2015 INDIANA SMALL FARM CONFERENCE
POSTER PRESENTERS

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Andrea Burniske
International Programs in Agriculture, Purdue University

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Local Food: What Does “Local” Mean?
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Efficacy of Household Sanitizers for the Reduction of Listeria monocytogenes and Salmonella s.v. Typhimurium on Cantaloupe
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Yingying Hong, Samantha Hatter, and Paul Ebner
Department of Animal Sciences, Purdue University

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PICS Bags for Safe Storage of Food, Feed, and Seed
Scott B. Williams, Dieudonne Baribusta, and Larry Murdock
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Small Farming for Food Security: An Interactive Curriculum
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Economic Based Decision Support for Sustainable Horse Drawn Farming Enterprises
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Horse drawn farming enterprises can be profitable ventures that are economically and environmentally sustainable as well as beneficial to rural communities. This project addresses the lack of research-based information available about the economics of horse drawn farming as a viable option for farmers and ranchers, with horses as either their primary form of power or as a supplementary form used in conjunction with machine power. This analysis will involve quantitative and qualitative measures of horse drawn farm enterprises such as purchase costs of draft animals, expenses needed to maintain horses, acreage, labor, and expertise needed. Information used to construct the budget will be provided by working draft powered farms in Indiana. The research will assist people looking to begin or transition to horse drawn farming make an informed financial decision best suited for their needs, thereby increasing the likelihood of a successful and sustainable venture. This project will not only look at the profitability of horse drawn farming utilized in different production and/or cropping scenarios, but will also aid in decision making through the development of a decision support tool which is based on the resources available to the individual. This tool will be employed in Extension programming as well as hands on training at draft horse seminars. Farmers and ranchers looking to employ horse drawn farming in addition to tractors can apply the findings to determine if horse drawn farming complements their unique circumstances, thereby enhancing rural livelihoods through improved decision making and better profitability.

Local Food: What Does “Local” Mean?
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What are consumer preferences for locally grown meat products? What does local mean to consumers when purchasing meat? What socio demographics are related to consumer definitions of local? As the debate about what animal agriculture “should” look like continues, it is important to understand what consumers perceive attributes and buzzwords such as “local” to mean especially for meat products such as pork chops and chicken breasts. A recent nationwide survey of US consumers who self-reported as being active in hunting, fishing, or other outdoor activities revealed 28% of respondents reported local food as having been produced within 10 miles of their home. Those respondents who reported regularly hunting and/or fishing are more likely to indicate “local” food is produced within 50 miles of their home; meanwhile, those who participate in other outdoor activities, like hiking or camping, are less likely to indicate “local” food is produced within 50 miles of their home. Preliminary results of a simulated...
purchasing scenario indicate outdoor enthusiasts are willing to pay for verified locally produced chicken breasts, but are not willing to pay for verified locally produced pork chops. What could account for this difference? Is it possible consumers feel differently about pigs and chickens? This project will explore how the willingness to pay for locally verified meat products is related to demographic factors and outdoor activities.

Efficacy of Household Sanitizers for the Reduction of Listeria monocytogenes and Salmonella s.v. Typhimurium on Cantaloupe
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2Department of Food Science, Purdue University, West Lafayette, IN

Recent outbreaks and recalls associated with cantaloupe contaminated with Salmonella Typhimurium and Listeria monocytogenes have led to an increasing need for methods consumers can use at home to clean and sanitize cantaloupe before consumption. Hot water (82 °C) and household chemicals (bleach (0.25% and 0.02% chlorine), vinegar (1% and 0.1% acetic acid), iodine (0.1%), salt (3%) and hydrogen peroxide (1% and 0.1%)) that are readily available to consumers were tested to determine their efficacy for the reduction of S. Typhimurium and L. monocytogenes inoculated on cantaloupe surfaces. Cryos-scanning electron microscopy was performed to demonstrate that biofilms were present for each bacterium tested before treatment. Each household sanitizer was tested either by soaking in the solution for 5 or 10 minutes, or by first scrubbing the cantaloupe surface under running water for 1 minute prior to soaking in the solution. Bacteria were enumerated from the treated and control samples to calculate the average log reductions for each treatment. Overall, scrubbing the cantaloupe surface prior to exposure to the sanitizer had a greater log reduction compared to the sanitizer alone. Hot water exposure for 5 minutes with scrubbing was the most effective at reducing S. Typhimurium on the cantaloupe surface (3.8 log reduction). The combination of 0.1% acetic acid and 3% NaCl for 10 minutes with scrubbing and 0.1% iodine for 5 minutes had a 3.2 and 3.1 log reduction, respectively, for S. Typhimurium. For L. monocytogenes, the hot water treatment for 5 minutes both with and without scrubbing had the highest log reduction (2.5 and 2.2 respectively). These results demonstrate consumers can use household sanitizers to reduce pathogenic bacteria on cantaloupe surfaces. However, it is difficult to remove biofilms once they are present and emphasizes the importance of on-farm prevention to inhibit the formation of biofilms by human pathogens on cantaloupe.

