TPA NEWSLETTER

"Serving the integrated broiler/breeder industry in Tennessee"

Summer 2021

Tennessee Poultry Association

Is there an end to the nation's labor shortage? And, will CAFP-2 funding happen for growers?

Labor shortages at the plants: *Poultry Times* has a really good article addressing how the nation's labor shortage is affecting the poultry industry while the ongoing chicken sandwich wars call for even more product. Several plants tell us they are still short several hundred employees. One of the plants hired an extra 300 people earlier on during the pandemic with the hopes of having enough workers to show up on any given day and is still experiencing labor shortages. One complex shared they are behind in processing 700,000 birds and are working Saturdays to catch up. Integrators have no choice but to consider investing in more robotics and further automated operation systems at an even faster rate than originally planned. On pages 31-32 of this newsletter, *MeatPoultry.com* has a really good article reviewing where the industry is today with respect to line speeds and available automation. Simon M. Shane's spot on editorial in *Chick-News.com* that we have included for you on pages 7 & 10 further addresses the labor situation and his justifications for robotics. Recent **cyberattacks** experienced by JBS & Pilgrims, the Colonial Pipeline and other industries further complicate the overall situation in keeping things running smoothly and with certainty.

Truck driver shortages and HOS: One complex shared they are still short 11 feed truck drivers and have been running 24/7 just to keep up with feed deliveries *since January*. Another complex shared they are currently short 5 live haul drivers. Blessed are the truck drivers who have stayed on the job and have cared to put in the extra hours and hard work to keep things going as they do. On May 26, 2021, the Federal Motor Carrier Safety Administration thankfully **extended** their COVID-19 **waivers for Hours of Service through August 31, 2021**, which includes waivers **for live haul & feed trucks**, etc. For specific details click here. A special thanks goes to USPOULTRY, the NCC and the NTF for their work in obtaining this extension. TPA led other states in making this national request.

Past time for everyone to get back to work: The TN Chamber of Commerce conducted a survey last month in which 90% of TN's businesses said they are experiencing labor shortages and believe the shortages are a result of federally enhanced unemployment benefits. In a May 11, 2021 press release, TN Gov. Bill Lee announced the **end of all federally funded pandemic unemployment compensation programs in TN, effective July 3**. An overview of the programs that are set to end can be found on page 4, along with a link to Gov. Lee's letter to the feds. While we all agree that it's past time for everyone to get back to work and wish these programs had ended much sooner (or maybe not even have been implemented as they all were to begin with) we are thankful this is finally ending.

Food for thought: Wouldn't it have been something if there had been a way to prevent those who were taking advantage of the unemployment system from being able to buy chicken? This would not only have helped address chicken shortages experienced at the retail level but might have even motivated a few more folks to get back to work sooner!

CAFP-2 relief funds for growers: This program could still happen, but *nothing is guaranteed*. In the meantime, applications are still being accepted. Contact your local FSA office immediately if you are not already signed up. At the request of TPA and the NCC, TN US Congressman John Rose has been a leader in following up with USDA to hold the government accountable in honoring the original promise to fund $1 billion in aid as a result of lost revenue during the pandemic. A special thanks to Lou Nave in Congressman Rose's office for her dedicated efforts on behalf of our industry in making this request happen. Other members of Congress from TN who kindly signed onto the letter to Sec. Vilsack include David Kustoff, Chuck Fleischmann and Diana Harshbarger. The moment anything is officially announced, the TPA office will promptly notify our members. For an overview of the program request click here. As TPA Board Member and Cobb grower, Dale McLerran, has so wisely coached the TPA staff to say: "*This is the latest we know at this time*."

INSIDE THIS ISSUE

Tyson Foods Invests $425 Million in New Tennessee Poultry Complex

Humboldt, Tenn. — April 8, 2021 — Tyson Foods (NYSE: TSN) along with local, state and federal officials met Thursday to officially open the company's new poultry complex in Humboldt, Tennessee. The $425 million project, which includes a processing plant, feed mill and hatchery, represents Tyson's biggest investment in Tennessee and the single largest corporate investment ever in Gibson County.

"We're pleased to add to the growth in Gibson County with the opening of our new 370,000 square foot processing facility," said Dean Banks, President and CEO, Tyson Foods. "We appreciate the support of all those who played a role in making this facility possible—the local community, county, state and our Humboldt team members, who safely and responsibly produce high-quality protein daily to help feed our nation and the world."

"Tyson Foods started as a small family poultry business more than 85 years ago, and today we are a recognized leader in protein," said John R. Tyson, chief sustainability officer and member of the Tyson Family. "We are incredibly proud to make western Tennessee the home of our first new poultry facility in 25 years and look forward to being part of the community and supporting the local economy."

Several hundred workers have been hired so far and are being trained for the start of production later this month. The processing plant, which is expected to employ more than 1,500 team members by 2023, is located within the Gibson County Industrial Park and will produce pre-packaged trays of fresh chicken for retail grocery stores nationwide beginning in late April.

"The demand for Tyson chicken products continues to grow and this plant will help us meet the needs of our customers and consumers," said Donnie King, Chief Operating Officer and Group President, Poultry for Tyson Foods. "We're excited to start this new chapter with the people of western Tennessee who have been extremely supportive of the project since day one."

The payroll and payments to farmers from the new operation, along with the purchase of grain and utilities, is expected to generate an annual economic benefit to the state of Tennessee of $150 million.

"With five facilities across Tennessee, Tyson Foods has an enormous impact on our state's agriculture industry and rural communities," said Tennessee Governor Bill Lee. "Job creation is crucial to our continued economic success, and I thank Tyson for its investment and commitment to Humboldt and West Tennessee."

The company's Humboldt feed mill, which will supply feed for approximately 56 local poultry farmers, will employ 30 team members and produce 14,000 tons of finished feed a week when production reaches full capacity.

The Humboldt hatchery employs 30 team members and provides chicks for local poultry farmers who supply broiler chickens to Tyson.

This is the second major economic development project Tyson Foods has initiated in Tennessee in recent years. In August 2017, the company announced an $84 million expansion of its Union City operations, which has added more than 200 jobs.

Including Union City, the company currently operates five facilities in the state, employing about 5,000 people with an annual payroll of more than $226 million. In its 2020 fiscal year, Tyson Foods paid Tennessee farmers more than $61 million. The company estimates its total statewide annual impact for fiscal 2020, including payroll, grain purchases, utilities, property taxes and charitable contributions to be more than $428 million.

"Tyson Foods has been doing business in Tennessee for nearly 50 years and we're committed to making a positive impact on Humboldt and the entire region," said Tom McCue, Humboldt complex manager. "We appreciate the support of the local community as we've worked toward this day and I'm excited to build a tradition of excellence with our team members." (See page 58 for pictures from the ribbon cutting for their first broiler farm.)




ADVERTISING INDEX

Tennessee Poultry Association

Annual Meeting & Summer Getaway

August 13-14, 2021

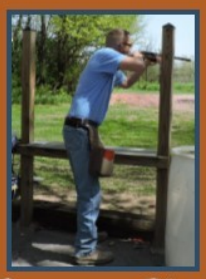
Gaylord Opryland Resort & Convention Center
Nashville, TN

COVID-19 preventative guidelines specific for the Gaylord Opryland Resort & Convention Center, the city of Nashville and the CDC will be followed during this event.

- For more information, contact Tracy Rafferty at tracy@tnpoultry.org or (270) 363-2078
- Register online by *July 9* at http://tnpoultry.org/meeting/registrationForm.cfm
- Special group hotel rate available until *July 12 @ 5pm EST*
- Hotel reservations can be made at the link below: https://book.passkey.com/go/TPA2021

Speakers

Silent Auction



Sporting Clays

Golf

Awards Banquet & Live Auction

Live Entertainment by Dave Fenley

Gov. Lee Pushes Return to Work, Economic Recovery

Ends All Federal Pandemic Unemployment Funding

NASHVILLE, **Tenn.** – On May 11, Tennessee Governor Bill Lee announced the end of all federally funded pandemic unemployment compensation programs in Tennessee, effective July 3.

"We will no longer participate in federal pandemic unemployment programs because Tennesseans have access to more than 250,000 jobs in our state," said Gov. Lee. "Families, businesses and our economy thrive when we focus on meaningful employment and move on from short-term, federal fixes."

Gov. Lee's letter to the U.S. Department of Labor can be viewed here.

Federal pandemic unemployment programs set to end on July 3 include the following:

- **Federal Pandemic Unemployment Compensation (FPUC)**, which provides for an additional $300 weekly payment to recipients of unemployment compensation
- **Pandemic Unemployment Assistance (PUA)**, which provides benefits for those who would not usually qualify, such as the self-employed, gig workers and part-time workers
- **Pandemic Emergency Unemployment Compensation (PEUC)**, which provides for an extension of benefits once regular benefits have been exhausted
- **Mixed Earner Unemployment Compensation (MEUC)**, which provides an additional $100 benefit to certain people with mixed earnings

Unemployment claimants in Tennessee have been required to complete three weekly job searches inorder to remain eligible for benefits since Oct. 4, 2020. Any weeks filed before July 3 that are eligible under federal program requirements will continue to be processed. ◻

National Chicken Council refutes claims of chicken shortage

May 3, 2020 in MeatPoultry.com by Joel Crews

Supplies are tight as a result of winter storms, but production is rebounding. Click here for full article. ◻

JBS Informs White House that Cyberattack is Likely from Russia

June 2, 2021 at FoodMarket.com

JBS informed the White House that the cyberattack on the company that impacted its cattle and hog plants in the United States Tuesday (May 27th) likely originated from Russia. Click here for full article. ◘

China Reports First Human Case of H10N3 Bird Flu

June 1, 2021 on FoodMarket.com by Hallie Gu and Dominique Patton

A 41-year-old man in China's eastern province of Jiangsu has been confirmed as the first human case of infection with the H10N3 strain of bird flu, China's National Health Commission (NHC) said on Tuesday. Click here for full article. ◘

Land Grab or Climate Solution? President Biden Could Unveil '30 by 30' Plan Details Next Week

April 16, 2021 at Drovers.com by Tyne Morgan

Details of a U.S. land and water related executive order could be unveiled soon. Known as the '30 by 30' plan, it would place 30% of U.S. lands and 30% of U.S. waters under federal jurisdiction by 2030. Click here for full article. ◘

EPA Administrator Will Not Return to Obama-Era WOTUS Rule

May 7, 2021 at FeedStuffs.com by Jacqui Fatka

In a hearing in the House of Representatives, Environmental Protection Agency Administrator Michael Regan said he does not intend to go back to the Obama-era waters of the U.S. - WOTUS – rule and again made that claim before members of the Senate. In a subsequent hearing before the Senate Environment and Public Works Committee hearing, Sen. Joni Ernst asked what farmers, landowners and manufacturers can expect to see from the Biden administration in a potential new WOTUS rule. Regan responded that he does not intend to pull the Obama-rule off the shelf, "especially after we've learned so much over the years," he adds. He notes this is not to be dismissive of what was done in the past, but also acknowledging those lessons learned. But changes are warranted, Regan says. "We're also not quite satisfied that the waters of the U.S. rule developed under the Trump administration is as protective of water quality as it could be while not placing administrative burdens on our small farmers." Click here for full article. ◘

EPA sued for failure to update farm wastewater guidelines

May 20, 2021 at BeefMagazine.com by Jacqui Fatka

CAFO requirements under Clean Water Act challenged by Food & Water Watch. Click here for full article. ◘

Judge Rules Maryland Must Regulate Chicken Farm Air Pollution

March 12, 2021 at BayJournal.com by Jeremy Cox

A Maryland judge has dealt a blow to the state's poultry industry, ordering regulators to impose limits for the first time on air pollution emanating from the sprawling indoor facilities where chickens spend most of their lives. Montgomery Co. Circuit Court Judge Sharon Burrell ruled March 11 that the Maryland Department of the Environment must regulate nitrogen released into the air because some of it falls into waters protected by the federal Clean Water Act, such as the nearby Chesapeake Bay. Click here for full article. ◘

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Editorial: Shortage of Plant Labor-Causes and Solutions

May 26, 2021 at Chick-News.com by Simon M. Shane

A May 20th article in the Atlanta Journal Constitution by Chris Quinn points to the shortage of labor affecting production levels in chicken plants in Georgia. Fieldale Farms in Baldwin claims to be short 1,000 workers, Wayne Farms in Pendergrass has 200 openings. In their quarterly reports, the CEOs of Pilgrim's Pride, Tyson Foods and Sanderson Farms have noted labor availability as a restraint to achieving higher production volume. Concurrently, many participants in the chain from food production through distribution to retail are experiencing difficulties in recruiting and retaining workers required to perform either manual or skilled work. As the chicken industry emerges from COVID restrictions, it is apparent that recruitment, training and retention will not revert to "business as usual". Questions concerning the desirability of the proposed increase in the national minimum wage are now moot with economic reality having overtaken the debate with $15 serving as a new base in many areas.

There are a variety of reasons why workers are disinclined to return to processing lines. Given that 40 percent of plant workers are women, it must be recognized that in the absence of functioning schools domestic responsibilities have kept women at home caring for children and in many cases assisting with distance learning. In urban areas, closure of small businesses during 2020 displaced unskilled workers, many of whom have joined the Gig Economy.

Operators of chicken plants in Georgia and other southeastern states must realize that they are now in competition with other industries that are in a position to pay higher wage rates. It is estimated that 30,000 workers are employed in plants in either first processing or further-product preparation in Georgia. In the past five years, Amazon.com has established fulfillment centers employing 20,000 in the state. They are drawing labor from processing plants in areas where workers are able to commute. Basically an employee must make trade-off decisions involving wage rates and working conditions. However hard it may be to work in an Amazon warehouse, conditions are less attractive than performing repetitive manual on-line work at 40 F and high humidity while in a standing position.

Although the chicken industry was less impacted by COVID than red meat plants, there is a perception that close proximity among workers in change rooms and on lines contributes to transmission of infection. Many red meat and poultry processors were proactive in introducing programs of testing, masking and social distancing, and when available promoted and facilitated vaccination. Despite the preventive measures, some of which were introduced belatedly, there is now a perception that meat plants represent a danger to workers. The incidence rates of COVID are falling nationally but hot spots persist. The higher the level of immunity in a population, the lower the risk of an individual acquiring the viral disease disseminated through air. It is indeed unfortunate that vaccination acceptance rates in red states where poultry plants are located are lower than the national average, maintaining a level of risk.

A simplistic explanation of the labor shortage relates to COVID and jobless benefits. Quinn correctly notes that a $365 per week benefit together with a Federal $300 incentive provides an unemployed worker with the equivalent of $16 per hour. This is obviously a disincentive to work and accordingly the situation is undergoing change in many states. In Georgia, the $300 weekly Federal supplement will cease on June 26th. The Commissioner of Labor has announced that to qualify for state jobless benefits, recipients must prove that they are applying for jobs, reinstating a requirement that was suspended during the COVID crisis.

Prior to 2010, a proportion of the workers in plants were illegal immigrants. With increasing control over borders and mandating the E-Verify program in the mid-2010s, and with subsequent enforcement raids by ICE, the labor pool for minimum-wage workers was restricted. Successive administrations have failed to recognize the dependence of intensive agriculture on non-U.S. labor, and have neglected to implement a workable H-2B visa program or to reform policy on immigration. The tenuous balance between the availability of willing laborers and their remuneration was disrupted by COVID from March 2020 onwards, and the disease has disclosed a number of fundamental problems that require innovative solutions.

David Leonhardt regards the labor shortage in the context of ECON 101 in his incisive article in the May 20th article in the New York Times. He invokes capitalism as the answer to a shortage opining that employers will have to pay the going rate and provide incentives that are competitive with other industries vying for the same labor pool. Many processing and food companies are offering sign-up bonuses and retention payments in addition to adjusting starting wage rates.

Justification for Robotics

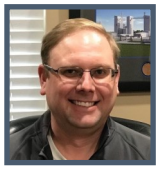
- Robots are E-Verify compliant.
- Robots reduce direct costs through savings on salaries, benefits, and indirect H&R expense.
- Robots incur fixed costs of installation. Their return may be evaluated by quantifying output applying discounted cash flow calculations to determine the return from savings using conventional labor.
- Robots do not demand pay raises.
- Robots do not join unions.
- Robots do not sue employers over health, safety, discrimination and related issues.
- Robots are not protected by OSHA.
- Robots have immense power and precision through hydraulics.
- Robots will continue to function as programed without developing injuries.

continued on page 10

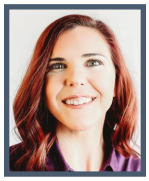
NEWS FROM AROUND THE COMPLEXES

Effective April 19, **Aviagen®** has named **Derrick Tice** Director of Quality Assurance (QA) for North America. Based in Aviagen's corporate office in Huntsville, Tice will report directly to the president of Aviagen North America Marc de Beer. Tice will ensure the quality of Aviagen's birds, from their beginning on GP farms to the time they are delivered at customer farms. He will also collaborate with sales and service teams and with customers to make sure they are satisfied with healthy, high-quality parent stock chicks. Click here for full article.

Aviagen® is pleased to announce that **Dr. Kate Hayes** has been named Vice President of Veterinary Services for North America. Based in Elkmont, Ala., Dr. Hayes will report to President of North America Dr. Marc de Beer. In this new role, she leads a team of veterinary, laboratory, biosecurity and animal welfare specialists who all work collaboratively and innovatively to ensure the safety and security of the world's poultry supply. In doing so, she and her team work together with Aviagen's internal experts around the globe to help customers continually improve the health and welfare of their flocks.



Aviagen® North America welcomes **Kasey Wilson** as Feed Mill Manager for the company's new feed processing facility in Pikeville, Tenn., effective March 1. In this role, he will be responsible for overseeing the production, quality, cost and safety of the facility. After achieving a Bachelor of Feed Science Management at Kansas State University, Wilson accepted a position as management trainee at Perdue Farms in Kentucky. He quickly rose in the ranks at Perdue from trainee, to foreman, to supervisor to manager at the Livermore, Ky., feed mill. He served at Perdue for 16 years total.



Aviagen® North America is pleased to introduce **Dr. Sara Reichelt** as its new Director of Welfare and Sustainability, effective immediately. Reporting directly to Dr. Kate Hayes, Aviagen's Vice President of Veterinary Services, Dr. Reichelt will be the face of welfare and sustainability for Aviagen's North American customer base, collaborating closely with Aviagen Group's Global Vice President of Sustainability and Welfare Anne-Marie Neeteson and her team to share the company's "Breeding Sustainability" and welfare messages on a global level. She is a graduate of NC State.

Tyson Humboldt announces that **Matthew Mauk** became their new broiler manager in January of this year. Matthew previously worked in outside sales for Hog Slat/Georgia Poultry Equipment (2017-2019), broiler manager for Prairies Best Farms in Iowa (2016-2017), and production supervisor for Sanderson Farms in Waco, TX (2010-2016). He graduated from Tarleton State in Ag Econ. in 2009.

Brandon Womble became the hatchery manager for **Tyson Humboldt** in Sept. 2020. Brandon graduated in 2019 from West Virginia University with a B.S. in Agribusiness Management along with a dual minor in Agriculture and Natural Resource Law and Soil Science. He started out in the poultry industry as an operations associate and then became the hatchery supervisor for Tyson in Crewe, VA in Sept. of 2019.

On June 2, **Tyson Foods, Inc.** announced that Chief Operating Officer **Donnie King** has been named President and Chief Executive Officer, effective immediately. Current President and CEO Dean Banks is leaving the company and board for personal reasons. Click here for full article.

Agri-Pulse recently sat down with **Matt Mika**, **Tyson Foods,** for a Meet the Farm Hand interview to discuss how he came to work in politics and the agriculture industry, his experience at the congressional baseball shooting, and what it is like to work on government relations issues for an association and a company. Click here to watch the video.

Jerry Hughes has joined **Pilgrim's** in Chattanooga as the new Live Production Manager. Jerry started his career with Gold Kist Poultry in 2000 and has spent the past 4 years in Douglas, GA as Live Operations Manager. Originally from Ellijay, GA, Jerry and his wife have 7 children and 12 grandchildren who all live in North GA.

General Mills announced that it has entered into a definitive agreement to acquire **Tyson Foods'** pet treats business for $1.2 billion. The business, which includes the Nudges, Top Chews, and True Chews brands, is a leader in natural meat treats for pets. Tyson Foods' pet treats portfolio generated more than $240 million in net sales in the past year. Click here for full article.

Isaiah Knowles, owner of Tennessee Valley Aerials, provided us with these updated photos (taken Mid-May) of the progress being made at the new Aviagen feed mill being built in Pikeville, TN. You can see Isaiah's ad on page 32.

WELCOME
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Biomin
Jason King
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PeroxyChem LLC
Brandon Cryar
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Integrity Testing & Inspection
Josh Thrash
270-570-0494

Superior Plus Propane
James Watson
404-307-3491

Phileo
George Perigo
706-889-5068

ReNew Solar Solutions
Holly McMullen
615-617-6470

ALLIED MEMBER NEWS

BioSafe Systems is pleased to present ReduceIT™, a sulfuric acid-based product that helps to balance pH levels in poultry drinking water. ReduceIT utilizes sulfuric acid and sodium sulfate to acidify water and lower pH levels.

