

NEWS & VIEWS

USPOULTRY[®]

U.S. POULTRY & EGG ASSOCIATION

May/ June 2020

IPPE Ranks #22 on TSNN's Top Trade Show List

Unlocking the Mysteries of Blackhead Disease in Poultry

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NEWS & VIEWS

MAY / JUNE 2020

News & Views is produced quarterly by the U.S. Poultry & Egg Association, the world's largest and most active poultry organization. USPOULTRY represents the entire industry as an "All Feather" Association. USPOULTRY is a nonprofit organization which represents its poultry and egg members through research, education, communication and technical assistance. Membership includes producers and processors of broilers, turkeys, ducks, eggs and breeding stock, as well as allied companies. Formed in 1947, the Association has member companies nationwide and affiliations in 28 states. USPOULTRY also sponsors the International Poultry Expo.

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Slog Forward One More Step

“Slog – n., long, hard work.”¹

A slog is what our industry is in right now. The virus, the countermeasures, the illnesses, the supply chain, the market shifts, the absenteeism, the negativity and the unknowable unknowns. And, as one item is addressed, it seems as though two or more come in its place. But still, the industry persists: it slogs. Quality poultry products continue to be distributed to consumers worldwide. And generally, as I've talked to people across the industry, there is a cautious sense that conditions are slowly improving. But for now, it's still slog forward one more step.

I've been fortunate in my career to be involved in the design, construction and start-up of three greenfield broiler plants (and one hamburger plant). One of these start-ups was extremely “all hands on deck” tough for the first 120 days. Many of you have been in similar situations. What we are slogging through now will obviously last more than 120 days. But, just as obviously, it will pass. Winston Churchill captured it well: “When you're going through hell, keep going.” Thank you and keep slogging!

¹American Heritage Dictionary, William Morris, Editor, New College Edition 1980

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IPPE RANKS #22 ON TSNN'S TOP TRADE SHOW LIST



The International Production & Processing Expo (IPPE) is pleased to announce its recognition by Trade Show News Network (TSNN) as ranking #22 in net square footage on the 2019 TSNN Top Trade Show list. All trade shows on the list are based in the United States and are ranked by overall net square footage. The 2019 IPPE had 1,426 exhibitors and 594,052 net square feet of exhibit space. IPPE is sponsored by the U.S. Poultry & Egg Association (USPOULTRY),

the American Feed Industry Association and the North American Meat Institute.

"IPPE is honored to be recognized for its growth. This is the highest ranking IPPE has attained, and it could not have been achieved without the commitment of our exhibitors and attendees who appreciate smart collaborations between the right industries. Bringing three strong industries together allows all of our members and the industry at large to see the newest technology, equipment, suppliers and innovative solutions for their businesses in one combined event," said IPPE show organizers.

The 2021 IPPE will take place Tuesday through Thursday, Jan. 26 – 28, at the

Georgia World Congress Center in Atlanta, Ga. IPPE is the world's largest annual poultry, animal food and meat industry event.

Show updates and attendee and exhibitor information are available at www.ippexpo.org.



USPOULTRY Highlights Poultry and Egg Farm and Poultry Facilities Environmental Stewardship in Observance of Earth Day

In observance of Earth Day, USPOULTRY is highlighting two videos from its series emphasizing environmental stewardship on poultry and egg farms and at poultry companies with exemplary performance at water reclamation. The two videos are of Herbruck's Poultry Ranch in Saranac, Michigan, and Tyson Foods in Russellville, Arkansas.

Herbruck's Poultry Ranch is a recipient of USPOULTRY's Family Farm Environmental Excellence Award, which recognizes exemplary environmental stewardship by family farms engaged in poultry and egg production. Tyson Foods is a recipient of USPOULTRY's Clean Water Award, which recognizes exemplary performance at water reclamation facilities serving the poultry industry.



Herbruck's Poultry Ranch is the largest egg producer in Michigan. The Herbruck family has produced and supplied farm-fresh eggs to major retailers and food service outlets for decades. Their video highlights just a few of the practices Herbruck's uses to ensure a responsible environmental footprint, including developing a technology that processes hen litter into organic fertilizer onsite. This process drastically reduces odors and provides a nutrient-rich fertilizer for local farmers. Herbruck's also uses energy efficient equipment and methods at all facilities to reduce energy uses. To ensure the farm is a good neighbor and strong steward of the air, land and water, Herbruck's strives to maintain solid partnerships with local and state officials and first responders.



Tyson Food's Russellville, Arkansas, further processing facility treats an average of 200,000 thousand gallons of water per day. Their video highlights a few of the best practices the facility uses for water reclamation, including the installation of a supervisory control and data acquisition (SCADA) system to more efficiently monitor and operate dissolved air flotation units, flow



meters, tanks, pumps and other equipment remotely. In an effort to save energy, the facility manages the operation of tank aerators to ensure they are not running simultaneously.



The facility continuously reviews operations to expand its reuse of treated wastewater in an effort to cultivate and demonstrate their commitment to advance conservation efforts. The facility also offers team members the ability to participate in training courses from universities and other groups to further employee knowledge and increase the level of their wastewater treatment certification.

The videos can be viewed on USPOULTRY's YouTube channel at www.YouTube/USPOULTRY.org.



What Are the Identified Research Needs of the US Poultry Industry...Today?



Each year, USPOULTRY and the USPOULTRY Foundation fund more than \$1 million of research for the poultry industry through the Comprehensive Research Program (CRP). The CRP accepts research proposals two times a year during a Fall Competition and a Spring Competition targeted at one or more of the identified research needs broad topic areas. The list of identified research needs addresses the priorities of the industry and is updated every two years by USPOULTRY's Foundation Research Advisory Committee (FRAC). The FRAC consists of a panel of fifteen industry experts and all research proposals are evaluated by this Committee. The best proposals are recommended for funding.

The USPOULTRY CRP research program does not solicit research proposals on very specific topics. The research community can submit proposals on any of the priority topics. This open process provides the basis for a very successful, broad-based research platform and allows the USPOULTRY research program to contribute to the advancement of the poultry industry in many areas.

The current list of identified research needs includes goals and objectives for the following categories: (1) animal welfare, (2) breeder management (turkeys and broilers), (3) meat bird management, (4) commercial egg

production, (5) diseases, (6) employee safety and health, (7) environmental management, (8) feed mill operations, (9) food safety, (10) further processing, (11) genetics, (12) hatchery management, (13) live haul, (14) human nutrition, (15) nutrition, (16) poultry housing and (17) processing. Over the past two years, USPOULTRY has received many preproposals and requested full proposals which address these topics.



The FRAC will meet to discuss and compose the 2020-2022 list of identified research needs broad topic areas in the Fall of 2020. The Committee voluntarily dedicate their time and efforts into making sure that each area identified has the potential to resolve real industry problems.

The newly constructed list of research priorities will be communicated to researchers and research institutions with the objective of increasing awareness of industry research priorities, thereby ensuring that research funded and performed directly addresses the exigencies



of the poultry industry. As the needs of the industry have shifted over the years the USPOULTRY research program has responded by funding research to meet these changing needs.

