extension, soil, ecosystem services, nutrition, forestry and forest health, animal production, organic farming, food security, climate change, native plants, integrated pest management, food safety, microbiome and microbes, bioenergy and bioproducts, and controlled environmental agriculture. I don't think people missed any. But these are really very overarching theme, and if I talk about animal production, there were so many aspects of animal production - all the way from animal health and the need for vaccines and the need for diagnostic tools, need for genetic conservation of stocks. So, each topic

can be then blown up into granular form, what different priorities were really included in those themes.

- Muquarrab Q.: For example, and I'll just give you one example. The top theme, for example, was data and technology. Essentially, 124 organizations and 118 personal opinions, about 40% of all comments, were around data and technology. And the idea was that we have tremendous amount of data, whether it is sequencing data or production data or environmental data or agriculture production system data, that we need to somehow not only know how to put our hands around that data, but also how to effectively use it in developing tools or informing production agriculture.
- Muquarrab Q.: Major areas was data, 15%, genomics was 9%, precision agriculture, diagnostics, robotics, gene editing, and sensors. All of these revolve around not only data, but very futuristic technologies, and you will start seeing these type of languages in our future RFAs.
- Muquarrab Q.: And then, second most popular theme was plant production. Again, very, very broad theme. 99 organizations and 125 personal opinions, 37%. Plants are a central commodity and focus in agriculture-based ecosystems. That was the overarching theme we heard, and all comments essentially dealt with either production agriculture or natural resource conservation.
- Muquarrab Q.: Further granularity - soil health, ecosystem services, native plants, specialty crops, pest management, plant breeding were common related areas under plant production. So, to find out more about NIFA Listens 2017, what I just shared with you in terms of very limited data slides, we have, as Megan said earlier, all the presentations on our website, all the raw presentations, the full report, the analysis, and this set of slides, which I'm sure will be very helpful to you if you want to take those and share them with your colleagues, and also put 2018 comments into the context of what we have listened already in 2017.
- Muquarrab Q.: So, really, thank you for coming and we look forward to your comments. As I said earlier, this is extremely, extremely important for us. Secretary Agriculture, and by the way, I forgot to say that I bring greetings to you from my boss, Meryl Broussard, who loves to be here in these type of gatherings but could not because of personal reasons, and also our Director, Tom Shanower, our Secretary Agriculture, Honorable Sonny Perdue, and also our Deputy Secretary, Steve Censky, and our REE Administrator at this point, our Under Secretary, Dr. Chavonda Jacobs-Young. They all are thrilled and excited that NIFA is doing stakeholder listening sessions because we consider customer experience and customer satisfaction as a top priority of this administration, and listening to people and then aligning our efforts really brings everybody on the same page, and that's really the spirit why we are here.
- Muquarrab Q.: So I'm looking forward to listening to your comments and we'll take very serious notes. We'll listen to your comments without any judgment, without any preconceived good or bad ideas. We'll just note them down. We are being

recorded. And I assure you that when we analyze them, we'll get some really great nuggets out of your valuable input. So thank you, thank you very much.

Mike O'Neill from University of Connecticut Extension

Megan Haidet: Wonderful. Well, shall we begin? First up is Mike O'Neill from University of Connecticut Extension.

Mike O'Neill: I timed it. Okay, good morning, folks. On behalf of the University of Connecticut and my colleagues across the Northeast region, I'd like to welcome the NIFA family here to Hartford. I hope that you get some time to explore Connecticut and some of the surrounding states so that you get a sense of the diverse agricultural production and unique rural communities that make up our region.

Mike O'Neill: For the record, and this is my mea culpa, I guess, I would like to state that NIFA does listen. Last year, I went to the regional listening session which was conducted in Washington, D.C. And at that meeting, one of my comments was that the Northeast region, this region, extended far beyond the D.C. beltway, and I encouraged them to visit some of the other great cities in the Northeast region. Mission accomplished. Thank you very much.

Mike O'Neill: I have three comments for the record that I would like you to consider. First, throughout New England, and across much of the Northeast, small, diversified farms are an integral component of rural communities and their economies. The demand for regional food, or food produced in the same region in which it's consumed, has been on the rise. This demand for local food has helped support a New England industry that has really been in decline for many decades previous to this, with the number of small farms decreasing and the median age of farmers continually rising.

Mike O'Neill: While these farms only represent a small economic impact nationally, they are the cornerstone of the social fabric in our rural communities. Moreover, many of the farmers who operate these small farms are now focusing on working in concert with and enhancing ecosystem services, and I believe this represents an opportunity for NIFA to support the future of agriculture in our region.

Mike O'Neill: The emphasis of NIFA programming on food production has not adequately supported or recognized the importance of social, economic, and environmental benefits of small, diversified farms in sustainable rural communities of the Northeast. These benefits are accrued by the farmers, but also the consumers, their families, and many other citizens in the region.

Mike O'Neill: The ecosystem services provided by diversified food production systems can produce benefits such as regulation of soil and water quality, carbon sequestration, support for biodiversity, and cultural services. Without a deliberate investment to support the research and extension necessary to develop best practices that support these agroecosystems, agriculture could

also be the source of numerous disservices, including loss of habitat, nutrient runoff, sedimentation, greenhouse gas emission, and pesticide misuse. So, we really believe working on these small farms is critical to the environmental and social health of the region.

Mike O'Neill: NIFA is faced with an opportunity to support integrated research and extension activities at a regional scale to enhance ecosystem farming practices. NIFA has the capacity to enable transformative changes in the rural economy and the rural economic landscape by investing in coordinated regional activity that promotes ecosystem farming.

Mike O'Neill: I believe there are two potential solutions to meet this challenge. The first is increasing the funding and providing Coordinated Agricultural Projects, CAPS, that you've developed, in the range of \$2 to \$5 million in support of ecosystem farming through your Small Farms Program. The second would be broadening the scope of the Sustainable Agricultural Systems Program and the 20-year goal statements to reflect the importance of small farms, rural economies, and ecosystem services provided by these farms.

Mike O'Neill: The value of agriculture is not simply total food production. A strong agricultural economy needs farms and farmers working the land at multiple scales. You asked for the greatest challenge, the most-needed breakthrough, and the top priority for investment across all of agriculture? In our region, I believe ecosystem farming is the answer.

Mike O'Neill: I know that you're here seeking input on innovations that can transform agriculture, and so my second comment focuses on your support for the people and infrastructure needed to generate these innovations in agriculture and rural communities. Land-grant universities across the nation have produced the vast majority of innovations that have transformed agriculture for more than a century. The Capacity Funds that you provide to land-grant universities create a stable platform to spark these innovations. Capacity Funds that we receive at the University of Connecticut from NIFA for research and extension programs allow us to pilot new concepts that otherwise would not be possible.

Mike O'Neill: Just a quick example. Couple years ago, Connecticut passed a ban on the use of pesticides on public school playing fields. Our Turfgrass Research and Extension faculty team has been working with school facilities managers to develop practices that promote healthy turfgrass while meeting the pesticide ban. Dr. Jason Henderson, from our Department of Plant Sciences and Landscape Architecture, created an attachment for lawn equipment that selectively targets weeds growing on playing fields. The weeds are damaged and suppressed, allowing healthy turf to flourish.

Mike O'Neill: Jason's work was possible because he was able to leverage the Capacity Funds that we provided and that you provided from NIFA with industry funding to create this implement. So I ask that you continue, and if possible, grow your

support for the Capacity Funds so that land-grant universities can continue to innovate solutions to regional challenges.

Mike O'Neill: And my final comment, and I suspect that you're gonna hear this many times today and throughout the course of your listening session, addresses a broader concern for future funding opportunities in agriculture in rural communities. It is imperative that NIFA remain in Washington, D.C. Too often, partnerships from federal agencies that create the best opportunities for innovation happen there. As a former national program leader for NIFA, I know that those federal partnerships take place because program leaders build relationships across agencies and departments.

Mike O'Neill: During the time that I worked at NIFA, I participated in three federal funding partnerships that addressed water resource issues. I was able to leverage a modest investment by NIFA with funding from the National Science Foundation, the Environmental Protection Agency, and the Natural Resources Conservation Service in multiple grant programs. Those partnerships developed because I was able to build relationships with program leaders in other agencies who shared a common interest in addressing water resource issues. The opportunity to meet face-to-face with those partner agencies opened the door for me to multiply the USDA investment and the impact of that investment of NIFA's resources.

Mike O'Neill: As federal budgets shrink, it will be imperative for federal agencies to seek partnerships that will fund the most impactful research, education, and extension programs. If NIFA is relocated outside the Washington, D.C. metro area, your ability to leverage your investments in science will diminish. Thank you for the moments to offer these comments.

Megan Haidet: Thanks, Mike. I think you took my notes.

Kieran Foran from Trifecta Ecosystems

Megan Haidet: All right. Up next, we have Kieran Foran from Trifecta Ecosystems. Thanks.

Kieran Foran: Hello. As she said, my name's Kieran. I'm from Trifecta Ecosystems, Connecticut's only commercial indoor aquaponics farm, and I'm here to kind of voice the opinion on that 3% of the controlled environment agriculture that so often gets overlooked.

