Agenda Brief
ESCOP Budget and Legislative Committee
Gary Thompson and Mike Harrington
For Information Only

The committee holds regular conference calls on the last Tuesday of each month that have generally been well attended. The current B&L Committee membership is shown below. Gary Thompson assumed the chair at the 2014 ESS meeting.

Chair: Gary Thompson (NERA)* Delegates: Barry Bequette (ARD) Carolyn Brooks (ED-ARD) Karen Plaut (NCRA) Ernie Minton NCRA Tim Phipps (NERA) Vacant (NERA) Bill Brown (SAAESD) Bob Shulstad (SAAESD) Jim Moyer (WAAESD) Jeff Steiner (WAAESD) Executive Vice-Chair Mike Harrington (WAAESD)	Liaisons Rick Klemme Chair ECOP BLC Paula Geiger (NIFA) Emir Albores (NIFA) Glen Hoffsis (APLU Vet Med) Eddie Gouge (APLU) Ian Maw (APLU) Dina Chacon-Reitzel (CARET) Cheryl Achterberg (APLU - BoHS) Jim Richards (Cornerstone) Hunt Shipman (Cornerstone) Vernie Hubert (Cornerstone) Chair elect –TBD, SAAESD

ROI White Paper: Previously The ESCOP and ECOP Budget and Legislative Committees agreed to work on the development of a white paper that would demonstrate the return on investment (ROI) of public investments in the AES and CES systems. In conjunction with Mike Hoffman and Daryl Buchholtz, Robin Shepard and Mike Harrington worked on the outline that was approved by both B&L Committees at the J-COPs meeting in Manhattan.

In early September 2014, the Executive Directors assembled a response to questions from Noah Engelberg at OMB. The questions were*: 1) What is the appropriate mix of competitive and formula funds? and 2) How can performance on individual projects be improved?* That response addressed many of the points in the outline and could serve as an initial starting point to develop a finalized document. Robin and Mike are again working with the respective committees to create a draft document that captures the value of what we do. Included here is a draft of the white paper that still needs Extension input. It is anticipated that a one page executive summary from the larger document would be finalized in time for the AHS-CARET meeting.

The Land Grant system - Meeting Current and future challenges

The history of the land grant colleges is generally well known, from first the Land-grant Morrill Act (1862) providing for practical higher education in agriculture and the mechanical arts to the second Morrill Act, (1890) which provided Land-grant status to the historically black institutions. Later on, other colleges including University of the District of Columbia and the "1994 Land-grant colleges" for Native Americans were also awarded "Land-grant" status. The Hatch Act of 1887 provided federal funds to states to establish agricultural experiment stations with a mission of developing new information (i.e. conduct research). The outreach mission included in the Smith-Lever Act of 1914, creating the Cooperative Extension Service, which placed agents into rural areas to bring the results of research to the end users. Each Land-grant college receives an annual Federal appropriation for research and extension work on the condition that those funds are at least matched 1:1 by state or local funds.

Today's Land-grant University is a very comprehensive institution and Colleges of Agriculture (or expanded title) therein have multiple departments with research and teaching faculty serving more than 160,000 undergraduate and some 30,000 graduate students each year and through Extension, maintain outreach efforts in more than 3,400 counties in the U.S.

The Nation's Agriculture Experiment Stations and Cooperative Extension work hand-in-hand to assure community-based engagement informs relevant science, research results get generated in a timely fashion, so that practices can be improved. This iterative process is where true innovation occurs and requires both competitive and capacity funding for rapid responses and long-term research and education. Research and Extension have national representative leadership committees on organization and policy that define national priorities. See http://escop.ncsu.edu/docs/scienceroadmap.pdf for ESCOP's *A Science Roadmap for Food and Agriculture* and https://www.aplu.org/document.doc?id=4096 for ECOP's *Cooperative Extension Strategic Opportunities.* Underscoring the strong alignment of research and Extension at state and local levels, the two documents, developed through separate processes, show a striking alignment.