We realize that new issues are always emerging and that scientists may see the importance of a potential problem that has not been recognized or cited as an industry research need. A great example of this is the COVID-19 pandemic. USPOULTRY invites proposals that address problems outside the industry lists but urges the submitter to provide ample background and justification to explain the need for the research.

Dr. Denise Heard
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USPOULTRY and Foundation Approve \$400,000 in New Research Grants Through the Comprehensive Research Program



USPOULTRY and the USPOULTRY Foundation have approved approximately \$400,000 for seven new research grants at six institutions through the comprehensive research program. The research funding was approved by the boards of directors of both organizations, based on recommendations from the Foundation Research Advisory Committee. The committee evaluates research proposals to determine their value to the industry and then makes recommendations to the boards for funding. Committee members are professional specialists from different segments of the poultry and egg industry who represent a variety of disciplines.

The Association's comprehensive research program dates back to the early 1960s when funds were first approved for poultry disease research. It gradually grew into an all-inclusive program incorporating all phases of poultry and egg production and processing. Since the inception of the research program, USPOULTRY has reinvested more than \$32 million dollars into the industry in the form of research grants. More than 50 universities and federal and state facilities have received grants over the years.

"Research is an important aspect of USPOULTRY's and the Foundation's service to the poultry industry. The Foundation Research Advisory Committee is the heart of the research program with committee members volunteering numerous hours reviewing and evaluating research proposals before making recommendations for funding. We sincerely appreciate and value their excellent work," said Greg Hinton, Rose Acre Farms, and USPOULTRY chairman.

The research grants for each institution include the following.

The Use of Accelerometers and Artificial Intelligence to Predict Presence of Woody Breast in Live Broilers Throughout Growout and in Broiler Fillets

University of Arkansas (research grant made possible in part by an endowing Foundation gift from George's Inc.)

Automated Tracking of Laying Hens in Cage-Free Aviary Environment Using Affordable Radio Frequency Identification (RFID) Chips
North Carolina State University

Pathogenicity and Genetic Profile of Turkey Hepatitis Reovirus (THRV)

University of Minnesota (research grant made possible in part by an endowing Foundation gift from the Cooper Family Foundation)

Comparative Genomics and In Vitro Screening Approach for the Identification of Vaccine Candidates for Food-Borne Pathogen *Campylobacter jejuni*

Mississippi State University (research grant made possible in part by an endowing Foundation gift from Peco Foods)

Effectiveness of Various Compounds in the Sanitation of Shell Egg Processing Equipment and Facility Surfaces

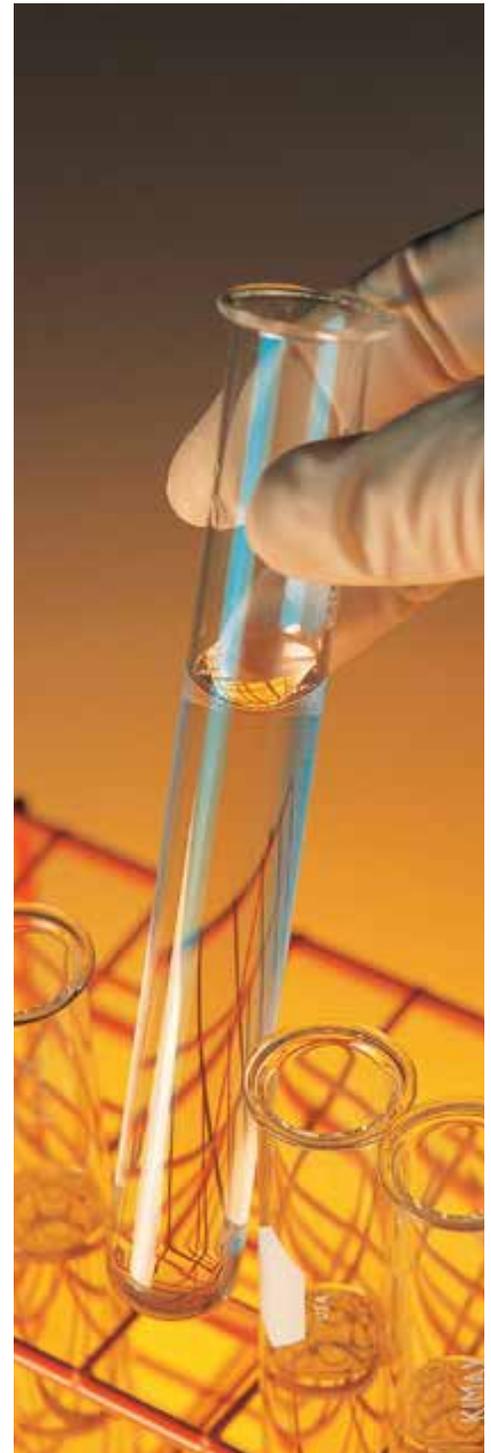
USDA ARS (research grant made possible in part by an endowing Foundation gift from MPS Egg Farms)

Using Electrostatic Precipitator to Improve Indoor Air Quality in Cage-Free Layer Houses

North Carolina State University (research grant made possible in part by an endowing Foundation gift from Cal-Maine Foods)

Poultry-Safe and Environment-Acceptable Pest-Repellent Paint

University of Kansas (research grant made possible in part by an endowing Foundation gift from Wayne Farms)



C3 Farms and Poultry, LLC, Recognized for Environmental Excellence by USPOULTRY

C3 Farms and Poultry, LLC, of Caldwell, Texas, was one of six farms across the United States to receive USPOULTRY's Family Farm Environmental Excellence Award during the 2020 IPPE in Atlanta. USPOULTRY sponsors the annual awards in recognition of exemplary environmental stewardship by family farmers engaged in poultry and egg production.

Applicants were rated in several categories, including manure management, nutrient management planning, community involvement, wildlife enhancement techniques, innovative nutrient management techniques, and participation in education and outreach programs. Applications were reviewed and farm visits conducted by a team of environmental professionals from universities, regulatory agencies and state poultry associations.

C3 Farms raises broilers for Sanderson Farms. The farm started in 1999 as Chmelar Poultry, which has since expanded its operation to include the Chmelar's children and grandchildren. This inspired the new name "C3,"

which represents the three generations of Chmelars that have lived and worked on the farm. Over the years, their operation has gone from four broiler houses to eight, all of which are run with the same systems and equipment to ensure consistency across the board. These broiler houses are maintained with a careful litter management system, windrowing and reusing clean litter and transporting composted litter for use on the fields of both the Chmelars and their neighbors.

As their operation has grown, Chmelars have kept their broiler houses up to date, installing LED lights and solid sidewalls to create an environment for their birds that is both calming and energy efficient. They continue to further their education, attending multiple seminars regarding rules, regulations and best practices for Concentrated Animal Feeding Operations. They are meticulous about biosecurity on the farm, carefully monitoring who enters the farm and offering disinfectant for shoes and tires at the farm entrance. The Chmelar family is highly involved in their

community, serving on the board for both the annual county fair and their local Farm Bureau agency. They actively participate in their local church, and one of their children runs a tutoring business assisting local schoolchildren. In the aftermath of Hurricane Harvey, the Chmelars were instrumental in sending trailers full of water, food and other needed supplies to hurricane victims.



