

## [2012 NC-FAR Lunch~N~Learn Hill Research Seminars-Abstracts](#)

### [THE NEXT 40 YEARS](#)—*The Challenge of Feeding 9.6 Billion*, Dr. Robert Thompson, **Johns Hopkins U**

With the projected growth in population, the world's farmers are being asked to produce enough more food to feed the equivalent of two more Chinas in the next 40 years. Where can this production come from? The only sustainable future is one in which we close to double the average productivity of land already in production worldwide. Malthus has been wrong for more than two centuries because he underestimated the power of agricultural research to increase productivity in agriculture faster than the demand for food has grown. There is no more excuse for him to be right in the 21<sup>st</sup> century than he was in the 19<sup>th</sup> or 20<sup>th</sup>, but he will continue to be wrong only if we redouble our commitment to investments in agricultural research.

### [OUT OF THE TRASH AND ONTO TRAYS](#)—*Increasing Fruit & Vegetable Consumption in the School*

*Lunch Program*, Dr. David R. Just, **Cornell**

The Healthy, Hunger-Free Kids Act introduced new guidelines for school lunch, including the requirement that lunch must include a fruit or vegetable serving to receive federal reimbursement. Research funded by the U.S. Department of Agriculture shows that some of the fruits and vegetables are eaten, but the majority is thrown away, costing the school system thousands of dollars and doing nothing to improve child nutrition.

Alternative approaches that emphasize student choice, paired with subtle nudges toward healthier choices, have large impacts on fruit and vegetable consumption at nearly no cost. From offering pre-cut fruit to optimizing placement of salad bars, food service directors and policymakers can implement no-cost and low-cost changes in lunchrooms that lead students to make smarter, healthier food decisions.

### [LOCATION, LOCATION, LOCATION!](#)—*Putting Forested Buffers in Their Place*, Dr. Michael Dosskey,

**U.S. Forest Service**

Vegetative buffers are strips of grass and trees designed into agriculture landscapes to improve drinking water quality and aquatic health by trapping sediment and farm chemicals from runoff before they get into streams. Recent studies are showing that some of these locations are much better than others for getting solid conservation returns. The simplicity of these tools facilitates their widespread use by field professionals. By guiding conservationists toward higher-impact locations and away from less-promising ones, the use of these new tools may substantially improve the cost-effectiveness of vegetative buffers and water quality improvement programs.

### [WHAT WOULD LINCOLN DO?](#)—*The Critical Value of Extension in Translating Agricultural Research*, Dr.

Douglas Steele, **Montana State**

The extension component of the land-grant university mission sets these public institutions apart from all others by focusing on how research can be translated to practical application. The presentation will summarize how transformational education offered through Cooperative Extension programs nationwide is at the core of assuring research results get in the hands of those who need them most. What would Lincoln do? Blend high touch, community-based educational opportunities with cutting edge high teach ones, and prioritize programs to focus on changed behavior.

### [SAFEGUARDING THE SEEDS OF OUR FOOD SECURITY](#)—*The U.S. National Plant Germplasm*

*System*, Dr. Peter Bretting, **USDA, ARS**

Genebanks support global food security by ensuring global access to these plant genetic resources in the face of many daunting challenges. Researchers and plant breeders turn to genebanks for sources of resistance to diseases and pests, tolerance to environmental extremes, materials for key experiments, or for new valuable products. Scientific interest in these genetic materials has increased tangibly during the last five years, with the NPGS distributing more than 1 million plant samples to researchers and breeders world-wide.

### [HEALTHY ANIMALS, CONFIDENT CONSUMERS](#)—*The Direct Relationship Between Animal Health*

*and Food Safety Outcomes*, Dr. H. Scott Hurd, **Iowa State**

As global food demands increase, the need for healthy livestock must be brought into focus. The U.S. food safety inspection system holds that healthy animals are essential for safe food and inspects accordingly, but good health can't be determined solely on the way an animal looks while alive. The authors cite studies demonstrating the connection between subclinical (not visibly ill) animal health and carcass contamination with foodborne pathogens. To promote high productivity in animal agriculture, decision makers need to consider nutrition, management systems, and biomedical policies including housing, the use of antibiotics, and vaccines.