Funding for Capacity Programs has declined: The formula funds are now termed capacity funds because they provide critical infrastructure at State Agriculture Experiment Stations and for Cooperative Extension that facilitate the success of the U.S. agriculture system. While there have been small increases in the competitive funding area , according to USDA-NIFA data, capacity fund programs have lost as much as 40% in buying power over the last 20 years (Figure 1). Simply put the same or new innovation services cannot be provided with fewer funds.

The top federal funding priority for State Agricultural Experiment Stations and Cooperative Extension organizations is maintaining steady increases in capacity funds, ideally at least recovering lost buying power. There are few other federal programs where limited funds have been leveraged at least five to six times with state funds annually over a period of decades, in this case to yield ongoing positive impacts on the nation's food and fiber system, as well as related issues such as alternative fuels, environmental sustainability, economic development, and health and well-being of our citizens in both urban and rural settings.

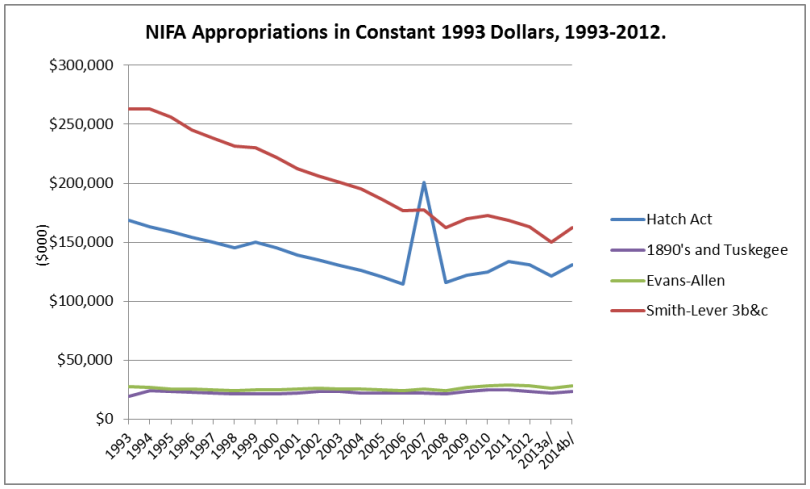

Figure 1 (Data provided by NIFA, constant 1993 dollars)

More Competitive Funding Is Needed: The most recent AFRI Annual Synopsis for 2010 indicates that there were over *$2.6 billion* in highly meritorious proposals that would have been awarded if funds were available. Unfortunately, only 403 proposals could be funded from the available $232,649,478. Inadequate funding of NIFA competitive and capacity programs jeopardizes the world's most productive and successful Agricultural Research and Cooperative Extension system.

The value of the capacity funding mechanism has been questioned by the Administration, through the Office of Management and Budget and others who assert that, *"The best science results from externally funded competitive programs."* This premise assumes that competitive programs provide the best outcomes, but there is little hard evidence to support this assumption. Huffman and Evenson observed in their paper[1], that as increases occur in the share of State Agricultural Experiment Station funding from federal contracts, grants, and cooperative agreements (not limited to USDA), the impact of public sector agricultural research on state agricultural productivity declines. Huffington and Evenson, 2006, noted that "each unit of Hatch formula funding of SAES research had a larger impact on local agricultural productivity than a similar unit of federal competitive funding." These authors maintain that between 1970 and 2004 the marginal real rate of return was approximately 50% annually on Hatch and Smith Lever formula funds[2]. More conservative estimates place return at 20% annually.

SELECTED OUTCOMES FROM FORMULA FUND INVESTMENTS

Significant efforts have been made to collect information on project and programs outcomes via federally required State Plan of Work that integrates experiment station and Extension activities and

[1] *New Economic Evidence on Agricultural Total Factor Productivity Determinants: Impact of Funding Compositions,* August, 2005

[2] Huffman, Norton et al. Investing in a Better Future through Public Agricultural Research. CAST Commentary QTA 2011-1, March 2011)

state annual reports thereon. Individual faculty members must also report on Hatch projects as well. Newly initiated efforts are collecting specific information on individual project and program outcomes.