Kieran Foran: So, as little as five years ago, there was no such thing as commercial aquaponics in the United States. It was something that was a hobby thing and really much practiced in back yards, and didn't really make its way into the industry until about five years ago, when we started seeing farms pop up in areas where there's a lot of sort of climate change and resource inefficiency - so, areas in the South that are lacking in water and areas like Hawaii who have to rely heavily on imports - and then slowly the transition has been making its way into cities and urban environments.

Kieran Foran: So, one of the things that NIFA is trying to figure out is, as we see in the next decade that we're about to add another billion people to the planet and I think it's the U.N. reports that about 80% of those people are gonna be living in cities, and we already see that our resources are stretched thin in terms of our capacity to produce food, it is where and how are we going to incentivize farming in ways that hasn't been done before. So, places like urban rooftops, places like old abandoned warehouses. And that's sort of one of the challenges that my company is trying to take on.

Kieran Foran: And one of the biggest things that we're seeing across the industry, and one of the biggest areas where we have a problem is sort of, to what Mike was commenting on, the average age of farmers in the mid-60s, and there's not really a succession plan that is coming about for how they're gonna take over those farms. But one of the only areas that we're actually seeing an input of new farmers is in controlled environment agriculture. It's one of the few sectors that people under the age of 35 are actually coming in, and it's one of the only areas where first generation farmers are sort of taking up the pitchfork, for lack of a better term.

Kieran Foran: But the problem is there's not a lot of resources and extension activities that are focused around helping farmers in this new paradigm. There's plenty of resources out there and I think they need to stay there for the [rural 00:29:51], but going about farming in an urban environment and going about farming using new technologies like aquaponics, hydroponics, aeroponics, there's not a lot out there. A lot of us that are in this industry are sort of doing it blind and just trying to figure out our way as we go, and what we need is to sort of incentivize, both in the schools, but also through the extension, the ability for new farmers to get the knowledge and the resources they need to be successful.

Kieran Foran: Now, of course, that's gonna happen through some technological breakthroughs. That's one of our biggest barriers to success. Anything we can do to increase our efficiencies and that all revolves around controlling our environment, so whether that's HVAC efficiencies, whether that's LED efficiencies, or just automating parts of our labor through robotics or something like that, that's all great.

Kieran Foran: But our biggest, biggest issue is that we don't have a trained labor force and we don't have anyone coming out of the university system that's sort of got experience in this field in these new styles of farming - hydroponics, aeroponics, aquaponics. They're barely taught at the university level, and even less so at the K through 12 level. UConn is actually one of the few universities that actually has aquaponics on their student farm, so kudos to them for that.

Kieran Foran: And it's great to see those things. But we went through a round of hiring this year, and the biggest shock for us was how little experience people came in to the field. We're hiring and training people and teaching them from the ground up, which is great and that's a fine way to do it, but if we could actually have

qualified candidates, it would allow us to expand faster, it would allow us to put farms in more urban areas. And so that's sort of where we need to, in our opinion, to sort of put the focus for the resources. So anything that NIFA can do that'll help incentivize STEM learning through farm-to-school programs, and then extension services to help new farmers get into growing in urban environments I think would be a great use of resources. Thank you.

Sandy Bushmich from the University of Connecticut

Megan Haidet: Thank you. Next up we have Sandy Bushmich from the University of Connecticut College of Agriculture, Health, and Natural Resources.

Sandy B.: ... To put it down here for the short folk. Thank you, Megan.

Sandy B.: Thanks very much for letting me come here and speak, and Karen, thanks, you were talking to me. So thank you very much for those comments. I've heard Mike's before.

Sandy B.: Anyway, just a little background on me, I'm a veterinarian, and in the past, my 29 year career in academia, I mainly focused on infectious diseases and veterinary diagnostic medicine and vector-borne diseases. A year and a half ago, I switched gears and joined the deanly staff at our College of Agriculture, Health, and Natural Resources at the University of Connecticut as associate dean for academic programs. This has allowed me to pursue my passion full time for undergraduate education.

Sandy B.: What I'm going to talk about is what I see as challenges and needs for NIFA, we'll encompass both of those things. So, the greatest challenge that I see for NIFA is to develop the next generation of scientists who can creatively address major challenges related to agriculture in the broadest sense. I think sometimes, probably nothing, folks in DC, but our stakeholders have a limited view of agriculture. We have to remember that agriculture, I'm speaking to the choir here, but incorporates food production, health, natural resource management, and environmental and economic sustainability. So we need scientists, we need young people, new people, who can address these diverse needs in novel, collaborative ways.

Sandy B.: I believe that NIFA could accomplish this by more fully embracing the one health concept of foundational interrelationships among animal health, human health, and environmental health. The topics that were listed in the introductory thing encompass a lot of these, but it's the way people look at them as meshed. That's what I'm talking about. We have all the components, we say we don't want to work in silos, but how much are we really thinking that way. I think, generation Z, coming right up, they're folks that really look at things wholistically, so it's a real opportunity for us.

Sandy B.: Thinking this way will complement workforce development, but it adds a different slant to it. I believe that NIFA can play a pivotal role in this process by continuing to strongly support funding for innovations in undergraduate education. NIFA does support these things, and I'm so grateful, such as the higher education challenge grant program, the research and extension experiences for undergraduates program, and the workforce development programs. I believe that funding priority should be given to proposals that look at the issues and impacts of research, teaching, and extension programs through the lens of intersecting human, animal, environmental health, and sustainability. NIFA research and graduate education funding could follow suit. I'm not limiting my plea to undergraduates only.

Sandy B.: The next request for us to talk about is what you see as the most important breakthrough. From my perspective, as someone interested in infectious diseases, veterinary medicine, and higher education, what we really need as a breakthrough is a change in behavior that would occur if scientists actually approached problem solving, big problem solving, even little problem solving, with the one health mindset as opposed to the single disciplinary approach. This is hard. I know it's been coming for a while, but it's difficult for people to think out of their own area and to embrace diversity. That's what we're talking about, right? Diversity in science. So I believe that enhanced NIFA support of planning grants to encourage interdisciplinary collaboration and research extension in higher education are really essential in promoting this mindset.

Sandy B.: Prioritization of funding for proposals that demonstrate this collaborative one health approach would help affect the needed change. You know, money talks, right? That's how we're going to be able to get change in behavior more quickly. I believe that key problems in agriculture and planetary well-being cry out for an integrative, truly complementary and interdisciplinary approach. Sometimes when we talk about interdisciplinary, it's lip service to some other area, but a truly collaborative approach.

Sandy B.: So, lastly, my top priority for NIFA, you can already guess it, is wide adoption of a one health collaborative interdisciplinary method of approaching agriculture, natural resource, health, and education issues. One health could become a USDA mission relevant area. I believe that this would result in improved diversity and efficiency in finding solutions to key problems in all of our regions, and in the country and across the globe.

Sandy B.: Thank you.

Kathy Engle-Dulac from the Institute of Community Research

Megan: Wonderful. Next up, we have Pete Gorman. Are you here, Pete? Nope. Okay. So, after that, we will have Kathy Engle-Dulac from the Institute of Community Research.

- Kathy E-D: Okay, once again, those of us who are vertically challenged.
- Kathy E-D: I feel kind of out of place, I'm in a room full of hard scientists, and I'm really what is considered a soft scientist. I'm a social worker, and I work with anthropologists at the Institute for Community Research. I have that tone, apparently.
- Kathy E-D: I am honored to have the privilege to work with youth programs across the state of Connecticut, in the Connecticut Youth Food Program Alliance. We're a network of 12 programs located predominantly in urban centers across the state connecting young people directly to the land and leadership skills through that connection.
- Kathy E-D: When you ask what the greatest challenge facing agriculture is today, oh Lord have mercy, the greatest challenge that I see facing agriculture today is the aging out of our farming population. Fillings are rattling. In the state of Connecticut ... I don't like that thing. In the state of Connecticut, the average age of farmers is about 60 years. On over 2,000 of those farms, the income from produce sales last year was less than \$1,000. When you're encountering the age of 60 and you're trying to plan your transition out of your professional life, your income being under or just about \$1,000 makes it very difficult to encourage anyone else to engage in what you're doing.
- Kathy E-D: Simultaneously, we are looking at a world where the climate is changing. You may have heard just last Monday, the report from the IPCC citing the need for immediate action to address and begin to reverse climate impact. Our current food system leaves food production isolated, predominantly in rural areas, whereas consumption occurs mostly in urban and suburban areas. This relies heavily on transportation, and in fact denies agency for urban residents to dictate what is grown and what is made available to them. It also creates a lot of opportunities for problems and interference in food access.
- Kathy E-D: In naming ways to address climate change, the same governmental body cited calls for increased equity, which they define along three dimensions. Intergenerational, cooperation between generations, international, cooperation between states, and national, cooperation between individuals, which they define along two axes, incurring procedural justice, participation in decision making, and distributive justice, so that costs and benefits are shared equally.
- Kathy E-D: In order to see a food system where this is happening, we need to begin to move food production into areas where consumption is taking place. So the most needed breakthrough in agriculture, I think involves inclusion of those soft sciences, particularly focusing on meeting needs of individuals in cities to connect to the land. Increasing land access for farming programs, particularly for young people. Currently, most of that land access takes place through long-term leases through the city, which run about five to ten years. The alliance that I get to coordinate is in its fifth year, so we are beginning to see the end of those leases. These leases, as they currently exist, keep ownership located with the

city, and as farming addresses issues of blight, neglected landscapes, contaminated soils, the values of those properties under lease increase dramatically. The city owns the land, the value increases, it leads to a non-renewal of those leases. So programs that have dedicated time and sweat, blood, and tears to this land lose access to it.

