ENGINEERING TOMORROW'S POULTRY INDUSTRY

PoultryTech

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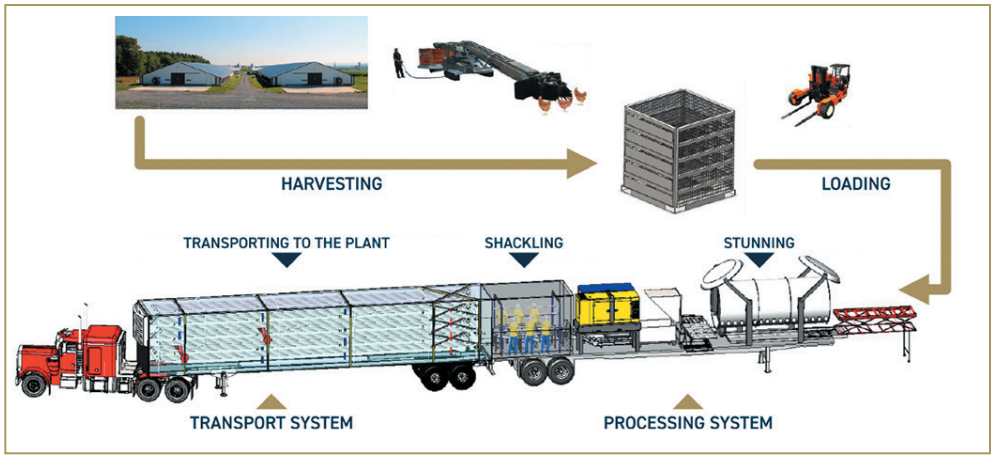
Reimagining Live Bird Transport: Researchers Test Novel On-Farm Processing and Transport System

The Georgia Tech Research Institute's (GTRI) Agricultural Technology Research Program (ATRP) fosters a culture of constant innovation and improvement through its strategic initiative focused on defining the next generation of poultry processing methods and technologies. The initiative, titled Poultry Production and Processing of the Future, funds R&D projects that take a "thinking outside the box" approach to improving industry processes from the growout farm to the processing plant. One such project is the novel Farm Processing and Transport (FPaT) system.



GTRI's Farm Processing and Transport (FPaT) system dramatically changes the entire poultry transport process by transporting carcasses instead of live birds to the processing plant. Researchers believe the system shows promise for alleviating transportation-related bird welfare concerns while producing economic benefits by reducing manual labor requirements and transportation costs.

The poultry industry places a high priority on the humane treatment of broilers (chickens raised for their meat). Nevertheless, handling and transfer activities that occur before slaughtering are some of the most stressful for the birds. As part of this process, the birds are manually captured and loaded onto trailers for transport from the growout farm to the processing plant, where they are then manually transferred to a moving shackle line for processing. During this period, they experience an entirely new and foreign environment and may suffer from heat and environmental stress during transport.

"The current poultry transport process has been largely unchanged for decades. We asked ourselves if we started to design the process now, would we do it the same way?," says Alexander Samoylov, Ph.D., GTRI principal research scientist and project director. "Our collective response was that it is time to reimagine how broiler transport works, and our FPaT system has a chance to do exactly that."

The FPaT system dramatically changes the entire process by transporting carcasses instead of live birds to the processing plant, alleviating transportation-related bird welfare concerns while producing economic benefits by reducing manual labor requirements and transportation costs.

The system consists of two mobile units: a Processing Trailer and a Transport Trailer, each built on standard 53-foot trailers. In the FPaT production process, birds are stunned, shackled, and killed at the farm using a series of mechanical systems within the processing trailer, and then the shackled carcasses are transferred to the transport trailer for delivery to the processing plant. The processing trailer can be easily moved around at the farm and to different farms and is designed to process up to 5,000 birds per hour, which is comparable

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MANAGER'S CORNER

In addition to our research mission, the Agricultural Technology Research Program (ATRP) participates in several activities that facilitate our outreach goals. These outreach activities allow us to engage with our industry stakeholders, university colleagues, and national lab partners to ensure that the information and discoveries generated within ATRP are disseminated in a timely fashion. In addition, they provide opportunities for ATRP to receive feedback and input on emerging and future research needs. We began the year with a return to in-person events, adhering to appropriate safety precautions as we continue to adjust to a new normal following the height of the coronavirus pandemic.