Weeden Environments has recently been granted another patent that provides additional protection on their Weeden Sprinkler System and method of cooling and promoting physical activity of poultry.

Darling Ingredients has been announced as one of the 50 Sustainability and Climate Leaders by Bloomberg and TBD Media Group. As demand on natural resources rise, with more mouths to feed and higher demand for transportation energy, Darling identifies as one of the sustainable creators and is driven to increase efforts to improve climate change.

Wendy's recently-released Corporate Responsibility Report cites its partnership with DAR PRO Solutions, a **Darling Ingredients** brand, for producing 2.8 million gallons of cleaner-burning renewable diesel from 24 million pounds of used cooking oil in the U.S. This renewable diesel reduces up to 85 percent greenhouse gas emissions than traditional petroleum diesel. Click here for full article.

Boehringer Ingelheim has transitioned to renewable energy to power its largest U.S. manufacturing site, in St. Joseph, Mo., as part of a broader company commitment to environmental sustainability in the United States and around the world, the company announced.

Applied LifeSciences & Systems (ALSS) has secured $7 million in series B funding that will be used to commercialize their poultry vaccine delivery system, with financing co-led by **Merck Animal Health** and Mountain Group Partners. The ALSS system can individually vaccinate up to 100,000 chicks per hour against coccidiosis, infectious bronchitis and Newcastle disease. The technology platform incorporates high-speed imaging, artificial intelligence, robotics and microfluidics, was one of the innovations highlighted at the 2020 Virtual Poultry Tech Summit.

Ag Career Profile: Terry Paschall - Darling Ingredients

March 5, 2021 at KyFoodandFarm.com

Terry Paschall grew up on a small family farm in Murray, Kentucky, where they grew tobacco, soybeans, and corn. His plan growing up was to continue farming for his entire life, as there was no substitute for being able to work daily with parents, grandparents, and great grandparents and learning the lessons of life. Click here for full article. ◘

Huvepharma: The Cost Saving Reformulation Tool For Laying Hen Nutrition

May 23, 2021 at Huvepharma.com

Formulation of more efficient and economical feeds relies on the better use by the animal of nutrients from the raw materials as well as on the safe choices to lower feed costs. Animal performance indicators shall not be compromised, rather improved, and health status should not be negatively affected. This apparently simple statement has a significant weight in the decision process of the nutritionist, under constant pressure to find the most cost-effective solutions for his business. A significant amount of research has been done to show efficacy of different feed additives in improving animal performance, alongside reducing feed costs. Among the researched products, exogenous enzymes have had the spotlight. Click here for full article. ◘

Editorial: Shortage of Plant Labor-Causes and Solutions (*continued from page 7)*

- Robots are infinitely flexible depending on end-of-arm tool, programming and design.
- Robots do not take holidays.
- Robots are always present for work at plant start-upon irrespective of day or shift.
- Robots represent a capital cost that can be depreciated over an extended working life.
- Robots allow a reduction in plant area. This should be factored into the initial capital cost. A robot that can perform the work of two or three employees implies a shorter processing line and hence a saving in floor area. Robots will reduce expenditure on break-rooms, change- rooms and hence construction costs.

Leonhardt maintains that wage rates have not kept up with cost of living including food, housing, education, services, transport and energy. Over a 40-year period extending from 1960 through 2000, the increase in wages and salaries generally tracked the increase in company profits at approximately five percent annually. Since 2005, company profits and wages deviated over the past 15 years. Company profits have increased annually at a rate of 33 percent compared to a combination of wages and salaries at 10 percent.

It is projected that as we recover from COVID restraints, we will enter an environment characterized by plentiful jobs but with higher wages and a proportional rise in prosperity. It is likely that there will be less of a gap between traditionally low-paid demographics based on their geographic location, educational level and ethnicity compared to white-collar workers and artisans.

Both the New York Times and Atlanta Journal-Constitution articles considered the problem of a labor shortage in plants from the perspective of economics. Obviously, short-term approaches must include raising wages, enhancing benefits including health insurance and child-care and improving working conditions. Mechanization and robotics represent a longer-term solution. A comparison between U.S. chicken plants and those in Europe demonstrate the extent to which manual labor can be displaced by machinery. With plentiful availability of relatively low-cost workers and the need to maximize yield, it is appropriate to install manual lines for portioning and deboning. As we move to a different operating environment, it is financially beneficial to invest capital in mechanization and robotics and install currently available off-the-shelf technology. The list of the advantages for robots over manual workers is shown in the sidebar and should be considered with respect to retrofitting existing plants or designing new operations. □

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Tyson project asks chickens about enrichment preferences

April 7, 2021 at WattAgNet.com by Elizabeth Doughman

The birds were given a choice between ramps, huts and boxes.

New research at the Tyson Foods' Broiler Welfare Research Farm (BWRF) leverages animal preference to choose the best environmental enrichments for broiler chickens.

"Caring about the animals that are entrusted to our care at Tyson Foods is pretty inherent to who we are as a company. Our approach to that is grounded in sound science and the latest animal welfare research," Karen Christensen, senior director animal welfare, Tyson Foods, said.

"We use preference as a key aspect of our research strategy. What I mean by that is that any topic we focus on, we want to present different options to the birds and let them tell us what they want."

Benefits of enrichment

Enrichments promote natural behaviors and are a key component of any animal welfare program.

It's important that any project results be ready for use in commercial facilities, so the farm made sure to only test recycled materials that were durable, portable, safe for growers and completely biosecure to prevent the introduction of any possible pathogens.

How preference is measured

Researchers from the University of Arkansas monitored and evaluated chicken behavior with or without enrichments.

Preference was measured through a combination of analysis of psychological factors, such as dopamine and serotonin levels, as well as the assessment of several key health indicators, such as looking at brain activity to determine stress levels.

Ramps, huts or boxes?

The project focused on three types of enrichments: ramps, huts and boxes. So far, huts seem to be the clear winner.

"We've found, and the birds have clearly showed us, is that they like an enrichment that lets them get under something or next to something," Christensen said.

The huts allow the birds to express their natural behaviors, "where they can gather feed quickly where they can see it and then retreat to places that may be safer," she added.

Next, the researchers plan to compare barns with the hut enrichment to standard control barns, with the expectation of seeing improved behavioral assessments, leg health and dopamine and serotonin regulation in the enriched environments.

The enrichment project is funded by a two-year grant from the U.S. Poultry and Egg Association (USPOULTRY) given to the University of Arkansas, who is collaborating with Tyson Foods. Other projects at BWRF include research on lighting and the how technology can be used to monitor bird health and well-being. ◘

Tyson's plant-based brand expands with new products

May 3, 2021 at BeefMagazine.com

Company continues to increase market share in plant-based category. Click here for full article. ◘

Tyson Foods' plant-based debuts in Asia

June 2, 2021 at MeatPoultry.com by Erica Shaffer

The initial launch will introduce frozen Bites, Nuggets and Strips to consumers in Malaysia. Click here for full article. ◘

New Cobb White Paper Includes Expertise for Pullet Rearing Ventilation and Light Trap Selection and Installation

at Cobb-Vantress.com

The Cobb technical team is equipping the industry with new guidelines to improve pullet ventilation and the process of selecting and installing light traps in rearing houses. The newest white paper by Andrew Bourne, world technical services specialist, is a timely and important tool for industry professionals to review when designing, building, or updating ventilation systems. "Our team understands that the choice and installation of light traps can be critical," said Robin Jarquin, director of world tech services. "That's why we are pleased to share this new expertise with the industry as part of our commitment to support successful broiler breeder management." Click here for full article. ◘

Hubbard invests extra $20 million in broiler breeder R&D

April 19, 2021 at WattAgNet.com by Elizabeth Doughman

Hubbard will spend $20 million to expand and upgrade its Walpole, New Hampshire, Research and Development (R&D) operations focused on broiler breeder stock health and welfare. Click here for full article. □

Sanderson: Breeding problems can be worse in NAE programs

May 20, 2021 at WattAgNet.com by Roy Graber

Ordinary problems with hatchability and livability can be further complicated when the breeding stock and pullets are raised as part of no antibiotics ever (NAE) programs, the CEO of Sanderson Farms said. Click here for full article. □

Greta Thunberg Aims to Change How Food Is Produced

May 28, 2021 at Drovers.com by Colm Fulton

Swedish climate activist Greta Thunberg has set her sights on changing how the world produces and consumes food in order to counteract a trio of threats: carbon emissions, disease outbreaks and animal suffering. Click here for full article. □

The Ag Watchdog Newsletter

April 26, 2021

Methane Concerns: A coalition of over 400 environmental groups petitioned the EPA this week to take action against large-scale farms. They want the agency to classify methane as a volatile organic compound, which would allow the agency to increase regulations.

May 18, 2021

Study: Farm Emissions Kill 18,000 A Year: A new study claims that emissions from agriculture, primarily particulate matter and ammonia, lead to 18,000 deaths a year. The study's methodology relies on a number of models to come up with this figure. It strikes us as essentially fancy guesswork. However, it will provide ammunition for environmental activists who are pushing the EPA to regulate ag methane emissions under the Clean Air Act. *More on next page*

March 13, 2021

Lab-Grown Meat Will Cost Under $3/Pound: A study commissioned by the Good Food Institute estimates that by 2030 cell-cultured meat will cost less than $5.66 per kilogram (about $2.57/pound) to produce. The research also claims cultivated meat will reduce environmental impact of conventional beef by 93 percent. The Good Food Institute is an association that promotes fake meat. Its founder is a former VP of PETA.

Proposed Colorado Ballot Measure Would Wreak Havoc: A proposed ballot initiative in Colorado would prohibit livestock & poultry from being slaughtered until they have lived 25 percent of their natural lifespan. The measure would also ban artificial insemination and similar procedures. While the measure currently only applies to production inside Colorado, it could potentially be changed to apply to goods sold inside Colorado. If this has a chance for passage it will confirm the multi-year influx of residents from California.

March 30, 2021

Global Funding Boom for Alternative Proteins: In 2020, alternative protein companies raised $3.1 billion, up from $1 billion the previous year. The amount raised in 2020 accounted for half of the $6 billion investment over the past decade. Most of the funding went to companies producing plant-based imitations of meat, eggs, or dairy, as opposed to cell-cultured alternatives.

The (Cow) Tipping Point: When will fake meat hit the "tipping point"? We explore the matter in our latest Meatingplace column. Read it here.

April 3, 2021

1 in 4 Fake Meat Products Not a Good Protein Source: Safefood, a food and nutrition group in Ireland, examined the nutrition of 354 fake meat products. One-quarter of them **did not meet EU standards** for being a good protein source, meaning 20% of calories come from protein. Fake meats are ultra-processed and often have as many calories as, and more sodium than, natural meats. See ingredient labels at our website CleanFoodFacts.com.

May 1, 2021

Beyond Chicken Debuting This Summer: Beyond Meat is reportedly planning to roll out a fake chicken product this summer. Beyond has tested a fried fake chicken product with KFC, and previously had a line of frozen chicken strips (which it has discontinued).

NY Times Calls for Federal Funding of Fake Meat: NY Times columnist Ezra Klein, a vegan, called for federal funding for research into the development of cell-cultured meat. "The Good Food Institute"—a fake meat advocacy group—"produced a wish list calling for $2 billion in funding, half of it for research and half of it to set up a network of innovation centers," he writes. Klein also points to a bill in California that would pay farmers to switch from animal agriculture to plants.

May 8, 2021

Impossible Foods Set Sights on Schools: Impossible Foods is targeting K-12 school lunch programs after securing the USDA Child Nutrition Label for its ultra-processed "burger." Some school districts, including in New York City and Los Angeles, have adopted Meatless Mondays, and activists will work to expand this. Separately, Impossible won a court battle this week over its use of heme to mimic the "bleed" of a real burger. The litigation was brought by an anti-GMO group called the Center for Food Safety.

Beyond Meat Falls Short of Expectations: Beyond Meat stock dropped 11% this week as its retail sales slowed. However, the company says it expects revenue to increase next quarter by 32% compared to last year. Beyond also released a new formulation of its imitation burger that has lower fat content (but is still ultra-processed).

May 18, 2021

Company Plans Cell-Cultured Chicken Release: The lab-grown meat startup Upside Foods, formerly Memphis Meats, announced it could be ready to launch a small-scale commercial offering of lab-grown chicken in the US by the end of the year. One key factor will be whether there is regulatory approval. Upside has raised $181 million, including from Whole Foods founder John Mackey, Tyson, and Cargill.

Fake Meat Companies Look for "Cleaner" Products: Following criticism that fake meat has just as many calories and more sodium than real meat, two companies are attempting to make meat alternatives out of real vegetables. Typically, fake meat products are based around extruded plant protein. Our website www.CleanFoodFacts.com educates consumers about the ultra-processed ingredients in fake meat products.

May 22, 2021

Lab-Grown Meat Company Raises $170 Million: Eat Just's cell-cultured meat arm raised $170 million in a new funding round. The company currently sells plant-based egg products. Eat Just's cell-cultured chicken has been on sale in Singapore on a limited basis after receiving regulatory approval from officials there.

Survey: Most Would Try Lab-Grown Meat: A survey funded by a cell-cultured meat company has found that 40% of people are "highly likely" to try "cultivated meat" and 40% "would consider" trying it. Younger respondents expressed more willingness to try. Like many polls, it's about how you ask the question. A Pew survey a few years ago found that only 20% of people would be willing to try lab-grown meat. □

Mississippi River Reopens Near Memphis After Shutdown Caused Barge Jam

May 20, 2021 at FoodMarket.com

The Mississippi River reopened to vessel traffic near Memphis, Tennessee, ending a shutdown of part of the waterway that caused a backlog of more than 1,000 barges carrying oil, corn, and other goods. The fracture and disruption in river shipments put a spotlight on infrastructure needs as President Joe Biden seeks congressional approval for a $2.25 trillion infrastructure bill. The reopening will begin to ease a jam of 62 vessels with 1,058 barges, and the backlog may take close to 48 hours to clear. Click here for full article. ◘

Propane Update

SPOT PRICING: Mont Belvieu Propane Spot Price on March 24, 2021 was at $0.835/gal. The lowest prices experienced over the past twelve months was around $0.45 to $0.50 in May and June of 2020 and the highest spot price was $0.98 on April 5, 2021.

Allowing for an average of $0.60 per gallon for tariffs, handling and delivery to most areas, **the average current retail price is roughly $1.435/gal.** Larger accounts can often negotiate a lower price agreement by as much as $0.05/gal., or more. To follow Mont Belvieu spot pricing go to https://www.eia.gov/dnav/pet/hist/eer_epllpa_pf4_y44mb_dpgD.htm. We are hearing of growers in some areas being quoted prices to lock in for a year at $1.75 and hope nobody is having to do so. To further explore and shop this, please refer to the contact info for the TPA allied member propane companies that is listed at the back of this newsletter, or contact the TPA office.

Quotes for Mont Belvieu propane **futures** is fairly steady for the remainder of the year and then declines toward $0.70 by June of 2022. https://www.cmegroup.com/trading/energy/petrochemicals/mont-belvieu-propane-5-decimals-swap.html#

For REAP grant funding for energy retrofit projects go to https://www.rd.usda.gov/programs-services/rural-energy-america-program-renewable-energy-systems-energy-efficiency.

To learn more about the Propane Farm Incentive program that can provide up to $5000 toward the purchase of new propane powered farm equipment click here.

For an update on FMCSA emergency declarations and HOS waivers through August 31, 2021 go to https://www.fmcsa.dot.gov/emergency-declarations. ◘

TN now ranks 12th for broilers

On March 5, 2021 from the NCC

The top young meat chicken states in 2020 were Georgia, North Carolina, and Arkansas, according to the annual report from USDA/ National Agricultural Statistics Service (NASS).

These three states accounted for 37.6 percent of the U.S. broiler slaughtered measured by liveweight pounds. States with the largest percentage increases in production last year were Pennsylvania, 8.5 percent; Maryland, 4.8 percent; North Carolina, 4.7 percent; Texas, 3.9 percent; Tennessee, 3.9 percent; and California, 3.4 percent. For the United States in 2020, broiler slaughter totaled 59,155.7 million pounds, liveweight, 1.5 percent ahead of the 58,287.0 million pounds in 2019. Average liveweight last year was 6.41 pounds, an increase of 1.4 percent over the 6.32 pounds in 2019.

For the nineteen states and others reporting the data are as follows:
Young Chickens Slaughtered, Liveweight

State	2019	2020	Change
	——— *million pounds* ———		—— *%* ——-
Georgia	7,856.0	7,786.7	-0.9
North Carolina	7,146.4	7,483.5	4.7
Arkansas	6,831.0	6,975.6	2.1
Alabama	6,285.5	6,444.2	2.5
Texas	4,483.4	4,656.7	3.9
Mississippi	4,589.1	4,455.1	-2.9
Delaware	2,828.5	2,699.5	-4.6
South Carolina	2,216.5	2,225.5	0.4
Missouri	2,237.2	2,128.6	-4.9
Virginia	1,995.0	1,953.8	-2.1
Kentucky	1,840.8	1,843.0	0.1
Tennessee	1,646.0	1,710.9	3.9
California	1,594.6	1,648.8	3.4
Louisiana	1,232.4	1,197.2	-2.9
Oklahoma	1,028.4	947.8	-7.8
Maryland	833.9	873.7	4.8
Pennsylvania	680.6	738.6	8.5
Indiana	338.1	343.7	1.7
New York	137.0	135.8	-0.9
Others	2,486.6	2,907.0	16.9
United States	58,287.0	59,155.7	1.5

Total pounds certified as wholesome in 2019 were 43.905 billion pounds and 44.583 billion pounds in 2020, both on a ready-to-cook weight basis. The annual increase was 1.5 percent. The liveweight conversion to ready-to-cook weight in 2019 was 75.33 percent compared with 75.37 percent in 2020.

The post-mortem condemnations for the United States in 2019 were 0.65 percent compared with 0.56 percent in 2020. Pounds condemned are measured as a percentage of pounds certified plus post-mortem condemnations. Ante-mortem condemnations in 2019 were 0.22 percent compared with 0.20 percent in 2020. Ante-mortem condemnations are measured as a percentage of liveweight pounds federally-inspected.

NASS reports young chickens are slaughtered under federal inspection in 38 states. Approximately 370 federally-inspected plants slaughtered poultry in the United States in 2019. There was not a breakout listed for plants that only slaughter young meat chickens.

