A mobile poultry processing unit to provide small scale training and instruction for chicken processing from catching through cut-up and refrigeration is a useful extension tool. Outreach activities can include youth programming where meat-type or dual-purpose birds are raised from chicks with the end purpose of producing meat. Additionally, a mobile poultry-processing unit can also be utilized for backyard poultry flock producer training programs. A mobile processing unit has been designed by Auburn University to include poultry processing batch equipment that can easily be transported and set up at program locations. Program locations provide access to water and electricity. The mobile processing unit provides the equipment necessary for slaughter (cones, kill knife), scalding (turkey fryer), defeathering (drum picker), evisceration (table, knives, and scissors), and chilling (tub with ice and water). Once the carcasses have been chilled, further instruction on deboning and principles of food safety can be provided. The goal of extension programming regarding backyard poultry processing is to teach participants how to humanely and safely slaughter chickens for meat production. In addition, participants will be trained utilizing batch processing equipment that is readily available and relatively inexpensive. Upon completion of the chicken processing program instruction, participants will have the necessary knowledge to put together their own backyard chicken processing unit where their birds can be humanely and safely slaughtered for meat production.

Key Words: backyard flock, processing, extension, slaughter

The poultry sector in Myanmar is in its infancy. Majority of chickens are either raised in the backyard or in semi-enclosed chicken houses, sold at live markets, and butchered in small shops. The Myanmar poultry farmers have identified a need to develop the poultry sector to increase production efficiencies and hygienically process chickens. Hence, USAID has funded a “Farmer to Farmer” program executed through Winrock International to support the growth of Myanmar’s poultry sector. I had an opportunity to visit, interact and train the farmers, processing personnel and laboratory technicians on pre-harvest food safety, poultry processing, food safety and rapid methods for pathogen detection in March 2017. Based on the observations during the visit, there are several opportunities to develop Myanmar’s poultry sector given below. The poultry sector in Myanmar must get organized either through vertical integration or under farmer co-operative societies to determine the growth potential of the industry, identify the needs, develop and conduct trainings. The Myanmar Government should develop and conduct trainings for poultry farmers about loans or subsidies to build closed poultry houses. Most importantly, veterinarians should train the farmers on biosecurity and use social media to track disease outbreaks in poultry flock. Moreover, farmers and processing personnel must be trained on the scientific methods of processing to improve food safety and quality. The laboratory technicians can replace the classical techniques for pathogen detection and use modern rapid methods to detect pathogens.

Key Words: Myanmar’s poultry sector will become a model to develop food safety in other food sectors of the country.

Key Words: Myanmar, food safety

The 2014–2015 highly pathogenic avian influenza (HPAI) outbreak in the US was the largest animal health emergency in the country’s history. While the disease was initially introduced by wild birds, the majority of farms were infected by people and equipment traveling between farms. This example, along with smaller outbreaks that have taken place in 2016 and 2017, show the importance of biosecurity. Biosecurity can be defined as any and all procedures used to prevent the introduction and spread of disease-causing organisms. Currently, most individuals use the internet media to acquire knowledge when faced with challenges. To address this need, our Poultry Extension Team at the University of Maryland received a USDA-NIFA Smith-Lever Special Needs grant to develop short (6-min) biosecurity videos for commercial poultry growers, technical service personnel, and backyard poultry producers. These videos have been disseminated to poultry industry representatives, state and federal animal health agencies, Extension agents, and emergency response personnel. Additionally, the videos are also available on YouTube and at the University of Maryland Poultry Extension website in an effort to educate growers on ways to help prevent future outbreaks of avian influenza. By using short videos we are able to get beneficial information out to individuals that work with poultry in an easy readily available form.

Key Words: poultry, biosecurity, avian influenza, farms, growers

We undertook the present study to begin to test the capacity of laying hens to accomplish adaptive locomotion, which is the effective anticipation of obstacles and modulation of basic locomotor patterns for safe navigation through their environment. Three-dimensional rearing systems are structurally more complex than single-tier or caged systems, and the birds have much more space and opportunity to interact with their environment. To aid them in navigating this complex setting, ramps and perches are provided for reaching high-elevation tiers of the housing structures. If birds do not adapt their locomotion, injury may result. We measured the effects of incline angle upon the locomotor adjustments made to the preparatory step before climbing a ramp. We predicted that the largest kinetic changes would be made in response to the steepest inclines, specifically, that birds would modulate kinetics to maximize peak ground reaction force (GRF), as well as maximize ground contact time. We recorded 20 female domestic fowl preparing to ascend ramp inclines at slopes of +0, +40 and +70° when birds were 17, 21, 26, 31, and 36 weeks of age. We used a walkway integrated force plate to assess the GRFs, collecting force data one step before climbing the ramp. We found that the GRFs of the foot changed gradually for increasing slope angle, with significantly higher vertical peak
GRFs and longer level ground contact times in preparation for the steepest inclines. The magnitude of the peak vertical GRFs (relative to bodyweight) showed a significant increase at the greatest angle ($P < 0.0001$). Ramp inclines of $+40^\circ$ were no significantly different than horizontal ones, whereas higher vertical peak GRFs were measured on $+70^\circ$ ramp inclines compared with $+40^\circ$ ramp incline ($P < 0.0001$) and compared with the horizontal ramp ($P < 0.0001$). Our results show that domestic fowl modulate locomotion patterns in response to incline angle in a manner that suggests anticipation. These new data on bipedal kinetic modulation are essential to understand how safe locomotion is controlled in laying hens.

**Key Words:** incline, locomotion, ground reaction force, adaptive walking, bird

237 Teaching food defense in the age of the *Food Safety Modernization Act*. Emefa Monu* and Robert Norton, Auburn University, Auburn, AL.

Food defense deals with planning and prevention of intentional contamination of food products. Changes in the FDA’s *Food Safety Modernization Act* (FSMA) have made Food Defense plans (FDP) mandatory for food processors. Students need training to prepare their entry to the workforce. This presentation highlights the importance of incorporating FDP in poultry science and food science curricula. Case studies inform students of potential scenarios and keep them current on events in the industry. Students’ comprehension of concepts will be tested before and following introduction to potential intentional contamination scenarios. Beyond these, students must also understand sources of threats and motivations of threat actors. Development of individualized FDP introduces students to the practical tools and techniques needed in the workforce, including on-line tools, such as the FDA Food Defense Plan Builder. As the purpose of Food Defense education is to train students for their roles in the food industry, involvement from the industry would be vital, including guest lectures. Since computers and the internet have become so important to business, cyber security will also be included. Although Food Safety has been part of the curriculum in Food Science and Poultry Science for decades, FDP educational requirements are new, undeveloped and untested. The goal of this effort is to gather assessment data to be used to better prepare future FDP curricula. Food Defense training is available, usually in workshops aimed at individuals already in the workforce. The approach promoted here provides both the focused education and training before students enter the workforce. By updating our curriculum to cover FDP topics now required by FSMA and incorporating rigorous assessments, corrections in the curricula can be quickly implemented, providing students with the tools, techniques and strategies to contribute to the defense of our food supply.

**Key Words:** food defense, FSMA, on-line tools, cyber, education