In January, two of our research teams showcased their innovative research projects during the International Production & Processing Expo (IPPE) in Atlanta. The Enhanced Chilling Automation team, led by Comas Haynes, demonstrated a tabletop version of their in-line immersive chilling concept. Their discoveries have shown that the mechanical manipulation of the product in chilling can significantly reduce total chilling times. Conceptual designs of in-line immersion chilling could allow for more effective and targeted microbial control schemes while facilitating better tracking and traceability. The Virtual Reality (VR) for Robotic System Control and Development team, led by Colin Usher and Konrad Ahlin, allowed visitors to the booth to remotely control a robotic arm performing cone loading located one mile away in the research lab. Leveraging VR technologies could significantly change our perspective of labor, as people would no longer need to be physically located at the plant. In addition, their discoveries have provided a pathway for bridging the current gap between manual operations and full automation by allowing people to perform the difficult perception tasks through remote immersive VR user interfaces.

In April, ATRP co-hosted the International Food Automation Networking (IFAN) Conference after two postponements due to the pandemic. The biennial event, held at the Georgia Tech Hotel and Conference Center in Atlanta, brought together food and allied industry professionals from across the United States as well as international attendees from Europe and Australia. This industry-focused event provided a fantastic opportunity for industry speakers and participants to share and discuss state-of-the-art automation and robotics technologies. The networking activities allow for engagement across different food sectors facilitating the cross-pollination of technology uses and potentials. It was great to see the level of engagement and participation by all the attendees as they seek to address common and unique challenges in their industries.

On behalf of IFAN founder and co-host, Koorosh Khodabandehloo of BMC, United Kingdom, I would like to express our appreciation to this year's conference sponsors: Gold Sponsors – Australian Meat Processor Corporation (AMPC), BAADER-LINCO, Georgia Manufacturing Extension Partnership program at Georgia Tech, and ATRP; Silver Sponsors – Culmstock Technology and Consultancy Limited (CT&C), EIT International, S&A Produce, and STÄUBLI.

While these two gatherings marked an exciting start to the year, we are looking forward to a pair of upcoming activities.

ATRP is pleased to co-sponsor the National Safety Conference for the Poultry Industry, scheduled for August 15-17 in Destin, Florida. The annual conference focuses on workplace safety and health topics relevant to poultry processing facilities (see page 6 for additional information and registration details).

We will also help coordinate volunteer staffing for Poultry World at the Georgia National Fair, scheduled for October 7-16 at the Georgia National Fairgrounds & Agricenter in Perry, Georgia. The educational exhibit was established by the Georgia Poultry Federation, along with industry and academic partners, to promote the poultry industry and its importance to Georgia as the state's No. 1 agribusiness sector.

Lastly, I would like to highlight that we held our annual Poultry Industry Advisory Committee meeting in person for the first time since the pandemic (see page 7). While we have met virtually the last two years, it was great to see everyone face-to-face once again. We are so thankful for your continued support!

Doug Britton, Ph.D.
ATRP Program Manager

Using Learning from Demonstration (LfD) to Train Robots for Complex Poultry Processing Tasks

BY MICHAEL PARK

An increasing number of robots are being deployed across manufacturing, agriculture, and healthcare to address labor shortages or to improve the efficiency of manual operations. These robots are usually made with all-purpose generic hardware and are programmed for multiple purposes, which often include the ability to self-navigate in unstructured environments or make complex decisions.

Currently, programming a robot is difficult and time-consuming. It is at least a two-step process where an engineer first needs to understand a task and then translate it into a code that a robot can understand. For instance, for a breast deboning task in poultry processing, an engineer must learn how an expert deboner inserts and guides his or her knife to make a cut and translate that process into a code, which often is unnatural and nonintuitive. In addition, every movement of a robot must be custom-tailored for accomplishing different tasks, which requires an expert engineer to program the robot.

A lot of research has been conducted since the 1980s to minimize, or even eliminate, this difficult step by letting users train the robot to fit their needs by utilizing expert knowledge from the user, in the form of demonstrations. This is a paradigm called robot learning from demonstration (LfD) or robot programming by demonstration. LfD provides a very efficient programming interface where even non-expert users can easily and quickly teach a robot how to do various tasks through either visual demonstrations or physical guidance.