The Poultry Slaughter 2020 Summary February 2021 issued by USDA/NASS can be viewed here. □

Sporting Clays Winners

1st Flight
1st Place - Jack Wright (95)
2nd Place - Mark Turner, TN Farm Bureau Federation (94)
3rd Place - Brian Ladd (85)

2nd Flight
1st Place - Chris Pankey, Southwestern Sales Co.
2nd Place - Marshall Gorman, Allegiant Electric
3rd Place - Austin Wright, Volunteer Poultry

Highest Placing Female - Carly Whipple, Tyson OBC
Highest Placing Youth - Braxton Miller

More pics on page 29

Golf Scramble Winners

1st Flight
1st Place team - Kemin
Mark Bellamy, Mark Penzo, Shane Guy, Wes Sullivan

2nd Place team - Farmers Poultry Supply
Greg Martin, Joe West, Ralph Statom, Ty Robertson

2nd Flight
1st Place team - CT Consulting
Adam Duvall, Cody Elmore, Jereme Hill, Tim Cook

2nd Place team - Motion Industries
Brian Moore, Chad Schwender, John Morton, Keith Sandlin

Longest Drive - Scott Black, Cobb-Vantress
Closest to Pin #7 - Clay Cozart, Goggin Warehousing
Closest to Pin #12 - Jim Allen
Closest to Pin #15 - David Boils, Tyson Albany

Use Water Loss Data to Assess Setter Function

April 9, 2021 Aviagen Hatchery Tip #31

The water loss of hatching eggs will affect hatchability and chick quality. The ideal weight loss from 0-18 days is between 10.5-12.5%. The main factor affecting incubation water loss is the humidity of the air in the setter. Most hatcheries monitor water loss and use it as an effective management tool to fine tune setter humidity programs. Click here for more. ◘

Aviagen's Best Practice on the Farm: Guide to Fly Control

at en.aviagen.com

Click here for tips, techniques & expert advice on fly control at your poultry operation. ◘

Aviagen's Best Practice in Broiler House Biosecurity

at en.aviagen.com

Click here for biosecurity tips, techniques & best practices for broiler houses. Minimizes adverse effects to prevent the spread of disease, and more. ◘

Aviagen's Recommendations for Transferring Broiler Breeders

at en.aviagen.com

Click here to learn the best practices so you're prepared before, during and after the transfer of broiler breeders. ◘

How to transport birds comfortably as the temperature rises

April 27, 2021 at PoultryTimes.com by Rafael Rivera

Spring is here, and summer is just around the corner. Higher temperatures present challenges when transporting poultry from farms to processing plants. Heat stress can cause heavy loses, especially during the summer. Click here for full article. ◘

Impacts of Summer Heat Waves, Increasing Temperatures on Agriculture

March 22, 2021 at MorningAgClips.com

In recent years, we are experiencing an increased occurrence of summer heat waves and drought, which can have negative impacts on agricultural production, the agricultural economy and regional and state economies. Click here for full article. ◘

Helping broiler chickens keep their cool

May 11, 2021 at PoultryHealthToday.com

Rising temperatures means summer's on its way, and making a few changes now could help flocks stay cool as things heat up. In this special report, Poultry Health Today looks at the impact of heat stress on birds, and shares advice from the experts on ways to prevent it. Click here for full article. ◘

Rethink how to reduce poultry moisture litter

April 14, 2020 at WattAgNet.com by Roy Graber

Investing in systems that ensure a drier litter in poultry houses might seem expensive, but it should more than pay off in the end. Click here for full article. ◘

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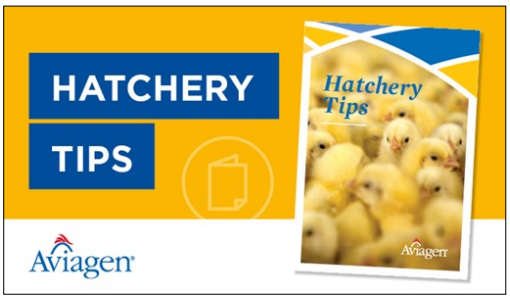


DATES TO REMEMBER

TN MASTER FARM MANAGER WEBINAR SERIES
June 15, 2021
Mail-in Registration Deadline

TPA SERVICE TECH TRAINING
June 23, 2021
Farm Bureau Expo Center
Lebanon, TN

US POULTRY FINANCIAL MANAGEMENT SEMINAR
June 28-30, 2021
Amelia Island, FL

US POULTRY HATCHERY BREEDER CLINIC
July 7-8, 2021
Nashville, TN

TPA ANNUAL MEETING & SUMMER GETAWAY
August 13-14, 2021
Gaylord Opryland Resort & Convention Center
Nashville, TN

US POULTRY WOMEN'S LEADERSHIP CONFERENCE
August 19-21, 2021
Sandestin, FL

TPA GROWER MEETINGS
November 2, 2021
On the campus of UT Martin
Martin, TN

November 11, 2021
Museum Center at 5ive Points
Cleveland, TN

Pullet vaccination: There's always room for improvement

February 24, 2020 at PoultryHealthToday.com

Pullet vaccination is essential for protecting broiler breeder health, but a 'need for speed' in vaccination practices can sometimes lead to slip-ups in application. Tim Cummings, DVM, senior technical services veterinarian, Zoetis, gives his advice on how to ensure vaccination goes as well as it possibly can. Click here for full article. ◘

Pathways to protection: How one vaccine can impact broiler disease management options

April 22, 2021 at PoultryHealthToday.com

Broiler operations naturally want to provide the best disease protection for the least cost, but deciding which vaccines to use and when can be a daunting task. Poultry Health Today asked two experts with extensive experience evaluating vaccination programs on hundreds of farms — Kalen Cookson, DVM, MAM, and Lloyd Keck, DVM, ACPV — for help in navigating the path to sensible, strategic and cost-effective disease protection. Click here for full article. ◘

Study: Live S. Typhimurium vaccine reduces S. Infantis colonization

June 10, 2020 at PoultryHealthToday.com

Live Salmonella vaccines can stimulate birds' immune systems to protect against more than one serotype of the pathogen, Charles Hofacre, DVM, PhD, Southern Poultry Research Group Inc., told Poultry Health Today. He advised that results from a recent vaccine efficacy study suggest investing in programs to develop cross-protection against some of the most common strains of Salmonella could help limit foodborne outbreaks. Click here for full article. ◘

Marek's disease vaccination needed now more than ever

May 1, 2021 at WattAgNet.com

Relaxing Marek's disease (MD) vaccination programs could badly backfire on producers reconsidering the value of protecting birds against the disease. Click here for full article. ◘

Details matter when it comes to ILT vaccination success

May 14, 2021 at PoultryHealthToday.com

Managing outbreaks of infectious laryngotracheitis (ILT) can be challenging, but careful administration of vaccines and a close eye on flock reactions make it possible to control outbreaks of the highly contagious virus. Tim Cummings, DVM, Zoetis senior technical services veterinarian, explains what to look out for. Click here for full article.

Live Salmonella vaccines and some DFMs may not mix

July 20, 2020 at PoultryHealthToday.com by Philip A. Stayer

They're both common interventions in Salmonella control, but combining live vaccines with some direct-fed microbials might not always be the best mix. Writing for Poultry Health Today, Phil Stayer, DVM, of Sanderson Farms, explains why negative interactions can happen, and how producers can test for potential problems. Click here for full article.

Salmonella genotyping helps identify contamination source

May 18, 2021 at WattAgNet.com by Elizabeth Doughman

A new approach to Salmonella typing can detect the source of contamination in the poultry value chain and reduce the incidence of the foodborne pathogen. Click here for full article.

Is ionophore rotation necessary to control coccidiosis?

March 11, 2021 info from PoultryWorld.net

In the video posted by PoultryWorld.net discussing "Why do people feel rotation is necessary?", the conclusion is that "there is no advantage in rotating from one ionophore to another since they all have essentially the same mode of action".

What causes a coccidiosis outbreak if it's not resistance?

March 18, 2021 at PoultryWorld.net

In this video Thomas K. Jeffers will discuss what causes a coccidiosis outbreak if it's not resistance, what would resistance look like? Click here for the full article and to watch the video.

FAO head calls for urgent action to tackle antimicrobial resistance

May 5, 2021 at WattAgNet.com by Jackie Linden

Stronger multi-sectoral collaboration and capacity-building, as well as prudent and responsible use of antimicrobials in the agriculture and food sectors are needed to overcome antimicrobial resistance (AMR), according to the head of the Food and Agriculture Organization. Click here for full article.

Solution to antimicrobial resistance may be very small (blog)

May 6, 2020 at WattAgNet.com by Mark Clements

A nanoparticle used as a drug delivery vehicle in cancer therapies may aid poultry producers in addressing antibiotic resistant bacteria. Click here for full article.

Biosecurity Webinar Series: Prevention is Key to Stop Avian Influenza is now available

April 30, 2021 by USPOULTRY

If you missed any of the four-part Biosecurity Webinar Series, click the links below to view.

Session 1 -- Wild Bird Mitigation Techniques – David Marks
https://uspoultry-org.zoom.us/rec/share/JbksrsLxT12I2sunFNC8VouNOm_IKsjhh2kLzI-eHYSR3gTK9iC4uYGeCcSJ9vEb.rocFVSd3jtqHaE52
Passcode: 8$#=K?$G

Session 2 -- 2015 HPAI Outbreak Impact to the Industry and Factors Contributing to Virus Spread – Oscar Garrison, Dr. Dale Lauer
https://uspoultry-org.zoom.us/rec/share/Y9K_6csUJ6MNq2eWTHd2hnSuztR5MmdyNG-4ziqLxPLJd9EH4z5FSWtwkkxkM3WN.2YKWu_fNU5h2mvWB Passcode: 5L4@HJy0

Session 3 -- Clean and Disinfecting for Prevention – Bret Rings
https://uspoultry-org.zoom.us/rec/share/hg617hX0f-_IEoUUwvdZrbqKt4MQPGeZoK4ww5GwsTzR0MTwRwzIIcE1Fqan63_L.9fjxUfqaUuqjDENw Passcode: =WvvK5?0

Session 4 -- NPIP Biosecurity Guidelines and Indemnification – Dr. Elena Behnke
https://uspoultry-org.zoom.us/rec/share/Kpchs8URNmEdbmEE5sXsjzgb-3PnorjQpQJW7NozWmidQpAzl-17z53aImvAwsos.dwB_O7IJAwdcQLn_ Passcode: Hr*^9z81 □

Researchers Begin Developing Tissue Tests to Detect Emerging Bird Flu Strains

April 23, 2021 at ThePoultrySite.com

Led by the University of Edinburgh's Roslin Institute, the project will focus on both mild and more severe strains associated with recent outbreaks. The results could identify the risks linked to emerging strains, so those with a high potential for disease can be better managed. Scientists say the outcomes could also support ongoing global surveillance measures for avian flu. Click here for full article. □

Gene-edited chickens could make research more efficient

May 5, 2021 at WattAtNet.com by Elizabeth Doughman

Researchers at the Technical University of Munich have developed Cas9 transgenic chickens for easier gene modification at target genes for use in agricultural and biomedical research. Click here for full article. □

Failure of maternal antibodies to protect against E. coli infection highlights need for early protection

February 13, 2021 at PoultryHealthToday.com

Antibodies passed from mother to chick provide young birds with their earliest form of immune protection. However, new studies in broiler chicks show that maternal antibodies to Escherichia coli do not prevent infection, underlining the need for early protection against this ubiquitous and harmful pathogen. Click here for full article. □

Antibiotic use fell sharply from 2013-2017

May 2021 at WATTPoultry.com by Austin Alonzo

Dr. Randall Singer presented the results of an ongoing research project to measure antimicrobial use in the poultry industry at The Poultry Federation's virtual Food Safety Conference in March. In hatchery use of antimicrobials fell by 76% in broilers and 55% in turkeys. Click here for full article. □

Tips for uncovering toxicity in poultry flocks

April 15, 2021 at PoultryHealthToday.com

Toxicity is a relatively rare affliction for hens, and tracking down the source can be a challenge. Eric Shepherd, DVM, clinical assistant professor at the University of Georgia's Poultry Diagnostic and Research Center, shares his tips for identifying the problem and diagnosing cases. Click here for full article. □

Salmonellosis in Poultry

Biomin has very detailed information posted addressing the signs, causes, treatment and prevention of Salmonella infection in chickens and other avian species at https://www.biomin.net/us/species/poultry/salmonellosis-in-poultry/. □

Molecular Test Helps Identify Pathogenicity in New Strains of IBDV

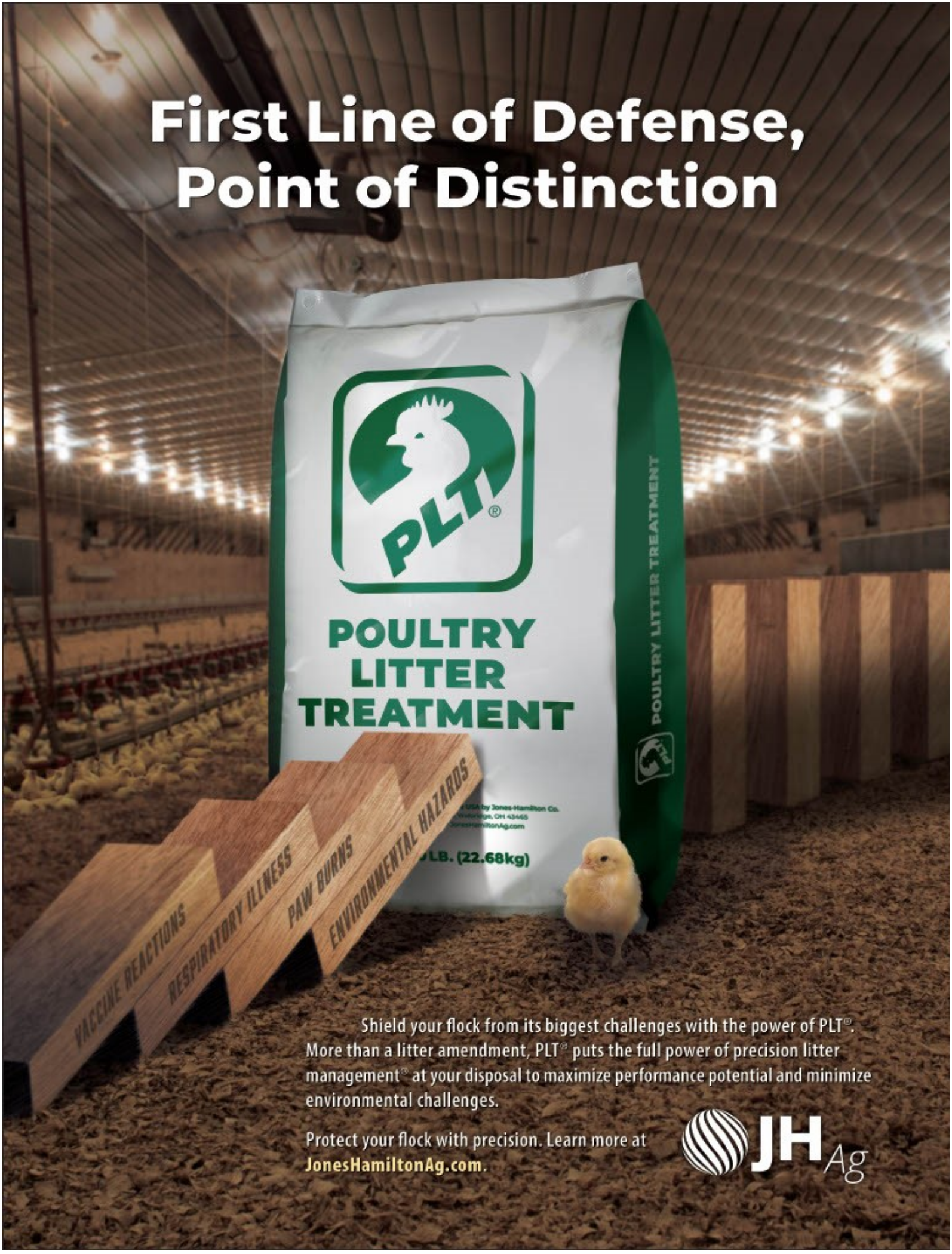
April 8, 2021 at PoultryHealthToday.com

A genetic technique which could improve predictions about the virulence of infectious bursal disease (IBDV) has identified pathogenicity in seven new strains of the virus. Daral Jackwood, PhD, professor at Ohio State University, said the genetic analysis shows promise in identifying risk markers and is a cheaper option to current methods of assessing effects of viral strains in vivo. Click here for full article. □

Superbug infections in poultry under the microscope

May 14, 2021 at PoultryWorld.net by Tony McDougal

Researchers report promising results in the fight against superbug infections on poultry farms, which could have wider implication for human health. Click here for full article. □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Treatment blend offers 'exciting potential' for Campylobacter control at processing

September 3, 2020 at PoultryHealthToday.com

Processing facilities could improve their control of Campylobacter by blending two commonly used antibacterial treatments, according to researchers at Colorado State University. Keith Belk, PhD, head of the university's animal science department, said using both peroxyacetic acid and low-pH buffered sulfuric acid is significantly more effective at tackling Campylobacter than using either treatment alone. Click here for full article.

3D gut models from stem cells to support studies

April 28, 2021 at PoultryWorld.net by Tony McDougal

Scientists have developed inside-out miniature intestines, grown from stem cells, which are to be used for researching gut biology in poultry. Click here for full article.

Assessing the Impact of Feed Supplements on the Selection of Avian Pathogenic E. coli (APEC)

Posted May 6, 2021 on the USPOULTRY YouTube Channel

Dr. Catherine Logue, professor, Department of Population Health, Poultry Diagnostic and Research Center at the University of Georgia, shares her research on the impact of feed supplements on the selection of avian pathogenic Escherichia coli, commonly referred to as APEC. Findings will shed light on how metal supplementation can impact poultry health by selecting APEC resistant strains. Click here to view the video.

How contaminants enter the poultry feed supply

May 5, 2021 at ThePoultrySite.com by Sarah Mikesell

Microbial contamination, from bacteria and viruses to molds and mycotoxins, access poultry feed and feed ingredients through a variety of routes. Some routes are naturally occurring, while others are caused by exposure during the manufacturing process. Click here for full article.

Salmonella outbreak sickens people in 8 states; [song]birds dying from same strain

April 1, 2021 at FoodSafetyNews.com by News Desk

Public health officials in several states are collecting different types of data to investigate a multi-state outbreak of Salmonella Typhimurium infections in people. The outbreak is linked to an outbreak among songbirds that has been killing wild birds in recent months from coast to coast. "Epidemiologic and laboratory data show that contact with wild songbirds. Click here for full article.

Variant Influenza in Two Human Cases in Canada

May 14, 2021 at EGG-NEWS.com by Simon M. Shane

The Public Health Agency of Canada has reported on a case of influenza A strain H1N2 and a second influenza A strain H1N1 in separate areas of the Province of Manitoba. The infections were acquired from hogs.

These zoonotic cases were sporadic and isolated and represent no danger to communities since there was no apparent human-to-human transmission.

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Boneless Pursuit

April 5, 2021 at MeatPoultry.com by Bob Sims

While exponential growth of the global population shows no signs of slowing down, food companies are working to feed their customers using processing equipment to produce products with an emphasis on efficiency and speed. A lack of labor requires innovative solutions to produce the food necessary to meet demand. Poultry offers a relatively inexpensive and healthy protein, and automation continues to make processing chickens easier and faster. Boneless cuts of chicken have reigned supreme in recent years and continue to be the most popular among shoppers. So, processors seek to debone chicken as quickly and efficiently as possible to serve the market. Click here for full article. ◻

Will chicken meet the needs of tomorrow's consumers?

April 12, 2021 at WattAgNet.com by Elizabeth Doughman

The COVID-19 global pandemic changed how consumers shopped, prepared and even thought about food. These changes could be long-lasting so chicken brands need to be prepared to meet the needs and desires of the post-pandemic chicken consumer. Click here for full article. ◻

Fermentation: A natural tool for meat preservation, food safety and flavor enhancement

March 17, 2021 at TheCorbionCut.com

Many methods of food preservation are effective, but few are as long-established as fermentation. Click here for full article. ◻

Are enviro-scores the future of food labels?

May 12, 2021 at WattAgNet.com by Elizabeth Doughman

Enviro-scores – which measure the environmental impact of food production – could be the latest trend in product labeling. Click here for full article. ◻

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USDA Announces May 2021 Lending Rates for Agricultural Producers

WASHINGTON, May 3, 2021 – The U.S. Department of Agriculture (USDA) today announced loan interest rates for May 2021, which are effective May 3. USDA's Farm Service Agency (FSA) loans provide important access to capital to help agricultural producers start or expand their farming operation, purchase equipment and storage structures, or meet cash flow needs.

Operating and Ownership Loans
FSA offers farm ownership and operating loans with favorable interest rates and terms to help eligible agricultural producers, whether multi-generational, long-time or new to the industry, obtain financing needed to start, expand or maintain a family agricultural operation. For many loan options, FSA sets aside funding for historically disadvantaged producers, including beginning, women, American Indian or Alaskan Native, Asian, Black or African American, Native Hawaiian or Pacific Islander, and Hispanic farmers and ranchers.

Interest rates for Operating and Ownership loans for May 2021 are as follows:

Farm Operating Loans (Direct): 1.750%
Farm Ownership Loans (Direct): 3.250%
Farm Ownership Loans (Direct, Joint Financing): 2.500%
Farm Ownership Loans (Down Payment): 1.500%
Emergency Loan (Amount of Actual Loss): 2.750%

FSA also offers guaranteed loans through commercial lenders at rates set by those lenders.

You can find out which of these loans may be right for you by using our Farm Loan Discovery Tool. ◘

Entrapment Drama

April 30, 2021 at ProgressiveFarmer.com by Dan Miller

'SILO' movie vividly illustrates the danger of grain entrapment. Here's why it's worth watching. (www.silothefilm.com) Click here for full article. ◘

Many thanks to all who came out and supported our scholarship fundraisers.














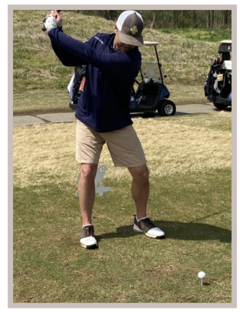





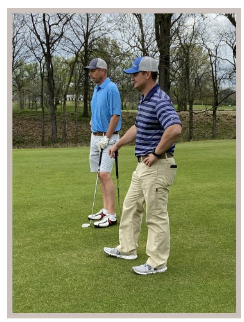





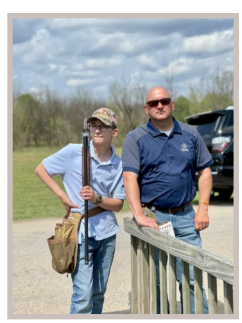
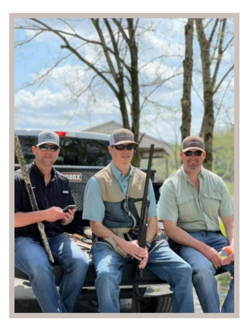






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Poultry Processing Tech: Speeding ahead

May 17, 2021 at MeatPoultry.com by Keith Loria

Integrated anatomical wing separating and whole wing cutting are essential steps for an automated deboning line.

With the increased demand for labor savings, automatic wing cutting, dark meat and breast deboning have become an essential part of high-speed cut-up systems.

The current pandemic showed how vulnerable workers in processing plants can be. Automatic cut-up lines decrease manual labor.

Globally, poultry processing line speeds are slowly progressing to 15,000 birds per hour (bph). However, that is much faster than the legally allowed speed in the United States.

Eric Nolten, vice president of commercial operations for Meyn America, Ball Ground, Ga., noted cut-up lines are operating at speeds of 7,500 bph, so, the ideal set-up is a dual cut-up and deboning line per single slaughtering and evisceration line.

"I think the most notable trends are the increased use of smart data (matching the flock characteristics with the desired output based on parameters like weight or quality) to channel each broiler to the most ideal cut," he said. "Based on these data parameters, broilers, legs and wings can pass through a cut-up machine or bypass it."

Another trend is the increased weight range a cut-up machine can process in one setting so there are fewer setting adjustments needed during processing.