Kathy E-D: That loss of access undermines the participant connection to the land, community reliance on established access to produce, and it limits the ability to grow perennials in sustainable practices that we would refer to as permaculture. If we can focus on moving food production into urban centers, we decrease reliance on distant rural providers and diminish the need for farmers to necessarily have to produce and begin to increase the perspective of farmers as experts, as really knowledgeable and ... I can't think of the word. Very respectable people, who do more than just feed us, but possess knowledge that we really and truly need as they develop opportunities to come in and educate urban youth in practices of farming.

Kathy E-D: We decrease opportunities for issues in the food system by localizing production in the community where consumption happens, and we increase opportunities for residents to have an equitable say in what crops are grown, what they can use, and what they will eat. So this begins to address some of the health disparities that we see.

Kathy E-D: So if I had the opportunity to name the top priority, I would emphasize concepts of youth leadership and the connection to the land. Programs that build collective efficacy through such tangible skills as effectiveness in group identification and working for change, identifying issues and barriers within communities, cultural and political wisdom, and civic responsibility are very tangibly connected to programs that connect young people to the land where they live. Over the course of the five years that I've worked with this alliance, I have seen some incredible growth among individuals and groups of young people in Hartford, in New Haven, in Bridgeport, where young folks come in thinking that they're just going to collect a paycheck for the summer, and they leave going from, "Yeah, I might graduate high school," to, "I'm enrolled at UConn and I'm so excited." "I'm looking at social work and anthropology." "I'm looking at agriculture, at political science." From, "Yeah, I might make it through tech school."

Kathy E-D: And it is, they individually directly correlate their goals and their success to the work that they have done through programs that connect them tangibly to the land. There's more to be said about the importance of kids getting their hands in the dirt than just, "It makes for more laundry."

Kathy E-D: I hope that you will invest in assuring land access for urban youth. Thank you.

Cameron Faustman, from the University of Connecticut

- Megan: Thank you. Next, we have Cameron Faustman, from the University of Connecticut.
- Cameron F.: Good morning everyone, and I'd like to thank NIFA for coming this far north, in the northeast, and giving us an opportunity to participate, and some of my colleagues from other institutions and areas to participate, where we might not have been able to otherwise. I also want to thank you for the incredible layout of refreshments that you have over here in the corner. These listening sessions look like they're just going to be a lot of fun.
- Cameron F.: In any event, first, I'd like to start off by echoing my colleague Mike O'Neil's comment, I know as he said, you'll probably hear it, and I even said to [inaudible 00:47:35] before we started the session that I realize that the folks from NIFA here today didn't probably have a role at all in this decision, and likely may not be pleased with it, or they may. But the proposal to move NIFA out of the DC area is one that, from an academic research/education viewpoint, is one that we view as just a real negative consequence of whatever's driving that decision. Principally, the reasons are what Mike O'Neil said, which is the proximity that you have in the Washington, DC area to other science agencies, we think is critical for certainly your functionality, for their ability to be more likely to interact with the USDA as a partner as well. So it's a two-way street there. I think Mike captured it well, so I won't say any more there.
- Cameron F.: I do think that staying close with other science agencies reflects on USDA as being more of a science-driven agency, or NIFA as being a science-driven enterprise of USDA, as opposed to a commodity-driven one. I think that's an important reputation to have and maintain.
- Cameron F.: One of the greatest challenges that I wanted to highlight along with my other colleagues from UConn who chose theirs as well, but the one I want to highlight today has to do with how agriculture will produce enough food for the anticipated population that will exist by 2050. There's three ways that that could be accomplished. One is to just become more efficient with existing land and that's something that American agriculture's been very good at.
- Cameron F.: A second way is to make more land, and that means usually some deforestation to remove trees, et cetera, from areas that can become arable. That has a lot of negative environmental consequences and really isn't a good solution.
- Cameron F.: The third major way, the third way in which a major contribution can be made in a short time frame, would be to decrease food waste. Approximately 33 to 40% of the food that's produced in this country is wasted. In developed countries like ours, most of the waste occurs in food service and at the consumer end of the line from production to consumption. In underdeveloped countries it tends to occur in the field and in transportation. So it's really a

consumer issue as much as anything. Reducing food waste would have tremendous implications for food security, which I saw was one of the topics that was highly rated, I guess, last year, and would also have tremendous impact for environmental consequences of agriculture as well. And so those are two very important areas that are served by reducing food waste.

Cameron F.: There's many players in this area, both in the private sector and in the public sector or federal sector. I'm familiar with USDA's food waste challenge and their partnership with EPA, but I'd also say that a lot, lot more could be done by USDA. I think USDA should be a leader in this area, and I don't see them as a leader. I think they could be a leader by emphasizing this area in their education and research programming, highlighting it as an important, important problem, and that would gain a lot of interest, quite frankly, from varied interdisciplinary teams within universities and between universities. This would include folks who are natural scientists, life scientists, but it would also include social scientists, as one of our previous speakers spoke to. It would include law, for instance, and regulatory authorities.

Cameron F.: So I think that's the area that I think I want to, that I did want to highlight today as one being absolutely a great challenge, a greatest challenge, if you will. And then just a couple other quick thoughts. I think, on the greatest breakthrough, that's really hard for me to predict or to think about, but I do think that one is that we often talk about how we need a systems approach for solving problems. But I don't think too many people can really say what that means. I think we need, and this is something that would be great to have from an inter-agency effort, but what does it mean to have a systems approach, and what counts as a systems approach? So that if people claim that's what they're going to do in research proposals or whatnot, that there's actually a rubric for saying, "Well, a systems approach would mean that you would include A, B, C, D." And that would ensure that some minimum attention is given to the various areas that relate to that systems approach.

Cameron F.: And finally, just a few key words I want to throw out. I do think that microbiomes, understanding microbiomes in the soil and the forest, in humans and other animals, in plants, is a phenomenal area ripe for research and so much to be learned there. I think emerging infectious diseases are critical for continued investment by the USDA/NIFA. Urban agriculture, and some of the comments you heard by, I think our second speaker, were fantastic, spot on in my opinion.

Cameron F.: And finally, again, coming back to the social sciences aspect, I think we need to consider more, I ask USDA/NIFA to consider more to investing in sort of human dimensions of food and fiber. The social sciences areas, the human behavior, the behavioral psychology that goes, if we can understand some of that, we can probably make some really great progress in the perspectives that the public, a public that decreasingly has a direct connection with the land, has about agriculture, and I think that could do a great deal for us.

Cameron F.: Thank you for your time.

Ali Mitchell from the Association of Northeast Extension Directors

Megan: Moving right along, next we have Ali Mitchell from the Association of Northeast Extension Directors.

Megan: While she's making her way up, I just wanted to invite everyone to stay for the break, we're going to take a quick photo, so we'd like to document everyone that was here. Thanks.

Ali Mitchell: I'm the opposite of vertically challenged.

Ali Mitchell: Good morning. My name is Ali Mitchell. I serve as the executive director for the Association of Northeast Extension Directors, NEED for short. NEED is a non-profit organization through which the extension directors from each of the 12 northeastern states, 16 land grant institutions in total, come together to share information, collaborate on priority issues, and establish a collective voice for communicating the interests of cooperative extension at a regional scale. Extensions programs have been built from a legacy of agriculture, 4-H, and home economics. They have since evolved into contemporary programs, delivered effectively to farmers of all stripes, their families, and the communities in which they live, meeting modern needs.

Ali Mitchell: To continue on this path, we believe that the three legs of NIFA, education, research, and extension, must be equal partners that work together to address today's most pressing challenges. In the northeast, NEED works towards this, alongside our sister organization [NERA 00:56:13], which represents the agriculture experiment station directors, to build relationships that empower transdisciplinary collaboration, information sharing, and integrated programming across the region. At the national scale, we work alongside the four remaining regions to address five national strategic priorities. Nutrition, health, and wellness, 4-H positive youth development, water quality and use, food production and food security, and community and economic development.

Ali Mitchell: With that background, I will respond to the three questions posed. First, what is the most needed breakthrough in science and technology that would advance your agricultural enterprise? Breakthroughs in science and technology cannot occur without investment in research, and cannot be implemented without investment in extension. As such, NEED urges NIFA to prioritize funding research that maximizes cross-disciplinary approaches, including social science, to improve system efficiency, sustainability, and resilience. We also urge NIFA to continue consulting and engaging cooperative extension throughout the priority setting, scoping, and RFP writing process. American agriculture is not the sum of large commodity enterprises, it is equally small, local, and niche farms in mid sized and small states. It is important that growers in those communities are not

structurally excluded from accessing NIFA's funds by the wording of RFPs or forgotten wholesale in their development.