LfD is not a simple record and play technique, and its power goes beyond providing an easy interface. In fact, LfD allows users to encode human intuition. By observing several demonstrations, a robot can learn how to generalize a skill and flexibly apply it to varying environments.

Modern poultry processing plants have increasingly been automated. However, there remains several tasks that require human experts such as hanging, cone loading, or trimming. Even for the automated tasks, the machines need to be manually adjusted to accommodate the size variance in birds to minimize yield loss. By observing multiple demonstrations of skilled workers performing such tasks, a robot can obtain human-level flexibility in handling variations and uncertainties in bird sizes, shapes, and weights. In addition, the robots can easily be repurposed to carry out different tasks without significant overhead.

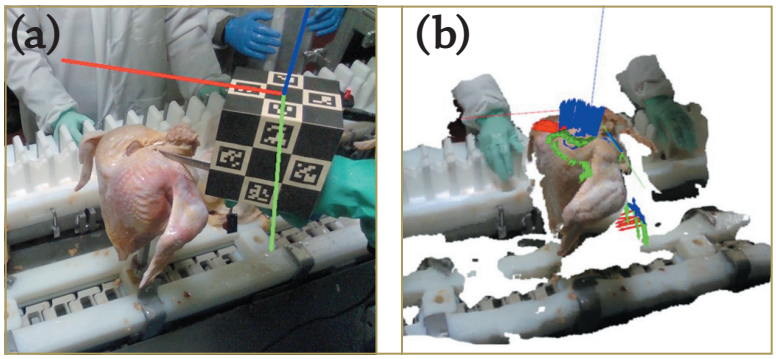
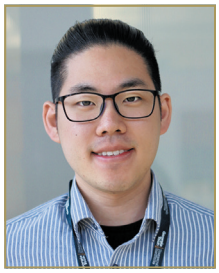


Figure 1. (a) A custom knife tool that includes ArUco tags and an inertial measurement unit was created to collect position, velocity, and acceleration data from experts' demonstrations. (b) Reconstructed point cloud showing knife pose throughout cutting trajectory.

Figure 2. The learned deboning strategy was deployed on a 6 degrees of freedom robot manipulator, and the manipulator was able to perform a cut with a much more natural and smoother motion compared to the motion programmed by engineers.

Michael Park is a GTRI research engineer I.



Researchers in the Georgia Tech Research Institute's (GTRI) Agricultural Technology Research Program have applied LfD to teach a robot to debone chicken breasts. A custom knife tool that includes ArUco tags and an inertial measurement unit was created to collect position, velocity, and acceleration data from experts' demonstrations as shown in Figure 1. The images of the birds were also collected, and machine learning was used to learn the association between the bird's external features and the expert's knife trajectory. The learned deboning strategy was deployed on a 6 degrees of freedom robot manipulator, and the manipulator was able to perform a cut with a much more natural and smoother motion compared to the motion programmed by engineers. The robot was also able to cut birds with varying sizes without any adjustments as long as similar looking and similar sized birds were captured in the collected data. Figure 2 shows the resulting cut.

The next goal is to pair the LfD technique with a real-time force feedback control to create a robust robotics deboning system that not only can autonomously adapt to varying sizes and shapes of the birds, but also make an optimal cut by continuously adjusting the knife path to find the joints.

LfD provides an easy and intuitive way to program robot behaviors, potentially saving development time and costs. It can also add flexibility to robots by encoding human intuition and knowledge for a more robust operation.

RESEARCH Q&A

Non-Destructive Egg Fertilization Detection via VOCs

Judy Song, Ph.D., senior research engineer in the Georgia Tech Research Institute's (GTRI) Agricultural Technology Research Program, discusses her project "Non-Destructive Egg Fertilization Detection via VOCs." The project captures and characterizes volatile organic compounds (VOCs) from infertile eggs, fertile eggs, and eggs containing female and male embryos, using gas chromatograph-mass spectrometry and statistical analysis, to enable early-stage fertility and sex detection and separation of eggs.

Q: PoultryTech – What industrial challenge is the project addressing?
A: Song – Fertility and hatchability rates drop with the age of the flock resulting in losses of millions of dollars annually and remain of great economic concern to poultry growers globally. These non-hatching (non-fertile) eggs can find useful applications as lower grade food stock if they can be detected early and isolated accordingly, preferably prior to incubation.