"Human interaction remains an important part of automation," Nolten said. "Safety for personnel working with these pieces of equipment is always under consideration, and we keep updating our equipment to be seen as the safest equipment in the market."

Marel Poultry offers processors an automatic modular in-line cut-up system capable of handling up to 6,500 broilers per hour. Driessen noted the ACM-NT system will handle both air and water chilled products.

"Flexible, modular and precise, ACM-NT uses the unique Sigma overhead conveyor; its layout is infinitely flexible," said Roy Driessen, industry marketing manager of poultry at Marel, with US operations in Lenexa, Kan. "Systems can be configured to suit the exact processing and layout requirements of each individual plant. A combination of the unique ACM-NT shackle and turning mechanisms within the system allows products to be held and positioned perfectly for each cutting operation, resulting in optimum yield as well as top presentation and quality."

Oliver Hahn, chief executive officer of Kansas City, Kan.-based Baader Poultry USA, said integrated anatomical wing segmenting and whole wing cutting are essential steps for automatic breast deboning. However, most processors are not willing to sacrifice final product quality and yield in exchange for automation.

"Baader offers integrated anatomical wing segmenting and whole wing cutting which is an essential step for automatic breast deboning," he said. "Our patented Wing-Tip and Mid-Wing Segmenting Modules process left and right wings independently with no rotating blades for the highest percentage of A-grade cuts in the industry."

Additionally, Baader's wing segmenting modules integrate high-quality wing cuts into any cut-up line to reduce labor caused by secondary handling. When combined with the company's ProFlex Cut-Up Line, processors can automatically bypass the wing segmenting units to create various wing products without stopping the lines.

"Boneless, skinless thigh meat is growing as one of the most versatile and sought-after chicken products," Hahn said. "With the largest US install base, the Baader Thigh Filleting System is an industry-hardened solution that provides our customers with quality products. The system processes left and right legs simultaneously and the thigh meat can be skinless or skin on. The Baader system keeps the knee cartilage on the bone, thereby reducing trimming labor and increasing yield."

Adam McCoy, national account manager for Foodmate US, Ball Ground, Ga., noted he has seen more interest from a growing number of customers wanting the intelligence to grade better.

"In our ongoing commitment to deliver what our clients need, we can add another level of precision and efficiency to our customers using our intelligent solutions in sorting and grading for cut-up systems," he said, citing the company's ChickSort 3.0 software, which ensures that every part of every bird is accounted for. "Utilizing an advanced dashboard to display real-time process status, management can see at a glance what is being produced where. We plan to continue to invest in smart technology; that is not a trend that will go away."

Travis Martin, engineering manager for Foodmate, noted another trend is the need for cutting more wings inline (integrated) for automated breast deboning.

"Automation in itself is in high demand and is a strong trend, as it consistently reduces labor considerably," he said.

The R&D process

Faster computing processes have allowed processors to focus on maximizing the accuracy of weighing and vision grading of birds, which in turn, allow processors to meet the ever-tightening specifications of their customers. That is why the R&D process is so important for continual improvement. *continued on next page*

Poultry Processing Tech: Speeding ahead *(continued from previous page)*

According to Hahn, innovation has been and will always be the driver for its success and continues to invest significant resources to integrate new technologies and achieve greater advancements in overall performance.

“Innovating within the food value chain leads to new opportunities for us and our customers,” he said. “Close relationships with customers, the science community, animal welfare groups, environmental groups, regulatory bodies, etc., deliver the necessary input for future developments. Everything can be improved and Baader is never done striving for better performance.”

Nolten said since a cut-up line may involve up to 15 different individual machines, there is always something to improve.

“Due to the high volume, every gram of yield improvement pays off immediately,” he said.

According to McCoy, Foodmate’s R&D team is constantly improving equipment.

“Either the customer or our team notices what needs to be improved, then we implement changes and test the theory,” he said. “No time wasted in lengthy approval process. We see the need; we work on it as immediately as possible.”

Looking ahead

Faster line speeds and efficient automation compared to manual processing will always be a focus area for processors and that’s where the industry is headed in the years ahead.

Hahn noted the ability to weigh and distribute birds to different lines with either automatic or semi-automatic hanging out of the water chiller continues to be a challenge within the industry and one Baader is looking to solve.

“The industry will continue to seek ways to hang, weigh, and grade these birds, at maximum speeds and minimum labor,” he said. “This will mean finding a way to singulate and accurately weigh and vision grade every bird that exits the chiller, without the help of human hands. Once the bird is captured in a shackle, processors still need an automated form of intelligence or software that can find the best fit for each bird, based on the orders that each plant has to fill on any given day.”

That’s why it’s important to not only focus on processing needs, but also in deciding which birds should go to which cutting units and how to distribute with the least amount of labor.

“Finally, smart communication between machines along with machines to processors will optimize production results through intelligent linking of real time data,” Hahn said.

Nolten noted that line speeds will go up.

“Some processors already expressed their desire to speed up to 18,000 bph and eventually even to 20,000 bph, so cut-up line speeds will have to grow as well,” he said. “Another development is the increase of data due to camera imaging or x-ray techniques. By utilizing bird-specific data, each cut can be further optimized per individual bird for maximizing the yield per bird.”

Driessen noted capacity, yield and quality. ACM-NT is an extremely valuable and versatile tool for poultry processors everywhere and that’s where the industry is headed.

“It can save labor, an increasingly important issue as hourly capacities climb and workforce is hardly available,” he said. “It does this, however, without compromising in any way the yield or presentation of the end product. In short, this system can truly transform the overall efficiency of a cut-up operation.”

Martin believes more demand in auto deboning will drive cut-up lines to provide higher yielded cuts and push for more inline wing segmenting since cone lines will be less prevalent.

“What I see coming is the industry is going to move away from chain driven lines to a magnetic driven line to where we can run a plant at speeds of 175-plus but with buffer zones in the system so the bird can be staged before moving on,” he said. “Robotics will also be playing more and more of a factor; they are here now but will soon be the primary ‘worker’ in the plant in very near future.” ◘

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Fried chicken skins offer new use for processing byproduct

March 4, 2021 at WattAgNet.com by Elizabeth Doughman

Fried chicken skins made by consumer-packaged goods company Chick N' Skin repurpose a part of the bird normally discarded during processing into a low-carb snack for consumers. Click here for full article. ◘

US: First application for hemp as feed for poultry

March 3, 2021 at PoultryWorld.net by Natalie Berkhout

A submission has been made in the US for hemp to become an approved animal feed ingredient. Click here for full article. ◘

FSIS inspector shortage a congressional concern

March 1, 2021 at WattAgNet.com by Roy Graber

Making sure that there is an ample supply of meat and poultry inspectors through the U.S. Department of Agriculture (USDA) Food Safety and Inspection Service (FSIS) is a concern for members of the U.S. Congress, Rep. Chellie Pingree said. Click here for full article. ◘

Vilsack: Mexico GMO corn ban won't apply to animal feed

March 31, 2021 at FeedStrategy.com by Andrea Gantz

Mexico's plan to phase out imports of genetically modified (GMO) corn will apply to grain used for food products and not livestock feed. Click here for full article. ◘

Judge won't drop activists' avian flu suit against USDA

March 30, 2021 at WattAgNet.com by Roy Graber

A federal judge refused to drop a lawsuit filed on behalf of three animal rights groups against the U.S. Department of Agriculture and its administrators related to allegations that the agency neglected to properly act to prevent the spread avian influenza. Click here for full article. ◘

Examining the catching, carrying, and crating process during depopulation of end-of-lay hens

March 2021 at ScienceDirect.com

The full paper can be found in *Journal of Applied Poultry Research* and online here. ◘

Knife Safety and Cutting Techniques for the Poultry Debone Line Training Video

This training video demonstrates proper breast deboning cutting techniques. The video features a holistic approach to breast deboning that includes employee protection and ergonomics, prevention of cross contamination and foreign material, and proper knife handling and care. The video is intended for new hire and refresher training in poultry processing plants and is available to USPOULTRY members only. Click here to request access to the video. ◘

Compulsory poultry housing measures to end in parts of UK

March 30, 2021 at PoultryWorld.net by Tony McDougal

Chief Veterinary Officers (CVOs) from across the UK have announced that compulsory poultry housing measures are to be lifted at the end of the month. Click here for full article. ◘

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Farm Bureau Launches Farm State of Mind Resource Directory to Support Mental Health Month

WASHINGTON, May 3, 2021 - In recognition of May as Mental Health Month, the American Farm Bureau Federation launched a comprehensive, easy-to-use online directory of resources for farmers, ranchers and their families who are experiencing stress and mental health challenges.

The directory, which is on the Farm State of Mind website at farmstateofmind.org, features listings for crisis hotlines and support lines, counseling services, training opportunities, podcasts, videos, published articles and other resources in every U.S. state and Puerto Rico. Listings for crisis support, counseling and behavioral health resources that are available nationwide are also included.

"For far too long, farmers and ranchers have been trying to cope with increasing levels of stress on their own," said AFBF President Zippy Duvall. "Our Farm State of Mind campaign is encouraging conversations about stress and mental health in farming and ranching communities. It is so important to spread the word that no one has to go it alone.

"This new online directory of stress and mental health resources in every state gives farmers, ranchers and rural communities a user-friendly, one-stop shop to find services in their area that can help them manage farm stress and find help for mental health concerns. Whether you're looking for information about how to recognize and manage stress, trying to find counseling services in your area or are in need of crisis support, you can find help here."

National research polls conducted and published by AFBF in 2019 and 2021 showed that a number of factors including financial issues and the impact of the COVID-19 pandemic are impacting farmers' mental health, highlighting the need to identify local resources that can help farmers and ranchers cope with chronic stress and mental health concerns.

The Farm State of Mind directory lists resources specifically geared toward farmers, ranchers and rural communities in states where these specific services are available, with additional listings for county and statewide mental health and other support services in every state. The listings can be filtered by state and type of resource, including hotlines, counseling services and published information.

AFBF partnered with the University of Georgia School of Social Work to research available resources across the U.S. and Puerto Rico and compile comprehensive information included in the directory.

Farmers and ranchers are encouraged to share the directory with their family, friends and community networks to ensure widespread awareness of the availability of these important resources. ◻

Study: Guilt rarely reduces consumers' meat consumption

May 12, 2021 at WattAgNet.com by Elizabeth Doughman

Consumers that feel guilty about eating meat choose healthier approaches to preparing animal proteins over plant-based alternatives, according to a new study published in the Journal of Consumer Psychology. Click here for full article. ◘

Forget "Meatless Mondays" as More Than 90% Consumers Eat Meat

May 17, 2021 at Feedstuffs.com

When most people feel guilty about eating meat, they don't eat less of it. They simply justify their choice by picking a meat dish that's prepared in a healthier way, according to new research from the University at Buffalo School of Management. Despite increasing concerns over animal welfare and the rise in plant-based options, more than 90% of consumers eat meat — a number that hasn't changed much in the past two decades, according to Gallup polls. This new study, forthcoming in the Journal of Consumer Psychology, sheds light on why this occurs. Click here for full article. ◘

Cultivated Meat Likely to Make Up 40% of Future Meat Intake

May 19, 2021 at FoodMarket.com

According to research published by the journal Foods, cultivated meat is likely to make up a major part of consumers' future diets. The study showed patterns of greater openness to trying such products by younger generational groups, but most consumers surveyed were not familiar with cultivated meat. About 40% of consumers were "very" or "extremely likely" to try cultivated meat in the United States and the United Kingdom. Click here for full article. ◘

Rooted in innovation: Plant-based alternatives set to grow alongside traditional proteins

May 20, 2021 at TheCorbionCut.com

Driven by concerns about health, wellness and sustainability — not to mention a taste for variety — a strikingly large number of consumers are interested in trying and purchasing more plant-based foods, including meat alternatives. Click here for full article. ◘

Plant-Based Fast Food Chain Completes $7.5 Million Series A Raise

May 27, 2021 at FoodMarket.com

Plant Power Fast Food has completed its $7.5 million Series A capital raise led by Helia Capital USA, Inc. (a subsidiary of Fusion Ventures), Eat Beyond Global Holdings and Batta Foods with additional funding from Aileen Getty.

Co-founder and co-CEO Zach Vouga said that the funds will be used by the plant-based fast-food restaurant chain to continue to execute its expansion plans with a focus on new corporate unit development. Click here for full article. ◘

Spies, Satellites, Subpoenas: Soy Buyers Play Hardball with Brazilian Farmers

May 5, 2021 at FoodMarket.com

Global grains merchants are using satellites and spies to surveil Brazil's soybean heartland and deploying an army of lawyers to ensure farmers deliver promised crops instead of finding a different buyer at prices that have doubled since deals were made. Click here for full article. ◘

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Cultured Meat Start-ups Step Up Efforts to Reduce Cost of Production

February 26, 2021 at FutureBridge.com

Both manufacturers and research institutes are developing new technologies to reduce the high cost of cultured meat production. For example, Dyadic International recently partnered with TurtleTree Scientific to develop low cost recombinant proteins growth factors. Ankara University's Stem Cell Institute researchers seek US patent for cheaper artificial meat. To read these stories and more why not click into this week's Industry Pulse. Click here for full article. ◘

Report projects alternative proteins category to expand to 11% by 2035

March 31, 2021 at MeatPoultry.com by Jeff Gelski

Analysis forecasts $290 billion market for alternative meat, eggs, dairy and seafood products. Click here for full article. ◘

Consumers intrigued by novelty of cultured meat

March 30, 2021 at WattAgNet.com by Elizabeth Doughman

Learn why the meat and poultry industry shouldn't be worried that consumer appetite and interest for cultured meat is primarily driven by the novelty factor. Click here for full article. ◘

Alternative protein investments top $3 billion in 2020

March 22, 2021 at MeatPoultry.com by Keith Nunes

Funding levels have tripled since 2019. Click here for full article. ◘

Cargill invests in meat alternative start-up Bflike

April 26, 2021 at WattAgNet.com by Elizabeth Doughman

Cargill is investing in Bflike, a start-up in the Netherlands that has developed technology to create plant-based meat alternatives that look, feel and cook like their animal-based counterparts. Click here for full article. ◘

Brazilian giants invest in alternative proteins

May 3, 2021 at PoultryWorld.net by Daniel Azevedo

Brazilian giants JBS and BRF announced plans to invest into alternative proteins to reinforce their positions in Brazil, the US, and Europe. Click here for full article. ◘

CFI NOW: Cell-Based Protein Recording Available

Click here if you're interested in viewing the March 26 webcast of CFI NOW: Cell-Based Protein Consumer Appetites and Emerging Markets. ◘

Cell-Cultured Chicken Brand Slashes Production Costs – Eyes Price Parity With Poultry Within 8 Years

May 11, 2021 at PoultryProducer.com

A cell-cultured chicken brand has slashed its production costs, speeding up its goal of reaching price parity with real poultry.

Future Meat has reduced its production costs by almost 50 percent. It can now create 110g of slaughter-free chicken breast for under $4.

Price parity

The start-up's Chief Executive Rom Kshuk predicts the cost will drop to below $2 in the next 12-18 months.

He told the Financial Times: "We will launch a product in the US market in the next 18 months that will have a commercially viable price."

Analysts at Boston Consulting Group say cell-cultured meat will achieve price parity with its livestock counterpart by 2032.

However, Kshuk revealed Future Meat expects to match poultry prices in just eight years. ◘

Podcast: The R&D behind plant-based foods

February 12, 2021 at MeatPoultry.com by Ryan McCarthy

KANSAS CITY, MO. – New meat and poultry product introductions are the lifeblood of the industry. In this week's MEAT+POULTRY Podcast, the theme is new-product research and development and the subject is Motif FoodWorks, an ingredient company in Boston that creates products and ingredients that are plant-based meat alternatives.

Mike Leonard, chief technology officer for Motif describes the evolution of plant-based ingredients used in meat alternatives and how the pandemic has affected the R&D process.

Leonard examined plant-based foods' growing popularity over the past few years and how consumers have embraced a wider variety of the products. He also discussed the challenges Motif faces by trying to make plant-based foods that mimic traditional meat products' taste and texture.

Finally, Leonard described how research and development worked for the company during COVID-19 and how its new research and development facility fits into its future plans. Click here to listen to the podcast. ◘

Sodexo and EPA delivering presentations to universities promoting plant-based diets

April 20, 2021 in FACCT newsletter

The Animal Ag Alliance has recently learned of Sodexo and the Environmental Protection Agency giving presentations at various universities about plant-based foods and sustainability. So far, presentations have been given at University of Texas at Arlington, University of North Texas, Harvard University, New Mexico State University, University of Michigan, Harding University, University of Oklahoma, UC Berkeley and more. Sodexo has a partnership with [one of the animal rights groups'] culinary unit to train chefs at the universities. This is a reminder to continue engaging with your customers about sustainability and animal agriculture's commitment to continuous improvement. Members are encouraged to share our Sustainability Impact Report, which is currently being updated and will be released by Earth Day, April 22. ◘

McDonald's begins tests of McPlant Burger in Europe

March 16, 2020 at WattAgNet.com by Elizabeth Doughman

Quick service restaurant chain McDonald's has quietly introduced the McPlant Burger to menus in Denmark and Sweden. Click here for full article. ◘

Atlast Raises $40M to Expand Production of Whole Cut Plant-Based Meat

April 26, 2021 at FoodMarket.com

Atlast Food, the mycelium food company growing the future of plant-based meats, announced a $40 million Series A funding round to develop and supply whole cut plant-based meat to partners around the globe, including directly to consumers through its own brand MyEats. The investment will allow the company to build the largest mycelium production facility in the U.S. to provide consumers nationwide with whole cut meat alternatives. Click here for full article. ◘

JBS to purchase plant-based food company

April 19, 2021 at MeatPoultry.com by Ryan McCarthy

The deal with Vivera includes three manufacturing facilities and a research and development center. Click here for full article. ◘

How big a threat is plant-based protein for poultry?

April 2021 at WATTPoultryUSA.com by Mark Clements

Plant-based and cultured proteins have been headline grabbing and appearing in greater numbers, but do they really threaten the poultry market? Click here for full article. ◘

Chinese fastfood chain introduces plant-based eggs

January 21, 2021 on PoultryWorld.net by Natalie Berkhout

Eat Just has announced that Chinese fastfood chain Dicos has added the plant-based JUST Egg to its menu in over 500 locations across the country. Click here for full article. ◘

KFC to open 75,000 units worldwide, pilot plant-based chicken

May 27, 2021 at WattAgNet.com by Elizabeth Doughman

The quick service chain's growth strategy will be driven primarily by the popularity of the new KFC Chicken Sandwich, launched earlier this year, and a pilot program that will test plant-based chicken in eight markets. Click here for full article. □

Peter Singer Changes Justification for Vegetarian Advocacy

April 27, 2021 at Chick-News.com by Simon M. Shane

Peter Singer, a distinguished Australian-born philosopher was a subject of a recent interview in the April 25th edition of the New Yorker authored by Daniel A. Gross. In 1973, Singer published Animal Liberation in the New York Review of Books. In this article Singer explained his views on raising animals for food. The essay was effectively the genesis of the Animal Rights Movement. Singer became a vegetarian during his studies at Oxford University influenced by the concerns of fellow students and descriptions of processing then in use.

As a philosopher, Singer has written widely on diverse subjects including euthanasia, the obligation of rich nations to support the under-privileged in the Third World, and ethics in government. Recently he was the moving force for a peer-reviewed publication The Journal of Controversial Ideas in collaboration with colleagues at Princeton University where he has a teaching appointment.

Singer expressed his objection to intensive production and consumption of food animals based on an inherent sense that the process was cruel. In some respects, his views were reinforced by other philosophers some of whom were personally or professionally impacted by the Holocaust. Isaac Bashevis Singer, a Nobel Laureate in literature has a character in one of his short stories stating, "for any animal every day is "Treblinka", a notorious Nazi death camp.

As a diversion it is perhaps interesting to observe an exaggerated manifestation of guilt among German academics and young politicians has resulted in extreme opposition to culling and disposal of cockerel chicks in hatcheries. The movement to ban the practice had its origins in Germany together with active research to develop technology to differentiate between male and female embryos in ovo.

Opposition against consumption of meat and poultry was originally based on alleged cruelty that may in fact have been the case in the UK in the 1960's and 1970s. The emergence of animal welfare has resulted in standards of husbandry, transport and slaughter that minimize pain and suffering in industrialized nations.

New justifications are emerging to promote a vegan agenda. Scientists and public health specialists have pointed to the obvious dangers of antibiotic drug resistance. Given regulations banning routine administration of antibiotics to promote growth and productivity, the question of antibiotic resistance is now moot. Notwithstanding this reality, recent publications and web postings still condemn the intensive animal segment of agriculture for using antibiotics. Ezra Klein trots out the same canards in his opinion piece in the April 24th edition of the New York Times urging government support for alt-meat. Over the past ten years, there has been a progressive increase in live weight of chickens and turkeys, higher feed conversion efficiency and lower mortality in the absence of antibiotic feed additives.

Most recently advocates of a vegan lifestyle are implicating large animal production units as possible sources of zoonotic infections with pandemic potential. This mindset emerged with highly pathogenic avian influenza in the early 2000's, although mortality associated with avian strains of H5 and H7 influenza have not resulted in epidemics and were confined to individuals with presumed susceptibility in close contact with poultry on small-scale farms or wet markets in Asia. To the contrary, commercial-scale production of chickens processed in a central plant following hygienic principles and with distribution through a cold chain has not been associated with any emergent viral disease.