Mike Levensgood (left), vice president, Chief Animal Care Officer and Farmer Relationship Advocate for Perdue Foods and vice chairman of the USPOULTRY board of directors, with Sherri and Jamie Chmelar

Mishler Turkey Farm Recognized for Environmental Excellence

Mishler Turkey Farm of Seymour, Missouri, was also one of six farms across the United States to receive USPOULTRY's Family Farm Environmental Excellence Award during the 2020 IPPE in Atlanta.

John and Carla Mishler own and operate their turkey operation in Seymour, Missouri, along with their five children, who are all involved in farm maintenance. The Mishlers raise turkeys for Cargill. In addition to the day-to-day operation of the farm, the family runs a vegetable garden on their land, fertilized by the litter from their own poultry houses. The vegetables that grow in this garden help to feed both their family and their community. The Mishler's oldest son assists with the farm's wildlife conservation efforts, restricting cattle access to the woods and following game

management laws to promote the growth and regulation of the deer species that live on their land.

The Mishlers have taken it upon themselves to stay current on best practices, participating in annual animal welfare training, process verified program trainings and other educational opportunities. They have taken the time to learn about solar energy and install solar panels on their turkey houses, creating a source of continued sustainable energy. They also continue to create plans to improve the energy performance of their operation. Their farm adheres to a strict nutrient management plan, which depends solely on the use of their own composted litter, ending the Mishlers' use of chemical fertilizer completely.

The Mishlers firmly believe in using sustainable agriculture in order to preserve natural resources for both their children and future generations. The leading motivation behind their operation is to create a better tomorrow through responsible farm management.



Levensgood with Carla and John Mishler

USPOULTRY Foundation Approves New Board Research Initiative Grant Addressing Blackhead Disease in Poultry

The USPOULTRY Foundation approved approximately \$120,000 in funding for a new research grant addressing blackhead disease in poultry through the Board Research Initiative program. The topic and request for proposal were selected by the USPOULTRY Foundation board of directors. The Foundation Research Advisory Committee evaluated several research proposals and then recommended which project to fund to the board.

The research grant is as follows, and the research was made possible in part by donations to the USPOULTRY Foundation. The donations were from a wide range of poultry and egg companies, individuals and families to support the Foundation's mission of funding industry research and recruiting students into poultry careers.

Methods for Preventing Blackhead Disease in Poultry

North Carolina State University (research

grant made possible in part by an endowing Foundation gift from Prestage Farms)

A better understanding of blackhead disease and its bird to bird transmission is needed to both improve the testing of alternative products to prevent the disease and identify best management practices to prevent large scale outbreaks. This project will develop and test a new type of vaccine using molecular techniques, as well as identify Heterakis vectors.

"The identification of preventative strategies and treatment options for blackhead disease in poultry is not only an economic need, but an animal welfare imperative," said Dr. Robert Beckstead, Prestage Family Distinguished Scholar in Turkey Physiology, Nutrition and Immunology with the Prestage Department of Poultry Science at North Carolina State University. Dr. Beckstead will be the primary researcher for the research on blackhead disease.

Dr. Denise Heard, USPOULTRY director of research commented, "Blackhead is such an important disease in the commercial turkey and chicken industries. With no effective vaccines to prevent blackhead and no approved treatments on the market, we must rely on novel research to provide innovative strategies to tackle this issue."

"For several years, the USPOULTRY Foundation has supported a number of projects related to blackhead disease, because of its continuing adverse impact on the turkey industry and the lack of approved proactive measures," said John Starkey, USPOULTRY Foundation president.

The USPOULTRY Board Research Initiative was created by the boards of USPOULTRY and the USPOULTRY Foundation to address current issues facing the poultry industry. The USPOULTRY Board Research Initiative operates alongside the USPOULTRY comprehensive research program and augments the great success of the existing program by focusing additional resources toward defined areas of research.

USPOULTRY Approves New Board Research Initiative Grant Focused on Animal Welfare

USPOULTRY approved approximately \$110,000 in funding for a new research grant addressing animal welfare in commercial broiler farms through the Board Research Initiative program. The research grant is as follows, and the research was made possible in part by donations from a wide range of poultry and egg companies, individuals and families to support the funding of industry research and recruiting students into poultry careers.

Effect of Variable Light Intensity Program on Broiler Gait Score, Stress and Central Positive Welfare on Commercial Broiler Farms

University of Arkansas (research grant made

possible in part by an endowing Foundation gift from Simmons Foods)

Light intensity has been shown to affect the activity of birds, but most studies have focused on constant light intensities to determine their effect on welfare. This project will provide objective measures to evaluate the impact on broiler welfare (i.e.; lameness, stress and behavior) by light sources and intensity.

"This research will help measure bird behavioral and physiological outcomes, allowing this information to guide the industry's efforts to continuously improve welfare for the birds entrusted to our care," said Karen Christensen,

Ph.D., senior director of animal welfare for Tyson Foods, and primary investigator for the animal welfare research.

Dr. Denise Heard, USPOULTRY director of research, commented, "This comprehensive animal welfare study will provide sound data to assist the industry with determining the optimum lighting program to improve overall broiler welfare."

"USPOULTRY has consistently funded research projects to further advance animal care and husbandry across all sectors of our industry. This is another step in that process," said John Starkey, USPOULTRY president.

Research Results

Funded by USPOULTRY and the USPOULTRY FOUNDATION

USPOULTRY and the USPOULTRY Foundation announce the completion of funded research projects. The projects are part of the Association's extensive research program encompassing all phases of poultry and egg production and processing. Brief summaries of the completed projects are shown below. The complete reports, along with information on other Association research, may be obtained by going to USPOULTRY's website, www.uspoultry.org.

Research Examines the Impacts of Cage-Free Layer Housing

Project #F075: Cage-free Housing: Northern Fowl Mite Impact on Laying Hens

Project #701: Laying Hen Ectoparasites: Impact of *Salmonella* Typhimurium, *Salmonella* Enteritidis and *Salmonella* Kentucky Contamination in Cage-Free Housing

(Dr. Darrin Karcher, Purdue University, West Lafayette, Indiana)

Dr. Darrin Karcher at Purdue University and colleagues from the USDA-ARS U.S. National Poultry Research Center recently completed two research projects. These studies examined the role and impact of northern fowl mites on laying hens in a cage-free environment and assessed horizontal transmission of *S. Typhimurium*, *S. Enteritidis* and *S. Kentucky* infection of laying hens in indoor cage-free housing. These projects uncovered some of the challenges with cage-free laying hens and the long-term financial impacts that a company may experience.

The research was made possible in part by endowing Foundation gifts from Cal-Maine Foods and Centurion Poultry.