Q: PoultryTech – What is the project's approach and how is it different from current practice?
A: Song – Currently, "candling" is the conventional method of chicken egg fertility assessment. However, it is subjective, cumbersome, slow, and ultimately inefficient, and therefore not performed as an online process. Hence, there is a need for a non-destructive, fast, and online prediction technology to assist with early detection of chicken egg fertility. It has been shown that volatile organic compounds (VOCs) are released through the eggshell and can be detected and identified. The approach of this project is to identify and characterize the VOCs emitted from infertile and fertile eggs non-destructively, and determine their differences using Principal Component and Linear Discriminant analyses, in order to explore potential biological information such as fertilization-specific and gender-specific VOC biomarkers.

Incubator and setup for collecting volatile organic compounds (VOCs) from eggs.

Q: PoultryTech – What are the results to date?
A: Song – Researchers have obtained promising classification results on the determination of fertility status (fertile or infertile) through the detection of VOC differences in broiler eggs at a very early incubation time (<3 days).

Q: PoultryTech – What has been the most challenging and/or rewarding aspect of working on the project thus far?
A: Song – The most challenging aspect has been identifying the key biomarkers that are associated with the infertile eggs prior to incubation based on the odors/VOCs transmitted through the eggshells. The odor/VOC differences might be caused by factors independent of fertility such as breed, age of chicken, and type of feed. This complicated biological matrix is the most challenging, yet rewarding, puzzle we are facing.

Q: PoultryTech – What are the project's next steps and long-term goals?
A: Song – The next step is to clarify and eliminate the other possible factors that may cause the VOC differences, and focus on the VOC identification only from fertility. By filtering down the VOCs of interest to only the ones related to fertility, we hope to improve the ability to determine fertility status prior to incubation. This fertilization-specific VOC biomarker information will lay a foundation to develop a fast, online, and non-destructive tool to pre-screen eggs for fertility identification before being passed on to incubation.

Q: PoultryTech – What are the potential benefits for poultry processors?
A: Song – A fast, online, and non-destructive pre-screening of eggs for fertility identification before being passed for incubation would improve hatcher utilization and overall hatch rates, thereby increasing throughput and efficiency of the operations.

Q: PoultryTech – Is there anything else you would like to add?
A: Song – A very special thanks to Dr. Jeanna Wilson at the University of Georgia's Poultry Research Center, who supplied both infertile eggs and fertile eggs from her poultry research facility and provided valuable research information and suggestions.

Lance Barrett and Ryan Giometti Selected as Inaugural R. Harold and Patsy Harrison Student Interns in the Abit Massey Student Internship Program

The Georgia Tech Research Institute's (GTRI) Agricultural Technology Research Program (ATRP) has selected Lance Barrett and Ryan Giometti as the 2022 R. Harold and Patsy Harrison Student Interns. They are the first recipients of the one-year funded internships made possible through an endowment from the R. Harold and Patsy Harrison Foundation.

The internships are part of ATRP's Abit Massey Student Internship Program, which provides Georgia Institute of Technology (Georgia Tech) undergraduate students an opportunity to work alongside ATRP researchers on real-world challenges facing poultry production and processing. Interns also have the opportunity to gain practical industry knowledge by networking with staff at local poultry companies. The goal is to prepare the next generation of researchers and professionals to produce significant advances in innovation and technology. The program is funded entirely through donations and sponsorship from industry and friends of ATRP.

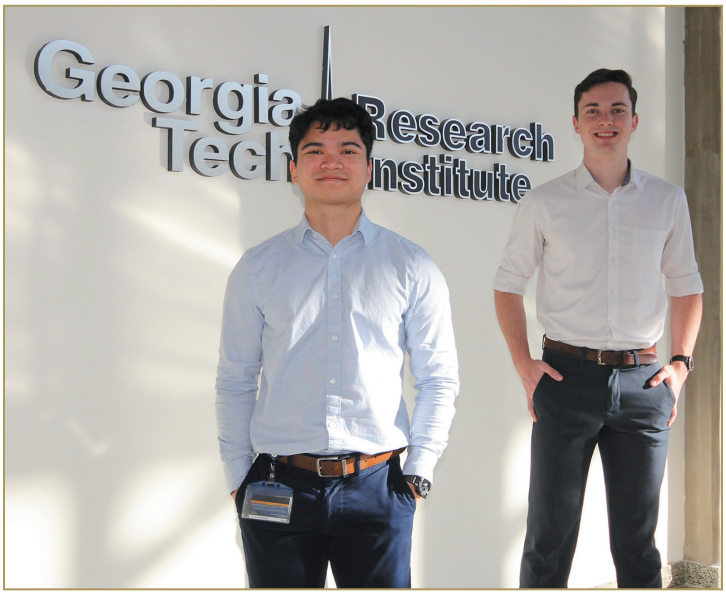
"We are extremely grateful to the Reynolds family and the R. Harold and Patsy Harrison Foundation for supporting these internships. This program allows us to engage bright students in the engineering and science disciplines and share with them the opportunities they have to make an impact in the poultry industry," said Doug Britton, ATRP program manager.