**AMERICAN AGRICULTURE COOPERATES**—*Economics, Research and Structure of Farmer Owned Cooperatives*, Dr. Phil Kenkel, **Oklahoma State**

Farmer owned cooperatives are an important part of the American agricultural sector and part of a broader cooperative business model that is successful in all sectors of the U.S. and world economy. Research has demonstrated that businesses organized as cooperatives have higher economic impact and job creation in the rural community relative to firms owned by outside investors. There is a need for continued public-private partnerships for research on cooperatives. There is also the need to create a better understanding of the cooperative business model among policy makers, accountants, consultants and attorneys. The lack of familiarity with the cooperative business model among support professionals is an impediment to the development of new, successful cooperatives.

**HANDS-ON SCIENCE IN THE WILD**—*Discovery of the Innate Plant-Protective Properties of Plants, and Delivery to the U.S. Marketplace and Beyond*, Dr. Mary Ann Lila, **North Carolina State**

Plants that exist at the extremes in nature can masterfully produce unique chemical cocktails that allow survival despite environmental stresses. Consumers are aware of the term ‘antioxidant’ as proactive route to make dietary choices that avoid chronic human diseases—in particular, cancer. Still, research suggests that only 1% of the adult US population (and 2% of kids) consumes the recommended amount of these plant-based components on a daily basis. Urgent research priorities and milestones to be discussed include; validation of bioactive attributes in plant foods, development of novel functional food formulations and translation of functional food technology into a biofortification strategy.

**A DIAGNOSIS OF TROUBLED WATERS**—*Impacts of Ag Land Management Change on Water Quality*, Dr. Donald Huggins, Kansas Biological Survey, **U of Kansas**

Governments are making substantial investments in the modification of agricultural production activities. Land management practices obviously are but one of multiple factors affecting streams. These range from natural determinants of stream quality to imposed conditions related to current land use, farm practices, altered hydrology, legacy conditions from past uses, and other watershed activities. Understanding the role and interplay of land- and stream-related factors in determining water and stream quality is necessary in implementing watershed changes and allowing time for these changes to translate to stream improvements.

**CAN PROCESSED FOODS BE HEALTHY?**—*How Do Processed Foods Fit into a Healthy Lifestyle*, Dr. Eric Decker, **U of Massachusetts, Amherst**

Now more than ever, the role of food in health is of great interest and concern to many people. During much of this debate, processed foods have been demonized as the root of our nutritional problems. However, when you look at this issue more closely many questions arise: What exactly is a processed food? Are all processed foods equal? Can we really eliminate processed foods from the diet? Is there any evidence that processed foods are unhealthy? This seminar will take a critical look at the origin and composition of processed foods to evaluate if they can fit into a healthy lifestyle.

**INVASION PERSUASION**—*A Review of a Successful USDA Program For Defeating a Wide-Spread Invader: TEAM Leafy Spurge*, Dr. Rodney Lym, **North Dakota State**

Managing a wide spread invasive weed like leafy spurge in a cost effective manner was a hopeless situation for most land managers prior to 2000. In MT, ND, SD, and WY, leafy spurge caused over \$130 million in losses each year. In 1997 under leadership from USDA, The Ecological Area-wide Management (TEAM) Leafy Spurge project was initiated to research and demonstrate IPM strategies to effectively manage leafy spurge. By 2011, it was estimated that the five year research and demonstration program helped reduce the size of the leafy spurge infestation by 75% of what it would have been today. It would have been difficult if not impossible to have done this in four states without the USDA Area-wide Pest Management Program.

**PUTTING ENERGY IN TO GET ENERGY OUT**—*Energy Issues Affecting Corn/Soybean Systems: Challenges for Sustainable Production*, Dr. Doug Karlen, **USDA, ARS**

This Issue Paper examines energy issues associated with and affecting corn/soybean rotations by first defining the size of the system from both a U.S. and global perspective and then establishing boundaries based on the Farm Bill definition of sustainability. Two key economic challenges for decreasing energy use are (1) overcoming adoption barriers and (2) demonstrating the viability of sustainable bioenergy feedstock production. To help address the complex energy issue, life cycle assessment is used as a tool to evaluate the impact of what many characterize as a simple production system.