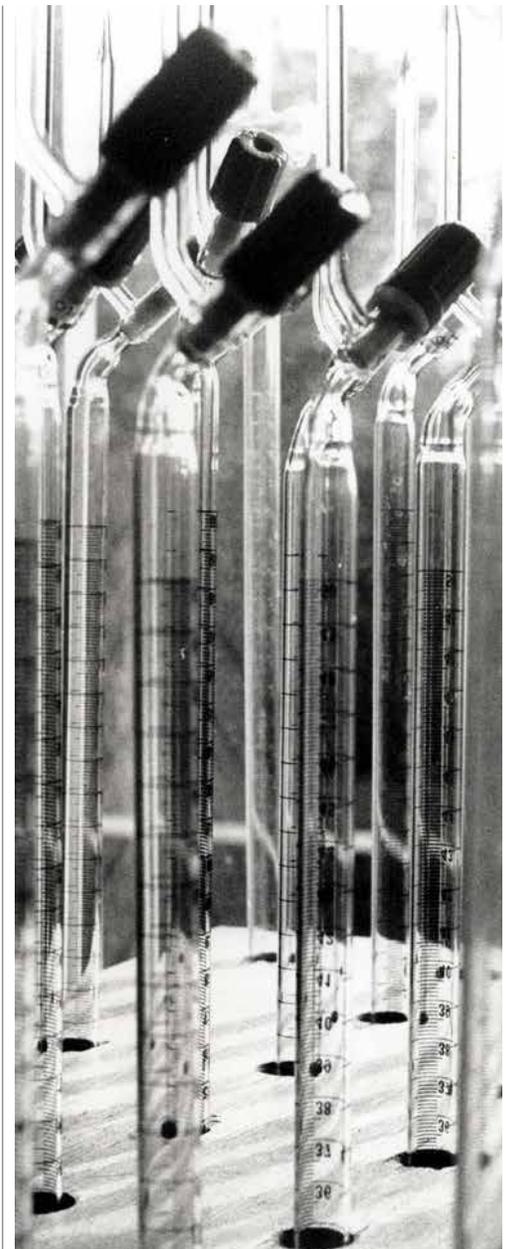
Research Focuses on Different Dietary Treatments for Woody Breast

Project #706: Nutritional Strategies to Reduce the Incidence of Wooden Breast in Pectoralis Major Muscles in Broiler Chickens

(Dr. W. A. Dozier, III, Auburn University, Auburn, Alabama)

Dr. Dozier and colleagues from Auburn University recently completed a research project in which they determined the effects of various levels of dietary lysine, vitamin C, phytase and potassium concentrations on reducing the incidence of wooden breast in broilers destined for further-processing markets. Data indicated that the different dietary treatments implemented in this study did not alter the incidences or the severity of wooden breast or white striping.

The research was made possible in part by an endowing Foundation gift from Peco Foods.



Research Results

Funded by USPOULTRY and the USPOULTRY FOUNDATION



Researchers Study the Role of APEC in Turkey Cellulitis

Project #707: Potential Impact of Litter Quality on *E. coli*-Associated Cellulitis in Production Turkeys in Iowa

(Dr. Catherine M. Logue, University of Georgia, Athens, Georgia)

Dr. Catherine Logue and colleagues recently completed a research project that sought to assess the potential impact of the turkey production environment microbiome (including litter), as well as completed a *Clostridium cellulitis* project to assess the role of litter and its quality on *E. coli*-associated cellulitis in turkey production.

Overall research findings suggest that the primary cause of cellulitis in turkeys is likely linked with clostridia. However, the role of Avian Pathogenic *E. Coli* (APEC) in the disease process should not be overlooked, as well as how the organism interacts with the host and clostridia present.

The research was made possible in part by an endowing Foundation gift from the Cooper Family Foundation.

Research Examines Novel Next Generation Sequencing Techniques

Project #711: Improvements in Molecular Diagnostics for *Mycoplasma*, Infectious Laryngotracheitis Virus and Other Important Avian Respiratory Pathogens

(Dr. Naola Ferguson-Noel, University of Georgia, Athens, Georgia)

Dr. Naola Ferguson-Noel at the University of Georgia Poultry Diagnostic and Research Center recently completed a project in which research was conducted to develop and compare novel next generation sequencing techniques. This research identifies relevant respiratory pathogens quickly and also differentiates them between vaccine and field strains.

The research was made possible in part by endowing Foundation gifts from Elton and Claire Maddox and the Georgia Poultry Federation.



Unlocking the Mysteries of Blackhead Disease in Poultry

Blackhead disease, caused by the protozoan *Histomonas meleagridis*, was not a problem for the modern poultry industry and could be readily treated or prevented by feed additives. Amidst the use of these products, blackhead research all but disappeared. Unfortunately, with the de-registration of anti-blackhead drugs in the 1980s and loss of the preventative Histostat-50 in 2016, blackhead disease has reemerged to cause financial difficulties for producers and an animal welfare problem for veterinarians. Fortunately, USPOULTRY had the foresight to begin funding blackhead research as far back as 1998 with more than \$346,983 spent on five research projects.

Dr. Robert Beckstead of North Carolina State University stated, "Without U.S. Poultry & Egg Association's support, my lab would not have focused on the problem of blackhead disease." Dr. Beckstead is the recipient of the 2020 Board Research Initiative grant aimed at the development of innovative methods to prevent or treat blackhead disease in turkeys and chickens.



Finding Clues About Blackhead Disease

Previous work in Dr. Beckstead's lab has shown that bird health influences the severity of



blackhead disease. Only when chickens are immunocompromised is production negatively affected by blackhead disease and mortality observed. Similarly, when turkeys experience secondary environmental and disease stresses, they are more likely to spread blackhead disease throughout the flock. Research supported by the board research initiative grant will develop new blackhead disease models, combining primary stressors with histomonas infection to mirror conditions that occur in production settings. These models will open the door to identify management practices to control blackhead disease and to test products that improve gut health and bird immunity.

Heterakis gallinarum, the Partner in Crime

Ultimately the survival and transmission of histomonas between flocks relies upon the cecal nematode *Heterakis gallinarum*. *Heterakis* eggs, which can survive in the environment for years, act as a natural encapsulation and carrier for the fragile histomonas. When a susceptible bird eats the contaminated heterakis egg, it becomes infected with both heterakis and histomonas, initiating blackhead disease. Chickens, which are a host for heterakis and histomonas, act as a disease reservoir shedding contaminated heterakis eggs into the poultry litter. Turkeys that consume contaminated heterakis eggs transmit blackhead disease to the flock but die before heterakis can complete its lifecycle. To break the cycle of blackhead disease between flocks, the heterakis egg needs to be destroyed. Prior research funded by USPOULTRY has shown that, unfortunately, the majority of cleaning products do not harm heterakis eggs. Additionally, as part of this

previous grant, the Beckstead lab showed that chlorine (bleach) can damage the heterakis eggshell. Research in the current initiative will use a combinatorial approach to identify disinfectants that, when used with chlorine, can kill the heterakis egg in the poultry house.

Collaborative Approach to Solving the Problem

"Robert is our Prestage Family Distinguished Scholar in Turkey Physiology, Nutrition and Immunology. He is very dedicated to helping solve industry problems. He has even set up a testing lab to evaluate products for industry to assess their effectiveness and help companies determine treatment strategies," remarked Dr. Pat Curtis, chair of the Prestage Department of Poultry Science.