During the internships, Barrett will work with Jie Xu, GTRI principal research scientist, on advanced sensing projects aimed at improving poultry processing wastewater treatment, while Giometti will work alongside Alex Samoylov, GTRI principal research scientist, on designing alternative poultry transportation systems to improve animal handling and welfare.

Barrett, a native of Port St. Lucie, Florida, is a co-op student from Drexel University (co-op students alternate semesters of full-time study with semesters of full-time paid work). Reflecting on his semesters as a co-op with ATRP, the fourth-year chemical engineering major says after multiple site visits, conferences, and working on various projects, he can tell he has only scraped the tip of the iceberg in the poultry industry.

"With meeting the Reynolds family and other connections this internship will provide, I hope to dive deeper into the field and further my understanding of the state and needs of the industry," said Barrett. "That way I can better utilize and focus my time in the lab, the remainder of my undergraduate degree, and beyond into graduate school."

A third-year mechanical engineering major at Georgia Tech, Giometti expressed his excitement for the opportunities that the internship will provide, especially to learn about the poultry industry outside the walls of GTRI.



Lance Barrett (left) and Ryan Giometti (right) are the first R. Harold and Patsy Harrison Student Interns in the Abit Massey Student Internship Program at the Georgia Tech Research Institute.

"I hope to gain a better exposure to the complex mechanical systems behind the high-capacity poultry industry. I find the modern methods of poultry processing quite fascinating, yet it is fun to step in and find room for improvement," said Giometti, who is from San Marcos, California. "The experiences that I will get through the research process will enable me to better find and solve problems as a mechanical engineer."

Established in 1973, ATRP develops advanced technology in support of Georgia's multibillion-dollar poultry industry, the state's leading agricultural sector. The technologies help poultry processors optimize operations and improve efficiency, safety, product yields, and environmental sustainability.

The R. Harold and Patsy Harrison Foundation was founded by the Harrisons' daughter, Bobbie Ann Harrison Reynolds, and her husband, Raymond H. Reynolds, Jr. (a Georgia Tech industrial engineering alumnus), in honor of her late parents with a primary goal to strengthen and support education. Her father founded Harrison Poultry in 1958 in Bethlehem, Georgia.

The Abit Massey Student Internship Program honors Massey, president emeritus of the Georgia Poultry Federation, who was instrumental in ATRP's founding nearly 50 years ago and remains a dedicated supporter to this day.

RESEARCHER PROFILE

Jinho Park

Job title: Research Scientist II

Education:
Ph.D., Chemistry, Georgia Institute of Technology, Atlanta, Georgia
M.S., Chemical Engineering, Washington University, St. Louis, Missouri
M.S., Chemical Engineering, Sogang University, Seoul, South Korea
B.S., Chemical Engineering, Sogang University, Seoul, South Korea

Areas of research expertise: Design/Synthesis/Functionalization/Characterization of materials for applications in energy storage/conversion and gas sensing systems, etc.

List of any poultry industry projects you're working on and your role:
Title: Multi-function Sensor System (PI: Milad Navaei)

Description: Development of a portable sensor for real-time monitoring of ammonia gas concentration in poultry farms

Role: Preparation of sensing materials and deposition onto sensor chips; performance testing of sensors toward detecting ammonia (sensitivity, response time, long-term stability, etc.)

What I find most rewarding about working on poultry industry projects:
- The opportunity to work with people who have different research backgrounds/skillsets/expertise from me
- Understanding areas of the poultry industry where I can apply my research skillset

A talent I wish I had: Play a guitar

Another occupation I'd like to try: I do not know if it will be possible, but I would like to be a pilot, a car racer, or a sea captain, as I like to drive something.