Sustainability is however emerging as the third justification for phasing out intensive livestock production. Advocates point to the availability of vegetable-based protein as an alternative to meat. Environmental scientists note the difference in energy required to produce a pound of beef compared to vegetable-based products of equivalent nutrient value. Land usage, water consumption and disposal of waste are also advanced as factors that favor plant-based alternatives to meat.

Sustainability and environmental issues that currently are gaining considerable traction will be the biggest challenge to intensive livestock production going forward. Although vegetable-based alternatives are available, they represent a small proportion of total protein sales and on a unit basis are considerably more expensive than the real product. Associations representing pork, beef, chicken and turkey should be aware of the future challenges facing the image of real meat and should be prepared to provide appropriate counter arguments to those that advocate vegetarian alternatives.

There are obvious indications that industry groups are attempting to quantify energy input and greenhouse gas emissions associated with various segments of intensive protein production. Concurrently associations should continue to maintain acceptable welfare standards addressing the cruelty issue and to publicize the disuse of antibiotic growth promoters. Obvious deviations of what may be deemed acceptable in terms of the second decade of the 21st century such as gestation crates for sows and maceration of conscious cockerel chicks should be eliminated. We have made progress in improving welfare in many areas, eliminated routine antibiotic administration and should be justifiably proud of the nutritional value and safety of our products. Increasing the level of sustainability will however be a profound challenge. □

Cooling Poultry Flocks During Hot Weather

March 2021 at The Feed by Boehringer Ingelheim by Tom Tabler, Ph.D.

MISSISSIPPI STATE UNIVERSITY
DEPARTMENT OF POULTRY SCIENCE

Most commercial poultry houses utilize tunnel ventilation and evaporative cool cell pads to maintain flock performance and keep birds alive during periods of hot weather. Cool cell pads are valuable; however, it is the fans (and associated wind chill and airflow down the house) that are critical to success with tunnel ventilation. Evaporative cooling pads are often used because of their cooling efficiency, despite the fact they can consume large amounts of water. Foggers were once used as auxiliaries to cool cell systems even though their cooling potential was limited. However, foggers are rarely used today because they further increase humidity level in the chicken house, making it more difficult to provide effective bird cooling. Consequently, large numbers of heat losses can occur when foggers are utilized in combination with cool cells, even though air temperature in the house may only be in the low 80s. However, it's not heat alone that kills chickens during hot weather. It's the combination of heat and humidity.

An alternative to cool cells is sprinkling birds on a specific schedule with large drops of water. Cattle and hogs are often cooled in hot weather by sprinkling with water. And years ago, poultry producers often hosed down large birds with garden hoses to keep them alive during extremely hot periods. Low-pressure sprinkler systems do not work by cooling the house temperature, but rather by letting house temperature rise and humidity level decrease and then cooling individual chickens by sprinkling them with water. The initial inclination may be to think that sprinkling water in a chicken house will wet the floor and ruin litter conditions, but this is not the case. When managed properly, sprinkler house floors are similar to or drier than cool cell house floors because house humidity is lower and house temperature higher, resulting in drier litter.

Water usage by cool cell systems is dependent on three factors – amount of air being drawn through the pads (this depends on number of tunnel fans running), outside temperature, and outside humidity.1 The lower the humidity (drier the air), the more water pads can evaporate, the more cooling they produce, and the more overall cooling water consumed. Dry air is key to effective evaporative cooling. This is why evaporative cooling works so well in the desert where there is very little humidity. Evaporative cooling becomes less efficient as outside humidity increases. Therefore, we do not run cool cell pads overnight or early in the morning when outside humidity is high. Once outside air becomes saturated with moisture, pads lose their ability to have a significant cooling effect.

However, water evaporating from wet cool cell pads does have a cooling effect on hot, dry air passing through the pads and alters both temperature and humidity inside the chicken house.2 It is slightly complicated and involves the First Law of Thermodynamics, but to evaporate water, heat (energy) is required. The heat comes from whatever object the water is in contact with as it evaporates; in our cool cell situation, that object is the hot outside air itself as it passes through the wet pads. As heat is removed, the temperature of the air is decreased, but the heat (energy) remains, although in another form. The First Law of Thermodynamics states that "energy can be changed from one form to another, but it cannot be created or destroyed." We didn't destroy the heat when we pulled it through the wet cool cell pad, we only changed its form.

Consider this: for every gallon of water that is evaporated, 8,700 Btu of sensible heat is taken out of the air (resulting in a temperature decrease) and converted to latent heat (resulting in a humidity increase). Sensible heat is related to changes in temperature; latent heat is related to changes in form (solid, liquid, gas). The decrease in air temperature of hot, dry outside air passing through wet pads must be accompanied by an increase in humidity of the now cooler (but more humid) air inside the house. We are simply trading high temperature/low humidity outside air for lower temperature/higher humidity inside air. Again, we cannot destroy that 8,700 Btu of heat per gallon of water evaporated but we can change its form by passing it through a wet cool cell pad system. However, cooling an entire chicken house consumes huge amounts of cooling water, depending on how hot and dry outside air is.

Once a flock reaches approximately four weeks of age, water use by the pads is not directly correlated with bird age. This is because with big chickens in hot weather, all or almost all the tunnel fans are operating 24/7, so the amount of air coming through the pads remains relatively constant. Therefore, daily water usage by the pads depends on how dry outside air is and has little to do with age of the birds. The high air moving capacity of today's tunnel ventilation systems that can provide 600 to 1,000 feet per minute of air speed down the house offers the benefits of convective cooling, yet inadvertently consumes large quantities of cooling water. With big chickens in hot weather, daily cooling water demand may easily exceed daily drinking water demand.

In contrast, sprinkler cooling attempts to cool individual chickens and not the environment the chickens live in, as evaporative cooling systems do. There is no need to cool a large mass of ventilation air with cooling pads to increase convective cooling. Essentially, with sprinklers we are bluffing the chickens into thinking conditions are cooler than they are. Think of it like this. Suppose it is 100° F on a hot August afternoon and there is a breeze blowing. Now let's suppose you go jump in the creek to cool down after hauling hay all afternoon. Once you get out of the creek, that hot breeze against your wet skin may give you chill bumps until the water evaporates. It's still 100° F but the wind chill effect of that breeze against your wet skin has bluffed you into thinking it's a lot cooler than that; at least until the water evaporates, and it's time to go jump in the creek again (or get sprinkled again, if you're a chicken).

The phase change between liquid water to water vapor that takes place on a surface (e.g., a chicken's body that has been sprinkled) is much more efficient than convective heat transfer between chickens and the surrounding air. Cool cells and sprinklers work in entirely different ways. A cool cell system is like air conditioning, where the entire room (or a chicken house) is cooled. A sprinkler system is more like jumping in the creek and then sitting under a fan where only you (or your chickens) are cooled, not the surrounding environment. *continued on page 45*

COMMODITY REPORT

May 27, 2021 at Chick-News.com by Simon M. Shane

- Markets fluctuated widely this past week as influenced by weather, shipments of commodities and anticipation of orders from China. There is still an overhang from the May WASDE Report on Wednesday the 12th. The WASDE projected increased corn and soybean harvests compared to 2020 together with higher ending stocks for soybeans and corn.
- The direction of trade policy to be implemented by the Biden Administration in 2021 is now clear following the March confirmation of Kathleen Tai as the U.S. Trade Representative. Ms. Tai has already expressed firmness in dealing with China, a sentiment echoed by Secretary of State Antony Blinken in bilateral meetings with China in Alaska on March 18th and with President Biden on April 15th. Ms. Tai met with her counterpart Vice-Premier Liu He this past week and additional discussions are planned.
- S producers are now receiving and conversely livestock producers in the Midwest are paying above $6.70 per bushel for corn and crushers are paying $15.50 per bushel for soybeans plus transport and basis. Corn was 2.3 percent higher and the price of soybeans was up 1.8 percent compared to the previous week and both commodities are at notably high levels. Soybean meal was down 1.3 percent for July delivery but will soon reflect the escalation in price of soybeans.
- According to the USDA FAS Export Report for the week ending May 20th, 2021, reflecting market year 2020-2021, outstanding export orders for corn for this market year amounted to 19.4 million metric tons (712 million bushels) with 49.1 million metric tons (1,802 million bushels) actually shipped. During the past week a net quantity of 0.56 million metric tons (20.6 million bushels) of corn was sold for delivery during the 2020-2021 market year. A total of 1.9 million tons (69.7 million bushels) of corn was shipped. For the succeeding 2021-2022 market year commencing in September, 5.7 million metric tons (209 million bushels) was ordered this past week with outstanding sales amounting to 14.6 million metric tons (536 million bushels) of new crop corn.
- Outstanding export orders for soybeans for the 2020-2021 market year stand at 4.3 million metric tons (169 million bushels) with 57.2 million metric tons (2,254 million bushels) actually shipped. Weekly sales of soybeans attained 0.06 million metric tons (2.4 million bushels) with 0.29 million metric tons (11.4 million bushels) shipped, 15 percent less than the previous week. For the 2021-2022 market year outstanding sales for soybeans amount to 7.2 million metric tons (284 million bushels).
- During the past week 197,400 metric tons of soybean meal and cake were ordered, up 4.2 percent from the previous week. The quantity shipped attained 192,000 metric tons, double the volume in the previous week.

The following quotations for delivery in the months as indicated were posted by the CME at close of trading on May 27th, 2021 compared with values posted at close of trading on May 21st, 2021 (in parentheses) reflecting specified months for delivery.

COMMODITY		
Corn (cents per bushel)	July 671 (656)	Sept 587 (572)
Soybeans (cents per bushel)	July 1,551 (1,524)	Sept 1,425 (1,394)
Soybean meal ($ per ton)	July 393 (398)	Sept. 394 (396)

Changes in the price of corn, soybeans and soybean meal over four trading days this past week were:-

COMMODITY CHANGE FROM PAST WEEK

Corn: May quotation up 15 cents per bushel (+2.3 percent)

Soybeans: May quotation up 27 cents per bushel (+1.8 percent)

Soybean Meal: July quotation down $5 per ton (-1.3 percent)

- For each 10 cent per bushel change in corn:-

The cost of egg production would change by 0.45 cent per dozen

The cost of broiler production would change by 0.25 cent per pound live weight

- For each $10 per ton change in the price of soybean meal:-

The cost of egg production would change by 0.44 cent per dozen

The cost of broiler production would change by 0.25 cent per pound live weight

This week the upward change in the price of corn and the small fall in soybean meal would decrease nest-run production cost for eggs by a net 0.5 cents per dozen and for broilers 0.4 cent per live pound. Over the past 20 weeks, escalations in the prices of major ingredients have added 13.5 cents per dozen and 8.4 cents per live-weight lb.

The USDA weekly wholesale feedstuffs prices expressed per short ton posted on May 25th (with previous week in parentheses) were:-

- Corn: $221 ($234), Chicago
- Soybean Meal: $391 ($415), Central Illinois
- Meat and Bone Meal: $395 ($400), Central Midwest
- DDGS: $240 ($265), Eastern corn belt

continued on next page

COMMODITY REPORT *(continued from previous page)*

According to the May 12th WASDE, corn harvested in calendar 2021 will attain 14,990 million bushels with ending stocks projected at 1,507 million bushels, up 11.5 percent from the 1,352 million bushels in the April 2021 WASDE Report. Values will be updated reflecting production, ongoing export volumes and domestic use in the June WASDE. Compared with the May 21st value, the CME quotation for corn at close of trading on May 27th was up 15 cents per bushel for July delivery to 671 cents.

The restrictions imposed in the U.S. as a result of COVID-19 will reduce ethanol demand by 1.5 billion gallons or 10 percent of projected 2020-2021 requirement accepting a nominal ten percent addition to gasoline. This past week 15.3 percent of the U.S. ethanol fermentation capacity based on January U.S. Energy Information Administration (US EIA) data was off-line or operating at lower than capacity. The outlook for increased production will depend on higher domestic demand with approximately ten percent of production exported. According to the US EIA for the week ending May 21st the industry produced on average 1,011,000 barrels per day down 2.0 percent from the week ending May 14th 2021. On May 21st ethanol stock was down 2.1 percent from the previous week at 19.0 million barrels, (an approximate 20-day reserve). With increased production and constant inventory off-take increased obviously during the past week.

Ethanol was priced at $2.34 per gallon on May 27th unchanged over the previous two weeks and should be compared with a five-year low of $0.92 per gallon on March 26th, 2020 during COVID restrictions. Concurrently RBOB gasoline at $2.15 per gallon (quoted, New York Harbor) was up 4.8 percent from the previous week presumably due to higher WTI crude price ($63.58 per barrel). Gasoline is 19 cents per gallon lower than ethanol but with a 63 percent higher BTU rating.

With most plants functioning among the 201 that were operational on January 1st, 2021, DDGS is freely available but commanded a higher price than in the first quarter of 2021. Eastern Corn-belt product was priced at $240 per ton on May 25th, 2021, $25 per ton lower than the previous week and $84 per ton more expensive than on May 19th 2020. Generally DDGS is incorporated at low inclusion levels in egg-production formulas based on high price relative to the nutrient contribution of corn and other ingredients. *continued on next page*

COMMODITY REPORT *(continued from previous page)*

Soybeans continue to be the beneficiary of export demand by China and other nations. The CME price at close of trading on May 27th rose 27 cents per bushel over the week to 1,5651 cents per bushel for July delivery. The USDA documented a 2021 crop of 4,405 million bushels. 6.5 percent higher than for 2020. Ending stocks according to the May 12th, 2021 WASDE projection will attain 140 million bushels, up 20 million bushels from the April Report. This is close to a seven-year low and possibly represents an over-estimate. The USDA Planting Intentions report indicated that soybean acreage would increase by 5 percent over 2020. This was confirmed in the May WASDE that projected a 5.4 percent increase in acreage over 2020. According to a release on May 13th by the National Oilseed Processors Association, 169 million bushels of soybeans were crushed in April. This value was 6.6 percent lower than in March due to disruption caused by maintenance.

On May 25th, 2021, meat and bone meal quoted Central U.S. attained $395 per ton, $5 per ton lower from the previous week and compared to $240 per ton on May 19th, 2020 when a surplus prevailed due to COVID-related disruption of packing operations requiring euthanasia and disposal of hogs.

On May 27th the conversion of CNY 1 to the BRL was 0.82 BRL, unchanged from the previous week). The conversion of US$1 to the CNY was set at CNY 6.38 (up CNY 0.05, from the previous week.

For consecutive calendar years 2017 through 2019, the U.S. supplied 34.4 percent of soybean requirements for China amounting to 95.5 million metric tons. This was followed by a decline to 16.9 percent of 88.5 million metric tons in 2018 and 16.6 percent of 88.0 million metric tons in 2019. The USDA anticipates that soybean imports by China will amount to 95 million metric tons during the 2020-2021 market year.

For the 2019/2020 market year China imported 2.1 million metric tons of corn from the U.S., 4.8 percent of total exports of 43.3 million tons, but 12 percent less than in the 2018/2019 market year. The U.S. Grains Council documented sales of U.S. corn to China through December 31st 2020 during the 2020/2021 year amounting to 11.7 million metric tons (460 million bushels) with 65 percent yet to be shipped.

For the 2019/2020 market year China imported 16.3 million metric tons of soybeans from the U.S., 36.2 percent of total exports of 44.9 million metric tons, but 3.9 percent less than in the 2018/2019 market year.

COMMENTS

Subscribers are referred to the May 12th, 2021 WASDE #612 under the Statistics Tab

Consistent with the need for self-sufficiency China announced on January 8th that an additional 1.7 million acres would be planted to corn in 2021. China intends to rehabilitate 6.8 million acres of "polluted land" to be brought into production. ◘

Cooling Poultry Flocks During Hot Weather *(continued from page 42)*

Cooling water use by sprinkler houses during University of Arkansas trials averaged 70 percent less than cooling water use by cool-cell-only houses.3 Recent research during the summer of 2020 at Mississippi State University indicated similar results (unpublished data). In an era where water conservation is attracting global attention and locally where poultry growers may be paying high water bills or have weak wells or poor-quality water, sprinklers are a viable cooling alternative that are proven to maintain flock performance.

Commercial poultry flocks must be cooled during hot weather to maintain performance and protect bird health, safety, and welfare. Evaporative cool cell pads and large tunnel fans are the most common method to accomplish this. However, sprinklers (either alone or in combination with cool cells) have emerged as a viable cooling option but again, wind speed and airflow down the house are critical to success. Regardless of whether cool cells or sprinklers are used, wind speed and airflow are vital to keeping birds alive. The poultry industry continues to focus efforts on water conservation, reducing its carbon footprint, and minimizing its environmental impact while assisting growers with cooling their birds and protecting the health and welfare of the nation's poultry flocks during times of heat stress and hot weather. ◘

UT AgResearch Announces Plans to Upgrade and Refocus Two Facilities

April 19, 2021 News Release

Improvements Will Enhance Support to State's Animal Agriculture Industries [with focus on poultry research]

KNOXVILLE, Tenn. — University of Tennessee AgResearch is realigning the capabilities at two of its ten AgResearch and Education Centers to better support the state's dairy, beef and poultry industries. The Little River Animal Environment Unit of the East Tennessee AgResearch and Education Center near Knoxville will upgrade its dairy research capabilities, and the Middle Tennessee AgResearch and Education Center in Spring Hill will close its dairy and refocus the center's efforts to support beef and poultry production research.

Hongwei Xin, Dean [of] UT AgResearch, says, "The changes will help us better utilize our research resources across the state while also supporting improved educational opportunities for students in the Herbert College of Agriculture." He affirms that the realignment is not expected to impact staffing levels at either center.

UT AgResearch has conducted dairy research and education for more than 100 years and currently operates dairies at both the Middle Tennessee Center at Spring Hill and the East Tennessee Center's Little River Animal and Environmental Unit near Walland. The Spring Hill dairy was established in 1951 and research conducted at this facility has significantly contributed to the Tennessee dairy industry, most recently with milk quality research and in research aimed at developing new vaccines against mastitis pathogens resistant to current methods of control. UT continues to lead in this area of study; however, aging facilities and equipment at the Spring Hill dairy have become unsuitable for generating quality research data.

Rather than invest in upgrading Spring Hill and managing two modern dairies, Xin says plans are to further invest in the Little River Unit, specifically to equip that research farm with state-of-the-art milking robots and precision livestock farming (PLF) sensors. "These will enable our research and education efforts to better serve our dairy producers and student training efforts," he says. "The Little River Unit will continue to support dairy production and efficiency research and studies involving animal health and behavior, nutrition, milk quality and other emerging topics." Some of the pure-bred Jersey herd currently located at the Middle Tennessee Center will be relocated to the Little River Unit so the University can continue to conduct research involving this breed and preserve the herd's well-documented genetics.

The current Spring Hill dairy facilities, including pastures, will be renovated to support precision beef production projects. Beef cattle production is one of the two largest animal livestock industries in Tennessee, and Maury County, home of the Middle Tennessee Center, ranks within the top five beef-producing counties in the state and is centrally located to other counties also ranking in the top five.

Xin says the UT Institute of Agriculture beef research team has been expanding and strengthening in several areas, including nutrition, reproduction and genomics. With existing capabilities at other UT AgResearch and Education Centers, faculty and students will have access to greater beef animal numbers for research and teaching across Tennessee. He expects that the improvements and focused research objectives will help attract industry as well as federal funding.

"Investment in precision animal agriculture such as smart waterers and feeders, to monitor animal health, reproduction, nutrition and behavior of individual animals within groups will directly support Tennessee agricultural enterprises," says Kevin Thompson, director of the Middle Tennessee Center at Spring Hill. "I look forward to realigning our efforts to better support our beef-producing neighbors and the industry as a whole."

Thompson and Xin also acknowledge that closing the Spring Hill dairy **will create an opportunity for UT AgResearch to provide much needed support to Tennessee's expanding poultry industry. Poultry, along with beef, ranks among the state's top two animal commodities. "One of the UTIA faculty's growing needs is a set of modern poultry research and education facilities," says Xin. "The Spring Hill location would be suitable for construction of commercial-scale research and demonstration poultry facilities. Research efforts would include nutrition, health, welfare and precision poultry management." No timeline for this conversion is set, but planning is underway.**

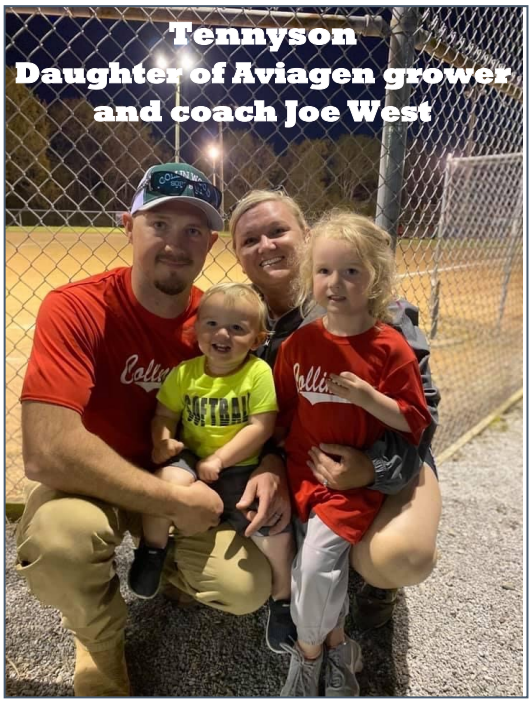
Thompson, who also directs the Middle Tennessee AgResearch and Education Center at Lewisburg, says that facility will remain the home of the Tennessee Beef Heifer Development Program. "As the beef industry continues to evolve and grow, additional opportunities for strengthening beef- and forage-related research and Extension programs may arise from coordinating efforts at Lewisburg and Spring Hill," he says.