Ali Mitchell: We hope that the same consideration is given to agricultural diversity if and when technologies or systems are developed at the federal level. Stakeholder utility, accessibility, affordability, must be ensured as tech gets transferred from the lab to the marketplace.

Ali Mitchell: Now that I've set the stage for what research investment should look like, I will highlight the two areas where breakthroughs are needed, intelligent farm management and market economics. First, in the northeast region, we see need for technologies that help people farm smarter, not harder. We need farm management technologies that harness the power of interdisciplinary data to combat shrinking labor forces and are built to fit working lives. We hope that NIFA will provide the funds to aid in developing labor-enhancing technologies, such as pest identification management apps, remote monitoring systems, precision robotics for management or pesticide application, and quick field tests.

Ali Mitchell: Second, while not a traditional scientific area, research is also needed to develop markets and distribution systems that elevate diversified local and small-scale agriculture. With economic models that show how small and large agricultural enterprises can harness externalities and turn them into diversified income streams, struggling farmers and resource-strapped communities can rise together. Cooperative extension, with its system of university and field-based researchers, agents, and educators, is uniquely situated to help farmers adapt their businesses to these new models, while helping communities access resources in their own back yards. Take, for example, a mountain of rock produced when clearing a Connecticut farm. That farmer could sell the rocks for coastal infrastructure projects and suddenly, a local economy is building itself.

Ali Mitchell: The second question is, when considering all of agriculture, what is the greatest challenge that should be addressed through NIFA's research, education, and extension? Today's greatest agricultural challenges arise at the interface of urban and rural America. Nowhere are these issues more salient than in the northeast. With a population of 60 to 65 million people, the northeast region holds roughly 19% of the population on 5% of its land area. As a hub of wealth and population, this region drives food production decisions. Despite this, extension sees a dynamic where farmers and agriculture continue to be misunderstood while consumers remain misinformed or frustrated by the marketplace.

Ali Mitchell: NEED knows that increasing agricultural literacy in consumer populations is critical for bridging the divide between urban and rural America. We know that an informed public makes for a more productive farming sector, leads to an increased appetite for smart agriculture, provides increased support for smart farm management decisions, and leads to a stronger, more vibrant community. But the same rule applies, cooperative extension has the capacity and know-

how to deliver these programs, but what we're missing is the investment and support.

Ali Mitchell: In northeast, as in many parts of America, agricultural land can often be valued higher for non-agricultural uses. This is especially true at the urban/rural interface. Resources must be put toward supporting the economic and mental health of farmers who face this harsh reality alongside questions of crop insurance, health insurance, farm employees, succession planning, and marketing. At the same time, we should be doing our best to bring talent into the sector by highlighting the innovative opportunities in tech, biology, and natural resource management that agriculture provides. The work training and positive youth development cooperative extension provides are critical in this endeavor and should be elevated as a NIFA priority.

Ali Mitchell: Finally, what is your top priority in food and agricultural research, extension, or education that NIFA should address? In the northeast region, state extension priorities run the gamut from new market opportunities to nimble climate adaptation, from support for small business planning to [agability 01:01:44] to effective pest management. It's NEED's stance that cooperative extension should be at the table while NIFA establishes competitive [inaudible 01:01:53] that address co-developed priority areas.

Ali Mitchell: At the same time, NIFA should empower this locally based national network of researchers and educators to be nimble and effective by prioritizing capacity funding that lets dedicated individuals do their day-to-day work. Capacity grants are the lifeblood for many northeastern states. Those dollars provide both sustainability, stability, and responsiveness. Since they are not tied up in pre-defined issue areas, capacity funds give extension the opportunity to leverage resources of all types to address fast-moving, critical, and evolving research and extension issues as they arise. Capacity funds also allow cooperative extension to leverage state and local investments to address the traditional agriculture topics detailed earlier, as well as the nation's largest positive youth development project through 4-H, the administration of national nutrition programs through SNAP-Education and EFNEP, and the efforts to challenge the country's growing epidemic of opioid abuse and misuse, through PROSPER and other initiatives. Without a healthy balance between competitive and capacity grants, cooperative extension cannot hope to continue driving American agricultural ingenuity and innovation, helping to ensure food security, or developing community vitality.

Ali Mitchell: Let me close with this. We are concerned that moving NIFA away from the capital region may have profoundly negative effects on the health of the national extension and the ag research system. The number of day-to-day interactions between NIFA and other federal agencies will likely plummet, reducing the capacity for NIFA to interact, align, and collaborate with agencies whose goals intersect their own. At the same time, budget strapped leaders at the land grant universities will be faced with the hard choice between sending

representatives to interact with their federal funding partner NIFA, or with their elected representatives in Congress.

Ali Mitchell: In summary, meetings are easy to schedule over the Web. Relationships are not. And this relationship between NIFA and the LGUs is important, not just for the health of the land grant system, but for the American people as a whole. On behalf of NEED, we hope that you in the USDA and many other unnamed and un-present departments with a stake in the national project take our comments and recommendations to heart as we usher in a new relationship between agricultural and urban America. We ask that you help extension being nimble through capacity funding, and pointed through dedicated grants. Consider the northeast and remember the urban/rural interface as you identify challenges, work towards breakthroughs and set priorities. Thank you for your time.

Rick Rhodes from NERA

Megan Haidet: Next we have Rick Rhodes from NERA, perfect following act to compliment Allie's comments.

Rick Rhodes: Hi, good morning. I appreciate the opportunity to provide NIFA with research priorities in food and agriculture. I served as the executive director for a consortium of 14 research stations in this region. Collectively, I represent the Northeastern Regional Association of State Agricultural Experiment station directors. NERA, for short. These stations are primarily located on the campuses of the northeast's land grant universities. Ironically, this listening session is in the one state in the northeast that has two experiment stations, one that's associated with the University of Connecticut and one that's associated with the State of Connecticut. Collectively all of these stations serve NIFA as hubs in a nationwide agricultural R&D enterprise that is the envy of the world.

Rick Rhodes: You just heard from my colleague and friend, Allie Mitchell, who represents the northeast extension directors. That's the engagement arm of the R&D enterprise. Now, I share this background as a context for the reflections and the recommendations that I'll make. The Northeast Ag Experiment Station directors want to ensure that the unique characteristics of the agricultural systems in the northeast are well represented in NIFA's approach and grant funding portfolio. As you just heard, the Northeast is home to some 66 million consumers on roughly five percent of the US land. That translates into a large portion of the Northeast living in close proximity to, as Allie called it, that rural/urban continuum. Clearly there's a need to promote agricultural literacy across this continuum if we are to exploit the opportunity that this proximity poses.

Rick Rhodes: Not surprisingly there's great diversity in agricultural system. You've heard that from speakers that have preceded me. This diversity includes both food and non-food systems, and NERA encourages NIFA to make available grants that support diverse agricultural activities. Small to large, food to the green industry. Further, funding opportunities that promote sustainable practices from field to

table are essential to solving our food and natural resources challenges. Very little grant funding exists to promote agricultural entrepreneurship at the rural/urban interface in the Northeast. We encourage NIFA to fund integrated programs that lead to measurable impact in agricultural entrepreneurship, agricultural workforce development, and agricultural prosperity.

Rick Rhodes: A final reflection, and it's one that you've heard previously, the NERA executive board believes that relocation NIFA away from the capital region will have profoundly negative effect on the land grant university system. The day to day interaction that NIFA will have with other federal agencies will disappear, and reduce the capacity for inter-agency partnerships that line and strengthen outcomes for NIFA stakeholders. As Allie shared, and I buy into this, meetings are easy to schedule over the web. Relationships are not.

Rick Rhodes: Those are the reflections. Here are some recommendations from NERA to the questions posed by NIFA. Greatest challenge: sustainable prosperity in our agricultural communities. What are the attributes of sustainable prosperity? A trained workforce, good paying jobs, adaptive strategies for coping with global climate change. As Allie said, farming smarter. Growth and development in an economic context, and high quality of life. What do we know? We know that our producers are aging, and we know that agricultural communities are growing smaller as rural populations out migrate to seek employment opportunities in urban areas.

Rick Rhodes: The agricultural and rural communities have been some of the hardest hit by the opioid crisis. Consider this for a moment, that of the top ten states leading the nation in drug overdose mortality, eight are in the Northeast. The magnifying glass is on the Northeast, and I believe that we have the intellectual horsepower to address this challenge. However, that horsepower, that intellectual horsepower will require an investment, and so to meet this challenge, I ask NIFA to fund opportunities that support sustainable agricultural systems. We appreciate that funding has been dedicated to funding sustainable agricultural systems, and to programs into Brazilian agro-ecosystems. However, further investment in programs that promote entrepreneurship, financial and business planning, and agricultural innovation that exploit the opportunities at the rural/urban continuum are necessary to meet this essential challenge.

Rick Rhodes: What's the breakthrough? Producing more with less, and in making this recommendation we're seeking reduction in agricultural inputs. Water, fertilizer, pesticides, fuel, energy, and human power across all agricultural sectors. This, to me, puts the spotlight on local food systems, an area specialty, and an area of opportunity for the Northeast. To achieve this breakthrough, innovation is required. An investment in programs that explore agricultural innovation is necessary, as is investment in programs for specialty crops, the sweet spot for Northeast food systems. We appreciate that NIFA has exempted the land grant universities and the state agricultural experiment stations from the cost sharing requirement for the specialty crops research initiative. Many thanks to my NIFA colleagues.