My first job: My first full-time job is a research scientist, but for a part-time job, I worked as a café server at age 19.

If I could meet someone famous, who would it be and why: I would like to personally meet Dr. George M. Whitesides, who is my academic grandfather (my advisor's advisor). As he is one of the most notable living scientists and has pioneered many research areas over his career, I would like to have conversations with him about current and future trends in science and technology.

One thing people may not know about me: I am a South Korea Army veteran (served as a soldier for 26 months).

My day would not be complete without: Tucking my daughter into her bed

The last book I read: The Road Less Travelled by Scott Peck

The last movie I saw: It is not a movie, but recently, I have watched Pachinko, an Apple TV series that is based on the New York Times bestseller book (same title), a story of a Korean immigrant family.

My favorite song: "Beethoven Symphony No. 9" by Berlin Philharmonic and Herbert von Karajan

My motto: Be Yourself

My hobbies: Cooking, baking, playing badminton

SAVE THE DATE

NATIONAL SAFETY CONFERENCE FOR THE POULTRY INDUSTRY

August 15-17, 2022

Hilton Sandestin Beach Golf Resort & Spa – Destin, Florida

The 2022 National Safety Conference for the Poultry Industry is designed specifically for poultry facility and corporate safety personnel. The three-day event features key presentations on important industry topics and updates on government policy. Other highlights include breakout sessions for discussing best practices and current challenges, as well as networking and knowledge exchange opportunities with other safety and health professionals.

To register, visit **uspoultry.org/educationprograms**

Reimagining Live Bird Transport

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to current industry live bird loading rates. The current design contains a stand-alone power system and was developed with farm operation in mind. The transport trailer can carry close to 4,300 birds. To minimize cross-contamination between loads, the system is equipped with a washdown system that is used before carrying a different load.

In cooperation with colleagues from the University of Georgia (UGA) Department of Poultry Science and USDA-ARS U.S. National Poultry Research Center, the team recently field tested FPaT processing using waterbath electric stunning followed by shackled transport. Tests were conducted at UGA's Poultry Research Center. All carcasses were examined for physical damage (broken limbs), defeathering quality, and meat quality parameters such as pH, cook loss, lean color, and texture. No significant differences were observed between a control group (traditionally processed carcasses) and carcasses transported and processed via the FPaT system.

"We are extremely pleased with the initial field test results, especially the meat quality analysis that showed similar results between traditionally and FPaT-processed broilers, which suggests that the proposed process may be commercially viable," says Samoylov.

In addition to improved bird welfare and minimal meat quality effects, the proposed approach also minimizes manual handling of the birds both at the farm and subsequently at the processing plant. This reduces labor requirements at the farm as FPaT can free up catching crews to perform other tasks, while also possibly eliminating one of the toughest jobs at the plant — hanging live birds onto shackles. Other benefits include preventing bird weight losses and eliminating DOAs (dead on arrival) during transportation.

"Another benefit of the FPaT system is its data collection system that can count and weigh carcasses. This data can then be electronically transferred to the processing plant, informing them of the exact number and weight of incoming product, which improves yield efficiency and helps the plant customize carcass processing," says Samoylov. "The system also improves transportation safety by eliminating shifting loads since all the carcasses will be shackled and fixed in place, which reduces the likelihood of transport trailer rollover accidents."

While the FPaT system holds promise, investigations are ongoing. The team is currently evaluating the effects of rigor mortis on subsequent carcass processing.

"One artifact of FPaT is that carcass processing is delayed," explains Samoylov. "This leads to an onset of rigor mortis, which can have an effect on defeathering, eviscerating, and cut-up at the processing plant."

The research team wishes to acknowledge project collaborators including the University of Georgia Department of Poultry Science, USDA-ARS U.S. National Poultry Research Center, TechnoCatch, and Auburn University Department of Poultry Science.

ATRP Advisory Committee Reviews Research Progress

On May 3, the Agricultural Technology Research Program (ATRP) held its annual Advisory Committee Meeting in person for the first time since the COVID-19 pandemic (the last two meetings were held virtually). During the half-day event, project directors provided committee members with an update on program research projects as well as technology transfer and outreach activities. A round-table session was also held where committee members provided feedback and discussed future research opportunities, challenges, and directions with researchers. The annual meeting serves as a key step in ATRP's efforts to identify and conduct research projects that best address priority industry needs. ATRP extends its appreciation to the Georgia Poultry Federation and the individual committee members for their invaluable guidance.