For more information about UT AgResearch and each of its ten AgResearch and Education Centers, please visit agresearch.tennessee.edu.

Through its land-grant mission of research, teaching and extension, the University of Tennessee Institute of Agriculture touches lives and provides Real. Life. Solutions. utia.tennessee.edu. □

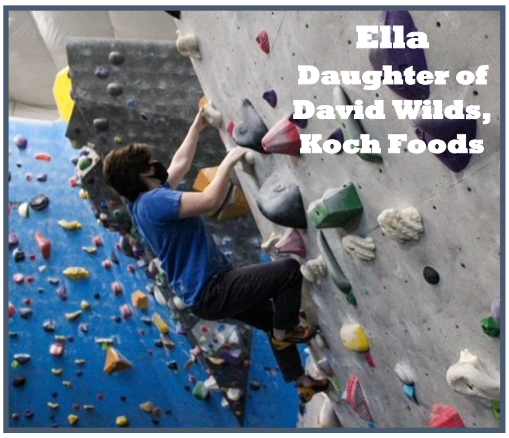
Jimmy
Grandson of Pilgrim's grower Jim Bilbo

Acts
with Coach Mike (Papa) Tracy's grandson & husband

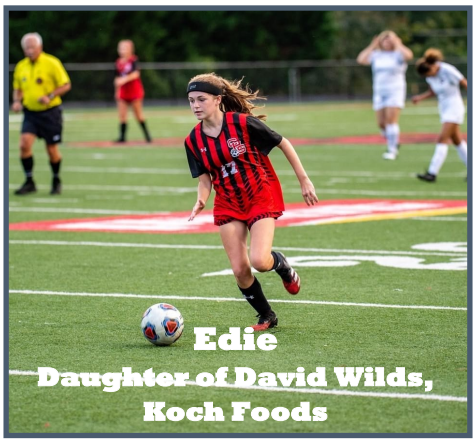


Tennyson
Daughter of Aviagen grower and coach Joe West

Lily
Daughter of David Wilds, Koch Foods



Ella
Daughter of David Wilds, Koch Foods



Edie
Daughter of David Wilds, Koch Foods

Ethan
Son of Tina Hurley, Koch Foods

Duke
with Dad (and coach) Justin
Grandson and son-in-law of Pilgrim's grower Jim Bilbo

Upton
Son of Keith Bellenfant, Goggin Warehousing

Mackenzie
Granddaughter of Pilgrim's growers Todd & Lisa Layne

Matthew "Tater"
Grandson of Pilgrim's growers Todd & Lisa Layne

Emmi
Daughter of Scott Black, Cobb-Vantress

Taylor
Dan Nuckolls' grandson

Duncan
Son of Tyson growers Jackie & Katrina Dollar

Ali
Dan Nuckolls' granddaughter

Grant
Dan Nuckolls' grandson

Riley
Son of Scott Black, Cobb-Vantress

Summer
daughter of Jeff Ratledge, Big Dutchman

Mason
Son of Adam & Kate Hates, Aviagen

Abe
Tracy's grandson

Poultry Farm Insurers Expect Proper Earth Grounding

March, 2020 by Tom Tabler, PhD, Extension Professor, MSU Poultry Science

MISSISSIPPI STATE UNIVERSITY
DEPARTMENT OF POULTRY SCIENCE

Poultry farm insurance has become increasingly difficult to find and maintain since 2005's Hurricane Katrina and, in more recent years, multiple tornadoes across Mississippi's commercial poultry production region. While hurricanes, tornadoes, and fires result in huge, catastrophic claims for insurers, overall, a much greater total number of claims is associated with lightning damage to poultry house controllers and sensitive electronic equipment.

It is critical that poultry growers have properly earth-grounded control rooms, feed bins, generator sheds, and generator frames. A lack of proper grounding on the farm is not only dangerous to people and poultry, but it also increases the risk of equipment damage and failure. Ground rods, grounding lugs, and ground wires are all critical parts of a poultry farm's electrical system and are required for preventing damage from lightning storms and power surges.

Figure 1. Ground rod driven into the earth, grounding lug, and attached ground wire.

The National Electrical Code (NEC), Article 100, defines a ground as "a conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of the earth." Growers should regularly check grounding points to make sure the grounding system is secure and intact and will do its job when needed. If lightning damage occurs and a claim is filed, insurers will inspect to determine whether or not the grower had taken every precaution to ensure proper earth grounding of equipment.

Understanding Grounding

There are two parts to a grounding system: earth grounding and equipment grounding. The two parts of the system must be kept separate, except for a single connection between the two. Earth grounding is an intentional connection from a circuit conductor, usually the neutral, to a ground electrode (rod) driven into the earth (Figure 1). A proper equipment ground protects the operating equipment within a structure. In addition to protecting people and poultry, a properly grounded poultry house provides a safe path for the dissipation of fault currents, lightning strikes, and static discharges.

Ground rods should be driven deep into moist earth. The ground wire connections should be tight on both ends. Copper ground wires should be free of damage and must be sized to meet NEC requirements. It is recommended to use copper clad ground rods that are at least 8 feet long by 5/8 inch in diameter with solid acorn-style grounding lugs that tighten with a bolt (Figure 1) instead of two-piece pipe clamps. Experience indicates that most two-piece clamps loosen and are more prone to failure over time.

A simple grounding system includes a ground conductor (the grounding wire), the grounding lug that connects the ground wire to the ground rod, and the electrode (ground rod) itself. When installing grounding systems, focus your attention on ways to reduce the ground resistance. The resistance of the ground electrode and its connection is usually quite low. Ground rods are often made of material that is high conductance/low resistance such as copper or steel. In addition, the contact resistance of the surrounding earth to the electrode is almost negligible if the ground electrode is free of grease, paint, and similar materials, and the ground rod is in firm contact with the earth.

The NEC code requires a minimum ground rod length of 8 feet to be in contact with the soil. Longer is better to further lessen the ground resistance. There are four factors that may affect the ground resistance of a grounding system:

- Ground rod length
- Ground rod diameter
- Number of ground rods
- Ground system design

Increasing the length of the ground rod above the 8-foot minimum and driving it deeper into the soil is an effective way of lowering ground resistance. Soil is never uniform or consistent in its resistivity and can be highly unpredictable. Moist areas make better contact because moisture helps reduce resistance. The ground rod must be driven below the frost line so that resistance to ground will not be greatly affected by freezing and thawing of the surrounding soil.

In most cases, doubling the length of the ground rod will reduce resistance level by an additional 40 percent. However, there are occasions where it is physically impossible to drive ground rods 8 feet deep. Areas that are composed of rock, granite, or similar material may require alternative methods, such as grounding to cement. In contrast to increasing the length, increasing the diameter of the ground rod has little effect on lowering the resistance. Doubling the diameter of a ground rod will decrease the resistance only about 10 percent.

Multiple ground rods can be driven to further lower resistance. In this scenario, more than one ground rod is driven into the earth and connected in parallel to lower the resistance. However, for additional ground rods to be effective, the spacing (or distance) between the additional rods must be at least equal to the depth of the driven rods. *continued on next page*

Poultry Farm Insurers Expect Proper Earth Grounding (*continued from previous page)*

Each ground rod influences the soil near it. Multiple ground rods must be far enough apart that their influence areas do not overlap. Otherwise, resistance will not be lowered.

Lightning Protection

The NEC has developed acceptable codes for wiring farm buildings. Poultry farms often have the main farm service panel at the meter pole, where there will also be disconnects for electric lines going to each poultry house. Electric lines should be underground and in conduit from the meter pole to the chicken houses. Overhead power lines should never be near chicken houses where large feed, live haul, and chick delivery trucks must operate. The standby generator and automatic transfer switch may also be located at or near the meter pole. However, this is not always the case, particularly on farms with multiple standby generators. The NEC recommends that grounding devices should be tested to make sure they read no more than 25 ohms electrical resistance to earth ground.

Unfortunately, many poultry farms may be over this 25-ohm threshold because of soil characteristics, improper grounding connections, and lack of maintenance on the grounding system.

Linhoss and Purswell (2019) tested earth ground resistance at multiple broiler, broiler breeder, and pullet houses in Mississippi, and found that all grounded feed bins and 12 out of 29 houses had resistances above the recommended 25 ohms at the control room breaker box. On many poultry farms today with electronic controllers, alarm systems, telephone dialers, and other sensitive equipment, a resistance of 5 ohms or less would be a better goal to strive for. However, rock and soil characteristics on many farms may make that goal practically unobtainable. In such cases, the absolute lowest ground resistance value obtainable that makes sense from both an economical and physical standpoint should be the goal in ground resistance. Soil composition, temperature, and moisture content all affect soil resistivity. Most soils are rarely homogenous, and resistivity varies geographically and at different depths. Moisture content changes based on season and varies according to the nature of the sublayers of the earth and depth of the water table.

Lightning strikes represent serious challenges to poultry farm electrical systems. There are four ways lightning can enter a farm building:

- By directly striking the building
- By striking a metal object extending out from the building such as a roof ventilator or cupola
- By striking feed bins or a nearby tree and leaping over to the building for a more direct path to ground
- By striking and following overhead utility power lines or by striking an ungrounded wire fence attached to a building

Many experts believe that 90 percent of all lightning damage can be prevented on farms with properly grounded electrical systems. Proper grounding is more critical today because of all the high-tech, expensive, electronic equipment found in poultry house control rooms that was not there a few years ago (Donald et al., 2004). This electronic equipment must be properly installed and grounded to prevent serious damage from power surges or lightning strikes. A lightning strike contains a huge amount of energy, and it does not take a direct hit to damage today's sensitive electronic equipment.

Steps to Ensure Proper Grounding

Electrical equipment (feeders, fans, lights, etc.) may work, but it will not work safely without proper grounding. Proper grounding protects you (Moyle et al.,2018), your birds, sensitive electronic equipment, and the entire electrical system from costly repairs, stray voltage, fires, and possibly fatal accidents. Make sure that your farm's electrical system meets NEC grounding standards. This will likely require the assistance of a qualified electrician, but it is money well spent, and it is necessary to protect you, your workers, your birds, and your equipment. Table 1 can help you assess the electrical safety situation on your farm. However, it is not a substitute for a thorough professional electrical inspection, so if you are having electrical issues, contact a qualified electrician immediately and have the problem checked out.

Don't Forget the Standby Generator

Power failures on the poultry farm can occur without warning because of severe weather or other circumstances. A standby electrical power system can protect your birds, your equipment, and your livelihood in the event of a power failure. A standby generating system consists of a generator, which produces electricity when utility line power goes down, and an automatic transfer switch, which safely connects the generator to the farm wiring system and prevents any interconnection between the standby generator and the power lines. Electrical codes require that a suitable transfer switch be used to disconnect the electrical load from the power lines and connect it to the standby generator. When properly installed, the transfer switch prevents backflow of electricity into power lines, which could endanger the lives of power line personnel working on power lines miles from your farm. The transfer switch also protects the standby equipment from being damaged by electrical feedback coming from power lines once line power has been restored.

Equipment must be installed correctly. Therefore, do not try to install the generator or transfer switch yourself! An improperly installed standby generator system can endanger you, power line company employees, and the general public, not to mention severely damage equipment and/or property. Consult a qualified electrician who can identify the farm's voltage requirements, help determine the capacity size of your generator, and advise you on correct electrical installation and connection.

One final item is to make sure that the generator frame is grounded to a ground rod (Figure 2), either the main one at the shed or a separate rod all to itself. Often, the generator itself will only be grounded through the neutral back to the transfer switch. This is not sufficient. *continued on next page*

Poultry Farm Insurers Expect Proper Earth Grounding *(continued from previous page)*

Without a frame ground, there is a much greater chance that a lightning strike that hits the transfer switch will also damage the computer controller on the generator (Brothers et al., 2011). If both the transfer switch and generator are damaged, there is no way to provide power to the poultry farm in the event of a power failure.

Table 1. Farm safety electrical checklist.
Each no may indicate a safety issue on your farm. Check with a qualified electrician if you have questions.

YES	NO	Mark yes or no for each question.
YES	NO	Was the electrical system installed by a qualified electrician?
YES	NO	Was the electrical system inspected by an electrical inspector?
YES	NO	Does the building have a single electrical service entrance?
YES	NO	Is the service entrance at each building equipped with a grounding rod?
YES	NO	Are feed bins and standby generators equipped with ground rods?
YES	NO	Do all electrical panels have at least 3 feet of clearance, and can all panel doors be opened at least 90 degrees?
YES	NO	Are all enclosures, thermostats, switches, receptacle boxes, and covers water-tight, dust-tight, and made of corrosion-resistant materials?
YES	NO	Are all cables and cable fittings designed for use in a wet or damp location?
YES	NO	Is all conduit non-metallic and surface-mounted?
YES	NO	Is all metallic equipment properly grounded?
YES	NO	Are all grounding and neutral conductors electrically separated except in the main disconnect panel?
YES	NO	Are all light fixtures made of corrosion-resistant material?
YES	NO	Do all cables and conduits enter junction boxes from the side or bottom whenever possible?
YES	NO	Are all motors totally enclosed and rated for farm-duty service?
YES	NO	Are all metallic building components within 8 feet of the ground or floor bonded to the electrical grounding system?
YES	NO	Do family members and all hired farm workers know where and how to disconnect power in case of an electrical emergency?
YES	NO	Do family members and all hired farm workers know first aid for electrical shock and/or burns?

Summary
As poultry farm insurance becomes more difficult to find and keep, growers must do all they can to ensure that insurance providers will continue to write policies to insure their poultry farms. An important step in this process is to make sure that the poultry farm has proper earth grounding at all control rooms, feed bins, generator sheds, and generators. Ground rods, lugs, and wires are all vital parts of a poultry farm's electrical system. Check these components at least annually and verify that the grounding system is intact. Use copper clad ground rods that are at least 8 feet long by 5/8 inch in diameter with solid acorn-style grounding lugs. Grounding devices should be tested to make sure they read no more than 25 ohms electrical resistance to earth ground. If a minimum of 25 ohms cannot be obtained with one ground rod, multiple ground rods should be driven and connected in parallel to further lower resistance. Don't overlook standby generators and automatic transfer switches, and remember that generators should be fully serviced at least once a year. In the business of poultry farming, insurance is a necessity, so do all you can to protect and keep it. □

Figure 2. The generator frame should have a ground wire connected to a ground rod.

Stray Voltage: Have you looked lately?

June 1, 2021 on PoultryProducer.com by John Menges from Best Veterinary Services

This week, we are happy to present the first guest post from Director of Technical Services for Best Veterinary Solutions, John Menges. In this article, John reviews the key takeaways of stray voltage and how it may impact your flock. Click here for full article. □

European Commission Reviewing Policies on GM Crops and the Precautionary Principle

May 7, 2021 in EGG.NEWS.com by Simon M. Shane

Faced with increasing costs of ingredients and food, the European Commission is reassessing a long-standing approach disfavoring biotechnology and genetically modified (GM) crops. A recent study conducted by the European Union disclosed that restrictive legislation effectively preventing the use of GM crops should be reevaluated. In a radical departure from two-decade opposition, the Commission has concluded that anti-GM legislation passed in 2001 has been without benefit. Click here for full article. □

Poultry Housing Tips, Hot Circuit Breaker? A Fan is Not the Solution

March 5, 2021 at PoultryProducer.com

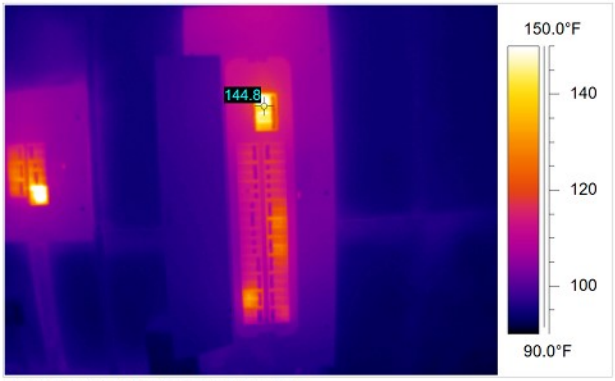


Figure 1. Excessive main circuit breaker temperature.


Figure 2. Fan being used to cool overheated circuit breaker.

With market age birds the last thing a producer wants is for the main electrical panel circuit breaker to trip. Though it often seems like it may happen without any warning, the truth is that in most cases there is a very clear indicator that an electrical breaker will trip sometime in the near future, namely because the breaker is hot. Basically, an electrical circuit breaker operates on temperature. As the flow of electrical current through a breaker increases, so does the temperature of the circuit breaker. Each circuit breaker is rated for a specific current flow. If the current exceeds a circuit breaker's rating, it will warmup to a point where it will "break" the circuit, cutting power to the device/devices to prevent an electrical fire. In addition to excessive current flow, circuit breaker overheating can be the result of poor quality electrical connections. Poor electrical connections increase the resistance to the flow of electrical current, resulting in the generation of heat. Potential problem area sinclude where the wires connect to the circuit breaker, where the circuit breaker connects to the main panel or possible electrical connections within the circuit breaker itself. Generally, the temperature of a circuit breaker should not exceed 140oF. If it does, this means the circuit breaker is in danger of tripping. A good "rule of thumb" is that if you can't hold your finger on the plastic part of the circuit breaker without getting burned, it is too hot.

Though it may seem like a good idea if you find that your circuit breakers are abnormally warm (i.e. 120oF+),using a fan to cool them is not solving the problem. Blowing air over a circuit breaker may solve the symptom (a hot breaker), but it does not solve the underlying problem, namely that the circuit is overloaded or there are poor electrical connections. Case in point: the thermal image in Figure 1 was taken on a farm with seven-week old broilers during hot weather. The main breaker had a surface temperature of 145oF, indicating that the breaker could trip at any time. The producer decided to remove the cover on the electrical panel (not recommended) and install a circulation fan to help cool the main breaker. Initially, the circulation fan appeared to solve the problem. The temperature of the main circuit breaker decreased to less than 130oF (Figure 3). But in fact the underlying problem was not solved. A week later a second thermal image was taken of the same breaker under the same operating conditions. Even with the cooling fan operating, the main circuit breaker was significantly hotter than measured the previous week (Figure 4). It became obvious that the problem was getting worse. The next morning the main circuit breaker was replaced and there was a dramatic decrease in the temperature of the main breaker (Figure 5). The problem was solved.

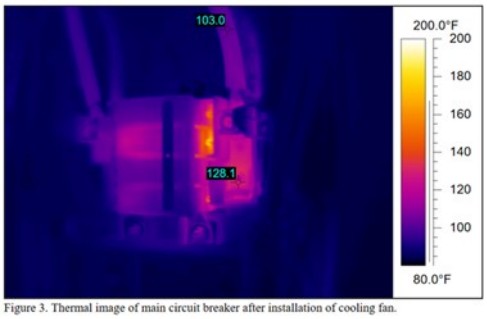


Figure 3. Thermal image of main circuit breaker after installation of cooling fan.

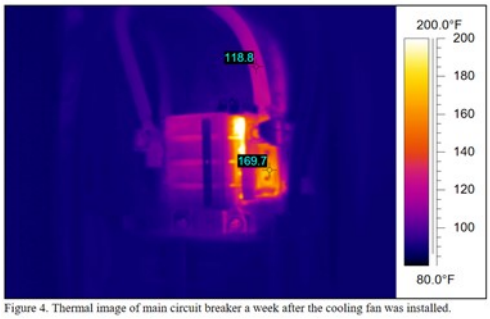


Figure 4. Thermal image of main circuit breaker a week after the cooling fan was installed.

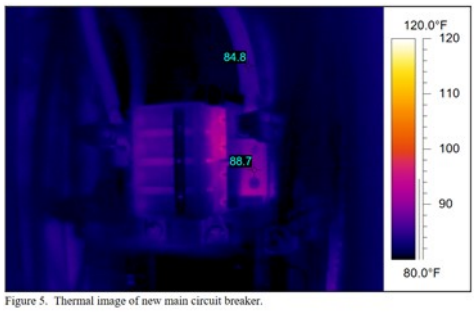


Figure 5. Thermal image of new main circuit breaker.

To put it simply, if your breakers are running hot there is a serious problem and a cooling fan is not the solution. An electrician should be called immediately to determine the cause of the overheating so it can be addressed immediately before there is a potentially disastrous loss of power. □

Do Your Valves and Hose Bibs Restrict Water Capacity?