Introduction to Extension through Service Learning
Paul Ebner and Mark Russell
Department of Animal Sciences, Purdue University

Purdue Animal Sciences provides an annual international service-learning based course, in partnership with Banat University for Agricultural Sciences (Timisoara, Romania), Heifer International, and the Hunedoara Association for Livestock and Poultry Breeders (Deva, Romania), that
introduces undergraduate students to effective Extension programming. In this course, US and Romanian undergraduate students form binational teams to work with small-scale Romanian livestock producers to design and implement solutions to the challenges that they face in their operations. Prior to initiating projects, students participate in a one semester preparatory course focused on understanding business, educational, and community development principles including the Heifer International model, sustainable development, and small farm and enterprise development. A heavy emphasis is placed on Extension methodologies including: conducting needs assessments, developing and delivering programs, survey methods and impact assessment. While in Romania, students conduct homestays, deliver Extension seminars or workshops and work directly with producers to design and implement better and more efficient production systems using appropriate technologies. Students complete self-assessments throughout the course to document not only what they learn, but how they learn. Through participating in the course, 83.3% of the students stated that they were “confident” (61.1%) or “very confident” (22.2%) in their ability to apply social, economic and environmental principles in another country with 88.9% of these students stating that this ability had changed since before participating in this course. All students (100%) stated that their ability to communicate and work with individuals from different countries “improved” (72.2%) or “greatly improved” (27.8%) as a result of participating in this course. Additionally, 94.5% of students stated that the experience greatly deepened their understanding of agricultural Extension. Finally, 100% of students stated that the experience broadened their knowledge of a range of cultures and an understanding of human values and diverse world views. Over 100 Purdue students have participated in the course, which has allowed students to enhance their education and training through practical application and engagement and, at the same time, improve the economic stability and sustainability of the various livestock programs.

Employing Bacteriophages to Reduce Salmonella in Meat and Eggs
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The incidence of Salmonella infection (15.19 per 100,000 population) remains well above the national Healthy People objective (11.4 cases per 100,000 population). Reducing such infections requires a multi-faceted approach. Bacteriophages are natural predators of bacteria, and in recent years, much attention has focused on their potential use as antibacterials in both veterinary and human medicine. Here, we aimed to determine if a single, broad spectrum phage could decrease Salmonella Enteritidis contamination in liquid whole eggs and ground pork. Likewise, we assessed the potential of targeted bacteria to develop resistance to the treatment over time. Ground pork and liquid eggs, experimentally contaminated with Salmonella Enteritidis, were treated with a broad spectrum bacteriophage and incubated for 24 h and 48h at room temperature, and for 24 h, 1 wk and 2 wk under refrigeration. Phage treatment significantly reduced Salmonella concentrations in ground pork (room
Post-harvest losses result in food insecurity and lost income to smallholder farmers and pose major challenges. Storage losses due to insects commonly reach 30%, but can reach as high as 100% depending on the crop and the region. Most of the existing pest management practices available to smallholder farmers are not effective or have lost effectiveness, are expensive, or present health hazards.

Entomologists at Purdue University developed a cost-effective and chemical-free grain storage technology, the “Purdue Improved Crop Storage” (PICS) bag. The PICS bag is a triple-layer hermetic technology composed of two inner liners of polyethylene and one outer woven polypropylene bag. The technology reduces postharvest storage losses of legume and cereal crops including cowpea, wheat, beans, chickpea, sorghum, maize, and wheat flour. PICS bags have also been shown to be effective in storing seed and in mitigating mold growth and aflatoxin development.

Since 2007, PICS bags have been disseminated in 23 countries in Sub-Saharan Africa and Asia to reduce storage losses among smallholder farmers. Purdue has also worked with extension services to train farmers and the private sector to develop the supply chain so that the technology is available in rural areas. To date, more than 2.5 million farmers have been trained in the proper use of PICS bags in at least 33,000 villages. Fifteen manufacturers have produced and sold more than 4.5 million bags to smallholder farmers. For small farms, including those in the U.S., PICS bags are a viable, chemical-free alternative for grain and seed storage.
Small Farming for Food Security: An Interactive Curriculum
Charlotte P. Wolfe¹ and Therese Niemier²
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²Bertrand Farm, Inc., Niles, MI

A team of three small farmers in northern Indiana/southern Michigan developed a curriculum to train new farmers and provide educational information to those adding new enterprises to their operations. Bertrand Farm, Prairie Winds Farm, and Clay Bottom Farm have been using internship programs in combination with the curriculum to recruit and train new farmers. Using a SARE funded grant, we created a modular, online, user friendly educational tool with a focus on sustainable and profitable food-growing practices for small farms. Our goal was to respond to the need for quick information retrieval for new farmers seeking to add outreach as part of their commitment to sustainable food production.

The curriculum is targeted toward farms marketing locally to meet food security needs by growing food intensively and sustainably on small acreages, using minimal fossil fuels. Many small farmers are interested in outreach but lack time or knowhow to put such a program in place. We hope these farming operations will consider adding interns and that this curriculum will help facilitate the decision to add a teaching component to their farm business. Interns could possibly use it to apply for credit to their institution of higher learning.

The current curriculum consists of 24 farm practices and design units presented as modules, each with a visual PowerPoint, references, and media resources. The modules can be tailored to the needs of each individual farm’s practices, and additional modules could be added if time & resources allow. The curriculum can be accessed at http://bertrandfarm.org/beginner-farmer/.

Thank you to all of the poster presenters!

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