Extension Outcomes (5 stories)

Research Outcomes (Hatch, Evans Allen and State Funds) (5 stories)

Wastewater Treatment System Saves Turkey Processor Millions, Protects Environment: Wastewater from food processing plants is often pre-treated at considerable expense before it is sent to municipal wastewater treatment plants causing environmental concerns. The Ohio Agriculture Research and Development Center (OARD) agricultural engineers have developed treatment system for turkey slaughterhouse wastewater. The four-acre sand and gravel bioreactor, the first of its kind, treats the wastewater from 7,000 processed birds per day achieving 99% BOD (biological oxygen demand) removal and 53-85% ammonia removal. The treated water runs clear. The bioreactor cost is estimated to be $2.8 million over 20 years saving the owner about $10 million from the proposed alternatives. The new bioreactor plant went online in August 2012 and

Hypoallergenic Peanuts: The prevalence of peanut allergy in the U.S. population ranges from 0.6 percent to 1.3 percent (2-4 million people) and this allergy is rarely outgrown. Scientists in the Food and Nutritional Sciences Program at North Carolina Agricultural and Technical State University have developed a safe, relatively simple technology for deactivating/reducing the allergenic proteins in whole roasted peanuts by up to 98%.

Integrated Research and Extension

Economic Development: The Arkansas Division of Agriculture's Breakthrough Solutions Community and Economic Development team and 18 partner organizations help communities build the basis for a vibrant and prosperous future. Harrison, the pilot community, reported a net increase of 35 new businesses from 2009 through the 2012.

Multistate Research Program (reduce to 5-6 stories)

The Agriculture Experiment Stations support nearly 300 multistate projects (See NIMSS) many of which are integrated with Extension and academic programs. In addition to providing critical support for faculty and technicians, many of these projects also support both graduate and undergraduate students. These regionally and national peer reviewed projects typically involve scientists from all regions, ARS, ERS, etc. and are consistent with the USDA Goals as well as ESCOP's Science Roadmap for Agriculture. Support for these projects comes primarily from Hatch Multistate but also includes Hatch, McIntire Stennis, State Matching and, where appropriate, Evans-Allen Research as well as Smith-Lever and other Extension capacity funding when integrated with Extension (ERA designation). The State Agricultural Experiment Stations also support peer reviewed National Research Support Projects (NRSPs) that

provide crucial data which enables/facilitates research by agricultural and other scientists nationwide. The Agriculture Experiment Stations currently invest $1.231 million in 7 NRSPs that have leveraged over $30.6 million in other funding.

Together these projects result in savings of several hundreds of million dollars annually to the $225 Billon U.S. agriculture industry as well as significant leveraging of capacity and state dollars in the form of grants and contracts from the USDA-NIFA Agriculture and Food Research Initiative (AFRI), NIH, NSF, DOE, DOD, NASA, commodity groups, foundations and other sources.

Additional ioutcomes can be found in the Impact Reports on multistate projects that are assimilated at the end of the project period. (See: 2011 Impact Statement Catalogue, and 2012 Impact Statement Catalogue)

Rural Population Change (W-2001) has provided data and insights on demographic trends in rural areas that are essential for plans, programs, and policies that support sustainable rural communities and promote residents' quality of life. This research has helped public policy makers and rural residents design or modify programs, so that they address important issues and are adapted to current and projected rural population trends. Federal, state, and local decision-makers have been empowered to compare situations and learn from each other's experiences.

Personal Protective Technologies (NC-170) has improved textiles and personal protective garments (PPE) for workers in hazardous occupations, leading to better safety and job performance. Specific outcomes include: improved protection from dangerous chemicals and pathogens by developing self-decontaminating materials for industrial workers, first responders, public health workers, and military personnel (the design of body armor that has been adopted by the U.S. Marine Corps) and ensure a baseline level of protection for workers by setting standard performance specifications for PPE sold in the U.S. This national project has improved tools and methods for testing PPE performance.