It is impossible to eliminate all vectors of blackhead from the environment or ensure that birds are healthy and stress free and thus less sensitive to blackhead disease. Blackhead disease can only be controlled when there are tools available to prevent or treat the disease. To this end, the Beckstead lab is collaborating with USPOULTRY, faculty at North Carolina State University and industry partners to identify alternative products that have anti-histomonas and heterakis activity, develop a workable vaccine, and select for turkeys that are resistant to blackhead disease. Although these are ambitious goals, it is through this collaborative effort that the suffering that poultry needlessly have to endure because of the loss of efficacious products against blackhead disease can be eliminated. The Beckstead lab invites all who want to participate to come join the fight.

Dr. Robert Beckstead
Prestage Family Distinguished Scholar
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North Carolina State University

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Wooden Breast Condition in Broilers

In recent years, an economically important muscle condition affecting the breast muscle of broiler chickens, usually called “wooden or woody breast,” has emerged in the broiler industry. The condition is characterized by hard, chewy areas in the breast meat. Affected breast meat is safe to eat but usually unsuitable to be used as breast fillets. Little is known about the cause of the condition, and this has stimulated the poultry industry to conduct research to determine the cause and find solutions. Much of the research has been funded by USPOULTRY and the USPOULTRY Foundation. Eleven projects have been funded to date on woody breast research, with a total investment by USPOULTRY and the USPOULTRY Foundation of approximately \$620,000. These projects have been funded at North Carolina State University, Ohio State University, Auburn University, University of Arkansas, University of Delaware and the USDA Agricultural Research Service. Some projects are still in progress, but others have been completed; and we have already gained some important new insight on this condition.



Two projects have been completed, which characterized the condition and provided new information on how the condition develops in breast tissue. The initial indication of a problem is seen as microscopic inflammation of the small veins in the breast muscle of two-week-old birds. This inflammation of the blood vessels impairs blood flow and causes microscopic muscle fibers to die. These muscle fibers are replaced by microscopic scar tissue, which ultimately causes the muscle tissue to become hardened or “woody”. The longer the broiler lives, the longer this condition has to progress and produce hardened breast meat. It was thought initially that this condition occurred only in modern fast-growing broilers, but this research has shown that the condition exists in a broiler genetic line from the 1950s. The condition simply does not progress far enough in the 1950s chickens to be noticeable.

As we have worked to understand the condition, other efforts have focused on identifying affected breast fillets and removing them from the product line. This requires that each fillet be manually inspected to determine its condition, which involves a great deal of tedious labor. Three projects have been completed that attempted to find methods to mechanize this inspection and sorting process. Techniques were developed to use imaging-based technologies to create a type of vision grading, whereby automated equipment views the breast fillets and identifies those affected by woody breast. In addition, a technique was developed to use a handheld device that can be touched to each breast fillet and determine

its condition automatically. These new technologies are providing the basis for improved sorting of breast fillets and are being adapted for use in broiler processing plants today.

Other ongoing areas of research are focused on factors involved with the rearing of the broilers to determine whether some management factor contributes to the development of woody breast. Several projects have looked at nutritional aspects of feeding broilers, but no correlation with the incidence of woody breast has been found with individual ingredients or nutrients. Current research is focused on the effect of nutrition during the first days of the broiler’s life. In addition, research is being conducted to determine the effect of broiler growth rate on the development of woody breast.

The broiler industry is busy working to determine the cause of woody breast and to find solutions. In the meantime, the primary broiler breeding companies are working diligently to reduce the occurrence of this condition in their broiler lines through selective breeding. The key to eliminating this condition from the modern production system is the thorough understanding of the condition and its cause. As the poultry industry has successfully done with so many other new diseases or conditions, new knowledge gained through research will be used to implement solutions.

John R. Glisson DVM, MAM, PhD
Professor Emeritus
University of Georgia
and Retired Vice President of Research Programs for USPOULTRY

Using the Hierarchy of Controls for Business Response Planning for COVID-19

The impact of COVID-19 on the world has required industries like ours to look at additional steps to maintain a safe and productive work environment. Having a well developed and formalized way to protect workers from the possibility of exposure to illness is critical.

When developing an effective control plan, it is vital to work through a logical progression when you are considering controls for potential exposures or hazards. That logical progression is the hierarchy of controls.

In the following image, the hierarchy of controls is listed in order. Elimination is always the first priority. If elimination is not possible, then continue down the list by assessing your ability to implement substitution, followed by engineering controls, administrative controls and finally (and only as a last resort) personal protective equipment.

Clearly, the best method of dealing with exposures is to eliminate it. Once the threat of exposure has been eliminated, the potential for spread has gone. Employees staying home when they experience symptoms of illness eliminates the risk of exposure to other employees.

Substitution is the act of replacing a given hazard with something less hazardous. In this case, substitution does not lend itself as a viable option. However, in medical research, that would mean replacing the COVID-19 virus in the body of a patient with antibodies to stop the spread. This work is underway for COVID-19 but may take a long time before this becomes a viable treatment option.

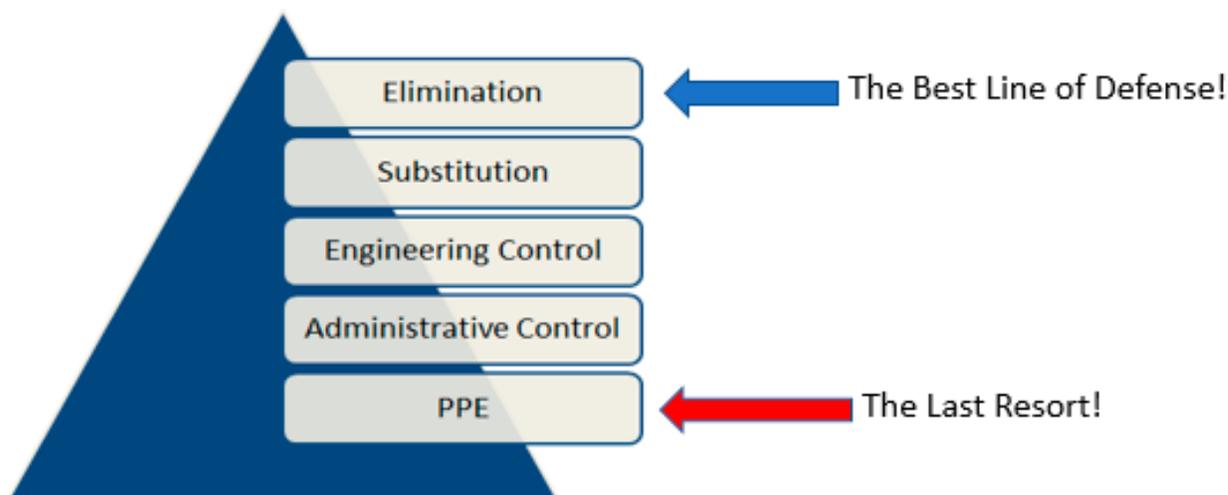
Implementing engineering controls involves isolating people from a hazard or placing a barrier between them. Barriers on processing lines, break rooms and nurses stations provides protection from viral exposure and is a form of engineering control. The use of ventilation to remove air that contains suspended particulates in the work environment is another critical engineering control.