May 6, 2021 at Farming by Kelly Griggs, Jeremiah Davis, Jesse Campbell, Oladiran Fasina, Robert Bradford, James Johnson

As we repair or add on to our existing water supply systems, we often don't think about the types of fixtures and valves we use. Click here for full article. □

The University of Georgia

College of Agricultural and Environmental Sciences
Cooperative Extension

Poultry Housing Tips

Small Variable Speed Fans Operating Continuously Vs. Larger Fans on Timers

Volume 33 Number 3 **2020**

The purpose of a minimum ventilation system is to bring in small amounts of cold fresh air into a house and to warm it as much as possible before it moves down to floor level so as not to chill the birds and to maximize the litter drying potential of the incoming air. Traditionally, poultry producers have utilized a "negative pressure" minimum ventilation system. In a negative pressure system, exhaust fans draw air out of a house, thereby making the pressure lower inside the house than it is outside. When the pressure is lower inside the house than outside, fresh air will flow into a house to relieve the low pressure created by the exhaust fans. The level of negative pressure is determined by the amount of inlet opening available to the fan relative to the air-moving capacity of the fan. If there is a lot of inlet opening in a house, there will be an extremely low difference in pressure, and if there little inlet opening available to the fan there will be a high difference in pressure (Figure 1).

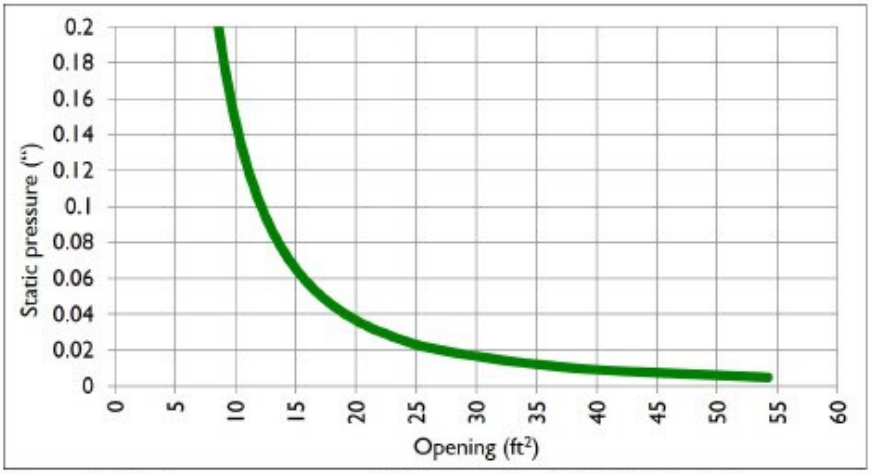


Figure 1. Static pressure vs. available opening (10,000 cfm fan)

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There are primarily two reasons why a negative pressure is desirable. First, when a negative pressure is created by an exhaust fan(s), the level of negative pressure will be essentially the same throughout the house (Figure 2). This means no matter how far an inlet is from an exhaust fan the pressure difference between inside and outside of a house will be the same. Second, by controlling the level of negative pressure a producer can control the speed at which the air will enter a house The greater the pressure difference, the higher the speed. The smaller the pressure difference, the lower the speed (Figure 3). Now if all the inlets throughout a house are opened the same amount, and the air is entering though all the inlets at same speed, then the same amount of air will entering through all the inlets no matter where they are located in a house (Figure 2). This is very important because this means that in a properly functioning negative pressure system all the birds in a house will receive the same amount of fresh air regardless of how far they are from an exhaust fan. Control over speed of the incoming air is also important because it provides control over how the air moves once it enters the house. If the air enters the house slowly (low pressure) the cool, heavy, damp, incoming air will tend to quickly fall to the floor. But if the air enters the house quickly (high pressure) it can be directed along the ceiling far from the birds and where warm air tends to accumulate. The longer the cool air stays along the ceiling, the more it warms before moving down to floor level (Figure 4). Just as important, because the moisture holding ability of air will roughly double for every 20°F rise in temperature, the longer it stays along the ceiling, the drier it will become and the greater the amount of moisture which can be removed from a house.

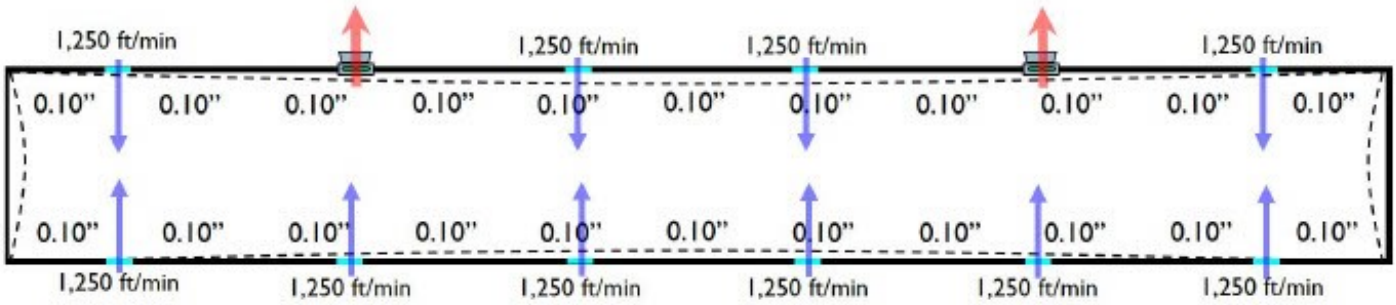

Figure 2. Pressure and entrance air velocity uniformity in a house utilizing negative pressure ventilation

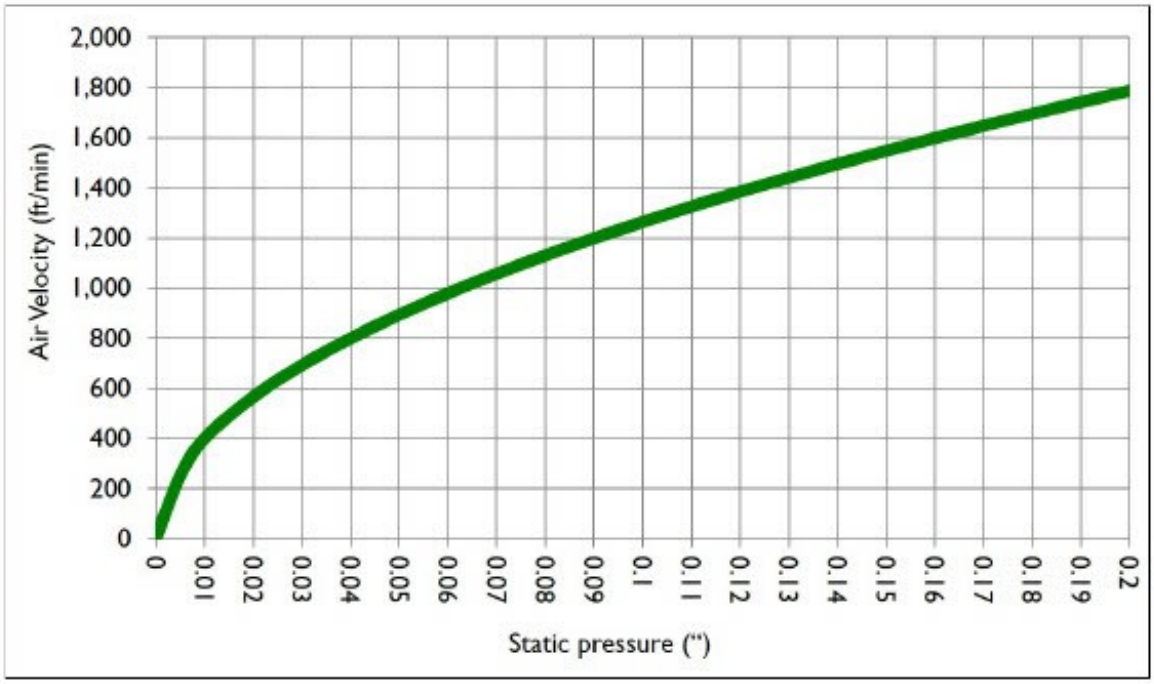

Figure 3. Inlet air velocity vs. static pressure

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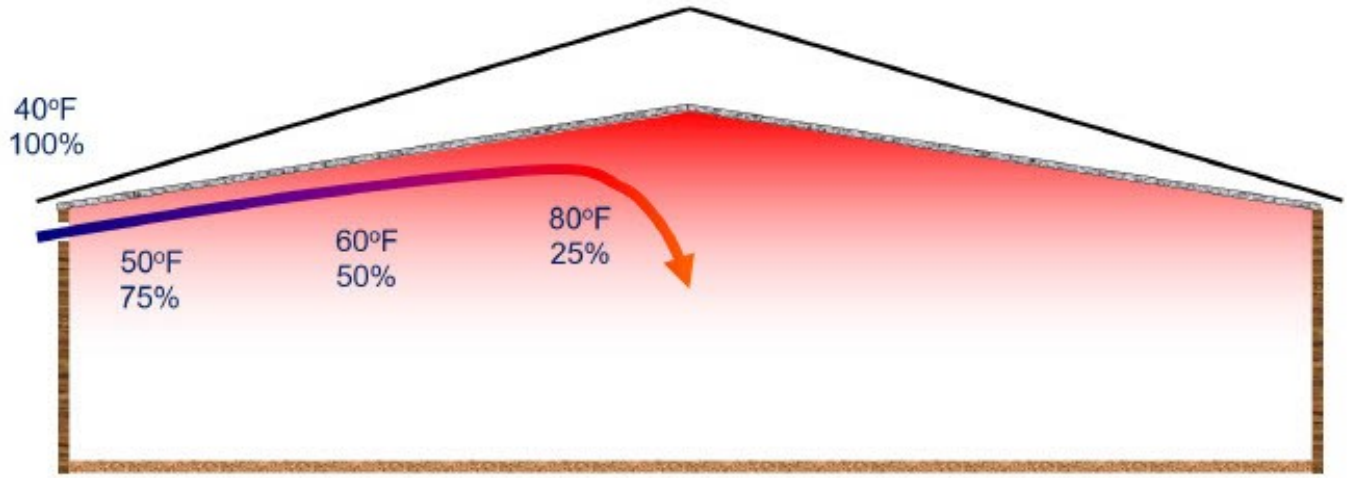

Figure 4. Desired inlet air flow pattern during cold weather

A common question about negative pressure minimum ventilation system is why we use large fans operating on an interval timer instead of using smaller fans that operate constantly? For instance, to remove the moisture that 30,000 six-day-old chicks are adding to a house on a cold winter day (40°F / 50% Rh) requires the exchange of approximately 3,000 cubic feet of air each minute (Table 1). Wouldn't it be simpler, and better, to use a single 18" fan that moves 3,000 cfm or even a variable speed 24" fan (6,000 cfm capacity) operating at 50% rather than using a couple of 36" fans (10,000 cfm) on a five-minute-timer ? Though in theory a smaller fan operating continuously would produce a more consistent house temperature and air quality, the primary reason why we can't use a smaller fan is that poultry houses are simply not tight enough to do so.

Age (Days)	Temperature (F)	Daily Water Usage (Gals - 30,000 birds)	Minimum Vent. Rate to maintain 50% Rh (cfm)	"On Time" (seconds) for five-minute-timer (20,000 cfm)
0	90	61	370	6
1	89.5	125	770	12
2	89	190	1,200	18
3	88.5	254	1,610	24
4	88	319	2,070	32
5	87.5	383	2,540	39
6	87	447	3,020	45
7	86.5	512	3,530	54
14	76	1,090	12,110	183
21	72	1,560	20,000	360

Table 1. Minimum ventilation rates to remove bird moisture and maintain an inside relative humidity of 50% (Min. vent. rates determined using Poultry411 App - outside conditions = 40°F / 50% Rh)

Continued on next page

At a static pressure of 0.10", an exhaust fan requires roughly one square foot of opening for every 750 cubic feet of air it moves. Therefore, an 18" fan only requires a total of four square feet of inlet opening (3,000 cfm / 750 cfm/ft^2). If the opening area is greater, the pressure will be lower, and the fresh air may not enter with sufficient speed to travel along the ceiling far enough to be properly warmed before moving down to bird level. Worse yet, if the amount of opening available to a fan is so large that the fan is incapable of generating a negative pressure, then only birds in the immediate vicinity of the fan will receive any fresh air when the fan is operating.

Four square feet of inlet opening is not very much relative to size of the typical modern poultry house. For instance, most producers would consider a house where a negative pressure of 0.20" could be obtained with a single 48" fan (with all the air inlets closed) to be fairly airtight. But, in truth there would be roughly nine square feet of "cracks" scattered throughout the house, over twice the opening required to feed an 18" fan (Figure 5). With nine square feet of opening available to it, an 18" fan would only generate a negative pressure of approximately 0.01". In order for an 18" exhaust fan to be used for minimum ventilation, the pressure generated with all inlets closed would need to be well over 0.10" (for example 0.15" - 0.20") so that when the inlets were opened, and the pressure decreased, a static pressure of approximately 0.10" could be maintained. To obtain a static pressure of 0.20" with an 18" fan, a house would need to have less than two square feet of leakage area, which would be essentially impossible in even the best built totally enclosed 40' X 500' house. From a practical standpoint, if an exhaust fan is not capable of generating a pressure of at least 0.15" in a closed house, it would be very difficult for it to be used by itself for minimum ventilation during cold weather.

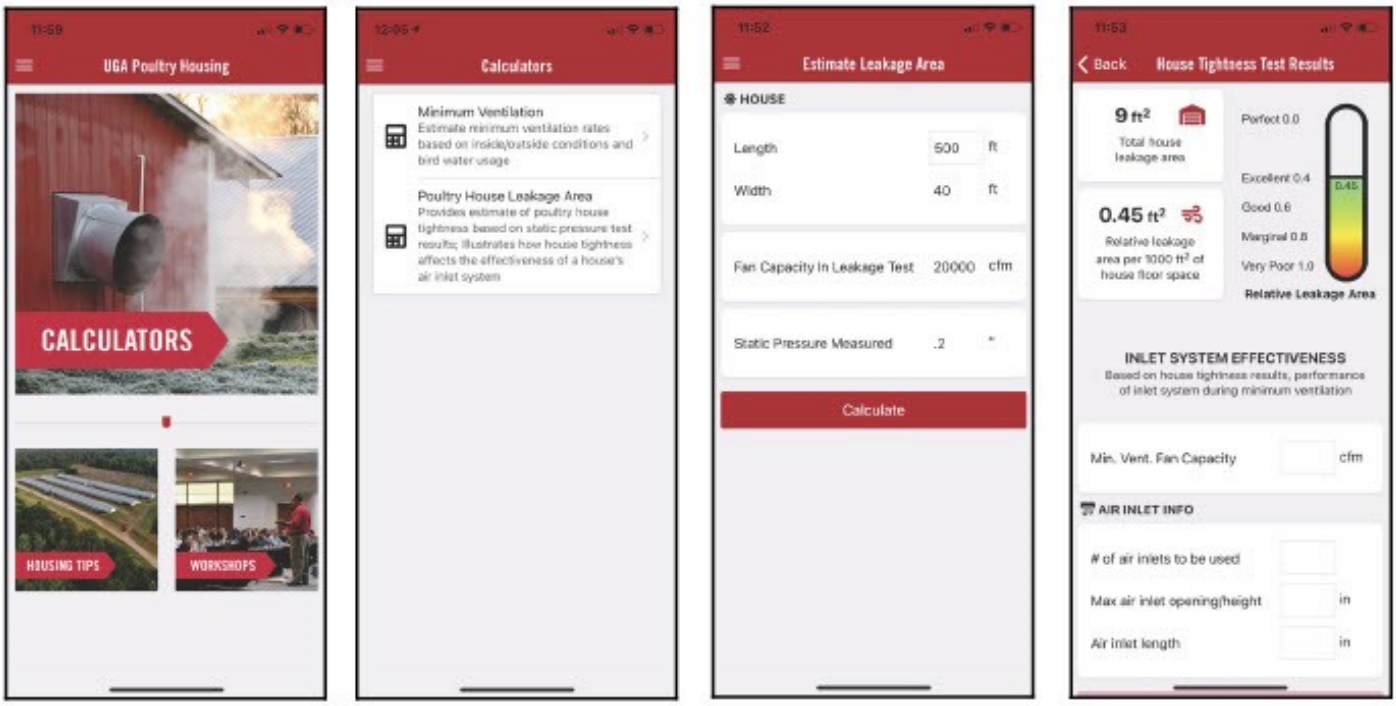

Figure 5. Poultry411 App used to estimate house leakage area

Another potential issue with using small fans for minimum ventilation in large houses is fresh air distribution. At 0.10" static pressure, approximately 450 cfm will enter through a 42" long air inlet opened two inches. So if all the air moved by a single 18" fan were to enter though a house's air inlets, only seven inlets would be required. The problem is this assumes the house were perfectly tight, which is never the case. Even if a house were tight enough to obtain a static pressure of 0.15" with an single 18" fan, there would still be a significant amount of air entering through cracks. In fact, roughly half the air brought into a house by an 18" fan would enter through the cracks, which means only three or four air inlets would be required. Three or four air inlets in a 500' house would result in dramatic variations in air quality and temperature along the length of that house.

Continued on next page

In most cases it takes one cfm or better of exhaust fan capacity per square foot of floor space to generate sufficient pressure to produce a functioning negative pressure inlet system. A functioning inlet system would be one where a pressure of around 0.10" can be maintained with a majority of the inlets in the house opened a couple of inches. For instance, as noted previously, if a static pressure of 0.20" could be obtained in a closed 40' X 500' house with a couple of 36" fans that move 20,000 cfm (1 cfm per square foot of floor space), it would indicate that there is nine square feet of leakage area. Assuming 750 cfm will enter through a square foot of inlet opening at a pressure of 0.10" (cracks are "inlets"), this means that approximately 6,800 cfm of the 20,000 cfm of fresh air will enter through the cracks in the house and the remainder, 13,200 cfm, will enter through air inlets. If the house has 42" long inlet doors, open two inches (450 cfm), this means that roughly 30 air inlets (42" long, opened two inches) could be used with two 36" minimum ventilation fans (Table 2).

Minimum ventilation fan(s)	40' X 500' closed house static pressure in a house with 9 ft^2 of leakage (very tight)	Amount 30 inlets would open with a target pressure of 0.10"
Two 36" fans (20,000 cfm)	0.20"	2"
One 36" fan (10,000 cfm)	0.08"	0
One 24" fan (6,000 cfm)	0.03"	0
One 18" fan (3,000 cfm)	0.008"	0

Table 2. Amount 30 inlets would open with various sizes of minimum ventilation fans in a tight 40' X 500' house

Minimum ventilation fan(s)	40' X 500' closed house pressure test in a house with 5 ft^2 of leakage (exceptionally tight)	Amount 30 inlets would open with a target pressure of 0.10"
Two 36" fans (20,000 cfm)	0.30"	3"
One 36" fan (10,000 cfm)	0.17"	1"
One 24" fan (6,000 cfm)	0.10"	0
One 18" fan (3,000 cfm)	0.03"	0

Table 3. Amount 30 inlets would open with various sizes of minimum ventilation fans in an exceptionally tight 40' X 500' house

If a 40' X 500' house were exceptionally tight and a pressure of 0.17" could be obtained with a single 36" fan (0.5 cfm/ft^2) then only 15 air inlets, opened 2", would be required. Fifteen air inlets in a 500' long house would result in air inlet spacing of approximately 30', which is toward the upper limit of what most people would find acceptable (Table 3). If 30 inlets were used, to maintain the same static pressure (0.10") the inlet opening size would have to be reduced to one inch and chances are the cold incoming air would not have enough momentum to travel very far along the ceiling before falling to the floor. The problem is that a ventilation rate of 10,000 cfm is still greater than minimum ventilation requirements the first couple weeks of a flock and an interval timer would still be required to limit the amount of fresh air brought into a house.

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If a static pressure of at least 0.15" can be obtained using a single exhaust fan in a closed house, it is a good indicator that the fan could be used effectively to provide fresh air for the birds throughout a house during minimum ventilation. The problem is that in virtually all commercial poultry houses there is simply too much leakage area for most smaller fans (24" and smaller) by themselves to generate the level of negative pressure required to create a properly functioning inlet system. Though using a larger fan(s) capable of creating a sufficient pressure to allow inlets throughout a house to be opened the proper amount and allow the air to enter with sufficient speed to create a proper minimum ventilation air flow pattern requires the use of a five-minute timer, it is better than operating a smaller fan continuously that will end up just pulling fresh air through cracks resulting in drafts, poor air quality control, and increased likelihood of caked litter.

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Farm pics: Ribbon cutting at Tina Bloecher's 8-house broiler farm in Trenton, TN on May 13, 2021 for the new Tyson Humboldt complex. Sons Grant and Joshua, and their respective families, are each building 8-house farms on neighboring properties.

Matthew Mauk, Broiler Mgr., and Mark Harmon, Sr. Mgr. Live Production, are shown in the lower left photo reviewing the controller capabilities with Commissioner of Agriculture, Dr. Charlie Hatcher.

60 million poultry could starve to death in Colombia (blog)

May 12, 2021 at WattAgNet.com by Benjamin Ruiz

The political crisis in Colombia is going through difficult days. Click here for full article.

Women in Poultry: Dr. Kate Barger-Weathers

March 8, 2021 at ThePoultrySite.com by Sarah Mikesell

Dr. Kate Barger-Weathers, veterinarian and director of world animal welfare with Cobb-Vantress, is responsible for providing direction for Cobb's internal teams with the company's program for animal welfare. This involves development of training materials, audits, guidelines and research projects to help verify their program and to advance awareness and understanding of poultry welfare and management practices.