2022-2023 ATRP Advisory Committee

Members:

Juanfra DeVillena, Wayne Farms (Chair)
Matt Nelson, Boehringer Ingelheim
Randy Segars, Boehringer Ingelheim
Brian Porter, Cantrell-Gainco Group
Steve Snyder, Claxton Poultry
Mark Hamby, Cobb-Vantress
Bill Crider, Crider Foods
Michael Carr, Darling Ingredients
Kelly Horne, Darling Ingredients
David Wicker, Fieldale Farms
John Wright, Fieldale Farms
Paul Breure, Foodmate
Scott Hazenbroek, Foodmate
Jason Bragg, Georgia EMC
Gary Funk, Georgia Power
Ed Harmon, Georgia Power
Blake Wikle, Gold Creek Foods
David Bleth, Harrison Poultry
Humberto Hernandez, JBT FoodTech
Joe Gasbarro, JBT-Prime Equipment Group
Cezary Mroz, JBT-Prime Equipment Group
Kirk Reis, JBT-Prime Equipment Group
David Sewell, Koch Foods
Matt Brass, Marel
Phillip Turner, Mar-Jac Poultry
John Weeks, Mar-Jac Poultry
Damon Simpson, Perdue Farms
Lucas Hill, Pilgrim's
Adam Willis, Pilgrim's
Dwayne Holifield, Sanderson Farms
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Lisa Blotsky, Tyson Foods
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Louise Dufour-Zavala, Georgia Poultry Laboratory Network
Todd Applegate, University of Georgia
Denise Heard, U.S. Poultry & Egg Association

Avian Flu FAQs

With news of recent Avian Influenza ("bird flu") outbreaks in parts of the United States, you may be wondering — What do I need to know about avian flu? Here are answers to the most commonly asked questions.

What is avian influenza?
Just like humans, birds can get the flu. "Avian influenza," "avian flu," or simply "bird flu" is a disease that affects birds, including poultry like chickens, turkeys, and ducks. It is caused by a virus that is passed from bird to bird through their saliva, nasal secretions, and/or feces. Other susceptible birds pick up the virus by directly touching the infected bird's fluids or by touching a surface that has been contaminated by the fluids. There are two classifications of bird flu — low pathogenic avian influenza (LPAI) and highly pathogenic avian influenza (HPAI). Birds who contract LPAI sometimes do not exhibit any symptoms or show mild ones, like ruffled feathers or a decrease in egg production. Birds with HPAI exhibit more severe symptoms such as lack of energy or appetite, lack of coordination, coughing, sneezing, or nasal secretions. HPAI may also cause high morality.

Can people catch avian influenza?
The risk of humans contracting avian flu is very low, according to the Centers for Disease Control and Prevention (CDC). Scientists say bird flu is not easily transmitted from birds to humans.

What is the status of HPAI incidents in the United States?
The United States Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) tracks confirmed cases of HPAI: https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian/avian-influenza/2022-hpai

APHIS is working closely with state animal health officials on joint incident responses. State officials quarantined the affected premises, and birds on the properties were depopulated to prevent the spread of the disease. Birds from the flocks will not enter the food system.

What happens if there is an outbreak of avian influenza on a chicken farm?
In the event of an outbreak, the poultry industry has strict procedures and works directly with state and federal governments to identify and eliminate the problem and reduce the spread of the disease. When avian flu is detected, the following five-step response plan is carried out:

Quarantine
First, the farmer ensures that the affected flock stays on the farm, along with any equipment that has been near the birds.

Eradicate
The affected flock is then quickly and humanely euthanized.

Monitor region
At the same time, both wild and domestic birds in a defined surrounding "control" area are tested and monitored for avian influenza.

Disinfect
The farm where the flock was housed is then thoroughly disinfected to ensure all of the virus is killed.

Test
Last, the entire poultry farm is carefully tested for 21 days to confirm it is free of avian influenza before allowing a new flock of birds to arrive.

No chicken from avian flu-affected flocks are ever allowed to enter the food chain.

Source: chickencheck.in/faq/avian-flu-information (a website sponsored by the National Chicken Council)

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ATRP's Facebook page features information about exciting research initiatives underway, interesting poultry and food industry news, industry events, photos, videos, and more!

facebook.com/ATRP.GTRI

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