Administrative controls, which involve changing the way employees work or interact, include changes in policy or procedures to reduce or minimize hazard exposure. Education and implementation of specific personal hygiene methods, strategic placement of workers, changes to work hours or meetings to limit the size of gatherings and utilizing a 6-foot separation between employees are examples of administrative controls.

Personal protective equipment (PPE) such as gloves, masks and protective clothing that establishes a barrier between the worker and the hazard is the last line of defense and the least effective control. The current shortages in available PPE, partnered with the proper usage and limitations of the PPE, is a real challenge. With PPE at the bottom of the list of controls, it has been a significant focus during the COVID-19 pandemic. When it is available, PPE can be implemented quickly.

You can access all the latest updates on the COVID-19 pandemic on the USPOULTRY website COVID-19 landing page (<https://www.uspoultry.org/COVID-19/>). For more information on HR, Safety and Health programs, please contact Matt Spencer at m Spencer@uspoultry.org.

Matt Spencer
Director of HR, Safety & Health Programs
m Spencer@uspoultry.org



Poultry Supply Chains Evolve, and Your Product Traceability Program Needs to Adapt

Poultry supply chains are complex, and their ability to track and trace products from farm to fork can be very difficult. The industry has diversified its distribution channels creating variety in sale points for customers. Tracking product serves several purposes, such as determining demand, analyzing consumer preferences, and importantly, locating product if there is a public health incident. In order to trace product during a public health incident, you need to have tools at your disposal. As your business expands, your food traceability program needs to adapt along with it.



Food recall and traceability programs must comply with:

- Regulations and laws
- Codex Alimentarius (joint FAO/WHO Food Standards Program)
- Good Manufacturing Practices (GMP)
- Hazard Analysis Critical Control Point (HACCP) Principles
- Industry best practices

Food traceability best practices are designed to protect public health and your business in case of a food recall event. Food recalls are a series of actions that remove potentially unsafe food products from the distribution channel, store shelves and consumers' kitchens. Several things can trigger a food safety investigation that could lead to a recall:

- **Outbreak of illness:** Public health officials identify a potential link between an illness and a specific food.
- **Regulatory inspection finding:** Certain activities (such as visual observations of products and manufacturing practices or

analysis of company records) can detect a food safety concern.

- **Consumer complaint:** A complaint about the safety of a food product is reported to the company, the Food Safety and Inspection Service (FSIS) or the Food and Drug Administration (FDA).
- **Recall in another country:** Another country recalls a food product that is also sold in your country.
- **Other triggers:** These may include information from law enforcement about potential food tampering, trade complaints, information from consumer associations, or even posts on social media websites.

In most situations, a company may undertake a self-initiated recall and subsequently inform its respective regulatory agency of its actions. There are three recall categories defined by FSIS and FDA. These guidelines categorize all recalls into one of three classes, according to the level of hazard involved.

Class I: Dangerous or defective products that predictably could cause serious health problems or death. Examples include food found to contain a pathogen, such as *Salmonella* spp. or *Listeria monocytogenes*, or food with undeclared allergens.

Class II: Products that might cause a temporary health problem or pose only a slight threat of a serious nature. Examples include those listed in Class I but may also cause sporadic or local cases.

Class III: Products that are unlikely to cause any adverse health reaction, but that violate FDA labeling or manufacturing laws. Examples include a minor container defect and/or mislabeling not involving safety instructions or allergen declarations.

As a consumer, news of food recalls is alarming and raises concerns, since there is a possibility of having consumed potentially contaminated and harmful products. For manufacturers, a food safety recall signals a shortfall in internal quality or food safety control processes. It can also cause significant expense, impact long-term financial

health, garner negative media attention and result in the loss of client confidence, all of which can be difficult to overcome.

Food safety investigations are complex, and several steps are needed to determine if a food recall is required. An investigation should follow three primary objectives:

- Determine which products could be unsafe.
- Track where potentially harmful products have been distributed.
- Determine the root cause of the problem.

Food safety investigations and recalls require training, discipline and teamwork. A multi-disciplinary team is required to gather the necessary information to identify the affected product, remove it from market and determine the root cause of the problem. Training is necessary so that the investigation teams know their respective roles, can remove products from market quickly, can use investigation and root cause analysis tools correctly to prevent a problem from happening again, and can communicate every new development to the government, customers and consumers effectively. Practicing potential scenarios develops the discipline and the teamwork that becomes necessary when a real situation arises.

Traceability programs need to keep pace with an increasingly complex distribution chain. Traceability tools, like blockchain, are improving by helping to identify affected products accurately and minimizing the recall of more products, while restoring public safety. Food recalls can have a negative impact to your business. An adequate investigation strategy with training, practice and execution discipline will protect public health and help businesses recover quickly.

Rafael Rivera
Manager, Food Safety & Production Programs
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University of Arkansas Poultry Science Department Awarded \$33,309 USPOULTRY Foundation Grant

The USPOULTRY Foundation awarded a \$33,309 student recruiting grant to the University of Arkansas Department of Poultry Science. The grant was made possible in part from an endowing Foundation gift from the Monty and Margot Henderson Student Recruiting Fund.

The University of Arkansas is one of six universities in the United States that has a department dedicated to poultry science. Dr. David Caldwell, department head and director for the Center of Excellence for Poultry Science at the University of Arkansas, said the gift will help support recruitment efforts including the annual Poultry Science Youth Conference, the youth broiler show at the Arkansas State Fair, in service training for faculty and other recruiting activities.

“The USPOULTRY Foundation contributions to the Poultry Science Department are tremendously important to the recruitment and retention efforts we employ to grow our undergraduate student population. This is essentially the only funding we receive on an annual basis that specifically targets new student recruitment. We are extremely appreciative of the continued support we receive from the USPOULTRY Foundation and the Monty and Margot Henderson Student Recruiting Fund. We have recently established a new goal for undergraduate enrollment and are eager to put these funds to work as we strive to accomplish this goal,” remarked Caldwell.

In September 2019, the USPOULTRY Foundation board approved student recruiting grants totaling \$383,577 to 35 colleges and universities

across the United States with a poultry science department or industry-related degree program. The USPOULTRY Foundation provides annual recruiting funds to colleges and universities to attract students to their poultry programs. The grants are made possible by gifts to the Foundation from companies, individuals and families, in addition to funds earned over the years at the International Poultry Expo, part of IPPE.



Pictured left to right: Katie Ann Sievert, Hannah Feuerborn and Renee Cude, poultry science students; Dr. David Caldwell; Monty and Margot Henderson; and Payton McGinnis and Hannah Sherman, poultry science students.

\$28,587 USPOULTRY Foundation Grant Awarded to Auburn University Poultry Science Department

The USPOULTRY Foundation awarded a \$28,587 student recruiting grant to the Auburn University Department of Poultry Science. The grant was made possible in part from an endowing Foundation gift from Ingram Farms.

Auburn University is one of six universities in the United States that has a department dedicated to poultry science. Dr. William "Bill" Dozier, department head and director for the Charles C. Miller Jr. Poultry Research and Education Center, states that the gift will help support the university's recruitment efforts, including visits to local high schools and community colleges and travel to key industry events throughout the country.