Rick Rhodes: We also believe that to do more for less is going to require full participation of NIFA's land grant partners. Researchers, educators, extension specialists, and we support NIFA engaging us with innovative opportunities that seek an integrated approach. Top priority: adequate and appropriate support for the nation's number one agricultural R&D enterprise. The state agricultural experiment stations, and our counterpart in programmed delivery, cooperative extension.

Rick Rhodes: Now this support that's required by this agricultural enterprise falls into three buckets. You've heard about capacity funds, second one the Agricultural and Food Research Initiative, AFRI, and infrastructure. Of these three, infrastructure poses the largest challenge. It's no secret that across the country research laboratories are aging, while scientific instrumentation and technologies are advancing at light speed. While I have no silver bullet to resolve this, having access to bricks and mortar funds would significantly assist the Northeast, home to some of this country's oldest land grant institutions.

Rick Rhodes: The capacity funds which you've heard about, provided by NIFA to land grant universities and to institutions within the Northeast constitutes the capitol that makes us competitive. These funds allow us to meet and to be responsive to our unique constituencies. The capacity funds provide the support to maintain the intellectual capital within our network of agricultural research and extension. Importantly for every federal capacity fund dollar invested, each state in the Northeast contributes equally to the endeavor minimally one to one. AFRI, with its competitive grant initiative funded an FY18 at 400 million dollars is authorized at 700 million dollars. I appreciate that NIFA doesn't have any control over the appropriations. Conversely, I'm confident that NIFA is supportive of AFRI funded at its fully authorized level, and as we say at the University of Rhode Island, think big.

Rick Rhodes: Finally, I'd like to finish up by saying that we value the partnership between the Northeast land grant universities and state agricultural experiment stations, and NIFA. We look forward to applying the strength of the partnership to secure the resources, to ensure that our stakeholders, our producers, our processors, our entrepreneurs, and our consumers have access to a robust, innovative, responsive regional research and development enterprise. Thank you.

Theodore Andreadis from the Connecticut Experiment Station

Megan Haidet: Alright. We have one additional speaker, and perhaps there will be more. Theodore Andreadis from the Connecticut experiment station. Thank you.

Theodore A.: Thank you. I want to thank NIFA for affording us this opportunity to address you here in Hartford, Connecticut. I would like to say a few things about capacity funds to get started, and you've heard a lot from others concerning the importance of maintaining these funds for state agriculture experiment stations. For those of you who are not familiar with these, I know there's a few of you in

the audience, these are funds that come to every agricultural experiment station in the country. They date back to 1887 from the Hatch Grant, which is focused on research. There are Smith legal funds that go for extension, and now there's a McIntire-Stennis program for forestry. As Rick indicated, they all require a one to one matching funds from the state.

Theodore A.: Now, these capacity funds which have been so important to us in the past are essential. I wanna repeat that. They are essential to our very existence as we have come to know it. It's not new that state support for agricultural research and experiment stations has declined significantly over the last ten years. Especially here in the Northeast, and particularly here in Connecticut which has been very slow to recover from the recession. At the same time, capacity funds have largely remained flat with very little increase.

Theodore A.: Some have argued within the USDA that research funding shift should be more towards competitive funds because some believe this will encourage greater innovation. I do not believe this is true. While I certainly support increased funding for AFRI, but not at the expense of Hatch funds. I would argue that Hatch Act of 1887 represents the most cost effective and impressive agricultural support system ever conceived in this country, and the list of achievements is quite remarkable. In fact, I can tell you for our external station in Connecticut, [inaudible 01:17:37] and the double cross method was developed at or agricultural experiment station based on Hatch funding support.

Theodore A.: What does this funding allow us to do? It allows us to design research programs that reflect local needs, quickly address emerging problems and unanticipated research challenges, and most importantly it allows us to set our own agenda. The rationale for that is we are the ones that are nearest to the problem, and thus can more effectively direct a research means to solve it, rather than Washington. There is a tendency in NIFA and AFRI to take the lead on funding activities are matters of concern in many states, and I have no issues with this, but many of these may not be particular to the Northeast. That's why these capacity funds are so important. The strength of these funds allows us to maintain a proper balance between solving immediate local problems, which we do exceptionally well, and at the same time conduct more visionary innovative research that's designed to solve problems that lie in the future.

Theodore A.: That being said, I think the greatest challenges facing agriculture that should be addressed by NIFA number at least four in my mind. Number one, increasing food productivity which others have mentioned. Two, developing sustainable and affordable energy, especially here in the Northeast where our energy costs are some of the highest in the nation. Increasing efficient use of water, and the need to develop better methods for rabbit detection and control of emerging pests, pathogens, and invasive plants and animals. Without getting into specifics because I don't have time to address all these issues, I think NIFA through its competitive grants program should encourage more visionary, high-risk research with an increased focus on biotechnology. Using a multi-disciplinary

approach to take advantage of these rapidly emerging new technologies that could be applied to agriculture, and other folks have mentioned this same item.

Theodore A.: I truly believe this is where the future of agriculture lies. Especially here in the Northeast. In the past, much of our funded research effort has been devoted to so called safe incremental research, and while this approach has contributed much practical solutions, it's not always been visionary. To me, it's inconceivable that we can meet future demands for higher yields, more nutritious crops, increased resistance to disease, drought, and even fertilizers without these biotechnology tools. To do this it's going to be imperative that we recruit the best and brightest individuals across a multitude of disciplines. I know it may be a pipe dream, but I can really imagine that at some time in the future through technological advancement, we will no longer have the need to depend so heavily on agricultural chemicals. With that, I will conclude my remarks, and thank you for your attention.

Jody Jellison from the Massachusetts experiment station

Megan Haidet: Thank you so much. Are there any additional speakers that would like to provide impromptu comments at this listening session today? Come on up, and please introduce yourself. Can you save your comments for the mic, because we have some people remotely viewing?

Jody Jellison: Oh, okay, I'm sorry. Thank you. I'm here today, my name is Jody Jellison. I'm the director of the Massachusetts experiment station. I'm also the director of the Massachusetts extension services. I guess since about sometime in September, is the chair of NERA? I prefer empress, but we won't too technical there. I'm here speaking, not in those roles, but as an individual faculty member, and I like that because it gives me the flexibility to speak as someone first who is not gonna follow the script, will probably go over time, and will not address the specific questions that were asked.

Jody Jellison: I'd like to say that I have been a student, or an employee, or faculty member, or administrator at five different land grant colleges, and the impact that the land grant colleges have had on my career, and also on my ability to, I hope, meet some of the expectations of the stake holders that I serve has been profound. I'd like to identify one thing that the capacity grants in particular have done that I think is absolutely amazing, and that is they've fostered collaborations and partnerships that might otherwise not have existed. We've heard about the partnership between the federal government, the state governments, and the universities. Well, you know universities don't play if there isn't money involved. I shouldn't say that, but that's true. The capacity grants have been the foundation of that partnership, but also have played a tremendous role in the partnership between the researchers, the educators, and the stake holders. I'm defining stake holders very broadly to be everything from, in some cases commodity groups all the way to 4H youth groups. These capacity funds, because they can be controlled at a local level, allow us to develop a partnership

that otherwise might be very difficult to develop and maintain with out stakeholders.

Jody Jellison: Because I can never remember numbers, like leveraging numbers, and I think they're made up anyway, I think more in terms of the stories and the things that I've seen. At all the institutions I've either been at as a student, or as an employee, I was trying to figure out what was the common denominator. They all grew apples. East coast, West coast wherever, every place is growing apples, and they've all had orchards. These orchards have been in many cases a true collaboration between the institution, the state, the capacity funds support, and in most cases the orchard community. In Massachusetts for example, we have multi-state Hatch project that looks at root stalk. This is not an exceptional project. It's a great project. It meets the need of the stake holders, but it's a good example because it's not the best and the brightest perhaps, but it's a wonderful project. It is made possible because of the capacity funding, but also because of the interaction with the growers in the grower communities who have provided the land, and continue to provide the operational expenses that make this possible.

Jody Jellison: The last thing that I'd like to say is ... I've even got notes. I've just got the word "divisive". We live in divisive times, and one of the wonderful things about capacity grants and their ability to foster relationships, is that they tend to bring people together across the political spectrum, and also across the different emphasis areas. Whether you're looking at social good, or commodity agriculture, anything in between. These grants have provided traditionally the glue to hold people together. I'd just like to thank NIFA for the continuing support of the capacity program, and to encourage where possible their advocacy of the capacity programs. So, thanks.

Megan Haidet: Are there any other speakers that would like to come up this morning? Alright. After this one, we'll take a short break. You can enjoy the refreshments. We'll take a photo, and then we'll come back for a short question and answer session. Thank you.