Preventing Obesity in High Risk Families (W1005) has advanced the science of child obesity prevention, particularly about parenting, energy dynamics, and lifestyle factors. By focusing on these factors, child obesity prevention programs can be more effective in family and community settings.

Management of Small Grain Diseases (NCERA-184) has improved monitoring and management of diseases in small grains, thus preventing millions of dollars in losses due to poor grain yield and quality and assuring an ample supply of grain for consumption and other uses in the U.S. and with U.S. commodities traded globally. Research results have provided information about Fusarium Head Blight to thousands of farmers in 30 states, helping prevent serious outbreaks resulting in savings of $47 million per year.

Emerging Soybean Rust Threat (NCERA-208) alerted the soybean industry when and where soybean rust (SBR as detected, thus saving North American soybean producers over $600 million in unnecessary fungicide costs), reducing chemical exposure to the environment and food supply, and diminishing apprehension among the soybean industry.

Regulating Photosynthesis (NC-1168) has made significant strides in identifying genetic mechanisms that increase resistance to salt, heat and water stress, reducing crop loss and costs and advancing strategies to maintain plant yields under climate change. They have also discovered ways to regulate gene expression during photosynthesis, enabling scientists to modify crop genetics without introducing foreign genes, thus relieving many consumer concerns about genetically engineered plants.

Bioactive Dietary Chemicals (W-2122) advanced our understanding of bioactive dietary chemicals that can be either beneficial or harmful to human health, thus identifying ways to improve food safety, prevent common diseases, and ensure that consumers have a healthy food supply. Research results have helped consumers make more informed, healthier choices about whether to take dietary supplements. For example, researchers found that the estrogen-like compounds (isoflavones) in some soy supplements can stimulate growth of estrogen-dependent breast cancer and can negate the effectiveness of breast cancer therapies. In addition, outcomes have improved food safety by identifying how to prevent contamination from food-borne toxins during processing, preparation, and other post-harvest activities

Nutrient Analyses (SERA-006) of plant and soil has promoted accurate, unbiased procedures for nutrient analyses, facilitating better nutrient management that ensures the sustainability of agricultural production and natural resource stewardship in the southern U.S. The project also reduced over application of nutrients, saving producers tens of millions of dollars and protecting surface waters and groundwater from potential contamination.

Biological Control of Pests in Plant Systems (W2185) provided successful, cost effective, and sustainable pest control in agricultural and natural settings by releasing, manipulating, and conserving the predators, parasites, and pathogens that attack harmful insect and weed pests. From 2007 through 2010, property owners/managers in the northwestern U.S. saved an estimated $500,000; in 2011 alone, they saved $250,000 by biologically controlling weeds. Over the last 16 years, an IPM program that incorporates natural enemy conservation saved Arizona cotton growers $388 million by reducing crop loss and chemical pesticide use.

Biological Improvement of Chestnut (NE1333) has focused on the important goal of restoring the American chestnut, previously on of the most valuable trees in eastern North American forests. Some of the many outcomes of this project has been the development of (1) new blight resistant chestnut cultivars as both timber crops and orchard trees for nuts; (2) new strategies for planting chestnuts in harvested and disturbed ecosystems; (3) biocontrol viruses that provide more options for controlling pests and diseases of chestnut trees; and (4) an aggressive program to reintroduce domestically grown chestnuts as a diversely used food source for common consumption.

Enabling Pesticide Registrations for Specialty Crops and Minor Uses (NRSP4 or IR-4) has been the primary entity in the United States to facilitate registrations of pesticides and biopesticides on specialty food crops and non-food ornamental horticulture crops. The IR-4 Project esearch data facilitated nearly 16,000 food crop registrations and an additional 160 product registrations impacting nearly 31,000 ornamental crop uses. IR-4 contributes an estimated $7.2 billion to U.S. Gross Domestic Product and the Program supports nearly 105,600 jobs[3].

[3] Miller, S.R. and A. Leschewski (2011). Economic Impacts of the IR-4 Project and IR-4 Project Programs. East Lansing, MI: Michigan State University's Center for Economic Analysis.