"We are very appreciative of the funds from the USPOULTRY Foundation to support the



Dr. Wilmer Pacheco (left, front row), assistant professor, and Dr. William "Bill" Dozier (left, back row), department head, with several Auburn university poultry science students

departmental recruitment of future leaders of the poultry industry," remarked Dozier. "These funds will be used for recruiting activities related to transfer student exploration day, virtual student tours, virtual teacher training,

high school and community college visits, attendance at the National FFA Convention and Expo and National 4-H Poultry and Egg Conference, and recruitment materials."

North Carolina A&T State University Receives \$6,820 USPOULTRY Foundation Student Recruiting Grant

The USPOULTRY Foundation awarded a \$6,820 student recruiting grant to North Carolina A&T State University. The grant was made possible in part by an endowing Foundation gift from the Stanley & Dorothy Frank Family Foundation and was presented by John Starkey, president of USPOULTRY, to Dr. Tracy Hanner, interim chairman of the Department of Animal Sciences in the College of Agriculture and Environmental Sciences (CAES). Joining in the presentation were several North Carolina A&T staff and poultry club students.

The funds will be used to support further education about the poultry industry among the university's agriculture students. This will include a visit to the USPOULTRY College Student Career Program at the International Poultry Expo, part of the IPPE, where the students can interview for full-time careers and internship opportunities.



John Starkey (front row, second from left) and Dr. Tracy Tanner (second from right)

\$7,000 USPOULTRY Foundation Student Recruiting Grant Awarded to Wilkes Community College

The USPOULTRY Foundation awarded a \$7,000 student recruiting grant to Wilkes Community College in North Carolina. The grant was made possible in part by an endowing Foundation gift from Case Foods and was presented to Matthew Greene, Animal Science lead instructor.

The funds will be used to bolster the college's current recruitment efforts and to spread awareness of the Animal Science and Poultry Management Technology programs available at the college. The college plans to hold a poultry evaluation contest on campus, sponsoring the top three teams to the State FFA Poultry Evaluation Contest. Additional plans include offering a Youth Poultry Workshop on campus that will educate local students about the poultry industry and the basics of poultry husbandry.



Dr. Jeff Cox, Wilkes Community College president; Matthew Greene, Animal Science lead instructor; Frank Blevins, Animal Science/Horticulture instructor; Ronald Dollyhite, dean of Applied Career Technologies; Dr. Leslie Sparks; and several WCC Animal Science program students.

University of Delaware Awarded \$7,000 USPOULTRY Foundation Student Recruiting Grant

The USPOULTRY Foundation awarded a \$7,000 student recruiting grant to the University of Delaware. The grant was made possible in part by an endowing Foundation gift from Valley Proteins and was presented by Barbara Jenkins, executive director of the USPOULTRY Foundation, to Robert Alphin, senior instructor and laboratory manager for the university's Department of Animal and Food Sciences.

A portion of the funds will be used to further the poultry program's existing efforts to recruit and educate students on the opportunities available within the poultry industry. The university hosts an annual Animal Agriculture Seminar series, which allows students to hear from various speakers from a variety of companies and organizations within the poultry industry. Other learning experiences include tours

of the Delmarva broiler industry and trips to various judging events.

The remaining funds will be used to support further education about the poultry industry among the university's agriculture students.

This includes participating in USPOULTRY's College Student Career Program at the International Poultry Expo where the students can interview for full-time careers and internship opportunities.



Barbara Jenkins (fifth from left), executive director of the USPOULTRY Foundation, presenting a student recruiting check to Robert Alphin (seventh from right), senior instructor and laboratory manager for the Department of Animal and Food Sciences, along with several animal science and pre-vet students.

2020 USPOULTRY Financial Management Seminar Offers Perspectives on Business Continuity During a Pandemic and Assuring a Healthy Bottom Line

In the best of times and in the worst of times, the financial management sector of the poultry and egg industry still faces economic pressures. Consumer behavior, tax laws, technology and legislation are constantly in flux, even without the influence of unforeseen pandemics.

Therefore, it is critical that financial managers stay informed and up-to-date. For this reason, USPOULTRY continues to offer a strong Financial Management Seminar agenda of presentations and breakout sessions that will help financial managers stay current with the latest trends and best practices in today's modern poultry industry. This year's seminar will be held June 29 – July 1 at the Ritz Carlton, a Marriott property, in Amelia Island, Florida.

As USPOULTRY is currently planning to move forward with the seminar, the health and safety of everyone who attends is a top priority. Guidelines from the Centers for Disease Control and Prevention (CDC) and state and local governments regarding COVID-19 will be followed, and regular updates will be provided to all stakeholders if the situation warrants. For example, in addition to the hotel sanitation practices outlined by Marriott International (<https://clean.marriott.com/>), seating will be configured to allow for social distancing.

“The planning committee has done an outstanding job this year, pulling speakers from all over the industry on a diverse selection of relevant topics,” said Stacey Crump, division controller for Pilgrim’s, and program committee chairperson. “As always, attendees will leave this seminar with the information and knowledge they need to help secure their company’s success.”

The 2020 USPOULTRY Financial Management Seminar program planning committee is comprised of various industry leaders. The committee includes Sloan Clinton, Mountaire Corporation; Stacey Crump, Pilgrim’s (committee chairperson); Ron Faircloth, Peco Foods Inc.; Greg Finch, Claxton Poultry Farms;

Rob Gunther, Frost PLLC; Joey Long, Case Foods, Inc.; Jarod Morrison, Farbest Foods Inc., and USPOULTRY board member; Mulham Shbeib, Mar-Jac Poultry Inc.; and Bob Sliva, Tyson Foods, Inc.