Chris Martin from the Connecticut Department of Energy and Environmental Protection

Chris Martin: I do appreciate this opportunity to speak. I didn't plan on speaking, but I just can't help myself. My name's Chris Martin. I'm the director of forestry for the Connecticut Department of Energy and Environmental Protection. I like to consider myself a critical customer, and a partner with cooperative extension and experiment station here in Connecticut. We work hand in glove on many, many topics. Of course I'm a little bit more centric on forests and trees. Just a little bit of background, in Connecticut I can speak a little bit more for the Northeast. We are, again, a very heavily populated state. Three and a half million people plus in a state that's sixty percent forested. In fact, if you look at New England and the Northeast as a total, the majority of landscape type is

trees and forests. As far as how that environment effects the people, it's a significant input in everybody's daily lives.

Chris Martin: I'm also chair ... although I like the empress, emperor of the Forest Science Health Committee for the National Association of State Foresters. I launched in base DC association. As with many of your professions here, we all have larger groups that we work with, and so I kind of bring a regional[inaudible 01:28:14] perspective to this discussion. In the Northeast we are blessed with a diverse forest type. Especially in Connecticut you have the Appalachian hardwoods, and [inaudible 01:28:25] hardwoods kind of converge on us. It really adds to our fall foliage, but also it brings us to one of the greatest vulnerabilities of forest pests in the nation.

Chris Martin: In Connecticut, if you were to look at a forest health map produced by US Forest Service Coop Health, we are the bullseye on the number of invasive forest pests in the nation. I'm speaking for, certainly Connecticut, but Rhode Island, Massachusetts up in the Northeast, and to our West Pennsylvania, and New York. The work that extension and experiment stations do is imperative to our ability to respond to these forest pests and emerging issues. I can't stress that enough. As a state agency we have seen decreased capacity for funding. It is only through this partnership with these other entities that we can have any amount of success.

Chris Martin: I'll also say that the majority of forest land, I'm comparing ourselves to the rest of the nation, the majority of forest land is private ownership. That's imperative for technical outreach and education. In order to keep these forest land owners engaged in their property, we wanna retain their forests as forests, they need technical assistance. That comes through experiment stations. It comes certainly through extension service forestry. So, I'm just putting a plug in I guess for capacity funding for that. Forest service folks stay in private forestry and AFES. I heard this term, competitive funding. Certainly a certain amount of competitive funding is valuable. It shows to O&B and congress that we are working hard to via performance measures to bring forth, but I cannot stress the importance enough of reaching dependable capacity, what we call "core funding", that we receive from the forest service. That steady stream dependable that we can budget upon, and we can help react to other income streams that may be increasing or decreasing on our programs. We need to have that study among.

Chris Martin: I also mentioned this rural/urban continuum. In the forestry world we often refer to it as the "wild land urban interface.". More of a Western term for forest fires and whatnot, but we have a wild land urban interface issue in Connecticut, and that is our forest health. I like to say that Connecticut and a lot of the Northeast, the residents, the population are forest dwellers. They live amongst the forest. In fact, you can't look out a window here without seeing a tree. So, the impact that these trees have, and when they start to decline creates a significant public safety issue. Our department of transportation, our municipalities are stressed currently on the mass amount of dying trees we have in Connecticut basically to invasive forest pests.

Chris Martin: I'll also say that similar to the agricultural community, our workforce is aging and becoming smaller. Our investments in logging training and technology, and also arboriculture are important. University extension systems and university colleges, certainly land grant universities have a role in that. Agriculture in particular. It would be great to see [inaudible 01:31:36] there.

Chris Martin: Finally, I just want to say that I embrace the one USDA concept. That's something Perdu has been promoting across the nation. I do think there's great opportunity for AFES, NIFA, USDA forest service to work more collaboratively strategically on specific project. Thank you very much.

Megan Haidet: Great. Why don't we take a quick break, and we'll reconvene the group right here near the food for a photo. Awesome! Thank you.

Question and Answer Session

Speaker 5: Okay, we'll get started in a couple minutes.

Speaker 5: Okay. We'll eat maybe the next 30 minutes or so. Take this opportunity to have some sort of discussion amongst ourselves. We have heard great ideas, very diverse ideas. Some very unique to the northeastern region, but most certainly, most of the ideas have national, even global application. And they certainly are informing all three functions: the research, the extension, and the outreach, education, workforce development part.

Speaker 5: So thank you so much. This has been really a fantastic listening experience for me and my colleagues. This is just my suggestion, but I think what would benefit all of us greatly is that we are continuing to record all these conversations.

Speaker 5: We have a floating microphone which will move around. We've heard all these ideas from you. You have heard these ideas now from your colleagues here in attendance.

Speaker 5: Let's take this opportunity to react to these ideas. If there is any further discussion, has the lightbulb gone up in your mind, after you heard your colleagues speak? Is there something we can further refine in our thought process?

Speaker 5: I think this is an opportunity for us to, I know Judy just had some additional fantastic ideas, when she was whispering in my ear. Which I think you all need to hear as well.

Speaker 5: So I'll open the floor for discussion and a conversation. Just raise your hand, and Dr. Jeanette Thurston will bring the microphone to you. And if you speak in the microphone, your discussion and your ideas will get recorded.

Speaker 5: And yeah, you can refer back to the questions, where did it go? Here are the questions again, and you don't necessarily now have to stick and react to these questions, because we have been listening to your suggestions around these questions anyway since morning. But I'll just put these up for you, just to be aware that this is what we think is the feedback NIFA could use this year.

Speaker 5: So mic. Yeah.

Mike: So one of the things that I heard this morning [inaudible 01:55:29], that I think is particularly germane to the northeast is urban agriculture and how the various forms of urban agriculture, whether that's community gardens in vacant lots, or high-tech opportunities in warehouses and other spaces, where does NIFA see that fitting into the broader scheme of its investment portfolio, and how do we capitalize on that for research and extension programming?

Mike: We're strapped, as I was discussing with Karen, we're losing people through attrition, and our state economy is not strong enough to actually replace many of those people. So we don't necessarily have an individual expert to help him today. We're gonna need some sort of multi-state, multi-regional collaboration to pull that together.

Mike: So do you have any thoughts on where those kinds of urban agriculture issues are being addressed, where they best fit in the NIFA portfolio?

Speaker 5: Yeah. Mike, you know, you have been with NIFA for a long time yourself. NIFA's portfolios are certainly quite broad, and quite accommodating. They can certainly embrace any new ideas which come along.

Speaker 5: The question really, you should be asking, is there a funding mechanism which can accommodate these type of new areas of an agriculture, obviously is an evolving area. We still need to, I was talking to Cameron earlier this morning, we still need to wrap our hands around actually what urban agriculture means, what are the attributes of an agriculture? How does it interface with rural agriculture?

Speaker 5: Some of the funding mechanisms, as you know, which are suitable to these type of new programs, are of course based on our local needs, capacity funds you have been referring to. But I don't know, Mike, if there's any multi-state committee around this topic.

Speaker 5: If not, that might be a starting point. If it is unique to northeast, I would strongly encourage my colleagues to consider developing, submitting a proposal, whether it's an extension and research combined proposal, and see if your colleagues would consider bringing teams together, experts together, individuals together, to establish a multi-state committee around this sort of overarching theme and see what objectives you would like to have in that multi-committee.

Speaker 5: And I think, considering the importance of this, what I've heard today and last year, even, I think NIFA would be very receptive to support standing up a multi-state committee.

Speaker 5: Coming from Landgren system myself, I know how valuable these multi-state committees are. I have been a member of one, Genetic Bases of Disease Resistance in Poultry, for example, it was northeastern actually, we used to call it NE-60.

Speaker 5: I would venture to say that what poultry production is today in terms of poultry health, is because of that northeastern brains and intellect which came together, even when I was a student at Cornell I was a member of NE-60.

Speaker 5: So I think new ideas, especially the ones now which really involve multi-states, that could be a starting point. And that's just my guess. Anyone else has any ideas?

Speaker 6: In regards specifically to urban agriculture in a multi-state perspective, through the youth work we've been connecting with organizations in Massachusetts, in New York, in Rhode Island, through actually NESAWG, the It Takes a Region conference. Which will be in two weeks in Philadelphia.

Speaker 6: There's a lot of work being done right now looking at how urban agriculture in particular addresses the intergenerational and different demographic elements of food provision and sustainability.

Speaker 7: Could you tell us what NESAWG is?

Speaker 6: I'm sorry. NESAG is the Northeastern Sustainable Agriculture Working Group.

Speaker 8: Sorry. I think one of the good places to look for how to go about a multi-disciplinary urban environment approach is, there's an organization called Agrilist, which every year produces a report called the State of Indoor Farming.

Speaker 8: That report, not only will they know every single urban farm in the country pretty much, but they're tracking the trends within the industry, what are the technologies that are being used, what are the crops that are being grown, what are the price points that are getting set around different areas of the country.

Speaker 8: So in terms of putting together a committee, they would be someone I would look to partner with, because they're gonna have the best insights into what's going on in urban agriculture right now.

Speaker 9: Ally?

Ally: Hi. Thank you again for giving us the time to expand on topics.