Dr. Barger-Weathers is also Cobb's liaison with external colleagues in animal health, welfare and veterinary sectors. Communication, research and strategic planning are key facets of her role when she's in the office. And she spends time "in the trenches" visiting farms, hatcheries, and other agriculture facilities to verify what is happening in the industry and how to contribute to improvements.

What's unique about your role?

As director of world animal welfare, my role is relatively new for Cobb. While Cobb and most animal agriculture companies have demonstrated a commitment to health and welfare for years, having a dedicated person in animal welfare was not a common role eight to 10 years ago in the poultry industry or other sectors of animal agriculture. I was the first person in this new position for Cobb in 2011, so I had no proverbial shoes to fill and no roadmap to follow. As a result, both my role and daily focus were and continue to be unique as I've helped develop our strategic plan and expand the company program for animal welfare. My focus on welfare science and our understanding of what is best for poultry continues to evolve. It is this uniqueness and emphasis on continuous improvement that motivate me each day.

Dr. Kate Barger-Weathers, director of world animal welfare with Cobb-Vantress

What are the main challenges you face in your role?

There are three key areas for my role that challenge me and the industry. These include:

1. **Integration**: Daily care for animals has always been a primary focus for farmers. However, the integration of welfare expectations into daily conversations and actions are often viewed as a challenge. At Cobb, we believe that fully integrating a comprehensive welfare program with clear guidelines, regular audits to verify compliance, and training to improve staff awareness is a way to overcome this challenge. In my role, I support many customers and supply chain partners with questions about poultry health and welfare and how to integrate this into their company culture. I believe we must view poultry health and welfare outcomes in a synergistic manner with flock performance expectations. In this example, viewing welfare as part of the solution rather than part of the challenge allows for more buy-in and continuous improvement at all levels.
2. **Perspective**: Differences in perspective can be a major challenge in any sector. In presentations I give within the poultry industry, I often highlight that many different groups (livestock companies, food companies, NGOs, government entities, farmers, and welfare scientists) have different perspectives and varying definitions for animal welfare. As a result of these differing perspectives, having a focused discussion among these groups about what is best for the chicken is a challenge in animal agriculture. These divergent perspectives and resulting variances in messaging from each group can result in confusion for the end consumer. While I recognize it is critical to listen to these different perspectives, I believe we all should focus on what we can do to optimize the care, health and welfare of the animal. In other words, if we can set aside our differences and reframe the perspective to what is best for the animal, we can achieve a better future with improved collaboration and transparency.
3. **Change**: It may seem cliché to list "change" as a real challenge. There are many quotes about change, but this one from John F. Kennedy is one I believe applies to my role and to this third challenge: *"Change is the law of life, and those who look only to the past and present are certain to miss the future."* While progress and innovation continue to change the landscape of the poultry industry at hatcheries, farms and processing plants, I think that our ability to adapt production practices, respond to supplier expectations and make progress in sustainability are critical factors in the next few years. Although there is immense experience and extensive knowledge in the industry, we have to think ahead about how changes in the workforce, changes in global focus on sustainable practices and changes in supply chain expectations will impact how we produce food. *continued on next page*

Women in Poultry: Dr. Kate Barger-Weathers

What does the future of poultry health look like in terms of preventing and treating disease?
I believe the saying, "An ounce of prevention is worth a pound of cure" is particularly important when we focus on the future of poultry health and welfare. Listening to flocks, observing their behavior and distribution, and analyzing on-farm conditions continue to be important when responding to any flock health concerns. However, we have less treatment options today than we had two decades ago due to changes in allied industry and changes in supply chain expectations regarding antimicrobial use. This means we have to be more proactive in preventing disease in poultry flocks.

As the threat of pathogens like avian influenza continue to be a global concern, biosecurity is the key factor and focal point for each person involved in live production. I am hopeful that the development and implementation of innovative technology combined with a new focus on prevention strategies will result in an exciting future for biosecurity and poultry health. For example, automated systems that evaluate flock sound may enable farmers to detect a stressor more quickly. Other technology may enable veterinarians to more accurately predict and prioritize which farms need to be visited to address emerging health needs. Also, future animal health and nutrition interventions may enhance flock health and immunity in ways that allow poultry to be more resilient.

Dr. Kate Barger-Weathers at an American Association of Avian Pathologists meeting

Are there individuals or organizations in poultry you've found particularly inspirational?
I've always been passionate about farming and animal agriculture due to my roots on a livestock farm. However, my first introduction to poultry occurred when I was an undergraduate student at North Carolina State University. I will forever be thankful to the professors, veterinarians and fellow students who welcomed me into the exciting world of poultry production and encouraged me to learn about chickens and turkeys. Many of these people are now my colleagues and friends, and it has been great to stay in touch as our career paths in the industry have transformed over the past two decades.

Have you encountered any challenges as a woman in your field? If yes, how have you overcome them?
There have certainly been some challenges along the way, but overcoming hurdles, setbacks, and even moving forward after failures have made me a better person and a better leader. I've been the first woman in various roles during my professional career at Cobb and the first woman in several volunteer positions within allied industry organizations. I've viewed each occasion as an opportunity to lead, listen and learn. I've been fortunate to have excellent mentors during my education and career who have been generous with their guidance, patience and encouragement. While the poultry industry is much more diverse now than it was 20 years ago, finding a female mentor was a challenge for me in the early half of my career. As a result of this gap in mentorship, I am purposefully involved in mentoring other women in the industry who ask for my guidance and support.

What outstanding challenge facing the poultry industry would you most like to solve?
Our biggest industry challenge is communication with the general public about the poultry industry, but I know that I cannot solve this one on my own. Poultry — both meat and eggs — is widely consumed around the world. However, one of the biggest challenges facing the poultry industry is communication with the general public and consumers about food production. These two broad categories are often misinformed about poultry care and agriculture practices, unaware of the level of interconnectedness of the supply chain, and oblivious to the reasons why the industry has evolved to be incredibly efficient and sustainable.

We do a good job of sharing the facts and science of the industry, but we often miss the mark in where and what we communicate to our external audiences. I believe that consumers want to know that we care, we're doing the right thing, and we will provide them with a safe and high-quality product to enjoy. Thus, we must figure out a way to tell our story in a way that builds confidence, empathy and trust with consumers. This message must be compelling, memorable, and emotive, and I'd like to help solve this challenge. *continued on next page*

Women in Poultry: Dr. Kate Barger-Weathers

What's the most exciting innovation you see on the horizon for the poultry industry?
I'm really excited about the continued introduction of technology in the industry and the possibility of using robotics. I don't foresee a future where robotics will replace people but rather think that this innovative technology will refine the focus of staff, improve their safety and satisfaction while at work, and will allow them to really focus on aspects that require skilled observation and personal knowledge of poultry behavior and health characteristics.

What are you most excited about in the next five to 10 years regarding the poultry industry?
At Cobb and within the industry, we generate a tremendous amount of data. However, a lot of this data is evaluated in a retrospective manner and tells us what happened on a particular day or during the life of a particular flock. In most cases, the data does not allow us to make immediate proactive changes for improved outcomes. In the future, I'm hopeful that we will be able to better use data that is flock-based, bird -based and facility-based to improve our decisions.

I also hope that we'll have the ability to better connect different production segments. I remember the days when the broiler houses were updated with controllers to better program lighting, ventilation, etc. This technology was advantageous for optimizing flock health, performance, and welfare and enabled the farmer to prioritize time spent caring for the flocks. It is my hope that we'll have similar leaps in adoption of technology in the next five to 10 years that will enable us to better predict outcomes and improve our response to poultry flocks and their environment in a proactive manner.

What's your next challenge?
From a personal perspective, I'm a mom of a toddler, so sometimes my next challenge is related to the latest reason for a temper tantrum or balancing family and work projects. From a professional perspective, my next challenge is related to reconnecting with global colleagues and customers when it is safe to travel again. I'm incredibly thankful for technology, the ability to connect via video calls and the opportunity to collaborate with colleagues around the world. However, this cannot replace the in-person visits and time in the chicken house that I truly value and have missed in the last year. □

Exciting scenes from around TN Tech University

Dirt work started on the TTU research facility

Aerial photo of the progress

Building being delivered on May 25, 2021

Congratulations to all grads, especially to those starting (or still exploring) poultry careers!

TPA ANNUAL MEETING & SUMMER GETAWAY REGISTRATION FORM

Tennessee Poultry Association

" It'll Be Alright "

August 13-14, 2021

Gaylord Opryland Resort & Convention Center - Nashville, TN

Tennessee Poultry Association

Name _____ Company _____

Address _____ City _____ State _____ Zip _____

Cell Phone _____ Email _____

Guest Names 1) _____ 2) _____

3) _____ 4) _____

We are following CDC, state and local guidelines for COVID-19. While attending this event, please follow all posted instructions. If you are sick or have had recent direct exposure, we regretfully ask that you not attend this event. By attending, you voluntarily assume all risks related to exposure to COVID-19. Feel free to wear a mask. Check the box to agree that you understand this statement. If you do not agree, we politely ask that you do not register to attend. ☐

SPONSORSHIP, AUCTION, MEMBERSHIP***

☐ Diamond Sponsorship	$ 5000.00
☐ Platinum Sponsorship	$ 2500.00
☐ Gold Sponsorship	$ 1000.00
☐ Silver Sponsorship	$ 750.00
☐ Bronze Sponsorship	$ 500.00
☐ Auction Cash Donation	$ _____
☐ *TPA Allied Membership Renewal*	$ 750.00
TOTAL COMMITMENT	

***Deadline for sponsorship recognition on promotional materials is July 23.

____# attending the **Annual Meeting & speaker program on Friday, August 13 @ 1:00 pm**

____# attending the **reception & silent auction on Friday @ 5:30 pm**

____I would like to contribute the following auction items:

_____

____I will bring the items with me ____I will ship the items to TPA

____I am donating $_____ to purchase auction items

REGISTRATION DEADLINE: July 9, 2021

- Register online at www.tnpoultry.org or
- SEND REGISTRATION FORMS & PAYMENT TO: TPA, PO Box 1525, Shelbyville, TN 37162-1525 or tracy@tnpoultry.org
- Please make checks payable to TPA or call Tracy at 270-363-2078 to pay by credit card.
- Hotel reservations may be made online at https://book.passkey.com/go/TPA2021

TPA room rate available until 5 pm EST on July 12, 2021

GOLF TOURNAMENT

Sat., August 14 - 8 a.m. @ Gaylord Springs Golf Links, Nashville

(Please complete a separate registration form for each golfer)

Golfer Entry *(Includes greens fee, cart, lunch)*	@ $ 150.00	$ _____
T-shirt size _____		
Handicap or average score (required)		
Sponsor a Golf Hole *x* ____	@ $ 200.00	$ _____
Donation for door prizes *($20.00 minimum)*		$ _____

SPORTING CLAYS SHOOT

Sat., August 14 - 9 a.m. @ Nashville Gun Club, Nashville

(Please complete a separate form for each shooter)

Shooter Entry *(Includes fees, shells, snacks, lunch)*	@ $ 150.00	$ _____
T-shirt size _____		
Shotgun gauge you will be using (required)		
Sponsor a Shooting Station *x* ____	@ $200.00	$ _____
Donation for door prizes *($20.00 minimum)*		$ _____

SATURDAY MORNING & AFTERNOON OPTIONS

Sat., August 14 - please choose

Gaylord Relache Spa ** **Appointment required	@ $150.00	$ _____
SoundWaves (3 tickets)	@ $150.00	$ _____
General Jackson (2 tickets)	@ $150.00	$ _____

SATURDAY EVENING DINNER & ENTERTAINMENT

Sat., August 14 - reception @ 5:00 p.m., dinner @ 5:30 p.m.

Reservations required

Dinner Tickets x ____ (Includes entertainment)	@ $200.00	$_____

CONFERENCE REGISTRATION FEE

Individual	@ $ 45.00	$ _____
Couple	@ $ 70.00	$ _____

GRAND TOTAL from both columns $

5.13.21

Tennessee
Poultry Association

Youth Art Contest Entry Rules

TPA welcomes participation in our 5th annual art contest for youth. All entries will be displayed and judged during the TPA Annual Meeting & Summer Getaway on August 13-14, 2021 at the Gaylord Opryland Resort & Convention Center in Nashville.

Subject: All art must be poultry-related, i.e. of a chicken or chickens, and/or of a poultry live operation.

Who is eligible: Family members (children, grandchildren, nieces/nephews, step-children, etc.) of TPA grower members, TPA poultry complex employees, or affiliated TPA allied company members are eligible to submit entries. There will be three age categories: 9 and under, 10-14, 15-18 (age as of August 1, 2021).

Our **Eggceptional Friends of Poultry** category is reserved for children up to age 18 who have a diagnosed exceptionality. Those qualified to enter in this category may submit a drawing, painting or other project that fits their individual gifting. Some suggestions could include, but are not limited to poultry related photography, posters with pictures or cutouts, Lego or Popsicle stick buildings, etc.

Awards: Each group will have 1st, 2nd, and 3rd place winners that will be awarded ribbons and will be eligible to receive cash prizes of $100, $50 & $25 respectively for each age division. There will also be an overall *Best of Show* entry awarded as well as a *Best of Show* for the Eggceptional category, which will both subsequently be auctioned off during the TPA fundraiser on Aug. 14 in lieu of the cash prize. All proceeds from the sale of the winning art piece will be awarded to the artist as a scholarship.

Media:

- Art will need to be submitted on 8½ by 11 inch rigid canvas, sketch or cardstock paper
- Framed entries **will not** be accepted, but all entries must be suitable for framing
- Drawings and paintings are the only types of media that can be entered unless entering in the *Eggceptional Friends of Poultry* category
    - Drawings include: pencil, charcoal, colored pencil, ink, markers, etc.
    - Paintings include: acrylic, oils, tempera, watercolors, etc.

Entry: All entries must be received at the TPA Annual Meeting at the Gaylord Nashville no later than 3 p.m. on Friday, August 13, 2021. Mail-in entries are discouraged, so if you are not attending the meeting please send your artwork with someone who is.

Include: Please complete and submit the attached TPA Art Contest Entry Form. Artwork will not be returned unless the attached form and requested information is submitted. ***Please also put your name and age on the back of your art piece.***

Judging: All entries will be judged by a panel of industry representatives during the TPA Annual Meeting on August 13th.

Information:

- The art will stay on display through the evening TPA banquet on August 14th.
- Photo rights of all artwork become property of TPA for use on social media and for promotional efforts.
- TPA is not responsible for lost or damaged entries.
- TPA will auction off the *Best of Show* art pieces. They will not be returned to the artist. Please allow two weeks for remaining entries, ribbons and prize money to be mailed.
- TPA is not responsible for the receiving or condition of mailed in entries.
- Contact tracy@tnpoultry.org or 270-363-2078 for more information.

Tennessee Poultry Association

Entry #_____
[9&U] | [10-14] | [15-18]
(for office use only)

TPA Art Contest Entry Form

Name: _____

Age: _____ Contact Phone Number: _____
(As of August 1, 2021)

Family member's name: _____

Relationship: _____ Hometown & State: _____

Employer: _____

Or grows for: _____

TPA will contact and award the 1st through 3rd place in all categories and the *Best of Show* winners. The *Best of Show* winners will receive a scholarship check for the sale of their art piece.

Contestants who would like to have their art work returned and have ribbons and checks sent to them after the entries are judged should provide a complete physical mailing address:

_____

_____

_____
City State Zip Code

TPA is <u>not responsible</u> for the condition of artwork or for any losses or damages.

Please include this entry form along with your entry to be received by TPA *no later than* August 13, 2021 at 3 p.m. at the Gaylord Opryland Resort & Conference Center, Nashville.

For more information contact tracy@tnpoultry.org or 270-363-2078

TPA GREATLY APPRECIATES OUR ALLIED MEMBERS

Ag Lighting Innovations
Tom Ellsworth
(615) 378-0108

Alltech
Sam Bates
(229) 225-1212

Animal Health International
Jeff Sims
(256) 504-2588

Arm & Hammer Animal Nutrition
Jason Quick
(540) 271-4038

BankPlus
Kenny Williamson
(601) 850-7306

Best Veterinary Solutions, Inc.
Van Harper
(812) 259-9146

Big Dutchman
Jeff Ratledge
(616) 283-4527

Biomin
Jason King
816-469-9460

BioSafe Systems
Chynette Todd
(931) 704-2336

Boehringer Ingelheim
Mike Johnson
(678) 644-8463

Ceva Biomune
Todd Grisham
(256) 503-5726

ChemStation Mid-South
Roy Brown
(901) 345-5333

Chore-Time Poultry
Brent Escoe
(706) 338-8570

Clear View Enterprises
Johnny Smith
(770) 712-0015

CT Consulting
Chynette Todd
(931) 704-2336

Cumberland Poultry
Brian Johnson (217) 820-3530
Gary Sadler (225) 531-2461

D & F Equipment
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(256) 528-7842

Diamond V
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(870) 822-9752

Diversified Ag
Brad Bowen (479) 879-2832
Chris Nelson (270) 499-0315

Ecodrum Composters
Byron Irwin
(701) 446-6139

Elanco
Cleve Jackson
(706) 238-2464

Fairmount Poultry
Mark Owens
(706) 337-5941

Farm Credit Mid-America
Devin Gilliam
(615) 708-8590

First Financial Bank
Allen Ginn
(770) 531-4343

Georgia Poultry Equipment
Mike Sears
(479) 435-4255

Goggin Warehousing
Keith Bellenfant
(931) 225-1206

GrassWorx
Larry Dean (314) 997-8659
Serge Traylor (314) 276-0917

Huvepharma
Evan Bartley (417) 813-7212
Joe Williams (205) 412-0192

Integrity Testing & Inspection
Josh Thrash
270-570-0494

International Paper
Russ Bratton
(731) 501-9164

Jamesway Chick Master Incubator
Krista Baker
(519) 624-4646 ext. 1244

JBT - Prime Equipment Group
Jody Howell
(770) 530-1895

Jeff Woods Generators
Fred Peterson
(931) 265-0138

Johnson Farm & Agribusiness Insurance
Beth Burns
(423) 290-1442

Jones-Hamilton Co.
Steve Carpenter (334) 470-1561
Clint Lauderdale (256) 620-1175

K Supply Co., Inc.
David Walker
(256) 894-0034

Kemin Animal Nutrition and Health
Wes Sullivan
(870) 403-6991

Lhoist NA
Barry Collins
(931) 368-9057

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(910) 499-4687

Lubing
John Hawk
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Marel, Inc.
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Merck Animal Health
Paul Burke
(615) 804-3564

New Holland
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Phileo
George Perigo
706-889-5068

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Robert King
(256) 252-9239

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Proxy-Clean Products
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Luke Barnes (731) 479-9955

Quality Incentive Company
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ReNew Solar Solutions
Holly McMullen
615-617-6470

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Chase Kizer
(423) 771-1161

River Valley Ingredients
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(770) 886-2250

Silvercote Insulation
Jordan Helms
(864) 315-7225

SKOV
John Hoffman
(903) 724-3403

Smith Creek, Inc.
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(812) 431-1579

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Allen Reynolds
800-608-3755 ext 701

Southwestern Sales Co.
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(479) 427-8005

Space Ray
Jeff Wilson
(254) 252-0434

Sunbelt Rentals, Inc.
Bart Smith
(205) 602-2485

Superior Plus Propane
James Watson
404-307-3491

Swallows Insurance Agency
Gabe Colwell or Greg McDonald
(931) 526-4025

TN Farm Bureau Federation
www.tnfarmbureau.com
(931) 388-7872

TN Corn Promotion Council
Carol Reed
(731) 819-7111

Tennessee Farmers Co-op
Jimmy Ogilvie
(615) 714-3212

Tennessee Valley Tractor & Equipment
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(256) 673-0566

UT - Extension
Robert Burns
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Val-Co
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(601) 850-3844

Viand Group
Maggie Smith
(931) 607-4176

Vincit Group
Eric Killen
(423) 504-1974

Weeden Environments
Jake Smith
(870) 680-7382

Westan Insurance Group
Portis Tanner
(731) 885-5453

Zoetis
Jason Hicks
(706) 768-4088

Tennessee
Poultry Association

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Member Services
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(270) 363-2078
tracy@tnpoultry.org

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*TPA board member **David Tallent** (formerly with River Valley AgCredit), along with **Travis Stewart** (state FFA poultry proficiency winner who went on to become the 2019-2020 East TN VP for FFA), **Phillip Baker** (Farm Bureau Insurance, Cookeville) and **Nick Carpenter** (2018-2019 State FFA Secretary who interned with **Aviagen** in the summer of 2020) at the 2019 TN FFA Convention. This photo is featured on the 2021 convention sponsor survey.*

Not sure what we would have done without these amazing students from TN Tech at our scholarship fundraiser sporting clays event. L to R: Heather Thompson, Callie Fisher, Olivia Smith (her family grows for Cobb in Macon Co.), Summer Donoho (is in MS for the summer doing a QA internship with Koch Foods), and Jacob Harris (past internships with Cal-Maine and Koch Foods, starting a full-time position with Pilgrims in AL as an Operations Associate). THANKS GUYS!!!