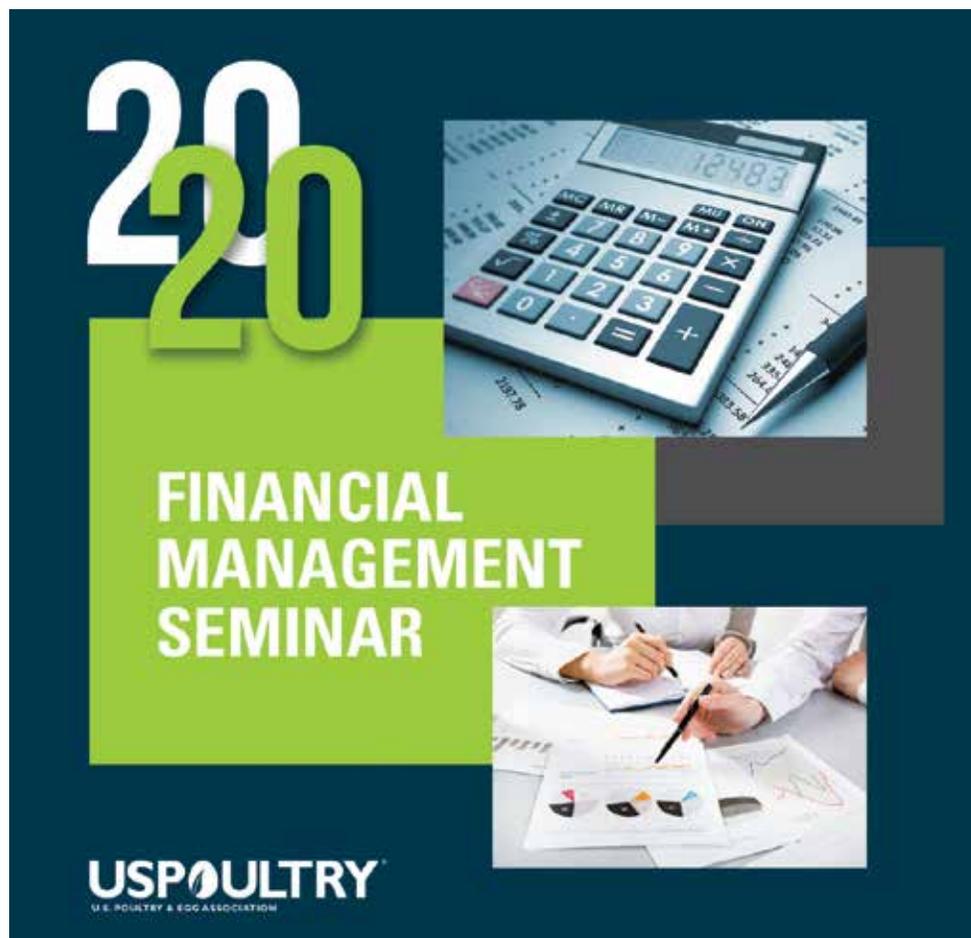
The seminar agenda will include topics, such as A Former CEO’s Perspective of Poultry Financial Management; Tax Update; Exports Update; IT Business Continuity During a Pandemic; Insurance: Trends, Rate Development, Risk Assessments; Business Intelligence Tools and Predictive Analytics; and much more.

Small group breakout sessions are also planned, covering topics such as Cyber Security; Turkey and Egg Industry Discussions; AP Automation; Hedge Accounting; Water

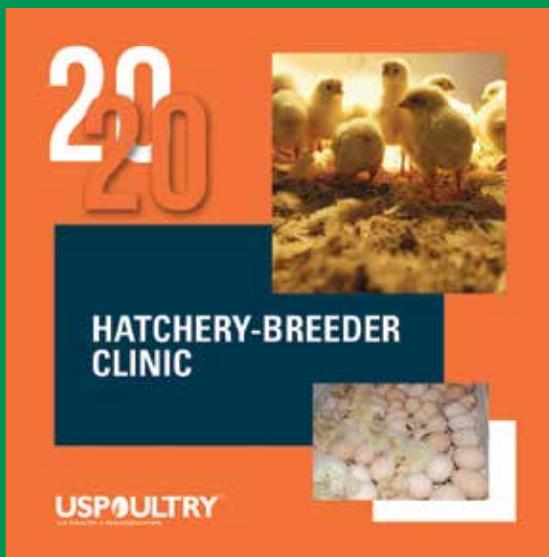
Conservation and Other Sustainability Concepts; and more.

USPOULTRY is registered with the National Association of State Boards of Accountancy (NASBA) as a sponsor of continuing professional education on the National Registry of CPE Sponsors. Up to 12.5 CPE credits may be awarded to seminar attendees. State boards of accountancy have final authority on the acceptance of individual courses for CPE credit.

Don’t miss this valuable opportunity to learn and network. To register, reserve your room and see the full agenda for the USPOULTRY Financial Management Seminar, go to www.uspoultry.org.



2020 USPOULTRY Hatchery-Breeder Clinic Tackles Challenges in Hatchery Operations and Breeder Management



Any successful poultry operation is dependent on the success of its hatchery-breeder management. USPOULTRY's Hatchery-Breeder Clinic brings attendees up to date on best management practices, biosecurity challenges, vaccinations and other topics related to chick quality.

This year's seminar will be held July 8-9 at the DoubleTree Nashville Downtown, a Hilton property, in Nashville, Tennessee. As USPOULTRY is currently planning to move forward with the seminar, the health and safety of everyone who attends is a top priority.

Guidelines from the Centers for Disease Control and Prevention (CDC) and state and local governments regarding COVID-19 will be followed, and regular updates will be provided to all stakeholders if the situation warrants. For instance, in addition to the hotel sanitation practices outlined by Hilton (<https://www.hilton.com/en/corporate/coronavirus/>), seating will be configured to allow for social distancing if necessary.

"USPOULTRY's Hatchery-Breeder Clinic offers a promising selection of presentations, helping attendees increase performance and quality at their individual hatchery and breeder operations," said Adam Rutledge, flock health and housing manager for Mountaire Corporation, and program committee chairman. "Year after year, this event proves itself to be one of the most informative opportunities for hatchery and breeder specialists. This year's program is no exception."

The 2020 USPOULTRY Hatchery-Breeder Clinic planning committee is comprised of leaders of industry hatchery and breeder operations. The committee includes Jenny Asip, Perdue Farms; Adam Black, Wayne Farms LLC; Adam Rutledge, Mountaire Corporation (committee chairman); Sasha Smith, Perdue Farms; and Joe Steed, Pilgrim's.

The seminar agenda topics include a Poultry Industry Review; Biosecurity for Salmonella Control at Breeder Farms; Incubation Impact on Intestinal Integrity, Absorption, Parasite Susceptibility; Hatchery Sanitation; Male Management. . .Effect on Hatch; Chick Delivery; Breeder and Broiler Vaccinations; and more. Don't miss this valuable opportunity to learn and network. To register, reserve your room and see the full agenda for the USPOULTRY Hatchery-Breeder Clinic, go to www.uspoultry.org

Financial Management Seminar
June 29 - July 1, Amelia Island, Florida
The Ritz Carlton

Hatchery Breeder Clinic
July 8-9, Nashville, Tennessee
DoubleTree by Hilton Downtown

Feed Mill Management Seminar
July 29-30, Nashville, Tennessee
DoubleTree by Hilton Downtown

National Safety Conference for the
Poultry Industry
August 10-12, Destin, Florida
Hilton Sandestin Beach Golf Resort
& Spa

Women's Leadership Conference
August 13-14, Destin, Florida
Hilton Sandestin Beach Golf Resort
& Spa

Human Resources Seminar
August 19-21, Destin, Florida
Hilton Sandestin Beach Golf Resort
& Spa

Environmental Management Seminar
September 17-18, Destin, Florida
Hilton Sandestin Beach Golf Resort
& Spa

Live Production, Welfare & Biosecurity
Seminar
September 23-24, Nashville, Tennessee
DoubleTree by Hilton Downtown

Poultry Protein & Fat Seminar
October 1-2, Nashville, Tennessee
DoubleTree by Hilton Downtown

Poultry Processor Workshop
October 7-8, Nashville, Tennessee
DoubleTree by Hilton Downtown

Air Cargo Seminars
Dates TBD
Miami, Florida
Chicago, Illinois
Washington, DC

Grower Relations Seminars
Scheduled upon industry request

Poultry Wastewater Operators Training
Scheduled upon industry request