- Ally: Many people mentioned systems. Systems approaches to research, systems approaches to agriculture. And I'm wondering if you can help me understand NIFA's approach to the agricultural system as a whole, when we're thinking about multimodal transportation and ag health, especially in the northeast. We've talked a lot about local food systems supporting small farms, niche farmers, local farmers, and connecting communities to the agriculture in their backyard.
- Ally: But anecdotally, I see restaurateurs who don't know how to connect to their farms. We see schools who rely on prepackaged food instead of the farm in their community.
- Ally: So how do you think cooperative extension and research can work with NIFA to bridge that divide between transportation systems and ag health to structurally support the implementation of what we talk about?
- Ally: We can think about it as much as we want, but until we know that there will be trucks to connect or boats to move, or platforms to house the resources that we produce on the northeast farms, then we're stuck.
- Speaker 5: So again, this is a very good point. I don't want this to be a question-answer session, but to get us started in thinking on those lines, I would be on a very slippery slope if I start defining what I think is right.
- Speaker 5: NIFA never has been prescriptive, for the right reasons. We want that prescription to come from our stakeholders and our applicants, and our scientists, who we ask always, you define for yourself what is your definition of system.
- Speaker 5: And that fundamentally has been our premise when we started brainstorming, transitioning from challenge areas for funding, if you know what I'm talking about, the last challenge areas we have: scope, scale and impact was really the driving guidance or principle for having those challenge areas.
- Speaker 5: And then those evolved into what we now call SAS- excuse me. Sustainable ag systems.
- Speaker 5: So when we're writing the RFA, we thought, "Oh my god. How do I define it, or how does our team define and tell our stakeholders what do we mean? What type of grants we are looking for under sustainable ag systems."
- Speaker 5: And Jeannette Thurston, Dr. Thurston back there, is a lot more knowledgeable how these whole things evolved.
- Speaker 5: But when we were talking about it, we said, better yet, let the applicants define what their systems approach would be towards what problem. So you would define the problem, you would see what are the components of that problem,

and you would see what type of systems approach you need to address that challenge.

Speaker 5: Yes, an earlier comment which I made, that we need to get out of silos approach and make systems approach. But there are certain disciplines that we do need deep silos or deep understanding of a vertical discipline also.

Speaker 5: So don't understand us wrong. NIFA continues to support fundamental research, that's why we have a foundational and applied sciences program, because those are the foundational sciences which then would lead to applied research and applied finding solutions.

Speaker 5: So really, Ally, I would put that sort of thing on our partners, such as you, to help us understand what in your view would be the next system. How would the next system look like?

Speaker 5: Some of these things which were informed to us last year, that systems should include social sciences. Systems should include human dimension. Systems should include economics affairs. Systems should include the production chain in itself and overarching, of course, would be a problem which you're addressing. Whether it's food waste, or production agriculture, what have you.

Speaker 5: So really, this is something which would keep evolving, and we'll keep listening, and we'll keep taking these ideas and fine tuning the RFAs, which we will send forward.

Speaker 5: Any reaction to this? Mike?

Mike: I would love to debate this with you for hours, but we won't.

Speaker 5: Okay.

Mike: So I think- I appreciate that, and I think the sustainable agriculture systems approach was both innovative and novel, it was great. Except for the fact that when I read through the 25-year goals, or whatever those statements were called, it all seemed, with the exception of food safety, it all seemed to focus on solutions that were gonna come from the production side of the problem.

Mike: My thoughts, particularly in this region, is there's tremendous power if we can change the behavior on the consumptive side of this, which would affect both food waste and other issues, and yet in the goal statements, there's really nothing there to promote, focus on-

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Mike: ... Nothing there to kind of promote, focus on how consumers are engaged in that very process. So one of the goals is total factor productivity, and an

increase of like .1 or .2%, which seems really, I mean, really fine pointed in terms of how you're going to get to a solution of a problem as opposed to having consumers just do better, have better behavior in the food system, and being more participatory in that food system.

Mike: So I guess my feeling and my comment would be, can you actually go back home and write a statement that would say, and I'll send you some language, but would talk about the role of consumers in the food system, because it is a system, and if we cut it off at production, where the goals are all focused on, increasing efficiencies, increasing production, increasing delivery of food, it sells short that social science consumptive behavior that we need to kind of correct as well, and I think to Allie's point, if we're reliant on a heavily carbon driven transportation system to get all these products around, if we can be more local than we actually shrink our footprint in that dimension.

Speaker 5: Point well made Mike.

Mike: I'll send you some language, but I'd really like to see that kind of consumer focus as well.

Speaker 5: That's the kind of feedback we need, thank you, that's very valuable.

Speaker 10: [inaudible 02:09:30], I wanted to just change gears a little bit. We've heard a number of different themes throughout this morning, the urban, rural continuum, diversity of agriculture in the north east, sustainability, workforce development, prosperity, bio tech. I wanted to think a little bit about what's the best way for us to help you help us? And I bring that up in the context of publicly funded agricultural research and development.

Speaker 10: The ERS has demonstrated in any number of studies that public investment in agricultural research has resulted in large economic benefits. So we know that. However, the sobering element to this all is that public funding of agricultural R&D has fallen in the past decade, continue to fall, and we have countries that are overtaking us on their publicly funded agricultural R&D.

Speaker 10: And so my question to you is how can we help you help us gather those resources that we need then, to push an agricultural and natural resource agenda forward? So my concern is that we've got all these interesting topics, which we wish to pursue, however the pie is getting smaller, and the investment into any of those individual themes will also be smaller.

Speaker 5: Okay. So what you're doing now in this room and what we will be doing in next three future listening sessions is exactly the kind of things which any agency thrives on. We do not work in isolation, we work in collaboration with our stakeholders. Ideas which are coming out now are the kind of things which gives us the basis on which we can justify the future needs for our agricultural enterprise for research extension and outreach in education.

Speaker 5: I can share this with you that when we sit and write the budget narratives, because that budget is not NIFA's budget, that's the presidents budget, right, that are several sort of my goodness, I can give a whole lecture how the budget is developed. Yes, the budget, when I joined NIFA, I can tell you this, we used to have an all hands, and there would be a document which said this is our budget for next year, okay. And we sort of react to it in terms of getting the money out of the door.

Speaker 5: Now things have changed. NIFA develops budget from grounds up rather than top down. Every subject matter expert, every national program leader, every program team is directly engaged and involved in developing the budget narrative, and we've already done that for 2020, this is how advanced NIFA works. The omen, the burden on that program team really is to make sure that things which are being included in 2020 budget would be very relevant to our stakeholders, which would be future looking, which would be problem solving, etc, etc, etc.

Speaker 5: Now, there are three guiding principles which we always use. Rick you mentioned earlier that [AFFI 02:13:49] for example is authorized at \$700 million for example, we are inching our way if you remember, when I joined NIFA we were not even under \$200 million range, and now we are touching \$400 million. So there is incremental progress in that. But there are three guiding principles.

Speaker 5: Number one, that we want to continue to grow every, that's under the pretext that if we have competitive funding available, we can broaden our opportunities for discovery and innovation through competition. Second, we want to maintain or even grow our capacity programs, and a lot of these things which you brought out today, doubt that capacity and how important those capacity programs are, but one thing which we are now emphasizing even more that those capacities need to be developed in collaboration.

Speaker 5: A lot of you have mentioned one to one match, and state is also putting their value into what they think is important at the local level. The third guiding principle is sustaining, and supporting, and growing of minority serving institution programs. So what you are truly doing is really helping us to further refine and continue to refine our thoughts, not only into one particular arena of production agriculture, it's a very broad stakeholder enterprise which NIFA ... I started earlier by saying it's not only \$400 million Rick, it's \$1.5 plus billion and things look better.

Speaker 5: Consider all the competing priorities which we have been seeing in the last couple of three years, NIFA's budget has really been going very strong, and that's largely because of your input. So you're already doing what you're offering us to do, so thank you. Thank you for what you do on daily basis.

Rick: Appreciate that.

Speaker 5: Yep. Judy.

Judy: So I just can't keep from talking. But one of the things that I mentioned just, well not confidentially to you was, we're sort of the converted here. We show up, and we talk about how great capacity funding is, and how important it is, and I'm kind of old, and I've been at a lot of places with different refreshments, where the same conversation takes place. I think the problem is, that has not been an effective argument, the fact that these are important for all of the multiple reasons that we articulate has not been a compelling argument.

Judy: I think one of the things that we haven't done is to step back and say well what would be a compelling argument to folks who actually could grow the pie? Just to throw something out, I think that we need to not just say give us more money so we can continue to be really good people, and do really good things, but to identify some specific compelling things that additional funding would enable us to do.

Judy: The straw man that I'd like to put out is to make the argument that a specific increase in capacity funds targeted towards allowing us to partner between the mission areas to address some of the social behavioral implications and intersections with research and science would be an argument that I think even in divided political times could be very powerful, because if it's linked to the capacity programs, it enables local control, and local control enables the stakeholder in the different regions to identify their own priorities.

Judy: So the priorities that the west might have would involve wildfires, maybe water utilization. The north east might be looking at social behavior components that feed into the opioid crisis. Certainly the south might have some interest in social acceptance of GMO's and other technologies. So I'm throwing this out as a suggestion of a way of making a compelling argument of something that we should be doing already to meet our mission, and I would argue we are not doing it well.

Speaker 5: Yeah it's always a very difficult argument to sell, we need more money right? We need to increase this. But to your point, this is exactly the kind of feedback we need. Why do we need to advocate for more money? Why do we need to increase this and not that? That was the idea of this, there are several programs which we are sun setting, because those programs, I give you one example.

Speaker 5: The poultry disease person, for last 30 years we have been receiving proposals on Merrick's Disease. All right, Merrick's Disease, you would know what I mean, you're a veterinarian. So every year, people send proposals who want to tweak vaccine because previous vaccine has stopped working, right. We are continuing to understand the interaction of the immune system, and the Merrick's Disease virus.

- Speaker 5: The virus stays ahead of us every time. We have run out of V's, virulent, very virulent, very, very virulent, very, very, very virulent, very, very, very, very. We have run out of V's, and I said folks, if this is all what we are doing, let's take a break from Merrick's Disease, until the virus makes up its mind what it wants to do.
- Speaker 5: So understanding basic biology is one thing, but going after something repeatedly without any really meaningful outcome or impact is we are not going there. But point well made, if there are certain overarching topics, like what you're just saying, which does have regional flavor, but still address some overarching national issues, those are the type of ideas one could bring in as new programs.
- Speaker 5: There's nothing which stops us in advocating the need for a new program under a new topic area through a competitive program, or even like I was saying earlier, if we want to use certain multi state funds out of capacity funds, start a multi state committee. Yes sir.
- Ted: Yes I wanted to say a comment about something that I do think is a very great challenge. And that's public acceptance of genetically modified organisms. The general public has absolutely no understanding of what a GMO is, and there's such a negative connotation to this that is clearly unwarranted, and I think all of us are faced with this, especially with the new technologies, and I addressed this earlier about biotechnology, this really is where the future is.
- Ted: We're going to outpace the ability of regulatory agencies to deal with it, and I think that's a major issues. And public acceptance, and I think there's a role for us somewhere, and I don't know how we do this, I mean you go into the supermarket, and you see advertising, no GMO, no GMO. Like this is a great product, you don't have to worry. We all know here that you've been modifying organisms forever through traditional breeding methods, we're just doing it now at a molecular level.
- Ted: But I see that as a very, very serious challenge that somehow we have to overcome, because this is where the science is going. I think there's no doubt in my mind, and this is where we'll be pressing the envelope, and this is where the greatest innovative advances are going to be made.
- Ted: Somehow the public is going to need to accept this, and understand what it truly is. So I just want to throw that out to the group, others to possibly comment on.
- Speaker 11: So I think that's a great example of the consumer side question that Mike and a couple of others brought up, and I wonder if something like this, this particular issue could possibly be built into a new competitive grant. If NIFA's able to acknowledge that this is a national issue, does that provide the backing required to establish a program to feed resources to extension and research, to go at that

problem directly? If not, it would be great for you to share some clarity on how to move that forward.

Speaker 12: I would just respond to Ted's comment, I think GMO's is such an emotionally charged topic for people, and we had some instances in groups at our university that people ended up shouting at each other about GMO's. I think you don't want to preach, it's all perfect one way or the other. Some people really want organic, some people, for a variety of reasons. I myself have some pretty significant food allergies, and I need to know what proteins are in what I'm eating, or I could croak.

Speaker 12: So that's important. But I totally get your point. Like people, it's gone pretty far. So to me it shows a need for education, what they, people don't even know what they are. What they are, what they do, what it is, what it isn't, and a respectful discourse. Even if the people don't understand it, that doesn't mean we shouldn't be respectful. I'm big on education.

Speaker 13: So Ted, I appreciate your comments about GMO, and I think that science collectively lost the battle on that we. We didn't get out in front. I think we've got some golden opportunities in front of us as we look at the next generation of genetical tools, specifically gene editing. We collective, scientists, both hard and soft as we have heard, I'd call us natural scientists, and social scientists, need to work together to get out in front of the public's scientific illiteracy.

Speaker 13: Because what we don't want to do is we don't want to try this in the court of public opinion, because the court of public opinion tends to be a largely uninformed opinion. So I think the comment that I had made earlier, in the morning about promoting scientific literacy should be a theme throughout many of the RFP's, and thinking in terms of as I think about the RFP's, and what should go into those, then the outcome that we expect from that RFP.

Speaker 13: So scientific literacy could be an outcome of effective implementation of a particular RFP. Agricultural prosperity, the state we seek, so that those young people that are coming out of our institutions, they have the opportunity to earn a living wage. We are not educating the next generation of share croppers, we want folks to be able to go out and earn that living wage.

Speaker 13: So as I think about the RFP's of the future, I think about what are the outcomes that those RFP's seek? And we look forward to working with you on those.

Speaker 14: Sorry, no problem. I find myself falling into some of those visceral reactions when the conversation shifts from something along the lines of agriculture and food systems, to education strictly, and solely. It seems to shift toward a one way discussion whereas I really strongly advocate that we begin to approach education as a two way street.

Speaker 14: When communities have these reactions to buzz words along the lines of GMO, what do those reactions come from? And does it have more to do with where is the money going that I have to pay for this then what are the proteins that are in this item? When we have conversations about education for the public, I really would advocate that we include concepts like bilateral communication, that we include notions of participatory action research, or CBPR, community based participatory research.

Speaker 14: Hear from your community, instead of saying that this is the problem, have them help you define the problem.

Speaker 5: Thank you. Going once.

Speaker 14: Please don't let that be the last comment.

Speaker 15: Yeah this is just a personal question. What is NIFA's approach to vector borne diseases in terms of support? Is this a priority area?

Speaker 5: I don't know if it is included specifically as a topic, or as a heading, vector borne disease, but I'm sure under animal health, animal production for example, we have seen a lot of proposals coming over the years, vector borne diseases.

Speaker 5: We can get back to you on it if there's a specific question, just write me an email and we'll be happy to dig it out for you, yeah.

Speaker 5: Yeah Jenna just brought to my attention an active program which is just closing, has just closed actually, September, end of September was the deadline on it, and that's addressing a lot of the comments Judy you're making, and friend in the back. Social implications of food and agricultural technologies.

Speaker 5: So this RFA-

Speaker 11: A free.

Speaker 5: I don't know how much total funding is available for this, but these are standard grants, strengthening grants, standard grants and new investigative grants not to exceed \$500,000 per project. So I think this is great. I can tell you that if you scan NIFA's RFA's now lately, lately means last three, four years RFA, you will see a lot of intersection of biophysical and social sciences emphasis, which we are encouraging for our scientists really, pay attention to. Largely because of the dimensions you're talking about, the human dimensions you're talking about.

Mike: I really appreciate you pointing out that kind of program because I think those are the places where we believe we have opportunities to work collaboratively. I think the challenge that we face in our region is the last part of the sentence that you said, which is standard grants up to \$500,000 maybe. So when we put three or four institutions together, and try to collaborate, because oftentimes

we don't have the complete expertise at one institution, we're looking at partnering with Rhode Island, partnering with Massachusetts, maybe even Delaware State or one of our 1890 institutions to bring that collaboration together.

Mike: We need those same big cap grants that larger institutions can internalize that cost, we have to go out and find the expertise regionally, and it just, the necessary costs to do that is greater. So if you could just change that language slightly to allow for projects of even two to \$3 million, but something above \$500,000, that would transform our response in those program areas because typically we'll have one or two people that could work on it at our institution, but we don't have the full team.

Mike: Just bringing all those people together unfortunately as you know with the indirect costs sort of go up on all the projects. It really limits then the amount of science and education that can be done. So that again, just to sort of, a very directed comment to just change the cap on some of those possibilities, would really transform our response I think in those areas.

Speaker 5: Point well made. Thank you. Judy?

Judy: Sorry, me again. We're back to capacity. And much of my concern is, so NIFA does an amazing job of ... I mean this sincerely, of thinking strategically about their RFA's, and the way in which to incentivize and to actually I won't say manage your partners, but you're thoughtful in trying to help us realize the direction we need to go. The comment I have referencing some of the social behavioral is a mechanism to allow us at the local and regional level, perhaps to address some of these interfacial questions and priorities in a way that may not even be competitive at a national RFP level, because many of the needs I see actually exist at the interface between extension and research.

Judy: There are things as, I mean they're not really sexy proposals that are going to get through the evaluation process, because they're new and different, they're as simple as being able to hire additional educators to address issues of the real challenge that is facing our youth relative to opioid addiction for example. So it's not either or, but in looking at the role of the capacity programs, I think it really is complementary with your competitive programs, and I would argue that in many ways, the expansion of the competitive programs has been truly miraculous, and if we could see a con committed, complementary expansion on the capacity side that would also be transformative.

Speaker 5: Thank you. Well folks this has been fantastic. Now Mike [inaudible 02:36:08] cannot say that we didn't come to north east Hartford. He cannot now challenge us that Baltimore is the only north east place that Washington considers as north east. No honestly, the idea was to come out where the stakeholders are, and listen to you all, and hopefully all these wonderful ideas which we've heard today, like the analysis which I shared with you from last year, we really, really value these, and we pay attention to these.

Speaker 5:

This is not an exercise in futility, this would be taken into very serious consideration by the senior leadership at NIFA and also the program staff. So thank you so much. If there are no more speaker on the agenda, let me hand it over to my colleague, no? Well she's saying any last minute housekeeping messages? No? Okay. Well thank you so much, appreciate it.

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